

# *Planck* 2018 Results: Cosmological Parameter Tables

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## Abstract

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

## 1 Introduction

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

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

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

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

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

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

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

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

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

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

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

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

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## 2 Baseline model

### 2.1 base\_plikHM-TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022126	$0.02212^{+0.00044}_{-0.00043}$	$\sigma_8 \Omega_m^{0.25}$	0.6116	$0.611^{+0.023}_{-0.023}$	$H(0.15)$	72.23	$72.3^{+1.6}_{-1.5}$
$\Omega_c h^2$	0.12068	$0.1206^{+0.0041}_{-0.0041}$	$\sigma_8/h^{0.5}$	0.9938	$0.993^{+0.031}_{-0.031}$	$D_M(0.15)$	647.8	$648^{+16}_{-16}$
$100\theta_{MC}$	1.04075	$1.04077^{+0.00093}_{-0.00091}$	$r_{drag}h$	98.40	$98.5^{+3.2}_{-3.1}$	$H(0.38)$	82.50	$82.5^{+1.1}_{-1.1}$
$\tau$	0.0523	$0.052^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.454	$2.454^{+0.074}_{-0.073}$	$D_M(0.38)$	1542.6	$1542^{+31}_{-31}$
$\ln(10^{10} A_s)$	3.0413	$3.040^{+0.033}_{-0.032}$	$z_{re}$	7.54	$7.5^{+1.6}_{-1.7}$	$H(0.51)$	89.31	$89.32^{+0.90}_{-0.83}$
$n_s$	0.9635	$0.963^{+0.011}_{-0.011}$	$10^9 A_s$	2.093	$2.092^{+0.069}_{-0.066}$	$D_M(0.51)$	1996.8	$1997^{+36}_{-36}$
$y_{cal}$	1.00046	$1.0004^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8853	$1.884^{+0.027}_{-0.027}$	$H(0.61)$	95.00	$95.01^{+0.72}_{-0.67}$
$A_{217}^{CIB}$	48.5	$48^{+10}_{-10}$	$D_{40}$	1231.7	$1234^{+30}_{-30}$	$D_M(0.61)$	2322.3	$2322^{+39}_{-39}$
$\xi^{tSZ \times CIB}$	0.32	—	$D_{220}$	5710	$5713^{+83}_{-82}$	$H(2.33)$	236.75	$236.7^{+2.5}_{-2.5}$
$A_{143}^{tSZ}$	7.03	$5.1^{+3.8}_{-4.0}$	$D_{810}$	2538.2	$2536^{+27}_{-27}$	$D_M(2.33)$	5777.8	$5778^{+32}_{-33}$
$A_{100}^{PS}$	255	$263^{+60}_{-60}$	$D_{1420}$	815.5	$814^{+10}_{-9.9}$	$f\sigma_8(0.15)$	0.4642	$0.464^{+0.024}_{-0.024}$
$A_{143}^{PS}$	49.8	$49^{+20}_{-20}$	$D_{2000}$	229.94	$229.5^{+3.6}_{-3.5}$	$\sigma_8(0.15)$	0.7500	$0.749^{+0.015}_{-0.015}$
$A_{143 \times 217}^{PS}$	47.3	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9635	$0.963^{+0.011}_{-0.011}$	$f\sigma_8(0.38)$	0.4804	$0.480^{+0.019}_{-0.019}$
$A_{217}^{PS}$	119.9	$115^{+20}_{-20}$	$Y_P$	0.245295	$0.24529^{+0.00018}_{-0.00021}$	$\sigma_8(0.38)$	0.6638	$0.663^{+0.012}_{-0.012}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246621	$0.24661^{+0.00018}_{-0.00021}$	$f\sigma_8(0.51)$	0.4779	$0.477^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.7}_{-3.6}$	$10^5 D/H$	2.632	$2.634^{+0.083}_{-0.082}$	$\sigma_8(0.51)$	0.6208	$0.620^{+0.011}_{-0.011}$
$A_{143}^{dustTT}$	10.80	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.830	$13.830^{+0.072}_{-0.074}$	$f\sigma_8(0.61)$	0.4722	$0.472^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.5}_{-6.5}$	$z_*$	1090.29	$1090.30^{+0.80}_{-0.80}$	$\sigma_8(0.61)$	0.5904	$0.590^{+0.010}_{-0.010}$
$A_{217}^{dustTT}$	94.8	$93^{+10}_{-10}$	$r_*$	144.44	$144.46^{+0.94}_{-0.94}$	$f\sigma_8(2.33)$	0.2973	$0.2971^{+0.0051}_{-0.0049}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04096	$1.04097^{+0.00091}_{-0.00089}$	$\sigma_8(2.33)$	0.3061	$0.3059^{+0.0054}_{-0.0051}$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.876	$13.878^{+0.087}_{-0.086}$	$f_{2000}^{143}$	30.5	$31^{+6}_{-6}$
$H_0$	66.86	$66.9^{+1.8}_{-1.8}$	$z_{drag}$	1059.44	$1059.39^{+0.92}_{-0.91}$	$f_{2000}^{143 \times 217}$	33.34	$34^{+4}_{-4}$
$\Omega_\Lambda$	0.6791	$0.679^{+0.025}_{-0.026}$	$r_{drag}$	147.18	$147.21^{+0.94}_{-0.95}$	$f_{2000}^{217}$	107.77	$108.2^{+3.8}_{-3.8}$
$\Omega_m$	0.3209	$0.321^{+0.026}_{-0.025}$	$k_D$	0.14058	$0.1405^{+0.0010}_{-0.0010}$	$\chi_{small}^2$	395.88	$397.0 (\nu: 1.5)$
$\Omega_m h^2$	0.14345	$0.1434^{+0.0039}_{-0.0039}$	$100\theta_D$	0.16105	$0.16107^{+0.00052}_{-0.00053}$	$\chi_{lowl}^2$	23.60	$23.9 (\nu: 0.8)$
$\Omega_m h^3$	0.09591	$0.09589^{+0.00090}_{-0.00089}$	$z_{eq}$	3413	$3411^{+94}_{-93}$	$\chi_{plik}^2$	758.7	$771.4 (\nu: 14.9)$
$\sigma_8$	0.8126	$0.812^{+0.017}_{-0.018}$	$k_{eq}$	0.010416	$0.01041^{+0.00029}_{-0.00028}$	$\chi_{prior}^2$	1.4	$7.3 (\nu: 6.8)$
$S_8$	0.8405	$0.840^{+0.048}_{-0.046}$	$100\theta_{eq}$	0.8106	$0.811^{+0.018}_{-0.017}$	$\chi_{CMB}^2$	1178.2	$1192.3 (\nu: 15.1)$
$\sigma_8 \Omega_m^{0.5}$	0.4604	$0.460^{+0.026}_{-0.025}$	$100\theta_{s,eq}$	0.4482	$0.4483^{+0.0091}_{-0.0088}$			

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

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

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022225	$0.02222^{+0.00038}_{-0.00039}$	$\sigma_8/h^{0.5}$	0.9814	$0.982^{+0.023}_{-0.022}$	$H(0.38)$	82.97	$82.96^{+0.70}_{-0.68}$
$\Omega_c h^2$	0.11898	$0.1190^{+0.0024}_{-0.0024}$	$r_{\text{drag}} h$	99.76	$99.8^{+1.8}_{-1.8}$	$D_M(0.38)$	1529.5	$1530^{+18}_{-18}$
$100\theta_{\text{MC}}$	1.04102	$1.04098^{+0.00082}_{-0.00082}$	$\langle d^2 \rangle^{1/2}$	2.425	$2.429^{+0.054}_{-0.053}$	$H(0.51)$	89.67	$89.66^{+0.58}_{-0.56}$
$\tau$	0.0532	$0.054^{+0.017}_{-0.015}$	$z_{\text{re}}$	7.59	$7.6^{+1.7}_{-1.6}$	$D_M(0.51)$	1981.5	$1982^{+22}_{-22}$
$\ln(10^{10} A_s)$	3.0390	$3.040^{+0.035}_{-0.032}$	$10^9 A_s$	2.089	$2.091^{+0.073}_{-0.067}$	$H(0.61)$	95.272	$95.26^{+0.50}_{-0.48}$
$n_s$	0.9673	$0.9664^{+0.0085}_{-0.0084}$	$10^9 A_s e^{-2\tau}$	1.8777	$1.877^{+0.023}_{-0.023}$	$D_M(0.61)$	2305.9	$2306^{+23}_{-23}$
$y_{\text{cal}}$	1.00044	$1.0005^{+0.0048}_{-0.0051}$	$D_{40}$	1223.2	$1226^{+26}_{-25}$	$H(2.33)$	235.75	$235.7^{+1.5}_{-1.5}$
$A_{217}^{\text{CIB}}$	49.2	$48^{+10}_{-10}$	$D_{220}$	5717	$5721^{+80}_{-81}$	$D_M(2.33)$	5766.2	$5767^{+24}_{-24}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.26	—	$D_{810}$	2536.8	$2536^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4542	$0.454^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	7.06	$5.1^{+3.8}_{-4.0}$	$D_{1420}$	816.3	$815^{+10}_{-10}$	$\sigma_8(0.15)$	0.7459	$0.746^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	255	$264^{+60}_{-60}$	$D_{2000}$	230.24	$229.9^{+3.5}_{-3.5}$	$f\sigma_8(0.38)$	0.4727	$0.473^{+0.013}_{-0.013}$
$A_{143}^{\text{PS}}$	48.1	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9673	$0.9664^{+0.0085}_{-0.0084}$	$\sigma_8(0.38)$	0.6613	$0.661^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	44.9	$43^{+20}_{-20}$	$Y_{\text{P}}$	0.245336	$0.24533^{+0.00016}_{-0.00017}$	$f\sigma_8(0.51)$	0.4715	$0.472^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	118.4	$114^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246663	$0.24666^{+0.00016}_{-0.00017}$	$\sigma_8(0.51)$	0.6190	$0.619^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.613	$2.615^{+0.074}_{-0.070}$	$f\sigma_8(0.61)$	0.4666	$0.467^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.85	$9.0^{+3.6}_{-3.5}$	Age/Gyr	13.805	$13.807^{+0.055}_{-0.056}$	$\sigma_8(0.61)$	0.5890	$0.589^{+0.011}_{-0.0099}$
$A_{143}^{\text{dustTT}}$	10.85	$10.8^{+3.5}_{-3.5}$	$z_*$	1090.01	$1090.03^{+0.59}_{-0.58}$	$f\sigma_8(2.33)$	0.2970	$0.2971^{+0.0054}_{-0.0050}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.6}_{-6.5}$	$r_*$	144.81	$144.82^{+0.63}_{-0.62}$	$\sigma_8(2.33)$	0.3063	$0.3063^{+0.0057}_{-0.0052}$
$A_{217}^{\text{dustTT}}$	94.4	$93^{+10}_{-10}$	$100\theta_*$	1.04121	$1.04118^{+0.00081}_{-0.00081}$	$f_{2000}^{143}$	30.3	$31^{+6}_{-6}$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.907	$13.909^{+0.062}_{-0.060}$	$f_{2000}^{143 \times 217}$	33.11	$33^{+4}_{-4}$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.51	$1059.50^{+0.85}_{-0.90}$	$f_{2000}^{217}$	107.61	$107.9^{+3.9}_{-3.7}$
$H_0$	67.62	$67.6^{+1.1}_{-1.1}$	$r_{\text{drag}}$	147.52	$147.54^{+0.68}_{-0.67}$	$\chi_{\text{small}}^2$	395.89	$397.1 (\nu: 1.9)$
$\Omega_\Lambda$	0.6898	$0.690^{+0.014}_{-0.015}$	$k_{\text{D}}$	0.14030	$0.14027^{+0.00087}_{-0.00088}$	$\chi_{\text{lowl}}^2$	22.83	$23.09 (\nu: 0.4)$
$\Omega_{\text{m}}$	0.3102	$0.310^{+0.015}_{-0.014}$	$100\theta_{\text{D}}$	0.16101	$0.16102^{+0.00051}_{-0.00050}$	$\chi_{\text{plik}}^2$	760.1	$772.2 (\nu: 15.1)$
$\Omega_{\text{m}} h^2$	0.14185	$0.1418^{+0.0023}_{-0.0023}$	$z_{\text{eq}}$	3374	$3374^{+56}_{-56}$	$\chi_{6\text{DF}}^2$	0.022	$0.059 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	0.09593	$0.09589^{+0.00090}_{-0.00088}$	$k_{\text{eq}}$	0.010299	$0.01030^{+0.00017}_{-0.00017}$	$\chi_{\text{MGS}}^2$	1.28	$1.35 (\nu: 0.1)$
$\sigma_8$	0.8071	$0.807^{+0.016}_{-0.015}$	$100\theta_{\text{eq}}$	0.8180	$0.818^{+0.010}_{-0.010}$	$\chi_{\text{DR12BAO}}^2$	4.18	$4.8 (\nu: 1.3)$
$S_8$	0.8207	$0.821^{+0.030}_{-0.028}$	$100\theta_{s,\text{eq}}$	0.4519	$0.4520^{+0.0053}_{-0.0053}$	$\chi_{\text{prior}}^2$	1.4	$7.4 (\nu: 6.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4495	$0.450^{+0.016}_{-0.016}$	$H(0.15)$	72.89	$72.88^{+0.92}_{-0.91}$	$\chi_{\text{BAO}}^2$	5.49	$6.2 (\nu: 0.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6023	$0.602^{+0.016}_{-0.015}$	$D_M(0.15)$	641.2	$641.3^{+9.1}_{-9.1}$	$\chi_{\text{CMB}}^2$	1178.8	$1192.4 (\nu: 15.4)$

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

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.18 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3\_2\_29: 22.83 plik\_rd12\_HM\_v22\_TT: 760.10

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02212^{+0.00044}_{-0.00043}$	$\sigma_8 \Omega_m^{0.25}$	$0.612^{+0.023}_{-0.022}$	$H(0.15)$	$72.3^{+1.6}_{-1.5}$
$\Omega_c h^2$	$0.1206^{+0.0041}_{-0.0041}$	$\sigma_8/h^{0.5}$	$0.994^{+0.031}_{-0.031}$	$D_M(0.15)$	$647^{+16}_{-16}$
$100\theta_{MC}$	$1.04077^{+0.00093}_{-0.00091}$	$r_{drag}h$	$98.5^{+3.2}_{-3.1}$	$H(0.38)$	$82.5^{+1.1}_{-1.1}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.457^{+0.073}_{-0.072}$	$D_M(0.38)$	$1542^{+31}_{-31}$
$\ln(10^{10} A_s)$	$3.044^{+0.028}_{-0.026}$	$z_{re}$	$< 8.86$	$H(0.51)$	$89.34^{+0.90}_{-0.83}$
$n_s$	$0.963^{+0.011}_{-0.011}$	$10^9 A_s$	$2.098^{+0.060}_{-0.055}$	$D_M(0.51)$	$1996^{+36}_{-37}$
$y_{cal}$	$1.0004^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	$1.884^{+0.027}_{-0.026}$	$H(0.61)$	$95.02^{+0.72}_{-0.67}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{40}$	$1234^{+30}_{-30}$	$D_M(0.61)$	$2321^{+39}_{-39}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5713^{+83}_{-82}$	$H(2.33)$	$236.7^{+2.5}_{-2.5}$
$A_{143}^{tSZ}$	$5.1^{+3.8}_{-4.0}$	$D_{810}$	$2536^{+27}_{-27}$	$D_M(2.33)$	$5777^{+32}_{-33}$
$A_{100}^{PS}$	$263^{+60}_{-60}$	$D_{1420}$	$814^{+10}_{-9.9}$	$f\sigma_8(0.15)$	$0.464^{+0.024}_{-0.023}$
$A_{143}^{PS}$	$49^{+20}_{-20}$	$D_{2000}$	$229.6^{+3.6}_{-3.4}$	$\sigma_8(0.15)$	$0.750^{+0.014}_{-0.013}$
$A_{143 \times 217}^{PS}$	$44^{+20}_{-20}$	$n_{s,0.002}$	$0.963^{+0.011}_{-0.011}$	$f\sigma_8(0.38)$	$0.480^{+0.019}_{-0.019}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$Y_P$	$0.24529^{+0.00019}_{-0.00020}$	$\sigma_8(0.38)$	$0.664^{+0.011}_{-0.010}$
$A^{kSZ}$	$< 8.45$	$Y_P^{BBN}$	$0.24661^{+0.00019}_{-0.00020}$	$f\sigma_8(0.51)$	$0.478^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	$8.9^{+3.7}_{-3.6}$	$10^5 D/H$	$2.633^{+0.083}_{-0.081}$	$\sigma_8(0.51)$	$0.621^{+0.010}_{-0.0090}$
$A_{143}^{dustTT}$	$10.7^{+3.5}_{-3.5}$	Age/Gyr	$13.829^{+0.072}_{-0.073}$	$f\sigma_8(0.61)$	$0.472^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.5}_{-6.5}$	$z_*$	$1090.29^{+0.79}_{-0.80}$	$\sigma_8(0.61)$	$0.5907^{+0.0095}_{-0.0082}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$r_*$	$144.48^{+0.93}_{-0.94}$	$f\sigma_8(2.33)$	$0.2975^{+0.0044}_{-0.0041}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04098^{+0.00092}_{-0.00090}$	$\sigma_8(2.33)$	$0.3064^{+0.0046}_{-0.0042}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.879^{+0.086}_{-0.086}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$H_0$	$66.9^{+1.8}_{-1.8}$	$z_{drag}$	$1059.40^{+0.91}_{-0.92}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$\Omega_\Lambda$	$0.680^{+0.025}_{-0.026}$	$r_{drag}$	$147.22^{+0.94}_{-0.95}$	$f_{2000}^{217}$	$108.1^{+3.8}_{-3.8}$
$\Omega_m$	$0.320^{+0.026}_{-0.025}$	$k_D$	$0.1405^{+0.0010}_{-0.0010}$	$\chi_{simall}^2$	$396.9 (\nu: 1.5)$
$\Omega_m h^2$	$0.1433^{+0.0039}_{-0.0039}$	$100\theta_D$	$0.16107^{+0.00053}_{-0.00053}$	$\chi_{lowl}^2$	$23.9 (\nu: 0.8)$
$\Omega_m h^3$	$0.09589^{+0.00091}_{-0.00090}$	$z_{eq}$	$3410^{+94}_{-92}$	$\chi_{plik}^2$	$771.3 (\nu: 14.7)$
$\sigma_8$	$0.813^{+0.017}_{-0.016}$	$k_{eq}$	$0.01041^{+0.00029}_{-0.00028}$	$\chi_{prior}^2$	$7.3 (\nu: 6.7)$
$S_8$	$0.840^{+0.048}_{-0.046}$	$100\theta_{eq}$	$0.811^{+0.018}_{-0.017}$	$\chi_{CMB}^2$	$1192.0 (\nu: 14.8)$
$\sigma_8 \Omega_m^{0.5}$	$0.460^{+0.026}_{-0.025}$	$100\theta_{s,eq}$	$0.4485^{+0.0090}_{-0.0089}$		

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

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02222^{+0.00038}_{-0.00039}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$H(0.38)$	$82.97^{+0.71}_{-0.68}$
$\Omega_c h^2$	$0.1189^{+0.0024}_{-0.0024}$	$r_{\text{drag}} h$	$99.8^{+1.8}_{-1.8}$	$D_M(0.38)$	$1530^{+18}_{-18}$
$100\theta_{\text{MC}}$	$1.04099^{+0.00083}_{-0.00082}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.053}_{-0.051}$	$H(0.51)$	$89.66^{+0.59}_{-0.56}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$z_{\text{re}}$	$< 9.04$	$D_M(0.51)$	$1982^{+22}_{-22}$
$\ln(10^{10} A_s)$	$3.043^{+0.030}_{-0.027}$	$10^9 A_s$	$2.097^{+0.064}_{-0.057}$	$H(0.61)$	$95.27^{+0.50}_{-0.48}$
$n_s$	$0.9665^{+0.0084}_{-0.0083}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.023}_{-0.023}$	$D_M(0.61)$	$2306^{+23}_{-24}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0051}$	$D_{40}$	$1226^{+26}_{-25}$	$H(2.33)$	$235.7^{+1.5}_{-1.5}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5721^{+79}_{-81}$	$D_M(2.33)$	$5767^{+24}_{-25}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2536^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{1420}$	$815^{+10}_{-10}$	$\sigma_8(0.15)$	$0.747^{+0.013}_{-0.012}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$D_{2000}$	$230.0^{+3.5}_{-3.6}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$n_{s,0.002}$	$0.9665^{+0.0084}_{-0.0083}$	$\sigma_8(0.38)$	$0.662^{+0.011}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}$	$0.24533^{+0.00016}_{-0.00017}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00016}_{-0.00017}$	$\sigma_8(0.51)$	$0.620^{+0.010}_{-0.0092}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.615^{+0.075}_{-0.071}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0097}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$\text{Age}/\text{Gyr}$	$13.806^{+0.056}_{-0.056}$	$\sigma_8(0.61)$	$0.5898^{+0.0096}_{-0.0087}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$z_*$	$1090.02^{+0.60}_{-0.58}$	$f\sigma_8(2.33)$	$0.2974^{+0.0048}_{-0.0043}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.6}_{-6.5}$	$r_*$	$144.82^{+0.63}_{-0.61}$	$\sigma_8(2.33)$	$0.3067^{+0.0050}_{-0.0045}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04119^{+0.00082}_{-0.00081}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.062}_{-0.060}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.51^{+0.84}_{-0.87}$	$f_{2000}^{217}$	$107.9^{+3.9}_{-3.7}$
$H_0$	$67.6^{+1.1}_{-1.1}$	$r_{\text{drag}}$	$147.54^{+0.68}_{-0.67}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$\Omega_\Lambda$	$0.690^{+0.014}_{-0.014}$	$k_{\text{D}}$	$0.14028^{+0.00087}_{-0.00088}$	$\chi_{\text{lowl}}^2$	$23.11 (\nu: 0.4)$
$\Omega_{\text{m}}$	$0.310^{+0.014}_{-0.014}$	$100\theta_{\text{D}}$	$0.16101^{+0.00051}_{-0.00050}$	$\chi_{\text{plik}}^2$	$772.0 (\nu: 14.8)$
$\Omega_{\text{m}} h^2$	$0.1418^{+0.0023}_{-0.0023}$	$z_{\text{eq}}$	$3373^{+56}_{-56}$	$\chi_{6\text{DF}}^2$	$0.058 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.09589^{+0.00090}_{-0.00089}$	$k_{\text{eq}}$	$0.01030^{+0.00017}_{-0.00017}$	$\chi_{\text{MGS}}^2$	$1.36 (\nu: 0.1)$
$\sigma_8$	$0.808^{+0.015}_{-0.013}$	$100\theta_{\text{eq}}$	$0.818^{+0.010}_{-0.010}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.3)$
$S_8$	$0.822^{+0.029}_{-0.028}$	$100\theta_{\text{s,eq}}$	$0.4520^{+0.0053}_{-0.0053}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 6.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.016}_{-0.015}$	$H(0.15)$	$72.89^{+0.93}_{-0.91}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.015}_{-0.015}$	$D_M(0.15)$	$641.2^{+9.1}_{-9.1}$	$\chi_{\text{CMB}}^2$	$1192.2 (\nu: 15.0)$
$\bar{\chi}_{\text{eff}}^2 = 1205.76; R - 1 = 0.02069$					

## 2.5 base\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022377	$0.02236^{+0.00029}_{-0.00029}$	$\Omega_m h^3$	0.09636	$0.09633^{+0.00058}_{-0.00057}$	$100\theta_{\text{eq}}$	0.8128	$0.812^{+0.011}_{-0.011}$
$\Omega_c h^2$	0.12010	$0.1202^{+0.0027}_{-0.0027}$	$\sigma_8$	0.8120	$0.812^{+0.015}_{-0.014}$	$100\theta_{\text{s,eq}}$	0.4491	$0.4490^{+0.0058}_{-0.0057}$
$100\theta_{\text{MC}}$	1.04092	$1.04090^{+0.00059}_{-0.00062}$	$S_8$	0.8331	$0.834^{+0.032}_{-0.030}$	$H(0.15)$	72.65	$72.6^{+1.0}_{-1.0}$
$\tau$	0.0543	$0.054^{+0.017}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4563	$0.457^{+0.017}_{-0.017}$	$D_{\text{M}}(0.15)$	643.7	$644^{+10}_{-10}$
$\ln(10^{10} A_s)$	3.0447	$3.045^{+0.032}_{-0.030}$	$\sigma_8 \Omega_m^{0.25}$	0.6087	$0.609^{+0.016}_{-0.015}$	$H(0.38)$	82.85	$82.82^{+0.74}_{-0.73}$
$n_s$	0.9659	$0.9649^{+0.0085}_{-0.0087}$	$\sigma_8/h^{0.5}$	0.9896	$0.990^{+0.023}_{-0.022}$	$D_{\text{M}}(0.38)$	1534.0	$1535^{+20}_{-20}$
$y_{\text{cal}}$	1.00061	$1.0005^{+0.0049}_{-0.0050}$	$r_{\text{drag}} h$	99.00	$98.9^{+2.1}_{-2.0}$	$H(0.51)$	89.61	$89.59^{+0.59}_{-0.57}$
$A_{217}^{\text{CIB}}$	47.2	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.445	$2.448^{+0.055}_{-0.053}$	$D_{\text{M}}(0.51)$	1986.5	$1988^{+24}_{-24}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.42	—	$z_{\text{re}}$	7.68	$7.7^{+1.6}_{-1.6}$	$H(0.61)$	95.270	$95.25^{+0.47}_{-0.45}$
$A_{143}^{\text{tSZ}}$	7.23	$5.5^{+3.6}_{-3.9}$	$10^9 A_s$	2.100	$2.101^{+0.068}_{-0.063}$	$D_{\text{M}}(0.61)$	2311.1	$2312^{+26}_{-26}$
$A_{100}^{\text{PS}}$	251	$258^{+50}_{-50}$	$10^9 A_s e^{-2\tau}$	1.8843	$1.884^{+0.023}_{-0.023}$	$H(2.33)$	236.64	$236.7^{+1.6}_{-1.6}$
$A_{143}^{\text{PS}}$	47.4	$46^{+20}_{-20}$	$D_{40}$	1229.3	$1232^{+25}_{-24}$	$D_{\text{M}}(2.33)$	5763.6	$5765^{+21}_{-21}$
$A_{143 \times 217}^{\text{PS}}$	47.3	$42^{+20}_{-20}$	$D_{220}$	5730	$5731^{+76}_{-76}$	$f\sigma_8(0.15)$	0.4605	$0.461^{+0.016}_{-0.015}$
$A_{217}^{\text{PS}}$	119.8	$115^{+20}_{-20}$	$D_{810}$	2541.1	$2539^{+26}_{-27}$	$\sigma_8(0.15)$	0.7499	$0.750^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	0.01	$< 8.02$	$D_{1420}$	818.3	$817.2^{+9.5}_{-9.7}$	$f\sigma_8(0.38)$	0.4779	$0.478^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	8.86	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	231.26	$230.9^{+3.1}_{-3.2}$	$\sigma_8(0.38)$	0.6642	$0.664^{+0.011}_{-0.010}$
$A_{143}^{\text{dustTT}}$	11.10	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9659	$0.9649^{+0.0085}_{-0.0087}$	$f\sigma_8(0.51)$	0.4760	$0.476^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.6^{+6.4}_{-6.5}$	$Y_{\text{P}}$	0.245398	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	0.6214	$0.621^{+0.010}_{-0.0096}$
$A_{217}^{\text{dustTT}}$	95.1	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246725	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4707	$0.471^{+0.010}_{-0.010}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.076}_{-0.076}$	$10^5 \text{D}/\text{H}$	2.584	$2.588^{+0.055}_{-0.053}$	$\sigma_8(0.61)$	0.5912	$0.5910^{+0.0097}_{-0.0091}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.057}_{-0.059}$	$\text{Age}/\text{Gyr}$	13.7973	$13.800^{+0.047}_{-0.047}$	$f\sigma_8(2.33)$	0.29790	$0.2978^{+0.0049}_{-0.0046}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.92	$1089.95^{+0.55}_{-0.53}$	$\sigma_8(2.33)$	0.3069	$0.3068^{+0.0053}_{-0.0049}$
$A_{143}^{\text{dustTE}}$	0.224	$0.23^{+0.10}_{-0.10}$	$r_*$	144.40	$144.39^{+0.58}_{-0.58}$	$f_{2000}^{143}$	28.9	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	1.04110	$1.04109^{+0.00059}_{-0.00061}$	$f_{2000}^{143 \times 217}$	32.04	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.08	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.870	$13.869^{+0.054}_{-0.055}$	$f_{2000}^{217}$	106.69	$107.0^{+3.5}_{-3.4}$
$c_{100}$	0.99969	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.97	$1059.93^{+0.58}_{-0.60}$	$\chi_{\text{small}}^2$	396.05	$397.1 (\nu: 2.0)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.06	$147.05^{+0.57}_{-0.58}$	$\chi_{\text{lowl}}^2$	23.26	$23.55 (\nu: 0.5)$
$H_0$	67.32	$67.3^{+1.2}_{-1.2}$	$k_{\text{D}}$	0.14091	$0.14090^{+0.00062}_{-0.00060}$	$\chi_{\text{plik}}^2$	2344.6	$2359.5 (\nu: 16.6)$
$\Omega_{\Lambda}$	0.6842	$0.683^{+0.016}_{-0.017}$	$100\theta_{\text{D}}$	0.160744	$0.16077^{+0.00034}_{-0.00034}$	$\chi_{\text{prior}}^2$	1.8	$11.6 (\nu: 10.3)$
$\Omega_{\text{m}}$	0.3158	$0.317^{+0.017}_{-0.016}$	$z_{\text{eq}}$	3405	$3407^{+60}_{-60}$	$\chi_{\text{CMB}}^2$	2764.0	$2780.2 (\nu: 16.6)$
$\Omega_{\text{m}} h^2$	0.14313	$0.1432^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	0.010392	$0.01040^{+0.00018}_{-0.00018}$			

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

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3.2\_29: 23.26 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.65

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022432	$0.02242^{+0.00026}_{-0.00026}$	$\sigma_8$	0.8098	$0.810^{+0.015}_{-0.013}$	$H(0.15)$	72.97	$72.94^{+0.76}_{-0.74}$
$\Omega_c h^2$	0.11926	$0.1193^{+0.0020}_{-0.0020}$	$S_8$	0.8240	$0.825^{+0.025}_{-0.024}$	$D_M(0.15)$	640.5	$640.8^{+7.5}_{-7.4}$
$100\theta_{MC}$	1.04100	$1.04101^{+0.00054}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	0.4513	$0.452^{+0.014}_{-0.013}$	$H(0.38)$	83.07	$83.05^{+0.56}_{-0.55}$
$\tau$	0.0553	$0.056^{+0.017}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6046	$0.605^{+0.014}_{-0.013}$	$D_M(0.38)$	1527.8	$1528^{+15}_{-15}$
$\ln(10^{10} A_s)$	3.0452	$3.046^{+0.034}_{-0.030}$	$\sigma_8/h^{0.5}$	0.9843	$0.985^{+0.020}_{-0.019}$	$H(0.51)$	89.785	$89.77^{+0.44}_{-0.44}$
$n_s$	0.9680	$0.9670^{+0.0074}_{-0.0074}$	$r_{drag} h$	99.66	$99.6^{+1.5}_{-1.5}$	$D_M(0.51)$	1979.2	$1980^{+17}_{-18}$
$y_{cal}$	1.00071	$1.0006^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.4326	$2.436^{+0.048}_{-0.047}$	$H(0.61)$	95.401	$95.39^{+0.36}_{-0.36}$
$A_{217}^{CIB}$	46.7	$47^{+10}_{-10}$	$z_{re}$	7.76	$7.8^{+1.6}_{-1.5}$	$D_M(0.61)$	2303.2	$2304^{+19}_{-19}$
$\xi^{tSZ \times CIB}$	0.54	—	$10^9 A_s$	2.101	$2.103^{+0.071}_{-0.062}$	$H(2.33)$	236.14	$236.2^{+1.2}_{-1.2}$
$A_{143}^{tSZ}$	7.12	$5.5^{+3.6}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8813	$1.880^{+0.021}_{-0.021}$	$D_M(2.33)$	5758.2	$5759^{+17}_{-17}$
$A_{100}^{PS}$	249	$258^{+50}_{-60}$	$D_{40}$	1225.2	$1227^{+23}_{-21}$	$f\sigma_8(0.15)$	0.4560	$0.456^{+0.013}_{-0.012}$
$A_{143}^{PS}$	48.6	$45^{+20}_{-20}$	$D_{220}$	5735	$5735^{+74}_{-73}$	$\sigma_8(0.15)$	0.7484	$0.748^{+0.013}_{-0.012}$
$A_{143 \times 217}^{PS}$	49.8	$42^{+20}_{-20}$	$D_{810}$	2541.5	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4745	$0.475^{+0.011}_{-0.011}$
$A_{217}^{PS}$	120.4	$115^{+20}_{-20}$	$D_{1420}$	819.1	$817.8^{+9.6}_{-9.3}$	$\sigma_8(0.38)$	0.6635	$0.664^{+0.011}_{-0.010}$
$A^{kSZ}$	0.00	$< 8.03$	$D_{2000}$	231.58	$231.1^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	0.4732	$0.473^{+0.010}_{-0.0096}$
$A_{100}^{dustTT}$	8.89	$8.9^{+3.7}_{-3.5}$	$n_{s,0.002}$	0.9680	$0.9670^{+0.0074}_{-0.0074}$	$\sigma_8(0.51)$	0.6210	$0.621^{+0.011}_{-0.0096}$
$A_{143}^{dustTT}$	11.01	$10.9^{+3.5}_{-3.5}$	$Y_P$	0.245420	$0.245413^{+0.000095}_{-0.00010}$	$f\sigma_8(0.61)$	0.4683	$0.4685^{+0.0095}_{-0.0090}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.6^{+6.3}_{-6.3}$	$Y_P^{BBN}$	0.246746	$0.246739^{+0.000095}_{-0.00011}$	$\sigma_8(0.61)$	0.5909	$0.591^{+0.010}_{-0.0091}$
$A_{217}^{dustTT}$	95.2	$94^{+10}_{-10}$	$10^5 D/H$	2.5740	$2.577^{+0.049}_{-0.046}$	$f\sigma_8(2.33)$	0.29796	$0.2979^{+0.0051}_{-0.0046}$
$A_{100}^{dustTE}$	0.114	$0.113^{+0.075}_{-0.075}$	Age/Gyr	13.7857	$13.787^{+0.039}_{-0.039}$	$\sigma_8(2.33)$	0.3072	$0.3072^{+0.0053}_{-0.0048}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.057}_{-0.059}$	$z_*$	1089.776	$1089.80^{+0.44}_{-0.41}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.17}_{-0.17}$	$r_*$	144.576	$144.57^{+0.44}_{-0.46}$	$f_{2000}^{143 \times 217}$	31.78	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	0.225	$0.23^{+0.10}_{-0.11}$	$100\theta_*$	1.04118	$1.04119^{+0.00055}_{-0.00056}$	$f_{2000}^{217}$	106.39	$106.8^{+3.5}_{-3.3}$
$A_{143 \times 217}^{dustTE}$	0.666	$0.67^{+0.15}_{-0.15}$	$D_M(z_*)/\text{Gpc}$	13.8858	$13.885^{+0.042}_{-0.044}$	$\chi_{simall}^2$	396.20	$397.3 (\nu: 2.4)$
$A_{217}^{dustTE}$	2.08	$2.09^{+0.51}_{-0.52}$	$z_{drag}$	1060.01	$1060.00^{+0.54}_{-0.56}$	$\chi_{lowl}^2$	22.87	$23.13 (\nu: 0.3)$
$c_{100}$	0.99971	$0.9997^{+0.0013}_{-0.0012}$	$r_{drag}$	147.221	$147.22^{+0.45}_{-0.48}$	$\chi_{plik}^2$	2345.5	$2359.6 (\nu: 17.0)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14078	$0.14077^{+0.00058}_{-0.00055}$	$\chi_{6DF}^2$	0.029	$0.057 (\nu: 0.0)$
$H_0$	67.69	$67.67^{+0.87}_{-0.87}$	$100\theta_D$	0.160709	$0.16073^{+0.00033}_{-0.00032}$	$\chi_{MGS}^2$	1.22	$1.25 (\nu: 0.1)$
$\Omega_\Lambda$	0.6894	$0.689^{+0.011}_{-0.012}$	$z_{eq}$	3385.9	$3387^{+45}_{-44}$	$\chi_{DR12BAO}^2$	4.41	$4.9 (\nu: 1.0)$
$\Omega_m$	0.3106	$0.311^{+0.012}_{-0.011}$	$k_{eq}$	0.010334	$0.01034^{+0.00014}_{-0.00013}$	$\chi_{prior}^2$	1.7	$11.6 (\nu: 10.4)$
$\Omega_m h^2$	0.14233	$0.1424^{+0.0019}_{-0.0018}$	$100\theta_{eq}$	0.8165	$0.8162^{+0.0084}_{-0.0083}$	$\chi_{BAO}^2$	5.66	$6.2 (\nu: 0.7)$
$\Omega_m h^3$	0.09635	$0.09634^{+0.00058}_{-0.00056}$	$100\theta_{s,eq}$	0.45098	$0.4509^{+0.0043}_{-0.0043}$	$\chi_{CMB}^2$	2764.6	$2780.1 (\nu: 16.4)$

Best-fit  $\chi_{eff}^2 = 2771.92$ ;  $\bar{\chi}_{eff}^2 = 2797.91$ ;  $R - 1 = 0.01929$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.41 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3\_2\_29: 22.87 plik\_rd12\_HM\_v22b\_TTTEEE: 2345.51

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02236^{+0.00029}_{-0.00029}$	$\Omega_m h^3$	$0.09633^{+0.00058}_{-0.00057}$	$100\theta_{\text{eq}}$	$0.813^{+0.011}_{-0.011}$
$\Omega_c h^2$	$0.1202^{+0.0027}_{-0.0027}$	$\sigma_8$	$0.813^{+0.014}_{-0.013}$	$100\theta_{\text{s,eq}}$	$0.4490^{+0.0058}_{-0.0057}$
$100\theta_{\text{MC}}$	$1.04091^{+0.00059}_{-0.00062}$	$S_8$	$0.834^{+0.032}_{-0.030}$	$H(0.15)$	$72.6^{+1.0}_{-1.0}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.017}_{-0.016}$	$D_{\text{M}}(0.15)$	$644^{+10}_{-10}$
$\ln(10^{10} A_s)$	$3.047^{+0.028}_{-0.026}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.016}_{-0.015}$	$H(0.38)$	$82.83^{+0.74}_{-0.73}$
$n_s$	$0.9650^{+0.0085}_{-0.0087}$	$\sigma_8/h^{0.5}$	$0.991^{+0.022}_{-0.021}$	$D_{\text{M}}(0.38)$	$1535^{+20}_{-20}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0050}$	$r_{\text{drag}} h$	$99.0^{+2.1}_{-2.0}$	$H(0.51)$	$89.60^{+0.58}_{-0.57}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.450^{+0.054}_{-0.052}$	$D_{\text{M}}(0.51)$	$1987^{+24}_{-24}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 9.03$	$H(0.61)$	$95.26^{+0.47}_{-0.46}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.6}_{-3.9}$	$10^9 A_s$	$2.105^{+0.060}_{-0.055}$	$D_{\text{M}}(0.61)$	$2312^{+26}_{-25}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$10^9 A_s e^{-2\tau}$	$1.884^{+0.023}_{-0.023}$	$H(2.33)$	$236.7^{+1.6}_{-1.6}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{40}$	$1232^{+25}_{-24}$	$D_{\text{M}}(2.33)$	$5764^{+21}_{-21}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5731^{+76}_{-75}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.015}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-27}$	$\sigma_8(0.15)$	$0.750^{+0.012}_{-0.011}$
$A^{\text{kSZ}}$	$< 7.99$	$D_{1420}$	$817.2^{+9.5}_{-9.7}$	$f\sigma_8(0.38)$	$0.479^{+0.013}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$230.9^{+3.1}_{-3.2}$	$\sigma_8(0.38)$	$0.665^{+0.010}_{-0.0095}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.9650^{+0.0085}_{-0.0087}$	$f\sigma_8(0.51)$	$0.477^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$Y_{\text{P}}$	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	$0.6219^{+0.0092}_{-0.0087}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.471^{+0.010}_{-0.0098}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.076}$	$10^5 \text{D/H}$	$2.587^{+0.055}_{-0.053}$	$\sigma_8(0.61)$	$0.5916^{+0.0087}_{-0.0082}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.059}$	$\text{Age/Gyr}$	$13.799^{+0.047}_{-0.047}$	$f\sigma_8(2.33)$	$0.2981^{+0.0044}_{-0.0041}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.94^{+0.55}_{-0.53}$	$\sigma_8(2.33)$	$0.3071^{+0.0046}_{-0.0043}$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.10}_{-0.10}$	$r_*$	$144.40^{+0.58}_{-0.58}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	$1.04109^{+0.00058}_{-0.00061}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.870^{+0.054}_{-0.055}$	$f_{2000}^{217}$	$106.9^{+3.5}_{-3.4}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.93^{+0.57}_{-0.57}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 2.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.06^{+0.57}_{-0.58}$	$\chi_{\text{lowl}}^2$	$23.56 (\nu: 0.5)$
$H_0$	$67.3^{+1.2}_{-1.2}$	$k_{\text{D}}$	$0.14090^{+0.00062}_{-0.00060}$	$\chi_{\text{plik}}^2$	$2359.3 (\nu: 16.1)$
$\Omega_{\Lambda}$	$0.684^{+0.016}_{-0.017}$	$100\theta_{\text{D}}$	$0.16076^{+0.00034}_{-0.00034}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_{\text{m}}$	$0.316^{+0.017}_{-0.016}$	$z_{\text{eq}}$	$3406^{+60}_{-60}$	$\chi_{\text{CMB}}^2$	$2779.9 (\nu: 16.1)$
$\Omega_{\text{m}} h^2$	$0.1432^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	$0.01040^{+0.00018}_{-0.00018}$		

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



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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02242^{+0.00026}_{-0.00026}$	$\sigma_8$	$0.810^{+0.013}_{-0.013}$	$H(0.15)$	$72.95^{+0.76}_{-0.74}$
$\Omega_c h^2$	$0.1193^{+0.0020}_{-0.0019}$	$S_8$	$0.825^{+0.024}_{-0.023}$	$D_M(0.15)$	$640.7^{+7.4}_{-7.5}$
$100\theta_{MC}$	$1.04101^{+0.00054}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.013}_{-0.013}$	$H(0.38)$	$83.06^{+0.56}_{-0.55}$
$\tau$	$0.057^{+0.015}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.013}_{-0.013}$	$D_M(0.38)$	$1528^{+15}_{-15}$
$\ln(10^{10} A_s)$	$3.047^{+0.030}_{-0.027}$	$\sigma_8/h^{0.5}$	$0.985^{+0.020}_{-0.018}$	$H(0.51)$	$89.78^{+0.44}_{-0.44}$
$n_s$	$0.9670^{+0.0075}_{-0.0073}$	$r_{\text{drag}} h$	$99.6^{+1.5}_{-1.5}$	$D_M(0.51)$	$1980^{+17}_{-18}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0050}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.048}_{-0.045}$	$H(0.61)$	$95.39^{+0.36}_{-0.36}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$7.9^{+1.3}_{-1.4}$	$D_M(0.61)$	$2304^{+19}_{-19}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.106^{+0.063}_{-0.057}$	$H(2.33)$	$236.2^{+1.2}_{-1.2}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.8}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.021}_{-0.021}$	$D_M(2.33)$	$5759^{+17}_{-17}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-60}$	$D_{40}$	$1227^{+22}_{-21}$	$f\sigma_8(0.15)$	$0.457^{+0.013}_{-0.012}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{220}$	$5735^{+74}_{-73}$	$\sigma_8(0.15)$	$0.749^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.010}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.8^{+9.6}_{-9.3}$	$\sigma_8(0.38)$	$0.664^{+0.010}_{-0.0096}$
$A^{\text{kSZ}}$	$< 8.01$	$D_{2000}$	$231.1^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	$0.474^{+0.010}_{-0.0093}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$n_{s,0.002}$	$0.9670^{+0.0075}_{-0.0073}$	$\sigma_8(0.51)$	$0.6214^{+0.0096}_{-0.0089}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.6}_{-3.5}$	$Y_P$	$0.245414^{+0.000094}_{-0.00010}$	$f\sigma_8(0.61)$	$0.4687^{+0.0093}_{-0.0087}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.3}$	$Y_P^{\text{BBN}}$	$0.246740^{+0.000095}_{-0.00010}$	$\sigma_8(0.61)$	$0.5913^{+0.0091}_{-0.0084}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 \text{D/H}$	$2.577^{+0.049}_{-0.046}$	$f\sigma_8(2.33)$	$0.2982^{+0.0046}_{-0.0042}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.075}$	Age/Gyr	$13.787^{+0.039}_{-0.039}$	$\sigma_8(2.33)$	$0.3074^{+0.0048}_{-0.0044}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.059}$	$z_*$	$1089.80^{+0.44}_{-0.41}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.57^{+0.44}_{-0.46}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	$1.04119^{+0.00054}_{-0.00056}$	$f_{2000}^{217}$	$106.8^{+3.4}_{-3.4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.15}$	$D_M(z_*)/\text{Gpc}$	$13.886^{+0.042}_{-0.044}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.5)$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.51}_{-0.52}$	$z_{\text{drag}}$	$1060.00^{+0.54}_{-0.53}$	$\chi_{\text{lowl}}^2$	$23.14 (\nu: 0.3)$
$c_{100}$	$0.9997^{+0.0013}_{-0.0012}$	$r_{\text{drag}}$	$147.22^{+0.45}_{-0.48}$	$\chi_{\text{plik}}^2$	$2359.5 (\nu: 16.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14077^{+0.00058}_{-0.00054}$	$\chi_{6\text{DF}}^2$	$0.056 (\nu: 0.0)$
$H_0$	$67.67^{+0.88}_{-0.86}$	$100\theta_D$	$0.16072^{+0.00033}_{-0.00032}$	$\chi_{\text{MGS}}^2$	$1.26 (\nu: 0.1)$
$\Omega_\Lambda$	$0.689^{+0.011}_{-0.012}$	$z_{\text{eq}}$	$3387^{+45}_{-45}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.0)$
$\Omega_m$	$0.311^{+0.012}_{-0.011}$	$k_{\text{eq}}$	$0.01034^{+0.00014}_{-0.00014}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.4)$
$\Omega_m h^2$	$0.1424^{+0.0019}_{-0.0019}$	$100\theta_{\text{eq}}$	$0.8163^{+0.0083}_{-0.0083}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.7)$
$\Omega_m h^3$	$0.09634^{+0.00058}_{-0.00055}$	$100\theta_{s,\text{eq}}$	$0.4509^{+0.0043}_{-0.0043}$	$\chi_{\text{CMB}}^2$	$2779.9 (\nu: 15.7)$

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

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022174	$0.02214^{+0.00041}_{-0.00039}$	$\sigma_8 \Omega_m^{0.25}$	0.6085	$0.609^{+0.015}_{-0.015}$	$H(0.15)$	72.46	$72.4^{+1.2}_{-1.2}$
$\Omega_c h^2$	0.12010	$0.1202^{+0.0030}_{-0.0031}$	$\sigma_8/h^{0.5}$	0.9896	$0.990^{+0.020}_{-0.020}$	$D_M(0.15)$	645.5	$646^{+12}_{-12}$
$100\theta_{MC}$	1.04083	$1.04080^{+0.00090}_{-0.00088}$	$r_{drag}h$	98.86	$98.8^{+2.4}_{-2.3}$	$H(0.38)$	82.67	$82.62^{+0.88}_{-0.85}$
$\tau$	0.0527	$0.052^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.4428	$2.447^{+0.048}_{-0.048}$	$D_M(0.38)$	1538.0	$1539^{+24}_{-24}$
$\ln(10^{10} A_s)$	3.0404	$3.040^{+0.030}_{-0.030}$	$z_{re}$	7.55	$7.5^{+1.6}_{-1.6}$	$H(0.51)$	89.44	$89.40^{+0.71}_{-0.68}$
$n_s$	0.9653	$0.9634^{+0.0093}_{-0.0095}$	$10^9 A_s$	2.091	$2.091^{+0.064}_{-0.062}$	$D_M(0.51)$	1991.4	$1993^{+28}_{-28}$
$y_{cal}$	1.00033	$1.0005^{+0.0048}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	1.8823	$1.882^{+0.022}_{-0.022}$	$H(0.61)$	95.10	$95.06^{+0.58}_{-0.56}$
$A_{217}^{CIB}$	47.9	$48^{+10}_{-10}$	$D_{40}$	1227.4	$1232^{+25}_{-24}$	$D_M(0.61)$	2316.6	$2318^{+30}_{-30}$
$\xi^{tSZ \times CIB}$	0.44	—	$D_{220}$	5710	$5716^{+79}_{-79}$	$H(2.33)$	236.43	$236.4^{+1.9}_{-1.9}$
$A_{143}^{tSZ}$	6.92	$5.0^{+3.8}_{-4.0}$	$D_{810}$	2537.7	$2536^{+26}_{-26}$	$D_M(2.33)$	5773.5	$5775^{+27}_{-28}$
$A_{100}^{PS}$	254	$264^{+60}_{-50}$	$D_{1420}$	816.0	$815^{+10}_{-10}$	$f\sigma_8(0.15)$	0.4608	$0.461^{+0.016}_{-0.016}$
$A_{143}^{PS}$	51.1	$49^{+20}_{-20}$	$D_{2000}$	230.18	$229.6^{+3.5}_{-3.5}$	$\sigma_8(0.15)$	0.7486	$0.748^{+0.011}_{-0.011}$
$A_{143 \times 217}^{PS}$	49.9	$43^{+20}_{-20}$	$n_{s,0.002}$	0.9653	$0.9634^{+0.0093}_{-0.0095}$	$f\sigma_8(0.38)$	0.4778	$0.478^{+0.012}_{-0.012}$
$A_{217}^{PS}$	120.7	$115^{+20}_{-20}$	$Y_P$	0.245315	$0.24530^{+0.00017}_{-0.00019}$	$\sigma_8(0.38)$	0.6630	$0.6625^{+0.0099}_{-0.0097}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246641	$0.24662^{+0.00017}_{-0.00019}$	$f\sigma_8(0.51)$	0.4757	$0.476^{+0.010}_{-0.010}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.6}_{-3.5}$	$10^5 D/H$	2.623	$2.630^{+0.076}_{-0.076}$	$\sigma_8(0.51)$	0.6202	$0.6197^{+0.0093}_{-0.0091}$
$A_{143}^{dustTT}$	10.80	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.821	$13.825^{+0.062}_{-0.063}$	$f\sigma_8(0.61)$	0.4703	$0.4702^{+0.0091}_{-0.0093}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.5}_{-6.6}$	$z_*$	1090.18	$1090.23^{+0.67}_{-0.68}$	$\sigma_8(0.61)$	0.5900	$0.5895^{+0.0090}_{-0.0087}$
$A_{217}^{dustTT}$	94.8	$93^{+10}_{-10}$	$r_*$	144.55	$144.56^{+0.73}_{-0.71}$	$f\sigma_8(2.33)$	0.29724	$0.2970^{+0.0048}_{-0.0046}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04103	$1.04101^{+0.00088}_{-0.00087}$	$\sigma_8(2.33)$	0.3062	$0.3059^{+0.0053}_{-0.0051}$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.886	$13.886^{+0.068}_{-0.067}$	$f_{2000}^{143}$	30.2	$31^{+6}_{-6}$
$H_0$	67.12	$67.1^{+1.4}_{-1.4}$	$z_{drag}$	1059.47	$1059.41^{+0.87}_{-0.85}$	$f_{2000}^{143 \times 217}$	33.12	$34^{+4}_{-4}$
$\Omega_\Lambda$	0.6828	$0.682^{+0.019}_{-0.019}$	$r_{drag}$	147.28	$147.30^{+0.75}_{-0.73}$	$f_{2000}^{217}$	107.51	$108.2^{+3.7}_{-3.8}$
$\Omega_m$	0.3172	$0.318^{+0.019}_{-0.019}$	$k_D$	0.14051	$0.14047^{+0.00087}_{-0.00087}$	$\chi_{lensing}^2$	8.90	$9.45 (\nu: 0.4)$
$\Omega_m h^2$	0.14292	$0.1430^{+0.0029}_{-0.0029}$	$100\theta_D$	0.16101	$0.16106^{+0.00049}_{-0.00051}$	$\chi_{small}^2$	395.86	$396.9 (\nu: 1.3)$
$\Omega_m h^3$	0.09594	$0.09587^{+0.00089}_{-0.00087}$	$z_{eq}$	3400	$3401^{+69}_{-70}$	$\chi_{lowl}^2$	23.23	$23.7 (\nu: 0.5)$
$\sigma_8$	0.8108	$0.810^{+0.012}_{-0.012}$	$k_{eq}$	0.010377	$0.01038^{+0.00021}_{-0.00021}$	$\chi_{plik}^2$	759.3	$771.1 (\nu: 13.6)$
$S_8$	0.8337	$0.834^{+0.032}_{-0.031}$	$100\theta_{eq}$	0.8131	$0.813^{+0.013}_{-0.013}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_m^{0.5}$	0.4566	$0.457^{+0.017}_{-0.017}$	$100\theta_{s,eq}$	0.4494	$0.4493^{+0.0068}_{-0.0065}$	$\chi_{CMB}^2$	1187.3	$1201.1 (\nu: 14.9)$

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

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

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022224	$0.02221^{+0.00038}_{-0.00036}$	$r_{\text{drag}} h$	99.65	$99.6^{+1.7}_{-1.6}$	$H(0.51)$	89.63	$89.63^{+0.52}_{-0.52}$
$\Omega_c h^2$	0.11909	$0.1191^{+0.0021}_{-0.0021}$	$\langle d^2 \rangle^{1/2}$	2.4309	$2.436^{+0.042}_{-0.042}$	$D_M(0.51)$	1982.8	$1983^{+20}_{-20}$
$100\theta_{\text{MC}}$	1.04093	$1.04097^{+0.00085}_{-0.00083}$	$z_{\text{re}}$	7.71	$7.8^{+1.5}_{-1.5}$	$H(0.61)$	95.244	$95.24^{+0.45}_{-0.45}$
$\tau$	0.0544	$0.055^{+0.015}_{-0.014}$	$10^9 A_s$	2.095	$2.099^{+0.063}_{-0.060}$	$D_M(0.61)$	2307.4	$2308^{+21}_{-21}$
$\ln(10^{10} A_s)$	3.0421	$3.044^{+0.030}_{-0.029}$	$10^9 A_s e^{-2\tau}$	1.8788	$1.879^{+0.021}_{-0.021}$	$H(2.33)$	235.81	$235.8^{+1.4}_{-1.4}$
$n_s$	0.9669	$0.9659^{+0.0078}_{-0.0080}$	$D_{40}$	1225.0	$1228^{+24}_{-22}$	$D_M(2.33)$	5767.6	$5768^{+23}_{-23}$
$y_{\text{cal}}$	1.00051	$1.0007^{+0.0050}_{-0.0048}$	$D_{220}$	5720	$5724^{+79}_{-74}$	$f\sigma_8(0.15)$	0.4555	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	48.5	$48^{+10}_{-10}$	$D_{810}$	2537.5	$2537^{+27}_{-26}$	$\sigma_8(0.15)$	0.7471	$0.748^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$D_{1420}$	816.4	$815.6^{+9.6}_{-9.9}$	$f\sigma_8(0.38)$	0.4739	$0.4744^{+0.0099}_{-0.0098}$
$A_{143}^{\text{tSZ}}$	7.04	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	230.29	$230.0^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	0.6623	$0.663^{+0.010}_{-0.0096}$
$A_{100}^{\text{PS}}$	253	$263^{+60}_{-50}$	$n_{\text{s},0.002}$	0.9669	$0.9659^{+0.0078}_{-0.0080}$	$f\sigma_8(0.51)$	0.4726	$0.4730^{+0.0089}_{-0.0088}$
$A_{143}^{\text{PS}}$	49.0	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245336	$0.24533^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	0.6198	$0.6203^{+0.0094}_{-0.0090}$
$A_{143 \times 217}^{\text{PS}}$	46.8	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246662	$0.24665^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	0.4676	$0.4680^{+0.0083}_{-0.0080}$
$A_{217}^{\text{PS}}$	119.3	$115^{+20}_{-20}$	$10^5 D/H$	2.613	$2.617^{+0.069}_{-0.071}$	$\sigma_8(0.61)$	0.5898	$0.5902^{+0.0090}_{-0.0086}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.808	$13.809^{+0.053}_{-0.052}$	$f\sigma_8(2.33)$	0.29740	$0.2976^{+0.0047}_{-0.0044}$
$A_{100}^{\text{dustTT}}$	8.84	$8.9^{+3.6}_{-3.5}$	$z_*$	1090.03	$1090.05^{+0.54}_{-0.55}$	$\sigma_8(2.33)$	0.30663	$0.3068^{+0.0051}_{-0.0047}$
$A_{143}^{\text{dustTT}}$	10.77	$10.7^{+3.6}_{-3.5}$	$r_*$	144.78	$144.78^{+0.56}_{-0.56}$	$f_{2000}^{143}$	30.1	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.6}_{-6.6}$	$100\theta_*$	1.04113	$1.04117^{+0.00084}_{-0.00081}$	$f_{2000}^{143 \times 217}$	33.01	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.906	$13.906^{+0.056}_{-0.056}$	$f_{2000}^{217}$	107.49	$107.9^{+3.6}_{-3.8}$
$c_{100}$	0.99966	$0.9996^{+0.0013}_{-0.0012}$	$z_{\text{drag}}$	1059.51	$1059.49^{+0.86}_{-0.82}$	$\chi_{\text{lensing}}^2$	8.87	$9.26 (\nu: 0.2)$
$c_{217}$	0.99822	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.50	$147.50^{+0.63}_{-0.63}$	$\chi_{\text{small}}^2$	396.09	$397.1 (\nu: 1.7)$
$H_0$	67.56	$67.54^{+0.95}_{-0.95}$	$k_{\text{D}}$	0.14033	$0.14031^{+0.00085}_{-0.00083}$	$\chi_{\text{lowl}}^2$	22.96	$23.24 (\nu: 0.4)$
$\Omega_\Lambda$	0.6890	$0.689^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	0.160992	$0.16102^{+0.00048}_{-0.00050}$	$\chi_{\text{plik}}^2$	759.8	$771.6 (\nu: 13.7)$
$\Omega_{\text{m}}$	0.3110	$0.311^{+0.013}_{-0.013}$	$z_{\text{eq}}$	3376.9	$3378^{+49}_{-49}$	$\chi_{6\text{DF}}^2$	0.029	$0.060 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.14196	$0.1420^{+0.0020}_{-0.0021}$	$k_{\text{eq}}$	0.010307	$0.01031^{+0.00015}_{-0.00015}$	$\chi_{\text{MGS}}^2$	1.22	$1.27 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	0.09590	$0.09590^{+0.00090}_{-0.00085}$	$100\theta_{\text{eq}}$	0.8174	$0.8173^{+0.0092}_{-0.0089}$	$\chi_{\text{DR12BAO}}^2$	4.37	$4.9 (\nu: 1.2)$
$\sigma_8$	0.8085	$0.809^{+0.012}_{-0.012}$	$100\theta_{\text{s,eq}}$	0.45166	$0.4516^{+0.0048}_{-0.0046}$	$\chi_{\text{prior}}^2$	1.3	$7.3 (\nu: 6.6)$
$S_8$	0.8232	$0.824^{+0.023}_{-0.023}$	$H(0.15)$	72.83	$72.82^{+0.83}_{-0.82}$	$\chi_{\text{CMB}}^2$	1187.7	$1201.2 (\nu: 14.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4509	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	641.7	$641.9^{+8.2}_{-8.1}$	$\chi_{\text{BAO}}^2$	5.62	$6.2 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6038	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	82.93	$82.92^{+0.64}_{-0.62}$			
$\sigma_8/h^{0.5}$	0.9836	$0.985^{+0.018}_{-0.017}$	$D_M(0.38)$	1530.6	$1531^{+17}_{-17}$			

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

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.88 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.09 commander\_dx12.v3.2.29: 22.96 plik\_rd12\_HM.v22\_TT: 759.80

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022191	$0.02217^{+0.00041}_{-0.00038}$	$\sigma_8/h^{0.5}$	0.9871	$0.987^{+0.019}_{-0.019}$	$H(0.38)$	82.76	$82.75^{+0.82}_{-0.78}$
$\Omega_c h^2$	0.11977	$0.1197^{+0.0027}_{-0.0028}$	$r_{\text{drag}} h$	99.13	$99.2^{+2.2}_{-2.1}$	$D_M(0.38)$	1535.4	$1536^{+22}_{-22}$
$100\theta_{\text{MC}}$	1.04089	$1.04087^{+0.00088}_{-0.00087}$	$\langle d^2 \rangle^{1/2}$	2.4391	$2.442^{+0.046}_{-0.047}$	$H(0.51)$	89.51	$89.50^{+0.66}_{-0.64}$
$\tau$	0.0527	$0.054^{+0.016}_{-0.015}$	$z_{\text{re}}$	7.55	$7.6^{+1.5}_{-1.6}$	$D_M(0.51)$	1988.4	$1989^{+25}_{-26}$
$\ln(10^{10} A_s)$	3.0404	$3.042^{+0.030}_{-0.029}$	$10^9 A_s$	2.091	$2.094^{+0.064}_{-0.061}$	$H(0.61)$	95.15	$95.14^{+0.55}_{-0.53}$
$n_s$	0.9654	$0.9645^{+0.0090}_{-0.0090}$	$10^9 A_s e^{-2\tau}$	1.8820	$1.881^{+0.022}_{-0.021}$	$D_M(0.61)$	2313.3	$2314^{+27}_{-28}$
$y_{\text{cal}}$	1.00064	$1.0006^{+0.0049}_{-0.0048}$	$D_{40}$	1228.3	$1230^{+24}_{-24}$	$H(2.33)$	236.23	$236.2^{+1.7}_{-1.7}$
$A_{217}^{\text{CIB}}$	49.8	$48^{+10}_{-10}$	$D_{220}$	5719	$5720^{+78}_{-77}$	$D_M(2.33)$	5771.1	$5772^{+26}_{-26}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.14	—	$D_{810}$	2538.4	$2537^{+26}_{-26}$	$f\sigma_8(0.15)$	0.4588	$0.459^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	7.12	$5.1^{+3.8}_{-4.0}$	$D_{1420}$	816.2	$815.1^{+9.8}_{-10}$	$\sigma_8(0.15)$	0.7478	$0.748^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	256	$263^{+60}_{-50}$	$D_{2000}$	230.19	$229.8^{+3.5}_{-3.4}$	$f\sigma_8(0.38)$	0.4763	$0.476^{+0.011}_{-0.012}$
$A_{143}^{\text{PS}}$	46.5	$49^{+20}_{-20}$	$n_{s,0.002}$	0.9654	$0.9645^{+0.0090}_{-0.0090}$	$\sigma_8(0.38)$	0.6625	$0.6626^{+0.0099}_{-0.0096}$
$A_{143 \times 217}^{\text{PS}}$	42.0	$43^{+20}_{-20}$	$Y_{\text{P}}$	0.245322	$0.24531^{+0.00016}_{-0.00018}$	$f\sigma_8(0.51)$	0.4745	$0.475^{+0.010}_{-0.0098}$
$A_{217}^{\text{PS}}$	117.3	$115^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246648	$0.24664^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	0.6198	$0.6200^{+0.0094}_{-0.0090}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.620	$2.624^{+0.073}_{-0.075}$	$f\sigma_8(0.61)$	0.4692	$0.4693^{+0.0091}_{-0.0089}$
$A_{100}^{\text{dustTT}}$	8.87	$8.9^{+3.6}_{-3.5}$	Age/Gyr	13.815	$13.818^{+0.060}_{-0.060}$	$\sigma_8(0.61)$	0.5897	$0.5898^{+0.0091}_{-0.0087}$
$A_{143}^{\text{dustTT}}$	10.79	$10.7^{+3.6}_{-3.5}$	$z_*$	1090.13	$1090.15^{+0.62}_{-0.63}$	$f\sigma_8(2.33)$	0.29719	$0.2973^{+0.0048}_{-0.0045}$
$A_{143 \times 217}^{\text{dustTT}}$	19.0	$18.3^{+6.6}_{-6.6}$	$r_*$	144.63	$144.65^{+0.68}_{-0.66}$	$\sigma_8(2.33)$	0.3062	$0.3063^{+0.0052}_{-0.0048}$
$A_{217}^{\text{dustTT}}$	94.0	$93^{+10}_{-10}$	$100\theta_*$	1.04110	$1.04107^{+0.00087}_{-0.00086}$	$f_{2000}^{143}$	30.4	$31^{+6}_{-6}$
$c_{100}$	0.99962	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.892	$13.895^{+0.065}_{-0.062}$	$f_{2000}^{143 \times 217}$	33.15	$33^{+4}_{-4}$
$c_{217}$	0.99824	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.51	$1059.45^{+0.86}_{-0.82}$	$f_{2000}^{217}$	107.72	$108.0^{+3.6}_{-3.8}$
$H_0$	67.28	$67.3^{+1.3}_{-1.2}$	$r_{\text{drag}}$	147.35	$147.39^{+0.72}_{-0.69}$	$\chi_{\text{lensing}}^2$	8.84	$9.35 (\nu: 0.3)$
$\Omega_\Lambda$	0.6849	$0.685^{+0.017}_{-0.017}$	$k_D$	0.14045	$0.14040^{+0.00086}_{-0.00087}$	$\chi_{\text{small}}^2$	395.87	$397.0 (\nu: 1.5)$
$\Omega_m$	0.3151	$0.315^{+0.017}_{-0.017}$	$100\theta_D$	0.161012	$0.16104^{+0.00049}_{-0.00050}$	$\chi_{\text{lowl}}^2$	23.23	$23.48 (\nu: 0.5)$
$\Omega_m h^2$	0.14261	$0.1425^{+0.0026}_{-0.0027}$	$z_{\text{eq}}$	3392	$3391^{+63}_{-65}$	$\chi_{\text{plik}}^2$	759.1	$771.3 (\nu: 13.7)$
$\Omega_m h^3$	0.09594	$0.09589^{+0.00090}_{-0.00086}$	$k_{\text{eq}}$	0.010354	$0.01035^{+0.00019}_{-0.00020}$	$\chi_{\text{JLA}}^2$	1035.26	$1035.42 (\nu: 0.2)$
$\sigma_8$	0.8097	$0.810^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	0.8145	$0.815^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	1.6	$7.3 (\nu: 6.7)$
$S_8$	0.8298	$0.830^{+0.029}_{-0.029}$	$100\theta_{s,\text{eq}}$	0.4502	$0.4503^{+0.0063}_{-0.0060}$	$\chi_{\text{CMB}}^2$	1187.1	$1201.1 (\nu: 14.8)$
$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.455^{+0.016}_{-0.016}$	$H(0.15)$	72.59	$72.6^{+1.1}_{-1.1}$			
$\sigma_8 \Omega_m^{0.25}$	0.6066	$0.607^{+0.014}_{-0.014}$	$D_M(0.15)$	644.1	$644^{+11}_{-11}$			

Best-fit  $\chi_{\text{eff}}^2 = 2223.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 2243.81$ ;  $R - 1 = 0.01128$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consect8: 8.84 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.23 plik\_rd12\_HM.v22.TT: 759.12 SN - JLA Pantheon18: 1035.26

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022241	$0.02222^{+0.00038}_{-0.00036}$	$r_{\text{drag}} h$	99.87	$99.8^{+1.6}_{-1.5}$	$H(0.51)$	89.70	$89.66^{+0.51}_{-0.50}$
$\Omega_c h^2$	0.11884	$0.1190^{+0.0020}_{-0.0021}$	$\langle d^2 \rangle^{1/2}$	2.4298	$2.434^{+0.042}_{-0.042}$	$D_M(0.51)$	1980.2	$1982^{+19}_{-19}$
$100\theta_{\text{MC}}$	1.04103	$1.04099^{+0.00085}_{-0.00082}$	$z_{\text{re}}$	7.86	$7.8^{+1.4}_{-1.5}$	$H(0.61)$	95.300	$95.26^{+0.44}_{-0.43}$
$\tau$	0.0560	$0.056^{+0.015}_{-0.014}$	$10^9 A_s$	2.101	$2.100^{+0.062}_{-0.060}$	$D_M(0.61)$	2304.5	$2306^{+21}_{-20}$
$\ln(10^{10} A_s)$	3.0450	$3.044^{+0.029}_{-0.029}$	$10^9 A_s e^{-2\tau}$	1.8783	$1.879^{+0.021}_{-0.020}$	$H(2.33)$	235.68	$235.7^{+1.3}_{-1.3}$
$n_s$	0.9679	$0.9663^{+0.0078}_{-0.0079}$	$D_{40}$	1223.6	$1227^{+23}_{-22}$	$D_M(2.33)$	5765.0	$5767^{+22}_{-22}$
$y_{\text{cal}}$	1.00073	$1.0008^{+0.0050}_{-0.0048}$	$D_{220}$	5721	$5725^{+79}_{-73}$	$f\sigma_8(0.15)$	0.4548	$0.455^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	48.6	$48^{+10}_{-10}$	$D_{810}$	2538.4	$2537^{+27}_{-26}$	$\sigma_8(0.15)$	0.7479	$0.748^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.30	—	$D_{1420}$	817.0	$815.8^{+9.7}_{-9.9}$	$f\sigma_8(0.38)$	0.4736	$0.4738^{+0.0096}_{-0.0096}$
$A_{143}^{\text{tSZ}}$	7.09	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	230.54	$230.1^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	0.6632	$0.663^{+0.010}_{-0.0096}$
$A_{100}^{\text{PS}}$	253	$263^{+60}_{-60}$	$n_{\text{s},0.002}$	0.9679	$0.9663^{+0.0078}_{-0.0079}$	$f\sigma_8(0.51)$	0.4724	$0.4726^{+0.0087}_{-0.0085}$
$A_{143}^{\text{PS}}$	48.1	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245343	$0.24533^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	0.6207	$0.6203^{+0.0094}_{-0.0090}$
$A_{143 \times 217}^{\text{PS}}$	45.8	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246669	$0.24666^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	0.4676	$0.4677^{+0.0082}_{-0.0080}$
$A_{217}^{\text{PS}}$	119.0	$115^{+20}_{-20}$	$10^5 D/H$	2.610	$2.615^{+0.069}_{-0.070}$	$\sigma_8(0.61)$	0.5907	$0.5903^{+0.0090}_{-0.0086}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.802	$13.806^{+0.052}_{-0.051}$	$f\sigma_8(2.33)$	0.29793	$0.2977^{+0.0047}_{-0.0044}$
$A_{100}^{\text{dustTT}}$	8.88	$8.9^{+3.6}_{-3.5}$	$z_*$	1089.98	$1090.02^{+0.53}_{-0.54}$	$\sigma_8(2.33)$	0.30724	$0.3069^{+0.0051}_{-0.0047}$
$A_{143}^{\text{dustTT}}$	10.81	$10.7^{+3.6}_{-3.5}$	$r_*$	144.83	$144.81^{+0.55}_{-0.55}$	$f_{2000}^{143}$	30.0	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.6}_{-6.6}$	$100\theta_*$	1.04123	$1.04119^{+0.00084}_{-0.00080}$	$f_{2000}^{143 \times 217}$	32.95	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.7	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.909	$13.908^{+0.055}_{-0.056}$	$f_{2000}^{217}$	107.50	$107.9^{+3.6}_{-3.8}$
$c_{100}$	0.99963	$0.9996^{+0.0013}_{-0.0012}$	$z_{\text{drag}}$	1059.55	$1059.51^{+0.88}_{-0.84}$	$\chi_{\text{lensing}}^2$	8.88	$9.27 (\nu: 0.3)$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.54	$147.53^{+0.62}_{-0.63}$	$\chi_{\text{small}}^2$	396.37	$397.2 (\nu: 1.8)$
$H_0$	67.69	$67.61^{+0.93}_{-0.92}$	$k_{\text{D}}$	0.14029	$0.14028^{+0.00085}_{-0.00082}$	$\chi_{\text{lowl}}^2$	22.81	$23.17 (\nu: 0.4)$
$\Omega_\Lambda$	0.6907	$0.690^{+0.012}_{-0.012}$	$100\theta_{\text{D}}$	0.160991	$0.16102^{+0.00048}_{-0.00050}$	$\chi_{\text{plik}}^2$	759.8	$771.7 (\nu: 13.7)$
$\Omega_{\text{m}}$	0.3093	$0.310^{+0.012}_{-0.012}$	$z_{\text{eq}}$	3371.5	$3374^{+48}_{-48}$	$\chi_{\text{JLA}}^2$	1034.95	$1035.08 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.14173	$0.1418^{+0.0020}_{-0.0020}$	$k_{\text{eq}}$	0.010290	$0.01030^{+0.00015}_{-0.00015}$	$\chi_{\text{6DF}}^2$	0.016	$0.049 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	0.09594	$0.09590^{+0.00090}_{-0.00085}$	$100\theta_{\text{eq}}$	0.8185	$0.8180^{+0.0090}_{-0.0087}$	$\chi_{\text{MGS}}^2$	1.34	$1.33 (\nu: 0.1)$
$\sigma_8$	0.8091	$0.809^{+0.012}_{-0.012}$	$100\theta_{\text{s,eq}}$	0.45222	$0.4520^{+0.0046}_{-0.0045}$	$\chi_{\text{DR12BAO}}^2$	4.03	$4.6 (\nu: 0.9)$
$S_8$	0.8216	$0.823^{+0.022}_{-0.022}$	$H(0.15)$	72.94	$72.88^{+0.80}_{-0.80}$	$\chi_{\text{prior}}^2$	1.5	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4500	$0.451^{+0.012}_{-0.012}$	$D_M(0.15)$	640.6	$641.3^{+7.9}_{-7.9}$	$\chi_{\text{CMB}}^2$	1187.9	$1201.4 (\nu: 14.7)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6034	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	83.01	$82.96^{+0.61}_{-0.61}$	$\chi_{\text{BAO}}^2$	5.39	$6.0 (\nu: 0.6)$
$\sigma_8/h^{0.5}$	0.9835	$0.984^{+0.018}_{-0.017}$	$D_M(0.38)$	1528.3	$1530^{+16}_{-16}$			

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

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.03 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.88 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.37 commander\_dx12.v3.2.29: 22.81 plik\_rd12\_HM.v22\_TT: 759.79 SN - JLA Pantheon18: 1034.95

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02215^{+0.00041}_{-0.00038}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.015}_{-0.015}$	$H(0.15)$	$72.5^{+1.2}_{-1.1}$
$\Omega_c h^2$	$0.1201^{+0.0029}_{-0.0030}$	$\sigma_8/h^{0.5}$	$0.990^{+0.020}_{-0.020}$	$D_M(0.15)$	$646^{+11}_{-11}$
$100\theta_{MC}$	$1.04082^{+0.00089}_{-0.00088}$	$r_{\text{drag}} h$	$98.9^{+2.3}_{-2.3}$	$H(0.38)$	$82.66^{+0.86}_{-0.82}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.449^{+0.048}_{-0.048}$	$D_M(0.38)$	$1538^{+23}_{-23}$
$\ln(10^{10} A_s)$	$3.043^{+0.026}_{-0.024}$	$z_{\text{re}}$	$< 8.85$	$H(0.51)$	$89.43^{+0.70}_{-0.66}$
$n_s$	$0.9638^{+0.0091}_{-0.0092}$	$10^9 A_s$	$2.096^{+0.056}_{-0.050}$	$D_M(0.51)$	$1992^{+27}_{-27}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.021}_{-0.022}$	$H(0.61)$	$95.08^{+0.58}_{-0.55}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1232^{+25}_{-24}$	$D_M(0.61)$	$2317^{+29}_{-29}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5716^{+79}_{-79}$	$H(2.33)$	$236.4^{+1.8}_{-1.8}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.8}_{-4.0}$	$D_{810}$	$2536^{+26}_{-26}$	$D_M(2.33)$	$5775^{+27}_{-28}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-50}$	$D_{1420}$	$815^{+10}_{-9.9}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$D_{2000}$	$229.6^{+3.5}_{-3.5}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0097}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$n_{s,0.002}$	$0.9638^{+0.0091}_{-0.0092}$	$f\sigma_8(0.38)$	$0.478^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P$	$0.24530^{+0.00017}_{-0.00018}$	$\sigma_8(0.38)$	$0.6633^{+0.0093}_{-0.0080}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24663^{+0.00017}_{-0.00018}$	$f\sigma_8(0.51)$	$0.476^{+0.010}_{-0.010}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$10^5 D/H$	$2.628^{+0.074}_{-0.076}$	$\sigma_8(0.51)$	$0.6205^{+0.0083}_{-0.0077}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$\text{Age/Gyr}$	$13.823^{+0.062}_{-0.062}$	$f\sigma_8(0.61)$	$0.4705^{+0.0090}_{-0.0091}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.2^{+6.5}_{-6.6}$	$z_*$	$1090.21^{+0.65}_{-0.66}$	$\sigma_8(0.61)$	$0.5903^{+0.0080}_{-0.0074}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.59^{+0.72}_{-0.69}$	$f\sigma_8(2.33)$	$0.2974^{+0.0042}_{-0.0038}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04103^{+0.00088}_{-0.00087}$	$\sigma_8(2.33)$	$0.3064^{+0.0046}_{-0.0041}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.889^{+0.068}_{-0.065}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$H_0$	$67.1^{+1.3}_{-1.3}$	$z_{\text{drag}}$	$1059.42^{+0.85}_{-0.82}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$\Omega_\Lambda$	$0.683^{+0.018}_{-0.019}$	$r_{\text{drag}}$	$147.32^{+0.75}_{-0.72}$	$f_{2000}^{217}$	$108.1^{+3.7}_{-3.8}$
$\Omega_m$	$0.317^{+0.019}_{-0.018}$	$k_D$	$0.14045^{+0.00087}_{-0.00087}$	$\chi_{\text{lensing}}^2$	$9.42 (\nu: 0.4)$
$\Omega_m h^2$	$0.1429^{+0.0028}_{-0.0029}$	$100\theta_D$	$0.16106^{+0.00049}_{-0.00051}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_m h^3$	$0.09588^{+0.00090}_{-0.00087}$	$z_{\text{eq}}$	$3398^{+67}_{-69}$	$\chi_{\text{lowl}}^2$	$23.7 (\nu: 0.5)$
$\sigma_8$	$0.811^{+0.012}_{-0.011}$	$k_{\text{eq}}$	$0.01037^{+0.00020}_{-0.00021}$	$\chi_{\text{plik}}^2$	$771.0 (\nu: 13.7)$
$S_8$	$0.834^{+0.031}_{-0.031}$	$100\theta_{\text{eq}}$	$0.813^{+0.013}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.017}_{-0.017}$	$100\theta_{s,\text{eq}}$	$0.4496^{+0.0067}_{-0.0063}$	$\chi_{\text{CMB}}^2$	$1200.9 (\nu: 14.7)$

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

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02221^{+0.00038}_{-0.00036}$	$r_{\text{drag}} h$	$99.7^{+1.6}_{-1.6}$	$H(0.51)$	$89.63^{+0.52}_{-0.52}$
$\Omega_c h^2$	$0.1191^{+0.0021}_{-0.0021}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.041}_{-0.042}$	$D_M(0.51)$	$1983^{+20}_{-20}$
$100\theta_{\text{MC}}$	$1.04098^{+0.00085}_{-0.00083}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(0.61)$	$95.24^{+0.45}_{-0.44}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$10^9 A_s$	$2.101^{+0.058}_{-0.052}$	$D_M(0.61)$	$2307^{+21}_{-21}$
$\ln(10^{10} A_s)$	$3.045^{+0.027}_{-0.025}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.021}_{-0.020}$	$H(2.33)$	$235.8^{+1.3}_{-1.4}$
$n_s$	$0.9660^{+0.0078}_{-0.0080}$	$D_{40}$	$1228^{+24}_{-22}$	$D_M(2.33)$	$5768^{+23}_{-23}$
$y_{\text{cal}}$	$1.0007^{+0.0050}_{-0.0048}$	$D_{220}$	$5724^{+79}_{-73}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+27}_{-26}$	$\sigma_8(0.15)$	$0.748^{+0.011}_{-0.0097}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.6^{+9.7}_{-9.9}$	$f\sigma_8(0.38)$	$0.4745^{+0.0099}_{-0.0097}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	$230.0^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	$0.6632^{+0.0098}_{-0.0084}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$n_{s,0.002}$	$0.9660^{+0.0078}_{-0.0080}$	$f\sigma_8(0.51)$	$0.4732^{+0.0088}_{-0.0084}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24533^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	$0.6206^{+0.0091}_{-0.0079}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24665^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	$0.4682^{+0.0082}_{-0.0076}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.616^{+0.069}_{-0.071}$	$\sigma_8(0.61)$	$0.5906^{+0.0087}_{-0.0075}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.808^{+0.053}_{-0.052}$	$f\sigma_8(2.33)$	$0.2978^{+0.0043}_{-0.0039}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$z_*$	$1090.05^{+0.54}_{-0.54}$	$\sigma_8(2.33)$	$0.3070^{+0.0046}_{-0.0042}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.6}_{-3.5}$	$r_*$	$144.79^{+0.55}_{-0.55}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.6}_{-6.6}$	$100\theta_*$	$1.04118^{+0.00084}_{-0.00081}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.906^{+0.055}_{-0.056}$	$f_{2000}^{217}$	$107.9^{+3.6}_{-3.8}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.50^{+0.86}_{-0.82}$	$\chi_{\text{lensing}}^2$	$9.22 (\nu: 0.2)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.51^{+0.63}_{-0.63}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$H_0$	$67.56^{+0.94}_{-0.94}$	$k_{\text{D}}$	$0.14030^{+0.00085}_{-0.00083}$	$\chi_{\text{lowl}}^2$	$23.24 (\nu: 0.4)$
$\Omega_\Lambda$	$0.689^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16102^{+0.00048}_{-0.00050}$	$\chi_{\text{plik}}^2$	$771.5 (\nu: 13.6)$
$\Omega_{\text{m}}$	$0.311^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3377^{+48}_{-49}$	$\chi_{6\text{DF}}^2$	$0.057 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1420^{+0.0020}_{-0.0021}$	$k_{\text{eq}}$	$0.01031^{+0.00015}_{-0.00015}$	$\chi_{\text{MGS}}^2$	$1.28 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.09590^{+0.00091}_{-0.00086}$	$100\theta_{\text{eq}}$	$0.8175^{+0.0092}_{-0.0088}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.1)$
$\sigma_8$	$0.810^{+0.012}_{-0.011}$	$100\theta_{\text{s,eq}}$	$0.4517^{+0.0048}_{-0.0046}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.6)$
$S_8$	$0.824^{+0.023}_{-0.023}$	$H(0.15)$	$72.83^{+0.83}_{-0.82}$	$\chi_{\text{CMB}}^2$	$1201.1 (\nu: 14.5)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.013}_{-0.013}$	$D_M(0.15)$	$641.8^{+8.1}_{-8.0}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.7)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.605^{+0.012}_{-0.012}$	$H(0.38)$	$82.93^{+0.63}_{-0.62}$		
$\sigma_8/h^{0.5}$	$0.985^{+0.017}_{-0.016}$	$D_M(0.38)$	$1531^{+17}_{-16}$		

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

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02218^{+0.00040}_{-0.00038}$	$\sigma_8/h^{0.5}$	$0.988^{+0.019}_{-0.019}$	$H(0.38)$	$82.77^{+0.80}_{-0.77}$
$\Omega_c h^2$	$0.1196^{+0.0027}_{-0.0028}$	$r_{\text{drag}} h$	$99.2^{+2.2}_{-2.1}$	$D_M(0.38)$	$1535^{+21}_{-22}$
$100\theta_{\text{MC}}$	$1.04088^{+0.00088}_{-0.00088}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.046}_{-0.047}$	$H(0.51)$	$89.52^{+0.65}_{-0.63}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 8.95$	$D_M(0.51)$	$1988^{+25}_{-25}$
$\ln(10^{10} A_s)$	$3.044^{+0.027}_{-0.024}$	$10^9 A_s$	$2.099^{+0.057}_{-0.051}$	$H(0.61)$	$95.15^{+0.55}_{-0.53}$
$n_s$	$0.9648^{+0.0088}_{-0.0089}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.022}_{-0.021}$	$D_M(0.61)$	$2313^{+27}_{-27}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$D_{40}$	$1230^{+24}_{-23}$	$H(2.33)$	$236.1^{+1.7}_{-1.7}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5720^{+78}_{-76}$	$D_M(2.33)$	$5771^{+26}_{-26}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2536^{+26}_{-26}$	$f\sigma_8(0.15)$	$0.459^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{1420}$	$815.0^{+9.9}_{-10}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0097}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-50}$	$D_{2000}$	$229.8^{+3.5}_{-3.5}$	$f\sigma_8(0.38)$	$0.476^{+0.012}_{-0.011}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$n_{s,0.002}$	$0.9648^{+0.0088}_{-0.0089}$	$\sigma_8(0.38)$	$0.6632^{+0.0095}_{-0.0081}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_P$	$0.24531^{+0.00016}_{-0.00018}$	$f\sigma_8(0.51)$	$0.4747^{+0.0099}_{-0.0098}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24664^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	$0.6206^{+0.0090}_{-0.0076}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.623^{+0.072}_{-0.075}$	$f\sigma_8(0.61)$	$0.4695^{+0.0090}_{-0.0087}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$\text{Age}/\text{Gyr}$	$13.817^{+0.059}_{-0.059}$	$\sigma_8(0.61)$	$0.5904^{+0.0082}_{-0.0075}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.6}_{-3.5}$	$z_*$	$1090.14^{+0.61}_{-0.63}$	$f\sigma_8(2.33)$	$0.2976^{+0.0043}_{-0.0039}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.6}_{-6.6}$	$r_*$	$144.67^{+0.67}_{-0.65}$	$\sigma_8(2.33)$	$0.3066^{+0.0047}_{-0.0042}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04108^{+0.00087}_{-0.00086}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.896^{+0.065}_{-0.061}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.46^{+0.85}_{-0.83}$	$f_{2000}^{217}$	$108.0^{+3.6}_{-3.8}$
$H_0$	$67.3^{+1.3}_{-1.2}$	$r_{\text{drag}}$	$147.40^{+0.72}_{-0.68}$	$\chi_{\text{lensing}}^2$	$9.32 (\nu: 0.3)$
$\Omega_\Lambda$	$0.685^{+0.017}_{-0.017}$	$k_D$	$0.14039^{+0.00087}_{-0.00087}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$\Omega_m$	$0.315^{+0.017}_{-0.017}$	$100\theta_D$	$0.16104^{+0.00048}_{-0.00050}$	$\chi_{\text{lowl}}^2$	$23.47 (\nu: 0.5)$
$\Omega_m h^2$	$0.1425^{+0.0026}_{-0.0027}$	$z_{\text{eq}}$	$3389^{+61}_{-64}$	$\chi_{\text{plik}}^2$	$771.2 (\nu: 13.7)$
$\Omega_m h^3$	$0.09589^{+0.00090}_{-0.00086}$	$k_{\text{eq}}$	$0.01034^{+0.00019}_{-0.00020}$	$\chi_{\text{JLA}}^2$	$1035.38 (\nu: 0.2)$
$\sigma_8$	$0.810^{+0.012}_{-0.011}$	$100\theta_{\text{eq}}$	$0.815^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.7)$
$S_8$	$0.830^{+0.029}_{-0.029}$	$100\theta_{s,\text{eq}}$	$0.4505^{+0.0062}_{-0.0059}$	$\chi_{\text{CMB}}^2$	$1200.9 (\nu: 14.6)$
$\sigma_8 \Omega_m^{0.5}$	$0.455^{+0.016}_{-0.016}$	$H(0.15)$	$72.6^{+1.1}_{-1.0}$		
$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.014}_{-0.014}$	$D_M(0.15)$	$644^{+11}_{-11}$		
$\bar{\chi}_{\text{eff}}^2 = 2243.62; R - 1 = 0.01253$					



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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02222^{+0.00038}_{-0.00036}$	$r_{\text{drag}} h$	$99.8^{+1.6}_{-1.5}$	$H(0.51)$	$89.67^{+0.51}_{-0.50}$
$\Omega_c h^2$	$0.1190^{+0.0020}_{-0.0021}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.041}_{-0.041}$	$D_M(0.51)$	$1982^{+19}_{-19}$
$100\theta_{\text{MC}}$	$1.04099^{+0.00084}_{-0.00082}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(0.61)$	$95.27^{+0.44}_{-0.43}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$10^9 A_s$	$2.102^{+0.060}_{-0.051}$	$D_M(0.61)$	$2306^{+20}_{-20}$
$\ln(10^{10} A_s)$	$3.046^{+0.028}_{-0.024}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.021}_{-0.020}$	$H(2.33)$	$235.7^{+1.3}_{-1.3}$
$n_s$	$0.9664^{+0.0077}_{-0.0079}$	$D_{40}$	$1227^{+23}_{-22}$	$D_M(2.33)$	$5767^{+22}_{-22}$
$y_{\text{cal}}$	$1.0008^{+0.0050}_{-0.0048}$	$D_{220}$	$5725^{+79}_{-73}$	$f\sigma_8(0.15)$	$0.455^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+27}_{-26}$	$\sigma_8(0.15)$	$0.748^{+0.011}_{-0.0097}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.7^{+9.7}_{-9.9}$	$f\sigma_8(0.38)$	$0.4740^{+0.0095}_{-0.0095}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	$230.1^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	$0.6632^{+0.0098}_{-0.0084}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$n_{\text{s},0.002}$	$0.9664^{+0.0077}_{-0.0079}$	$f\sigma_8(0.51)$	$0.4728^{+0.0086}_{-0.0083}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$Y_{\text{P}}$	$0.24533^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	$0.6207^{+0.0091}_{-0.0079}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.4679^{+0.0081}_{-0.0076}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.614^{+0.069}_{-0.070}$	$\sigma_8(0.61)$	$0.5906^{+0.0087}_{-0.0076}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.806^{+0.051}_{-0.051}$	$f\sigma_8(2.33)$	$0.2979^{+0.0044}_{-0.0040}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$z_*$	$1090.02^{+0.53}_{-0.54}$	$\sigma_8(2.33)$	$0.3071^{+0.0047}_{-0.0042}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.6}_{-3.5}$	$r_*$	$144.82^{+0.56}_{-0.55}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.6}_{-6.6}$	$100\theta_*$	$1.04119^{+0.00084}_{-0.00081}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.054}_{-0.056}$	$f_{2000}^{217}$	$107.9^{+3.6}_{-3.8}$
$c_{100}$	$0.9996^{+0.0013}_{-0.0012}$	$z_{\text{drag}}$	$1059.51^{+0.88}_{-0.84}$	$\chi_{\text{lensing}}^2$	$9.23 (\nu: 0.2)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.54^{+0.62}_{-0.63}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.8)$
$H_0$	$67.63^{+0.92}_{-0.91}$	$k_{\text{D}}$	$0.14028^{+0.00086}_{-0.00082}$	$\chi_{\text{lowl}}^2$	$23.18 (\nu: 0.4)$
$\Omega_\Lambda$	$0.690^{+0.012}_{-0.012}$	$100\theta_{\text{D}}$	$0.16101^{+0.00048}_{-0.00050}$	$\chi_{\text{plik}}^2$	$771.6 (\nu: 13.6)$
$\Omega_{\text{m}}$	$0.310^{+0.012}_{-0.012}$	$z_{\text{eq}}$	$3374^{+47}_{-48}$	$\chi_{\text{JLA}}^2$	$1035.07 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1418^{+0.0020}_{-0.0020}$	$k_{\text{eq}}$	$0.01030^{+0.00014}_{-0.00015}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.09590^{+0.00090}_{-0.00086}$	$100\theta_{\text{eq}}$	$0.8181^{+0.0090}_{-0.0086}$	$\chi_{\text{MGS}}^2$	$1.34 (\nu: 0.1)$
$\sigma_8$	$0.809^{+0.012}_{-0.011}$	$100\theta_{\text{s,eq}}$	$0.4520^{+0.0046}_{-0.0045}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.9)$
$S_8$	$0.823^{+0.023}_{-0.022}$	$H(0.15)$	$72.89^{+0.80}_{-0.79}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.012}_{-0.012}$	$D_M(0.15)$	$641.2^{+7.8}_{-7.8}$	$\chi_{\text{CMB}}^2$	$1201.2 (\nu: 14.5)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	$82.97^{+0.61}_{-0.60}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.5)$
$\sigma_8/h^{0.5}$	$0.984^{+0.017}_{-0.016}$	$D_M(0.38)$	$1530^{+16}_{-16}$		

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

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022383	$0.02237^{+0.00029}_{-0.00028}$	$\Omega_m h^3$	0.09636	$0.09633^{+0.00056}_{-0.00061}$	$100\theta_{\text{eq}}$	0.8128	$0.8134^{+0.0099}_{-0.0098}$
$\Omega_c h^2$	0.12011	$0.1200^{+0.0023}_{-0.0023}$	$\sigma_8$	0.8120	$0.811^{+0.012}_{-0.012}$	$100\theta_{\text{s,eq}}$	0.4491	$0.4494^{+0.0051}_{-0.0050}$
$100\theta_{\text{MC}}$	1.04091	$1.04092^{+0.00059}_{-0.00063}$	$S_8$	0.8331	$0.832^{+0.025}_{-0.025}$	$H(0.15)$	72.65	$72.68^{+0.90}_{-0.91}$
$\tau$	0.0543	$0.054^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4563	$0.455^{+0.014}_{-0.014}$	$D_{\text{M}}(0.15)$	643.7	$643.4^{+9.2}_{-8.9}$
$\ln(10^{10} A_{\text{s}})$	3.0448	$3.044^{+0.028}_{-0.027}$	$\sigma_8 \Omega_m^{0.25}$	0.6087	$0.608^{+0.013}_{-0.013}$	$H(0.38)$	82.85	$82.87^{+0.66}_{-0.66}$
$n_{\text{s}}$	0.9660	$0.9649^{+0.0082}_{-0.0082}$	$\sigma_8/h^{0.5}$	0.9897	$0.988^{+0.018}_{-0.018}$	$D_{\text{M}}(0.38)$	1534.0	$1533^{+18}_{-18}$
$y_{\text{cal}}$	1.00044	$1.0006^{+0.0048}_{-0.0048}$	$r_{\text{drag}} h$	99.00	$99.1^{+1.8}_{-1.8}$	$H(0.51)$	89.61	$89.63^{+0.52}_{-0.53}$
$A_{217}^{\text{CIB}}$	46.1	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.4449	$2.446^{+0.043}_{-0.044}$	$D_{\text{M}}(0.51)$	1986.5	$1986^{+22}_{-21}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.66	—	$z_{\text{re}}$	7.68	$7.7^{+1.4}_{-1.5}$	$H(0.61)$	95.272	$95.28^{+0.43}_{-0.43}$
$A_{143}^{\text{tSZ}}$	7.08	$5.4^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	2.101	$2.100^{+0.060}_{-0.057}$	$D_{\text{M}}(0.61)$	2311.0	$2310^{+23}_{-22}$
$A_{100}^{\text{PS}}$	248	$260^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8843	$1.883^{+0.021}_{-0.021}$	$H(2.33)$	236.64	$236.6^{+1.4}_{-1.4}$
$A_{143}^{\text{PS}}$	50.7	$46^{+20}_{-20}$	$D_{40}$	1229.0	$1232^{+23}_{-23}$	$D_{\text{M}}(2.33)$	5763.6	$5763^{+20}_{-20}$
$A_{143 \times 217}^{\text{PS}}$	53.3	$42^{+20}_{-20}$	$D_{220}$	5730	$5736^{+77}_{-74}$	$f\sigma_8(0.15)$	0.4606	$0.460^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	121.9	$115^{+20}_{-20}$	$D_{810}$	2541.3	$2539^{+26}_{-26}$	$\sigma_8(0.15)$	0.7499	$0.749^{+0.011}_{-0.010}$
$A^{\text{kSZ}}$	0.00	$< 8.16$	$D_{1420}$	818.4	$817.2^{+9.5}_{-9.4}$	$f\sigma_8(0.38)$	0.4780	$0.477^{+0.010}_{-0.010}$
$A_{100}^{\text{dustTT}}$	8.80	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	231.33	$230.9^{+3.1}_{-3.1}$	$\sigma_8(0.38)$	0.6643	$0.6637^{+0.0094}_{-0.0091}$
$A_{143}^{\text{dustTT}}$	11.01	$10.9^{+3.5}_{-3.4}$	$n_{\text{s},0.002}$	0.9660	$0.9649^{+0.0082}_{-0.0082}$	$f\sigma_8(0.51)$	0.4761	$0.4754^{+0.0090}_{-0.0093}$
$A_{143 \times 217}^{\text{dustTT}}$	20.2	$18.6^{+6.4}_{-6.4}$	$Y_{\text{P}}$	0.245401	$0.24539^{+0.00011}_{-0.00011}$	$\sigma_8(0.51)$	0.6214	$0.6209^{+0.0088}_{-0.0085}$
$A_{217}^{\text{dustTT}}$	95.5	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246727	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4707	$0.4701^{+0.0082}_{-0.0083}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.074}$	$10^5 D/H$	2.583	$2.585^{+0.053}_{-0.051}$	$\sigma_8(0.61)$	0.5912	$0.5907^{+0.0085}_{-0.0081}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.057}_{-0.058}$	Age/Gyr	13.7971	$13.797^{+0.046}_{-0.045}$	$f\sigma_8(2.33)$	0.29792	$0.2977^{+0.0044}_{-0.0042}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.914	$1089.92^{+0.50}_{-0.49}$	$\sigma_8(2.33)$	0.30695	$0.3068^{+0.0048}_{-0.0045}$
$A_{143}^{\text{dustTE}}$	0.225	$0.23^{+0.11}_{-0.11}$	$r_*$	144.39	$144.43^{+0.53}_{-0.52}$	$f_{2000}^{143}$	28.6	$30^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	1.04109	$1.04110^{+0.00059}_{-0.00062}$	$f_{2000}^{143 \times 217}$	31.97	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.08	$2.09^{+0.54}_{-0.54}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8696	$13.873^{+0.049}_{-0.048}$	$f_{2000}^{217}$	106.46	$107.1^{+3.4}_{-3.5}$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.97	$1059.94^{+0.60}_{-0.58}$	$\chi_{\text{lensing}}^2$	8.87	$9.23 (\nu: 0.2)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.05	$147.09^{+0.53}_{-0.51}$	$\chi_{\text{small}}^2$	396.05	$397.0 (\nu: 1.4)$
$H_0$	67.32	$67.4^{+1.0}_{-1.1}$	$k_{\text{D}}$	0.14092	$0.14087^{+0.00057}_{-0.00061}$	$\chi_{\text{lowl}}^2$	23.25	$23.53 (\nu: 0.4)$
$\Omega_{\Lambda}$	0.6842	$0.685^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	0.160734	$0.16076^{+0.00034}_{-0.00034}$	$\chi_{\text{plik}}^2$	2344.9	$2359.4 (\nu: 16.3)$
$\Omega_{\text{m}}$	0.3158	$0.315^{+0.015}_{-0.014}$	$z_{\text{eq}}$	3405	$3402^{+53}_{-52}$	$\chi_{\text{prior}}^2$	1.5	$11.5 (\nu: 9.9)$
$\Omega_{\text{m}} h^2$	0.14314	$0.1430^{+0.0022}_{-0.0022}$	$k_{\text{eq}}$	0.010393	$0.01038^{+0.00016}_{-0.00016}$	$\chi_{\text{CMB}}^2$	2773.1	$2789.2 (\nu: 16.9)$

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

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.87 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3.2\_29: 23.25 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.93

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022447	$0.02242^{+0.00026}_{-0.00027}$	$S_8$	0.8253	$0.825^{+0.021}_{-0.021}$	$H(0.38)$	83.08	$83.05^{+0.51}_{-0.52}$
$\Omega_c h^2$	0.11928	$0.1193^{+0.0018}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	0.4520	$0.452^{+0.011}_{-0.011}$	$D_M(0.38)$	1527.5	$1528^{+14}_{-14}$
$100\theta_{MC}$	1.04101	$1.04101^{+0.00055}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	0.6055	$0.605^{+0.011}_{-0.011}$	$H(0.51)$	89.797	$89.77^{+0.42}_{-0.43}$
$\tau$	0.0568	$0.056^{+0.014}_{-0.013}$	$\sigma_8/h^{0.5}$	0.9857	$0.985^{+0.017}_{-0.017}$	$D_M(0.51)$	1978.9	$1980^{+16}_{-16}$
$\ln(10^{10} A_s)$	3.0480	$3.047^{+0.028}_{-0.027}$	$r_{\text{drag}} h$	99.66	$99.6^{+1.4}_{-1.4}$	$H(0.61)$	95.414	$95.39^{+0.35}_{-0.36}$
$n_s$	0.9682	$0.9665^{+0.0076}_{-0.0073}$	$\langle d^2 \rangle^{1/2}$	2.4356	$2.438^{+0.040}_{-0.042}$	$D_M(0.61)$	2302.9	$2304^{+18}_{-18}$
$y_{\text{cal}}$	1.00047	$1.0008^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	7.90	$7.8^{+1.4}_{-1.4}$	$H(2.33)$	236.17	$236.2^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	45.6	$47^{+10}_{-10}$	$10^9 A_s$	2.107	$2.105^{+0.059}_{-0.056}$	$D_M(2.33)$	5757.5	$5759^{+18}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.71	—	$10^9 A_s e^{-2\tau}$	1.8811	$1.881^{+0.021}_{-0.020}$	$f\sigma_8(0.15)$	0.4567	$0.456^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	7.06	$5.4^{+3.7}_{-4.0}$	$D_{40}$	1225.0	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	0.7495	$0.749^{+0.011}_{-0.010}$
$A_{100}^{\text{PS}}$	247	$259^{+50}_{-60}$	$D_{220}$	5734	$5741^{+78}_{-76}$	$f\sigma_8(0.38)$	0.4752	$0.4749^{+0.0092}_{-0.0092}$
$A_{143}^{\text{PS}}$	50.6	$46^{+20}_{-20}$	$D_{810}$	2541.2	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	0.6645	$0.6637^{+0.0095}_{-0.0090}$
$A_{143 \times 217}^{\text{PS}}$	54.1	$42^{+20}_{-20}$	$D_{1420}$	819.2	$817.9^{+9.2}_{-9.2}$	$f\sigma_8(0.51)$	0.4739	$0.4736^{+0.0084}_{-0.0084}$
$A_{217}^{\text{PS}}$	122.3	$115^{+20}_{-20}$	$D_{2000}$	231.67	$231.1^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6219	$0.6212^{+0.0088}_{-0.0084}$
$A^{\text{kSZ}}$	0.01	$< 8.22$	$n_{s,0.002}$	0.9682	$0.9665^{+0.0076}_{-0.0073}$	$f\sigma_8(0.61)$	0.4690	$0.4686^{+0.0079}_{-0.0079}$
$A_{100}^{\text{dustTT}}$	8.78	$8.9^{+3.5}_{-3.5}$	$Y_P$	0.245425	$0.245414^{+0.000095}_{-0.00011}$	$\sigma_8(0.61)$	0.5918	$0.5911^{+0.0084}_{-0.0081}$
$A_{143}^{\text{dustTT}}$	10.97	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	0.246752	$0.246740^{+0.000096}_{-0.00011}$	$f\sigma_8(2.33)$	0.29841	$0.2980^{+0.0043}_{-0.0042}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.5^{+6.6}_{-6.6}$	$10^5 D/H$	2.5713	$2.576^{+0.051}_{-0.046}$	$\sigma_8(2.33)$	0.30769	$0.3073^{+0.0046}_{-0.0044}$
$A_{217}^{\text{dustTT}}$	95.3	$93^{+10}_{-10}$	Age/Gyr	13.7839	$13.787^{+0.040}_{-0.037}$	$f_{2000}^{143}$	28.2	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.074}_{-0.073}$	$z_*$	1089.760	$1089.80^{+0.42}_{-0.41}$	$f_{2000}^{143 \times 217}$	31.63	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	144.559	$144.57^{+0.44}_{-0.42}$	$f_{2000}^{217}$	106.20	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.48^{+0.16}_{-0.16}$	$100\theta_*$	1.04119	$1.04119^{+0.00055}_{-0.00058}$	$\chi_{\text{lensing}}^2$	8.73	$9.10 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8840	$13.885^{+0.042}_{-0.040}$	$\chi_{\text{simall}}^2$	396.52	$397.2 (\nu: 1.7)$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.05	$1060.01^{+0.54}_{-0.57}$	$\chi_{\text{lowl}}^2$	22.90	$23.25 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.54}_{-0.53}$	$r_{\text{drag}}$	147.198	$147.21^{+0.46}_{-0.44}$	$\chi_{\text{plik}}^2$	2345.3	$2359.6 (\nu: 16.9)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14081	$0.14078^{+0.00054}_{-0.00058}$	$\chi_{6\text{DF}}^2$	0.029	$0.053 (\nu: 0.0)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160690	$0.16072^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	1.22	$1.24 (\nu: 0.1)$
$H_0$	67.70	$67.66^{+0.80}_{-0.81}$	$z_{\text{eq}}$	3386.8	$3387^{+41}_{-41}$	$\chi_{\text{DR12BAO}}^2$	4.42	$4.8 (\nu: 0.9)$
$\Omega_\Lambda$	0.6894	$0.689^{+0.011}_{-0.011}$	$k_{\text{eq}}$	0.010337	$0.01034^{+0.00012}_{-0.00013}$	$\chi_{\text{prior}}^2$	1.6	$11.5 (\nu: 10.1)$
$\Omega_m$	0.3106	$0.311^{+0.011}_{-0.011}$	$100\theta_{\text{eq}}$	0.8163	$0.8162^{+0.0077}_{-0.0077}$	$\chi_{\text{CMB}}^2$	2773.5	$2789.2 (\nu: 17.2)$
$\Omega_m h^2$	0.14237	$0.1424^{+0.0017}_{-0.0017}$	$100\theta_{s,\text{eq}}$	0.45092	$0.4509^{+0.0040}_{-0.0039}$	$\chi_{\text{BAO}}^2$	5.67	$6.1 (\nu: 0.5)$
$\Omega_m h^3$	0.09639	$0.09635^{+0.00056}_{-0.00060}$	$H(0.15)$	72.98	$72.94^{+0.70}_{-0.70}$			
$\sigma_8$	0.8110	$0.810^{+0.012}_{-0.012}$	$D_M(0.15)$	640.4	$640.8^{+7.0}_{-6.8}$			

Best-fit  $\chi_{\text{eff}}^2 = 2780.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 2806.84$ ;  $R - 1 = 0.01508$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.42 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.73 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.52 commander\_dx12.v3.2.29: 22.90 plik\_rd12\_HM\_v22b\_TTTEEE: 2345.32

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022400	$0.02239^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8112	$0.811^{+0.012}_{-0.012}$	$H(0.15)$	72.77	$72.78^{+0.84}_{-0.87}$
$\Omega_c h^2$	0.11977	$0.1197^{+0.0022}_{-0.0021}$	$S_8$	0.8296	$0.829^{+0.024}_{-0.024}$	$D_M(0.15)$	642.4	$642.4^{+8.8}_{-8.2}$
$100\theta_{MC}$	1.04094	$1.04095^{+0.00059}_{-0.00062}$	$\sigma_8 \Omega_m^{0.5}$	0.4544	$0.454^{+0.013}_{-0.013}$	$H(0.38)$	82.93	$82.94^{+0.61}_{-0.63}$
$\tau$	0.0549	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6071	$0.607^{+0.012}_{-0.012}$	$D_M(0.38)$	1531.6	$1531^{+18}_{-17}$
$\ln(10^{10} A_s)$	3.0453	$3.045^{+0.028}_{-0.027}$	$\sigma_8/h^{0.5}$	0.9876	$0.987^{+0.018}_{-0.018}$	$H(0.51)$	89.679	$89.68^{+0.48}_{-0.51}$
$n_s$	0.9664	$0.9655^{+0.0081}_{-0.0080}$	$r_{drag} h$	99.25	$99.3^{+1.7}_{-1.7}$	$D_M(0.51)$	1983.7	$1984^{+21}_{-20}$
$y_{cal}$	1.00064	$1.0007^{+0.0048}_{-0.0047}$	$\langle d^2 \rangle^{1/2}$	2.4413	$2.443^{+0.042}_{-0.043}$	$H(0.61)$	95.320	$95.32^{+0.40}_{-0.42}$
$A_{217}^{CIB}$	47.2	$47^{+10}_{-10}$	$z_{re}$	7.73	$7.7^{+1.4}_{-1.4}$	$D_M(0.61)$	2308.0	$2308^{+22}_{-21}$
$\xi^{tSZ \times CIB}$	0.45	—	$10^9 A_s$	2.102	$2.102^{+0.059}_{-0.057}$	$H(2.33)$	236.44	$236.4^{+1.3}_{-1.3}$
$A_{143}^{tSZ}$	7.20	$5.4^{+3.7}_{-4.0}$	$10^9 A_s e^{-2\tau}$	1.8832	$1.883^{+0.021}_{-0.021}$	$D_M(2.33)$	5761.6	$5762^{+20}_{-19}$
$A_{100}^{PS}$	250	$259^{+50}_{-60}$	$D_{40}$	1228.7	$1231^{+23}_{-23}$	$f\sigma_8(0.15)$	0.4588	$0.458^{+0.012}_{-0.012}$
$A_{143}^{PS}$	47.7	$46^{+20}_{-20}$	$D_{220}$	5735	$5738^{+78}_{-75}$	$\sigma_8(0.15)$	0.7493	$0.749^{+0.011}_{-0.010}$
$A_{143 \times 217}^{PS}$	47.9	$42^{+20}_{-20}$	$D_{810}$	2541.2	$2540^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4766	$0.4763^{+0.0099}_{-0.010}$
$A_{217}^{PS}$	119.7	$115^{+20}_{-20}$	$D_{1420}$	818.5	$817.5^{+9.5}_{-9.3}$	$\sigma_8(0.38)$	0.6640	$0.6637^{+0.0094}_{-0.0090}$
$A^{kSZ}$	0.00	$< 8.22$	$D_{2000}$	231.33	$231.0^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	0.4750	$0.4747^{+0.0088}_{-0.0090}$
$A_{100}^{dustTT}$	8.83	$8.9^{+3.5}_{-3.5}$	$n_{s,0.002}$	0.9664	$0.9655^{+0.0081}_{-0.0080}$	$\sigma_8(0.51)$	0.6213	$0.6210^{+0.0088}_{-0.0085}$
$A_{143}^{dustTT}$	11.02	$10.9^{+3.5}_{-3.4}$	$Y_P$	0.245407	$0.24540^{+0.00010}_{-0.00011}$	$f\sigma_8(0.61)$	0.4698	$0.4695^{+0.0081}_{-0.0083}$
$A_{143 \times 217}^{dustTT}$	19.8	$18.5^{+6.5}_{-6.5}$	$Y_P^{BBN}$	0.246734	$0.24673^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5911	$0.5909^{+0.0084}_{-0.0081}$
$A_{217}^{dustTT}$	95.0	$93^{+10}_{-10}$	$10^5 D/H$	2.580	$2.582^{+0.053}_{-0.050}$	$f\sigma_8(2.33)$	0.29794	$0.2978^{+0.0044}_{-0.0041}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.074}_{-0.074}$	Age/Gyr	13.7930	$13.793^{+0.045}_{-0.042}$	$\sigma_8(2.33)$	0.30707	$0.3070^{+0.0047}_{-0.0045}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.057}_{-0.059}$	$z_*$	1089.862	$1089.87^{+0.47}_{-0.46}$	$f_{2000}^{143}$	28.8	$30^{+5}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.17}$	$r_*$	144.47	$144.48^{+0.50}_{-0.50}$	$f_{2000}^{143 \times 217}$	31.98	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	0.223	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	1.04112	$1.04113^{+0.00059}_{-0.00061}$	$f_{2000}^{217}$	106.61	$107.0^{+3.4}_{-3.5}$
$A_{143 \times 217}^{dustTE}$	0.664	$0.67^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8761	$13.877^{+0.046}_{-0.046}$	$\chi_{lensing}^2$	8.77	$9.17 (\nu: 0.2)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.53}_{-0.53}$	$z_{drag}$	1059.97	$1059.97^{+0.57}_{-0.61}$	$\chi_{small}^2$	396.16	$397.1 (\nu: 1.5)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.12	$147.14^{+0.51}_{-0.50}$	$\chi_{lowl}^2$	23.18	$23.42 (\nu: 0.4)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14086	$0.14084^{+0.00057}_{-0.00060}$	$\chi_{plik}^2$	2344.9	$2359.5 (\nu: 16.8)$
$H_0$	67.46	$67.48^{+0.97}_{-1.0}$	$100\theta_D$	0.160728	$0.16074^{+0.00033}_{-0.00033}$	$\chi_{JLA}^2$	1035.18	$1035.27 (\nu: 0.1)$
$\Omega_\Lambda$	0.6862	$0.686^{+0.013}_{-0.014}$	$z_{eq}$	3397.5	$3396^{+50}_{-49}$	$\chi_{prior}^2$	1.7	$11.5 (\nu: 10.0)$
$\Omega_m$	0.3138	$0.314^{+0.014}_{-0.013}$	$k_{eq}$	0.010369	$0.01037^{+0.00015}_{-0.00015}$	$\chi_{CMB}^2$	2773.0	$2789.2 (\nu: 17.2)$
$\Omega_m h^2$	0.14282	$0.1428^{+0.0021}_{-0.0020}$	$100\theta_{eq}$	0.8142	$0.8144^{+0.0092}_{-0.0094}$			
$\Omega_m h^3$	0.09635	$0.09633^{+0.00056}_{-0.00061}$	$100\theta_{s,eq}$	0.44985	$0.4500^{+0.0047}_{-0.0048}$			

Best-fit  $\chi_{eff}^2 = 3809.84$ ;  $\bar{\chi}_{eff}^2 = 3835.97$ ;  $R - 1 = 0.01281$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5.ftl.mv2.ndclpp\_p.teb.consext8: 8.77 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.16 commander\_dx12\_v3.2.29: 23.18 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.85 SN - JLA Pantheon18: 1035.18

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

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022451	$0.02243^{+0.00025}_{-0.00027}$	$S_8$	0.8237	$0.824^{+0.020}_{-0.020}$	$H(0.38)$	83.12	$83.09^{+0.51}_{-0.51}$
$\Omega_c h^2$	0.11913	$0.1192^{+0.0017}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	0.4511	$0.451^{+0.011}_{-0.011}$	$D_M(0.38)$	1526.6	$1527^{+14}_{-13}$
$100\theta_{MC}$	1.04102	$1.04102^{+0.00055}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.605^{+0.011}_{-0.012}$	$H(0.51)$	89.821	$89.80^{+0.41}_{-0.42}$
$\tau$	0.0568	$0.056^{+0.014}_{-0.013}$	$\sigma_8/h^{0.5}$	0.9847	$0.984^{+0.017}_{-0.017}$	$D_M(0.51)$	1977.8	$1979^{+16}_{-16}$
$\ln(10^{10} A_s)$	3.0482	$3.047^{+0.028}_{-0.027}$	$r_{\text{drag}} h$	99.77	$99.7^{+1.3}_{-1.3}$	$H(0.61)$	95.431	$95.41^{+0.34}_{-0.35}$
$n_s$	0.9682	$0.9668^{+0.0075}_{-0.0072}$	$\langle d^2 \rangle^{1/2}$	2.4343	$2.437^{+0.040}_{-0.042}$	$D_M(0.61)$	2301.7	$2303^{+17}_{-17}$
$y_{\text{cal}}$	1.00085	$1.0008^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	7.90	$7.8^{+1.4}_{-1.4}$	$H(2.33)$	236.07	$236.1^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	46.6	$47^{+10}_{-10}$	$10^9 A_s$	2.108	$2.105^{+0.059}_{-0.056}$	$D_M(2.33)$	5756.9	$5758^{+17}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.56	—	$10^9 A_s e^{-2\tau}$	1.8813	$1.881^{+0.020}_{-0.020}$	$f\sigma_8(0.15)$	0.4559	$0.456^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	7.16	$5.4^{+3.7}_{-4.0}$	$D_{40}$	1225.7	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	0.7492	$0.749^{+0.011}_{-0.010}$
$A_{100}^{\text{PS}}$	249	$259^{+60}_{-60}$	$D_{220}$	5739	$5741^{+77}_{-76}$	$f\sigma_8(0.38)$	0.4746	$0.4745^{+0.0090}_{-0.0092}$
$A_{143}^{\text{PS}}$	48.8	$46^{+20}_{-20}$	$D_{810}$	2542.0	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	0.6643	$0.6637^{+0.0095}_{-0.0090}$
$A_{143 \times 217}^{\text{PS}}$	50.4	$42^{+20}_{-20}$	$D_{1420}$	819.4	$818.0^{+9.2}_{-9.1}$	$f\sigma_8(0.51)$	0.4734	$0.4732^{+0.0083}_{-0.0085}$
$A_{217}^{\text{PS}}$	120.6	$115^{+20}_{-20}$	$D_{2000}$	231.70	$231.2^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6218	$0.6212^{+0.0088}_{-0.0084}$
$A^{\text{kSZ}}$	0.00	$< 8.21$	$n_{s,0.002}$	0.9682	$0.9668^{+0.0075}_{-0.0072}$	$f\sigma_8(0.61)$	0.4686	$0.4684^{+0.0078}_{-0.0079}$
$A_{100}^{\text{dustTT}}$	8.84	$8.9^{+3.5}_{-3.5}$	$Y_P$	0.245427	$0.245417^{+0.000094}_{-0.00011}$	$\sigma_8(0.61)$	0.5917	$0.5911^{+0.0084}_{-0.0080}$
$A_{143}^{\text{dustTT}}$	11.02	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	0.246753	$0.246744^{+0.000094}_{-0.00011}$	$f\sigma_8(2.33)$	0.29839	$0.2981^{+0.0043}_{-0.0042}$
$A_{143 \times 217}^{\text{dustTT}}$	19.9	$18.5^{+6.6}_{-6.7}$	$10^5 D/H$	2.5706	$2.575^{+0.050}_{-0.045}$	$\sigma_8(2.33)$	0.30771	$0.3074^{+0.0046}_{-0.0044}$
$A_{217}^{\text{dustTT}}$	95.2	$93^{+10}_{-10}$	Age/Gyr	13.7827	$13.785^{+0.040}_{-0.036}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.073}$	$z_*$	1089.742	$1089.78^{+0.41}_{-0.41}$	$f_{2000}^{143 \times 217}$	31.78	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.058}_{-0.058}$	$r_*$	144.595	$144.59^{+0.43}_{-0.41}$	$f_{2000}^{217}$	106.41	$106.9^{+3.4}_{-3.4}$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.48^{+0.16}_{-0.16}$	$100\theta_*$	1.04120	$1.04120^{+0.00054}_{-0.00058}$	$\chi_{\text{lensing}}^2$	8.72	$9.10 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8874	$13.887^{+0.041}_{-0.040}$	$\chi_{\text{simall}}^2$	396.52	$397.2 (\nu: 1.8)$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.05	$1060.02^{+0.56}_{-0.58}$	$\chi_{\text{lowl}}^2$	22.88	$23.20 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.54}_{-0.53}$	$r_{\text{drag}}$	147.233	$147.23^{+0.46}_{-0.43}$	$\chi_{\text{plik}}^2$	2345.3	$2359.7 (\nu: 17.0)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14078	$0.14076^{+0.00054}_{-0.00058}$	$\chi_{\text{JLA}}^2$	1034.974	$1035.06 (\nu: 0.0)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160690	$0.16072^{+0.00033}_{-0.00032}$	$\chi_{6\text{DF}}^2$	0.022	$0.046 (\nu: 0.0)$
$H_0$	67.76	$67.72^{+0.78}_{-0.78}$	$z_{\text{eq}}$	3383.3	$3385^{+39}_{-40}$	$\chi_{\text{MGS}}^2$	1.28	$1.29 (\nu: 0.1)$
$\Omega_\Lambda$	0.6902	$0.690^{+0.010}_{-0.011}$	$k_{\text{eq}}$	0.010326	$0.01033^{+0.00012}_{-0.00012}$	$\chi_{\text{DR12BAO}}^2$	4.24	$4.7 (\nu: 0.7)$
$\Omega_m$	0.3098	$0.310^{+0.011}_{-0.010}$	$100\theta_{\text{eq}}$	0.8170	$0.8167^{+0.0076}_{-0.0073}$	$\chi_{\text{prior}}^2$	1.8	$11.5 (\nu: 10.1)$
$\Omega_m h^2$	0.14222	$0.1423^{+0.0016}_{-0.0017}$	$100\theta_{s,\text{eq}}$	0.45125	$0.4511^{+0.0039}_{-0.0038}$	$\chi_{\text{CMB}}^2$	2773.4	$2789.3 (\nu: 17.2)$
$\Omega_m h^3$	0.09637	$0.09635^{+0.00056}_{-0.00058}$	$H(0.15)$	73.03	$72.99^{+0.67}_{-0.68}$	$\chi_{\text{BAO}}^2$	5.55	$6.00 (\nu: 0.4)$
$\sigma_8$	0.8106	$0.810^{+0.012}_{-0.012}$	$D_M(0.15)$	639.9	$640.3^{+6.7}_{-6.6}$			

Best-fit  $\chi_{\text{eff}}^2 = 3815.67$ ;  $\bar{\chi}_{\text{eff}}^2 = 3841.86$ ;  $R - 1 = 0.01667$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.24 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.72 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.52 commander\_dx12.v3.2.29: 22.88 plik\_rd12\_HM\_v22b\_TTTEEE: 2345.27 SN - JLA Pantheon18: 1034.97

## 2.21 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00028}_{-0.00028}$	$\Omega_m h^3$	$0.09633^{+0.00056}_{-0.00061}$	$100\theta_{\text{eq}}$	$0.8136^{+0.0098}_{-0.0097}$
$\Omega_c h^2$	$0.1199^{+0.0023}_{-0.0023}$	$\sigma_8$	$0.812^{+0.012}_{-0.011}$	$100\theta_{\text{s,eq}}$	$0.4495^{+0.0050}_{-0.0050}$
$100\theta_{\text{MC}}$	$1.04092^{+0.00059}_{-0.00063}$	$S_8$	$0.832^{+0.025}_{-0.025}$	$H(0.15)$	$72.70^{+0.89}_{-0.91}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.455^{+0.014}_{-0.014}$	$D_{\text{M}}(0.15)$	$643.2^{+9.2}_{-8.7}$
$\ln(10^{10} A_s)$	$3.046^{+0.026}_{-0.024}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.013}_{-0.013}$	$H(0.38)$	$82.88^{+0.65}_{-0.66}$
$n_s$	$0.9650^{+0.0082}_{-0.0082}$	$\sigma_8/h^{0.5}$	$0.989^{+0.018}_{-0.018}$	$D_{\text{M}}(0.38)$	$1533^{+18}_{-18}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0047}$	$r_{\text{drag}} h$	$99.1^{+1.8}_{-1.8}$	$H(0.51)$	$89.64^{+0.51}_{-0.52}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.043}_{-0.042}$	$D_{\text{M}}(0.51)$	$1985^{+21}_{-20}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.8^{+1.1}_{-1.3}$	$H(0.61)$	$95.29^{+0.43}_{-0.43}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.8}_{-3.8}$	$10^9 A_s$	$2.103^{+0.054}_{-0.050}$	$D_{\text{M}}(0.61)$	$2310^{+23}_{-22}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-50}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.021}_{-0.021}$	$H(2.33)$	$236.5^{+1.4}_{-1.4}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{40}$	$1232^{+23}_{-23}$	$D_{\text{M}}(2.33)$	$5763^{+20}_{-20}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5735^{+78}_{-74}$	$f\sigma_8(0.15)$	$0.460^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$\sigma_8(0.15)$	$0.750^{+0.010}_{-0.0094}$
$A^{\text{kSZ}}$	$< 8.14$	$D_{1420}$	$817.2^{+9.5}_{-9.4}$	$f\sigma_8(0.38)$	$0.477^{+0.010}_{-0.010}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$230.9^{+3.1}_{-3.2}$	$\sigma_8(0.38)$	$0.6641^{+0.0087}_{-0.0083}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$n_{\text{s},0.002}$	$0.9650^{+0.0082}_{-0.0082}$	$f\sigma_8(0.51)$	$0.4755^{+0.0089}_{-0.0090}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$Y_{\text{P}}$	$0.24540^{+0.00011}_{-0.00011}$	$\sigma_8(0.51)$	$0.6214^{+0.0081}_{-0.0077}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00011}$	$f\sigma_8(0.61)$	$0.4703^{+0.0081}_{-0.0081}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$10^5 \text{D/H}$	$2.585^{+0.053}_{-0.051}$	$\sigma_8(0.61)$	$0.5912^{+0.0077}_{-0.0073}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$\text{Age/Gyr}$	$13.796^{+0.045}_{-0.044}$	$f\sigma_8(2.33)$	$0.2979^{+0.0040}_{-0.0037}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.91^{+0.49}_{-0.49}$	$\sigma_8(2.33)$	$0.3070^{+0.0043}_{-0.0040}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$r_*$	$144.44^{+0.52}_{-0.51}$	$f_{2000}^{143}$	$30^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	$1.04110^{+0.00058}_{-0.00062}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.54}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.874^{+0.049}_{-0.048}$	$f_{2000}^{217}$	$107.0^{+3.4}_{-3.5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.95^{+0.59}_{-0.59}$	$\chi_{\text{lensing}}^2$	$9.22 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.10^{+0.53}_{-0.51}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.4)$
$H_0$	$67.4^{+1.0}_{-1.1}$	$k_{\text{D}}$	$0.14086^{+0.00058}_{-0.00060}$	$\chi_{\text{lowl}}^2$	$23.53 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.685^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	$0.16075^{+0.00034}_{-0.00034}$	$\chi_{\text{plik}}^2$	$2359.3 (\nu: 16.3)$
$\Omega_{\text{m}}$	$0.315^{+0.015}_{-0.014}$	$z_{\text{eq}}$	$3401^{+52}_{-52}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.0)$
$\Omega_{\text{m}} h^2$	$0.1430^{+0.0022}_{-0.0022}$	$k_{\text{eq}}$	$0.01038^{+0.00016}_{-0.00016}$	$\chi_{\text{CMB}}^2$	$2789.0 (\nu: 16.6)$

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

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02242^{+0.00026}_{-0.00027}$	$S_8$	$0.825^{+0.021}_{-0.021}$	$H(0.38)$	$83.06^{+0.51}_{-0.51}$
$\Omega_c h^2$	$0.1193^{+0.0018}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.011}_{-0.011}$	$D_M(0.38)$	$1528^{+14}_{-14}$
$100\theta_{MC}$	$1.04101^{+0.00055}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.011}_{-0.011}$	$H(0.51)$	$89.78^{+0.41}_{-0.42}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.985^{+0.017}_{-0.016}$	$D_M(0.51)$	$1980^{+16}_{-16}$
$\ln(10^{10} A_s)$	$3.048^{+0.026}_{-0.025}$	$r_{\text{drag}} h$	$99.6^{+1.4}_{-1.4}$	$H(0.61)$	$95.39^{+0.35}_{-0.36}$
$n_s$	$0.9666^{+0.0076}_{-0.0073}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.040}_{-0.040}$	$D_M(0.61)$	$2304^{+18}_{-17}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$236.2^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.106^{+0.055}_{-0.052}$	$D_M(2.33)$	$5759^{+17}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.881^{+0.020}_{-0.020}$	$f\sigma_8(0.15)$	$0.457^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-4.0}$	$D_{40}$	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0098}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-60}$	$D_{220}$	$5740^{+78}_{-76}$	$f\sigma_8(0.38)$	$0.4751^{+0.0091}_{-0.0092}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	$0.6640^{+0.0093}_{-0.0085}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.8^{+9.2}_{-9.1}$	$f\sigma_8(0.51)$	$0.4737^{+0.0083}_{-0.0082}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.1^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.6214^{+0.0086}_{-0.0078}$
$A^{\text{kSZ}}$	$< 8.22$	$n_{s,0.002}$	$0.9666^{+0.0076}_{-0.0073}$	$f\sigma_8(0.61)$	$0.4688^{+0.0078}_{-0.0076}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$Y_P$	$0.245414^{+0.000095}_{-0.00011}$	$\sigma_8(0.61)$	$0.5913^{+0.0082}_{-0.0074}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.246741^{+0.000095}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2982^{+0.0040}_{-0.0039}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.5}_{-6.6}$	$10^5 D/H$	$2.576^{+0.050}_{-0.046}$	$\sigma_8(2.33)$	$0.3074^{+0.0044}_{-0.0039}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.786^{+0.040}_{-0.037}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.073}$	$z_*$	$1089.79^{+0.42}_{-0.40}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.059}$	$r_*$	$144.57^{+0.44}_{-0.42}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$100\theta_*$	$1.04119^{+0.00055}_{-0.00058}$	$\chi_{\text{lensing}}^2$	$9.08 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.885^{+0.042}_{-0.040}$	$\chi_{\text{small}}^2$	$397.2 (\nu: 1.7)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.01^{+0.53}_{-0.57}$	$\chi_{\text{lowl}}^2$	$23.25 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.54}_{-0.53}$	$r_{\text{drag}}$	$147.22^{+0.46}_{-0.44}$	$\chi_{\text{plik}}^2$	$2359.5 (\nu: 16.8)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14078^{+0.00054}_{-0.00058}$	$\chi_{6\text{DF}}^2$	$0.052 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16072^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.25 (\nu: 0.1)$
$H_0$	$67.67^{+0.79}_{-0.80}$	$z_{\text{eq}}$	$3387^{+41}_{-41}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 0.8)$
$\Omega_\Lambda$	$0.689^{+0.011}_{-0.011}$	$k_{\text{eq}}$	$0.01034^{+0.00012}_{-0.00012}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.1)$
$\Omega_m$	$0.311^{+0.011}_{-0.011}$	$100\theta_{\text{eq}}$	$0.8163^{+0.0077}_{-0.0076}$	$\chi_{\text{CMB}}^2$	$2789.1 (\nu: 16.9)$
$\Omega_m h^2$	$0.1424^{+0.0017}_{-0.0017}$	$100\theta_{s,\text{eq}}$	$0.4509^{+0.0040}_{-0.0039}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.5)$
$\Omega_m h^3$	$0.09635^{+0.00057}_{-0.00060}$	$H(0.15)$	$72.95^{+0.70}_{-0.69}$		
$\sigma_8$	$0.811^{+0.012}_{-0.011}$	$D_M(0.15)$	$640.7^{+6.9}_{-6.7}$		

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

## 2.23 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00027}_{-0.00028}$	$\sigma_8$	$0.811^{+0.012}_{-0.011}$	$H(0.15)$	$72.80^{+0.83}_{-0.85}$
$\Omega_c h^2$	$0.1197^{+0.0022}_{-0.0021}$	$S_8$	$0.829^{+0.024}_{-0.024}$	$D_M(0.15)$	$642.2^{+8.5}_{-8.2}$
$100\theta_{MC}$	$1.04095^{+0.00059}_{-0.00062}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.013}_{-0.013}$	$H(0.38)$	$82.95^{+0.60}_{-0.62}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.012}_{-0.012}$	$D_M(0.38)$	$1531^{+17}_{-16}$
$\ln(10^{10} A_s)$	$3.047^{+0.026}_{-0.024}$	$\sigma_8/h^{0.5}$	$0.987^{+0.017}_{-0.018}$	$H(0.51)$	$89.69^{+0.48}_{-0.50}$
$n_s$	$0.9656^{+0.0081}_{-0.0080}$	$r_{\text{drag}} h$	$99.3^{+1.6}_{-1.7}$	$D_M(0.51)$	$1983^{+20}_{-19}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0047}$	$\langle d^2 \rangle^{1/2}$	$2.444^{+0.042}_{-0.042}$	$H(0.61)$	$95.33^{+0.40}_{-0.41}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$D_M(0.61)$	$2307^{+21}_{-21}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.105^{+0.054}_{-0.051}$	$H(2.33)$	$236.4^{+1.3}_{-1.3}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-4.0}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.021}_{-0.021}$	$D_M(2.33)$	$5761^{+20}_{-19}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-60}$	$D_{40}$	$1231^{+23}_{-24}$	$f\sigma_8(0.15)$	$0.459^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{220}$	$5737^{+79}_{-75}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0097}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.4765^{+0.0098}_{-0.010}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.4^{+9.3}_{-9.2}$	$\sigma_8(0.38)$	$0.6641^{+0.0091}_{-0.0082}$
$A^{\text{kSZ}}$	$< 8.22$	$D_{2000}$	$231.0^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	$0.4748^{+0.0088}_{-0.0089}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$n_{s,0.002}$	$0.9656^{+0.0081}_{-0.0080}$	$\sigma_8(0.51)$	$0.6214^{+0.0085}_{-0.0076}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P$	$0.24540^{+0.00010}_{-0.00011}$	$f\sigma_8(0.61)$	$0.4697^{+0.0079}_{-0.0081}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.6}_{-6.5}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5912^{+0.0081}_{-0.0072}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.581^{+0.052}_{-0.049}$	$f\sigma_8(2.33)$	$0.2980^{+0.0040}_{-0.0038}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.073}$	Age/Gyr	$13.793^{+0.045}_{-0.042}$	$\sigma_8(2.33)$	$0.3072^{+0.0043}_{-0.0040}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.059}$	$z_*$	$1089.86^{+0.47}_{-0.46}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.49^{+0.50}_{-0.49}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	$1.04113^{+0.00058}_{-0.00061}$	$f_{2000}^{217}$	$107.0^{+3.4}_{-3.5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.878^{+0.046}_{-0.046}$	$\chi_{\text{lensing}}^2$	$9.16 (\nu: 0.2)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.54}_{-0.53}$	$z_{\text{drag}}$	$1059.97^{+0.57}_{-0.57}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.5)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.14^{+0.50}_{-0.50}$	$\chi_{\text{lowl}}^2$	$23.42 (\nu: 0.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14083^{+0.00057}_{-0.00060}$	$\chi_{\text{plik}}^2$	$2359.4 (\nu: 16.8)$
$H_0$	$67.50^{+0.96}_{-0.98}$	$100\theta_D$	$0.16074^{+0.00033}_{-0.00033}$	$\chi_{\text{JLA}}^2$	$1035.25 (\nu: 0.1)$
$\Omega_\Lambda$	$0.687^{+0.013}_{-0.014}$	$z_{\text{eq}}$	$3396^{+48}_{-48}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.0)$
$\Omega_m$	$0.313^{+0.014}_{-0.013}$	$k_{\text{eq}}$	$0.01036^{+0.00015}_{-0.00015}$	$\chi_{\text{CMB}}^2$	$2789.0 (\nu: 17.0)$
$\Omega_m h^2$	$0.1427^{+0.0020}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8146^{+0.0092}_{-0.0092}$		
$\Omega_m h^3$	$0.09634^{+0.00056}_{-0.00061}$	$100\theta_{s,\text{eq}}$	$0.4501^{+0.0047}_{-0.0047}$		

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



## 2.24 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00025}_{-0.00027}$	$S_8$	$0.824^{+0.020}_{-0.020}$	$H(0.38)$	$83.09^{+0.50}_{-0.50}$
$\Omega_c h^2$	$0.1192^{+0.0017}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.011}_{-0.011}$	$D_M(0.38)$	$1527^{+13}_{-13}$
$100\theta_{MC}$	$1.04103^{+0.00055}_{-0.00058}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.011}_{-0.011}$	$H(0.51)$	$89.80^{+0.41}_{-0.41}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.985^{+0.016}_{-0.016}$	$D_M(0.51)$	$1979^{+16}_{-16}$
$\ln(10^{10} A_s)$	$3.048^{+0.027}_{-0.024}$	$r_{\text{drag}} h$	$99.7^{+1.3}_{-1.3}$	$H(0.61)$	$95.41^{+0.34}_{-0.35}$
$n_s$	$0.9668^{+0.0075}_{-0.0072}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.039}_{-0.040}$	$D_M(0.61)$	$2303^{+17}_{-17}$
$y_{\text{cal}}$	$1.0008^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$236.1^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.107^{+0.055}_{-0.053}$	$D_M(2.33)$	$5758^{+17}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.881^{+0.020}_{-0.020}$	$f\sigma_8(0.15)$	$0.456^{+0.010}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-4.0}$	$D_{40}$	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0098}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-60}$	$D_{220}$	$5741^{+77}_{-75}$	$f\sigma_8(0.38)$	$0.4746^{+0.0090}_{-0.0089}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	$0.6640^{+0.0093}_{-0.0086}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.9^{+9.1}_{-9.1}$	$f\sigma_8(0.51)$	$0.4734^{+0.0083}_{-0.0082}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.2^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.6214^{+0.0086}_{-0.0079}$
$A^{\text{kSZ}}$	$< 8.21$	$n_{s,0.002}$	$0.9668^{+0.0075}_{-0.0072}$	$f\sigma_8(0.61)$	$0.4685^{+0.0077}_{-0.0076}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$Y_P$	$0.245418^{+0.000093}_{-0.00011}$	$\sigma_8(0.61)$	$0.5913^{+0.0082}_{-0.0075}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.246744^{+0.000094}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2982^{+0.0041}_{-0.0039}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.6}_{-6.7}$	$10^5 D/H$	$2.575^{+0.050}_{-0.045}$	$\sigma_8(2.33)$	$0.3075^{+0.0043}_{-0.0041}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.785^{+0.040}_{-0.036}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.073}$	$z_*$	$1089.77^{+0.41}_{-0.40}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.058}$	$r_*$	$144.59^{+0.44}_{-0.41}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.16}$	$100\theta_*$	$1.04120^{+0.00054}_{-0.00057}$	$\chi_{\text{lensing}}^2$	$9.07 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.887^{+0.041}_{-0.040}$	$\chi_{\text{small}}^2$	$397.2 (\nu: 1.8)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.02^{+0.56}_{-0.59}$	$\chi_{\text{lowl}}^2$	$23.21 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.54}_{-0.54}$	$r_{\text{drag}}$	$147.23^{+0.46}_{-0.43}$	$\chi_{\text{plik}}^2$	$2359.6 (\nu: 16.9)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14076^{+0.00054}_{-0.00058}$	$\chi_{\text{JLA}}^2$	$1035.05 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16072^{+0.00033}_{-0.00032}$	$\chi_{6\text{DF}}^2$	$0.045 (\nu: 0.0)$
$H_0$	$67.72^{+0.78}_{-0.77}$	$z_{\text{eq}}$	$3385^{+39}_{-40}$	$\chi_{\text{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_\Lambda$	$0.690^{+0.010}_{-0.010}$	$k_{\text{eq}}$	$0.01033^{+0.00012}_{-0.00012}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.7)$
$\Omega_m$	$0.310^{+0.010}_{-0.010}$	$100\theta_{\text{eq}}$	$0.8167^{+0.0076}_{-0.0073}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_m h^2$	$0.1423^{+0.0016}_{-0.0017}$	$100\theta_{s,\text{eq}}$	$0.4511^{+0.0039}_{-0.0037}$	$\chi_{\text{CMB}}^2$	$2789.2 (\nu: 17.0)$
$\Omega_m h^3$	$0.09635^{+0.00056}_{-0.00058}$	$H(0.15)$	$72.99^{+0.67}_{-0.67}$	$\chi_{\text{BAO}}^2$	$5.98 (\nu: 0.4)$
$\sigma_8$	$0.810^{+0.012}_{-0.011}$	$D_M(0.15)$	$640.3^{+6.6}_{-6.5}$		

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

## 2.25 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022524	$0.02252^{+0.00028}_{-0.00027}$	$\Delta z_{\text{l,DES}}^1$	0.0030	$0.004^{+0.015}_{-0.014}$	$z_{\text{drag}}$	1060.16	$1060.12^{+0.57}_{-0.57}$
$\Omega_c h^2$	0.11811	$0.1179^{+0.0021}_{-0.0021}$	$\Delta z_{\text{l,DES}}^2$	0.0007	$0.001^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.42	$147.49^{+0.51}_{-0.50}$
$100\theta_{\text{MC}}$	1.04112	$1.04112^{+0.00059}_{-0.00059}$	$\Delta z_{\text{l,DES}}^3$	0.0035	$0.003^{+0.013}_{-0.013}$	$k_{\text{D}}$	0.14064	$0.14056^{+0.00058}_{-0.00058}$
$\tau$	0.0552	$0.055^{+0.016}_{-0.016}$	$\Delta z_{\text{l,DES}}^4$	0.0007	$0.001^{+0.018}_{-0.018}$	$100\theta_{\text{D}}$	0.160639	$0.16066^{+0.00033}_{-0.00034}$
$\ln(10^{10} A_{\text{s}})$	3.0416	$3.039^{+0.032}_{-0.032}$	$\Delta z_{\text{l,DES}}^5$	-0.0004	$-0.001^{+0.020}_{-0.019}$	$z_{\text{eq}}$	3360.8	$3355^{+47}_{-48}$
$n_{\text{s}}$	0.9700	$0.9696^{+0.0077}_{-0.0079}$	$\Delta z_{\text{s,DES}}^1$	0.0007	$-0.003^{+0.028}_{-0.028}$	$k_{\text{eq}}$	0.010257	$0.01024^{+0.00014}_{-0.00015}$
$y_{\text{cal}}$	1.00041	$1.0005^{+0.0049}_{-0.0049}$	$\Delta z_{\text{s,DES}}^2$	-0.0301	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{eq}}$	0.8214	$0.8224^{+0.0093}_{-0.0089}$
$A_{217}^{\text{CIB}}$	47.6	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^3$	0.0029	$0.004^{+0.019}_{-0.019}$	$100\theta_{\text{s,eq}}$	0.45348	$0.4540^{+0.0048}_{-0.0046}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.44	—	$\Delta z_{\text{s,DES}}^4$	-0.0301	$-0.030^{+0.036}_{-0.035}$	$H(0.15)$	73.42	$73.48^{+0.84}_{-0.81}$
$A_{143}^{\text{tSZ}}$	7.25	$5.5^{+3.8}_{-3.8}$	$H_0$	68.21	$68.30^{+0.97}_{-0.94}$	$D_{\text{M}}(0.15)$	636.1	$635.4^{+8.0}_{-8.1}$
$A_{100}^{\text{PS}}$	249	$259^{+50}_{-50}$	$\Omega_{\Lambda}$	0.6964	$0.698^{+0.013}_{-0.012}$	$H(0.38)$	83.40	$83.44^{+0.62}_{-0.60}$
$A_{143}^{\text{PS}}$	46.7	$45^{+10}_{-20}$	$\Omega_{\text{m}}$	0.3036	$0.302^{+0.012}_{-0.013}$	$D_{\text{M}}(0.38)$	1518.9	$1518^{+16}_{-16}$
$A_{143 \times 217}^{\text{PS}}$	46.9	$41^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	0.14128	$0.1410^{+0.0020}_{-0.0020}$	$H(0.51)$	90.037	$90.07^{+0.50}_{-0.48}$
$A_{217}^{\text{PS}}$	118.5	$114^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	0.09638	$0.09632^{+0.00058}_{-0.00057}$	$D_{\text{M}}(0.51)$	1968.9	$1967^{+19}_{-19}$
$A^{\text{kSZ}}$	0.00	< 8.14	$\sigma_8$	0.8048	$0.803^{+0.013}_{-0.013}$	$H(0.61)$	95.598	$95.62^{+0.42}_{-0.40}$
$A_{100}^{\text{dustTT}}$	8.78	$8.9^{+3.5}_{-3.5}$	$S_8$	0.8097	$0.806^{+0.024}_{-0.024}$	$D_{\text{M}}(0.61)$	2292.1	$2291^{+20}_{-21}$
$A_{143}^{\text{dustTT}}$	11.04	$11.0^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4435	$0.442^{+0.013}_{-0.013}$	$H(2.33)$	235.49	$235.3^{+1.3}_{-1.3}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.7^{+6.4}_{-6.4}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5974	$0.595^{+0.013}_{-0.013}$	$D_{\text{M}}(2.33)$	5750.0	$5750^{+19}_{-19}$
$A_{217}^{\text{dustTT}}$	94.7	$94^{+10}_{-10}$	$\sigma_8/h^{0.5}$	0.9745	$0.972^{+0.019}_{-0.019}$	$f\sigma_8(0.15)$	0.4487	$0.447^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTE}}$	0.115	$0.114^{+0.076}_{-0.075}$	$r_{\text{drag}} h$	100.56	$100.7^{+1.7}_{-1.6}$	$\sigma_8(0.15)$	0.7445	$0.743^{+0.012}_{-0.012}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.057}_{-0.058}$	$\langle d^2 \rangle^{1/2}$	2.4120	$2.408^{+0.046}_{-0.046}$	$f\sigma_8(0.38)$	0.4686	$0.467^{+0.010}_{-0.011}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.16}$	$z_{\text{re}}$	7.71	$7.6^{+1.5}_{-1.6}$	$\sigma_8(0.38)$	0.6608	$0.660^{+0.011}_{-0.011}$
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.10}_{-0.11}$	$10^9 A_{\text{s}}$	2.094	$2.090^{+0.069}_{-0.066}$	$f\sigma_8(0.51)$	0.4682	$0.4667^{+0.0095}_{-0.0096}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8750	$1.873^{+0.021}_{-0.022}$	$\sigma_8(0.51)$	0.6187	$0.618^{+0.010}_{-0.0098}$
$A_{217}^{\text{dustTE}}$	2.07	$2.06^{+0.52}_{-0.52}$	$D_{40}$	1220.3	$1221^{+23}_{-23}$	$f\sigma_8(0.61)$	0.4639	$0.4625^{+0.0088}_{-0.0089}$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$D_{220}$	5741	$5744^{+75}_{-76}$	$\sigma_8(0.61)$	0.5890	$0.5880^{+0.0096}_{-0.0094}$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$D_{810}$	2538.6	$2537^{+26}_{-27}$	$f\sigma_8(2.33)$	0.29728	$0.2968^{+0.0049}_{-0.0048}$
$b_{\text{DES}}^1$	1.506	$1.51^{+0.14}_{-0.15}$	$D_{1420}$	818.9	$817.9^{+9.4}_{-9.5}$	$\sigma_8(2.33)$	0.3068	$0.3064^{+0.0052}_{-0.0051}$
$b_{\text{DES}}^2$	1.710	$1.71^{+0.10}_{-0.10}$	$D_{2000}$	231.56	$231.2^{+3.1}_{-3.2}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$b_{\text{DES}}^3$	1.697	$1.698^{+0.085}_{-0.088}$	$n_{\text{s},0.002}$	0.9700	$0.9696^{+0.0077}_{-0.0079}$	$f_{2000}^{143 \times 217}$	31.72	$32^{+4}_{-4}$
$b_{\text{DES}}^4$	2.058	$2.06^{+0.10}_{-0.10}$	$Y_{\text{P}}$	0.245453	$0.24545^{+0.00010}_{-0.00011}$	$f_{2000}^{217}$	106.29	$106.7^{+3.5}_{-3.5}$
$b_{\text{DES}}^5$	2.161	$2.16^{+0.15}_{-0.15}$	$Y_{\text{P}}^{\text{BBN}}$	0.246780	$0.24678^{+0.00010}_{-0.00011}$	$\chi_{\text{small}}^2$	396.08	$397.0 (\nu: 1.6)$
$m_{\text{DES}}^1$	0.0133	$0.012^{+0.044}_{-0.045}$	$10^5 \text{D}/\text{H}$	2.558	$2.559^{+0.051}_{-0.050}$	$\chi_{\text{lowl}}^2$	22.49	$22.59 (\nu: 0.3)$
$m_{\text{DES}}^2$	0.0137	$0.012^{+0.044}_{-0.043}$	Age/Gyr	13.7679	$13.767^{+0.043}_{-0.042}$	$\chi_{\text{plik}}^2$	2348.0	$2363.4 (\nu: 20.7)$
$m_{\text{DES}}^3$	-0.0028	$-0.002^{+0.039}_{-0.039}$	$z_*$	1089.564	$1089.55^{+0.46}_{-0.46}$	$\chi_{\text{DES}}^2$	509.2	$518.0 (\nu: 11.8)$
$m_{\text{DES}}^4$	0.0018	$0.003^{+0.041}_{-0.040}$	$r_*$	144.803	$144.87^{+0.49}_{-0.48}$	$\chi_{\text{prior}}^2$	4.0	$25 (\nu: 23.0)$
$A_{\text{IA,DES}}$	0.434	$0.47^{+0.34}_{-0.32}$	$100\theta_*$	1.04129	$1.04129^{+0.00058}_{-0.00058}$	$\chi_{\text{CMB}}^2$	2766.6	$2783.0 (\nu: 20.0)$
$\alpha_{\text{IA,DES}}$	-2.55	< 2.97	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9061	$13.912^{+0.047}_{-0.045}$			

Best-fit  $\chi_{\text{eff}}^2 = 3279.69$ ;  $\bar{\chi}_{\text{eff}}^2 = 3325.69$ ;  $R - 1 = 0.00524$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 commander\_dx12\_v3.2\_29: 22.49 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.99 WL - DES\_1YR\_final: 509.16

## 2.26 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022502	$0.02251^{+0.00026}_{-0.00026}$	$\Delta z_{\text{l,DES}}^2$	0.0005	$0.001^{+0.013}_{-0.013}$	$k_D$	0.14059	$0.14057^{+0.00056}_{-0.00055}$
$\Omega_c h^2$	0.11810	$0.1180^{+0.0017}_{-0.0017}$	$\Delta z_{\text{l,DES}}^3$	0.0034	$0.003^{+0.013}_{-0.013}$	$100\theta_D$	0.160668	$0.16066^{+0.00033}_{-0.00033}$
$100\theta_{\text{MC}}$	1.04112	$1.04111^{+0.00057}_{-0.00057}$	$\Delta z_{\text{l,DES}}^4$	0.0008	$0.000^{+0.018}_{-0.018}$	$z_{\text{eq}}$	3359.9	$3358^{+39}_{-39}$
$\tau$	0.0552	$0.054^{+0.016}_{-0.015}$	$\Delta z_{\text{l,DES}}^5$	-0.0003	$0.000^{+0.019}_{-0.019}$	$k_{\text{eq}}$	0.010255	$0.01025^{+0.00012}_{-0.00012}$
$\ln(10^{10} A_s)$	3.0412	$3.039^{+0.032}_{-0.032}$	$\Delta z_{\text{s,DES}}^1$	0.0007	$-0.003^{+0.028}_{-0.028}$	$100\theta_{\text{eq}}$	0.8214	$0.8219^{+0.0075}_{-0.0073}$
$n_s$	0.9699	$0.9693^{+0.0071}_{-0.0073}$	$\Delta z_{\text{s,DES}}^2$	-0.0301	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{s,eq}}$	0.45354	$0.4537^{+0.0038}_{-0.0037}$
$y_{\text{cal}}$	1.00029	$1.0004^{+0.0048}_{-0.0049}$	$\Delta z_{\text{s,DES}}^3$	0.0033	$0.004^{+0.019}_{-0.019}$	$H(0.15)$	73.40	$73.43^{+0.68}_{-0.67}$
$A_{217}^{\text{CIB}}$	48.1	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^4$	-0.0300	$-0.030^{+0.036}_{-0.035}$	$D_{\text{M}}(0.15)$	636.2	$635.9^{+6.5}_{-6.6}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$H_0$	68.20	$68.24^{+0.78}_{-0.77}$	$H(0.38)$	83.38	$83.40^{+0.52}_{-0.50}$
$A_{143}^{\text{tSZ}}$	7.33	$5.5^{+3.8}_{-3.8}$	$\Omega_{\Lambda}$	0.6963	$0.697^{+0.010}_{-0.010}$	$D_{\text{M}}(0.38)$	1519.2	$1519^{+13}_{-13}$
$A_{100}^{\text{PS}}$	251	$258^{+50}_{-50}$	$\Omega_{\text{m}}$	0.3037	$0.303^{+0.010}_{-0.010}$	$H(0.51)$	90.021	$90.04^{+0.43}_{-0.41}$
$A_{143}^{\text{PS}}$	45.5	$45^{+10}_{-20}$	$\Omega_{\text{m}} h^2$	0.14125	$0.1412^{+0.0016}_{-0.0016}$	$D_{\text{M}}(0.51)$	1969.3	$1969^{+16}_{-16}$
$A_{143 \times 217}^{\text{PS}}$	44.5	$41^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	0.09633	$0.09632^{+0.00058}_{-0.00057}$	$H(0.61)$	95.582	$95.59^{+0.36}_{-0.35}$
$A_{217}^{\text{PS}}$	117.7	$114^{+20}_{-20}$	$\sigma_8$	0.8046	$0.803^{+0.013}_{-0.013}$	$D_{\text{M}}(0.61)$	2292.5	$2292^{+17}_{-17}$
$A^{\text{kSZ}}$	0.00	< 8.20	$S_8$	0.8095	$0.808^{+0.021}_{-0.021}$	$H(2.33)$	235.46	$235.4^{+1.0}_{-1.1}$
$A_{100}^{\text{dustTT}}$	8.86	$8.9^{+3.5}_{-3.6}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4434	$0.442^{+0.011}_{-0.011}$	$D_{\text{M}}(2.33)$	5750.9	$5751^{+17}_{-17}$
$A_{143}^{\text{dustTT}}$	11.12	$10.9^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5973	$0.596^{+0.012}_{-0.012}$	$f\sigma_8(0.15)$	0.4486	$0.448^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.7^{+6.5}_{-6.4}$	$\sigma_8/h^{0.5}$	0.9743	$0.972^{+0.018}_{-0.018}$	$\sigma_8(0.15)$	0.7443	$0.743^{+0.012}_{-0.012}$
$A_{217}^{\text{dustTT}}$	94.9	$94^{+10}_{-10}$	$r_{\text{drag}} h$	100.56	$100.6^{+1.3}_{-1.3}$	$f\sigma_8(0.38)$	0.4685	$0.4675^{+0.0095}_{-0.0096}$
$A_{100}^{\text{dustTE}}$	0.113	$0.115^{+0.076}_{-0.075}$	$\langle d^2 \rangle^{1/2}$	2.4118	$2.410^{+0.044}_{-0.044}$	$\sigma_8(0.38)$	0.6606	$0.660^{+0.011}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$z_{\text{re}}$	7.71	$7.6^{+1.5}_{-1.6}$	$f\sigma_8(0.51)$	0.4681	$0.4671^{+0.0089}_{-0.0089}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.17}_{-0.17}$	$10^9 A_s$	2.093	$2.089^{+0.067}_{-0.066}$	$\sigma_8(0.51)$	0.6186	$0.618^{+0.010}_{-0.010}$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.10}_{-0.11}$	$10^9 A_s e^{-2\tau}$	1.8741	$1.874^{+0.021}_{-0.021}$	$f\sigma_8(0.61)$	0.4638	$0.4628^{+0.0084}_{-0.0084}$
$A_{143 \times 217}^{\text{dustTE}}$	0.660	$0.66^{+0.16}_{-0.16}$	$D_{40}$	1219.9	$1222^{+22}_{-22}$	$\sigma_8(0.61)$	0.5888	$0.5879^{+0.0096}_{-0.0095}$
$A_{217}^{\text{dustTE}}$	2.06	$2.07^{+0.52}_{-0.52}$	$D_{220}$	5738	$5743^{+75}_{-77}$	$f\sigma_8(2.33)$	0.29720	$0.2968^{+0.0049}_{-0.0048}$
$c_{100}$	0.99969	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	2537.2	$2537^{+27}_{-27}$	$\sigma_8(2.33)$	0.3067	$0.3063^{+0.0051}_{-0.0050}$
$c_{217}$	0.99821	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	818.3	$817.8^{+9.3}_{-9.3}$	$f_{2000}^{143}$	28.7	$29^{+5}_{-5}$
$b_{\text{DES}}^1$	1.508	$1.51^{+0.14}_{-0.15}$	$D_{2000}$	231.33	$231.1^{+3.0}_{-3.1}$	$f_{2000}^{143 \times 217}$	31.86	$32^{+4}_{-4}$
$b_{\text{DES}}^2$	1.709	$1.71^{+0.10}_{-0.10}$	$n_{\text{s},0.002}$	0.9699	$0.9693^{+0.0071}_{-0.0073}$	$f_{2000}^{217}$	106.48	$106.8^{+3.6}_{-3.4}$
$b_{\text{DES}}^3$	1.697	$1.697^{+0.086}_{-0.088}$	$Y_{\text{P}}$	0.245445	$0.245446^{+0.000097}_{-0.00010}$	$\chi_{\text{simall}}^2$	396.08	$397.0 (\nu: 1.5)$
$b_{\text{DES}}^4$	2.058	$2.06^{+0.10}_{-0.10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246772	$0.246773^{+0.000098}_{-0.00010}$	$\chi_{\text{lowl}}^2$	22.50	$22.63 (\nu: 0.3)$
$b_{\text{DES}}^5$	2.162	$2.16^{+0.15}_{-0.15}$	$10^5 \text{D}/\text{H}$	2.5616	$2.561^{+0.048}_{-0.047}$	$\chi_{\text{plik}}^2$	2347.8	$2362.9 (\nu: 19.2)$
$m_{\text{DES}}^1$	0.0132	$0.011^{+0.044}_{-0.045}$	$\text{Age}/\text{Gyr}$	13.7702	$13.769^{+0.038}_{-0.038}$	$\chi_{6\text{DF}}^2$	0.0002	$0.021 (\nu: 0.0)$
$m_{\text{DES}}^2$	0.0141	$0.012^{+0.044}_{-0.043}$	$z_*$	1089.590	$1089.57^{+0.41}_{-0.41}$	$\chi_{\text{MGS}}^2$	1.75	$1.84 (\nu: 0.1)$
$m_{\text{DES}}^3$	-0.0024	$-0.003^{+0.038}_{-0.038}$	$r_*$	144.823	$144.84^{+0.42}_{-0.42}$	$\chi_{\text{DR12BAO}}^2$	3.46	$3.74 (\nu: 0.1)$
$m_{\text{DES}}^4$	0.0026	$0.003^{+0.040}_{-0.040}$	$100\theta_*$	1.04129	$1.04128^{+0.00056}_{-0.00056}$	$\chi_{\text{DES}}^2$	509.3	$518.2 (\nu: 11.7)$
$A_{\text{IA,DES}}$	0.444	$0.47^{+0.34}_{-0.31}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9080	$13.910^{+0.040}_{-0.041}$	$\chi_{\text{prior}}^2$	4.0	$25 (\nu: 22.7)$
$\alpha_{\text{IA,DES}}$	-2.44	< 2.95	$z_{\text{drag}}$	1060.09	$1060.11^{+0.59}_{-0.56}$	$\chi_{\text{BAO}}^2$	5.21	$5.60 (\nu: 0.1)$
$\Delta z_{\text{l,DES}}^1$	0.0029	$0.004^{+0.015}_{-0.014}$	$r_{\text{drag}}$	147.450	$147.47^{+0.44}_{-0.44}$	$\chi_{\text{CMB}}^2$	2766.4	$2782.5 (\nu: 18.8)$

Best-fit  $\chi_{\text{eff}}^2 = 3284.92$ ;  $\bar{\chi}_{\text{eff}}^2 = 3331.02$ ;  $R - 1 = 0.00830$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.46 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 commander\_dx12\_v3\_2\_29: 22.50 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.84 WL - DES\_1YR\_final: 509.26

## 2.27 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022522	$0.02251^{+0.00027}_{-0.00027}$	$\alpha_{\text{IA,DES}}$	-2.59	$< 2.86$	$100\theta_*$	1.04124	$1.04127^{+0.00058}_{-0.00057}$
$\Omega_c h^2$	0.11831	$0.1181^{+0.0019}_{-0.0020}$	$\Delta z_{\text{l,DES}}^1$	0.0029	$0.004^{+0.015}_{-0.015}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9019	$13.907^{+0.043}_{-0.044}$
$100\theta_{\text{MC}}$	1.04107	$1.04109^{+0.00058}_{-0.00058}$	$\Delta z_{\text{l,DES}}^2$	0.0005	$0.001^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.16	$1060.13^{+0.57}_{-0.58}$
$\tau$	0.0560	$0.057^{+0.016}_{-0.014}$	$\Delta z_{\text{l,DES}}^3$	0.0035	$0.003^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.370	$147.43^{+0.47}_{-0.48}$
$\ln(10^{10} A_{\text{s}})$	3.0441	$3.046^{+0.030}_{-0.028}$	$\Delta z_{\text{l,DES}}^4$	0.0008	$0.000^{+0.018}_{-0.018}$	$k_{\text{D}}$	0.14069	$0.14062^{+0.00057}_{-0.00057}$
$n_{\text{s}}$	0.9691	$0.9688^{+0.0076}_{-0.0077}$	$\Delta z_{\text{l,DES}}^5$	-0.0009	$-0.001^{+0.020}_{-0.019}$	$100\theta_{\text{D}}$	0.160626	$0.16065^{+0.00034}_{-0.00034}$
$y_{\text{cal}}$	1.00055	$1.0007^{+0.0048}_{-0.0049}$	$\Delta z_{\text{s,DES}}^1$	0.0007	$-0.003^{+0.028}_{-0.029}$	$z_{\text{eq}}$	3365.5	$3361^{+45}_{-44}$
$A_{217}^{\text{CIB}}$	47.3	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^2$	-0.0303	$-0.031^{+0.021}_{-0.021}$	$k_{\text{eq}}$	0.010272	$0.01026^{+0.00014}_{-0.00013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.40	—	$\Delta z_{\text{s,DES}}^3$	0.0030	$0.003^{+0.019}_{-0.019}$	$100\theta_{\text{eq}}$	0.8205	$0.8213^{+0.0086}_{-0.0084}$
$A_{143}^{\text{tSZ}}$	7.26	$5.5^{+3.7}_{-3.9}$	$\Delta z_{\text{s,DES}}^4$	-0.0310	$-0.031^{+0.036}_{-0.035}$	$100\theta_{\text{s,eq}}$	0.45301	$0.4534^{+0.0044}_{-0.0043}$
$A_{100}^{\text{PS}}$	250	$258^{+50}_{-50}$	$H_0$	68.13	$68.19^{+0.91}_{-0.87}$	$H(0.15)$	73.34	$73.39^{+0.79}_{-0.75}$
$A_{143}^{\text{PS}}$	46.2	$45^{+10}_{-20}$	$\Omega_{\Lambda}$	0.6952	$0.696^{+0.012}_{-0.012}$	$D_{\text{M}}(0.15)$	636.8	$636.3^{+7.3}_{-7.6}$
$A_{143 \times 217}^{\text{PS}}$	46.0	$42^{+20}_{-20}$	$\Omega_{\text{m}}$	0.3048	$0.304^{+0.012}_{-0.012}$	$H(0.38)$	83.34	$83.38^{+0.60}_{-0.56}$
$A_{217}^{\text{PS}}$	118.9	$115^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	0.14148	$0.1413^{+0.0019}_{-0.0018}$	$D_{\text{M}}(0.38)$	1520.4	$1519^{+15}_{-16}$
$A^{\text{kSZ}}$	0.00	$< 8.01$	$\Omega_{\text{m}} h^3$	0.09638	$0.09634^{+0.00058}_{-0.00057}$	$H(0.51)$	89.997	$90.02^{+0.49}_{-0.45}$
$A_{100}^{\text{dustTT}}$	8.85	$8.9^{+3.5}_{-3.6}$	$\sigma_8$	0.8062	$0.806^{+0.012}_{-0.011}$	$D_{\text{M}}(0.51)$	1970.6	$1969^{+17}_{-18}$
$A_{143}^{\text{dustTT}}$	11.06	$10.9^{+3.5}_{-3.5}$	$S_8$	0.8126	$0.811^{+0.020}_{-0.020}$	$H(0.61)$	95.568	$95.58^{+0.41}_{-0.38}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.6^{+6.5}_{-6.3}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4451	$0.444^{+0.011}_{-0.011}$	$D_{\text{M}}(0.61)$	2293.9	$2293^{+19}_{-20}$
$A_{217}^{\text{dustTT}}$	95.0	$94^{+10}_{-10}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5990	$0.599^{+0.011}_{-0.011}$	$H(2.33)$	235.61	$235.5^{+1.2}_{-1.2}$
$A_{100}^{\text{dustTE}}$	0.113	$0.115^{+0.076}_{-0.075}$	$\sigma_8/h^{0.5}$	0.9767	$0.976^{+0.015}_{-0.016}$	$D_{\text{M}}(2.33)$	5751.2	$5751^{+18}_{-19}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.057}_{-0.058}$	$r_{\text{drag}} h$	100.40	$100.5^{+1.5}_{-1.5}$	$f\sigma_8(0.15)$	0.4502	$0.450^{+0.010}_{-0.010}$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.48^{+0.17}_{-0.17}$	$\langle d^2 \rangle^{1/2}$	2.4188	$2.420^{+0.039}_{-0.038}$	$\sigma_8(0.15)$	0.7456	$0.746^{+0.011}_{-0.010}$
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.10}_{-0.11}$	$z_{\text{re}}$	7.79	$7.9^{+1.5}_{-1.5}$	$f\sigma_8(0.38)$	0.4699	$0.4695^{+0.0087}_{-0.0088}$
$A_{143 \times 217}^{\text{dustTE}}$	0.663	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}}$	2.099	$2.102^{+0.064}_{-0.059}$	$\sigma_8(0.38)$	0.6617	$0.6618^{+0.0098}_{-0.0091}$
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.53}_{-0.52}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8768	$1.876^{+0.021}_{-0.020}$	$f\sigma_8(0.51)$	0.4693	$0.4690^{+0.0079}_{-0.0078}$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$D_{40}$	1223.3	$1225^{+22}_{-22}$	$\sigma_8(0.51)$	0.6195	$0.6197^{+0.0092}_{-0.0085}$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$D_{220}$	5747	$5749^{+75}_{-75}$	$f\sigma_8(0.61)$	0.4649	$0.4647^{+0.0073}_{-0.0073}$
$b_{\text{DES}}^1$	1.508	$1.50^{+0.14}_{-0.15}$	$D_{810}$	2539.5	$2539^{+26}_{-26}$	$\sigma_8(0.61)$	0.5897	$0.5899^{+0.0087}_{-0.0082}$
$b_{\text{DES}}^2$	1.706	$1.70^{+0.10}_{-0.10}$	$D_{1420}$	818.9	$818.3^{+9.4}_{-9.4}$	$f\sigma_8(2.33)$	0.29758	$0.2977^{+0.0046}_{-0.0043}$
$b_{\text{DES}}^3$	1.694	$1.691^{+0.085}_{-0.088}$	$D_{2000}$	231.55	$231.3^{+3.0}_{-3.1}$	$\sigma_8(2.33)$	0.30709	$0.3073^{+0.0050}_{-0.0046}$
$b_{\text{DES}}^4$	2.055	$2.052^{+0.099}_{-0.10}$	$n_{\text{s},0.002}$	0.9691	$0.9688^{+0.0076}_{-0.0077}$	$\chi_{\text{lensing}}^2$	9.04	$9.44 (\nu: 0.5)$
$b_{\text{DES}}^5$	2.159	$2.15^{+0.15}_{-0.15}$	$Y_{\text{P}}$	0.245452	$0.24545^{+0.00010}_{-0.00010}$	$\chi_{\text{small}}^2$	396.23	$397.3 (\nu: 2.0)$
$m_{\text{DES}}^1$	0.0137	$0.012^{+0.044}_{-0.045}$	$Y_{\text{P}}^{\text{BBN}}$	0.246779	$0.24677^{+0.00010}_{-0.00011}$	$\chi_{\text{lowl}}^2$	22.70	$22.82 (\nu: 0.3)$
$m_{\text{DES}}^2$	0.0141	$0.012^{+0.044}_{-0.043}$	$10^5 \text{D}/\text{H}$	2.5580	$2.560^{+0.050}_{-0.049}$	$\chi_{\text{plik}}^2$	2347.2	$2361.9 (\nu: 18.1)$
$m_{\text{DES}}^3$	-0.0043	$-0.004^{+0.038}_{-0.038}$	$\text{Age}/\text{Gyr}$	13.7704	$13.770^{+0.041}_{-0.042}$	$\chi_{\text{DES}}^2$	509.5	$518.5 (\nu: 12.5)$
$m_{\text{DES}}^4$	0.0017	$0.001^{+0.039}_{-0.041}$	$z_*$	1089.584	$1089.58^{+0.44}_{-0.45}$	$\chi_{\text{prior}}^2$	4.2	$25 (\nu: 22.7)$
$A_{\text{IA,DES}}$	0.439	$0.47^{+0.33}_{-0.31}$	$r_*$	144.752	$144.81^{+0.46}_{-0.47}$	$\chi_{\text{CMB}}^2$	2775.1	$2791.5 (\nu: 20.0)$

Best-fit  $\chi_{\text{eff}}^2 = 3288.86$ ;  $\bar{\chi}_{\text{eff}}^2 = 3334.91$ ;  $R - 1 = 0.01020$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.04 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.23 commander\_dx12\_v3.2\_29: 22.70 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.17 WL - DES\_1YR\_final: 509.51

## 2.28 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022513	$0.02251^{+0.00026}_{-0.00026}$	$\Delta z_{\text{l,DES}}^2$	0.0005	$0.001^{+0.013}_{-0.013}$	$k_D$	0.14065	$0.14062^{+0.00056}_{-0.00055}$
$\Omega_c h^2$	0.11824	$0.1182^{+0.0016}_{-0.0017}$	$\Delta z_{\text{l,DES}}^3$	0.0034	$0.003^{+0.013}_{-0.013}$	$100\theta_D$	0.160643	$0.16066^{+0.00033}_{-0.00033}$
$100\theta_{\text{MC}}$	1.04108	$1.04109^{+0.00056}_{-0.00056}$	$\Delta z_{\text{l,DES}}^4$	0.0005	$0.000^{+0.018}_{-0.018}$	$z_{\text{eq}}$	3363.5	$3362^{+37}_{-38}$
$\tau$	0.0561	$0.057^{+0.015}_{-0.014}$	$\Delta z_{\text{l,DES}}^5$	-0.0005	$-0.001^{+0.019}_{-0.019}$	$k_{\text{eq}}$	0.010266	$0.01026^{+0.00011}_{-0.00011}$
$\ln(10^{10} A_s)$	3.0444	$3.045^{+0.029}_{-0.028}$	$\Delta z_{\text{s,DES}}^1$	0.00099	$-0.003^{+0.028}_{-0.029}$	$100\theta_{\text{eq}}$	0.8208	$0.8211^{+0.0072}_{-0.0070}$
$n_s$	0.9694	$0.9687^{+0.0069}_{-0.0072}$	$\Delta z_{\text{s,DES}}^2$	-0.0301	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{s,eq}}$	0.45320	$0.4534^{+0.0037}_{-0.0036}$
$y_{\text{cal}}$	1.00068	$1.0007^{+0.0048}_{-0.0049}$	$\Delta z_{\text{s,DES}}^3$	0.0029	$0.003^{+0.019}_{-0.019}$	$H(0.15)$	73.36	$73.37^{+0.67}_{-0.64}$
$A_{217}^{\text{CIB}}$	47.5	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^4$	-0.0310	$-0.031^{+0.036}_{-0.035}$	$D_{\text{M}}(0.15)$	636.6	$636.5^{+6.2}_{-6.4}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.39	—	$H_0$	68.15	$68.17^{+0.77}_{-0.73}$	$H(0.38)$	83.352	$83.36^{+0.50}_{-0.48}$
$A_{143}^{\text{tSZ}}$	7.28	$5.5^{+3.6}_{-3.9}$	$\Omega_{\Lambda}$	0.6955	$0.6958^{+0.0097}_{-0.0096}$	$D_{\text{M}}(0.38)$	1520.1	$1520^{+13}_{-13}$
$A_{100}^{\text{PS}}$	251	$258^{+60}_{-50}$	$\Omega_{\text{m}}$	0.3045	$0.3042^{+0.0096}_{-0.0097}$	$H(0.51)$	90.002	$90.01^{+0.41}_{-0.40}$
$A_{143}^{\text{PS}}$	46.4	$45^{+10}_{-20}$	$\Omega_{\text{m}} h^2$	0.14140	$0.1413^{+0.0015}_{-0.0016}$	$D_{\text{M}}(0.51)$	1970.2	$1970^{+15}_{-15}$
$A_{143 \times 217}^{\text{PS}}$	46.1	$42^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	0.09636	$0.09634^{+0.00058}_{-0.00057}$	$H(0.61)$	95.570	$95.57^{+0.35}_{-0.34}$
$A_{217}^{\text{PS}}$	118.9	$115^{+20}_{-20}$	$\sigma_8$	0.8062	$0.806^{+0.012}_{-0.011}$	$D_{\text{M}}(0.61)$	2293.5	$2293^{+16}_{-17}$
$A^{\text{kSZ}}$	0.00	< 8.02	$S_8$	0.8121	$0.812^{+0.018}_{-0.018}$	$H(2.33)$	235.56	$235.5^{+1.0}_{-1.0}$
$A_{100}^{\text{dustTT}}$	8.88	$8.9^{+3.5}_{-3.6}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4448	$0.4446^{+0.0099}_{-0.0098}$	$D_{\text{M}}(2.33)$	5751.2	$5751^{+17}_{-17}$
$A_{143}^{\text{dustTT}}$	11.06	$10.9^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5988	$0.5987^{+0.0099}_{-0.0099}$	$f\sigma_8(0.15)$	0.4500	$0.4498^{+0.0093}_{-0.0093}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.6^{+6.5}_{-6.3}$	$\sigma_8/h^{0.5}$	0.9766	$0.976^{+0.015}_{-0.015}$	$\sigma_8(0.15)$	0.7456	$0.746^{+0.011}_{-0.010}$
$A_{217}^{\text{dustTT}}$	94.9	$94^{+10}_{-10}$	$r_{\text{drag}} h$	100.45	$100.5^{+1.3}_{-1.2}$	$f\sigma_8(0.38)$	0.4698	$0.4696^{+0.0080}_{-0.0081}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.076}_{-0.076}$	$\langle d^2 \rangle^{1/2}$	2.4181	$2.420^{+0.038}_{-0.036}$	$\sigma_8(0.38)$	0.6617	$0.6618^{+0.0098}_{-0.0090}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.057}$	$z_{\text{re}}$	7.80	$7.9^{+1.4}_{-1.4}$	$f\sigma_8(0.51)$	0.4692	$0.4691^{+0.0074}_{-0.0074}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.17}_{-0.17}$	$10^9 A_s$	2.100	$2.102^{+0.062}_{-0.057}$	$\sigma_8(0.51)$	0.6196	$0.6197^{+0.0091}_{-0.0085}$
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.10}_{-0.11}$	$10^9 A_s e^{-2\tau}$	1.8768	$1.876^{+0.021}_{-0.020}$	$f\sigma_8(0.61)$	0.4648	$0.4647^{+0.0071}_{-0.0070}$
$A_{143 \times 217}^{\text{dustTE}}$	0.660	$0.66^{+0.16}_{-0.16}$	$D_{40}$	1222.9	$1225^{+22}_{-21}$	$\sigma_8(0.61)$	0.5898	$0.5898^{+0.0087}_{-0.0081}$
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.53}_{-0.52}$	$D_{220}$	5746	$5749^{+75}_{-75}$	$f\sigma_8(2.33)$	0.29764	$0.2977^{+0.0045}_{-0.0042}$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	2539.8	$2539^{+26}_{-26}$	$\sigma_8(2.33)$	0.30717	$0.3072^{+0.0048}_{-0.0045}$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	819.0	$818.3^{+9.4}_{-9.3}$	$\chi^2_{\text{lensing}}$	9.08	$9.40 (\nu: 0.4)$
$b_{\text{DES}}^1$	1.507	$1.50^{+0.14}_{-0.15}$	$D_{2000}$	231.57	$231.3^{+3.0}_{-3.1}$	$\chi^2_{\text{simall}}$	396.28	$397.3 (\nu: 1.9)$
$b_{\text{DES}}^2$	1.704	$1.70^{+0.10}_{-0.10}$	$n_{\text{s},0.002}$	0.9694	$0.9687^{+0.0069}_{-0.0072}$	$\chi^2_{\text{lowl}}$	22.65	$22.83 (\nu: 0.3)$
$b_{\text{DES}}^3$	1.695	$1.691^{+0.084}_{-0.088}$	$Y_{\text{P}}$	0.245449	$0.245446^{+0.000097}_{-0.00010}$	$\chi^2_{\text{plik}}$	2347.3	$2361.7 (\nu: 17.5)$
$b_{\text{DES}}^4$	2.055	$2.05^{+0.10}_{-0.10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246776	$0.246773^{+0.000097}_{-0.00010}$	$\chi^2_{6\text{DF}}$	0.0001	$0.018 (\nu: 0.0)$
$b_{\text{DES}}^5$	2.158	$2.15^{+0.15}_{-0.15}$	$10^5 \text{D/H}$	2.5596	$2.561^{+0.048}_{-0.046}$	$\chi^2_{\text{MGS}}$	1.68	$1.76 (\nu: 0.1)$
$m_{\text{DES}}^1$	0.0137	$0.012^{+0.044}_{-0.045}$	Age/Gyr	13.7707	$13.771^{+0.038}_{-0.037}$	$\chi^2_{\text{DR12BAO}}$	3.52	$3.78 (\nu: 0.1)$
$m_{\text{DES}}^2$	0.0137	$0.012^{+0.044}_{-0.043}$	$z_*$	1089.589	$1089.59^{+0.40}_{-0.41}$	$\chi^2_{\text{DES}}$	509.4	$518.5 (\nu: 12.2)$
$m_{\text{DES}}^3$	-0.0044	$-0.004^{+0.038}_{-0.037}$	$r_*$	144.778	$144.80^{+0.40}_{-0.40}$	$\chi^2_{\text{prior}}$	4.2	$25 (\nu: 22.8)$
$m_{\text{DES}}^4$	0.0015	$0.001^{+0.039}_{-0.041}$	$100\theta_*$	1.04125	$1.04126^{+0.00055}_{-0.00056}$	$\chi^2_{\text{CMB}}$	2775.3	$2791.2 (\nu: 18.9)$
$A_{\text{IA,DES}}$	0.437	$0.47^{+0.33}_{-0.30}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9042	$13.906^{+0.039}_{-0.039}$	$\chi^2_{\text{BAO}}$	5.20	$5.55 (\nu: 0.1)$
$\alpha_{\text{IA,DES}}$	-2.62	< 2.85	$z_{\text{drag}}$	1060.12	$1060.12^{+0.57}_{-0.57}$			
$\Delta z_{\text{l,DES}}^1$	0.0031	$0.004^{+0.015}_{-0.015}$	$r_{\text{drag}}$	147.401	$147.42^{+0.42}_{-0.43}$			

Best-fit  $\chi^2_{\text{eff}} = 3294.09$ ;  $\bar{\chi}^2_{\text{eff}} = 3340.17$ ;  $R - 1 = 0.01031$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.52 CMB - smicadx12.Dec5.ftl.mv2.ndclpp.p.teb.consext8: 9.08 simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.28 commander.dx12.v3.2.29: 22.65 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.27 WL - DES.1YR.final: 509.38

## 2.29 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02252^{+0.00028}_{-0.00027}$	$\Delta z_{\text{l,DES}}^1$	$0.004^{+0.015}_{-0.014}$	$z_{\text{drag}}$	$1060.13^{+0.60}_{-0.58}$
$\Omega_c h^2$	$0.1178^{+0.0020}_{-0.0021}$	$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.50^{+0.51}_{-0.49}$
$100\theta_{\text{MC}}$	$1.04112^{+0.00059}_{-0.00059}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14055^{+0.00058}_{-0.00059}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\Delta z_{\text{l,DES}}^4$	$0.001^{+0.018}_{-0.018}$	$100\theta_{\text{D}}$	$0.16065^{+0.00033}_{-0.00034}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.028}_{-0.026}$	$\Delta z_{\text{l,DES}}^5$	$-0.001^{+0.020}_{-0.019}$	$z_{\text{eq}}$	$3354^{+47}_{-48}$
$n_{\text{s}}$	$0.9697^{+0.0076}_{-0.0078}$	$\Delta z_{\text{s,DES}}^1$	$-0.003^{+0.028}_{-0.028}$	$k_{\text{eq}}$	$0.01024^{+0.00014}_{-0.00015}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0049}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{eq}}$	$0.8226^{+0.0093}_{-0.0088}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.019}_{-0.019}$	$100\theta_{\text{s,eq}}$	$0.4541^{+0.0047}_{-0.0045}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Delta z_{\text{s,DES}}^4$	$-0.030^{+0.036}_{-0.036}$	$H(0.15)$	$73.50^{+0.83}_{-0.80}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$H_0$	$68.32^{+0.97}_{-0.93}$	$D_{\text{M}}(0.15)$	$635.3^{+7.9}_{-8.0}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$\Omega_{\Lambda}$	$0.698^{+0.012}_{-0.012}$	$H(0.38)$	$83.45^{+0.62}_{-0.59}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$\Omega_{\text{m}}$	$0.302^{+0.012}_{-0.012}$	$D_{\text{M}}(0.38)$	$1517^{+16}_{-16}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	$0.1410^{+0.0019}_{-0.0020}$	$H(0.51)$	$90.08^{+0.50}_{-0.48}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	$0.09632^{+0.00058}_{-0.00057}$	$D_{\text{M}}(0.51)$	$1967^{+19}_{-19}$
$A^{\text{kSZ}}$	$< 8.11$	$\sigma_8$	$0.804^{+0.012}_{-0.012}$	$H(0.61)$	$95.63^{+0.41}_{-0.40}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$S_8$	$0.807^{+0.024}_{-0.024}$	$D_{\text{M}}(0.61)$	$2290^{+20}_{-21}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.442^{+0.013}_{-0.013}$	$H(2.33)$	$235.3^{+1.2}_{-1.3}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.5}_{-6.3}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.596^{+0.013}_{-0.013}$	$D_{\text{M}}(2.33)$	$5749^{+19}_{-19}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\sigma_8/h^{0.5}$	$0.973^{+0.018}_{-0.018}$	$f\sigma_8(0.15)$	$0.447^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	$r_{\text{drag}} h$	$100.8^{+1.7}_{-1.6}$	$\sigma_8(0.15)$	$0.744^{+0.011}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.057}$	$\langle d^2 \rangle^{1/2}$	$2.410^{+0.045}_{-0.044}$	$f\sigma_8(0.38)$	$0.467^{+0.010}_{-0.010}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$z_{\text{re}}$	$< 8.94$	$\sigma_8(0.38)$	$0.6603^{+0.0095}_{-0.0090}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$10^9 A_{\text{s}}$	$2.095^{+0.059}_{-0.055}$	$f\sigma_8(0.51)$	$0.4671^{+0.0093}_{-0.0091}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873^{+0.021}_{-0.022}$	$\sigma_8(0.51)$	$0.6184^{+0.0089}_{-0.0084}$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.52}_{-0.52}$	$D_{40}$	$1221^{+23}_{-23}$	$f\sigma_8(0.61)$	$0.4629^{+0.0086}_{-0.0083}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{220}$	$5744^{+75}_{-76}$	$\sigma_8(0.61)$	$0.5886^{+0.0084}_{-0.0079}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{810}$	$2536^{+26}_{-27}$	$f\sigma_8(2.33)$	$0.2972^{+0.0043}_{-0.0040}$
$b_{\text{DES}}^1$	$1.51^{+0.14}_{-0.15}$	$D_{1420}$	$817.9^{+9.5}_{-9.5}$	$\sigma_8(2.33)$	$0.3068^{+0.0045}_{-0.0042}$
$b_{\text{DES}}^2$	$1.71^{+0.10}_{-0.10}$	$D_{2000}$	$231.2^{+3.1}_{-3.2}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$b_{\text{DES}}^3$	$1.696^{+0.084}_{-0.087}$	$n_{\text{s},0.002}$	$0.9697^{+0.0076}_{-0.0078}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^4$	$2.057^{+0.099}_{-0.10}$	$Y_{\text{P}}$	$0.24545^{+0.00010}_{-0.00011}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.5}$
$b_{\text{DES}}^5$	$2.16^{+0.15}_{-0.15}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00011}_{-0.00011}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.6)$
$m_{\text{DES}}^1$	$0.012^{+0.044}_{-0.045}$	$10^5 \text{D/H}$	$2.558^{+0.050}_{-0.050}$	$\chi_{\text{lowl}}^2$	$22.59 (\nu: 0.3)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.043}$	Age/Gyr	$13.767^{+0.042}_{-0.042}$	$\chi_{\text{plik}}^2$	$2363.2 (\nu: 20.6)$
$m_{\text{DES}}^3$	$-0.003^{+0.039}_{-0.039}$	$z_*$	$1089.54^{+0.45}_{-0.45}$	$\chi_{\text{DES}}^2$	$518.0 (\nu: 11.8)$
$m_{\text{DES}}^4$	$0.003^{+0.040}_{-0.041}$	$r_*$	$144.88^{+0.49}_{-0.48}$	$\chi_{\text{prior}}^2$	$25 (\nu: 23.0)$
$A_{\text{IA,DES}}$	$0.47^{+0.34}_{-0.32}$	$100\theta_*$	$1.04130^{+0.00058}_{-0.00058}$	$\chi_{\text{CMB}}^2$	$2782.8 (\nu: 19.7)$
$\alpha_{\text{IA,DES}}$	$< 2.97$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.913^{+0.047}_{-0.045}$		

$$\bar{\chi}_{\text{eff}}^2 = 3325.44; R - 1 = 0.00547$$

### 2.30 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02251^{+0.00026}_{-0.00026}$	$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14057^{+0.00056}_{-0.00056}$
$\Omega_c h^2$	$0.1180^{+0.0017}_{-0.0017}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16066^{+0.00033}_{-0.00033}$
$100\theta_{\text{MC}}$	$1.04111^{+0.00057}_{-0.00057}$	$\Delta z_{\text{l,DES}}^4$	$0.000^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3357^{+38}_{-39}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\Delta z_{\text{l,DES}}^5$	$0.000^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01025^{+0.00012}_{-0.00012}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.028}_{-0.026}$	$\Delta z_{\text{s,DES}}^1$	$-0.003^{+0.028}_{-0.028}$	$100\theta_{\text{eq}}$	$0.8220^{+0.0075}_{-0.0072}$
$n_{\text{s}}$	$0.9694^{+0.0071}_{-0.0072}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{s,eq}}$	$0.4538^{+0.0038}_{-0.0037}$
$y_{\text{cal}}$	$1.0004^{+0.0048}_{-0.0049}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.019}_{-0.019}$	$H(0.15)$	$73.44^{+0.68}_{-0.66}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^4$	$-0.030^{+0.036}_{-0.036}$	$D_{\text{M}}(0.15)$	$635.8^{+6.4}_{-6.5}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$H_0$	$68.25^{+0.78}_{-0.76}$	$H(0.38)$	$83.41^{+0.52}_{-0.50}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\Omega_{\Lambda}$	$0.697^{+0.010}_{-0.0099}$	$D_{\text{M}}(0.38)$	$1518^{+13}_{-13}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$\Omega_{\text{m}}$	$0.3030^{+0.0099}_{-0.010}$	$H(0.51)$	$90.04^{+0.43}_{-0.41}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$\Omega_{\text{m}} h^2$	$0.1411^{+0.0016}_{-0.0016}$	$D_{\text{M}}(0.51)$	$1968^{+15}_{-16}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	$0.09632^{+0.00058}_{-0.00057}$	$H(0.61)$	$95.60^{+0.36}_{-0.35}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$\sigma_8$	$0.804^{+0.012}_{-0.011}$	$D_{\text{M}}(0.61)$	$2291^{+17}_{-17}$
$A^{\text{kSZ}}$	$< 8.16$	$S_8$	$0.808^{+0.020}_{-0.020}$	$H(2.33)$	$235.4^{+1.0}_{-1.1}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.443^{+0.011}_{-0.011}$	$D_{\text{M}}(2.33)$	$5750^{+17}_{-17}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.597^{+0.011}_{-0.011}$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.010}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.5}_{-6.3}$	$\sigma_8/h^{0.5}$	$0.973^{+0.017}_{-0.016}$	$\sigma_8(0.15)$	$0.744^{+0.011}_{-0.010}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$r_{\text{drag}} h$	$100.7^{+1.3}_{-1.3}$	$f\sigma_8(0.38)$	$0.4680^{+0.0092}_{-0.0090}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.076}_{-0.075}$	$\langle d^2 \rangle^{1/2}$	$2.412^{+0.043}_{-0.039}$	$\sigma_8(0.38)$	$0.6604^{+0.0094}_{-0.0089}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$z_{\text{re}}$	$< 8.90$	$f\sigma_8(0.51)$	$0.4676^{+0.0085}_{-0.0081}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$10^9 A_{\text{s}}$	$2.094^{+0.058}_{-0.054}$	$\sigma_8(0.51)$	$0.6184^{+0.0088}_{-0.0083}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.021}_{-0.021}$	$f\sigma_8(0.61)$	$0.4633^{+0.0080}_{-0.0075}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_{40}$	$1222^{+22}_{-22}$	$\sigma_8(0.61)$	$0.5887^{+0.0083}_{-0.0078}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.53}$	$D_{220}$	$5743^{+75}_{-77}$	$f\sigma_8(2.33)$	$0.2971^{+0.0042}_{-0.0040}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	$2537^{+27}_{-26}$	$\sigma_8(2.33)$	$0.3067^{+0.0044}_{-0.0041}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	$817.8^{+9.4}_{-9.4}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$b_{\text{DES}}^1$	$1.51^{+0.14}_{-0.15}$	$D_{2000}$	$231.1^{+3.0}_{-3.1}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^2$	$1.71^{+0.10}_{-0.10}$	$n_{\text{s},0.002}$	$0.9694^{+0.0071}_{-0.0072}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.4}$
$b_{\text{DES}}^3$	$1.695^{+0.083}_{-0.088}$	$Y_{\text{P}}$	$0.245447^{+0.000098}_{-0.00010}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$b_{\text{DES}}^4$	$2.06^{+0.10}_{-0.10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246774^{+0.000099}_{-0.00010}$	$\chi_{\text{lowl}}^2$	$22.64 (\nu: 0.3)$
$b_{\text{DES}}^5$	$2.16^{+0.15}_{-0.15}$	$10^5 \text{D/H}$	$2.560^{+0.048}_{-0.047}$	$\chi_{\text{plik}}^2$	$2362.7 (\nu: 19.1)$
$m_{\text{DES}}^1$	$0.012^{+0.044}_{-0.045}$	$\text{Age/Gyr}$	$13.769^{+0.038}_{-0.038}$	$\chi_{6\text{DF}}^2$	$0.021 (\nu: 0.0)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.043}$	$z_*$	$1089.57^{+0.41}_{-0.41}$	$\chi_{\text{MGS}}^2$	$1.85 (\nu: 0.1)$
$m_{\text{DES}}^3$	$-0.003^{+0.038}_{-0.038}$	$r_*$	$144.85^{+0.42}_{-0.42}$	$\chi_{\text{DR12BAO}}^2$	$3.73 (\nu: 0.1)$
$m_{\text{DES}}^4$	$0.002^{+0.040}_{-0.040}$	$100\theta_*$	$1.04128^{+0.00057}_{-0.00056}$	$\chi_{\text{DES}}^2$	$518.2 (\nu: 11.8)$
$A_{\text{IA,DES}}$	$0.47^{+0.34}_{-0.31}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911^{+0.040}_{-0.041}$	$\chi_{\text{prior}}^2$	$25 (\nu: 22.8)$
$\alpha_{\text{IA,DES}}$	$< 2.94$	$z_{\text{drag}}$	$1060.11^{+0.58}_{-0.56}$	$\chi_{\text{BAO}}^2$	$5.60 (\nu: 0.1)$
$\Delta z_{\text{l,DES}}^1$	$0.004^{+0.015}_{-0.015}$	$r_{\text{drag}}$	$147.47^{+0.44}_{-0.44}$	$\chi_{\text{CMB}}^2$	$2782.2 (\nu: 18.4)$

$$\bar{\chi}_{\text{eff}}^2 = 3330.75; R - 1 = 0.00777$$

### 2.31 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02251^{+0.00027}_{-0.00027}$	$\Delta z_{\text{l,DES}}^1$	$0.004^{+0.015}_{-0.015}$	$z_{\text{drag}}$	$1060.13^{+0.56}_{-0.58}$
$\Omega_c h^2$	$0.1181^{+0.0019}_{-0.0019}$	$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.43^{+0.47}_{-0.47}$
$100\theta_{\text{MC}}$	$1.04110^{+0.00058}_{-0.00058}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14061^{+0.00057}_{-0.00057}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\Delta z_{\text{l,DES}}^4$	$0.000^{+0.018}_{-0.018}$	$100\theta_{\text{D}}$	$0.16065^{+0.00034}_{-0.00034}$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.027}_{-0.026}$	$\Delta z_{\text{l,DES}}^5$	$-0.001^{+0.020}_{-0.019}$	$z_{\text{eq}}$	$3360^{+44}_{-44}$
$n_{\text{s}}$	$0.9689^{+0.0075}_{-0.0075}$	$\Delta z_{\text{s,DES}}^1$	$-0.003^{+0.028}_{-0.029}$	$k_{\text{eq}}$	$0.01026^{+0.00013}_{-0.00013}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{eq}}$	$0.8214^{+0.0085}_{-0.0081}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^3$	$0.003^{+0.019}_{-0.019}$	$100\theta_{\text{s,eq}}$	$0.4535^{+0.0043}_{-0.0042}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Delta z_{\text{s,DES}}^4$	$-0.031^{+0.036}_{-0.035}$	$H(0.15)$	$73.40^{+0.79}_{-0.74}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.6}_{-3.9}$	$H_0$	$68.20^{+0.91}_{-0.86}$	$D_{\text{M}}(0.15)$	$636.2^{+7.2}_{-7.6}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$\Omega_{\Lambda}$	$0.696^{+0.011}_{-0.011}$	$H(0.38)$	$83.38^{+0.59}_{-0.55}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$\Omega_{\text{m}}$	$0.304^{+0.011}_{-0.011}$	$D_{\text{M}}(0.38)$	$1519^{+15}_{-15}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	$0.1413^{+0.0018}_{-0.0018}$	$H(0.51)$	$90.03^{+0.48}_{-0.45}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	$0.09634^{+0.00058}_{-0.00057}$	$D_{\text{M}}(0.51)$	$1969^{+17}_{-18}$
$A^{\text{kSZ}}$	$< 8.01$	$\sigma_8$	$0.806^{+0.011}_{-0.010}$	$H(0.61)$	$95.59^{+0.41}_{-0.38}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$S_8$	$0.811^{+0.020}_{-0.020}$	$D_{\text{M}}(0.61)$	$2292^{+18}_{-20}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.444^{+0.011}_{-0.011}$	$H(2.33)$	$235.5^{+1.2}_{-1.2}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.3}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.599^{+0.011}_{-0.010}$	$D_{\text{M}}(2.33)$	$5751^{+18}_{-19}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\sigma_8/h^{0.5}$	$0.977^{+0.015}_{-0.015}$	$f\sigma_8(0.15)$	$0.450^{+0.010}_{-0.010}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.076}_{-0.076}$	$r_{\text{drag}} h$	$100.6^{+1.5}_{-1.5}$	$\sigma_8(0.15)$	$0.746^{+0.010}_{-0.0096}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.057}_{-0.057}$	$\langle d^2 \rangle^{1/2}$	$2.420^{+0.038}_{-0.037}$	$f\sigma_8(0.38)$	$0.4696^{+0.0086}_{-0.0086}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_{\text{re}}$	$7.9^{+1.3}_{-1.3}$	$\sigma_8(0.38)$	$0.6621^{+0.0089}_{-0.0084}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$10^9 A_{\text{s}}$	$2.105^{+0.058}_{-0.054}$	$f\sigma_8(0.51)$	$0.4691^{+0.0078}_{-0.0077}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.876^{+0.021}_{-0.020}$	$\sigma_8(0.51)$	$0.6200^{+0.0084}_{-0.0079}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.52}$	$D_{40}$	$1224^{+22}_{-22}$	$f\sigma_8(0.61)$	$0.4648^{+0.0072}_{-0.0071}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{220}$	$5749^{+75}_{-75}$	$\sigma_8(0.61)$	$0.5902^{+0.0080}_{-0.0076}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{810}$	$2539^{+26}_{-26}$	$f\sigma_8(2.33)$	$0.2979^{+0.0042}_{-0.0039}$
$b_{\text{DES}}^1$	$1.50^{+0.14}_{-0.15}$	$D_{1420}$	$818.3^{+9.4}_{-9.4}$	$\sigma_8(2.33)$	$0.3075^{+0.0045}_{-0.0042}$
$b_{\text{DES}}^2$	$1.70^{+0.10}_{-0.10}$	$D_{2000}$	$231.3^{+3.1}_{-3.1}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$b_{\text{DES}}^3$	$1.691^{+0.084}_{-0.088}$	$n_{\text{s},0.002}$	$0.9689^{+0.0075}_{-0.0075}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^4$	$2.051^{+0.098}_{-0.10}$	$Y_{\text{P}}$	$0.24545^{+0.00010}_{-0.00010}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.4}$
$b_{\text{DES}}^5$	$2.15^{+0.15}_{-0.15}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00010}_{-0.00011}$	$\chi_{\text{lensing}}^2$	$9.39 (\nu: 0.4)$
$m_{\text{DES}}^1$	$0.012^{+0.044}_{-0.045}$	$10^5 \text{D/H}$	$2.560^{+0.050}_{-0.048}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.1)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.043}$	Age/Gyr	$13.770^{+0.041}_{-0.042}$	$\chi_{\text{lowl}}^2$	$22.82 (\nu: 0.3)$
$m_{\text{DES}}^3$	$-0.004^{+0.038}_{-0.038}$	$z_*$	$1089.58^{+0.43}_{-0.44}$	$\chi_{\text{plik}}^2$	$2361.8 (\nu: 18.1)$
$m_{\text{DES}}^4$	$0.002^{+0.040}_{-0.041}$	$r_*$	$144.81^{+0.45}_{-0.45}$	$\chi_{\text{DES}}^2$	$518.4 (\nu: 12.5)$
$A_{\text{IA,DES}}$	$0.47^{+0.33}_{-0.31}$	$100\theta_*$	$1.04127^{+0.00058}_{-0.00057}$	$\chi_{\text{prior}}^2$	$25 (\nu: 22.8)$
$\alpha_{\text{IA,DES}}$	$< 2.86$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.907^{+0.043}_{-0.043}$	$\chi_{\text{CMB}}^2$	$2791.4 (\nu: 19.9)$

$$\bar{\chi}_{\text{eff}}^2 = 3334.75; R - 1 = 0.01067$$



## 2.32 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02251^{+0.00026}_{-0.00026}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3361^{+36}_{-37}$
$\Omega_c h^2$	$0.1182^{+0.0016}_{-0.0016}$	$\Delta z_{\text{l,DES}}^4$	$0.000^{+0.018}_{-0.018}$	$k_{\text{eq}}$	$0.01026^{+0.00011}_{-0.00011}$
$100\theta_{\text{MC}}$	$1.04109^{+0.00056}_{-0.00056}$	$\Delta z_{\text{l,DES}}^5$	$-0.001^{+0.019}_{-0.019}$	$100\theta_{\text{eq}}$	$0.8212^{+0.0072}_{-0.0069}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\Delta z_{\text{s,DES}}^1$	$-0.003^{+0.028}_{-0.029}$	$100\theta_{\text{s,eq}}$	$0.4534^{+0.0037}_{-0.0035}$
$\ln(10^{10} A_s)$	$3.046^{+0.027}_{-0.025}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$H(0.15)$	$73.38^{+0.66}_{-0.63}$
$n_s$	$0.9688^{+0.0069}_{-0.0071}$	$\Delta z_{\text{s,DES}}^3$	$0.003^{+0.019}_{-0.019}$	$D_{\text{M}}(0.15)$	$636.4^{+6.2}_{-6.4}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$\Delta z_{\text{s,DES}}^4$	$-0.031^{+0.036}_{-0.035}$	$H(0.38)$	$83.37^{+0.50}_{-0.48}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$H_0$	$68.18^{+0.76}_{-0.73}$	$D_{\text{M}}(0.38)$	$1520^{+12}_{-13}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Omega_{\Lambda}$	$0.6959^{+0.0096}_{-0.0094}$	$H(0.51)$	$90.01^{+0.41}_{-0.40}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.6}_{-3.9}$	$\Omega_{\text{m}}$	$0.3041^{+0.0094}_{-0.0096}$	$D_{\text{M}}(0.51)$	$1970^{+15}_{-15}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$\Omega_{\text{m}} h^2$	$0.1413^{+0.0015}_{-0.0016}$	$H(0.61)$	$95.58^{+0.35}_{-0.34}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$\Omega_{\text{m}} h^3$	$0.09634^{+0.00058}_{-0.00057}$	$D_{\text{M}}(0.61)$	$2293^{+16}_{-17}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\sigma_8$	$0.806^{+0.011}_{-0.010}$	$H(2.33)$	$235.5^{+1.0}_{-1.0}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$S_8$	$0.812^{+0.018}_{-0.018}$	$D_{\text{M}}(2.33)$	$5751^{+17}_{-17}$
$A^{\text{kSZ}}$	$< 8.01$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4447^{+0.0098}_{-0.0098}$	$f\sigma_8(0.15)$	$0.4498^{+0.0092}_{-0.0092}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5989^{+0.0099}_{-0.0097}$	$\sigma_8(0.15)$	$0.7460^{+0.0099}_{-0.0095}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$\sigma_8/h^{0.5}$	$0.977^{+0.015}_{-0.014}$	$f\sigma_8(0.38)$	$0.4698^{+0.0080}_{-0.0079}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.3}$	$r_{\text{drag}} h$	$100.5^{+1.3}_{-1.2}$	$\sigma_8(0.38)$	$0.6621^{+0.0088}_{-0.0084}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.421^{+0.037}_{-0.035}$	$f\sigma_8(0.51)$	$0.4692^{+0.0074}_{-0.0072}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.076}_{-0.076}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$\sigma_8(0.51)$	$0.6199^{+0.0083}_{-0.0079}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.057}_{-0.057}$	$10^9 A_s$	$2.104^{+0.056}_{-0.053}$	$f\sigma_8(0.61)$	$0.4649^{+0.0070}_{-0.0067}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.020}_{-0.020}$	$\sigma_8(0.61)$	$0.5901^{+0.0080}_{-0.0075}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$D_{40}$	$1225^{+21}_{-21}$	$f\sigma_8(2.33)$	$0.2978^{+0.0041}_{-0.0039}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_{220}$	$5749^{+75}_{-75}$	$\sigma_8(2.33)$	$0.3074^{+0.0044}_{-0.0041}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.52}$	$D_{810}$	$2539^{+26}_{-26}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{1420}$	$818.2^{+9.4}_{-9.3}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{2000}$	$231.3^{+3.0}_{-3.1}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.4}$
$b_{\text{DES}}^1$	$1.50^{+0.14}_{-0.15}$	$n_{\text{s},0.002}$	$0.9688^{+0.0069}_{-0.0071}$	$\chi_{\text{lensing}}^2$	$9.35 (\nu: 0.4)$
$b_{\text{DES}}^2$	$1.70^{+0.10}_{-0.10}$	$Y_{\text{P}}$	$0.245447^{+0.000096}_{-0.00010}$	$\chi_{\text{small}}^2$	$397.3 (\nu: 1.9)$
$b_{\text{DES}}^3$	$1.691^{+0.084}_{-0.088}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246773^{+0.000097}_{-0.00010}$	$\chi_{\text{lowl}}^2$	$22.83 (\nu: 0.3)$
$b_{\text{DES}}^4$	$2.051^{+0.099}_{-0.10}$	$10^5 \text{D/H}$	$2.561^{+0.048}_{-0.046}$	$\chi_{\text{plik}}^2$	$2361.6 (\nu: 17.5)$
$b_{\text{DES}}^5$	$2.15^{+0.15}_{-0.15}$	$\text{Age/Gyr}$	$13.770^{+0.038}_{-0.037}$	$\chi_{6\text{DF}}^2$	$0.018 (\nu: 0.0)$
$m_{\text{DES}}^1$	$0.012^{+0.044}_{-0.045}$	$z_*$	$1089.59^{+0.40}_{-0.41}$	$\chi_{\text{MGS}}^2$	$1.77 (\nu: 0.1)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.043}$	$r_*$	$144.80^{+0.40}_{-0.40}$	$\chi_{\text{DR12BAO}}^2$	$3.77 (\nu: 0.1)$
$m_{\text{DES}}^3$	$-0.004^{+0.038}_{-0.037}$	$100\theta_*$	$1.04126^{+0.00055}_{-0.00056}$	$\chi_{\text{DES}}^2$	$518.5 (\nu: 12.2)$
$m_{\text{DES}}^4$	$0.001^{+0.039}_{-0.041}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.906^{+0.038}_{-0.039}$	$\chi_{\text{prior}}^2$	$25 (\nu: 22.8)$
$A_{\text{IA,DES}}$	$0.47^{+0.33}_{-0.31}$	$z_{\text{drag}}$	$1060.12^{+0.57}_{-0.57}$	$\chi_{\text{CMB}}^2$	$2791.1 (\nu: 18.6)$
$\alpha_{\text{IA,DES}}$	$< 2.85$	$r_{\text{drag}}$	$147.43^{+0.42}_{-0.43}$	$\chi_{\text{BAO}}^2$	$5.55 (\nu: 0.1)$
$\Delta z_{\text{l,DES}}^1$	$0.004^{+0.015}_{-0.015}$	$k_{\text{D}}$	$0.14062^{+0.00056}_{-0.00055}$		
$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16065^{+0.00033}_{-0.00033}$		

$$\bar{\chi}_{\text{eff}}^2 = 3340.03; R - 1 = 0.01092$$

### 2.33 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022441	$0.02244^{+0.00027}_{-0.00027}$	$\Delta z_{s,DES}^3$	0.0048	$0.004^{+0.020}_{-0.020}$	$z_{eq}$	3384.2	$3380^{+49}_{-50}$
$\Omega_c h^2$	0.11918	$0.1190^{+0.0022}_{-0.0022}$	$\Delta z_{s,DES}^4$	-0.0218	$-0.022^{+0.039}_{-0.039}$	$k_{eq}$	0.010329	$0.01032^{+0.00015}_{-0.00015}$
$100\theta_{MC}$	1.04099	$1.04103^{+0.00059}_{-0.00058}$	$H_0$	67.72	$67.8^{+1.0}_{-0.96}$	$100\theta_{eq}$	0.8168	$0.8176^{+0.0096}_{-0.0091}$
$\tau$	0.0533	$0.053^{+0.016}_{-0.015}$	$\Omega_\Lambda$	0.6898	$0.691^{+0.013}_{-0.013}$	$100\theta_{s,eq}$	0.45114	$0.4516^{+0.0049}_{-0.0047}$
$\ln(10^{10} A_s)$	3.0403	$3.040^{+0.032}_{-0.030}$	$\Omega_m$	0.3102	$0.309^{+0.013}_{-0.013}$	$H(0.15)$	72.99	$73.06^{+0.87}_{-0.82}$
$n_s$	0.9678	$0.9673^{+0.0078}_{-0.0077}$	$\Omega_m h^2$	0.14226	$0.1421^{+0.0021}_{-0.0021}$	$D_M(0.15)$	640.2	$639.6^{+8.2}_{-8.5}$
$y_{cal}$	1.00045	$1.0005^{+0.0049}_{-0.0048}$	$\Omega_m h^3$	0.09635	$0.09633^{+0.00057}_{-0.00058}$	$H(0.38)$	83.09	$83.13^{+0.64}_{-0.60}$
$A_{217}^{CIB}$	47.0	$47^{+10}_{-10}$	$\sigma_8$	0.8075	$0.807^{+0.013}_{-0.013}$	$D_M(0.38)$	1527.2	$1526^{+16}_{-17}$
$\xi^{tSZ \times CIB}$	0.44	—	$S_8$	0.8211	$0.819^{+0.025}_{-0.025}$	$H(0.51)$	89.799	$89.83^{+0.51}_{-0.48}$
$A_{143}^{tSZ}$	7.23	$5.5^{+3.8}_{-3.8}$	$\sigma_8 \Omega_m^{0.5}$	0.4497	$0.449^{+0.013}_{-0.014}$	$D_M(0.51)$	1978.6	$1977^{+19}_{-20}$
$A_{100}^{PS}$	250	$259^{+60}_{-60}$	$\sigma_8 \Omega_m^{0.25}$	0.6026	$0.601^{+0.013}_{-0.013}$	$H(0.61)$	95.412	$95.44^{+0.42}_{-0.40}$
$A_{143}^{PS}$	47.3	$45^{+20}_{-20}$	$\sigma_8/h^{0.5}$	0.9812	$0.980^{+0.019}_{-0.019}$	$D_M(0.61)$	2302.5	$2301^{+21}_{-22}$
$A_{143 \times 217}^{PS}$	47.5	$42^{+20}_{-20}$	$r_{drag} h$	99.71	$99.9^{+1.7}_{-1.7}$	$H(2.33)$	236.09	$236.0^{+1.3}_{-1.3}$
$A_{217}^{PS}$	119.8	$115^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4261	$2.425^{+0.046}_{-0.045}$	$D_M(2.33)$	5757.8	$5757^{+19}_{-19}$
$A^{kSZ}$	0.00	$< 8.07$	$z_{re}$	7.55	$7.5^{+1.5}_{-1.6}$	$f\sigma_8(0.15)$	0.4544	$0.453^{+0.013}_{-0.013}$
$A_{100}^{dustTT}$	8.81	$8.9^{+3.6}_{-3.5}$	$10^9 A_s$	2.091	$2.091^{+0.067}_{-0.063}$	$\sigma_8(0.15)$	0.7463	$0.746^{+0.012}_{-0.011}$
$A_{143}^{dustTT}$	11.08	$10.9^{+3.4}_{-3.5}$	$10^9 A_s e^{-2\tau}$	1.8797	$1.879^{+0.022}_{-0.021}$	$f\sigma_8(0.38)$	0.4730	$0.472^{+0.011}_{-0.011}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.6^{+6.4}_{-6.5}$	$D_{40}$	1224.4	$1226^{+23}_{-23}$	$\sigma_8(0.38)$	0.6617	$0.661^{+0.011}_{-0.010}$
$A_{217}^{dustTT}$	95.2	$94^{+10}_{-10}$	$D_{220}$	5734	$5737^{+76}_{-74}$	$f\sigma_8(0.51)$	0.4717	$0.4709^{+0.0094}_{-0.0096}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.074}_{-0.075}$	$D_{810}$	2539.7	$2538^{+27}_{-25}$	$\sigma_8(0.51)$	0.6193	$0.619^{+0.010}_{-0.0094}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.059}_{-0.058}$	$D_{1420}$	818.5	$817.7^{+9.5}_{-9.1}$	$f\sigma_8(0.61)$	0.4669	$0.4661^{+0.0088}_{-0.0088}$
$A_{100 \times 217}^{dustTE}$	0.483	$0.48^{+0.17}_{-0.17}$	$D_{2000}$	231.35	$231.0^{+3.2}_{-3.0}$	$\sigma_8(0.61)$	0.5893	$0.5889^{+0.0095}_{-0.0090}$
$A_{143}^{dustTE}$	0.225	$0.22^{+0.11}_{-0.11}$	$n_{s,0.002}$	0.9678	$0.9673^{+0.0078}_{-0.0077}$	$f\sigma_8(2.33)$	0.29717	$0.2970^{+0.0049}_{-0.0046}$
$A_{143 \times 217}^{dustTE}$	0.664	$0.66^{+0.16}_{-0.16}$	$Y_P$	0.245423	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	0.3064	$0.3063^{+0.0052}_{-0.0049}$
$A_{217}^{dustTE}$	2.07	$2.08^{+0.52}_{-0.52}$	$Y_{P}^{BBN}$	0.246749	$0.24675^{+0.00010}_{-0.00011}$	$f_{2000}^{143}$	28.7	$29^{+5}_{-5}$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$10^5 D/H$	2.572	$2.574^{+0.051}_{-0.049}$	$f_{2000}^{143 \times 217}$	31.88	$32^{+4}_{-4}$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	Age/Gyr	13.7848	$13.783^{+0.042}_{-0.043}$	$f_{2000}^{217}$	106.55	$106.9^{+3.5}_{-3.4}$
$m_{DES}^1$	0.0151	$0.014^{+0.044}_{-0.045}$	$z_*$	1089.759	$1089.75^{+0.46}_{-0.46}$	$\chi_{small}^2$	395.86	$396.9 (\nu: 1.4)$
$m_{DES}^2$	0.0119	$0.012^{+0.044}_{-0.044}$	$r_*$	144.59	$144.64^{+0.51}_{-0.49}$	$\chi_{lowl}^2$	22.84	$22.99 (\nu: 0.3)$
$m_{DES}^3$	-0.0072	$-0.008^{+0.040}_{-0.039}$	$100\theta_*$	1.04117	$1.04121^{+0.00058}_{-0.00057}$	$\chi_{plik}^2$	2346.0	$2360.9 (\nu: 17.6)$
$m_{DES}^4$	0.0127	$0.011^{+0.041}_{-0.042}$	$D_M(z_*)/\text{Gpc}$	13.8873	$13.891^{+0.048}_{-0.046}$	$\chi_{DES}^2$	229.20	$232.0 (\nu: 3.2)$
$A_{IA,DES}$	1.44	$1.24^{+0.97}_{-0.95}$	$z_{drag}$	1060.05	$1060.02^{+0.56}_{-0.58}$	$\chi_{prior}^2$	2.8	$19.5 (\nu: 18.0)$
$\alpha_{IA,DES}$	2.49	$> -2.09$	$r_{drag}$	147.23	$147.28^{+0.52}_{-0.49}$	$\chi_{CMB}^2$	2764.7	$2780.7 (\nu: 17.3)$
$\Delta z_{s,DES}^1$	0.0046	$0.005^{+0.028}_{-0.028}$	$k_D$	0.14077	$0.14072^{+0.00057}_{-0.00059}$			
$\Delta z_{s,DES}^2$	-0.0203	$-0.021^{+0.023}_{-0.023}$	$100\theta_D$	0.160699	$0.16072^{+0.00033}_{-0.00033}$			

Best-fit  $\chi_{eff}^2 = 2996.67$ ;  $\bar{\chi}_{eff}^2 = 3032.33$ ;  $R - 1 = 0.00975$

$\chi_{eff}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2\_29: 22.84 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.01 WL - DES\_1YR\_final: 229.20

## 2.34 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022468	$0.02245^{+0.00026}_{-0.00026}$	$\Delta z_{s,DES}^4$	-0.0212	$-0.022^{+0.038}_{-0.039}$	$100\theta_{eq}$	0.8182	$0.8187^{+0.0077}_{-0.0075}$
$\Omega_c h^2$	0.11885	$0.1187^{+0.0018}_{-0.0018}$	$H_0$	67.89	$67.91^{+0.80}_{-0.79}$	$100\theta_{s,eq}$	0.45187	$0.4521^{+0.0040}_{-0.0038}$
$100\theta_{MC}$	1.04107	$1.04107^{+0.00057}_{-0.00056}$	$\Omega_\Lambda$	0.6920	$0.692^{+0.011}_{-0.011}$	$H(0.15)$	73.14	$73.16^{+0.69}_{-0.68}$
$\tau$	0.0548	$0.054^{+0.016}_{-0.014}$	$\Omega_m$	0.3080	$0.308^{+0.011}_{-0.011}$	$D_M(0.15)$	638.8	$638.6^{+6.8}_{-6.8}$
$\ln(10^{10} A_s)$	3.0430	$3.041^{+0.032}_{-0.030}$	$\Omega_m h^2$	0.14197	$0.1418^{+0.0017}_{-0.0017}$	$H(0.38)$	83.20	$83.21^{+0.52}_{-0.51}$
$n_s$	0.9690	$0.9680^{+0.0072}_{-0.0073}$	$\Omega_m h^3$	0.09638	$0.09633^{+0.00057}_{-0.00057}$	$D_M(0.38)$	1524.4	$1524^{+14}_{-14}$
$y_{cal}$	1.00059	$1.0006^{+0.0049}_{-0.0048}$	$\sigma_8$	0.8078	$0.806^{+0.013}_{-0.012}$	$H(0.51)$	89.883	$89.89^{+0.43}_{-0.41}$
$A_{217}^{CIB}$	46.7	$47^{+10}_{-10}$	$S_8$	0.8185	$0.816^{+0.021}_{-0.021}$	$D_M(0.51)$	1975.3	$1975^{+16}_{-16}$
$\xi^{tSZ \times CIB}$	0.56	—	$\sigma_8 \Omega_m^{0.5}$	0.4483	$0.447^{+0.012}_{-0.012}$	$H(0.61)$	95.479	$95.48^{+0.36}_{-0.34}$
$A_{143}^{tSZ}$	7.23	$5.5^{+3.8}_{-3.8}$	$\sigma_8 \Omega_m^{0.25}$	0.6018	$0.600^{+0.012}_{-0.012}$	$D_M(0.61)$	2299.0	$2299^{+17}_{-17}$
$A_{100}^{PS}$	248	$259^{+60}_{-60}$	$\sigma_8/h^{0.5}$	0.9804	$0.978^{+0.018}_{-0.017}$	$H(2.33)$	235.92	$235.8^{+1.1}_{-1.1}$
$A_{143}^{PS}$	48.6	$45^{+20}_{-20}$	$r_{drag} h$	99.99	$100.1^{+1.4}_{-1.4}$	$D_M(2.33)$	5754.8	$5755^{+16}_{-17}$
$A_{143 \times 217}^{PS}$	50.4	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4236	$2.422^{+0.043}_{-0.042}$	$f\sigma_8(0.15)$	0.4532	$0.452^{+0.011}_{-0.011}$
$A_{217}^{PS}$	120.2	$114^{+20}_{-20}$	$z_{re}$	7.70	$7.6^{+1.5}_{-1.5}$	$\sigma_8(0.15)$	0.7468	$0.745^{+0.012}_{-0.011}$
$A^{kSZ}$	0.00	$< 8.05$	$10^9 A_s$	2.097	$2.092^{+0.067}_{-0.062}$	$f\sigma_8(0.38)$	0.4722	$0.4711^{+0.0095}_{-0.0094}$
$A_{100}^{dustTT}$	8.84	$8.9^{+3.5}_{-3.5}$	$10^9 A_s e^{-2\tau}$	1.8790	$1.878^{+0.021}_{-0.020}$	$\sigma_8(0.38)$	0.6623	$0.661^{+0.011}_{-0.0098}$
$A_{143}^{dustTT}$	11.04	$10.9^{+3.4}_{-3.5}$	$D_{40}$	1222.6	$1225^{+23}_{-22}$	$f\sigma_8(0.51)$	0.4712	$0.4702^{+0.0087}_{-0.0086}$
$A_{143 \times 217}^{dustTT}$	20.1	$18.6^{+6.3}_{-6.4}$	$D_{220}$	5736	$5739^{+76}_{-72}$	$\sigma_8(0.51)$	0.6200	$0.619^{+0.010}_{-0.0092}$
$A_{217}^{dustTT}$	95.2	$94^{+10}_{-10}$	$D_{810}$	2540.5	$2538^{+27}_{-25}$	$f\sigma_8(0.61)$	0.4666	$0.4656^{+0.0084}_{-0.0081}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.076}$	$D_{1420}$	819.2	$818.0^{+9.5}_{-8.9}$	$\sigma_8(0.61)$	0.5900	$0.5890^{+0.0097}_{-0.0087}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.059}_{-0.059}$	$D_{2000}$	231.64	$231.1^{+3.2}_{-3.0}$	$f\sigma_8(2.33)$	0.29763	$0.2972^{+0.0050}_{-0.0044}$
$A_{100 \times 217}^{dustTE}$	0.479	$0.48^{+0.16}_{-0.17}$	$n_{s,0.002}$	0.9690	$0.9680^{+0.0072}_{-0.0073}$	$\sigma_8(2.33)$	0.30700	$0.3065^{+0.0052}_{-0.0047}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.11}_{-0.11}$	$Y_P$	0.245433	$0.245426^{+0.000096}_{-0.00010}$	$f_{2000}^{143}$	28.4	$29^{+5}_{-5}$
$A_{143 \times 217}^{dustTE}$	0.660	$0.66^{+0.16}_{-0.16}$	$Y_P^{BBN}$	0.246760	$0.246752^{+0.000096}_{-0.00010}$	$f_{2000}^{143 \times 217}$	31.74	$32^{+4}_{-4}$
$A_{217}^{dustTE}$	2.07	$2.07^{+0.52}_{-0.52}$	$10^5 D/H$	2.5676	$2.571^{+0.048}_{-0.047}$	$f_{2000}^{217}$	106.29	$106.8^{+3.4}_{-3.4}$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	Age/Gyr	13.7782	$13.779^{+0.037}_{-0.038}$	$\chi_{simall}^2$	396.05	$396.9 (\nu: 1.5)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$z_*$	1089.697	$1089.71^{+0.40}_{-0.40}$	$\chi_{lowl}^2$	22.68	$22.87 (\nu: 0.3)$
$m_{DES}^1$	0.0142	$0.014^{+0.044}_{-0.045}$	$r_*$	144.653	$144.69^{+0.44}_{-0.42}$	$\chi_{plik}^2$	2346.4	$2361.0 (\nu: 17.4)$
$m_{DES}^2$	0.0126	$0.012^{+0.045}_{-0.043}$	$100\theta_*$	1.04125	$1.04124^{+0.00056}_{-0.00055}$	$\chi_{6DF}^2$	0.010	$0.028 (\nu: 0.0)$
$m_{DES}^3$	-0.0062	$-0.007^{+0.038}_{-0.039}$	$D_M(z_*)/\text{Gpc}$	13.8923	$13.896^{+0.042}_{-0.040}$	$\chi_{MGS}^2$	1.41	$1.50 (\nu: 0.1)$
$m_{DES}^4$	0.0129	$0.012^{+0.041}_{-0.042}$	$z_{drag}$	1060.09	$1060.04^{+0.58}_{-0.56}$	$\chi_{DR12BAO}^2$	3.94	$4.18 (\nu: 0.4)$
$A_{IA,DES}$	1.42	$1.21^{+0.96}_{-0.92}$	$r_{drag}$	147.285	$147.33^{+0.46}_{-0.44}$	$\chi_{DES}^2$	229.06	$231.9 (\nu: 2.9)$
$\alpha_{IA,DES}$	2.58	$> -2.14$	$k_D$	0.14074	$0.14068^{+0.00054}_{-0.00056}$	$\chi_{prior}^2$	2.6	$19.4 (\nu: 18.0)$
$\Delta z_{s,DES}^1$	0.0046	$0.004^{+0.029}_{-0.028}$	$100\theta_D$	0.160683	$0.16071^{+0.00033}_{-0.00032}$	$\chi_{BAO}^2$	5.35	$5.71 (\nu: 0.2)$
$\Delta z_{s,DES}^2$	-0.0207	$-0.021^{+0.023}_{-0.023}$	$z_{eq}$	3377.1	$3374^{+40}_{-41}$	$\chi_{CMB}^2$	2765.1	$2780.8 (\nu: 17.0)$
$\Delta z_{s,DES}^3$	0.0053	$0.005^{+0.021}_{-0.021}$	$k_{eq}$	0.010307	$0.01030^{+0.00012}_{-0.00013}$			

Best-fit  $\chi_{eff}^2 = 3002.12$ ;  $\bar{\chi}_{eff}^2 = 3037.77$ ;  $R - 1 = 0.01621$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.94 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3\_2\_29: 22.68 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.36 WL - DES\_1YR\_final: 229.06

### 2.35 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022454	$0.02244^{+0.00027}_{-0.00027}$	$\Delta z_{\text{s,DES}}^3$	0.0047	$0.004^{+0.020}_{-0.020}$	$z_{\text{eq}}$	3384.0	$3383^{+46}_{-46}$
$\Omega_c h^2$	0.11916	$0.1191^{+0.0020}_{-0.0020}$	$\Delta z_{\text{s,DES}}^4$	-0.0220	$-0.023^{+0.038}_{-0.039}$	$k_{\text{eq}}$	0.010328	$0.01033^{+0.00014}_{-0.00014}$
$100\theta_{\text{MC}}$	1.04100	$1.04102^{+0.00059}_{-0.00059}$	$H_0$	67.75	$67.75^{+0.94}_{-0.90}$	$100\theta_{\text{eq}}$	0.8168	$0.8170^{+0.0088}_{-0.0086}$
$\tau$	0.0554	$0.055^{+0.015}_{-0.014}$	$\Omega_{\Lambda}$	0.6900	$0.690^{+0.013}_{-0.012}$	$100\theta_{\text{s,eq}}$	0.45118	$0.4513^{+0.0045}_{-0.0044}$
$\ln(10^{10} A_{\text{s}})$	3.0447	$3.043^{+0.029}_{-0.027}$	$\Omega_{\text{m}}$	0.3100	$0.310^{+0.012}_{-0.013}$	$H(0.15)$	73.01	$73.02^{+0.82}_{-0.77}$
$n_{\text{s}}$	0.9683	$0.9669^{+0.0078}_{-0.0075}$	$\Omega_{\text{m}} h^2$	0.14225	$0.1422^{+0.0019}_{-0.0019}$	$D_{\text{M}}(0.15)$	640.0	$640.0^{+7.7}_{-8.0}$
$y_{\text{cal}}$	1.00043	$1.0007^{+0.0049}_{-0.0048}$	$\Omega_{\text{m}} h^3$	0.09637	$0.09634^{+0.00057}_{-0.00058}$	$H(0.38)$	83.11	$83.11^{+0.60}_{-0.57}$
$A_{217}^{\text{CIB}}$	46.0	$47^{+10}_{-10}$	$\sigma_8$	0.8093	$0.808^{+0.012}_{-0.011}$	$D_{\text{M}}(0.38)$	1526.8	$1527^{+15}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.62	—	$S_8$	0.8226	$0.821^{+0.021}_{-0.021}$	$H(0.51)$	89.814	$89.81^{+0.49}_{-0.46}$
$A_{143}^{\text{tSZ}}$	7.17	$5.5^{+3.7}_{-3.9}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4505	$0.450^{+0.012}_{-0.011}$	$D_{\text{M}}(0.51)$	1978.1	$1978^{+18}_{-19}$
$A_{100}^{\text{PS}}$	247	$259^{+60}_{-60}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6038	$0.603^{+0.011}_{-0.011}$	$H(0.61)$	95.426	$95.42^{+0.41}_{-0.38}$
$A_{143}^{\text{PS}}$	49.3	$45^{+20}_{-20}$	$\sigma_8/h^{0.5}$	0.9832	$0.982^{+0.016}_{-0.016}$	$D_{\text{M}}(0.61)$	2302.0	$2302^{+20}_{-20}$
$A_{143 \times 217}^{\text{PS}}$	52.0	$42^{+20}_{-20}$	$r_{\text{drag}} h$	99.74	$99.8^{+1.6}_{-1.6}$	$H(2.33)$	236.09	$236.1^{+1.2}_{-1.2}$
$A_{217}^{\text{PS}}$	121.4	$115^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4304	$2.431^{+0.038}_{-0.038}$	$D_{\text{M}}(2.33)$	5757.1	$5757^{+18}_{-19}$
$A^{\text{kSZ}}$	0.00	$< 8.07$	$z_{\text{re}}$	7.76	$7.7^{+1.5}_{-1.5}$	$f\sigma_8(0.15)$	0.4553	$0.455^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.78	$8.9^{+3.5}_{-3.5}$	$10^9 A_{\text{s}}$	2.100	$2.097^{+0.062}_{-0.057}$	$\sigma_8(0.15)$	0.7480	$0.747^{+0.011}_{-0.010}$
$A_{143}^{\text{dustTT}}$	11.01	$10.9^{+3.5}_{-3.5}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8802	$1.880^{+0.021}_{-0.020}$	$f\sigma_8(0.38)$	0.4739	$0.4732^{+0.0088}_{-0.0089}$
$A_{143 \times 217}^{\text{dustTT}}$	20.1	$18.6^{+6.3}_{-6.4}$	$D_{40}$	1224.4	$1228^{+23}_{-22}$	$\sigma_8(0.38)$	0.6632	$0.6623^{+0.0097}_{-0.0089}$
$A_{217}^{\text{dustTT}}$	95.4	$94^{+10}_{-10}$	$D_{220}$	5735	$5741^{+75}_{-74}$	$f\sigma_8(0.51)$	0.4727	$0.4720^{+0.0080}_{-0.0079}$
$A_{100}^{\text{dustTE}}$	0.114	$0.113^{+0.075}_{-0.076}$	$D_{810}$	2540.5	$2539^{+26}_{-25}$	$\sigma_8(0.51)$	0.6207	$0.6198^{+0.0092}_{-0.0084}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.060}_{-0.059}$	$D_{1420}$	819.0	$817.9^{+9.7}_{-9.2}$	$f\sigma_8(0.61)$	0.4679	$0.4672^{+0.0073}_{-0.0072}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.16}_{-0.17}$	$D_{2000}$	231.57	$231.1^{+3.2}_{-3.0}$	$\sigma_8(0.61)$	0.5906	$0.5898^{+0.0088}_{-0.0080}$
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.11}_{-0.11}$	$n_{\text{s},0.002}$	0.9683	$0.9669^{+0.0078}_{-0.0075}$	$f\sigma_8(2.33)$	0.29787	$0.2975^{+0.0046}_{-0.0042}$
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.66^{+0.16}_{-0.16}$	$Y_{\text{P}}$	0.245428	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	0.30715	$0.3068^{+0.0050}_{-0.0045}$
$A_{217}^{\text{dustTE}}$	2.08	$2.07^{+0.52}_{-0.52}$	$Y_{\text{P}}^{\text{BBN}}$	0.246754	$0.24675^{+0.00010}_{-0.00011}$	$f_{2000}^{143}$	28.2	$29^{+5}_{-5}$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0013}$	$10^5 \text{D}/\text{H}$	2.5701	$2.574^{+0.050}_{-0.049}$	$f_{2000}^{143 \times 217}$	31.68	$32^{+4}_{-4}$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$\text{Age}/\text{Gyr}$	13.7831	$13.784^{+0.041}_{-0.043}$	$f_{2000}^{217}$	106.24	$106.9^{+3.4}_{-3.4}$
$m_{\text{DES}}^1$	0.0144	$0.014^{+0.044}_{-0.046}$	$z_*$	1089.740	$1089.76^{+0.45}_{-0.45}$	$\chi_{\text{lensing}}^2$	8.77	$9.16 (\nu: 0.2)$
$m_{\text{DES}}^2$	0.0120	$0.012^{+0.044}_{-0.043}$	$r_*$	144.586	$144.61^{+0.47}_{-0.46}$	$\chi_{\text{small}}^2$	396.20	$397.0 (\nu: 1.5)$
$m_{\text{DES}}^3$	-0.0073	$-0.009^{+0.038}_{-0.039}$	$100\theta_*$	1.04118	$1.04120^{+0.00058}_{-0.00058}$	$\chi_{\text{lowl}}^2$	22.85	$23.12 (\nu: 0.3)$
$m_{\text{DES}}^4$	0.0119	$0.010^{+0.041}_{-0.042}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8868	$13.889^{+0.045}_{-0.043}$	$\chi_{\text{plik}}^2$	2345.8	$2360.1 (\nu: 16.3)$
$A_{\text{IA,DES}}$	1.45	$1.25^{+0.95}_{-0.93}$	$z_{\text{drag}}$	1060.09	$1060.03^{+0.56}_{-0.59}$	$\chi_{\text{DES}}^2$	229.30	$232.1 (\nu: 3.3)$
$\alpha_{\text{IA,DES}}$	2.50	$> -2.09$	$r_{\text{drag}}$	147.220	$147.25^{+0.49}_{-0.46}$	$\chi_{\text{prior}}^2$	2.6	$19.7 (\nu: 18.2)$
$\Delta z_{\text{s,DES}}^1$	0.0045	$0.005^{+0.029}_{-0.028}$	$k_{\text{D}}$	0.14079	$0.14075^{+0.00055}_{-0.00057}$	$\chi_{\text{CMB}}^2$	2773.6	$2789.4 (\nu: 17.2)$
$\Delta z_{\text{s,DES}}^2$	-0.0204	$-0.021^{+0.023}_{-0.023}$	$100\theta_{\text{D}}$	0.160683	$0.16071^{+0.00033}_{-0.00032}$			

Best-fit  $\chi_{\text{eff}}^2 = 3005.49$ ;  $\bar{\chi}_{\text{eff}}^2 = 3041.15$ ;  $R - 1 = 0.01376$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3.2\_29: 22.85 plik\_rd12\_HM\_v22b.TTTEEE: 2345.76 WL - DES\_1YR\_final: 229.30

## 2.36 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022468	$0.02246^{+0.00026}_{-0.00026}$	$\Delta z_{s,DES}^4$	-0.0211	$-0.022^{+0.038}_{-0.040}$	$100\theta_{eq}$	0.8183	$0.8182^{+0.0073}_{-0.0071}$
$\Omega_c h^2$	0.11882	$0.1188^{+0.0017}_{-0.0017}$	$H_0$	67.89	$67.88^{+0.78}_{-0.76}$	$100\theta_{s,eq}$	0.45193	$0.4519^{+0.0038}_{-0.0037}$
$100\theta_{MC}$	1.04103	$1.04106^{+0.00057}_{-0.00056}$	$\Omega_\Lambda$	0.6921	$0.692^{+0.010}_{-0.010}$	$H(0.15)$	73.14	$73.13^{+0.68}_{-0.66}$
$\tau$	0.0555	$0.056^{+0.015}_{-0.013}$	$\Omega_m$	0.3079	$0.308^{+0.010}_{-0.010}$	$D_M(0.15)$	638.8	$638.9^{+6.5}_{-6.6}$
$\ln(10^{10} A_s)$	3.0444	$3.044^{+0.029}_{-0.027}$	$\Omega_m h^2$	0.14193	$0.1419^{+0.0016}_{-0.0016}$	$H(0.38)$	83.19	$83.19^{+0.51}_{-0.49}$
$n_s$	0.9688	$0.9676^{+0.0072}_{-0.0072}$	$\Omega_m h^3$	0.09635	$0.09635^{+0.00057}_{-0.00058}$	$D_M(0.38)$	1524.4	$1525^{+13}_{-13}$
$y_{cal}$	1.00060	$1.0008^{+0.0049}_{-0.0048}$	$\sigma_8$	0.8081	$0.808^{+0.012}_{-0.011}$	$H(0.51)$	89.878	$89.87^{+0.42}_{-0.40}$
$A_{217}^{CIB}$	46.6	$47^{+10}_{-10}$	$S_8$	0.8187	$0.819^{+0.018}_{-0.018}$	$D_M(0.51)$	1975.3	$1976^{+15}_{-16}$
$\xi^{tSZ \times CIB}$	0.49	—	$\sigma_8 \Omega_m^{0.5}$	0.4484	$0.448^{+0.010}_{-0.0099}$	$H(0.61)$	95.473	$95.47^{+0.36}_{-0.34}$
$A_{143}^{tSZ}$	7.30	$5.5^{+3.7}_{-3.9}$	$\sigma_8 \Omega_m^{0.25}$	0.6020	$0.6020^{+0.0099}_{-0.010}$	$D_M(0.61)$	2299.0	$2299^{+17}_{-17}$
$A_{100}^{PS}$	248	$259^{+60}_{-60}$	$\sigma_8/h^{0.5}$	0.9808	$0.981^{+0.015}_{-0.015}$	$H(2.33)$	235.89	$235.9^{+1.0}_{-1.0}$
$A_{143}^{PS}$	47.4	$45^{+20}_{-20}$	$r_{drag} h$	99.997	$99.99^{+1.3}_{-1.3}$	$D_M(2.33)$	5755.2	$5755^{+16}_{-17}$
$A_{143 \times 217}^{PS}$	48.7	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4254	$2.428^{+0.036}_{-0.037}$	$f\sigma_8(0.15)$	0.4533	$0.4533^{+0.0094}_{-0.0094}$
$A_{217}^{PS}$	120.2	$115^{+20}_{-20}$	$z_{re}$	7.77	$7.8^{+1.4}_{-1.4}$	$\sigma_8(0.15)$	0.7471	$0.747^{+0.011}_{-0.010}$
$A^{kSZ}$	0.00	< 8.04	$10^9 A_s$	2.100	$2.100^{+0.061}_{-0.056}$	$f\sigma_8(0.38)$	0.4724	$0.4724^{+0.0080}_{-0.0081}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.6}_{-3.5}$	$10^9 A_s e^{-2\tau}$	1.8789	$1.879^{+0.021}_{-0.019}$	$\sigma_8(0.38)$	0.6626	$0.6625^{+0.0098}_{-0.0089}$
$A_{143}^{dustTT}$	11.04	$10.9^{+3.5}_{-3.5}$	$D_{40}$	1223.4	$1227^{+22}_{-22}$	$f\sigma_8(0.51)$	0.4714	$0.4714^{+0.0074}_{-0.0074}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.6^{+6.3}_{-6.5}$	$D_{220}$	5738	$5743^{+76}_{-73}$	$\sigma_8(0.51)$	0.6203	$0.6201^{+0.0093}_{-0.0083}$
$A_{217}^{dustTT}$	95.3	$94^{+10}_{-10}$	$D_{810}$	2540.4	$2540^{+26}_{-25}$	$f\sigma_8(0.61)$	0.4667	$0.4667^{+0.0071}_{-0.0069}$
$A_{100}^{dustTE}$	0.114	$0.113^{+0.075}_{-0.076}$	$D_{1420}$	819.1	$818.2^{+9.6}_{-9.0}$	$\sigma_8(0.61)$	0.5903	$0.5901^{+0.0089}_{-0.0080}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.060}_{-0.059}$	$D_{2000}$	231.59	$231.2^{+3.1}_{-3.0}$	$f\sigma_8(2.33)$	0.29777	$0.2977^{+0.0046}_{-0.0041}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.16}_{-0.17}$	$n_{s,0.002}$	0.9688	$0.9676^{+0.0072}_{-0.0072}$	$\sigma_8(2.33)$	0.30715	$0.3071^{+0.0049}_{-0.0044}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.11}_{-0.11}$	$Y_P$	0.245433	$0.245427^{+0.000095}_{-0.00010}$	$f_{2000}^{143}$	28.4	$29^{+5}_{-5}$
$A_{143 \times 217}^{dustTE}$	0.664	$0.66^{+0.16}_{-0.16}$	$Y_P^{BBN}$	0.246760	$0.246753^{+0.000095}_{-0.00010}$	$f_{2000}^{143 \times 217}$	31.70	$32^{+4}_{-4}$
$A_{217}^{dustTE}$	2.08	$2.07^{+0.52}_{-0.51}$	$10^5 D/H$	2.5675	$2.570^{+0.048}_{-0.046}$	$f_{2000}^{217}$	106.38	$106.8^{+3.4}_{-3.4}$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0013}$	Age/Gyr	13.7792	$13.780^{+0.037}_{-0.038}$	$\chi^2_{lensing}$	8.85	$9.17 (\nu: 0.2)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$z_*$	1089.693	$1089.71^{+0.40}_{-0.40}$	$\chi^2_{small}$	396.20	$397.1 (\nu: 1.6)$
$m_{DES}^1$	0.0139	$0.014^{+0.044}_{-0.046}$	$r_*$	144.662	$144.66^{+0.41}_{-0.40}$	$\chi^2_{lowl}$	22.73	$23.01 (\nu: 0.3)$
$m_{DES}^2$	0.0120	$0.012^{+0.044}_{-0.043}$	$100\theta_*$	1.04121	$1.04124^{+0.00056}_{-0.00056}$	$\chi^2_{plik}$	2346.1	$2360.3 (\nu: 16.3)$
$m_{DES}^3$	-0.0065	$-0.008^{+0.038}_{-0.039}$	$D_M(z_*)/\text{Gpc}$	13.8937	$13.894^{+0.040}_{-0.038}$	$\chi^2_{6DF}$	0.010	$0.030 (\nu: 0.0)$
$m_{DES}^4$	0.0134	$0.011^{+0.041}_{-0.042}$	$z_{drag}$	1060.09	$1060.05^{+0.57}_{-0.58}$	$\chi^2_{MGS}$	1.41	$1.45 (\nu: 0.1)$
$A_{IA,DES}$	1.42	$1.24^{+0.94}_{-0.92}$	$r_{drag}$	147.295	$147.30^{+0.44}_{-0.42}$	$\chi^2_{DR12BAO}$	3.93	$4.24 (\nu: 0.4)$
$\alpha_{IA,DES}$	2.57	> -2.12	$k_D$	0.14073	$0.14071^{+0.00053}_{-0.00054}$	$\chi^2_{DES}$	229.07	$231.9 (\nu: 3.0)$
$\Delta z_{s,DES}^1$	0.0049	$0.005^{+0.029}_{-0.028}$	$100\theta_D$	0.160678	$0.16070^{+0.00033}_{-0.00032}$	$\chi^2_{prior}$	2.7	$19.5 (\nu: 18.1)$
$\Delta z_{s,DES}^2$	-0.0205	$-0.021^{+0.023}_{-0.023}$	$z_{eq}$	3376.3	$3377^{+38}_{-39}$	$\chi^2_{CMB}$	2773.9	$2789.5 (\nu: 17.1)$
$\Delta z_{s,DES}^3$	0.0055	$0.005^{+0.020}_{-0.020}$	$k_{eq}$	0.010305	$0.01031^{+0.00012}_{-0.00012}$	$\chi^2_{BAO}$	5.35	$5.73 (\nu: 0.2)$

Best-fit  $\chi^2_{eff} = 3011.01$ ;  $\bar{\chi}^2_{eff} = 3046.67$ ;  $R - 1 = 0.01525$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.93 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.85 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12.v3.2.29: 22.73 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.15 WL - DES\_1YR\_final: 229.07

### 2.37 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02244^{+0.00027}_{-0.00027}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.020}_{-0.020}$	$z_{\text{eq}}$	$3379^{+48}_{-50}$
$\Omega_c h^2$	$0.1190^{+0.0021}_{-0.0022}$	$\Delta z_{\text{s,DES}}^4$	$-0.023^{+0.039}_{-0.039}$	$k_{\text{eq}}$	$0.01031^{+0.00015}_{-0.00015}$
$100\theta_{\text{MC}}$	$1.04104^{+0.00059}_{-0.00058}$	$H_0$	$67.8^{+1.0}_{-0.95}$	$100\theta_{\text{eq}}$	$0.8178^{+0.0095}_{-0.0091}$
$\tau$	$0.055^{+0.013}_{-0.011}$	$\Omega_{\Lambda}$	$0.691^{+0.013}_{-0.013}$	$100\theta_{\text{s,eq}}$	$0.4517^{+0.0049}_{-0.0047}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.027}_{-0.025}$	$\Omega_{\text{m}}$	$0.309^{+0.013}_{-0.013}$	$H(0.15)$	$73.08^{+0.86}_{-0.82}$
$n_{\text{s}}$	$0.9675^{+0.0077}_{-0.0077}$	$\Omega_{\text{m}} h^2$	$0.1420^{+0.0020}_{-0.0021}$	$D_{\text{M}}(0.15)$	$639.4^{+8.1}_{-8.4}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0048}$	$\Omega_{\text{m}} h^3$	$0.09633^{+0.00057}_{-0.00058}$	$H(0.38)$	$83.15^{+0.63}_{-0.60}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\sigma_8$	$0.807^{+0.013}_{-0.011}$	$D_{\text{M}}(0.38)$	$1526^{+16}_{-17}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$S_8$	$0.819^{+0.024}_{-0.025}$	$H(0.51)$	$89.84^{+0.51}_{-0.48}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.013}_{-0.014}$	$D_{\text{M}}(0.51)$	$1977^{+19}_{-20}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-60}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.013}_{-0.013}$	$H(0.61)$	$95.45^{+0.42}_{-0.39}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\sigma_8/h^{0.5}$	$0.981^{+0.018}_{-0.018}$	$D_{\text{M}}(0.61)$	$2301^{+21}_{-21}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$r_{\text{drag}} h$	$99.9^{+1.7}_{-1.7}$	$H(2.33)$	$236.0^{+1.3}_{-1.3}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.044}_{-0.043}$	$D_{\text{M}}(2.33)$	$5757^{+19}_{-19}$
$A^{\text{kSZ}}$	$< 8.02$	$z_{\text{re}}$	$< 8.86$	$f\sigma_8(0.15)$	$0.454^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$10^9 A_{\text{s}}$	$2.096^{+0.058}_{-0.052}$	$\sigma_8(0.15)$	$0.746^{+0.011}_{-0.010}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.5}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.878^{+0.022}_{-0.020}$	$f\sigma_8(0.38)$	$0.472^{+0.010}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$D_{40}$	$1226^{+23}_{-23}$	$\sigma_8(0.38)$	$0.6619^{+0.0094}_{-0.0087}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{220}$	$5737^{+76}_{-74}$	$f\sigma_8(0.51)$	$0.4713^{+0.0092}_{-0.0092}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.074}_{-0.075}$	$D_{810}$	$2538^{+27}_{-25}$	$\sigma_8(0.51)$	$0.6196^{+0.0087}_{-0.0080}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.058}$	$D_{1420}$	$817.7^{+9.5}_{-9.1}$	$f\sigma_8(0.61)$	$0.4666^{+0.0085}_{-0.0083}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$D_{2000}$	$231.1^{+3.2}_{-3.0}$	$\sigma_8(0.61)$	$0.5896^{+0.0083}_{-0.0076}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$n_{\text{s},0.002}$	$0.9675^{+0.0077}_{-0.0077}$	$f\sigma_8(2.33)$	$0.2974^{+0.0042}_{-0.0038}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$Y_{\text{P}}$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	$0.3067^{+0.0045}_{-0.0040}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24675^{+0.00010}_{-0.00011}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$10^5 \text{D/H}$	$2.573^{+0.050}_{-0.049}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	Age/Gyr	$13.782^{+0.042}_{-0.043}$	$f_{2000}^{217}$	$106.8^{+3.5}_{-3.4}$
$m_{\text{DES}}^1$	$0.014^{+0.044}_{-0.045}$	$z_*$	$1089.74^{+0.46}_{-0.46}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.4)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.044}$	$r_*$	$144.65^{+0.50}_{-0.48}$	$\chi_{\text{lowl}}^2$	$22.99 (\nu: 0.3)$
$m_{\text{DES}}^3$	$-0.008^{+0.040}_{-0.039}$	$100\theta_*$	$1.04122^{+0.00058}_{-0.00057}$	$\chi_{\text{plik}}^2$	$2360.7 (\nu: 17.4)$
$m_{\text{DES}}^4$	$0.011^{+0.040}_{-0.041}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.892^{+0.048}_{-0.045}$	$\chi_{\text{DES}}^2$	$232.1 (\nu: 3.2)$
$A_{\text{IA,DES}}$	$1.24^{+0.97}_{-0.95}$	$z_{\text{drag}}$	$1060.02^{+0.56}_{-0.55}$	$\chi_{\text{prior}}^2$	$19.5 (\nu: 18.1)$
$\alpha_{\text{IA,DES}}$	$> -2.07$	$r_{\text{drag}}$	$147.29^{+0.52}_{-0.49}$	$\chi_{\text{CMB}}^2$	$2780.5 (\nu: 16.9)$
$\Delta z_{\text{s,DES}}^1$	$0.005^{+0.028}_{-0.028}$	$k_{\text{D}}$	$0.14071^{+0.00057}_{-0.00059}$		
$\Delta z_{\text{s,DES}}^2$	$-0.021^{+0.023}_{-0.023}$	$100\theta_{\text{D}}$	$0.16071^{+0.00033}_{-0.00033}$		

$$\bar{\chi}_{\text{eff}}^2 = 3032.07; R - 1 = 0.00937$$

### 2.38 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02246^{+0.00026}_{-0.00025}$	$\Delta z_{s,\text{DES}}^4$	$-0.022^{+0.039}_{-0.040}$	$100\theta_{\text{eq}}$	$0.8188^{+0.0077}_{-0.0074}$
$\Omega_c h^2$	$0.1187^{+0.0017}_{-0.0018}$	$H_0$	$67.93^{+0.79}_{-0.79}$	$100\theta_{s,\text{eq}}$	$0.4522^{+0.0040}_{-0.0038}$
$100\theta_{\text{MC}}$	$1.04107^{+0.00057}_{-0.00056}$	$\Omega_\Lambda$	$0.693^{+0.010}_{-0.011}$	$H(0.15)$	$73.17^{+0.69}_{-0.68}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\Omega_{\text{m}}$	$0.307^{+0.011}_{-0.010}$	$D_{\text{M}}(0.15)$	$638.5^{+6.7}_{-6.7}$
$\ln(10^{10} A_{\text{s}})$	$3.043^{+0.028}_{-0.025}$	$\Omega_{\text{m}} h^2$	$0.1418^{+0.0016}_{-0.0017}$	$H(0.38)$	$83.21^{+0.52}_{-0.50}$
$n_{\text{s}}$	$0.9681^{+0.0072}_{-0.0073}$	$\Omega_{\text{m}} h^3$	$0.09633^{+0.00057}_{-0.00058}$	$D_{\text{M}}(0.38)$	$1524^{+14}_{-14}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0048}$	$\sigma_8$	$0.807^{+0.012}_{-0.011}$	$H(0.51)$	$89.89^{+0.43}_{-0.41}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$S_8$	$0.817^{+0.021}_{-0.021}$	$D_{\text{M}}(0.51)$	$1975^{+16}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.447^{+0.011}_{-0.012}$	$H(0.61)$	$95.48^{+0.36}_{-0.34}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.9}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.601^{+0.012}_{-0.011}$	$D_{\text{M}}(0.61)$	$2298^{+17}_{-17}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-60}$	$\sigma_8/h^{0.5}$	$0.979^{+0.017}_{-0.016}$	$H(2.33)$	$235.8^{+1.1}_{-1.1}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$r_{\text{drag}} h$	$100.1^{+1.4}_{-1.3}$	$D_{\text{M}}(2.33)$	$5755^{+16}_{-17}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.042}_{-0.040}$	$f\sigma_8(0.15)$	$0.452^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$z_{\text{re}}$	$< 8.89$	$\sigma_8(0.15)$	$0.746^{+0.011}_{-0.010}$
$A^{\text{kSZ}}$	$< 8.04$	$10^9 A_{\text{s}}$	$2.097^{+0.059}_{-0.053}$	$f\sigma_8(0.38)$	$0.4715^{+0.0093}_{-0.0092}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.877^{+0.021}_{-0.020}$	$\sigma_8(0.38)$	$0.6618^{+0.0096}_{-0.0088}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.6}$	$D_{40}$	$1225^{+23}_{-22}$	$f\sigma_8(0.51)$	$0.4706^{+0.0085}_{-0.0083}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.5}$	$D_{220}$	$5739^{+76}_{-72}$	$\sigma_8(0.51)$	$0.6195^{+0.0089}_{-0.0082}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{810}$	$2538^{+26}_{-25}$	$f\sigma_8(0.61)$	$0.4659^{+0.0081}_{-0.0076}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.075}_{-0.076}$	$D_{1420}$	$817.9^{+9.5}_{-8.9}$	$\sigma_8(0.61)$	$0.5896^{+0.0085}_{-0.0078}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.060}_{-0.059}$	$D_{2000}$	$231.2^{+3.2}_{-3.0}$	$f\sigma_8(2.33)$	$0.2975^{+0.0043}_{-0.0039}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$n_{\text{s},0.002}$	$0.9681^{+0.0072}_{-0.0073}$	$\sigma_8(2.33)$	$0.3069^{+0.0045}_{-0.0041}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$Y_{\text{P}}$	$0.245427^{+0.000095}_{-0.00010}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246754^{+0.000096}_{-0.00010}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.52}$	$10^5 \text{D/H}$	$2.570^{+0.047}_{-0.046}$	$f_{2000}^{217}$	$106.8^{+3.4}_{-3.4}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	Age/Gyr	$13.779^{+0.037}_{-0.039}$	$\chi_{\text{small}}^2$	$396.9 (\nu: 1.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_*$	$1089.70^{+0.40}_{-0.40}$	$\chi_{\text{lowl}}^2$	$22.88 (\nu: 0.3)$
$m_{\text{DES}}^1$	$0.014^{+0.044}_{-0.045}$	$r_*$	$144.70^{+0.44}_{-0.42}$	$\chi_{\text{plik}}^2$	$2360.8 (\nu: 17.1)$
$m_{\text{DES}}^2$	$0.012^{+0.045}_{-0.043}$	$100\theta_*$	$1.04125^{+0.00056}_{-0.00055}$	$\chi_{6\text{DF}}^2$	$0.027 (\nu: 0.0)$
$m_{\text{DES}}^3$	$-0.007^{+0.038}_{-0.039}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.897^{+0.042}_{-0.040}$	$\chi_{\text{MGS}}^2$	$1.51 (\nu: 0.1)$
$m_{\text{DES}}^4$	$0.011^{+0.040}_{-0.042}$	$z_{\text{drag}}$	$1060.04^{+0.58}_{-0.57}$	$\chi_{\text{DR12BAO}}^2$	$4.15 (\nu: 0.4)$
$A_{\text{IA,DES}}$	$1.22^{+0.96}_{-0.92}$	$r_{\text{drag}}$	$147.34^{+0.46}_{-0.43}$	$\chi_{\text{DES}}^2$	$231.9 (\nu: 2.9)$
$\alpha_{\text{IA,DES}}$	$> -2.15$	$k_{\text{D}}$	$0.14067^{+0.00054}_{-0.00056}$	$\chi_{\text{prior}}^2$	$19.4 (\nu: 18.0)$
$\Delta z_{s,\text{DES}}^1$	$0.004^{+0.029}_{-0.028}$	$100\theta_{\text{D}}$	$0.16071^{+0.00033}_{-0.00032}$	$\chi_{\text{BAO}}^2$	$5.69 (\nu: 0.2)$
$\Delta z_{s,\text{DES}}^2$	$-0.021^{+0.023}_{-0.023}$	$z_{\text{eq}}$	$3374^{+39}_{-41}$	$\chi_{\text{CMB}}^2$	$2780.5 (\nu: 16.5)$
$\Delta z_{s,\text{DES}}^3$	$0.005^{+0.020}_{-0.021}$	$k_{\text{eq}}$	$0.01030^{+0.00012}_{-0.00013}$		

$\bar{\chi}_{\text{eff}}^2 = 3037.53$ ;  $R - 1 = 0.01574$

### 2.39 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02244^{+0.00027}_{-0.00027}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.020}_{-0.020}$	$z_{\text{eq}}$	$3382^{+45}_{-46}$
$\Omega_c h^2$	$0.1191^{+0.0020}_{-0.0020}$	$\Delta z_{\text{s,DES}}^4$	$-0.023^{+0.039}_{-0.039}$	$k_{\text{eq}}$	$0.01032^{+0.00014}_{-0.00014}$
$100\theta_{\text{MC}}$	$1.04103^{+0.00059}_{-0.00059}$	$H_0$	$67.77^{+0.94}_{-0.88}$	$100\theta_{\text{eq}}$	$0.8173^{+0.0087}_{-0.0084}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\Omega_{\Lambda}$	$0.690^{+0.012}_{-0.012}$	$100\theta_{\text{s,eq}}$	$0.4514^{+0.0045}_{-0.0043}$
$\ln(10^{10} A_{\text{s}})$	$3.045^{+0.027}_{-0.024}$	$\Omega_{\text{m}}$	$0.310^{+0.012}_{-0.012}$	$H(0.15)$	$73.04^{+0.81}_{-0.76}$
$n_{\text{s}}$	$0.9671^{+0.0078}_{-0.0074}$	$\Omega_{\text{m}} h^2$	$0.1422^{+0.0019}_{-0.0019}$	$D_{\text{M}}(0.15)$	$639.8^{+7.6}_{-7.9}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0049}$	$\Omega_{\text{m}} h^3$	$0.09634^{+0.00057}_{-0.00058}$	$H(0.38)$	$83.12^{+0.60}_{-0.55}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\sigma_8$	$0.809^{+0.011}_{-0.010}$	$D_{\text{M}}(0.38)$	$1526^{+15}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$S_8$	$0.821^{+0.021}_{-0.021}$	$H(0.51)$	$89.82^{+0.49}_{-0.45}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.9}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.012}_{-0.011}$	$D_{\text{M}}(0.51)$	$1978^{+18}_{-19}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-60}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.011}_{-0.011}$	$H(0.61)$	$95.43^{+0.41}_{-0.37}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\sigma_8/h^{0.5}$	$0.982^{+0.016}_{-0.015}$	$D_{\text{M}}(0.61)$	$2302^{+19}_{-20}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$r_{\text{drag}} h$	$99.8^{+1.6}_{-1.5}$	$H(2.33)$	$236.0^{+1.2}_{-1.2}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.038}_{-0.037}$	$D_{\text{M}}(2.33)$	$5757^{+18}_{-19}$
$A^{\text{kSZ}}$	$< 8.06$	$z_{\text{re}}$	$< 8.92$	$f\sigma_8(0.15)$	$0.455^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$10^9 A_{\text{s}}$	$2.100^{+0.056}_{-0.051}$	$\sigma_8(0.15)$	$0.7474^{+0.0098}_{-0.0093}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.880^{+0.021}_{-0.020}$	$f\sigma_8(0.38)$	$0.4733^{+0.0087}_{-0.0087}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.4}$	$D_{40}$	$1228^{+22}_{-22}$	$\sigma_8(0.38)$	$0.6627^{+0.0087}_{-0.0081}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{220}$	$5741^{+75}_{-74}$	$f\sigma_8(0.51)$	$0.4722^{+0.0078}_{-0.0078}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.075}_{-0.076}$	$D_{810}$	$2539^{+26}_{-25}$	$\sigma_8(0.51)$	$0.6203^{+0.0082}_{-0.0076}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.060}_{-0.059}$	$D_{1420}$	$817.9^{+9.7}_{-9.2}$	$f\sigma_8(0.61)$	$0.4674^{+0.0072}_{-0.0071}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$D_{2000}$	$231.1^{+3.2}_{-3.0}$	$\sigma_8(0.61)$	$0.5903^{+0.0079}_{-0.0072}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$n_{\text{s},0.002}$	$0.9671^{+0.0078}_{-0.0074}$	$f\sigma_8(2.33)$	$0.2977^{+0.0041}_{-0.0037}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$Y_{\text{P}}$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	$0.3070^{+0.0044}_{-0.0040}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.52}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24675^{+0.00010}_{-0.00011}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0013}$	$10^5 \text{D/H}$	$2.573^{+0.050}_{-0.048}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	Age/Gyr	$13.783^{+0.041}_{-0.042}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.4}$
$m_{\text{DES}}^1$	$0.014^{+0.044}_{-0.046}$	$z_*$	$1089.75^{+0.44}_{-0.44}$	$\chi_{\text{lensing}}^2$	$9.12 (\nu: 0.2)$
$m_{\text{DES}}^2$	$0.012^{+0.043}_{-0.043}$	$r_*$	$144.62^{+0.47}_{-0.45}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$m_{\text{DES}}^3$	$-0.009^{+0.038}_{-0.039}$	$100\theta_*$	$1.04120^{+0.00058}_{-0.00058}$	$\chi_{\text{lowl}}^2$	$23.12 (\nu: 0.3)$
$m_{\text{DES}}^4$	$0.010^{+0.041}_{-0.042}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.890^{+0.045}_{-0.042}$	$\chi_{\text{plik}}^2$	$2360.0 (\nu: 16.1)$
$A_{\text{IA,DES}}$	$1.26^{+0.95}_{-0.93}$	$z_{\text{drag}}$	$1060.03^{+0.55}_{-0.55}$	$\chi_{\text{DES}}^2$	$232.1 (\nu: 3.2)$
$\alpha_{\text{IA,DES}}$	$> -2.10$	$r_{\text{drag}}$	$147.26^{+0.49}_{-0.46}$	$\chi_{\text{prior}}^2$	$19.6 (\nu: 18.4)$
$\Delta z_{\text{s,DES}}^1$	$0.005^{+0.029}_{-0.028}$	$k_{\text{D}}$	$0.14074^{+0.00054}_{-0.00056}$	$\chi_{\text{CMB}}^2$	$2789.2 (\nu: 16.7)$
$\Delta z_{\text{s,DES}}^2$	$-0.021^{+0.023}_{-0.023}$	$100\theta_{\text{D}}$	$0.16071^{+0.00033}_{-0.00032}$		

$$\bar{\chi}_{\text{eff}}^2 = 3040.94; R - 1 = 0.01565$$



## 2.40 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02246^{+0.00026}_{-0.00025}$	$\Delta z_{s,\text{DES}}^4$	$-0.022^{+0.038}_{-0.040}$	$100\theta_{\text{eq}}$	$0.8184^{+0.0073}_{-0.0070}$
$\Omega_c h^2$	$0.1188^{+0.0016}_{-0.0017}$	$H_0$	$67.89^{+0.77}_{-0.76}$	$100\theta_{s,\text{eq}}$	$0.4520^{+0.0037}_{-0.0036}$
$100\theta_{\text{MC}}$	$1.04106^{+0.00057}_{-0.00056}$	$\Omega_\Lambda$	$0.692^{+0.010}_{-0.010}$	$H(0.15)$	$73.14^{+0.67}_{-0.65}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\Omega_m$	$0.308^{+0.010}_{-0.010}$	$D_M(0.15)$	$638.8^{+6.5}_{-6.5}$
$\ln(10^{10} A_s)$	$3.046^{+0.027}_{-0.025}$	$\Omega_m h^2$	$0.1419^{+0.0016}_{-0.0016}$	$H(0.38)$	$83.19^{+0.50}_{-0.48}$
$n_s$	$0.9677^{+0.0072}_{-0.0073}$	$\Omega_m h^3$	$0.09635^{+0.00057}_{-0.00058}$	$D_M(0.38)$	$1524^{+13}_{-13}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$\sigma_8$	$0.808^{+0.011}_{-0.010}$	$H(0.51)$	$89.88^{+0.41}_{-0.40}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$S_8$	$0.819^{+0.018}_{-0.018}$	$D_M(0.51)$	$1975^{+15}_{-16}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.010}_{-0.0099}$	$H(0.61)$	$95.47^{+0.35}_{-0.33}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.9}$	$\sigma_8 \Omega_m^{0.25}$	$0.6022^{+0.0098}_{-0.0098}$	$D_M(0.61)$	$2299^{+17}_{-17}$
$A_{100}^{\text{PS}}$	$259^{+60}_{-60}$	$\sigma_8/h^{0.5}$	$0.981^{+0.015}_{-0.014}$	$H(2.33)$	$235.9^{+1.0}_{-1.0}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$r_{\text{drag}} h$	$100.0^{+1.3}_{-1.3}$	$D_M(2.33)$	$5755^{+16}_{-17}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.036}_{-0.036}$	$f\sigma_8(0.15)$	$0.4534^{+0.0094}_{-0.0093}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$\sigma_8(0.15)$	$0.7473^{+0.0099}_{-0.0094}$
$A^{\text{kSZ}}$	$< 8.04$	$10^9 A_s$	$2.102^{+0.056}_{-0.052}$	$f\sigma_8(0.38)$	$0.4725^{+0.0079}_{-0.0079}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.021}_{-0.019}$	$\sigma_8(0.38)$	$0.6628^{+0.0088}_{-0.0083}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.6}$	$D_{40}$	$1227^{+22}_{-22}$	$f\sigma_8(0.51)$	$0.4715^{+0.0072}_{-0.0072}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.3}_{-6.5}$	$D_{220}$	$5743^{+75}_{-73}$	$\sigma_8(0.51)$	$0.6204^{+0.0083}_{-0.0078}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{810}$	$2539^{+26}_{-25}$	$f\sigma_8(0.61)$	$0.4669^{+0.0069}_{-0.0067}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.075}_{-0.076}$	$D_{1420}$	$818.2^{+9.6}_{-9.0}$	$\sigma_8(0.61)$	$0.5905^{+0.0080}_{-0.0074}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.060}_{-0.059}$	$D_{2000}$	$231.2^{+3.1}_{-3.0}$	$f\sigma_8(2.33)$	$0.2979^{+0.0041}_{-0.0038}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$n_{s,0.002}$	$0.9677^{+0.0072}_{-0.0073}$	$\sigma_8(2.33)$	$0.3072^{+0.0044}_{-0.0041}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$Y_{\text{P}}$	$0.245427^{+0.000094}_{-0.00010}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246754^{+0.000095}_{-0.00010}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.51}$	$10^5 \text{D/H}$	$2.570^{+0.047}_{-0.046}$	$f_{2000}^{217}$	$106.8^{+3.4}_{-3.4}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0013}$	Age/Gyr	$13.779^{+0.037}_{-0.038}$	$\chi_{\text{lensing}}^2$	$9.13 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_*$	$1089.71^{+0.40}_{-0.40}$	$\chi_{\text{small}}^2$	$397.1 (\nu: 1.7)$
$m_{\text{DES}}^1$	$0.014^{+0.044}_{-0.046}$	$r_*$	$144.67^{+0.41}_{-0.40}$	$\chi_{\text{lowl}}^2$	$23.01 (\nu: 0.3)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.043}$	$100\theta_*$	$1.04124^{+0.00056}_{-0.00056}$	$\chi_{\text{plik}}^2$	$2360.2 (\nu: 16.2)$
$m_{\text{DES}}^3$	$-0.008^{+0.038}_{-0.039}$	$D_M(z_*)/\text{Gpc}$	$13.894^{+0.040}_{-0.038}$	$\chi_{6\text{DF}}^2$	$0.028 (\nu: 0.0)$
$m_{\text{DES}}^4$	$0.011^{+0.040}_{-0.042}$	$z_{\text{drag}}$	$1060.05^{+0.57}_{-0.54}$	$\chi_{\text{MGS}}^2$	$1.46 (\nu: 0.1)$
$A_{\text{IA,DES}}$	$1.24^{+0.94}_{-0.92}$	$r_{\text{drag}}$	$147.31^{+0.44}_{-0.42}$	$\chi_{\text{DR12BAO}}^2$	$4.21 (\nu: 0.4)$
$\alpha_{\text{IA,DES}}$	$> -2.12$	$k_{\text{D}}$	$0.14071^{+0.00052}_{-0.00054}$	$\chi_{\text{DES}}^2$	$231.9 (\nu: 3.0)$
$\Delta z_{s,\text{DES}}^1$	$0.005^{+0.029}_{-0.028}$	$100\theta_{\text{D}}$	$0.16070^{+0.00033}_{-0.00032}$	$\chi_{\text{prior}}^2$	$19.5 (\nu: 18.1)$
$\Delta z_{s,\text{DES}}^2$	$-0.021^{+0.023}_{-0.023}$	$z_{\text{eq}}$	$3376^{+37}_{-38}$	$\chi_{\text{CMB}}^2$	$2789.4 (\nu: 16.8)$
$\Delta z_{s,\text{DES}}^3$	$0.005^{+0.020}_{-0.021}$	$k_{\text{eq}}$	$0.01030^{+0.00011}_{-0.00012}$	$\chi_{\text{BAO}}^2$	$5.71 (\nu: 0.2)$

$$\bar{\chi}_{\text{eff}}^2 = 3046.49; R - 1 = 0.01631$$

### 3 Alens

#### 3.1 base\_Alens\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02270	$0.02260^{+0.00058}_{-0.00056}$	$\sigma_8 \Omega_m^{0.5}$	0.4291	$0.432^{+0.031}_{-0.031}$	$100\theta_{s,eq}$	0.4579	$0.457^{+0.011}_{-0.011}$
$\Omega_c h^2$	0.11613	$0.1166^{+0.0048}_{-0.0048}$	$\sigma_8 \Omega_m^{0.25}$	0.5840	$0.586^{+0.028}_{-0.029}$	$H(0.15)$	74.25	$74.0^{+2.1}_{-1.9}$
$100\theta_{MC}$	1.04143	$1.0414^{+0.0011}_{-0.0010}$	$\sigma_8/h^{0.5}$	0.9556	$0.958^{+0.039}_{-0.040}$	$D_M(0.15)$	628.1	$630^{+19}_{-19}$
$\tau$	0.0519	$0.050^{+0.016}_{-0.019}$	$r_{drag}h$	102.21	$101.8^{+4.1}_{-3.8}$	$H(0.38)$	84.01	$83.8^{+1.6}_{-1.4}$
$A_L$	1.263	$1.24^{+0.19}_{-0.18}$	$\langle d^2 \rangle^{1/2}$	2.656	$2.64^{+0.15}_{-0.15}$	$D_M(0.38)$	1502.8	$1507^{+38}_{-39}$
$\ln(10^{10} A_s)$	3.0300	$3.027^{+0.034}_{-0.039}$	$z_{re}$	7.30	$7.1^{+1.7}_{-1.9}$	$H(0.51)$	90.52	$90.4^{+1.3}_{-1.1}$
$n_s$	0.9769	$0.974^{+0.014}_{-0.014}$	$10^9 A_s$	2.070	$2.064^{+0.070}_{-0.079}$	$D_M(0.51)$	1949.9	$1955^{+45}_{-47}$
$y_{cal}$	0.99986	$1.0000^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8656	$1.867^{+0.028}_{-0.028}$	$H(0.61)$	95.99	$95.9^{+1.1}_{-0.93}$
$A_{217}^{CIB}$	42.5	$45^{+10}_{-10}$	$D_{40}$	1203.3	$1209^{+33}_{-33}$	$D_M(0.61)$	2271.5	$2277^{+49}_{-51}$
$\xi^{tSZ \times CIB}$	0.999	—	$D_{220}$	5737	$5736^{+84}_{-80}$	$H(2.33)$	234.39	$234.6^{+2.8}_{-2.8}$
$A_{143}^{tSZ}$	6.83	$5.6^{+3.7}_{-3.7}$	$D_{810}$	2527.7	$2527^{+27}_{-27}$	$D_M(2.33)$	5733.4	$5739^{+42}_{-46}$
$A_{100}^{PS}$	238	$250^{+60}_{-50}$	$D_{1420}$	815.8	$814^{+10}_{-9.8}$	$f\sigma_8(0.15)$	0.4351	$0.437^{+0.029}_{-0.029}$
$A_{143}^{PS}$	48.5	$42^{+20}_{-20}$	$D_{2000}$	233.15	$232.3^{+4.0}_{-3.9}$	$\sigma_8(0.15)$	0.7364	$0.736^{+0.018}_{-0.019}$
$A_{143 \times 217}^{PS}$	56.6	$41^{+20}_{-20}$	$n_{s,0.002}$	0.9769	$0.974^{+0.014}_{-0.014}$	$f\sigma_8(0.38)$	0.4575	$0.459^{+0.023}_{-0.024}$
$A_{217}^{PS}$	123.0	$115^{+20}_{-20}$	$Y_P$	0.245516	$0.24549^{+0.00025}_{-0.00022}$	$\sigma_8(0.38)$	0.6550	$0.654^{+0.014}_{-0.015}$
$A^{kSZ}$	0.00	$< 7.09$	$Y_P^{BBN}$	0.246843	$0.24681^{+0.00025}_{-0.00022}$	$f\sigma_8(0.51)$	0.4584	$0.459^{+0.020}_{-0.021}$
$A_{100}^{dustTT}$	8.91	$8.9^{+3.6}_{-3.5}$	$10^5 D/H$	2.527	$2.54^{+0.10}_{-0.10}$	$\sigma_8(0.51)$	0.6139	$0.613^{+0.012}_{-0.013}$
$A_{143}^{dustTT}$	10.60	$10.5^{+3.4}_{-3.5}$	Age/Gyr	13.732	$13.745^{+0.093}_{-0.10}$	$f\sigma_8(0.61)$	0.4552	$0.456^{+0.018}_{-0.019}$
$A_{143 \times 217}^{dustTT}$	19.6	$17.9^{+6.4}_{-6.5}$	$z_*$	1089.18	$1089.3^{+1.0}_{-1.0}$	$\sigma_8(0.61)$	0.5847	$0.584^{+0.011}_{-0.012}$
$A_{217}^{dustTT}$	95.6	$94^{+10}_{-10}$	$r_*$	145.19	$145.1^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	0.2956	$0.2951^{+0.0052}_{-0.0060}$
$c_{100}$	0.99973	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04157	$1.0416^{+0.0010}_{-0.00099}$	$\sigma_8(2.33)$	0.3057	$0.3050^{+0.0053}_{-0.0061}$
$c_{217}$	0.99813	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.939	$13.934^{+0.094}_{-0.093}$	$f_{2000}^{143}$	25.1	$27^{+7}_{-6}$
$H_0$	69.18	$68.9^{+2.4}_{-2.2}$	$z_{drag}$	1060.43	$1060.2^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	29.23	$30^{+5}_{-5}$
$\Omega_\Lambda$	0.7085	$0.705^{+0.028}_{-0.029}$	$r_{drag}$	147.75	$147.7^{+1.0}_{-0.98}$	$f_{2000}^{217}$	103.90	$105.0^{+4.4}_{-4.3}$
$\Omega_m$	0.2915	$0.295^{+0.029}_{-0.028}$	$k_D$	0.14041	$0.1404^{+0.0010}_{-0.0010}$	$\chi_{simall}^2$	395.66	$396.8 (\nu: 1.3)$
$\Omega_m h^2$	0.13947	$0.1399^{+0.0044}_{-0.0045}$	$100\theta_D$	0.16051	$0.16063^{+0.00060}_{-0.00058}$	$\chi_{lowl}^2$	21.34	$21.8 (\nu: 0.6)$
$\Omega_m h^3$	0.09648	$0.0964^{+0.0010}_{-0.00098}$	$z_{eq}$	3318	$3328^{+110}_{-110}$	$\chi_{plik}^2$	752.9	$767.3 (\nu: 15.4)$
$\sigma_8$	0.7948	$0.795^{+0.021}_{-0.023}$	$k_{eq}$	0.010126	$0.01016^{+0.00032}_{-0.00032}$	$\chi_{prior}^2$	0.97	$7.1 (\nu: 6.2)$
$S_8$	0.783	$0.788^{+0.057}_{-0.056}$	$100\theta_{eq}$	0.8301	$0.828^{+0.022}_{-0.021}$	$\chi_{CMB}^2$	1169.9	$1186.0 (\nu: 16.6)$

Best-fit  $\chi_{eff}^2 = 1170.89$ ;  $\Delta\chi_{eff}^2 = -8.69$ ;  $\bar{\chi}_{eff}^2 = 1193.04$ ;  $\Delta\bar{\chi}_{eff}^2 = -6.54$ ;  $R - 1 = 0.00760$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 ( $\Delta$  -0.21) commander\_dx12.v3.2.29: 21.34 ( $\Delta$  -2.26) plik\_rd12\_HM.v22.TT: 752.92 ( $\Delta$  -5.83)

### 3.2 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022567	$0.02249^{+0.00042}_{-0.00044}$	$\sigma_8/h^{0.5}$	0.9675	$0.967^{+0.024}_{-0.026}$	$D_M(0.38)$	1515.3	$1517^{+20}_{-20}$
$\Omega_c h^2$	0.11772	$0.1179^{+0.0025}_{-0.0025}$	$r_{\text{drag}} h$	100.91	$100.8^{+2.0}_{-2.0}$	$H(0.51)$	90.15	$90.08^{+0.66}_{-0.64}$
$100\theta_{\text{MC}}$	1.04123	$1.04122^{+0.00086}_{-0.00085}$	$\langle d^2 \rangle^{1/2}$	2.652	$2.63^{+0.15}_{-0.15}$	$D_M(0.51)$	1964.6	$1967^{+24}_{-24}$
$\tau$	0.0507	$0.049^{+0.016}_{-0.018}$	$z_{\text{re}}$	7.24	$7.1^{+1.7}_{-1.8}$	$H(0.61)$	95.69	$95.62^{+0.57}_{-0.55}$
$A_L$	1.231	$1.21^{+0.16}_{-0.15}$	$10^9 A_s$	2.073	$2.066^{+0.070}_{-0.078}$	$D_M(0.61)$	2287.5	$2290^{+26}_{-26}$
$\ln(10^{10} A_s)$	3.0317	$3.028^{+0.033}_{-0.038}$	$10^9 A_s e^{-2\tau}$	1.8731	$1.872^{+0.022}_{-0.022}$	$H(2.33)$	235.28	$235.3^{+1.6}_{-1.6}$
$n_s$	0.9730	$0.9709^{+0.0086}_{-0.0087}$	$D_{40}$	1211.7	$1215^{+25}_{-24}$	$D_M(2.33)$	5745.9	$5749^{+27}_{-27}$
$y_{\text{cal}}$	0.999996	$0.99998^{+0.0048}_{-0.0049}$	$D_{220}$	5731	$5730^{+79}_{-78}$	$f\sigma_8(0.15)$	0.4444	$0.445^{+0.016}_{-0.016}$
$A_{217}^{\text{CIB}}$	42.8	$45^{+10}_{-10}$	$D_{810}$	2530.5	$2528^{+26}_{-26}$	$\sigma_8(0.15)$	0.7405	$0.739^{+0.014}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	—	$D_{1420}$	815.5	$813.8^{+9.8}_{-9.8}$	$f\sigma_8(0.38)$	0.4648	$0.465^{+0.014}_{-0.014}$
$A_{143}^{\text{tSZ}}$	6.67	$5.6^{+3.7}_{-3.8}$	$D_{2000}$	232.70	$231.7^{+3.6}_{-3.6}$	$\sigma_8(0.38)$	0.6576	$0.656^{+0.012}_{-0.013}$
$A_{100}^{\text{PS}}$	240	$251^{+60}_{-50}$	$n_{s,0.002}$	0.9730	$0.9709^{+0.0086}_{-0.0087}$	$f\sigma_8(0.51)$	0.4647	$0.464^{+0.012}_{-0.013}$
$A_{143}^{\text{PS}}$	50.3	$43^{+20}_{-20}$	$Y_P$	0.245468	$0.24544^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	0.6159	$0.615^{+0.011}_{-0.012}$
$A_{143 \times 217}^{\text{PS}}$	57.4	$42^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.246795	$0.24677^{+0.00017}_{-0.00017}$	$f\sigma_8(0.61)$	0.4606	$0.460^{+0.011}_{-0.012}$
$A_{217}^{\text{PS}}$	123.5	$115^{+20}_{-20}$	$10^5 D/H$	2.550	$2.564^{+0.081}_{-0.076}$	$\sigma_8(0.61)$	0.5863	$0.585^{+0.010}_{-0.012}$
$A^{\text{kSZ}}$	0.00	$< 7.23$	Age/Gyr	13.759	$13.767^{+0.061}_{-0.061}$	$f\sigma_8(2.33)$	0.2960	$0.2954^{+0.0051}_{-0.0058}$
$A_{100}^{\text{dustTT}}$	8.85	$8.9^{+3.6}_{-3.5}$	$z_*$	1089.48	$1089.58^{+0.64}_{-0.63}$	$\sigma_8(2.33)$	0.3057	$0.3049^{+0.0052}_{-0.0060}$
$A_{143}^{\text{dustTT}}$	10.67	$10.5^{+3.4}_{-3.5}$	$r_*$	144.87	$144.89^{+0.63}_{-0.62}$	$f_{2000}^{143}$	25.9	$27^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.0^{+6.2}_{-6.3}$	$100\theta_*$	1.04139	$1.04139^{+0.00084}_{-0.00083}$	$f_{2000}^{143 \times 217}$	29.80	$31^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	95.9	$94^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.911	$13.913^{+0.062}_{-0.061}$	$f_{2000}^{217}$	104.42	$105.5^{+4.0}_{-4.0}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.24	$1060.07^{+0.93}_{-0.98}$	$\chi_{\text{small}}^2$	395.68	$396.8 (\nu: 1.3)$
$c_{217}$	0.99814	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.48	$147.52^{+0.69}_{-0.68}$	$\chi_{\text{lowl}}^2$	21.89	$22.23 (\nu: 0.3)$
$H_0$	68.43	$68.3^{+1.2}_{-1.2}$	$k_D$	0.14061	$0.14051^{+0.00091}_{-0.00089}$	$\chi_{\text{plik}}^2$	752.7	$766.3 (\nu: 14.2)$
$\Omega_\Lambda$	0.6990	$0.698^{+0.015}_{-0.015}$	$100\theta_D$	0.16061	$0.16071^{+0.00055}_{-0.00052}$	$\chi_{6\text{DF}}^2$	0.008	$0.046 (\nu: 0.0)$
$\Omega_m$	0.3010	$0.302^{+0.015}_{-0.015}$	$z_{\text{eq}}$	3352	$3354^{+57}_{-57}$	$\chi_{\text{MGS}}^2$	1.97	$1.95 (\nu: 0.2)$
$\Omega_m h^2$	0.14093	$0.1410^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	0.010232	$0.01024^{+0.00017}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	3.38	$4.05 (\nu: 0.5)$
$\Omega_m h^3$	0.09643	$0.09632^{+0.00098}_{-0.00095}$	$100\theta_{\text{eq}}$	0.8231	$0.823^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	1.0	$7.1 (\nu: 6.3)$
$\sigma_8$	0.8003	$0.799^{+0.016}_{-0.018}$	$100\theta_{s,\text{eq}}$	0.4544	$0.4541^{+0.0056}_{-0.0055}$	$\chi_{\text{BAO}}^2$	5.35	$6.0 (\nu: 0.7)$
$S_8$	0.8016	$0.802^{+0.031}_{-0.031}$	$H(0.15)$	73.60	$73.5^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	1170.2	$1185.3 (\nu: 15.6)$
$\sigma_8 \Omega_m^{0.5}$	0.4391	$0.439^{+0.017}_{-0.017}$	$D_M(0.15)$	634.3	$635^{+10}_{-9.8}$			
$\sigma_8 \Omega_m^{0.25}$	0.5928	$0.592^{+0.017}_{-0.017}$	$H(0.38)$	83.53	$83.45^{+0.79}_{-0.76}$			

Best-fit  $\chi_{\text{eff}}^2 = 1176.61$ ;  $\Delta\chi_{\text{eff}}^2 = -9.14$ ;  $\bar{\chi}_{\text{eff}}^2 = 1198.50$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -7.53$ ;  $R - 1 = 0.01593$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.01) MGS: 1.97 ( $\Delta$  0.69) DR12BAO: 3.38 ( $\Delta$  -0.80) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.21) commander\_dx12\_v3\_2\_29: 21.89 ( $\Delta$  -0.93) plik\_rd12\_HM\_v22\_TT: 752.66 ( $\Delta$  -7.44)

### 3.3 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02261^{+0.00058}_{-0.00056}$	$\sigma_8 \Omega_m^{0.5}$	$0.433^{+0.031}_{-0.031}$	$100\theta_{s,eq}$	$0.457^{+0.011}_{-0.011}$
$\Omega_c h^2$	$0.1166^{+0.0048}_{-0.0048}$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.028}_{-0.029}$	$H(0.15)$	$74.1^{+2.1}_{-1.9}$
$100\theta_{MC}$	$1.0414^{+0.0011}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.960^{+0.039}_{-0.040}$	$D_M(0.15)$	$630^{+19}_{-20}$
$\tau$	$0.0533^{+0.012}_{-0.0099}$	$r_{drag}h$	$101.9^{+4.1}_{-3.9}$	$H(0.38)$	$83.9^{+1.6}_{-1.4}$
$A_L$	$1.24^{+0.19}_{-0.18}$	$\langle d^2 \rangle^{1/2}$	$2.64^{+0.15}_{-0.15}$	$D_M(0.38)$	$1507^{+38}_{-40}$
$\ln(10^{10} A_s)$	$3.033^{+0.027}_{-0.025}$	$z_{re}$	$< 8.55$	$H(0.51)$	$90.4^{+1.3}_{-1.2}$
$n_s$	$0.974^{+0.014}_{-0.014}$	$10^9 A_s$	$2.077^{+0.056}_{-0.051}$	$D_M(0.51)$	$1955^{+45}_{-47}$
$y_{cal}$	$1.0000^{+0.0049}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	$1.867^{+0.028}_{-0.028}$	$H(0.61)$	$95.9^{+1.1}_{-0.94}$
$A_{217}^{CIB}$	$45^{+10}_{-10}$	$D_{40}$	$1209^{+34}_{-33}$	$D_M(0.61)$	$2277^{+49}_{-51}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5736^{+83}_{-80}$	$H(2.33)$	$234.6^{+2.8}_{-2.8}$
$A_{143}^{tSZ}$	$5.6^{+3.7}_{-3.7}$	$D_{810}$	$2527^{+27}_{-27}$	$D_M(2.33)$	$5738^{+42}_{-46}$
$A_{100}^{PS}$	$250^{+60}_{-60}$	$D_{1420}$	$814.4^{+9.9}_{-9.8}$	$f\sigma_8(0.15)$	$0.438^{+0.029}_{-0.029}$
$A_{143}^{PS}$	$42^{+20}_{-20}$	$D_{2000}$	$232.3^{+4.1}_{-3.9}$	$\sigma_8(0.15)$	$0.738^{+0.016}_{-0.017}$
$A_{143 \times 217}^{PS}$	$41^{+20}_{-20}$	$n_{s,0.002}$	$0.974^{+0.014}_{-0.014}$	$f\sigma_8(0.38)$	$0.460^{+0.023}_{-0.024}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$Y_P$	$0.24549^{+0.00025}_{-0.00022}$	$\sigma_8(0.38)$	$0.656^{+0.012}_{-0.012}$
$A^{kSZ}$	$< 7.06$	$Y_P^{BBN}$	$0.24681^{+0.00025}_{-0.00022}$	$f\sigma_8(0.51)$	$0.461^{+0.020}_{-0.021}$
$A_{100}^{dustTT}$	$8.9^{+3.6}_{-3.5}$	$10^5 D/H$	$2.54^{+0.10}_{-0.10}$	$\sigma_8(0.51)$	$0.615^{+0.011}_{-0.010}$
$A_{143}^{dustTT}$	$10.5^{+3.4}_{-3.5}$	Age/Gyr	$13.743^{+0.093}_{-0.10}$	$f\sigma_8(0.61)$	$0.457^{+0.018}_{-0.019}$
$A_{143 \times 217}^{dustTT}$	$17.9^{+6.4}_{-6.5}$	$z_*$	$1089.3^{+1.0}_{-1.0}$	$\sigma_8(0.61)$	$0.5857^{+0.0097}_{-0.0091}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$r_*$	$145.1^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	$0.2960^{+0.0043}_{-0.0041}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.0416^{+0.0010}_{-0.00099}$	$\sigma_8(2.33)$	$0.3060^{+0.0042}_{-0.0038}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0013}$	$D_M(z_*)/\text{Gpc}$	$13.935^{+0.094}_{-0.093}$	$f_{2000}^{143}$	$27^{+7}_{-6}$
$H_0$	$69.0^{+2.4}_{-2.3}$	$z_{drag}$	$1060.2^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	$30^{+5}_{-5}$
$\Omega_\Lambda$	$0.705^{+0.028}_{-0.029}$	$r_{drag}$	$147.7^{+1.0}_{-0.97}$	$f_{2000}^{217}$	$105.0^{+4.4}_{-4.3}$
$\Omega_m$	$0.295^{+0.029}_{-0.028}$	$k_D$	$0.1404^{+0.0010}_{-0.0010}$	$\chi_{simall}^2$	$396.4 (\nu: 0.6)$
$\Omega_m h^2$	$0.1398^{+0.0044}_{-0.0045}$	$100\theta_D$	$0.16063^{+0.00060}_{-0.00058}$	$\chi_{lowl}^2$	$21.9 (\nu: 0.6)$
$\Omega_m h^3$	$0.0964^{+0.0010}_{-0.00097}$	$z_{eq}$	$3326^{+110}_{-110}$	$\chi_{plik}^2$	$767.3 (\nu: 15.5)$
$\sigma_8$	$0.797^{+0.020}_{-0.021}$	$k_{eq}$	$0.01015^{+0.00032}_{-0.00033}$	$\chi_{prior}^2$	$7.1 (\nu: 6.2)$
$S_8$	$0.790^{+0.057}_{-0.057}$	$100\theta_{eq}$	$0.828^{+0.022}_{-0.021}$	$\chi_{CMB}^2$	$1185.5 (\nu: 16.1)$

$$\bar{\chi}_{eff}^2 = 1192.62; \Delta\bar{\chi}_{eff}^2 = -6.69; R - 1 = 0.00588$$

### 3.4 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02249^{+0.00042}_{-0.00043}$	$\sigma_8/h^{0.5}$	$0.970^{+0.022}_{-0.022}$	$D_M(0.38)$	$1517^{+20}_{-20}$
$\Omega_c h^2$	$0.1179^{+0.0025}_{-0.0025}$	$r_{\text{drag}} h$	$100.8^{+2.0}_{-2.0}$	$H(0.51)$	$90.08^{+0.65}_{-0.63}$
$100\theta_{\text{MC}}$	$1.04122^{+0.00086}_{-0.00084}$	$\langle d^2 \rangle^{1/2}$	$2.63^{+0.15}_{-0.15}$	$D_M(0.51)$	$1967^{+24}_{-24}$
$\tau$	$0.0526^{+0.012}_{-0.0096}$	$z_{\text{re}}$	$< 8.51$	$H(0.61)$	$95.63^{+0.57}_{-0.54}$
$A_L$	$1.20^{+0.15}_{-0.15}$	$10^9 A_s$	$2.080^{+0.054}_{-0.048}$	$D_M(0.61)$	$2290^{+26}_{-26}$
$\ln(10^{10} A_s)$	$3.035^{+0.026}_{-0.023}$	$10^9 A_s e^{-2\tau}$	$1.872^{+0.022}_{-0.022}$	$H(2.33)$	$235.3^{+1.5}_{-1.6}$
$n_s$	$0.9710^{+0.0085}_{-0.0087}$	$D_{40}$	$1216^{+26}_{-24}$	$D_M(2.33)$	$5749^{+27}_{-27}$
$y_{\text{cal}}$	$0.99999^{+0.0048}_{-0.0049}$	$D_{220}$	$5729^{+79}_{-78}$	$f\sigma_8(0.15)$	$0.446^{+0.016}_{-0.015}$
$A_{217}^{\text{CIB}}$	$45^{+10}_{-10}$	$D_{810}$	$2528^{+26}_{-26}$	$\sigma_8(0.15)$	$0.742^{+0.012}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$813.9^{+9.6}_{-9.6}$	$f\sigma_8(0.38)$	$0.466^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.7}_{-3.8}$	$D_{2000}$	$231.8^{+3.5}_{-3.6}$	$\sigma_8(0.38)$	$0.6585^{+0.0097}_{-0.0091}$
$A_{100}^{\text{PS}}$	$251^{+60}_{-50}$	$n_{s,0.002}$	$0.9710^{+0.0085}_{-0.0087}$	$f\sigma_8(0.51)$	$0.466^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_P$	$0.24544^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	$0.6167^{+0.0088}_{-0.0082}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24677^{+0.00017}_{-0.00017}$	$f\sigma_8(0.61)$	$0.462^{+0.010}_{-0.010}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 D/H$	$2.564^{+0.080}_{-0.076}$	$\sigma_8(0.61)$	$0.5871^{+0.0083}_{-0.0077}$
$A^{\text{kSZ}}$	$< 7.23$	Age/Gyr	$13.767^{+0.060}_{-0.061}$	$f\sigma_8(2.33)$	$0.2964^{+0.0040}_{-0.0037}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1089.58^{+0.64}_{-0.64}$	$\sigma_8(2.33)$	$0.3060^{+0.0041}_{-0.0037}$
$A_{143}^{\text{dustTT}}$	$10.5^{+3.4}_{-3.6}$	$r_*$	$144.89^{+0.64}_{-0.62}$	$f_{2000}^{143}$	$27^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.0^{+6.3}_{-6.3}$	$100\theta_*$	$1.04140^{+0.00085}_{-0.00082}$	$f_{2000}^{143 \times 217}$	$31^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.913^{+0.062}_{-0.061}$	$f_{2000}^{217}$	$105.4^{+4.0}_{-4.0}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.07^{+0.93}_{-0.97}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0013}$	$r_{\text{drag}}$	$147.52^{+0.69}_{-0.68}$	$\chi_{\text{lowl}}^2$	$22.29 (\nu: 0.3)$
$H_0$	$68.3^{+1.2}_{-1.2}$	$k_D$	$0.14050^{+0.00088}_{-0.00090}$	$\chi_{\text{plik}}^2$	$766.2 (\nu: 14.3)$
$\Omega_\Lambda$	$0.698^{+0.015}_{-0.015}$	$100\theta_D$	$0.16071^{+0.00054}_{-0.00052}$	$\chi_{6\text{DF}}^2$	$0.046 (\nu: 0.0)$
$\Omega_m$	$0.302^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3354^{+57}_{-57}$	$\chi_{\text{MGS}}^2$	$1.96 (\nu: 0.2)$
$\Omega_m h^2$	$0.1410^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	$0.01024^{+0.00017}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	$4.04 (\nu: 0.5)$
$\Omega_m h^3$	$0.09632^{+0.00097}_{-0.00093}$	$100\theta_{\text{eq}}$	$0.823^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 6.3)$
$\sigma_8$	$0.802^{+0.014}_{-0.013}$	$100\theta_{s,\text{eq}}$	$0.4542^{+0.0056}_{-0.0055}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.7)$
$S_8$	$0.805^{+0.031}_{-0.030}$	$H(0.15)$	$73.5^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	$1184.9 (\nu: 15.0)$
$\sigma_8 \Omega_m^{0.5}$	$0.441^{+0.017}_{-0.016}$	$D_M(0.15)$	$635^{+10}_{-9.8}$		
$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.016}_{-0.015}$	$H(0.38)$	$83.45^{+0.78}_{-0.76}$		

$$\bar{\chi}_{\text{eff}}^2 = 1198.08; \Delta \bar{\chi}_{\text{eff}}^2 = -7.68; R - 1 = 0.01471$$

### 3.5 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022631	$0.02259^{+0.00034}_{-0.00033}$	$\Omega_m h^2$	0.14113	$0.1413^{+0.0028}_{-0.0029}$	$k_{\text{eq}}$	0.010247	$0.01026^{+0.00021}_{-0.00021}$
$\Omega_c h^2$	0.11786	$0.1181^{+0.0030}_{-0.0031}$	$\Omega_m h^3$	0.09656	$0.09650^{+0.00061}_{-0.00058}$	$100\theta_{\text{eq}}$	0.8224	$0.821^{+0.013}_{-0.013}$
$100\theta_{\text{MC}}$	1.04118	$1.04114^{+0.00064}_{-0.00062}$	$\sigma_8$	0.8010	$0.800^{+0.017}_{-0.018}$	$100\theta_{\text{s,eq}}$	0.4539	$0.4534^{+0.0069}_{-0.0066}$
$\tau$	0.0511	$0.049^{+0.017}_{-0.017}$	$S_8$	0.8030	$0.804^{+0.038}_{-0.038}$	$H(0.15)$	73.60	$73.5^{+1.2}_{-1.2}$
$A_L$	1.191	$1.18^{+0.13}_{-0.13}$	$\sigma_8 \Omega_m^{0.5}$	0.4398	$0.440^{+0.021}_{-0.021}$	$D_M(0.15)$	634.4	$636^{+12}_{-12}$
$\ln(10^{10} A_s)$	3.0331	$3.029^{+0.035}_{-0.036}$	$\sigma_8 \Omega_m^{0.25}$	0.5935	$0.593^{+0.020}_{-0.020}$	$H(0.38)$	83.54	$83.46^{+0.91}_{-0.86}$
$n_s$	0.9729	$0.9708^{+0.0094}_{-0.0094}$	$\sigma_8/h^{0.5}$	0.9683	$0.968^{+0.028}_{-0.029}$	$D_M(0.38)$	1515.3	$1518^{+24}_{-24}$
$y_{\text{cal}}$	0.99999	$1.0000^{+0.0047}_{-0.0046}$	$r_{\text{drag}} h$	100.82	$100.6^{+2.5}_{-2.4}$	$H(0.51)$	90.17	$90.10^{+0.72}_{-0.69}$
$A_{217}^{\text{CIB}}$	42.2	$45^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.612	$2.60^{+0.11}_{-0.12}$	$D_M(0.51)$	1964.6	$1967^{+28}_{-28}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	—	$z_{\text{re}}$	7.27	$7.1^{+1.7}_{-1.8}$	$H(0.61)$	95.72	$95.66^{+0.59}_{-0.55}$
$A_{143}^{\text{tSZ}}$	6.93	$5.8^{+3.6}_{-3.6}$	$10^9 A_s$	2.076	$2.068^{+0.069}_{-0.079}$	$D_M(0.61)$	2287.3	$2290^{+30}_{-30}$
$A_{100}^{\text{PS}}$	237	$249^{+60}_{-50}$	$10^9 A_s e^{-2\tau}$	1.8743	$1.874^{+0.024}_{-0.023}$	$H(2.33)$	235.43	$235.6^{+1.8}_{-1.8}$
$A_{143}^{\text{PS}}$	49.1	$42^{+20}_{-20}$	$D_{40}$	1212.9	$1217^{+27}_{-26}$	$D_M(2.33)$	5744.0	$5747^{+24}_{-26}$
$A_{143 \times 217}^{\text{PS}}$	57.2	$42^{+20}_{-20}$	$D_{220}$	5737	$5739^{+74}_{-74}$	$f\sigma_8(0.15)$	0.4451	$0.446^{+0.020}_{-0.020}$
$A_{217}^{\text{PS}}$	124.1	$116^{+20}_{-20}$	$D_{810}$	2533.2	$2531^{+27}_{-26}$	$\sigma_8(0.15)$	0.7411	$0.740^{+0.015}_{-0.016}$
$A^{\text{kSZ}}$	0.00	$< 6.74$	$D_{1420}$	817.0	$815.6^{+9.4}_{-9.1}$	$f\sigma_8(0.38)$	0.4655	$0.465^{+0.016}_{-0.016}$
$A_{100}^{\text{dustTT}}$	8.72	$8.8^{+3.6}_{-3.6}$	$D_{2000}$	232.94	$232.2^{+3.1}_{-3.1}$	$\sigma_8(0.38)$	0.6580	$0.657^{+0.012}_{-0.014}$
$A_{143}^{\text{dustTT}}$	10.68	$10.6^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9729	$0.9708^{+0.0094}_{-0.0094}$	$f\sigma_8(0.51)$	0.4652	$0.465^{+0.014}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.1^{+6.4}_{-6.3}$	$Y_{\text{P}}$	0.245491	$0.24548^{+0.00014}_{-0.00013}$	$\sigma_8(0.51)$	0.6163	$0.615^{+0.011}_{-0.013}$
$A_{217}^{\text{dustTT}}$	95.7	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246818	$0.24680^{+0.00014}_{-0.00013}$	$f\sigma_8(0.61)$	0.4611	$0.461^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTE}}$	0.112	$0.114^{+0.076}_{-0.075}$	$10^5 D/H$	2.539	$2.546^{+0.061}_{-0.061}$	$\sigma_8(0.61)$	0.5867	$0.585^{+0.010}_{-0.012}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.059}_{-0.059}$	Age/Gyr	13.754	$13.761^{+0.054}_{-0.057}$	$f\sigma_8(2.33)$	0.2962	$0.2954^{+0.0053}_{-0.0054}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.41	$1089.48^{+0.62}_{-0.63}$	$\sigma_8(2.33)$	0.3058	$0.3050^{+0.0054}_{-0.0055}$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.10}_{-0.11}$	$r_*$	144.79	$144.76^{+0.66}_{-0.65}$	$f_{2000}^{143}$	25.4	$27^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	0.659	$0.66^{+0.15}_{-0.16}$	$100\theta_*$	1.04134	$1.04130^{+0.00063}_{-0.00061}$	$f_{2000}^{143 \times 217}$	29.48	$30^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.05	$2.05^{+0.53}_{-0.52}$	$D_M(z_*)/\text{Gpc}$	13.904	$13.902^{+0.060}_{-0.061}$	$f_{2000}^{217}$	104.23	$105.0^{+3.7}_{-3.7}$
$c_{100}$	0.99976	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.39	$1060.30^{+0.66}_{-0.64}$	$\chi_{\text{small}}^2$	395.67	$396.9 (\nu: 1.4)$
$c_{217}$	0.99810	$0.9981^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.37	$147.35^{+0.63}_{-0.63}$	$\chi_{\text{lowl}}^2$	21.96	$22.32 (\nu: 0.4)$
$H_0$	68.42	$68.3^{+1.4}_{-1.4}$	$k_{\text{D}}$	0.14077	$0.14076^{+0.00065}_{-0.00065}$	$\chi_{\text{plik}}^2$	2337.1	$2353.8 (\nu: 16.5)$
$\Omega_\Lambda$	0.6985	$0.697^{+0.018}_{-0.019}$	$100\theta_{\text{D}}$	0.160510	$0.16056^{+0.00037}_{-0.00037}$	$\chi_{\text{prior}}^2$	1.4	$11.3 (\nu: 9.5)$
$\Omega_{\text{m}}$	0.3015	$0.303^{+0.019}_{-0.018}$	$z_{\text{eq}}$	3357	$3362^{+68}_{-69}$	$\chi_{\text{CMB}}^2$	2754.7	$2773.0 (\nu: 17.8)$

Best-fit  $\chi_{\text{eff}}^2 = 2756.11$ ;  $\Delta\chi_{\text{eff}}^2 = -9.66$ ;  $\bar{\chi}_{\text{eff}}^2 = 2784.27$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -7.49$ ;  $R - 1 = 0.01070$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 ( $\Delta$  -0.38) commander\_dx12\_v3\_2\_29: 21.96 ( $\Delta$  -1.30) plik\_rd12\_HM\_v22b\_TTTEEE: 2337.11 ( $\Delta$  -7.54)

### 3.6 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022617	$0.02258^{+0.00030}_{-0.00029}$	$\sigma_8$	0.8011	$0.800^{+0.015}_{-0.017}$	$D_M(0.15)$	635.1	$635.9^{+8.3}_{-8.2}$
$\Omega_c h^2$	0.11802	$0.1182^{+0.0021}_{-0.0021}$	$S_8$	0.8046	$0.805^{+0.028}_{-0.028}$	$H(0.38)$	83.49	$83.43^{+0.64}_{-0.62}$
$100\theta_{MC}$	1.04115	$1.04113^{+0.00058}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	0.4407	$0.441^{+0.015}_{-0.015}$	$D_M(0.38)$	1516.7	$1518^{+17}_{-17}$
$\tau$	0.0507	$0.049^{+0.017}_{-0.017}$	$\sigma_8 \Omega_m^{0.25}$	0.5942	$0.594^{+0.015}_{-0.016}$	$H(0.51)$	90.13	$90.07^{+0.52}_{-0.49}$
$A_L$	1.185	$1.18^{+0.12}_{-0.12}$	$\sigma_8/h^{0.5}$	0.9691	$0.969^{+0.022}_{-0.024}$	$D_M(0.51)$	1966.2	$1968^{+20}_{-20}$
$\ln(10^{10} A_s)$	3.0325	$3.029^{+0.035}_{-0.036}$	$r_{drag} h$	100.68	$100.5^{+1.7}_{-1.7}$	$H(0.61)$	95.682	$95.64^{+0.43}_{-0.40}$
$n_s$	0.9722	$0.9705^{+0.0078}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	2.607	$2.60^{+0.11}_{-0.12}$	$D_M(0.61)$	2289.1	$2291^{+21}_{-21}$
$y_{cal}$	0.99994	$1.0000^{+0.0048}_{-0.0047}$	$z_{re}$	7.23	$7.0^{+1.7}_{-1.9}$	$H(2.33)$	235.52	$235.6^{+1.3}_{-1.3}$
$A_{217}^{CIB}$	42.4	$45^{+10}_{-10}$	$10^9 A_s$	2.075	$2.068^{+0.069}_{-0.079}$	$D_M(2.33)$	5745.5	$5748^{+19}_{-20}$
$\xi^{tSZ \times CIB}$	0.997	—	$10^9 A_s e^{-2\tau}$	1.8747	$1.875^{+0.021}_{-0.021}$	$f\sigma_8(0.15)$	0.4459	$0.446^{+0.014}_{-0.015}$
$A_{143}^{tSZ}$	6.86	$5.8^{+3.6}_{-3.5}$	$D_{40}$	1214.3	$1217^{+24}_{-23}$	$\sigma_8(0.15)$	0.7412	$0.740^{+0.014}_{-0.014}$
$A_{100}^{PS}$	238	$249^{+60}_{-50}$	$D_{220}$	5737	$5738^{+74}_{-74}$	$f\sigma_8(0.38)$	0.4660	$0.466^{+0.012}_{-0.013}$
$A_{143}^{PS}$	49.8	$42^{+10}_{-20}$	$D_{810}$	2533.0	$2531^{+26}_{-26}$	$\sigma_8(0.38)$	0.6580	$0.657^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	57.6	$42^{+20}_{-20}$	$D_{1420}$	816.8	$815.5^{+9.3}_{-9.0}$	$f\sigma_8(0.51)$	0.4657	$0.465^{+0.011}_{-0.012}$
$A_{217}^{PS}$	124.3	$116^{+20}_{-20}$	$D_{2000}$	232.76	$232.2^{+3.0}_{-3.0}$	$\sigma_8(0.51)$	0.6161	$0.615^{+0.011}_{-0.012}$
$A^{kSZ}$	0.00	$< 6.73$	$n_{s,0.002}$	0.9722	$0.9705^{+0.0078}_{-0.0077}$	$f\sigma_8(0.61)$	0.4615	$0.461^{+0.010}_{-0.011}$
$A_{100}^{dustTT}$	8.76	$8.8^{+3.5}_{-3.6}$	$Y_P$	0.245486	$0.24547^{+0.00012}_{-0.00011}$	$\sigma_8(0.61)$	0.5865	$0.585^{+0.011}_{-0.011}$
$A_{143}^{dustTT}$	10.62	$10.6^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246813	$0.24680^{+0.00012}_{-0.00011}$	$f\sigma_8(2.33)$	0.2961	$0.2955^{+0.0053}_{-0.0054}$
$A_{143 \times 217}^{dustTT}$	19.7	$18.1^{+6.3}_{-6.3}$	$10^5 D/H$	2.541	$2.548^{+0.053}_{-0.053}$	$\sigma_8(2.33)$	0.3056	$0.3050^{+0.0055}_{-0.0056}$
$A_{217}^{dustTT}$	95.4	$94^{+10}_{-10}$	Age/Gyr	13.7574	$13.763^{+0.043}_{-0.044}$	$f_{2000}^{143}$	25.8	$27^{+5}_{-6}$
$A_{100}^{dustTE}$	0.115	$0.114^{+0.077}_{-0.077}$	$z_*$	1089.441	$1089.50^{+0.48}_{-0.48}$	$f_{2000}^{143 \times 217}$	29.74	$30^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.057}_{-0.059}$	$r_*$	144.755	$144.74^{+0.47}_{-0.48}$	$f_{2000}^{217}$	104.44	$105.1^{+3.6}_{-3.6}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04130	$1.04129^{+0.00057}_{-0.00056}$	$\chi_{small}^2$	395.67	$396.9 (\nu: 1.4)$
$A_{143}^{dustTE}$	0.220	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.9013	$13.900^{+0.045}_{-0.045}$	$\chi_{lowl}^2$	22.06	$22.34 (\nu: 0.3)$
$A_{143 \times 217}^{dustTE}$	0.659	$0.66^{+0.15}_{-0.16}$	$z_{drag}$	1060.35	$1060.29^{+0.60}_{-0.58}$	$\chi_{plik}^2$	2337.1	$2353.2 (\nu: 15.5)$
$A_{217}^{dustTE}$	2.05	$2.06^{+0.54}_{-0.54}$	$r_{drag}$	147.342	$147.34^{+0.48}_{-0.48}$	$\chi_{6DF}^2$	0.002	$0.030 (\nu: 0.0)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14079	$0.14076^{+0.00059}_{-0.00058}$	$\chi_{MGS}^2$	1.82	$1.79 (\nu: 0.1)$
$c_{217}$	0.99814	$0.9981^{+0.0012}_{-0.0013}$	$100\theta_D$	0.160519	$0.16056^{+0.00035}_{-0.00036}$	$\chi_{DR12BAO}^2$	3.43	$3.95 (\nu: 0.3)$
$H_0$	68.33	$68.23^{+0.99}_{-0.97}$	$z_{eq}$	3360.8	$3364^{+48}_{-47}$	$\chi_{prior}^2$	1.3	$11.3 (\nu: 9.7)$
$\Omega_\Lambda$	0.6974	$0.696^{+0.012}_{-0.013}$	$k_{eq}$	0.010258	$0.01027^{+0.00015}_{-0.00014}$	$\chi_{BAO}^2$	5.25	$5.77 (\nu: 0.3)$
$\Omega_m$	0.3026	$0.304^{+0.013}_{-0.012}$	$100\theta_{eq}$	0.8216	$0.8209^{+0.0092}_{-0.0091}$	$\chi_{CMB}^2$	2754.9	$2772.4 (\nu: 17.0)$
$\Omega_m h^2$	0.14128	$0.1414^{+0.0020}_{-0.0020}$	$100\theta_{s,eq}$	0.45355	$0.4532^{+0.0047}_{-0.0047}$			
$\Omega_m h^3$	0.09654	$0.09649^{+0.00061}_{-0.00057}$	$H(0.15)$	73.52	$73.44^{+0.86}_{-0.84}$			

Best-fit  $\chi_{eff}^2 = 2761.40$ ;  $\Delta\chi_{eff}^2 = -10.51$ ;  $\bar{\chi}_{eff}^2 = 2789.54$ ;  $\Delta\bar{\chi}_{eff}^2 = -8.37$ ;  $R - 1 = 0.01310$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.82 ( $\Delta$  0.60) DR12BAO: 3.43 ( $\Delta$  -0.99) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 ( $\Delta$  -0.54) commander\_dx12\_v3\_2\_29: 22.06 ( $\Delta$  -0.81) plik\_rd12\_HM\_v22b\_TTTEEE: 2337.12 ( $\Delta$  -8.38)

### 3.7 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02259^{+0.00034}_{-0.00034}$	$\Omega_m h^2$	$0.1413^{+0.0029}_{-0.0029}$	$k_{\text{eq}}$	$0.01026^{+0.00021}_{-0.00021}$
$\Omega_c h^2$	$0.1181^{+0.0031}_{-0.0031}$	$\Omega_m h^3$	$0.09650^{+0.00060}_{-0.00058}$	$100\theta_{\text{eq}}$	$0.822^{+0.014}_{-0.013}$
$100\theta_{\text{MC}}$	$1.04114^{+0.00064}_{-0.00062}$	$\sigma_8$	$0.802^{+0.015}_{-0.014}$	$100\theta_{\text{s,eq}}$	$0.4535^{+0.0069}_{-0.0067}$
$\tau$	$0.0527^{+0.011}_{-0.0093}$	$S_8$	$0.806^{+0.037}_{-0.037}$	$H(0.15)$	$73.5^{+1.2}_{-1.2}$
$A_L$	$1.17^{+0.12}_{-0.12}$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.020}_{-0.020}$	$D_M(0.15)$	$635^{+12}_{-12}$
$\ln(10^{10} A_s)$	$3.036^{+0.026}_{-0.023}$	$\sigma_8 \Omega_m^{0.25}$	$0.595^{+0.019}_{-0.019}$	$H(0.38)$	$83.46^{+0.90}_{-0.88}$
$n_s$	$0.9709^{+0.0094}_{-0.0095}$	$\sigma_8/h^{0.5}$	$0.971^{+0.026}_{-0.026}$	$D_M(0.38)$	$1518^{+24}_{-24}$
$y_{\text{cal}}$	$1.0000^{+0.0047}_{-0.0046}$	$r_{\text{drag}} h$	$100.6^{+2.5}_{-2.4}$	$H(0.51)$	$90.10^{+0.72}_{-0.70}$
$A_{217}^{\text{CIB}}$	$45^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.60^{+0.11}_{-0.12}$	$D_M(0.51)$	$1967^{+28}_{-28}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.49$	$H(0.61)$	$95.66^{+0.59}_{-0.56}$
$A_{143}^{\text{tSZ}}$	$5.8^{+3.6}_{-3.6}$	$10^9 A_s$	$2.082^{+0.054}_{-0.048}$	$D_M(0.61)$	$2290^{+30}_{-30}$
$A_{100}^{\text{PS}}$	$249^{+60}_{-50}$	$10^9 A_s e^{-2\tau}$	$1.874^{+0.024}_{-0.023}$	$H(2.33)$	$235.5^{+1.8}_{-1.8}$
$A_{143}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{40}$	$1217^{+26}_{-26}$	$D_M(2.33)$	$5747^{+25}_{-26}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5739^{+74}_{-74}$	$f\sigma_8(0.15)$	$0.447^{+0.019}_{-0.019}$
$A_{217}^{\text{PS}}$	$116^{+20}_{-20}$	$D_{810}$	$2531^{+27}_{-26}$	$\sigma_8(0.15)$	$0.742^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	$< 6.73$	$D_{1420}$	$815.5^{+9.4}_{-9.1}$	$f\sigma_8(0.38)$	$0.467^{+0.015}_{-0.015}$
$A_{100}^{\text{dustTT}}$	$8.8^{+3.7}_{-3.6}$	$D_{2000}$	$232.2^{+3.0}_{-3.1}$	$\sigma_8(0.38)$	$0.659^{+0.010}_{-0.0095}$
$A_{143}^{\text{dustTT}}$	$10.6^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.9709^{+0.0094}_{-0.0095}$	$f\sigma_8(0.51)$	$0.466^{+0.014}_{-0.013}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.1^{+6.4}_{-6.3}$	$Y_{\text{P}}$	$0.24548^{+0.00014}_{-0.00013}$	$\sigma_8(0.51)$	$0.6170^{+0.0091}_{-0.0084}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24680^{+0.00014}_{-0.00013}$	$f\sigma_8(0.61)$	$0.462^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$10^5 \text{D/H}$	$2.546^{+0.062}_{-0.060}$	$\sigma_8(0.61)$	$0.5873^{+0.0084}_{-0.0077}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.059}_{-0.059}$	$\text{Age/Gyr}$	$13.760^{+0.055}_{-0.057}$	$f\sigma_8(2.33)$	$0.2965^{+0.0040}_{-0.0036}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.48^{+0.64}_{-0.63}$	$\sigma_8(2.33)$	$0.3060^{+0.0040}_{-0.0036}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$r_*$	$144.76^{+0.66}_{-0.66}$	$f_{2000}^{143}$	$27^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$100\theta_*$	$1.04130^{+0.00063}_{-0.00061}$	$f_{2000}^{143 \times 217}$	$30^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.05^{+0.53}_{-0.52}$	$D_M(z_*)/\text{Gpc}$	$13.902^{+0.060}_{-0.061}$	$f_{2000}^{217}$	$105.0^{+3.8}_{-3.7}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.30^{+0.66}_{-0.64}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$c_{217}$	$0.9981^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.36^{+0.63}_{-0.63}$	$\chi_{\text{lowl}}^2$	$22.38 (\nu: 0.4)$
$H_0$	$68.3^{+1.4}_{-1.4}$	$k_{\text{D}}$	$0.14075^{+0.00065}_{-0.00064}$	$\chi_{\text{plik}}^2$	$2353.8 (\nu: 16.4)$
$\Omega_\Lambda$	$0.697^{+0.018}_{-0.019}$	$100\theta_{\text{D}}$	$0.16056^{+0.00037}_{-0.00036}$	$\chi_{\text{prior}}^2$	$11.3 (\nu: 9.5)$
$\Omega_{\text{m}}$	$0.303^{+0.019}_{-0.018}$	$z_{\text{eq}}$	$3361^{+69}_{-69}$	$\chi_{\text{CMB}}^2$	$2772.6 (\nu: 17.1)$

$$\bar{\chi}_{\text{eff}}^2 = 2783.87; \Delta \bar{\chi}_{\text{eff}}^2 = -7.66; R - 1 = 0.01066$$



### 3.8 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02258^{+0.00029}_{-0.00029}$	$\sigma_8$	$0.803^{+0.013}_{-0.012}$	$D_M(0.15)$	$635.9^{+8.2}_{-8.2}$
$\Omega_c h^2$	$0.1182^{+0.0021}_{-0.0021}$	$S_8$	$0.808^{+0.026}_{-0.026}$	$H(0.38)$	$83.43^{+0.64}_{-0.62}$
$100\theta_{MC}$	$1.04113^{+0.00059}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.015}_{-0.014}$	$D_M(0.38)$	$1518^{+17}_{-17}$
$\tau$	$0.0527^{+0.011}_{-0.0094}$	$\sigma_8 \Omega_m^{0.25}$	$0.596^{+0.014}_{-0.014}$	$H(0.51)$	$90.07^{+0.52}_{-0.50}$
$A_L$	$1.17^{+0.12}_{-0.11}$	$\sigma_8/h^{0.5}$	$0.972^{+0.020}_{-0.019}$	$D_M(0.51)$	$1968^{+19}_{-20}$
$\ln(10^{10} A_s)$	$3.036^{+0.025}_{-0.023}$	$r_{\text{drag}} h$	$100.5^{+1.7}_{-1.7}$	$H(0.61)$	$95.64^{+0.43}_{-0.41}$
$n_s$	$0.9706^{+0.0079}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.60^{+0.11}_{-0.12}$	$D_M(0.61)$	$2291^{+21}_{-21}$
$y_{\text{cal}}$	$1.0000^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	$< 8.50$	$H(2.33)$	$235.6^{+1.3}_{-1.3}$
$A_{217}^{\text{CIB}}$	$44^{+10}_{-10}$	$10^9 A_s$	$2.083^{+0.053}_{-0.047}$	$D_M(2.33)$	$5748^{+19}_{-19}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.874^{+0.021}_{-0.021}$	$f\sigma_8(0.15)$	$0.448^{+0.014}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.8^{+3.5}_{-3.6}$	$D_{40}$	$1218^{+24}_{-23}$	$\sigma_8(0.15)$	$0.743^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	$250^{+60}_{-50}$	$D_{220}$	$5738^{+75}_{-74}$	$f\sigma_8(0.38)$	$0.467^{+0.012}_{-0.011}$
$A_{143}^{\text{PS}}$	$42^{+10}_{-20}$	$D_{810}$	$2531^{+27}_{-25}$	$\sigma_8(0.38)$	$0.6591^{+0.0093}_{-0.0086}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$815.5^{+9.4}_{-9.1}$	$f\sigma_8(0.51)$	$0.467^{+0.010}_{-0.0099}$
$A_{217}^{\text{PS}}$	$116^{+20}_{-20}$	$D_{2000}$	$232.2^{+3.0}_{-3.0}$	$\sigma_8(0.51)$	$0.6172^{+0.0085}_{-0.0078}$
$A^{\text{kSZ}}$	$< 6.62$	$n_{s,0.002}$	$0.9706^{+0.0079}_{-0.0078}$	$f\sigma_8(0.61)$	$0.4627^{+0.0094}_{-0.0089}$
$A_{100}^{\text{dustTT}}$	$8.8^{+3.6}_{-3.6}$	$Y_P$	$0.24547^{+0.00011}_{-0.00011}$	$\sigma_8(0.61)$	$0.5875^{+0.0080}_{-0.0073}$
$A_{143}^{\text{dustTT}}$	$10.6^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24680^{+0.00011}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2965^{+0.0039}_{-0.0035}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.2^{+6.3}_{-6.4}$	$10^5 D/H$	$2.548^{+0.052}_{-0.052}$	$\sigma_8(2.33)$	$0.3060^{+0.0040}_{-0.0036}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.762^{+0.043}_{-0.044}$	$f_{2000}^{143}$	$27^{+5}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.077}_{-0.076}$	$z_*$	$1089.50^{+0.48}_{-0.47}$	$f_{2000}^{143 \times 217}$	$30^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.059}$	$r_*$	$144.74^{+0.47}_{-0.47}$	$f_{2000}^{217}$	$105.1^{+3.6}_{-3.6}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04129^{+0.00059}_{-0.00056}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.900^{+0.045}_{-0.044}$	$\chi_{\text{lowl}}^2$	$22.40 (\nu: 0.3)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1060.29^{+0.60}_{-0.58}$	$\chi_{\text{plik}}^2$	$2353.2 (\nu: 15.4)$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.54}_{-0.54}$	$r_{\text{drag}}$	$147.34^{+0.48}_{-0.48}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0011}_{-0.0012}$	$k_D$	$0.14076^{+0.00057}_{-0.00057}$	$\chi_{\text{MGS}}^2$	$1.79 (\nu: 0.1)$
$c_{217}$	$0.9981^{+0.0012}_{-0.0013}$	$100\theta_D$	$0.16056^{+0.00035}_{-0.00034}$	$\chi_{\text{DR12BAO}}^2$	$3.95 (\nu: 0.3)$
$H_0$	$68.24^{+0.99}_{-0.97}$	$z_{\text{eq}}$	$3364^{+47}_{-48}$	$\chi_{\text{prior}}^2$	$11.3 (\nu: 9.7)$
$\Omega_\Lambda$	$0.696^{+0.013}_{-0.013}$	$k_{\text{eq}}$	$0.01027^{+0.00014}_{-0.00015}$	$\chi_{\text{BAO}}^2$	$5.78 (\nu: 0.3)$
$\Omega_m$	$0.304^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8210^{+0.0093}_{-0.0090}$	$\chi_{\text{CMB}}^2$	$2772.0 (\nu: 16.2)$
$\Omega_m h^2$	$0.1414^{+0.0020}_{-0.0020}$	$100\theta_{s,\text{eq}}$	$0.4532^{+0.0047}_{-0.0046}$		
$\Omega_m h^3$	$0.09649^{+0.00060}_{-0.00056}$	$H(0.15)$	$73.44^{+0.86}_{-0.84}$		

$$\bar{\chi}_{\text{eff}}^2 = 2789.13; \Delta\bar{\chi}_{\text{eff}}^2 = -8.59; R - 1 = 0.01550$$

### 3.9 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02243	$0.02239^{+0.00050}_{-0.00051}$	$\sigma_8 \Omega_m^{0.25}$	0.5884	$0.589^{+0.027}_{-0.027}$	$D_M(0.15)$	632.9	$634^{+18}_{-18}$
$\Omega_c h^2$	0.11690	$0.1172^{+0.0047}_{-0.0046}$	$\sigma_8/h^{0.5}$	0.9620	$0.963^{+0.038}_{-0.037}$	$H(0.38)$	83.59	$83.5^{+1.4}_{-1.3}$
$100\theta_{MC}$	1.04121	$1.0412^{+0.0010}_{-0.0010}$	$r_{drag}h$	101.43	$101.2^{+3.8}_{-3.7}$	$D_M(0.38)$	1512.8	$1515^{+37}_{-37}$
$\tau$	0.0509	$0.050^{+0.016}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	2.477	$2.479^{+0.060}_{-0.062}$	$H(0.51)$	90.16	$90.1^{+1.1}_{-1.1}$
$A_L$	1.084	$1.08^{+0.10}_{-0.10}$	$z_{re}$	7.27	$7.1^{+1.7}_{-1.8}$	$D_M(0.51)$	1962.0	$1965^{+43}_{-43}$
$\ln(10^{10} A_s)$	3.0285	$3.027^{+0.033}_{-0.036}$	$10^9 A_s$	2.067	$2.063^{+0.069}_{-0.074}$	$H(0.61)$	95.66	$95.61^{+0.93}_{-0.86}$
$n_s$	0.9733	$0.971^{+0.013}_{-0.013}$	$10^9 A_s e^{-2\tau}$	1.8666	$1.868^{+0.029}_{-0.028}$	$D_M(0.61)$	2284.8	$2288^{+46}_{-47}$
$y_{cal}$	0.99984	$1.0001^{+0.0050}_{-0.0048}$	$D_{40}$	1208.2	$1214^{+34}_{-33}$	$H(2.33)$	234.60	$234.8^{+2.8}_{-2.7}$
$A_{217}^{CIB}$	46.7	$47^{+10}_{-10}$	$D_{220}$	5719	$5725^{+80}_{-82}$	$D_M(2.33)$	5749.6	$5752^{+39}_{-40}$
$\xi^{tSZ \times CIB}$	0.54	—	$D_{810}$	2530.3	$2530^{+28}_{-27}$	$f\sigma_8(0.15)$	0.4401	$0.441^{+0.028}_{-0.028}$
$A_{143}^{tSZ}$	7.01	$5.3^{+3.7}_{-4.0}$	$D_{1420}$	815.9	$815^{+10}_{-9.9}$	$\sigma_8(0.15)$	0.7377	$0.737^{+0.017}_{-0.018}$
$A_{100}^{PS}$	249	$260^{+50}_{-60}$	$D_{2000}$	231.12	$230.5^{+3.7}_{-3.7}$	$f\sigma_8(0.38)$	0.4613	$0.462^{+0.022}_{-0.023}$
$A_{143}^{PS}$	48.8	$46^{+20}_{-20}$	$n_{s,0.002}$	0.9733	$0.971^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	0.6554	$0.655^{+0.013}_{-0.014}$
$A_{143 \times 217}^{PS}$	50.1	$42^{+20}_{-20}$	$Y_P$	0.245419	$0.24540^{+0.00020}_{-0.00022}$	$f\sigma_8(0.51)$	0.4615	$0.462^{+0.019}_{-0.020}$
$A_{217}^{PS}$	120.0	$114^{+20}_{-20}$	$Y_P^{BBN}$	0.246746	$0.24672^{+0.00020}_{-0.00022}$	$\sigma_8(0.51)$	0.6140	$0.613^{+0.012}_{-0.013}$
$A^{kSZ}$	0.01	$< 8.27$	$10^5 D/H$	2.574	$2.583^{+0.096}_{-0.091}$	$f\sigma_8(0.61)$	0.4578	$0.458^{+0.017}_{-0.018}$
$A_{100}^{dustTT}$	8.94	$9.0^{+3.6}_{-3.6}$	Age/Gyr	13.769	$13.775^{+0.087}_{-0.087}$	$\sigma_8(0.61)$	0.5847	$0.584^{+0.011}_{-0.012}$
$A_{143}^{dustTT}$	10.81	$10.8^{+3.4}_{-3.5}$	$z_*$	1089.57	$1089.65^{+0.95}_{-0.93}$	$f\sigma_8(2.33)$	0.2954	$0.2949^{+0.0051}_{-0.0055}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.5}_{-6.5}$	$r_*$	145.19	$145.1^{+1.0}_{-1.0}$	$\sigma_8(2.33)$	0.3051	$0.3046^{+0.0052}_{-0.0056}$
$A_{217}^{dustTT}$	94.9	$93^{+10}_{-10}$	$100\theta_*$	1.04140	$1.04138^{+0.00099}_{-0.00099}$	$f_{2000}^{143}$	28.4	$30^{+6}_{-6}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.942	$13.938^{+0.092}_{-0.092}$	$f_{2000}^{143 \times 217}$	31.77	$32^{+4}_{-4}$
$c_{217}$	0.99823	$0.9982^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.86	$1059.78^{+0.96}_{-0.99}$	$f_{2000}^{217}$	106.17	$106.9^{+4.0}_{-4.0}$
$H_0$	68.61	$68.5^{+2.2}_{-2.1}$	$r_{drag}$	147.85	$147.82^{+0.98}_{-0.98}$	$\chi_{lensing}^2$	9.31	$10.1 (\nu: 2.0)$
$\Omega_\Lambda$	0.7026	$0.700^{+0.027}_{-0.029}$	$k_D$	0.14011	$0.14011^{+0.00098}_{-0.00099}$	$\chi_{small}^2$	395.67	$396.8 (\nu: 1.2)$
$\Omega_m$	0.2974	$0.300^{+0.029}_{-0.027}$	$100\theta_D$	0.16082	$0.16087^{+0.00056}_{-0.00053}$	$\chi_{lowl}^2$	21.74	$22.2 (\nu: 0.7)$
$\Omega_m h^2$	0.13997	$0.1402^{+0.0044}_{-0.0043}$	$z_{eq}$	3329	$3336^{+110}_{-100}$	$\chi_{plik}^2$	757.8	$770.4 (\nu: 15.4)$
$\Omega_m h^3$	0.09603	$0.09599^{+0.00088}_{-0.00091}$	$k_{eq}$	0.010162	$0.01018^{+0.00032}_{-0.00031}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.8)$
$\sigma_8$	0.7968	$0.796^{+0.021}_{-0.021}$	$100\theta_{eq}$	0.8269	$0.826^{+0.021}_{-0.020}$	$\chi_{CMB}^2$	1184.5	$1199.5 (\nu: 15.9)$
$S_8$	0.793	$0.796^{+0.055}_{-0.053}$	$100\theta_{s,eq}$	0.4565	$0.456^{+0.011}_{-0.010}$			
$\sigma_8 \Omega_m^{0.5}$	0.4345	$0.436^{+0.030}_{-0.029}$	$H(0.15)$	73.73	$73.6^{+1.9}_{-1.8}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.80$ ;  $\Delta\chi_{\text{eff}}^2 = -2.77$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.83$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -1.59$ ;  $R - 1 = 0.00595$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.31 ( $\Delta$  0.41) small\_100x143\_offlike5\_EE\_Aplanck.B: 395.67 ( $\Delta$  -0.20) commander\_dx12\_v3.2.29: 21.74 ( $\Delta$  -1.49) plik\_rd12\_HM\_v22\_TT: 757.79 ( $\Delta$  -1.53)

### 3.10 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022366	$0.02233^{+0.00040}_{-0.00041}$	$\sigma_8/h^{0.5}$	0.9689	$0.968^{+0.025}_{-0.025}$	$D_M(0.38)$	1520.0	$1521^{+20}_{-20}$
$\Omega_c h^2$	0.11787	$0.1179^{+0.0025}_{-0.0025}$	$r_{\text{drag}} h$	100.67	$100.6^{+2.0}_{-2.0}$	$H(0.51)$	89.95	$89.92^{+0.63}_{-0.62}$
$100\theta_{\text{MC}}$	1.04114	$1.04110^{+0.00083}_{-0.00085}$	$\langle d^2 \rangle^{1/2}$	2.478	$2.478^{+0.060}_{-0.063}$	$D_M(0.51)$	1970.3	$1971^{+24}_{-23}$
$\tau$	0.0504	$0.049^{+0.017}_{-0.017}$	$z_{\text{re}}$	7.24	$7.1^{+1.7}_{-1.8}$	$H(0.61)$	95.50	$95.48^{+0.53}_{-0.53}$
$A_L$	1.070	$1.070^{+0.078}_{-0.076}$	$10^9 A_s$	2.069	$2.065^{+0.069}_{-0.075}$	$D_M(0.61)$	2293.8	$2295^{+26}_{-25}$
$\ln(10^{10} A_s)$	3.0297	$3.027^{+0.033}_{-0.037}$	$10^9 A_s e^{-2\tau}$	1.8709	$1.871^{+0.023}_{-0.023}$	$H(2.33)$	235.17	$235.1^{+1.6}_{-1.5}$
$n_s$	0.9703	$0.9692^{+0.0089}_{-0.0090}$	$D_{40}$	1214.8	$1217^{+27}_{-26}$	$D_M(2.33)$	5755.9	$5758^{+27}_{-26}$
$y_{\text{cal}}$	0.99995	$1.0001^{+0.0050}_{-0.0048}$	$D_{220}$	5719	$5722^{+79}_{-80}$	$f\sigma_8(0.15)$	0.4456	$0.445^{+0.016}_{-0.016}$
$A_{217}^{\text{CIB}}$	48.4	$47^{+10}_{-10}$	$D_{810}$	2531.3	$2530^{+27}_{-27}$	$\sigma_8(0.15)$	0.7401	$0.739^{+0.014}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$D_{1420}$	815.3	$814^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4656	$0.465^{+0.014}_{-0.014}$
$A_{143}^{\text{tSZ}}$	7.11	$5.2^{+3.8}_{-3.9}$	$D_{2000}$	230.72	$230.3^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	0.6569	$0.656^{+0.012}_{-0.013}$
$A_{100}^{\text{PS}}$	252	$261^{+60}_{-50}$	$n_{s,0.002}$	0.9703	$0.9692^{+0.0089}_{-0.0090}$	$f\sigma_8(0.51)$	0.4652	$0.465^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	46.0	$47^{+20}_{-20}$	$Y_P$	0.245394	$0.24538^{+0.00016}_{-0.00017}$	$\sigma_8(0.51)$	0.6152	$0.614^{+0.011}_{-0.012}$
$A_{143 \times 217}^{\text{PS}}$	43.9	$42^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.246721	$0.24670^{+0.00016}_{-0.00017}$	$f\sigma_8(0.61)$	0.4609	$0.460^{+0.011}_{-0.012}$
$A_{217}^{\text{PS}}$	117.6	$114^{+20}_{-20}$	$10^5 D/H$	2.586	$2.593^{+0.078}_{-0.072}$	$\sigma_8(0.61)$	0.5856	$0.585^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	0.00	$< 8.34$	Age/Gyr	13.782	$13.786^{+0.061}_{-0.058}$	$f\sigma_8(2.33)$	0.2956	$0.2951^{+0.0052}_{-0.0056}$
$A_{100}^{\text{dustTT}}$	8.98	$9.0^{+3.6}_{-3.6}$	$z_*$	1089.74	$1089.78^{+0.63}_{-0.61}$	$\sigma_8(2.33)$	0.3051	$0.3046^{+0.0053}_{-0.0058}$
$A_{143}^{\text{dustTT}}$	10.86	$10.8^{+3.4}_{-3.4}$	$r_*$	144.99	$145.01^{+0.61}_{-0.62}$	$f_{2000}^{143}$	29.1	$30^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.3^{+6.6}_{-6.5}$	$100\theta_*$	1.04132	$1.04129^{+0.00082}_{-0.00085}$	$f_{2000}^{143 \times 217}$	32.18	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.923	$13.926^{+0.060}_{-0.059}$	$f_{2000}^{217}$	106.71	$107.2^{+3.7}_{-3.7}$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.78	$1059.70^{+0.89}_{-0.91}$	$\chi_{\text{lensing}}^2$	9.42	$10.1 (\nu: 1.9)$
$c_{217}$	0.99825	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.66	$147.70^{+0.66}_{-0.66}$	$\chi_{\text{small}}^2$	395.68	$396.8 (\nu: 1.2)$
$H_0$	68.18	$68.1^{+1.2}_{-1.2}$	$k_D$	0.14026	$0.14020^{+0.00082}_{-0.00086}$	$\chi_{\text{lowl}}^2$	22.20	$22.43 (\nu: 0.4)$
$\Omega_\Lambda$	0.6969	$0.697^{+0.015}_{-0.015}$	$100\theta_D$	0.16086	$0.16091^{+0.00054}_{-0.00051}$	$\chi_{\text{plik}}^2$	757.2	$769.6 (\nu: 14.3)$
$\Omega_m$	0.3031	$0.303^{+0.015}_{-0.015}$	$z_{\text{eq}}$	3351	$3350^{+58}_{-57}$	$\chi_{6\text{DF}}^2$	0.002	$0.044 (\nu: 0.0)$
$\Omega_m h^2$	0.14088	$0.1409^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	0.010228	$0.01023^{+0.00018}_{-0.00018}$	$\chi_{\text{MGS}}^2$	1.82	$1.87 (\nu: 0.2)$
$\Omega_m h^3$	0.09605	$0.09597^{+0.00087}_{-0.00091}$	$100\theta_{\text{eq}}$	0.8227	$0.823^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	3.39	$4.1 (\nu: 0.5)$
$\sigma_8$	0.8000	$0.799^{+0.016}_{-0.017}$	$100\theta_{s,\text{eq}}$	0.4543	$0.4543^{+0.0057}_{-0.0056}$	$\chi_{\text{prior}}^2$	1.5	$7.4 (\nu: 7.0)$
$S_8$	0.8041	$0.803^{+0.032}_{-0.031}$	$H(0.15)$	73.37	$73.3^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	1184.5	$1199.0 (\nu: 15.3)$
$\sigma_8 \Omega_m^{0.5}$	0.4404	$0.440^{+0.017}_{-0.017}$	$D_M(0.15)$	636.5	$636.8^{+9.9}_{-9.8}$	$\chi_{\text{BAO}}^2$	5.22	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.25}$	0.5936	$0.593^{+0.017}_{-0.017}$	$H(0.38)$	83.33	$83.29^{+0.77}_{-0.74}$			

Best-fit  $\chi_{\text{eff}}^2 = 1191.14$ ;  $\Delta\chi_{\text{eff}}^2 = -3.55$ ;  $\bar{\chi}_{\text{eff}}^2 = 1212.35$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -2.38$ ;  $R - 1 = 0.01232$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.82 ( $\Delta$  0.60) DR12BAO: 3.40 ( $\Delta$  -0.98) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.42 ( $\Delta$  0.54) simall\_100x143\_offlike5\_EE\_Aplanck 395.68 ( $\Delta$  -0.42) commander\_dx12\_v3.2\_29: 22.20 ( $\Delta$  -0.76) plik\_rd12\_HM\_v22\_TT: 757.15 ( $\Delta$  -2.65)

### 3.11 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02239^{+0.00051}_{-0.00051}$	$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.027}_{-0.027}$	$D_M(0.15)$	$634^{+18}_{-18}$
$\Omega_c h^2$	$0.1171^{+0.0047}_{-0.0046}$	$\sigma_8/h^{0.5}$	$0.965^{+0.037}_{-0.037}$	$H(0.38)$	$83.5^{+1.4}_{-1.4}$
$100\theta_{MC}$	$1.0412^{+0.0010}_{-0.0010}$	$r_{drag}h$	$101.3^{+3.8}_{-3.8}$	$D_M(0.38)$	$1515^{+37}_{-36}$
$\tau$	$0.0528^{+0.012}_{-0.0098}$	$\langle d^2 \rangle^{1/2}$	$2.479^{+0.061}_{-0.063}$	$H(0.51)$	$90.1^{+1.1}_{-1.1}$
$A_L$	$1.08^{+0.10}_{-0.097}$	$z_{re}$	$< 8.54$	$D_M(0.51)$	$1964^{+43}_{-43}$
$\ln(10^{10} A_s)$	$3.033^{+0.027}_{-0.025}$	$10^9 A_s$	$2.076^{+0.056}_{-0.051}$	$H(0.61)$	$95.62^{+0.93}_{-0.87}$
$n_s$	$0.971^{+0.013}_{-0.013}$	$10^9 A_s e^{-2\tau}$	$1.868^{+0.029}_{-0.028}$	$D_M(0.61)$	$2287^{+47}_{-46}$
$y_{cal}$	$1.0001^{+0.0050}_{-0.0048}$	$D_{40}$	$1214^{+34}_{-33}$	$H(2.33)$	$234.7^{+2.8}_{-2.7}$
$A_{217}^{CIB}$	$47^{+10}_{-10}$	$D_{220}$	$5725^{+79}_{-82}$	$D_M(2.33)$	$5752^{+39}_{-40}$
$\xi^{tSZ \times CIB}$	—	$D_{810}$	$2529^{+28}_{-28}$	$f\sigma_8(0.15)$	$0.442^{+0.028}_{-0.028}$
$A_{143}^{tSZ}$	$5.3^{+3.7}_{-4.0}$	$D_{1420}$	$815^{+10}_{-9.9}$	$\sigma_8(0.15)$	$0.739^{+0.016}_{-0.016}$
$A_{100}^{PS}$	$259^{+50}_{-50}$	$D_{2000}$	$230.6^{+3.7}_{-3.7}$	$f\sigma_8(0.38)$	$0.463^{+0.022}_{-0.022}$
$A_{143}^{PS}$	$46^{+20}_{-20}$	$n_{s,0.002}$	$0.971^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	$0.657^{+0.012}_{-0.011}$
$A_{143 \times 217}^{PS}$	$42^{+20}_{-20}$	$Y_P$	$0.24540^{+0.00020}_{-0.00022}$	$f\sigma_8(0.51)$	$0.463^{+0.019}_{-0.019}$
$A_{217}^{PS}$	$114^{+20}_{-20}$	$Y_P^{BBN}$	$0.24673^{+0.00020}_{-0.00022}$	$\sigma_8(0.51)$	$0.615^{+0.011}_{-0.0097}$
$A^{kSZ}$	$< 8.21$	$10^5 D/H$	$2.582^{+0.096}_{-0.091}$	$f\sigma_8(0.61)$	$0.459^{+0.017}_{-0.017}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	Age/Gyr	$13.774^{+0.088}_{-0.087}$	$\sigma_8(0.61)$	$0.5857^{+0.0097}_{-0.0087}$
$A_{143}^{dustTT}$	$10.8^{+3.4}_{-3.5}$	$z_*$	$1089.64^{+0.96}_{-0.92}$	$f\sigma_8(2.33)$	$0.2958^{+0.0043}_{-0.0040}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.5}_{-6.5}$	$r_*$	$145.2^{+1.0}_{-1.0}$	$\sigma_8(2.33)$	$0.3056^{+0.0042}_{-0.0038}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04139^{+0.00099}_{-0.00099}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.939^{+0.091}_{-0.091}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{drag}$	$1059.78^{+0.99}_{-0.99}$	$f_{2000}^{217}$	$106.9^{+4.0}_{-4.0}$
$H_0$	$68.5^{+2.2}_{-2.2}$	$r_{drag}$	$147.83^{+0.98}_{-0.97}$	$\chi_{lensing}^2$	$10.1 (\nu: 2.0)$
$\Omega_\Lambda$	$0.701^{+0.027}_{-0.029}$	$k_D$	$0.14010^{+0.00097}_{-0.00098}$	$\chi_{simall}^2$	$396.4 (\nu: 0.6)$
$\Omega_m$	$0.299^{+0.029}_{-0.027}$	$100\theta_D$	$0.16087^{+0.00056}_{-0.00054}$	$\chi_{lowl}^2$	$22.3 (\nu: 0.7)$
$\Omega_m h^2$	$0.1402^{+0.0044}_{-0.0043}$	$z_{eq}$	$3334^{+110}_{-100}$	$\chi_{plik}^2$	$770.4 (\nu: 15.6)$
$\Omega_m h^3$	$0.09599^{+0.00088}_{-0.00090}$	$k_{eq}$	$0.01018^{+0.00032}_{-0.00031}$	$\chi_{prior}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.799^{+0.019}_{-0.019}$	$100\theta_{eq}$	$0.826^{+0.021}_{-0.020}$	$\chi_{CMB}^2$	$1199.2 (\nu: 15.7)$
$S_8$	$0.798^{+0.055}_{-0.053}$	$100\theta_{s,eq}$	$0.456^{+0.011}_{-0.010}$		
$\sigma_8 \Omega_m^{0.5}$	$0.437^{+0.030}_{-0.029}$	$H(0.15)$	$73.6^{+1.9}_{-1.9}$		

$$\bar{\chi}_{\text{eff}}^2 = 1206.48; \Delta \bar{\chi}_{\text{eff}}^2 = -1.68; R - 1 = 0.00707$$

### 3.12 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02233^{+0.00040}_{-0.00041}$	$\sigma_8/h^{0.5}$	$0.971^{+0.023}_{-0.022}$	$D_M(0.38)$	$1521^{+20}_{-20}$
$\Omega_c h^2$	$0.1178^{+0.0025}_{-0.0025}$	$r_{\text{drag}} h$	$100.7^{+2.0}_{-2.0}$	$H(0.51)$	$89.93^{+0.64}_{-0.61}$
$100\theta_{\text{MC}}$	$1.04110^{+0.00083}_{-0.00085}$	$\langle d^2 \rangle^{1/2}$	$2.477^{+0.061}_{-0.063}$	$D_M(0.51)$	$1971^{+24}_{-24}$
$\tau$	$0.0526^{+0.011}_{-0.0096}$	$z_{\text{re}}$	$< 8.54$	$H(0.61)$	$95.48^{+0.54}_{-0.53}$
$A_L$	$1.063^{+0.073}_{-0.072}$	$10^9 A_s$	$2.078^{+0.054}_{-0.049}$	$D_M(0.61)$	$2295^{+25}_{-26}$
$\ln(10^{10} A_s)$	$3.034^{+0.026}_{-0.024}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.023}_{-0.023}$	$H(2.33)$	$235.1^{+1.6}_{-1.5}$
$n_s$	$0.9693^{+0.0089}_{-0.0090}$	$D_{40}$	$1218^{+27}_{-26}$	$D_M(2.33)$	$5758^{+26}_{-26}$
$y_{\text{cal}}$	$1.0001^{+0.0050}_{-0.0048}$	$D_{220}$	$5722^{+79}_{-80}$	$f\sigma_8(0.15)$	$0.447^{+0.016}_{-0.016}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$D_{810}$	$2530^{+27}_{-27}$	$\sigma_8(0.15)$	$0.741^{+0.013}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.3^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	$0.466^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.8}_{-3.9}$	$D_{2000}$	$230.3^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	$0.6581^{+0.0099}_{-0.0092}$
$A_{100}^{\text{PS}}$	$261^{+60}_{-50}$	$n_{s,0.002}$	$0.9693^{+0.0089}_{-0.0090}$	$f\sigma_8(0.51)$	$0.466^{+0.012}_{-0.011}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$Y_P$	$0.24538^{+0.00016}_{-0.00017}$	$\sigma_8(0.51)$	$0.6162^{+0.0090}_{-0.0083}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24670^{+0.00016}_{-0.00017}$	$f\sigma_8(0.61)$	$0.462^{+0.010}_{-0.010}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$10^5 D/H$	$2.593^{+0.077}_{-0.072}$	$\sigma_8(0.61)$	$0.5866^{+0.0084}_{-0.0078}$
$A^{\text{kSZ}}$	$< 8.26$	Age/Gyr	$13.786^{+0.060}_{-0.059}$	$f\sigma_8(2.33)$	$0.2961^{+0.0041}_{-0.0037}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$z_*$	$1089.78^{+0.63}_{-0.62}$	$\sigma_8(2.33)$	$0.3056^{+0.0042}_{-0.0038}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$r_*$	$145.02^{+0.60}_{-0.61}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.7}_{-6.6}$	$100\theta_*$	$1.04129^{+0.00082}_{-0.00085}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.927^{+0.059}_{-0.058}$	$f_{2000}^{217}$	$107.2^{+3.7}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.69^{+0.89}_{-0.90}$	$\chi_{\text{lensing}}^2$	$10.1 (\nu: 2.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.71^{+0.65}_{-0.65}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$H_0$	$68.1^{+1.2}_{-1.2}$	$k_D$	$0.14019^{+0.00080}_{-0.00084}$	$\chi_{\text{lowl}}^2$	$22.50 (\nu: 0.4)$
$\Omega_\Lambda$	$0.697^{+0.015}_{-0.015}$	$100\theta_D$	$0.16091^{+0.00053}_{-0.00050}$	$\chi_{\text{plik}}^2$	$769.6 (\nu: 14.6)$
$\Omega_m$	$0.303^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3350^{+58}_{-57}$	$\chi_{6\text{DF}}^2$	$0.045 (\nu: 0.0)$
$\Omega_m h^2$	$0.1408^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	$0.01022^{+0.00018}_{-0.00017}$	$\chi_{\text{MGS}}^2$	$1.88 (\nu: 0.2)$
$\Omega_m h^3$	$0.09596^{+0.00087}_{-0.00090}$	$100\theta_{\text{eq}}$	$0.823^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$4.07 (\nu: 0.5)$
$\sigma_8$	$0.801^{+0.014}_{-0.013}$	$100\theta_{s,\text{eq}}$	$0.4544^{+0.0057}_{-0.0056}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 7.1)$
$S_8$	$0.806^{+0.031}_{-0.030}$	$H(0.15)$	$73.3^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	$1198.7 (\nu: 15.1)$
$\sigma_8 \Omega_m^{0.5}$	$0.441^{+0.017}_{-0.017}$	$D_M(0.15)$	$636.8^{+9.9}_{-9.8}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.25}$	$0.595^{+0.016}_{-0.016}$	$H(0.38)$	$83.30^{+0.77}_{-0.74}$		

$$\bar{\chi}_{\text{eff}}^2 = 1212.01; \Delta \bar{\chi}_{\text{eff}}^2 = -2.57; R - 1 = 0.01863$$

### 3.13 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022553	$0.02251^{+0.00033}_{-0.00032}$	$\Omega_m h^3$	0.09641	$0.09637^{+0.00057}_{-0.00055}$	$100\theta_{s,eq}$	0.4536	$0.4532^{+0.0066}_{-0.0065}$
$\Omega_c h^2$	0.11803	$0.1182^{+0.0030}_{-0.0029}$	$\sigma_8$	0.8008	$0.800^{+0.016}_{-0.017}$	$H(0.15)$	73.46	$73.4^{+1.2}_{-1.2}$
$100\theta_{MC}$	1.04111	$1.04110^{+0.00063}_{-0.00063}$	$S_8$	0.8049	$0.806^{+0.036}_{-0.036}$	$D_M(0.15)$	635.7	$637^{+11}_{-12}$
$\tau$	0.0506	$0.049^{+0.016}_{-0.017}$	$\sigma_8 \Omega_m^{0.5}$	0.4409	$0.441^{+0.020}_{-0.020}$	$H(0.38)$	83.43	$83.36^{+0.88}_{-0.84}$
$A_L$	1.075	$1.071^{+0.082}_{-0.076}$	$\sigma_8 \Omega_m^{0.25}$	0.5942	$0.594^{+0.019}_{-0.019}$	$D_M(0.38)$	1518.0	$1520^{+23}_{-23}$
$\ln(10^{10} A_s)$	3.0314	$3.029^{+0.032}_{-0.036}$	$\sigma_8/h^{0.5}$	0.9692	$0.969^{+0.027}_{-0.027}$	$H(0.51)$	90.07	$90.01^{+0.71}_{-0.67}$
$n_s$	0.9718	$0.9696^{+0.0094}_{-0.0097}$	$r_{drag} h$	100.63	$100.5^{+2.4}_{-2.3}$	$D_M(0.51)$	1967.8	$1970^{+27}_{-27}$
$y_{cal}$	0.99996	$1.0001^{+0.0050}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.483	$2.482^{+0.058}_{-0.059}$	$H(0.61)$	95.63	$95.58^{+0.57}_{-0.53}$
$A_{217}^{CIB}$	44.2	$46^{+10}_{-10}$	$z_{re}$	7.23	$7.1^{+1.7}_{-1.8}$	$D_M(0.61)$	2290.9	$2293^{+29}_{-30}$
$\xi^{tSZ \times CIB}$	0.83	—	$10^9 A_s$	2.073	$2.067^{+0.067}_{-0.073}$	$H(2.33)$	235.46	$235.6^{+1.7}_{-1.7}$
$A_{143}^{tSZ}$	7.00	$5.6^{+3.7}_{-3.7}$	$10^9 A_s e^{-2\tau}$	1.8733	$1.874^{+0.024}_{-0.023}$	$D_M(2.33)$	5748.6	$5751^{+24}_{-25}$
$A_{100}^{PS}$	244	$255^{+60}_{-50}$	$D_{40}$	1213.7	$1219^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4461	$0.446^{+0.019}_{-0.019}$
$A_{143}^{PS}$	50.3	$44^{+20}_{-20}$	$D_{220}$	5730	$5735^{+77}_{-76}$	$\sigma_8(0.15)$	0.7408	$0.740^{+0.014}_{-0.015}$
$A_{143 \times 217}^{PS}$	55.3	$42^{+20}_{-20}$	$D_{810}$	2535.0	$2533^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4661	$0.466^{+0.015}_{-0.016}$
$A_{217}^{PS}$	122.8	$115^{+20}_{-20}$	$D_{1420}$	818.0	$816.5^{+9.6}_{-9.4}$	$\sigma_8(0.38)$	0.6576	$0.657^{+0.012}_{-0.013}$
$A^{kSZ}$	0.01	$< 7.71$	$D_{2000}$	232.01	$231.3^{+3.1}_{-3.2}$	$f\sigma_8(0.51)$	0.4657	$0.465^{+0.014}_{-0.014}$
$A_{100}^{dustTT}$	8.82	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	0.9718	$0.9696^{+0.0094}_{-0.0097}$	$\sigma_8(0.51)$	0.6158	$0.615^{+0.011}_{-0.012}$
$A_{143}^{dustTT}$	11.02	$10.9^{+3.4}_{-3.5}$	$Y_P$	0.245463	$0.24545^{+0.00013}_{-0.00013}$	$f\sigma_8(0.61)$	0.4614	$0.461^{+0.012}_{-0.013}$
$A_{143 \times 217}^{dustTT}$	20.2	$18.5^{+6.4}_{-6.5}$	$Y_P^{BBN}$	0.246790	$0.24678^{+0.00013}_{-0.00013}$	$\sigma_8(0.61)$	0.5862	$0.5851^{+0.0099}_{-0.011}$
$A_{217}^{dustTT}$	95.7	$94^{+10}_{-10}$	$10^5 D/H$	2.553	$2.560^{+0.060}_{-0.059}$	$f\sigma_8(2.33)$	0.2959	$0.2953^{+0.0049}_{-0.0053}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.075}$	Age/Gyr	13.765	$13.770^{+0.053}_{-0.055}$	$\sigma_8(2.33)$	0.3054	$0.3048^{+0.0051}_{-0.0055}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.058}_{-0.058}$	$z_*$	1089.52	$1089.59^{+0.61}_{-0.60}$	$f_{2000}^{143}$	27.2	$28^{+5}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.16}_{-0.17}$	$r_*$	144.80	$144.78^{+0.64}_{-0.63}$	$f_{2000}^{143 \times 217}$	30.80	$31^{+4}_{-4}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.10}_{-0.10}$	$100\theta_*$	1.04128	$1.04128^{+0.00061}_{-0.00062}$	$f_{2000}^{217}$	105.36	$106.2^{+3.7}_{-3.6}$
$A_{143 \times 217}^{dustTE}$	0.661	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.906	$13.904^{+0.058}_{-0.058}$	$\chi^2_{lensing}$	10.18	$10.5 (\nu: 2.4)$
$A_{217}^{dustTE}$	2.06	$2.06^{+0.52}_{-0.53}$	$z_{drag}$	1060.20	$1060.14^{+0.63}_{-0.63}$	$\chi^2_{small}$	395.66	$396.8 (\nu: 1.2)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.41	$147.40^{+0.61}_{-0.60}$	$\chi^2_{lowl}$	22.06	$22.46 (\nu: 0.4)$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14067	$0.14065^{+0.00062}_{-0.00062}$	$\chi^2_{plik}$	2341.8	$2357.1 (\nu: 17.7)$
$H_0$	68.27	$68.2^{+1.4}_{-1.3}$	$100\theta_D$	0.160601	$0.16065^{+0.00036}_{-0.00036}$	$\chi^2_{prior}$	1.5	$11.5 (\nu: 10.2)$
$\Omega_\Lambda$	0.6969	$0.695^{+0.018}_{-0.018}$	$z_{eq}$	3360	$3364^{+67}_{-66}$	$\chi^2_{CMB}$	2769.7	$2786.9 (\nu: 17.8)$
$\Omega_m$	0.3031	$0.305^{+0.018}_{-0.018}$	$k_{eq}$	0.010254	$0.01027^{+0.00020}_{-0.00020}$			
$\Omega_m h^2$	0.14123	$0.1414^{+0.0028}_{-0.0027}$	$100\theta_{eq}$	0.8217	$0.821^{+0.013}_{-0.013}$			

Best-fit  $\chi^2_{eff} = 2771.20$ ;  $\Delta\chi^2_{eff} = -3.44$ ;  $\bar{\chi}^2_{eff} = 2798.40$ ;  $\Delta\bar{\chi}^2_{eff} = -2.29$ ;  $R - 1 = 0.01801$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 10.18 ( $\Delta$  1.31) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 ( $\Delta$  -0.39) commander\_dx12\_v3\_2\_29: 22.06 ( $\Delta$  -1.20) plik\_rd12\_HM\_v22b\_TTTEE: 2341.85 ( $\Delta$  -3.08)

### 3.14 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022543	$0.02251^{+0.00028}_{-0.00027}$	$\sigma_8$	0.8002	$0.800^{+0.015}_{-0.016}$	$D_M(0.15)$	636.5	$636.7^{+8.1}_{-7.9}$
$\Omega_c h^2$	0.11826	$0.1183^{+0.0021}_{-0.0021}$	$S_8$	0.8060	$0.806^{+0.027}_{-0.027}$	$H(0.38)$	83.37	$83.36^{+0.62}_{-0.61}$
$100\theta_{MC}$	1.04109	$1.04111^{+0.00057}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	0.4415	$0.442^{+0.015}_{-0.015}$	$D_M(0.38)$	1519.7	$1520^{+16}_{-16}$
$\tau$	0.0492	$0.049^{+0.016}_{-0.017}$	$\sigma_8 \Omega_m^{0.25}$	0.5943	$0.594^{+0.015}_{-0.015}$	$H(0.51)$	90.023	$90.01^{+0.50}_{-0.49}$
$A_L$	1.072	$1.071^{+0.073}_{-0.068}$	$\sigma_8/h^{0.5}$	0.9692	$0.969^{+0.022}_{-0.023}$	$D_M(0.51)$	1969.7	$1970^{+19}_{-19}$
$\ln(10^{10} A_s)$	3.0288	$3.029^{+0.034}_{-0.035}$	$r_{drag} h$	100.45	$100.4^{+1.7}_{-1.6}$	$H(0.61)$	95.591	$95.57^{+0.42}_{-0.40}$
$n_s$	0.9704	$0.9695^{+0.0076}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	2.482	$2.482^{+0.058}_{-0.058}$	$D_M(0.61)$	2293.0	$2294^{+21}_{-20}$
$y_{cal}$	0.99980	$1.0001^{+0.0050}_{-0.0048}$	$z_{re}$	7.09	$7.1^{+1.7}_{-1.8}$	$H(2.33)$	235.60	$235.6^{+1.2}_{-1.2}$
$A_{217}^{CIB}$	45.8	$46^{+10}_{-10}$	$10^9 A_s$	2.067	$2.068^{+0.067}_{-0.074}$	$D_M(2.33)$	5750.0	$5751^{+18}_{-19}$
$\xi^{tSZ \times CIB}$	0.62	—	$10^9 A_s e^{-2\tau}$	1.8735	$1.874^{+0.022}_{-0.021}$	$f\sigma_8(0.15)$	0.4466	$0.447^{+0.014}_{-0.014}$
$A_{143}^{tSZ}$	7.17	$5.6^{+3.8}_{-3.8}$	$D_{40}$	1216.2	$1219^{+24}_{-23}$	$\sigma_8(0.15)$	0.7401	$0.740^{+0.013}_{-0.015}$
$A_{100}^{PS}$	246	$255^{+50}_{-50}$	$D_{220}$	5732	$5735^{+75}_{-74}$	$f\sigma_8(0.38)$	0.4662	$0.466^{+0.012}_{-0.013}$
$A_{143}^{PS}$	48.0	$44^{+10}_{-20}$	$D_{810}$	2533.8	$2534^{+27}_{-26}$	$\sigma_8(0.38)$	0.6568	$0.657^{+0.011}_{-0.012}$
$A_{143 \times 217}^{PS}$	50.9	$42^{+20}_{-20}$	$D_{1420}$	817.1	$816.5^{+9.6}_{-9.2}$	$f\sigma_8(0.51)$	0.4657	$0.466^{+0.011}_{-0.012}$
$A_{217}^{PS}$	120.4	$115^{+20}_{-20}$	$D_{2000}$	231.65	$231.3^{+3.1}_{-3.1}$	$\sigma_8(0.51)$	0.6150	$0.615^{+0.010}_{-0.011}$
$A^{kSZ}$	0.01	$< 7.80$	$n_{s,0.002}$	0.9704	$0.9695^{+0.0076}_{-0.0078}$	$f\sigma_8(0.61)$	0.4613	$0.461^{+0.010}_{-0.011}$
$A_{100}^{dustTT}$	8.88	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245460	$0.24545^{+0.00011}_{-0.00011}$	$\sigma_8(0.61)$	0.5854	$0.5853^{+0.0097}_{-0.011}$
$A_{143}^{dustTT}$	11.03	$10.9^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246786	$0.24677^{+0.00011}_{-0.00011}$	$f\sigma_8(2.33)$	0.2954	$0.2954^{+0.0049}_{-0.0054}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.5^{+6.4}_{-6.6}$	$10^5 D/H$	2.554	$2.560^{+0.050}_{-0.051}$	$\sigma_8(2.33)$	0.3049	$0.3048^{+0.0050}_{-0.0055}$
$A_{217}^{dustTT}$	95.2	$94^{+10}_{-10}$	Age/Gyr	13.7677	$13.770^{+0.041}_{-0.043}$	$f_{2000}^{143}$	27.7	$28^{+5}_{-5}$
$A_{100}^{dustTE}$	0.114	$0.113^{+0.074}_{-0.075}$	$z_*$	1089.551	$1089.59^{+0.46}_{-0.46}$	$f_{2000}^{143 \times 217}$	31.14	$31^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.134^{+0.058}_{-0.058}$	$r_*$	144.750	$144.77^{+0.47}_{-0.46}$	$f_{2000}^{217}$	105.65	$106.2^{+3.6}_{-3.5}$
$A_{100 \times 217}^{dustTE}$	0.479	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	1.04126	$1.04128^{+0.00056}_{-0.00056}$	$\chi_{lensing}^2$	9.99	$10.5 (\nu: 2.4)$
$A_{143}^{dustTE}$	0.222	$0.22^{+0.10}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	13.9015	$13.904^{+0.046}_{-0.045}$	$\chi_{small}^2$	395.70	$396.8 (\nu: 1.2)$
$A_{143 \times 217}^{dustTE}$	0.662	$0.66^{+0.16}_{-0.16}$	$z_{drag}$	1060.20	$1060.14^{+0.60}_{-0.59}$	$\chi_{lowl}^2$	22.25	$22.46 (\nu: 0.3)$
$A_{217}^{dustTE}$	2.07	$2.06^{+0.52}_{-0.51}$	$r_{drag}$	147.362	$147.40^{+0.48}_{-0.47}$	$\chi_{plik}^2$	2341.7	$2356.5 (\nu: 17.1)$
$c_{100}$	0.99971	$0.9997^{+0.0013}_{-0.0012}$	$k_D$	0.14071	$0.14065^{+0.00056}_{-0.00055}$	$\chi_{6DF}^2$	0.000	$0.029 (\nu: 0.0)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160604	$0.16065^{+0.00034}_{-0.00034}$	$\chi_{MGS}^2$	1.68	$1.74 (\nu: 0.1)$
$H_0$	68.17	$68.15^{+0.95}_{-0.96}$	$z_{eq}$	3364.7	$3364^{+46}_{-46}$	$\chi_{DR12BAO}^2$	3.53	$3.98 (\nu: 0.3)$
$\Omega_\Lambda$	0.6956	$0.695^{+0.012}_{-0.013}$	$k_{eq}$	0.010270	$0.01027^{+0.00014}_{-0.00014}$	$\chi_{prior}^2$	1.6	$11.6 (\nu: 10.1)$
$\Omega_m$	0.3044	$0.305^{+0.013}_{-0.012}$	$100\theta_{eq}$	0.8207	$0.8207^{+0.0090}_{-0.0088}$	$\chi_{CMB}^2$	2769.6	$2786.3 (\nu: 17.1)$
$\Omega_m h^2$	0.14145	$0.1414^{+0.0019}_{-0.0019}$	$100\theta_{s,eq}$	0.45310	$0.4532^{+0.0046}_{-0.0045}$	$\chi_{BAO}^2$	5.20	$5.75 (\nu: 0.3)$
$\Omega_m h^3$	0.09642	$0.09637^{+0.00057}_{-0.00055}$	$H(0.15)$	73.38	$73.36^{+0.82}_{-0.83}$			

Best-fit  $\chi_{eff}^2 = 2776.44$ ;  $\Delta\chi_{eff}^2 = -4.26$ ;  $\bar{\chi}_{eff}^2 = 2803.67$ ;  $\Delta\bar{\chi}_{eff}^2 = -3.17$ ;  $R - 1 = 0.02408$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.68 ( $\Delta$  0.46) DR12BAO: 3.53 ( $\Delta$  -0.89) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.99 ( $\Delta$  1.26) simall\_100x143\_offlike5\_EE\_Aplanck 395.70 ( $\Delta$  -0.83) commander\_dx12\_v3.2\_29: 22.25 ( $\Delta$  -0.64) plik\_rd12\_HM\_v22b\_TTTEE: 2341.65 ( $\Delta$  -3.67)

### 3.15 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02252^{+0.00033}_{-0.00032}$	$\Omega_m h^3$	$0.09637^{+0.00057}_{-0.00056}$	$100\theta_{s,eq}$	$0.4533^{+0.0066}_{-0.0066}$
$\Omega_c h^2$	$0.1182^{+0.0030}_{-0.0029}$	$\sigma_8$	$0.802^{+0.015}_{-0.014}$	$H(0.15)$	$73.4^{+1.2}_{-1.2}$
$100\theta_{MC}$	$1.04111^{+0.00062}_{-0.00063}$	$S_8$	$0.808^{+0.036}_{-0.036}$	$D_M(0.15)$	$636^{+12}_{-11}$
$\tau$	$0.0526^{+0.011}_{-0.0093}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.019}$	$H(0.38)$	$83.38^{+0.88}_{-0.85}$
$A_L$	$1.065^{+0.079}_{-0.073}$	$\sigma_8 \Omega_m^{0.25}$	$0.596^{+0.018}_{-0.018}$	$D_M(0.38)$	$1520^{+23}_{-23}$
$\ln(10^{10} A_s)$	$3.035^{+0.026}_{-0.023}$	$\sigma_8/h^{0.5}$	$0.972^{+0.025}_{-0.025}$	$H(0.51)$	$90.02^{+0.70}_{-0.67}$
$n_s$	$0.9698^{+0.0095}_{-0.0097}$	$r_{drag} h$	$100.5^{+2.4}_{-2.3}$	$D_M(0.51)$	$1970^{+27}_{-27}$
$y_{cal}$	$1.0001^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.482^{+0.058}_{-0.057}$	$H(0.61)$	$95.59^{+0.57}_{-0.54}$
$A_{217}^{CIB}$	$46^{+10}_{-10}$	$z_{re}$	$< 8.49$	$D_M(0.61)$	$2293^{+29}_{-29}$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.081^{+0.054}_{-0.048}$	$H(2.33)$	$235.5^{+1.8}_{-1.7}$
$A_{143}^{tSZ}$	$5.6^{+3.7}_{-3.7}$	$10^9 A_s e^{-2\tau}$	$1.873^{+0.024}_{-0.023}$	$D_M(2.33)$	$5750^{+24}_{-25}$
$A_{100}^{PS}$	$255^{+60}_{-50}$	$D_{40}$	$1219^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.448^{+0.018}_{-0.018}$
$A_{143}^{PS}$	$44^{+20}_{-20}$	$D_{220}$	$5734^{+77}_{-75}$	$\sigma_8(0.15)$	$0.742^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	$41^{+20}_{-20}$	$D_{810}$	$2533^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.467^{+0.015}_{-0.015}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$D_{1420}$	$816.5^{+9.6}_{-9.4}$	$\sigma_8(0.38)$	$0.659^{+0.010}_{-0.0091}$
$A^{kSZ}$	$< 7.68$	$D_{2000}$	$231.4^{+3.1}_{-3.2}$	$f\sigma_8(0.51)$	$0.467^{+0.013}_{-0.013}$
$A_{100}^{dustTT}$	$9.0^{+3.7}_{-3.6}$	$n_{s,0.002}$	$0.9698^{+0.0095}_{-0.0097}$	$\sigma_8(0.51)$	$0.6168^{+0.0091}_{-0.0080}$
$A_{143}^{dustTT}$	$10.9^{+3.4}_{-3.5}$	$Y_P$	$0.24545^{+0.00013}_{-0.00013}$	$f\sigma_8(0.61)$	$0.463^{+0.012}_{-0.012}$
$A_{143 \times 217}^{dustTT}$	$18.5^{+6.3}_{-6.4}$	$Y_P^{BBN}$	$0.24678^{+0.00013}_{-0.00013}$	$\sigma_8(0.61)$	$0.5871^{+0.0082}_{-0.0077}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.559^{+0.060}_{-0.059}$	$f\sigma_8(2.33)$	$0.2963^{+0.0040}_{-0.0036}$
$A_{100}^{dustTE}$	$0.113^{+0.076}_{-0.076}$	Age/Gyr	$13.769^{+0.054}_{-0.054}$	$\sigma_8(2.33)$	$0.3058^{+0.0040}_{-0.0036}$
$A_{100 \times 143}^{dustTE}$	$0.134^{+0.057}_{-0.057}$	$z_*$	$1089.58^{+0.62}_{-0.60}$	$f_{2000}^{143}$	$28^{+5}_{-5}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.16}_{-0.17}$	$r_*$	$144.79^{+0.63}_{-0.63}$	$f_{2000}^{143 \times 217}$	$31^{+4}_{-4}$
$A_{143}^{dustTE}$	$0.22^{+0.11}_{-0.10}$	$100\theta_*$	$1.04128^{+0.00061}_{-0.00062}$	$f_{2000}^{217}$	$106.1^{+3.7}_{-3.6}$
$A_{143 \times 217}^{dustTE}$	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.058}_{-0.058}$	$\chi_{lensing}^2$	$10.5 (\nu: 2.4)$
$A_{217}^{dustTE}$	$2.06^{+0.52}_{-0.53}$	$z_{drag}$	$1060.15^{+0.62}_{-0.64}$	$\chi_{simall}^2$	$396.4 (\nu: 0.6)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	$147.41^{+0.61}_{-0.60}$	$\chi_{lowl}^2$	$22.51 (\nu: 0.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14064^{+0.00062}_{-0.00062}$	$\chi_{plik}^2$	$2357.1 (\nu: 17.7)$
$H_0$	$68.2^{+1.4}_{-1.4}$	$100\theta_D$	$0.16064^{+0.00037}_{-0.00036}$	$\chi_{prior}^2$	$11.5 (\nu: 10.3)$
$\Omega_\Lambda$	$0.696^{+0.018}_{-0.018}$	$z_{eq}$	$3362^{+67}_{-66}$	$\chi_{CMB}^2$	$2786.4 (\nu: 17.2)$
$\Omega_m$	$0.304^{+0.018}_{-0.018}$	$k_{eq}$	$0.01026^{+0.00021}_{-0.00020}$		
$\Omega_m h^2$	$0.1414^{+0.0028}_{-0.0027}$	$100\theta_{eq}$	$0.821^{+0.013}_{-0.013}$		

$$\bar{\chi}_{eff}^2 = 2797.97; \Delta\bar{\chi}_{eff}^2 = -2.54; R - 1 = 0.02423$$



### 3.16 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02251^{+0.00028}_{-0.00028}$	$\sigma_8$	$0.803^{+0.013}_{-0.012}$	$D_M(0.15)$	$636.6^{+8.2}_{-8.0}$
$\Omega_c h^2$	$0.1182^{+0.0021}_{-0.0021}$	$S_8$	$0.809^{+0.025}_{-0.026}$	$H(0.38)$	$83.36^{+0.62}_{-0.62}$
$100\theta_{MC}$	$1.04110^{+0.00057}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.014}_{-0.014}$	$D_M(0.38)$	$1520^{+17}_{-16}$
$\tau$	$0.0526^{+0.011}_{-0.0093}$	$\sigma_8 \Omega_m^{0.25}$	$0.596^{+0.013}_{-0.014}$	$H(0.51)$	$90.01^{+0.50}_{-0.49}$
$A_L$	$1.064^{+0.067}_{-0.064}$	$\sigma_8/h^{0.5}$	$0.972^{+0.019}_{-0.020}$	$D_M(0.51)$	$1970^{+19}_{-19}$
$\ln(10^{10} A_s)$	$3.036^{+0.026}_{-0.023}$	$r_{\text{drag}} h$	$100.5^{+1.7}_{-1.6}$	$H(0.61)$	$95.58^{+0.42}_{-0.40}$
$n_s$	$0.9696^{+0.0077}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.482^{+0.058}_{-0.055}$	$D_M(0.61)$	$2293^{+21}_{-20}$
$y_{\text{cal}}$	$1.0001^{+0.0050}_{-0.0048}$	$z_{\text{re}}$	$< 8.49$	$H(2.33)$	$235.6^{+1.2}_{-1.2}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.082^{+0.054}_{-0.047}$	$D_M(2.33)$	$5751^{+19}_{-19}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.874^{+0.022}_{-0.021}$	$f\sigma_8(0.15)$	$0.448^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.7}_{-3.8}$	$D_{40}$	$1219^{+24}_{-24}$	$\sigma_8(0.15)$	$0.742^{+0.011}_{-0.010}$
$A_{100}^{\text{PS}}$	$255^{+50}_{-50}$	$D_{220}$	$5735^{+74}_{-73}$	$f\sigma_8(0.38)$	$0.468^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$44^{+10}_{-10}$	$D_{810}$	$2533^{+27}_{-27}$	$\sigma_8(0.38)$	$0.6589^{+0.0093}_{-0.0086}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$816.5^{+9.6}_{-9.3}$	$f\sigma_8(0.51)$	$0.4671^{+0.0098}_{-0.010}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.4^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.6169^{+0.0085}_{-0.0078}$
$A^{\text{kSZ}}$	$< 7.74$	$n_{s,0.002}$	$0.9696^{+0.0077}_{-0.0078}$	$f\sigma_8(0.61)$	$0.4628^{+0.0091}_{-0.0091}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.7}_{-3.6}$	$Y_P$	$0.24545^{+0.00011}_{-0.00011}$	$\sigma_8(0.61)$	$0.5872^{+0.0080}_{-0.0073}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24677^{+0.00011}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2964^{+0.0039}_{-0.0036}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.4}_{-6.5}$	$10^5 D/H$	$2.560^{+0.051}_{-0.051}$	$\sigma_8(2.33)$	$0.3059^{+0.0040}_{-0.0036}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.770^{+0.042}_{-0.043}$	$f_{2000}^{143}$	$28^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.074}_{-0.075}$	$z_*$	$1089.59^{+0.47}_{-0.46}$	$f_{2000}^{143 \times 217}$	$31^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.058}$	$r_*$	$144.78^{+0.47}_{-0.46}$	$f_{2000}^{217}$	$106.2^{+3.6}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.04128^{+0.00057}_{-0.00057}$	$\chi_{\text{lensing}}^2$	$10.5 (\nu: 2.5)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	$13.904^{+0.046}_{-0.045}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1060.14^{+0.60}_{-0.59}$	$\chi_{\text{lowl}}^2$	$22.52 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.52}_{-0.52}$	$r_{\text{drag}}$	$147.40^{+0.48}_{-0.47}$	$\chi_{\text{plik}}^2$	$2356.5 (\nu: 17.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14065^{+0.00056}_{-0.00056}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16065^{+0.00034}_{-0.00034}$	$\chi_{\text{MGS}}^2$	$1.75 (\nu: 0.1)$
$H_0$	$68.16^{+0.96}_{-0.96}$	$z_{\text{eq}}$	$3363^{+46}_{-47}$	$\chi_{\text{DR12BAO}}^2$	$3.98 (\nu: 0.3)$
$\Omega_\Lambda$	$0.696^{+0.012}_{-0.013}$	$k_{\text{eq}}$	$0.01027^{+0.00014}_{-0.00014}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.1)$
$\Omega_m$	$0.304^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	$0.8209^{+0.0091}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$2785.9 (\nu: 16.5)$
$\Omega_m h^2$	$0.1414^{+0.0019}_{-0.0020}$	$100\theta_{s,\text{eq}}$	$0.4532^{+0.0046}_{-0.0045}$	$\chi_{\text{BAO}}^2$	$5.75 (\nu: 0.3)$
$\Omega_m h^3$	$0.09637^{+0.00057}_{-0.00055}$	$H(0.15)$	$73.37^{+0.83}_{-0.83}$		

$$\bar{\chi}_{\text{eff}}^2 = 2803.19; \Delta \bar{\chi}_{\text{eff}}^2 = -3.53; R - 1 = 0.03248$$

## 4 AphiPhi

### 4.1 base\_AphiPhi\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022161	$0.02214^{+0.00042}_{-0.00042}$	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.608^{+0.023}_{-0.022}$	$D_M(0.15)$	646.0	$646^{+16}_{-15}$
$\Omega_c h^2$	0.12020	$0.1201^{+0.0041}_{-0.0039}$	$\sigma_8/h^{0.5}$	0.9902	$0.989^{+0.031}_{-0.031}$	$H(0.38)$	82.63	$82.6^{+1.1}_{-1.1}$
$100\theta_{MC}$	1.04078	$1.04082^{+0.00094}_{-0.00093}$	$r_{drag}h$	98.77	$98.8^{+3.1}_{-3.1}$	$D_M(0.38)$	1539.0	$1539^{+31}_{-30}$
$\tau$	0.0525	$0.052^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.446	$2.445^{+0.074}_{-0.073}$	$H(0.51)$	89.40	$89.42^{+0.87}_{-0.84}$
$\ln(10^{10} A_s)$	3.0406	$3.039^{+0.032}_{-0.033}$	$z_{re}$	7.55	$7.5^{+1.5}_{-1.8}$	$D_M(0.51)$	1992.6	$1992^{+36}_{-35}$
$n_s$	0.9644	$0.963^{+0.011}_{-0.011}$	$10^9 A_s$	2.092	$2.088^{+0.067}_{-0.068}$	$H(0.61)$	95.07	$95.08^{+0.70}_{-0.67}$
$A_L^{\phi\phi}$	0.9996	$1.001^{+0.072}_{-0.069}$	$10^9 A_s e^{-2\tau}$	1.8831	$1.882^{+0.027}_{-0.026}$	$D_M(0.61)$	2317.9	$2318^{+39}_{-38}$
$y_{cal}$	1.00046	$1.0005^{+0.0050}_{-0.0049}$	$D_{40}$	1229.8	$1232^{+31}_{-29}$	$H(2.33)$	236.47	$236.4^{+2.5}_{-2.4}$
$A_{217}^{CIB}$	49.2	$48^{+10}_{-10}$	$D_{220}$	5714	$5716^{+80}_{-81}$	$D_M(2.33)$	5774.8	$5775^{+31}_{-32}$
$\xi^{tSZ \times CIB}$	0.28	—	$D_{810}$	2537.7	$2536^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4613	$0.460^{+0.024}_{-0.023}$
$A_{143}^{tSZ}$	7.14	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	815.6	$815^{+10}_{-10}$	$\sigma_8(0.15)$	0.7487	$0.748^{+0.015}_{-0.015}$
$A_{100}^{PS}$	255	$264^{+60}_{-60}$	$D_{2000}$	230.00	$229.6^{+3.6}_{-3.5}$	$f\sigma_8(0.38)$	0.4782	$0.477^{+0.018}_{-0.018}$
$A_{143}^{PS}$	48.7	$49^{+20}_{-20}$	$n_{s,0.002}$	0.9644	$0.963^{+0.011}_{-0.011}$	$\sigma_8(0.38)$	0.6630	$0.662^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	45.8	$43^{+20}_{-20}$	$Y_P$	0.245310	$0.24530^{+0.00018}_{-0.00019}$	$f\sigma_8(0.51)$	0.4761	$0.475^{+0.016}_{-0.016}$
$A_{217}^{PS}$	118.5	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246636	$0.24662^{+0.00017}_{-0.00020}$	$\sigma_8(0.51)$	0.6201	$0.619^{+0.011}_{-0.011}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.625	$2.630^{+0.082}_{-0.079}$	$f\sigma_8(0.61)$	0.4706	$0.470^{+0.014}_{-0.014}$
$A_{100}^{dustTT}$	8.85	$8.9^{+3.6}_{-3.6}$	Age/Gyr	13.823	$13.824^{+0.070}_{-0.070}$	$\sigma_8(0.61)$	0.5899	$0.589^{+0.010}_{-0.010}$
$A_{143}^{dustTT}$	10.80	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.20	$1090.23^{+0.79}_{-0.75}$	$f\sigma_8(2.33)$	0.29718	$0.2968^{+0.0049}_{-0.0050}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.6}_{-6.5}$	$r_*$	144.54	$144.57^{+0.93}_{-0.93}$	$\sigma_8(2.33)$	0.3061	$0.3057^{+0.0052}_{-0.0053}$
$A_{217}^{dustTT}$	94.5	$93^{+10}_{-10}$	$100\theta_*$	1.04099	$1.04102^{+0.00092}_{-0.00092}$	$f_{2000}^{143}$	30.4	$31^{+6}_{-6}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.885	$13.887^{+0.086}_{-0.085}$	$f_{2000}^{143 \times 217}$	33.28	$34^{+4}_{-4}$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.47	$1059.41^{+0.86}_{-0.89}$	$f_{2000}^{217}$	107.69	$108.2^{+3.7}_{-3.7}$
$H_0$	67.06	$67.1^{+1.8}_{-1.8}$	$r_{drag}$	147.27	$147.31^{+0.94}_{-0.92}$	$\chi^2_{lensing}$	8.89	$9.9 (\nu: 1.0)$
$\Omega_\Lambda$	0.6820	$0.682^{+0.024}_{-0.026}$	$k_D$	0.14052	$0.1405^{+0.0010}_{-0.0010}$	$\chi^2_{small}$	395.87	$396.9 (\nu: 1.3)$
$\Omega_m$	0.3180	$0.318^{+0.026}_{-0.024}$	$100\theta_D$	0.16102	$0.16106^{+0.00053}_{-0.00051}$	$\chi^2_{lowl}$	23.41	$23.7 (\nu: 0.8)$
$\Omega_m h^2$	0.14301	$0.1429^{+0.0039}_{-0.0038}$	$z_{eq}$	3402	$3400^{+94}_{-90}$	$\chi^2_{plik}$	758.9	$771.7 (\nu: 15.5)$
$\Omega_m h^3$	0.09591	$0.09587^{+0.00089}_{-0.00089}$	$k_{eq}$	0.010384	$0.01038^{+0.00029}_{-0.00028}$	$\chi^2_{prior}$	1.4	$7.3 (\nu: 6.7)$
$\sigma_8$	0.8109	$0.810^{+0.017}_{-0.018}$	$100\theta_{eq}$	0.8126	$0.813^{+0.017}_{-0.017}$	$\chi^2_{CMB}$	1187.1	$1202.1 (\nu: 16.2)$
$S_8$	0.8349	$0.833^{+0.047}_{-0.045}$	$100\theta_{s,eq}$	0.4492	$0.4494^{+0.0088}_{-0.0089}$			
$\sigma_8 \Omega_m^{0.5}$	0.4573	$0.456^{+0.026}_{-0.025}$	$H(0.15)$	72.41	$72.4^{+1.5}_{-1.5}$			

Best-fit  $\chi^2_{eff} = 1188.51$ ;  $\Delta\chi^2_{eff} = -0.05$ ;  $\bar{\chi}^2_{eff} = 1209.46$ ;  $\Delta\bar{\chi}^2_{eff} = 1.05$ ;  $R - 1 = 0.00514$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb.consext8: 8.89 ( $\Delta$  -0.01) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  0.01) commander\_dx12\_v3\_2\_29: 23.41 ( $\Delta$  0.18) plik\_rd12\_HM\_v22\_TT: 758.90 ( $\Delta$  -0.42)

## 4.2 base\_Aphiphi\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}} h^2$	$0.02215^{+0.00042}_{-0.00042}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.608^{+0.023}_{-0.022}$	$D_{\text{M}}(0.15)$	$646^{+16}_{-15}$
$\Omega_{\text{c}} h^2$	$0.1201^{+0.0041}_{-0.0039}$	$\sigma_8 / h^{0.5}$	$0.990^{+0.030}_{-0.030}$	$H(0.38)$	$82.7^{+1.1}_{-1.1}$
$100\theta_{\text{MC}}$	$1.04083^{+0.00094}_{-0.00092}$	$r_{\text{drag}} h$	$98.9^{+3.1}_{-3.1}$	$D_{\text{M}}(0.38)$	$1538^{+31}_{-30}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.073}_{-0.071}$	$H(0.51)$	$89.44^{+0.87}_{-0.84}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.027}_{-0.026}$	$z_{\text{re}}$	$< 8.81$	$D_{\text{M}}(0.51)$	$1992^{+36}_{-35}$
$n_{\text{s}}$	$0.964^{+0.011}_{-0.011}$	$10^9 A_{\text{s}}$	$2.095^{+0.057}_{-0.054}$	$H(0.61)$	$95.09^{+0.70}_{-0.67}$
$A_{\text{L}}^{\phi\phi}$	$0.999^{+0.071}_{-0.068}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.882^{+0.027}_{-0.026}$	$D_{\text{M}}(0.61)$	$2317^{+38}_{-38}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0049}$	$D_{40}$	$1232^{+31}_{-29}$	$H(2.33)$	$236.4^{+2.5}_{-2.4}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5717^{+80}_{-81}$	$D_{\text{M}}(2.33)$	$5774^{+31}_{-31}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2536^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.461^{+0.024}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	$815^{+10}_{-9.9}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$D_{2000}$	$229.6^{+3.6}_{-3.5}$	$f\sigma_8(0.38)$	$0.478^{+0.018}_{-0.018}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$n_{\text{s},0.002}$	$0.964^{+0.011}_{-0.011}$	$\sigma_8(0.38)$	$0.663^{+0.011}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}$	$0.24530^{+0.00018}_{-0.00019}$	$f\sigma_8(0.51)$	$0.476^{+0.015}_{-0.016}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24663^{+0.00018}_{-0.00019}$	$\sigma_8(0.51)$	$0.620^{+0.010}_{-0.0090}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.628^{+0.082}_{-0.078}$	$f\sigma_8(0.61)$	$0.470^{+0.014}_{-0.014}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$\text{Age}/\text{Gyr}$	$13.822^{+0.070}_{-0.070}$	$\sigma_8(0.61)$	$0.5900^{+0.0089}_{-0.0086}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$z_*$	$1090.21^{+0.78}_{-0.75}$	$f\sigma_8(2.33)$	$0.2973^{+0.0043}_{-0.0040}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.6}_{-6.5}$	$r_*$	$144.59^{+0.93}_{-0.92}$	$\sigma_8(2.33)$	$0.3063^{+0.0045}_{-0.0041}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04104^{+0.00092}_{-0.00091}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.889^{+0.086}_{-0.085}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.43^{+0.89}_{-0.91}$	$f_{2000}^{217}$	$108.2^{+3.7}_{-3.7}$
$H_0$	$67.1^{+1.7}_{-1.8}$	$r_{\text{drag}}$	$147.32^{+0.94}_{-0.92}$	$\chi_{\text{lensing}}^2$	$9.8 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.683^{+0.024}_{-0.026}$	$k_{\text{D}}$	$0.1404^{+0.0010}_{-0.0010}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_{\text{m}}$	$0.317^{+0.026}_{-0.024}$	$100\theta_{\text{D}}$	$0.16105^{+0.00053}_{-0.00050}$	$\chi_{\text{lowl}}^2$	$23.7 (\nu: 0.8)$
$\Omega_{\text{m}} h^2$	$0.1429^{+0.0039}_{-0.0038}$	$z_{\text{eq}}$	$3398^{+92}_{-90}$	$\chi_{\text{plik}}^2$	$771.5 (\nu: 15.4)$
$\Omega_{\text{m}} h^3$	$0.09588^{+0.00089}_{-0.00088}$	$k_{\text{eq}}$	$0.01037^{+0.00028}_{-0.00027}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.7)$
$\sigma_8$	$0.811^{+0.017}_{-0.016}$	$100\theta_{\text{eq}}$	$0.813^{+0.017}_{-0.017}$	$\chi_{\text{CMB}}^2$	$1201.8 (\nu: 15.7)$
$S_8$	$0.834^{+0.047}_{-0.045}$	$100\theta_{\text{s,eq}}$	$0.4496^{+0.0088}_{-0.0087}$		
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.457^{+0.026}_{-0.025}$	$H(0.15)$	$72.5^{+1.5}_{-1.5}$		

$$\bar{\chi}_{\text{eff}}^2 = 1209.13; \Delta \bar{\chi}_{\text{eff}}^2 = 0.97; R - 1 = 0.00594$$

### 4.3 base\_Aphiphi\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022385	$0.02237^{+0.00030}_{-0.00029}$	$\Omega_m h^3$	0.09636	$0.09633^{+0.00057}_{-0.00058}$	$100\theta_{s,eq}$	0.4492	$0.4493^{+0.0056}_{-0.0058}$
$\Omega_c h^2$	0.12005	$0.1201^{+0.0027}_{-0.0026}$	$\sigma_8$	0.8118	$0.811^{+0.014}_{-0.014}$	$H(0.15)$	72.67	$72.7^{+1.0}_{-1.0}$
$100\theta_{MC}$	1.04092	$1.04092^{+0.00060}_{-0.00061}$	$S_8$	0.8325	$0.832^{+0.031}_{-0.030}$	$D_M(0.15)$	643.4	$644^{+10}_{-9.9}$
$\tau$	0.0543	$0.054^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4560	$0.456^{+0.017}_{-0.017}$	$H(0.38)$	82.86	$82.85^{+0.73}_{-0.73}$
$\ln(10^{10} A_s)$	3.0448	$3.044^{+0.032}_{-0.030}$	$\sigma_8 \Omega_m^{0.25}$	0.6084	$0.608^{+0.016}_{-0.016}$	$D_M(0.38)$	1533.6	$1534^{+20}_{-20}$
$n_s$	0.9660	$0.9650^{+0.0085}_{-0.0084}$	$\sigma_8/h^{0.5}$	0.9893	$0.989^{+0.023}_{-0.023}$	$H(0.51)$	89.63	$89.62^{+0.58}_{-0.57}$
$A_L^{\phi\phi}$	0.999	$0.998^{+0.063}_{-0.059}$	$r_{drag} h$	99.04	$99.0^{+2.0}_{-2.1}$	$D_M(0.51)$	1986.0	$1986^{+24}_{-23}$
$y_{cal}$	1.00060	$1.0006^{+0.0049}_{-0.0050}$	$\langle d^2 \rangle^{1/2}$	2.444	$2.446^{+0.054}_{-0.055}$	$H(0.61)$	95.281	$95.27^{+0.47}_{-0.45}$
$A_{217}^{CIB}$	46.9	$47^{+10}_{-10}$	$z_{re}$	7.68	$7.7^{+1.5}_{-1.6}$	$D_M(0.61)$	2310.5	$2311^{+26}_{-25}$
$\xi^{tSZ \times CIB}$	0.48	—	$10^9 A_s$	2.101	$2.100^{+0.069}_{-0.063}$	$H(2.33)$	236.61	$236.6^{+1.6}_{-1.6}$
$A_{143}^{tSZ}$	7.15	$5.4^{+3.6}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8843	$1.884^{+0.022}_{-0.022}$	$D_M(2.33)$	5763.2	$5764^{+21}_{-21}$
$A_{100}^{PS}$	250	$259^{+50}_{-50}$	$D_{40}$	1229.2	$1232^{+25}_{-24}$	$f\sigma_8(0.15)$	0.4602	$0.460^{+0.016}_{-0.016}$
$A_{143}^{PS}$	48.2	$46^{+20}_{-20}$	$D_{220}$	5732	$5734^{+75}_{-78}$	$\sigma_8(0.15)$	0.7498	$0.749^{+0.013}_{-0.013}$
$A_{143 \times 217}^{PS}$	48.8	$42^{+20}_{-20}$	$D_{810}$	2541.4	$2540^{+26}_{-27}$	$f\sigma_8(0.38)$	0.4777	$0.478^{+0.013}_{-0.013}$
$A_{217}^{PS}$	120.3	$115^{+20}_{-20}$	$D_{1420}$	818.5	$817.4^{+9.3}_{-9.8}$	$\sigma_8(0.38)$	0.6642	$0.664^{+0.011}_{-0.010}$
$A^{kSZ}$	0.00	$< 8.05$	$D_{2000}$	231.33	$230.9^{+3.1}_{-3.2}$	$f\sigma_8(0.51)$	0.4759	$0.476^{+0.011}_{-0.011}$
$A_{100}^{dustTT}$	8.83	$8.9^{+3.7}_{-3.6}$	$n_{s,0.002}$	0.9660	$0.9650^{+0.0085}_{-0.0084}$	$\sigma_8(0.51)$	0.6214	$0.621^{+0.010}_{-0.0096}$
$A_{143}^{dustTT}$	11.04	$10.9^{+3.5}_{-3.5}$	$Y_P$	0.245402	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4706	$0.470^{+0.010}_{-0.011}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.6^{+6.4}_{-6.4}$	$Y_P^{BBN}$	0.246728	$0.24672^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.5912	$0.5908^{+0.0098}_{-0.0090}$
$A_{217}^{dustTT}$	95.2	$94^{+10}_{-10}$	$10^5 D/H$	2.583	$2.587^{+0.055}_{-0.053}$	$f\sigma_8(2.33)$	0.29791	$0.2977^{+0.0050}_{-0.0045}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.074}$	Age/Gyr	13.7962	$13.798^{+0.047}_{-0.047}$	$\sigma_8(2.33)$	0.30696	$0.3068^{+0.0052}_{-0.0047}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.057}_{-0.057}$	$z_*$	1089.90	$1089.93^{+0.54}_{-0.53}$	$f_{2000}^{143}$	28.8	$29^{+5}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.484	$0.48^{+0.17}_{-0.17}$	$r_*$	144.41	$144.42^{+0.58}_{-0.58}$	$f_{2000}^{143 \times 217}$	31.97	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	0.226	$0.23^{+0.10}_{-0.11}$	$100\theta_*$	1.04110	$1.04110^{+0.00059}_{-0.00060}$	$f_{2000}^{217}$	106.60	$107.0^{+3.5}_{-3.5}$
$A_{143 \times 217}^{dustTE}$	0.666	$0.67^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.871	$13.872^{+0.055}_{-0.055}$	$\chi^2_{lensing}$	8.83	$9.8 (\nu: 1.0)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.52}$	$z_{drag}$	1059.97	$1059.93^{+0.61}_{-0.57}$	$\chi^2_{small}$	396.05	$397.1 (\nu: 1.7)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.06	$147.08^{+0.58}_{-0.58}$	$\chi^2_{lowl}$	23.24	$23.52 (\nu: 0.5)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14091	$0.14088^{+0.00063}_{-0.00063}$	$\chi^2_{plik}$	2344.7	$2359.7 (\nu: 16.9)$
$H_0$	67.35	$67.3^{+1.2}_{-1.2}$	$100\theta_D$	0.160735	$0.16076^{+0.00034}_{-0.00034}$	$\chi^2_{prior}$	1.8	$11.6 (\nu: 10.1)$
$\Omega_\Lambda$	0.6845	$0.684^{+0.016}_{-0.017}$	$z_{eq}$	3404	$3404^{+60}_{-58}$	$\chi^2_{CMB}$	2772.8	$2790.1 (\nu: 18.0)$
$\Omega_m$	0.3155	$0.316^{+0.017}_{-0.016}$	$k_{eq}$	0.010389	$0.01039^{+0.00018}_{-0.00018}$			
$\Omega_m h^2$	0.14308	$0.1431^{+0.0025}_{-0.0024}$	$100\theta_{eq}$	0.8130	$0.813^{+0.011}_{-0.011}$			

Best-fit  $\chi^2_{eff} = 2774.59$ ;  $\Delta\chi^2_{eff} = -0.04$ ;  $\bar{\chi}^2_{eff} = 2801.64$ ;  $\Delta\bar{\chi}^2_{eff} = 0.95$ ;  $R - 1 = 0.01120$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.83 ( $\Delta$  -0.04) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.00) commander\_dx12\_v3.2.29: 23.24 ( $\Delta$  -0.01) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.72 ( $\Delta$  -0.21)

#### 4.4 base\_Aphiphi\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02237^{+0.00030}_{-0.00029}$	$\Omega_m h^3$	$0.09633^{+0.00057}_{-0.00058}$	$100\theta_{s,eq}$	$0.4493^{+0.0056}_{-0.0057}$
$\Omega_c h^2$	$0.1200^{+0.0027}_{-0.0026}$	$\sigma_8$	$0.812^{+0.014}_{-0.013}$	$H(0.15)$	$72.7^{+1.0}_{-1.0}$
$100\theta_{MC}$	$1.04092^{+0.00060}_{-0.00061}$	$S_8$	$0.833^{+0.031}_{-0.030}$	$D_M(0.15)$	$644^{+10}_{-9.9}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.456^{+0.017}_{-0.017}$	$H(0.38)$	$82.86^{+0.73}_{-0.72}$
$\ln(10^{10} A_s)$	$3.046^{+0.028}_{-0.026}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.016}_{-0.015}$	$D_M(0.38)$	$1534^{+20}_{-20}$
$n_s$	$0.9651^{+0.0085}_{-0.0084}$	$\sigma_8/h^{0.5}$	$0.990^{+0.022}_{-0.022}$	$H(0.51)$	$89.62^{+0.59}_{-0.56}$
$A_L^{\phi\phi}$	$0.997^{+0.062}_{-0.058}$	$r_{drag} h$	$99.1^{+2.0}_{-2.1}$	$D_M(0.51)$	$1986^{+24}_{-23}$
$y_{cal}$	$1.0006^{+0.0048}_{-0.0050}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.053}_{-0.052}$	$H(0.61)$	$95.27^{+0.47}_{-0.45}$
$A_{217}^{CIB}$	$47^{+10}_{-10}$	$z_{re}$	$< 8.97$	$D_M(0.61)$	$2311^{+25}_{-25}$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.104^{+0.060}_{-0.055}$	$H(2.33)$	$236.6^{+1.6}_{-1.5}$
$A_{143}^{tSZ}$	$5.4^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	$1.884^{+0.022}_{-0.022}$	$D_M(2.33)$	$5764^{+21}_{-21}$
$A_{100}^{PS}$	$258^{+50}_{-50}$	$D_{40}$	$1232^{+25}_{-24}$	$f\sigma_8(0.15)$	$0.460^{+0.016}_{-0.015}$
$A_{143}^{PS}$	$46^{+20}_{-20}$	$D_{220}$	$5734^{+75}_{-79}$	$\sigma_8(0.15)$	$0.750^{+0.012}_{-0.011}$
$A_{143 \times 217}^{PS}$	$42^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-27}$	$f\sigma_8(0.38)$	$0.478^{+0.013}_{-0.013}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$D_{1420}$	$817.3^{+9.3}_{-9.7}$	$\sigma_8(0.38)$	$0.664^{+0.010}_{-0.0095}$
$A^{kSZ}$	$< 8.06$	$D_{2000}$	$230.9^{+3.1}_{-3.2}$	$f\sigma_8(0.51)$	$0.476^{+0.011}_{-0.011}$
$A_{100}^{dustTT}$	$8.9^{+3.7}_{-3.6}$	$n_{s,0.002}$	$0.9651^{+0.0085}_{-0.0084}$	$\sigma_8(0.51)$	$0.6216^{+0.0092}_{-0.0087}$
$A_{143}^{dustTT}$	$10.9^{+3.5}_{-3.5}$	$Y_P$	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.471^{+0.010}_{-0.0099}$
$A_{143 \times 217}^{dustTT}$	$18.6^{+6.4}_{-6.4}$	$Y_P^{BBN}$	$0.24672^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.5914^{+0.0087}_{-0.0081}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.586^{+0.054}_{-0.053}$	$f\sigma_8(2.33)$	$0.2980^{+0.0043}_{-0.0040}$
$A_{100}^{dustTE}$	$0.114^{+0.076}_{-0.074}$	Age/Gyr	$13.798^{+0.047}_{-0.047}$	$\sigma_8(2.33)$	$0.3071^{+0.0045}_{-0.0042}$
$A_{100 \times 143}^{dustTE}$	$0.135^{+0.057}_{-0.057}$	$z_*$	$1089.92^{+0.54}_{-0.53}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.42^{+0.58}_{-0.58}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	$0.23^{+0.10}_{-0.11}$	$100\theta_*$	$1.04110^{+0.00059}_{-0.00060}$	$f_{2000}^{217}$	$107.0^{+3.5}_{-3.5}$
$A_{143 \times 217}^{dustTE}$	$0.67^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.872^{+0.055}_{-0.055}$	$\chi_{lensing}^2$	$9.8 (\nu: 1.0)$
$A_{217}^{dustTE}$	$2.08^{+0.52}_{-0.52}$	$z_{drag}$	$1059.94^{+0.60}_{-0.58}$	$\chi_{simall}^2$	$397.1 (\nu: 1.7)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	$147.08^{+0.57}_{-0.57}$	$\chi_{lowl}^2$	$23.53 (\nu: 0.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14088^{+0.00062}_{-0.00063}$	$\chi_{plik}^2$	$2359.5 (\nu: 16.6)$
$H_0$	$67.3^{+1.2}_{-1.2}$	$100\theta_D$	$0.16076^{+0.00034}_{-0.00034}$	$\chi_{prior}^2$	$11.6 (\nu: 10.1)$
$\Omega_\Lambda$	$0.684^{+0.016}_{-0.017}$	$z_{eq}$	$3403^{+60}_{-58}$	$\chi_{CMB}^2$	$2789.8 (\nu: 17.5)$
$\Omega_m$	$0.316^{+0.017}_{-0.016}$	$k_{eq}$	$0.01039^{+0.00018}_{-0.00018}$		
$\Omega_m h^2$	$0.1431^{+0.0025}_{-0.0024}$	$100\theta_{eq}$	$0.813^{+0.011}_{-0.011}$		

$$\bar{\chi}_{eff}^2 = 2801.40; \Delta \bar{\chi}_{eff}^2 = 0.90; R - 1 = 0.01121$$

## 5 alpha1

### 5.1 base\_alpha1\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022181	$0.02219^{+0.00045}_{-0.00045}$	$\sigma_8 \Omega_m^{0.5}$	0.4622	$0.464^{+0.027}_{-0.027}$	$100\theta_{s,eq}$	0.4471	$0.4464^{+0.0098}_{-0.0094}$
$\Omega_c h^2$	0.12112	$0.1214^{+0.0044}_{-0.0044}$	$\sigma_8 \Omega_m^{0.25}$	0.6128	$0.614^{+0.024}_{-0.024}$	$H(0.15)$	72.11	$72.0^{+1.6}_{-1.6}$
$100\theta_{MC}$	1.04062	$1.0405^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	0.9949	$0.996^{+0.032}_{-0.032}$	$D_M(0.15)$	649.0	$650^{+17}_{-16}$
$\tau$	0.0526	$0.054^{+0.017}_{-0.016}$	$r_{drag}h$	98.06	$97.8^{+3.4}_{-3.3}$	$H(0.38)$	82.43	$82.4^{+1.2}_{-1.1}$
$\alpha_{-1}$	-0.00030	$-0.0015^{+0.0028}_{-0.0042}$	$\langle d^2 \rangle^{1/2}$	2.458	$2.465^{+0.079}_{-0.078}$	$D_M(0.38)$	1545.0	$1547^{+33}_{-33}$
$\ln(10^{10} A_s)$	3.0442	$3.047^{+0.035}_{-0.036}$	$z_{re}$	7.57	$7.7^{+1.6}_{-1.7}$	$H(0.51)$	89.26	$89.22^{+0.91}_{-0.87}$
$n_s$	0.9607	$0.958^{+0.016}_{-0.014}$	$10^9 A_s$	2.099	$2.106^{+0.075}_{-0.074}$	$D_M(0.51)$	1999.5	$2002^{+38}_{-38}$
$y_{cal}$	1.0005	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	1.8895	$1.892^{+0.030}_{-0.030}$	$H(0.61)$	94.97	$94.94^{+0.73}_{-0.68}$
$A_{217}^{CIB}$	49.1	$48^{+10}_{-10}$	$D_{40}$	1222.0	$1218^{+44}_{-38}$	$D_M(0.61)$	2325.2	$2328^{+41}_{-41}$
$\xi^{tSZ \times CIB}$	0.28	—	$D_{220}$	5715	$5719^{+83}_{-82}$	$H(2.33)$	237.08	$237.3^{+2.7}_{-2.7}$
$A_{143}^{tSZ}$	7.02	$5.0^{+3.9}_{-3.9}$	$D_{810}$	2540.2	$2539^{+28}_{-28}$	$D_M(2.33)$	5778.1	$5780^{+32}_{-33}$
$A_{100}^{PS}$	255	$265^{+60}_{-60}$	$D_{1420}$	815.6	$814^{+10}_{-10}$	$f\sigma_8(0.15)$	0.4657	$0.467^{+0.025}_{-0.025}$
$A_{143}^{PS}$	49.1	$49^{+20}_{-20}$	$D_{2000}$	229.95	$229.4^{+3.6}_{-3.6}$	$\sigma_8(0.15)$	0.7497	$0.749^{+0.015}_{-0.015}$
$A_{143 \times 217}^{PS}$	46.1	$43^{+20}_{-20}$	$n_{s,0.002}$	0.9607	$0.958^{+0.016}_{-0.014}$	$f\sigma_8(0.38)$	0.4814	$0.482^{+0.019}_{-0.019}$
$A_{217}^{PS}$	118.8	$115^{+20}_{-20}$	$Y_P$	0.245318	$0.24532^{+0.00018}_{-0.00021}$	$\sigma_8(0.38)$	0.6632	$0.663^{+0.012}_{-0.012}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246644	$0.24664^{+0.00018}_{-0.00021}$	$f\sigma_8(0.51)$	0.4786	$0.479^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	8.90	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	2.622	$2.620^{+0.086}_{-0.083}$	$\sigma_8(0.51)$	0.6201	$0.620^{+0.011}_{-0.011}$
$A_{143}^{dustTT}$	10.83	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.830	$13.834^{+0.072}_{-0.073}$	$f\sigma_8(0.61)$	0.4727	$0.473^{+0.014}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.3^{+6.5}_{-6.5}$	$z_*$	1090.26	$1090.27^{+0.81}_{-0.81}$	$\sigma_8(0.61)$	0.5898	$0.589^{+0.010}_{-0.010}$
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$r_*$	144.29	$144.2^{+1.1}_{-1.0}$	$f\sigma_8(2.33)$	0.2969	$0.2965^{+0.0051}_{-0.0051}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04082	$1.0407^{+0.0011}_{-0.0010}$	$\sigma_8(2.33)$	0.3056	$0.3051^{+0.0055}_{-0.0055}$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.863	$13.857^{+0.095}_{-0.093}$	$f_{2000}^{143}$	30.5	$31^{+6}_{-6}$
$H_0$	66.71	$66.6^{+1.9}_{-1.9}$	$z_{drag}$	1059.59	$1059.62^{+0.96}_{-0.99}$	$f_{2000}^{143 \times 217}$	33.36	$34^{+4}_{-4}$
$\Omega_\Lambda$	0.6765	$0.674^{+0.027}_{-0.028}$	$r_{drag}$	147.01	$146.9^{+1.1}_{-1.1}$	$f_{2000}^{217}$	107.77	$108.3^{+3.6}_{-3.7}$
$\Omega_m$	0.3235	$0.326^{+0.028}_{-0.027}$	$k_D$	0.14081	$0.1409^{+0.0012}_{-0.0013}$	$\chi_{simall}^2$	395.88	$397.1 (\nu: 1.5)$
$\Omega_m h^2$	0.14395	$0.1443^{+0.0042}_{-0.0042}$	$100\theta_D$	0.16094	$0.16090^{+0.00062}_{-0.00057}$	$\chi_{lowl}^2$	22.18	$22.1 (\nu: 2.3)$
$\Omega_m h^3$	0.09602	$0.09602^{+0.00093}_{-0.00091}$	$z_{eq}$	3425	$3432^{+100}_{-100}$	$\chi_{plik}^2$	759.7	$774.0 (\nu: 17.1)$
$\sigma_8$	0.8126	$0.812^{+0.018}_{-0.018}$	$k_{eq}$	0.010452	$0.01047^{+0.00031}_{-0.00031}$	$\chi_{prior}^2$	1.4	$7.3 (\nu: 6.8)$
$S_8$	0.8438	$0.847^{+0.050}_{-0.048}$	$100\theta_{eq}$	0.8086	$0.807^{+0.019}_{-0.018}$	$\chi_{CMB}^2$	1177.7	$1193.2 (\nu: 16.7)$

Best-fit  $\chi_{eff}^2 = 1179.15$ ;  $\Delta\chi_{eff}^2 = -0.43$ ;  $\bar{\chi}_{eff}^2 = 1200.56$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.98$ ;  $R - 1 = 0.00658$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  0.01) commander\_dx12\_v3.2.29: 22.18 ( $\Delta$  -1.42) plik\_rd12\_HM\_v22\_TT: 759.66 ( $\Delta$  0.91)

## 5.2 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022252	$0.02228^{+0.00044}_{-0.00043}$	$\sigma_8/h^{0.5}$	0.9814	$0.981^{+0.022}_{-0.022}$	$D_M(0.38)$	1529.4	$1530^{+18}_{-18}$
$\Omega_c h^2$	0.11894	$0.1191^{+0.0025}_{-0.0024}$	$r_{\text{drag}} h$	99.76	$99.7^{+1.8}_{-1.9}$	$H(0.51)$	89.67	$89.67^{+0.58}_{-0.56}$
$100\theta_{\text{MC}}$	1.04092	$1.04087^{+0.00092}_{-0.00093}$	$\langle d^2 \rangle^{1/2}$	2.427	$2.429^{+0.054}_{-0.053}$	$D_M(0.51)$	1981.4	$1982^{+22}_{-21}$
$\tau$	0.0547	$0.055^{+0.017}_{-0.016}$	$z_{\text{re}}$	7.73	$7.8^{+1.6}_{-1.7}$	$H(0.61)$	95.273	$95.28^{+0.49}_{-0.47}$
$\alpha_{-1}$	-0.00005	$-0.0008^{+0.0029}_{-0.0038}$	$10^9 A_s$	2.095	$2.100^{+0.077}_{-0.074}$	$D_M(0.61)$	2305.8	$2306^{+23}_{-23}$
$\ln(10^{10} A_s)$	3.0422	$3.044^{+0.036}_{-0.036}$	$10^9 A_s e^{-2\tau}$	1.8781	$1.880^{+0.025}_{-0.024}$	$H(2.33)$	235.74	$235.9^{+1.6}_{-1.6}$
$n_s$	0.9664	$0.964^{+0.011}_{-0.011}$	$D_{40}$	1218.9	$1215^{+47}_{-39}$	$D_M(2.33)$	5766.2	$5766^{+24}_{-24}$
$y_{\text{cal}}$	1.00039	$1.0006^{+0.0049}_{-0.0050}$	$D_{220}$	5719	$5725^{+82}_{-79}$	$f\sigma_8(0.15)$	0.4541	$0.454^{+0.015}_{-0.015}$
$A_{217}^{\text{CIB}}$	48.7	$48^{+10}_{-10}$	$D_{810}$	2536.6	$2537^{+28}_{-27}$	$\sigma_8(0.15)$	0.7460	$0.745^{+0.013}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$D_{1420}$	816.0	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4727	$0.473^{+0.013}_{-0.012}$
$A_{143}^{\text{tSZ}}$	6.85	$5.0^{+3.9}_{-4.0}$	$D_{2000}$	230.14	$229.9^{+3.5}_{-3.5}$	$\sigma_8(0.38)$	0.6614	$0.661^{+0.011}_{-0.012}$
$A_{100}^{\text{PS}}$	255	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9664	$0.964^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	0.4715	$0.471^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	49.9	$48^{+20}_{-20}$	$Y_{\text{P}}$	0.245347	$0.24536^{+0.00018}_{-0.00019}$	$\sigma_8(0.51)$	0.6190	$0.618^{+0.010}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	47.0	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246674	$0.24668^{+0.00018}_{-0.00019}$	$f\sigma_8(0.61)$	0.4666	$0.466^{+0.010}_{-0.010}$
$A_{217}^{\text{PS}}$	119.0	$114^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	2.608	$2.603^{+0.082}_{-0.080}$	$\sigma_8(0.61)$	0.5890	$0.5884^{+0.0099}_{-0.010}$
$A^{\text{kSZ}}$	0.2	—	Age/Gyr	13.805	$13.804^{+0.055}_{-0.055}$	$f\sigma_8(2.33)$	0.2971	$0.2967^{+0.0051}_{-0.0052}$
$A_{100}^{\text{dustTT}}$	8.89	$9.0^{+3.5}_{-3.5}$	$z_*$	1089.98	$1089.95^{+0.63}_{-0.61}$	$\sigma_8(2.33)$	0.3063	$0.3059^{+0.0053}_{-0.0054}$
$A_{143}^{\text{dustTT}}$	10.74	$10.8^{+3.3}_{-3.4}$	$r_*$	144.80	$144.74^{+0.66}_{-0.68}$	$f_{2000}^{143}$	30.4	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.7}_{-6.7}$	$100\theta_*$	1.04111	$1.04107^{+0.00093}_{-0.00093}$	$f_{2000}^{143 \times 217}$	33.18	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.5	$94^{+10}_{-20}$	$D_M(z_*)/\text{Gpc}$	13.908	$13.903^{+0.064}_{-0.064}$	$f_{2000}^{217}$	107.58	$108.0^{+3.6}_{-3.7}$
$c_{100}$	0.99970	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.59	$1059.7^{+1.0}_{-1.0}$	$\chi_{\text{small}}^2$	396.06	$397.2 (\nu: 1.7)$
$c_{217}$	0.99823	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.50	$147.44^{+0.77}_{-0.76}$	$\chi_{\text{lowl}}^2$	22.26	$22 (\nu: 3.1)$
$H_0$	67.63	$67.6^{+1.0}_{-1.1}$	$k_{\text{D}}$	0.14034	$0.1404^{+0.0010}_{-0.0010}$	$\chi_{\text{plik}}^2$	760.7	$774.1 (\nu: 17.0)$
$\Omega_{\Lambda}$	0.6899	$0.689^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	0.16095	$0.16091^{+0.00065}_{-0.00060}$	$\chi_{6\text{DF}}^2$	0.022	$0.067 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3101	$0.311^{+0.015}_{-0.014}$	$z_{\text{eq}}$	3374	$3378^{+58}_{-57}$	$\chi_{\text{MGS}}^2$	1.28	$1.30 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	0.14183	$0.1420^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	0.010298	$0.01031^{+0.00018}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	4.22	$5.0 (\nu: 1.7)$
$\Omega_{\text{m}} h^3$	0.09592	$0.09598^{+0.00093}_{-0.00090}$	$100\theta_{\text{eq}}$	0.8180	$0.817^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	1.2	$7.3 (\nu: 6.9)$
$\sigma_8$	0.8071	$0.807^{+0.015}_{-0.015}$	$100\theta_{\text{s,eq}}$	0.4519	$0.4516^{+0.0055}_{-0.0055}$	$\chi_{\text{BAO}}^2$	5.52	$6.4 (\nu: 1.2)$
$S_8$	0.8206	$0.821^{+0.030}_{-0.028}$	$H(0.15)$	72.89	$72.87^{+0.91}_{-0.92}$	$\chi_{\text{CMB}}^2$	1179.0	$1193.6 (\nu: 16.3)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4495	$0.450^{+0.016}_{-0.016}$	$D_M(0.15)$	641.1	$641.4^{+9.2}_{-8.8}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6023	$0.602^{+0.016}_{-0.015}$	$H(0.38)$	82.97	$82.96^{+0.69}_{-0.68}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.69$ ;  $\Delta\chi_{\text{eff}}^2 = -0.06$ ;  $\bar{\chi}_{\text{eff}}^2 = 1207.24$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.22$ ;  $R - 1 = 0.02382$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.28 ( $\Delta$  0.00) DR12BAO: 4.22 ( $\Delta$  0.03) CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.17) commander\_dx12\_v3\_2\_29: 22.26 ( $\Delta$  -0.57) plik\_rd12\_HM\_v22\_TT: 760.65 ( $\Delta$  0.55)

### 5.3 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022207	$0.02223^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_m^{0.25}$	0.6095	$0.609^{+0.015}_{-0.015}$	$D_M(0.15)$	646.8	$647^{+13}_{-12}$
$\Omega_c h^2$	0.12051	$0.1207^{+0.0032}_{-0.0032}$	$\sigma_8/h^{0.5}$	0.9905	$0.990^{+0.020}_{-0.021}$	$H(0.38)$	82.58	$82.54^{+0.91}_{-0.87}$
$100\theta_{MC}$	1.04069	$1.0406^{+0.0010}_{-0.00099}$	$r_{drag}h$	98.53	$98.4^{+2.6}_{-2.5}$	$D_M(0.38)$	1540.7	$1542^{+25}_{-25}$
$\tau$	0.0528	$0.054^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.4491	$2.452^{+0.049}_{-0.050}$	$H(0.51)$	89.38	$89.35^{+0.74}_{-0.69}$
$\alpha_{-1}$	-0.00018	$-0.0013^{+0.0028}_{-0.0041}$	$z_{re}$	7.58	$7.6^{+1.5}_{-1.7}$	$D_M(0.51)$	1994.5	$1996^{+29}_{-29}$
$\ln(10^{10} A_s)$	3.0425	$3.045^{+0.030}_{-0.031}$	$10^9 A_s$	2.096	$2.101^{+0.065}_{-0.064}$	$H(0.61)$	95.06	$95.04^{+0.61}_{-0.57}$
$n_s$	0.9621	$0.959^{+0.014}_{-0.012}$	$10^9 A_s e^{-2\tau}$	1.8855	$1.888^{+0.025}_{-0.025}$	$D_M(0.61)$	2319.8	$2321^{+31}_{-32}$
$y_{cal}$	1.00018	$1.0004^{+0.0049}_{-0.0050}$	$D_{40}$	1222.2	$1216^{+45}_{-37}$	$H(2.33)$	236.72	$236.8^{+2.0}_{-2.0}$
$A_{217}^{CIB}$	49.4	$48^{+10}_{-10}$	$D_{220}$	5716	$5721^{+82}_{-82}$	$D_M(2.33)$	5774.8	$5776^{+28}_{-29}$
$\xi^{tSZ \times CIB}$	0.26	—	$D_{810}$	2537.9	$2538^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4622	$0.462^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	6.99	$5.0^{+3.9}_{-4.0}$	$D_{1420}$	815.2	$814.2^{+9.9}_{-10}$	$\sigma_8(0.15)$	0.7482	$0.747^{+0.011}_{-0.011}$
$A_{100}^{PS}$	257	$265^{+60}_{-60}$	$D_{2000}$	229.84	$229.4^{+3.6}_{-3.6}$	$f\sigma_8(0.38)$	0.4787	$0.479^{+0.012}_{-0.013}$
$A_{143}^{PS}$	48.9	$49^{+20}_{-20}$	$n_{s,0.002}$	0.9621	$0.959^{+0.014}_{-0.012}$	$\sigma_8(0.38)$	0.6623	$0.6614^{+0.0096}_{-0.0098}$
$A_{143 \times 217}^{PS}$	45.3	$43^{+20}_{-20}$	$Y_P$	0.245329	$0.24533^{+0.00018}_{-0.00019}$	$f\sigma_8(0.51)$	0.4764	$0.476^{+0.010}_{-0.011}$
$A_{217}^{PS}$	118.1	$114^{+20}_{-20}$	$Y_P^{BBN}$	0.246655	$0.24666^{+0.00018}_{-0.00019}$	$\sigma_8(0.51)$	0.6195	$0.6185^{+0.0092}_{-0.0093}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.617	$2.613^{+0.083}_{-0.080}$	$f\sigma_8(0.61)$	0.4707	$0.4704^{+0.0091}_{-0.0094}$
$A_{100}^{dustTT}$	8.88	$8.9^{+3.6}_{-3.6}$	Age/Gyr	13.823	$13.825^{+0.063}_{-0.066}$	$\sigma_8(0.61)$	0.5892	$0.5883^{+0.0090}_{-0.0090}$
$A_{143}^{dustTT}$	10.80	$10.8^{+3.4}_{-3.4}$	$z_*$	1090.17	$1090.16^{+0.70}_{-0.71}$	$f\sigma_8(2.33)$	0.29676	$0.2963^{+0.0048}_{-0.0048}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.4^{+6.4}_{-6.7}$	$r_*$	144.42	$144.37^{+0.81}_{-0.78}$	$\sigma_8(2.33)$	0.3056	$0.3051^{+0.0053}_{-0.0053}$
$A_{217}^{dustTT}$	94.2	$93^{+10}_{-10}$	$100\theta_*$	1.04089	$1.0408^{+0.0010}_{-0.00098}$	$f_{2000}^{143}$	30.5	$31^{+6}_{-6}$
$c_{100}$	0.99968	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.875	$13.872^{+0.074}_{-0.071}$	$f_{2000}^{143 \times 217}$	33.29	$34^{+4}_{-4}$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.59	$1059.65^{+0.97}_{-0.98}$	$f_{2000}^{217}$	107.62	$108.2^{+3.7}_{-3.7}$
$H_0$	66.96	$66.9^{+1.5}_{-1.4}$	$r_{drag}$	147.14	$147.08^{+0.88}_{-0.82}$	$\chi_{lensing}^2$	8.93	$9.52 (\nu: 0.5)$
$\Omega_\Lambda$	0.6803	$0.679^{+0.020}_{-0.021}$	$k_D$	0.14069	$0.1408^{+0.0010}_{-0.0011}$	$\chi_{small}^2$	395.89	$397.0 (\nu: 1.1)$
$\Omega_m$	0.3197	$0.321^{+0.021}_{-0.020}$	$100\theta_D$	0.16093	$0.16089^{+0.00062}_{-0.00057}$	$\chi_{lowl}^2$	22.35	$22.1 (\nu: 2.4)$
$\Omega_m h^2$	0.14337	$0.1435^{+0.0031}_{-0.0032}$	$z_{eq}$	3411	$3415^{+75}_{-75}$	$\chi_{plik}^2$	759.7	$773.7 (\nu: 16.1)$
$\Omega_m h^3$	0.09600	$0.09600^{+0.00091}_{-0.00088}$	$k_{eq}$	0.010409	$0.01042^{+0.00023}_{-0.00023}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.7)$
$\sigma_8$	0.8106	$0.810^{+0.012}_{-0.013}$	$100\theta_{eq}$	0.8112	$0.810^{+0.014}_{-0.013}$	$\chi_{CMB}^2$	1186.9	$1202.2 (\nu: 16.4)$
$S_8$	0.8368	$0.837^{+0.032}_{-0.033}$	$100\theta_{s,eq}$	0.4484	$0.4480^{+0.0074}_{-0.0070}$			
$\sigma_8 \Omega_m^{0.5}$	0.4583	$0.459^{+0.018}_{-0.018}$	$H(0.15)$	72.33	$72.3^{+1.2}_{-1.2}$			

Best-fit  $\chi_{eff}^2 = 1188.17$ ;  $\Delta\chi_{eff}^2 = -0.40$ ;  $\bar{\chi}_{eff}^2 = 1209.53$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.12$ ;  $R - 1 = 0.01166$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.93 ( $\Delta$  0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 ( $\Delta$  0.02) commander\_dx12\_v3.2\_29: 22.35 ( $\Delta$  -0.88) plik\_rd12\_HM\_v22\_TT: 759.73 ( $\Delta$  0.41)



## 5.4 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022281	$0.02229^{+0.00043}_{-0.00043}$	$\sigma_8/h^{0.5}$	0.9842	$0.983^{+0.017}_{-0.017}$	$D_M(0.38)$	1529.9	$1531^{+17}_{-17}$
$\Omega_c h^2$	0.11911	$0.1192^{+0.0022}_{-0.0022}$	$r_{\text{drag}} h$	99.65	$99.6^{+1.7}_{-1.7}$	$H(0.51)$	89.67	$89.65^{+0.55}_{-0.53}$
$100\theta_{\text{MC}}$	1.04092	$1.04085^{+0.00092}_{-0.00092}$	$\langle d^2 \rangle^{1/2}$	2.4356	$2.436^{+0.042}_{-0.042}$	$D_M(0.51)$	1982.0	$1983^{+20}_{-20}$
$\tau$	0.0565	$0.057^{+0.016}_{-0.015}$	$z_{\text{re}}$	7.91	$7.9^{+1.5}_{-1.5}$	$H(0.61)$	95.281	$95.26^{+0.48}_{-0.45}$
$\alpha_{-1}$	-0.00008	$-0.0009^{+0.0029}_{-0.0038}$	$10^9 A_s$	2.106	$2.107^{+0.068}_{-0.065}$	$D_M(0.61)$	2306.4	$2307^{+22}_{-22}$
$\ln(10^{10} A_s)$	3.0472	$3.048^{+0.032}_{-0.031}$	$10^9 A_s e^{-2\tau}$	1.8806	$1.881^{+0.023}_{-0.023}$	$H(2.33)$	235.89	$235.9^{+1.4}_{-1.4}$
$n_s$	0.9654	$0.964^{+0.011}_{-0.010}$	$D_{40}$	1221.4	$1216^{+47}_{-39}$	$D_M(2.33)$	5765.4	$5766^{+23}_{-24}$
$y_{\text{cal}}$	1.00074	$1.0007^{+0.0049}_{-0.0049}$	$D_{220}$	5728	$5728^{+81}_{-78}$	$f\sigma_8(0.15)$	0.4558	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	50.3	$48^{+10}_{-10}$	$D_{810}$	2538.5	$2538^{+27}_{-26}$	$\sigma_8(0.15)$	0.7478	$0.747^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.099	—	$D_{1420}$	816.4	$816^{+10}_{-9.9}$	$f\sigma_8(0.38)$	0.4743	$0.4740^{+0.0099}_{-0.0099}$
$A_{143}^{\text{tSZ}}$	7.14	$5.0^{+3.8}_{-4.1}$	$D_{2000}$	230.31	$230.0^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	0.6629	$0.6620^{+0.0097}_{-0.0098}$
$A_{100}^{\text{PS}}$	257	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9654	$0.964^{+0.011}_{-0.010}$	$f\sigma_8(0.51)$	0.4729	$0.4725^{+0.0088}_{-0.0088}$
$A_{143}^{\text{PS}}$	45.7	$48^{+20}_{-20}$	$Y_P$	0.245360	$0.24536^{+0.00018}_{-0.00018}$	$\sigma_8(0.51)$	0.6204	$0.6195^{+0.0091}_{-0.0092}$
$A_{143 \times 217}^{\text{PS}}$	40.6	$43^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.246686	$0.24668^{+0.00018}_{-0.00018}$	$f\sigma_8(0.61)$	0.4680	$0.4676^{+0.0081}_{-0.0081}$
$A_{217}^{\text{PS}}$	116.4	$115^{+20}_{-20}$	$10^5 \text{D/H}$	2.602	$2.602^{+0.081}_{-0.079}$	$\sigma_8(0.61)$	0.5903	$0.5895^{+0.0087}_{-0.0088}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.803	$13.804^{+0.054}_{-0.054}$	$f\sigma_8(2.33)$	0.29768	$0.2972^{+0.0045}_{-0.0046}$
$A_{100}^{\text{dustTT}}$	8.89	$8.9^{+3.6}_{-3.5}$	$z_*$	1089.95	$1089.96^{+0.62}_{-0.59}$	$\sigma_8(2.33)$	0.30692	$0.3064^{+0.0048}_{-0.0049}$
$A_{143}^{\text{dustTT}}$	10.75	$10.7^{+3.3}_{-3.4}$	$r_*$	144.73	$144.70^{+0.61}_{-0.62}$	$f_{2000}^{143}$	30.4	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	18.9	$18.3^{+6.5}_{-6.7}$	$100\theta_*$	1.04112	$1.04104^{+0.00094}_{-0.00092}$	$f_{2000}^{143 \times 217}$	33.10	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	93.9	$94^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.901	$13.899^{+0.059}_{-0.059}$	$f_{2000}^{217}$	107.70	$108.0^{+3.6}_{-3.7}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.67	$1059.69^{+0.97}_{-1.0}$	$\chi_{\text{lensing}}^2$	8.78	$9.25 (\nu: 0.3)$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.43	$147.39^{+0.70}_{-0.71}$	$\chi_{\text{simall}}^2$	396.43	$397.3 (\nu: 1.7)$
$H_0$	67.59	$67.54^{+0.99}_{-0.97}$	$k_D$	0.14045	$0.14048^{+0.00097}_{-0.00099}$	$\chi_{\text{lowl}}^2$	22.31	$22 (\nu: 3.2)$
$\Omega_\Lambda$	0.6891	$0.688^{+0.013}_{-0.013}$	$100\theta_D$	0.16091	$0.16089^{+0.00064}_{-0.00059}$	$\chi_{\text{plik}}^2$	759.8	$773.6 (\nu: 16.1)$
$\Omega_m$	0.3109	$0.312^{+0.013}_{-0.013}$	$z_{\text{eq}}$	3379	$3381^{+52}_{-51}$	$\chi_{6\text{DF}}^2$	0.029	$0.068 (\nu: 0.0)$
$\Omega_m h^2$	0.14204	$0.1421^{+0.0022}_{-0.0021}$	$k_{\text{eq}}$	0.010313	$0.01032^{+0.00016}_{-0.00016}$	$\chi_{\text{MGS}}^2$	1.22	$1.23 (\nu: 0.1)$
$\Omega_m h^3$	0.09601	$0.09600^{+0.00091}_{-0.00089}$	$100\theta_{\text{eq}}$	0.8172	$0.8168^{+0.0095}_{-0.0094}$	$\chi_{\text{DR12BAO}}^2$	4.40	$5.1 (\nu: 1.5)$
$\sigma_8$	0.8092	$0.808^{+0.012}_{-0.012}$	$100\theta_{s,\text{eq}}$	0.45150	$0.4513^{+0.0049}_{-0.0049}$	$\chi_{\text{prior}}^2$	1.6	$7.2 (\nu: 6.8)$
$S_8$	0.8237	$0.824^{+0.024}_{-0.023}$	$H(0.15)$	72.86	$72.82^{+0.87}_{-0.84}$	$\chi_{\text{CMB}}^2$	1187.3	$1202.5 (\nu: 16.1)$
$\sigma_8 \Omega_m^{0.5}$	0.4512	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	641.4	$641.9^{+8.4}_{-8.4}$	$\chi_{\text{BAO}}^2$	5.64	$6.4 (\nu: 1.0)$
$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	82.96	$82.93^{+0.66}_{-0.63}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.56$ ;  $\Delta\chi_{\text{eff}}^2 = -0.13$ ;  $\bar{\chi}_{\text{eff}}^2 = 1216.09$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.36$ ;  $R - 1 = 0.02745$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.40 ( $\Delta$  0.02) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.78 ( $\Delta$  -0.09) simall\_100x143\_offlike5\_EE\_Aplanck: 396.43 ( $\Delta$  0.34) commander\_dx12\_v3\_2.29: 22.31 ( $\Delta$  -0.65) plik\_rd12\_HM\_v22\_TT: 759.82 ( $\Delta$  0.02)

## 5.5 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02220^{+0.00045}_{-0.00045}$	$\sigma_8 \Omega_m^{0.5}$	$0.464^{+0.027}_{-0.026}$	$100\theta_{s,eq}$	$0.4465^{+0.0097}_{-0.0094}$
$\Omega_c h^2$	$0.1214^{+0.0044}_{-0.0043}$	$\sigma_8 \Omega_m^{0.25}$	$0.614^{+0.024}_{-0.023}$	$H(0.15)$	$72.0^{+1.6}_{-1.6}$
$100\theta_{MC}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.997^{+0.032}_{-0.031}$	$D_M(0.15)$	$650^{+17}_{-16}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$r_{drag}h$	$97.9^{+3.4}_{-3.3}$	$H(0.38)$	$82.4^{+1.2}_{-1.1}$
$\alpha_{-1}$	$-0.0015^{+0.0028}_{-0.0043}$	$\langle d^2 \rangle^{1/2}$	$2.468^{+0.078}_{-0.076}$	$D_M(0.38)$	$1547^{+33}_{-32}$
$\ln(10^{10} A_s)$	$3.050^{+0.031}_{-0.030}$	$z_{re}$	$< 9.04$	$H(0.51)$	$89.23^{+0.90}_{-0.86}$
$n_s$	$0.958^{+0.016}_{-0.014}$	$10^9 A_s$	$2.112^{+0.066}_{-0.063}$	$D_M(0.51)$	$2002^{+38}_{-38}$
$y_{cal}$	$1.0005^{+0.0049}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	$1.892^{+0.030}_{-0.030}$	$H(0.61)$	$94.95^{+0.72}_{-0.68}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{40}$	$1217^{+45}_{-38}$	$D_M(0.61)$	$2328^{+41}_{-41}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5719^{+82}_{-82}$	$H(2.33)$	$237.3^{+2.7}_{-2.7}$
$A_{143}^{tSZ}$	$5.0^{+3.9}_{-4.0}$	$D_{810}$	$2539^{+28}_{-28}$	$D_M(2.33)$	$5779^{+32}_{-33}$
$A_{100}^{PS}$	$264^{+60}_{-50}$	$D_{1420}$	$814^{+10}_{-10}$	$f\sigma_8(0.15)$	$0.467^{+0.025}_{-0.024}$
$A_{143}^{PS}$	$49^{+20}_{-20}$	$D_{2000}$	$229.4^{+3.6}_{-3.6}$	$\sigma_8(0.15)$	$0.750^{+0.014}_{-0.014}$
$A_{143 \times 217}^{PS}$	$43^{+20}_{-20}$	$n_{s,0.002}$	$0.958^{+0.016}_{-0.014}$	$f\sigma_8(0.38)$	$0.483^{+0.019}_{-0.019}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$Y_P$	$0.24532^{+0.00018}_{-0.00021}$	$\sigma_8(0.38)$	$0.663^{+0.011}_{-0.011}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.24665^{+0.00018}_{-0.00021}$	$f\sigma_8(0.51)$	$0.479^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	$2.618^{+0.086}_{-0.082}$	$\sigma_8(0.51)$	$0.620^{+0.010}_{-0.0094}$
$A_{143}^{dustTT}$	$10.7^{+3.5}_{-3.5}$	Age/Gyr	$13.833^{+0.072}_{-0.073}$	$f\sigma_8(0.61)$	$0.473^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.5}_{-6.5}$	$z_*$	$1090.26^{+0.80}_{-0.80}$	$\sigma_8(0.61)$	$0.5899^{+0.0097}_{-0.0087}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$r_*$	$144.2^{+1.1}_{-1.0}$	$f\sigma_8(2.33)$	$0.2969^{+0.0046}_{-0.0044}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.0407^{+0.0011}_{-0.0010}$	$\sigma_8(2.33)$	$0.3055^{+0.0050}_{-0.0047}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.857^{+0.094}_{-0.093}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$H_0$	$66.6^{+1.9}_{-1.9}$	$z_{drag}$	$1059.64^{+0.94}_{-0.97}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$\Omega_\Lambda$	$0.675^{+0.027}_{-0.028}$	$r_{drag}$	$146.9^{+1.1}_{-1.1}$	$f_{2000}^{217}$	$108.2^{+3.7}_{-3.7}$
$\Omega_m$	$0.325^{+0.028}_{-0.027}$	$k_D$	$0.1409^{+0.0012}_{-0.0013}$	$\chi_{simall}^2$	$397.0 (\nu: 1.5)$
$\Omega_m h^2$	$0.1442^{+0.0042}_{-0.0042}$	$100\theta_D$	$0.16089^{+0.00061}_{-0.00057}$	$\chi_{lowl}^2$	$22.1 (\nu: 2.2)$
$\Omega_m h^3$	$0.09603^{+0.00093}_{-0.00090}$	$z_{eq}$	$3431^{+100}_{-100}$	$\chi_{plik}^2$	$773.9 (\nu: 16.9)$
$\sigma_8$	$0.813^{+0.017}_{-0.017}$	$k_{eq}$	$0.01047^{+0.00031}_{-0.00031}$	$\chi_{prior}^2$	$7.3 (\nu: 6.7)$
$S_8$	$0.847^{+0.050}_{-0.048}$	$100\theta_{eq}$	$0.808^{+0.019}_{-0.018}$	$\chi_{CMB}^2$	$1193.0 (\nu: 16.1)$

$$\bar{\chi}_{eff}^2 = 1200.29; \Delta\bar{\chi}_{eff}^2 = 0.97; R - 1 = 0.00693$$

## 5.6 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02229^{+0.00044}_{-0.00043}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.021}$	$D_M(0.38)$	$1530^{+18}_{-18}$
$\Omega_c h^2$	$0.1191^{+0.0025}_{-0.0024}$	$r_{\text{drag}} h$	$99.7^{+1.8}_{-1.9}$	$H(0.51)$	$89.67^{+0.57}_{-0.56}$
$100\theta_{\text{MC}}$	$1.04087^{+0.00092}_{-0.00093}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.052}_{-0.049}$	$D_M(0.51)$	$1982^{+22}_{-21}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$z_{\text{re}}$	$< 9.11$	$H(0.61)$	$95.28^{+0.49}_{-0.47}$
$\alpha_{-1}$	$-0.0009^{+0.0029}_{-0.0038}$	$10^9 A_s$	$2.104^{+0.068}_{-0.064}$	$D_M(0.61)$	$2306^{+23}_{-23}$
$\ln(10^{10} A_s)$	$3.046^{+0.032}_{-0.031}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.025}_{-0.024}$	$H(2.33)$	$235.9^{+1.6}_{-1.6}$
$n_s$	$0.964^{+0.011}_{-0.011}$	$D_{40}$	$1214^{+47}_{-39}$	$D_M(2.33)$	$5766^{+24}_{-24}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0050}$	$D_{220}$	$5725^{+80}_{-79}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+28}_{-27}$	$\sigma_8(0.15)$	$0.746^{+0.013}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.9}_{-4.0}$	$D_{2000}$	$229.9^{+3.4}_{-3.5}$	$\sigma_8(0.38)$	$0.661^{+0.011}_{-0.010}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$n_{s,0.002}$	$0.964^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$Y_{\text{P}}$	$0.24536^{+0.00018}_{-0.00018}$	$\sigma_8(0.51)$	$0.6190^{+0.0099}_{-0.0093}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24668^{+0.00018}_{-0.00018}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0098}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.602^{+0.083}_{-0.079}$	$\sigma_8(0.61)$	$0.5890^{+0.0094}_{-0.0088}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.803^{+0.055}_{-0.055}$	$f\sigma_8(2.33)$	$0.2970^{+0.0048}_{-0.0044}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.5}$	$z_*$	$1089.94^{+0.63}_{-0.62}$	$\sigma_8(2.33)$	$0.3063^{+0.0050}_{-0.0046}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.3}_{-3.4}$	$r_*$	$144.74^{+0.67}_{-0.68}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.7}_{-6.8}$	$100\theta_*$	$1.04106^{+0.00093}_{-0.00093}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-20}$	$D_M(z_*)/\text{Gpc}$	$13.903^{+0.064}_{-0.064}$	$f_{2000}^{217}$	$107.9^{+3.6}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.68^{+0.98}_{-1.0}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.43^{+0.76}_{-0.77}$	$\chi_{\text{lowl}}^2$	$22 (\nu: 3.1)$
$H_0$	$67.6^{+1.0}_{-1.1}$	$k_{\text{D}}$	$0.1404^{+0.0010}_{-0.0010}$	$\chi_{\text{plik}}^2$	$774.0 (\nu: 16.7)$
$\Omega_{\Lambda}$	$0.689^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	$0.16090^{+0.00065}_{-0.00060}$	$\chi_{6\text{DF}}^2$	$0.066 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.311^{+0.015}_{-0.014}$	$z_{\text{eq}}$	$3378^{+58}_{-56}$	$\chi_{\text{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1420^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	$0.01031^{+0.00018}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.7)$
$\Omega_{\text{m}} h^3$	$0.09599^{+0.00092}_{-0.00090}$	$100\theta_{\text{eq}}$	$0.817^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.807^{+0.014}_{-0.014}$	$100\theta_{\text{s,eq}}$	$0.4516^{+0.0055}_{-0.0055}$	$\chi_{\text{BAO}}^2$	$6.4 (\nu: 1.2)$
$S_8$	$0.822^{+0.029}_{-0.027}$	$H(0.15)$	$72.87^{+0.90}_{-0.91}$	$\chi_{\text{CMB}}^2$	$1193.4 (\nu: 15.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.016}_{-0.015}$	$D_M(0.15)$	$641.4^{+9.2}_{-8.8}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.015}_{-0.015}$	$H(0.38)$	$82.97^{+0.69}_{-0.68}$		

$$\bar{\chi}_{\text{eff}}^2 = 1207.05; \Delta \bar{\chi}_{\text{eff}}^2 = 1.29; R - 1 = 0.02346$$

## 5.7 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02224^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.015}_{-0.015}$	$D_M(0.15)$	$647^{+12}_{-12}$
$\Omega_c h^2$	$0.1205^{+0.0031}_{-0.0032}$	$\sigma_8/h^{0.5}$	$0.990^{+0.020}_{-0.021}$	$H(0.38)$	$82.57^{+0.91}_{-0.85}$
$100\theta_{MC}$	$1.0406^{+0.0010}_{-0.00098}$	$r_{drag}h$	$98.5^{+2.6}_{-2.4}$	$D_M(0.38)$	$1541^{+24}_{-25}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.453^{+0.049}_{-0.050}$	$H(0.51)$	$89.37^{+0.72}_{-0.67}$
$\alpha_{-1}$	$-0.0014^{+0.0028}_{-0.0042}$	$z_{re}$	$< 8.94$	$D_M(0.51)$	$1995^{+28}_{-29}$
$\ln(10^{10} A_s)$	$3.047^{+0.027}_{-0.026}$	$10^9 A_s$	$2.106^{+0.058}_{-0.055}$	$H(0.61)$	$95.06^{+0.61}_{-0.55}$
$n_s$	$0.959^{+0.013}_{-0.012}$	$10^9 A_s e^{-2\tau}$	$1.887^{+0.024}_{-0.025}$	$D_M(0.61)$	$2320^{+30}_{-31}$
$y_{cal}$	$1.0004^{+0.0049}_{-0.0050}$	$D_{40}$	$1215^{+45}_{-36}$	$H(2.33)$	$236.8^{+1.9}_{-2.0}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{220}$	$5721^{+81}_{-81}$	$D_M(2.33)$	$5775^{+27}_{-29}$
$\xi^{tSZ \times CIB}$	—	$D_{810}$	$2538^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.462^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	$5.0^{+3.9}_{-4.0}$	$D_{1420}$	$814.2^{+9.9}_{-10}$	$\sigma_8(0.15)$	$0.748^{+0.010}_{-0.010}$
$A_{100}^{PS}$	$265^{+60}_{-60}$	$D_{2000}$	$229.5^{+3.6}_{-3.6}$	$f\sigma_8(0.38)$	$0.479^{+0.012}_{-0.013}$
$A_{143}^{PS}$	$49^{+20}_{-20}$	$n_{s,0.002}$	$0.959^{+0.013}_{-0.012}$	$\sigma_8(0.38)$	$0.6620^{+0.0092}_{-0.0086}$
$A_{143 \times 217}^{PS}$	$43^{+20}_{-20}$	$Y_P$	$0.24534^{+0.00018}_{-0.00019}$	$f\sigma_8(0.51)$	$0.476^{+0.010}_{-0.011}$
$A_{217}^{PS}$	$114^{+20}_{-20}$	$Y_P^{BBN}$	$0.24666^{+0.00018}_{-0.00019}$	$\sigma_8(0.51)$	$0.6192^{+0.0088}_{-0.0080}$
$A^{kSZ}$	—	$10^5 D/H$	$2.611^{+0.082}_{-0.079}$	$f\sigma_8(0.61)$	$0.4706^{+0.0090}_{-0.0094}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	Age/Gyr	$13.823^{+0.061}_{-0.065}$	$\sigma_8(0.61)$	$0.5889^{+0.0085}_{-0.0077}$
$A_{143}^{dustTT}$	$10.8^{+3.4}_{-3.4}$	$z_*$	$1090.14^{+0.69}_{-0.69}$	$f\sigma_8(2.33)$	$0.2966^{+0.0045}_{-0.0040}$
$A_{143 \times 217}^{dustTT}$	$18.4^{+6.4}_{-6.6}$	$r_*$	$144.39^{+0.81}_{-0.77}$	$\sigma_8(2.33)$	$0.3054^{+0.0050}_{-0.0045}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$100\theta_*$	$1.0408^{+0.0010}_{-0.00098}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.874^{+0.073}_{-0.071}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	$1059.67^{+0.95}_{-0.95}$	$f_{2000}^{217}$	$108.2^{+3.7}_{-3.7}$
$H_0$	$66.9^{+1.4}_{-1.4}$	$r_{drag}$	$147.10^{+0.87}_{-0.81}$	$\chi_{lensing}^2$	$9.50 (\nu: 0.5)$
$\Omega_\Lambda$	$0.680^{+0.020}_{-0.020}$	$k_D$	$0.1408^{+0.0010}_{-0.0011}$	$\chi_{simall}^2$	$396.9 (\nu: 1.1)$
$\Omega_m$	$0.320^{+0.020}_{-0.020}$	$100\theta_D$	$0.16088^{+0.00062}_{-0.00056}$	$\chi_{lowl}^2$	$22.0 (\nu: 2.4)$
$\Omega_m h^2$	$0.1434^{+0.0030}_{-0.0031}$	$z_{eq}$	$3412^{+71}_{-74}$	$\chi_{plik}^2$	$773.6 (\nu: 16.0)$
$\Omega_m h^3$	$0.09601^{+0.00091}_{-0.00088}$	$k_{eq}$	$0.01041^{+0.00022}_{-0.00023}$	$\chi_{prior}^2$	$7.3 (\nu: 6.7)$
$\sigma_8$	$0.810^{+0.012}_{-0.012}$	$100\theta_{eq}$	$0.811^{+0.014}_{-0.013}$	$\chi_{CMB}^2$	$1202.0 (\nu: 15.9)$
$S_8$	$0.837^{+0.032}_{-0.033}$	$100\theta_{s,eq}$	$0.4483^{+0.0072}_{-0.0067}$		
$\sigma_8 \Omega_m^{0.5}$	$0.458^{+0.017}_{-0.018}$	$H(0.15)$	$72.3^{+1.2}_{-1.2}$		

$$\bar{\chi}_{\text{eff}}^2 = 1209.29; \Delta\bar{\chi}_{\text{eff}}^2 = 1.13; R - 1 = 0.01342$$

## 5.8 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02229^{+0.00043}_{-0.00042}$	$\sigma_8/h^{0.5}$	$0.984^{+0.017}_{-0.017}$	$D_M(0.38)$	$1531^{+17}_{-17}$
$\Omega_c h^2$	$0.1192^{+0.0022}_{-0.0022}$	$r_{\text{drag}} h$	$99.6^{+1.7}_{-1.7}$	$H(0.51)$	$89.65^{+0.55}_{-0.52}$
$100\theta_{\text{MC}}$	$1.04085^{+0.00092}_{-0.00092}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.042}_{-0.041}$	$D_M(0.51)$	$1983^{+20}_{-20}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$z_{\text{re}}$	$8.0^{+1.2}_{-1.4}$	$H(0.61)$	$95.27^{+0.48}_{-0.45}$
$\alpha_{-1}$	$-0.0009^{+0.0029}_{-0.0039}$	$10^9 A_s$	$2.110^{+0.062}_{-0.061}$	$D_M(0.61)$	$2307^{+22}_{-22}$
$\ln(10^{10} A_s)$	$3.049^{+0.029}_{-0.029}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.023}_{-0.022}$	$H(2.33)$	$235.9^{+1.4}_{-1.4}$
$n_s$	$0.964^{+0.011}_{-0.010}$	$D_{40}$	$1216^{+47}_{-39}$	$D_M(2.33)$	$5766^{+23}_{-24}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0049}$	$D_{220}$	$5728^{+80}_{-77}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2538^{+27}_{-26}$	$\sigma_8(0.15)$	$0.747^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$816^{+10}_{-9.9}$	$f\sigma_8(0.38)$	$0.4741^{+0.0098}_{-0.0098}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.8}_{-4.0}$	$D_{2000}$	$230.0^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.6623^{+0.0094}_{-0.0091}$
$A_{100}^{\text{PS}}$	$264^{+50}_{-60}$	$n_{s,0.002}$	$0.964^{+0.011}_{-0.010}$	$f\sigma_8(0.51)$	$0.4727^{+0.0087}_{-0.0087}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$Y_{\text{P}}$	$0.24536^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	$0.6198^{+0.0088}_{-0.0085}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24669^{+0.00018}_{-0.00018}$	$f\sigma_8(0.61)$	$0.4677^{+0.0080}_{-0.0080}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 D/H$	$2.601^{+0.080}_{-0.078}$	$\sigma_8(0.61)$	$0.5897^{+0.0085}_{-0.0082}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.804^{+0.054}_{-0.054}$	$f\sigma_8(2.33)$	$0.2973^{+0.0045}_{-0.0042}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$z_*$	$1089.95^{+0.60}_{-0.59}$	$\sigma_8(2.33)$	$0.3066^{+0.0047}_{-0.0044}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.3}_{-3.4}$	$r_*$	$144.70^{+0.61}_{-0.62}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.5}_{-6.7}$	$100\theta_*$	$1.04104^{+0.00094}_{-0.00092}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.900^{+0.059}_{-0.059}$	$f_{2000}^{217}$	$107.9^{+3.6}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.70^{+0.96}_{-0.99}$	$\chi_{\text{lensing}}^2$	$9.21 (\nu: 0.2)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.39^{+0.70}_{-0.70}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 1.7)$
$H_0$	$67.56^{+0.98}_{-0.97}$	$k_{\text{D}}$	$0.14049^{+0.00097}_{-0.00099}$	$\chi_{\text{lowl}}^2$	$22 (\nu: 3.1)$
$\Omega_{\Lambda}$	$0.689^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16088^{+0.00063}_{-0.00059}$	$\chi_{\text{plik}}^2$	$773.6 (\nu: 16.0)$
$\Omega_{\text{m}}$	$0.311^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3381^{+52}_{-51}$	$\chi_{6\text{DF}}^2$	$0.066 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1421^{+0.0022}_{-0.0021}$	$k_{\text{eq}}$	$0.01032^{+0.00016}_{-0.00016}$	$\chi_{\text{MGS}}^2$	$1.24 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.09601^{+0.00091}_{-0.00089}$	$100\theta_{\text{eq}}$	$0.8169^{+0.0094}_{-0.0093}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.4)$
$\sigma_8$	$0.809^{+0.012}_{-0.012}$	$100\theta_{\text{s,eq}}$	$0.4513^{+0.0049}_{-0.0049}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 6.7)$
$S_8$	$0.824^{+0.024}_{-0.023}$	$H(0.15)$	$72.83^{+0.86}_{-0.84}$	$\chi_{\text{CMB}}^2$	$1202.4 (\nu: 15.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	$641.8^{+8.4}_{-8.4}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 1.0)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	$82.94^{+0.65}_{-0.63}$		

$$\bar{\chi}_{\text{eff}}^2 = 1215.96; \Delta \bar{\chi}_{\text{eff}}^2 = 1.39; R - 1 = 0.02803$$

## 5.9 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022381	$0.02236^{+0.00030}_{-0.00030}$	$\Omega_m h^2$	0.14328	$0.1435^{+0.0034}_{-0.0035}$	$k_{\text{eq}}$	0.010403	$0.01042^{+0.00025}_{-0.00025}$
$\Omega_c h^2$	0.12025	$0.1205^{+0.0035}_{-0.0036}$	$\Omega_m h^3$	0.09637	$0.09634^{+0.00057}_{-0.00059}$	$100\theta_{\text{eq}}$	0.8122	$0.811^{+0.016}_{-0.015}$
$100\theta_{\text{MC}}$	1.04086	$1.04082^{+0.00093}_{-0.00086}$	$\sigma_8$	0.8123	$0.813^{+0.015}_{-0.015}$	$100\theta_{\text{s,eq}}$	0.4488	$0.4483^{+0.0082}_{-0.0078}$
$\tau$	0.0543	$0.055^{+0.016}_{-0.015}$	$S_8$	0.8347	$0.837^{+0.040}_{-0.039}$	$H(0.15)$	72.60	$72.5^{+1.4}_{-1.3}$
$\alpha_{-1}$	-0.00001	$-0.0001^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.5}$	0.4572	$0.459^{+0.022}_{-0.021}$	$D_{\text{M}}(0.15)$	644.2	$645^{+13}_{-13}$
$\ln(10^{10} A_s)$	3.0459	$3.046^{+0.033}_{-0.032}$	$\sigma_8 \Omega_m^{0.25}$	0.6094	$0.610^{+0.019}_{-0.019}$	$H(0.38)$	82.81	$82.75^{+0.97}_{-0.92}$
$n_s$	0.9649	$0.964^{+0.013}_{-0.013}$	$\sigma_8/h^{0.5}$	0.9905	$0.992^{+0.026}_{-0.026}$	$D_{\text{M}}(0.38)$	1535.1	$1537^{+27}_{-27}$
$y_{\text{cal}}$	1.00076	$1.0006^{+0.0049}_{-0.0047}$	$r_{\text{drag}} h$	98.88	$98.7^{+2.9}_{-2.7}$	$H(0.51)$	89.59	$89.54^{+0.75}_{-0.71}$
$A_{217}^{\text{CIB}}$	46.8	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.449	$2.454^{+0.066}_{-0.065}$	$D_{\text{M}}(0.51)$	1987.8	$1990^{+31}_{-31}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.51	—	$z_{\text{re}}$	7.68	$7.7^{+1.5}_{-1.6}$	$H(0.61)$	95.25	$95.21^{+0.59}_{-0.55}$
$A_{143}^{\text{tSZ}}$	7.20	$5.4^{+3.8}_{-3.9}$	$10^9 A_s$	2.103	$2.104^{+0.069}_{-0.066}$	$D_{\text{M}}(0.61)$	2312.4	$2315^{+33}_{-34}$
$A_{100}^{\text{PS}}$	250	$259^{+60}_{-50}$	$10^9 A_s e^{-2\tau}$	1.8866	$1.886^{+0.027}_{-0.027}$	$H(2.33)$	236.73	$236.9^{+2.2}_{-2.2}$
$A_{143}^{\text{PS}}$	49.1	$46^{+10}_{-20}$	$D_{40}$	1230.5	$1231^{+29}_{-27}$	$D_{\text{M}}(2.33)$	5764.4	$5766^{+24}_{-26}$
$A_{143 \times 217}^{\text{PS}}$	50.0	$42^{+20}_{-20}$	$D_{220}$	5737	$5733^{+74}_{-75}$	$f\sigma_8(0.15)$	0.4613	$0.463^{+0.020}_{-0.020}$
$A_{217}^{\text{PS}}$	120.7	$115^{+20}_{-20}$	$D_{810}$	2542.8	$2540^{+27}_{-26}$	$\sigma_8(0.15)$	0.7501	$0.750^{+0.013}_{-0.013}$
$A^{\text{kSZ}}$	0.00	$< 7.95$	$D_{1420}$	818.5	$817.1^{+9.4}_{-9.4}$	$f\sigma_8(0.38)$	0.4785	$0.479^{+0.016}_{-0.016}$
$A_{100}^{\text{dustTT}}$	8.78	$8.9^{+3.6}_{-3.5}$	$D_{2000}$	231.29	$230.8^{+3.1}_{-3.2}$	$\sigma_8(0.38)$	0.6644	$0.664^{+0.011}_{-0.011}$
$A_{143}^{\text{dustTT}}$	11.01	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9649	$0.964^{+0.013}_{-0.013}$	$f\sigma_8(0.51)$	0.4765	$0.477^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.6^{+6.5}_{-6.5}$	$Y_{\text{P}}$	0.245400	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	0.6215	$0.621^{+0.010}_{-0.010}$
$A_{217}^{\text{dustTT}}$	95.3	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246726	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4711	$0.472^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.076}_{-0.076}$	$10^5 \text{D/H}$	2.583	$2.588^{+0.056}_{-0.053}$	$\sigma_8(0.61)$	0.5912	$0.5910^{+0.0096}_{-0.0097}$
$A_{100 \times 143}^{\text{dustTE}}$	0.136	$0.135^{+0.059}_{-0.059}$	Age/Gyr	13.799	$13.803^{+0.054}_{-0.056}$	$f\sigma_8(2.33)$	0.29789	$0.2977^{+0.0049}_{-0.0049}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.93	$1089.98^{+0.59}_{-0.57}$	$\sigma_8(2.33)$	0.3069	$0.3067^{+0.0053}_{-0.0052}$
$A_{143}^{\text{dustTE}}$	0.226	$0.23^{+0.11}_{-0.11}$	$r_*$	144.36	$144.32^{+0.87}_{-0.82}$	$f_{2000}^{143}$	28.9	$30^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.67^{+0.15}_{-0.15}$	$100\theta_*$	1.04105	$1.04100^{+0.00093}_{-0.00086}$	$f_{2000}^{143 \times 217}$	32.11	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.08	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.867	$13.863^{+0.076}_{-0.072}$	$f_{2000}^{217}$	106.71	$107.1^{+3.5}_{-3.5}$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.97	$1059.95^{+0.63}_{-0.62}$	$\chi_{\text{small}}^2$	396.06	$397.1 (\nu: 1.8)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.01	$146.98^{+0.88}_{-0.82}$	$\chi_{\text{lowl}}^2$	23.22	$23.4 (\nu: 1.3)$
$H_0$	67.26	$67.1^{+1.6}_{-1.5}$	$k_{\text{D}}$	0.14096	$0.14098^{+0.00089}_{-0.00094}$	$\chi_{\text{plik}}^2$	2344.8	$2361.5 (\nu: 18.7)$
$\Omega_{\Lambda}$	0.6833	$0.682^{+0.022}_{-0.023}$	$100\theta_{\text{D}}$	0.160726	$0.16074^{+0.00040}_{-0.00039}$	$\chi_{\text{prior}}^2$	1.7	$11.5 (\nu: 10.3)$
$\Omega_{\text{m}}$	0.3167	$0.318^{+0.023}_{-0.022}$	$z_{\text{eq}}$	3408	$3414^{+82}_{-83}$	$\chi_{\text{CMB}}^2$	2764.1	$2782.1 (\nu: 18.2)$

Best-fit  $\chi_{\text{eff}}^2 = 2765.78$ ;  $\Delta\chi_{\text{eff}}^2 = 0.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 2793.61$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.84$ ;  $R - 1 = 0.01294$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.01) commander\_dx12\_v3.2.29: 23.22 ( $\Delta$  -0.04) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.78 ( $\Delta$  0.14)

## 5.10 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022431	$0.02240^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8109	$0.810^{+0.014}_{-0.014}$	$D_M(0.15)$	640.0	$640.0^{+8.6}_{-8.4}$
$\Omega_c h^2$	0.11917	$0.1191^{+0.0023}_{-0.0023}$	$S_8$	0.8242	$0.823^{+0.027}_{-0.027}$	$H(0.38)$	83.11	$83.10^{+0.64}_{-0.62}$
$100\theta_{MC}$	1.04107	$1.04109^{+0.00074}_{-0.00077}$	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.451^{+0.015}_{-0.015}$	$D_M(0.38)$	1526.8	$1527^{+17}_{-17}$
$\tau$	0.0561	$0.055^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.604^{+0.014}_{-0.014}$	$H(0.51)$	89.813	$89.81^{+0.50}_{-0.48}$
$\alpha_{-1}$	0.00002	$0.00015^{+0.0011}_{-0.00095}$	$\sigma_8/h^{0.5}$	0.9852	$0.984^{+0.021}_{-0.020}$	$D_M(0.51)$	1978.1	$1978^{+20}_{-20}$
$\ln(10^{10} A_s)$	3.0466	$3.044^{+0.033}_{-0.031}$	$r_{drag} h$	99.75	$99.8^{+1.8}_{-1.8}$	$H(0.61)$	95.424	$95.41^{+0.42}_{-0.39}$
$n_s$	0.9693	$0.9681^{+0.0094}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	2.433	$2.433^{+0.052}_{-0.050}$	$D_M(0.61)$	2302.0	$2302^{+22}_{-22}$
$y_{cal}$	1.00082	$1.0007^{+0.0048}_{-0.0048}$	$z_{re}$	7.83	$7.8^{+1.5}_{-1.5}$	$H(2.33)$	236.09	$236.0^{+1.4}_{-1.5}$
$A_{217}^{CIB}$	45.1	$47^{+10}_{-10}$	$10^9 A_s$	2.104	$2.100^{+0.071}_{-0.065}$	$D_M(2.33)$	5757.2	$5758^{+18}_{-19}$
$\xi^{tSZ \times CIB}$	0.76	—	$10^9 A_s e^{-2\tau}$	1.8811	$1.879^{+0.024}_{-0.024}$	$f\sigma_8(0.15)$	0.4562	$0.455^{+0.014}_{-0.014}$
$A_{143}^{tSZ}$	7.05	$5.5^{+3.9}_{-3.9}$	$D_{40}$	1227.3	$1230^{+29}_{-27}$	$\sigma_8(0.15)$	0.7495	$0.748^{+0.013}_{-0.012}$
$A_{100}^{PS}$	246	$258^{+60}_{-60}$	$D_{220}$	5735	$5734^{+73}_{-75}$	$f\sigma_8(0.38)$	0.4749	$0.474^{+0.012}_{-0.011}$
$A_{143}^{PS}$	51.3	$45^{+10}_{-20}$	$D_{810}$	2542.5	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	0.6645	$0.664^{+0.011}_{-0.011}$
$A_{143 \times 217}^{PS}$	55.4	$42^{+20}_{-20}$	$D_{1420}$	819.9	$818.0^{+9.1}_{-8.9}$	$f\sigma_8(0.51)$	0.4737	$0.473^{+0.010}_{-0.010}$
$A_{217}^{PS}$	122.9	$115^{+20}_{-20}$	$D_{2000}$	231.90	$231.2^{+3.0}_{-3.0}$	$\sigma_8(0.51)$	0.6220	$0.6210^{+0.0099}_{-0.010}$
$A^{kSZ}$	0.00	$< 7.86$	$n_{s,0.002}$	0.9693	$0.9681^{+0.0094}_{-0.010}$	$f\sigma_8(0.61)$	0.4688	$0.4680^{+0.0096}_{-0.0094}$
$A_{100}^{dustTT}$	8.87	$9.0^{+3.6}_{-3.6}$	$Y_P$	0.245419	$0.24541^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5919	$0.5910^{+0.0095}_{-0.0094}$
$A_{143}^{dustTT}$	11.03	$10.9^{+3.6}_{-3.5}$	$Y_P^{BBN}$	0.246746	$0.24673^{+0.00011}_{-0.00011}$	$f\sigma_8(2.33)$	0.29849	$0.2980^{+0.0048}_{-0.0047}$
$A_{143 \times 217}^{dustTT}$	20.2	$18.7^{+6.5}_{-6.5}$	$10^5 D/H$	2.574	$2.580^{+0.052}_{-0.051}$	$\sigma_8(2.33)$	0.3078	$0.3074^{+0.0051}_{-0.0049}$
$A_{217}^{dustTT}$	95.8	$94^{+10}_{-10}$	Age/Gyr	13.7834	$13.785^{+0.041}_{-0.042}$	$f_{2000}^{143}$	28.1	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.114	$0.115^{+0.075}_{-0.077}$	$z_*$	1089.771	$1089.80^{+0.44}_{-0.44}$	$f_{2000}^{143 \times 217}$	31.63	$32^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.136^{+0.057}_{-0.060}$	$r_*$	144.60	$144.64^{+0.58}_{-0.58}$	$f_{2000}^{217}$	106.17	$106.9^{+3.6}_{-3.4}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	1.04125	$1.04127^{+0.00075}_{-0.00077}$	$\chi_{small}^2$	396.37	$397.2 (\nu: 2.1)$
$A_{143}^{dustTE}$	0.225	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.887	$13.890^{+0.053}_{-0.051}$	$\chi_{lowl}^2$	23.20	$23.8 (\nu: 1.4)$
$A_{143 \times 217}^{dustTE}$	0.664	$0.67^{+0.16}_{-0.15}$	$z_{drag}$	1060.01	$1059.95^{+0.63}_{-0.63}$	$\chi_{plik}^2$	2345.2	$2360.9 (\nu: 17.8)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.53}_{-0.53}$	$r_{drag}$	147.24	$147.29^{+0.62}_{-0.61}$	$\chi_{6DF}^2$	0.023	$0.056 (\nu: 0.0)$
$c_{100}$	0.99974	$0.9996^{+0.0012}_{-0.0012}$	$k_D$	0.14075	$0.14068^{+0.00073}_{-0.00074}$	$\chi_{MGS}^2$	1.28	$1.36 (\nu: 0.1)$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160724	$0.16077^{+0.00041}_{-0.00040}$	$\chi_{DR12BAO}^2$	4.25	$4.8 (\nu: 1.3)$
$H_0$	67.75	$67.8^{+1.0}_{-1.0}$	$z_{eq}$	3384	$3382^{+53}_{-54}$	$\chi_{prior}^2$	1.6	$11.7 (\nu: 9.8)$
$\Omega_\Lambda$	0.6901	$0.690^{+0.014}_{-0.014}$	$k_{eq}$	0.010328	$0.01032^{+0.00016}_{-0.00016}$	$\chi_{BAO}^2$	5.55	$6.2 (\nu: 0.8)$
$\Omega_m$	0.3099	$0.310^{+0.014}_{-0.014}$	$100\theta_{eq}$	0.8169	$0.817^{+0.010}_{-0.0099}$	$\chi_{CMB}^2$	2764.7	$2781.9 (\nu: 17.5)$
$\Omega_m h^2$	0.14224	$0.1422^{+0.0022}_{-0.0022}$	$100\theta_{s,eq}$	0.4512	$0.4514^{+0.0052}_{-0.0051}$			
$\Omega_m h^3$	0.09637	$0.09631^{+0.00059}_{-0.00059}$	$H(0.15)$	73.01	$73.02^{+0.86}_{-0.86}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.88$ ;  $\Delta\chi_{\text{eff}}^2 = -0.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 2799.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.87$ ;  $R - 1 = 0.02417$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.28 ( $\Delta$  0.06) DR12BAO: 4.25 ( $\Delta$  -0.16) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.37 ( $\Delta$  0.17) commander\_dx12\_v3\_2\_29: 23.20 ( $\Delta$  0.32) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.16 ( $\Delta$  -0.35)

### 5.11 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022410	$0.02238^{+0.00029}_{-0.00029}$	$\Omega_m h^3$	0.09641	$0.09633^{+0.00057}_{-0.00058}$	$100\theta_{s,eq}$	0.4491	$0.4491^{+0.0068}_{-0.0064}$
$\Omega_c h^2$	0.12008	$0.1201^{+0.0029}_{-0.0030}$	$\sigma_8$	0.8115	$0.811^{+0.011}_{-0.012}$	$H(0.15)$	72.68	$72.6^{+1.1}_{-1.1}$
$100\theta_{MC}$	1.04090	$1.04087^{+0.00086}_{-0.00083}$	$S_8$	0.8322	$0.833^{+0.029}_{-0.030}$	$D_M(0.15)$	643.4	$644^{+11}_{-11}$
$\tau$	0.0543	$0.054^{+0.016}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4558	$0.456^{+0.016}_{-0.016}$	$H(0.38)$	82.87	$82.84^{+0.82}_{-0.78}$
$\alpha_{-1}$	0.00000	$-0.0001^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	0.6082	$0.608^{+0.013}_{-0.014}$	$D_M(0.38)$	1533.4	$1534^{+22}_{-23}$
$\ln(10^{10} A_s)$	3.0446	$3.045^{+0.029}_{-0.027}$	$\sigma_8/h^{0.5}$	0.9888	$0.989^{+0.019}_{-0.019}$	$H(0.51)$	89.64	$89.60^{+0.65}_{-0.62}$
$n_s$	0.9657	$0.964^{+0.012}_{-0.011}$	$r_{drag} h$	99.03	$99.0^{+2.4}_{-2.3}$	$D_M(0.51)$	1985.8	$1987^{+26}_{-27}$
$y_{cal}$	1.00022	$1.0006^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.4441	$2.447^{+0.047}_{-0.047}$	$H(0.61)$	95.29	$95.26^{+0.52}_{-0.49}$
$A_{217}^{CIB}$	46.1	$47^{+10}_{-10}$	$z_{re}$	7.68	$7.7^{+1.5}_{-1.5}$	$D_M(0.61)$	2310.2	$2312^{+28}_{-28}$
$\xi^{tSZ \times CIB}$	0.60	—	$10^9 A_s$	2.100	$2.101^{+0.062}_{-0.057}$	$H(2.33)$	236.65	$236.6^{+1.8}_{-1.8}$
$A_{143}^{tSZ}$	7.11	$5.5^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8840	$1.884^{+0.023}_{-0.024}$	$D_M(2.33)$	5762.3	$5764^{+22}_{-23}$
$A_{100}^{PS}$	248	$259^{+60}_{-60}$	$D_{40}$	1228.1	$1230^{+29}_{-26}$	$f\sigma_8(0.15)$	0.4601	$0.460^{+0.014}_{-0.015}$
$A_{143}^{PS}$	49.7	$46^{+10}_{-20}$	$D_{220}$	5732	$5734^{+73}_{-75}$	$\sigma_8(0.15)$	0.7495	$0.749^{+0.010}_{-0.010}$
$A_{143 \times 217}^{PS}$	51.7	$42^{+20}_{-20}$	$D_{810}$	2540.6	$2540^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4776	$0.478^{+0.011}_{-0.011}$
$A_{217}^{PS}$	121.3	$115^{+20}_{-20}$	$D_{1420}$	818.2	$817.2^{+9.4}_{-9.5}$	$\sigma_8(0.38)$	0.6639	$0.6636^{+0.0094}_{-0.0093}$
$A^{kSZ}$	0.00	$< 7.91$	$D_{2000}$	231.28	$230.8^{+3.1}_{-3.2}$	$f\sigma_8(0.51)$	0.4757	$0.4757^{+0.0094}_{-0.0099}$
$A_{100}^{dustTT}$	8.79	$8.9^{+3.6}_{-3.5}$	$n_{s,0.002}$	0.9657	$0.964^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	0.6211	$0.6208^{+0.0090}_{-0.0090}$
$A_{143}^{dustTT}$	11.00	$10.9^{+3.6}_{-3.5}$	$Y_P$	0.245411	$0.24540^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4704	$0.4703^{+0.0085}_{-0.0087}$
$A_{143 \times 217}^{dustTT}$	20.1	$18.7^{+6.5}_{-6.6}$	$Y_P^{BBN}$	0.246738	$0.24672^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.5909	$0.5906^{+0.0088}_{-0.0086}$
$A_{217}^{dustTT}$	95.5	$94^{+10}_{-10}$	$10^5 D/H$	2.578	$2.585^{+0.055}_{-0.052}$	$f\sigma_8(2.33)$	0.29778	$0.2976^{+0.0047}_{-0.0046}$
$A_{100}^{dustTE}$	0.114	$0.116^{+0.075}_{-0.076}$	Age/Gyr	13.794	$13.799^{+0.050}_{-0.051}$	$\sigma_8(2.33)$	0.3068	$0.3066^{+0.0052}_{-0.0052}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.136^{+0.060}_{-0.060}$	$z_*$	1089.88	$1089.92^{+0.52}_{-0.52}$	$f_{2000}^{143}$	28.6	$30^{+6}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.17}$	$r_*$	144.38	$144.40^{+0.71}_{-0.70}$	$f_{2000}^{143 \times 217}$	31.86	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	0.226	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	1.04109	$1.04105^{+0.00086}_{-0.00083}$	$f_{2000}^{217}$	106.36	$107.0^{+3.5}_{-3.4}$
$A_{143 \times 217}^{dustTE}$	0.667	$0.67^{+0.16}_{-0.15}$	$D_M(z_*)/\text{Gpc}$	13.868	$13.870^{+0.063}_{-0.062}$	$\chi^2_{lensing}$	8.84	$9.35 (\nu: 0.3)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.53}_{-0.54}$	$z_{drag}$	1060.05	$1059.96^{+0.62}_{-0.64}$	$\chi^2_{small}$	396.04	$397.0 (\nu: 1.6)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.03	$147.06^{+0.73}_{-0.71}$	$\chi^2_{lowl}$	23.15	$23.4 (\nu: 1.4)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14097	$0.14091^{+0.00080}_{-0.00083}$	$\chi^2_{plik}$	2345.1	$2361.2 (\nu: 18.1)$
$H_0$	67.35	$67.3^{+1.3}_{-1.3}$	$100\theta_D$	0.160699	$0.16074^{+0.00041}_{-0.00040}$	$\chi^2_{prior}$	1.6	$11.6 (\nu: 10.0)$
$\Omega_\Lambda$	0.6845	$0.684^{+0.018}_{-0.018}$	$z_{eq}$	3405	$3405^{+67}_{-69}$	$\chi^2_{CMB}$	2773.1	$2791.0 (\nu: 18.5)$
$\Omega_m$	0.3155	$0.316^{+0.018}_{-0.018}$	$k_{eq}$	0.010393	$0.01039^{+0.00020}_{-0.00021}$			
$\Omega_m h^2$	0.14314	$0.1431^{+0.0028}_{-0.0029}$	$100\theta_{eq}$	0.8129	$0.813^{+0.013}_{-0.012}$			

Best-fit  $\chi^2_{eff} = 2774.65$ ;  $\Delta\chi^2_{eff} = 0.02$ ;  $\bar{\chi}^2_{eff} = 2802.58$ ;  $\Delta\bar{\chi}^2_{eff} = 1.89$ ;  $R - 1 = 0.01462$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.84 ( $\Delta$  -0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.04 ( $\Delta$  -0.01) commander\_dx12\_v3\_2\_29: 23.15 ( $\Delta$  -0.10) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.06 ( $\Delta$  0.13)



## 5.12 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022420	$0.02241^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8109	$0.810^{+0.011}_{-0.011}$	$D_M(0.15)$	640.5	$640.2^{+7.8}_{-8.0}$
$\Omega_c h^2$	0.11927	$0.1192^{+0.0020}_{-0.0021}$	$S_8$	0.8252	$0.824^{+0.022}_{-0.022}$	$H(0.38)$	83.07	$83.09^{+0.59}_{-0.56}$
$100\theta_{MC}$	1.04102	$1.04107^{+0.00074}_{-0.00075}$	$\sigma_8 \Omega_m^{0.5}$	0.4520	$0.451^{+0.012}_{-0.012}$	$D_M(0.38)$	1527.9	$1527^{+16}_{-16}$
$\tau$	0.0560	$0.056^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6054	$0.605^{+0.011}_{-0.012}$	$H(0.51)$	89.781	$89.80^{+0.48}_{-0.45}$
$\alpha_{-1}$	0.00001	$0.00013^{+0.0011}_{-0.00095}$	$\sigma_8/h^{0.5}$	0.9857	$0.985^{+0.016}_{-0.017}$	$D_M(0.51)$	1979.3	$1979^{+18}_{-19}$
$\ln(10^{10} A_s)$	3.0467	$3.046^{+0.030}_{-0.027}$	$r_{drag} h$	99.66	$99.7^{+1.7}_{-1.6}$	$H(0.61)$	95.397	$95.41^{+0.40}_{-0.37}$
$n_s$	0.9684	$0.9678^{+0.0093}_{-0.0098}$	$\langle d^2 \rangle^{1/2}$	2.4355	$2.436^{+0.041}_{-0.041}$	$D_M(0.61)$	2303.3	$2303^{+20}_{-20}$
$y_{cal}$	1.00086	$1.0008^{+0.0048}_{-0.0048}$	$z_{re}$	7.83	$7.8^{+1.4}_{-1.4}$	$H(2.33)$	236.14	$236.1^{+1.3}_{-1.3}$
$A_{217}^{CIB}$	46.4	$47^{+10}_{-10}$	$10^9 A_s$	2.104	$2.104^{+0.063}_{-0.056}$	$D_M(2.33)$	5758.5	$5758^{+17}_{-18}$
$\xi^{tSZ \times CIB}$	0.54	—	$10^9 A_s e^{-2\tau}$	1.8815	$1.880^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	0.4567	$0.456^{+0.011}_{-0.011}$
$A_{143}^{tSZ}$	7.12	$5.5^{+3.9}_{-3.9}$	$D_{40}$	1228.3	$1231^{+29}_{-28}$	$\sigma_8(0.15)$	0.7494	$0.749^{+0.010}_{-0.010}$
$A_{100}^{PS}$	249	$258^{+50}_{-60}$	$D_{220}$	5736	$5737^{+73}_{-74}$	$f\sigma_8(0.38)$	0.4752	$0.4747^{+0.0092}_{-0.0095}$
$A_{143}^{PS}$	48.6	$45^{+10}_{-20}$	$D_{810}$	2542.0	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	0.6644	$0.6641^{+0.0093}_{-0.0092}$
$A_{143 \times 217}^{PS}$	49.9	$42^{+20}_{-20}$	$D_{1420}$	819.4	$818.1^{+9.0}_{-9.0}$	$f\sigma_8(0.51)$	0.4739	$0.4734^{+0.0082}_{-0.0085}$
$A_{217}^{PS}$	120.7	$115^{+20}_{-20}$	$D_{2000}$	231.68	$231.2^{+2.9}_{-3.0}$	$\sigma_8(0.51)$	0.6218	$0.6216^{+0.0087}_{-0.0087}$
$A^{kSZ}$	0.00	$< 7.81$	$n_{s,0.002}$	0.9684	$0.9678^{+0.0093}_{-0.0098}$	$f\sigma_8(0.61)$	0.4690	$0.4686^{+0.0076}_{-0.0078}$
$A_{100}^{dustTT}$	8.92	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245415	$0.24541^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5917	$0.5915^{+0.0084}_{-0.0083}$
$A_{143}^{dustTT}$	11.07	$10.9^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246742	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.29837	$0.2983^{+0.0044}_{-0.0043}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.7^{+6.5}_{-6.5}$	$10^5 D/H$	2.576	$2.579^{+0.053}_{-0.050}$	$\sigma_8(2.33)$	0.30764	$0.3076^{+0.0048}_{-0.0046}$
$A_{217}^{dustTT}$	95.4	$94^{+10}_{-10}$	Age/Gyr	13.7862	$13.786^{+0.040}_{-0.041}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.114	$0.115^{+0.075}_{-0.077}$	$z_*$	1089.792	$1089.80^{+0.43}_{-0.43}$	$f_{2000}^{143 \times 217}$	31.78	$32^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.136^{+0.057}_{-0.060}$	$r_*$	144.58	$144.62^{+0.54}_{-0.52}$	$f_{2000}^{217}$	106.43	$106.9^{+3.6}_{-3.4}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04120	$1.04125^{+0.00074}_{-0.00076}$	$\chi_{lensing}^2$	8.74	$9.14 (\nu: 0.2)$
$A_{143}^{dustTE}$	0.225	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8861	$13.889^{+0.049}_{-0.047}$	$\chi_{small}^2$	396.38	$397.3 (\nu: 2.0)$
$A_{143 \times 217}^{dustTE}$	0.667	$0.67^{+0.16}_{-0.15}$	$z_{drag}$	1060.01	$1059.96^{+0.62}_{-0.64}$	$\chi_{lowl}^2$	23.24	$23.8 (\nu: 1.5)$
$A_{217}^{dustTE}$	2.09	$2.08^{+0.54}_{-0.54}$	$r_{drag}$	147.23	$147.27^{+0.58}_{-0.56}$	$\chi_{plik}^2$	2344.9	$2360.6 (\nu: 17.6)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14076	$0.14071^{+0.00069}_{-0.00069}$	$\chi_{6DF}^2$	0.029	$0.053 (\nu: 0.0)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160729	$0.16076^{+0.00041}_{-0.00041}$	$\chi_{MGS}^2$	1.22	$1.33 (\nu: 0.1)$
$H_0$	67.69	$67.73^{+0.95}_{-0.91}$	$z_{eq}$	3385.9	$3383^{+47}_{-49}$	$\chi_{DR12BAO}^2$	4.41	$4.7 (\nu: 1.1)$
$\Omega_\Lambda$	0.6893	$0.690^{+0.013}_{-0.013}$	$k_{eq}$	0.010334	$0.01033^{+0.00014}_{-0.00015}$	$\chi_{prior}^2$	1.7	$11.6 (\nu: 9.7)$
$\Omega_m$	0.3107	$0.310^{+0.013}_{-0.013}$	$100\theta_{eq}$	0.8164	$0.8169^{+0.0093}_{-0.0088}$	$\chi_{CMB}^2$	2773.3	$2790.9 (\nu: 17.9)$
$\Omega_m h^2$	0.14233	$0.1422^{+0.0020}_{-0.0021}$	$100\theta_{s,eq}$	0.45099	$0.4513^{+0.0048}_{-0.0046}$	$\chi_{BAO}^2$	5.66	$6.1 (\nu: 0.7)$
$\Omega_m h^3$	0.09634	$0.09632^{+0.00058}_{-0.00058}$	$H(0.15)$	72.96	$73.00^{+0.81}_{-0.78}$			

Best-fit  $\chi_{eff}^2 = 2780.63$ ;  $\Delta\chi_{eff}^2 = -0.07$ ;  $\bar{\chi}_{eff}^2 = 2808.59$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.75$ ;  $R - 1 = 0.02748$

$\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.41 ( $\Delta$  -0.01) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.74 ( $\Delta$  0.01) small\_100x143\_offlike5\_EE\_Aplanck: 396.38 ( $\Delta$  -0.14) commander\_dx12\_v3.2\_29: 23.24 ( $\Delta$  0.34) plik\_rd12\_HM\_v22b.TTTEEE: 2344.91 ( $\Delta$  -0.41)

### 5.13 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02236^{+0.00029}_{-0.00030}$	$\Omega_m h^2$	$0.1435^{+0.0034}_{-0.0035}$	$k_{\text{eq}}$	$0.01042^{+0.00025}_{-0.00025}$
$\Omega_c h^2$	$0.1205^{+0.0035}_{-0.0036}$	$\Omega_m h^3$	$0.09634^{+0.00057}_{-0.00059}$	$100\theta_{\text{eq}}$	$0.811^{+0.016}_{-0.015}$
$100\theta_{\text{MC}}$	$1.04082^{+0.00092}_{-0.00086}$	$\sigma_8$	$0.813^{+0.015}_{-0.014}$	$100\theta_{\text{s,eq}}$	$0.4484^{+0.0082}_{-0.0077}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$S_8$	$0.838^{+0.040}_{-0.039}$	$H(0.15)$	$72.5^{+1.4}_{-1.3}$
$\alpha_{-1}$	$-0.0001^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.5}$	$0.459^{+0.022}_{-0.021}$	$D_{\text{M}}(0.15)$	$645^{+13}_{-13}$
$\ln(10^{10} A_s)$	$3.048^{+0.030}_{-0.027}$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.019}_{-0.019}$	$H(0.38)$	$82.75^{+0.96}_{-0.92}$
$n_s$	$0.964^{+0.013}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.992^{+0.026}_{-0.025}$	$D_{\text{M}}(0.38)$	$1537^{+26}_{-27}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0047}$	$r_{\text{drag}} h$	$98.7^{+2.9}_{-2.7}$	$H(0.51)$	$89.54^{+0.75}_{-0.71}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.066}_{-0.063}$	$D_{\text{M}}(0.51)$	$1990^{+31}_{-31}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 9.00$	$H(0.61)$	$95.22^{+0.59}_{-0.55}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.8}_{-3.9}$	$10^9 A_s$	$2.108^{+0.063}_{-0.057}$	$D_{\text{M}}(0.61)$	$2315^{+33}_{-34}$
$A_{100}^{\text{PS}}$	$259^{+60}_{-50}$	$10^9 A_s e^{-2\tau}$	$1.886^{+0.027}_{-0.027}$	$H(2.33)$	$236.8^{+2.2}_{-2.2}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{40}$	$1231^{+29}_{-27}$	$D_{\text{M}}(2.33)$	$5766^{+24}_{-26}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5733^{+74}_{-74}$	$f\sigma_8(0.15)$	$0.463^{+0.020}_{-0.020}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-26}$	$\sigma_8(0.15)$	$0.751^{+0.013}_{-0.011}$
$A^{\text{kSZ}}$	$< 7.94$	$D_{1420}$	$817.1^{+9.4}_{-9.4}$	$f\sigma_8(0.38)$	$0.480^{+0.015}_{-0.015}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$230.8^{+3.1}_{-3.2}$	$\sigma_8(0.38)$	$0.665^{+0.010}_{-0.0096}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.964^{+0.013}_{-0.013}$	$f\sigma_8(0.51)$	$0.477^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.5}$	$Y_{\text{P}}$	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	$0.6219^{+0.0092}_{-0.0087}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.472^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.076}$	$10^5 \text{D}/\text{H}$	$2.587^{+0.056}_{-0.053}$	$\sigma_8(0.61)$	$0.5916^{+0.0087}_{-0.0082}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.059}$	$\text{Age}/\text{Gyr}$	$13.803^{+0.054}_{-0.056}$	$f\sigma_8(2.33)$	$0.2980^{+0.0044}_{-0.0042}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.97^{+0.59}_{-0.57}$	$\sigma_8(2.33)$	$0.3070^{+0.0048}_{-0.0046}$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.10}_{-0.11}$	$r_*$	$144.32^{+0.87}_{-0.82}$	$f_{2000}^{143}$	$30^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.15}_{-0.15}$	$100\theta_*$	$1.04101^{+0.00092}_{-0.00086}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.864^{+0.076}_{-0.072}$	$f_{2000}^{217}$	$107.0^{+3.5}_{-3.5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.95^{+0.63}_{-0.63}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$146.98^{+0.88}_{-0.82}$	$\chi_{\text{lowl}}^2$	$23.4 (\nu: 1.3)$
$H_0$	$67.2^{+1.6}_{-1.5}$	$k_{\text{D}}$	$0.14098^{+0.00089}_{-0.00094}$	$\chi_{\text{plik}}^2$	$2361.4 (\nu: 18.5)$
$\Omega_{\Lambda}$	$0.682^{+0.022}_{-0.023}$	$100\theta_{\text{D}}$	$0.16074^{+0.00040}_{-0.00039}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_{\text{m}}$	$0.318^{+0.023}_{-0.022}$	$z_{\text{eq}}$	$3413^{+81}_{-83}$	$\chi_{\text{CMB}}^2$	$2781.9 (\nu: 17.9)$

$$\bar{\chi}_{\text{eff}}^2 = 2793.42; \Delta \bar{\chi}_{\text{eff}}^2 = 1.88; R - 1 = 0.01296$$

### 5.14 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00028}_{-0.00028}$	$\sigma_8$	$0.810^{+0.013}_{-0.012}$	$D_M(0.15)$	$640.0^{+8.6}_{-8.5}$
$\Omega_c h^2$	$0.1191^{+0.0023}_{-0.0023}$	$S_8$	$0.823^{+0.027}_{-0.026}$	$H(0.38)$	$83.11^{+0.64}_{-0.61}$
$100\theta_{MC}$	$1.04109^{+0.00074}_{-0.00076}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.015}_{-0.014}$	$D_M(0.38)$	$1527^{+17}_{-17}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.014}_{-0.014}$	$H(0.51)$	$89.81^{+0.50}_{-0.48}$
$\alpha_{-1}$	$0.00015^{+0.0011}_{-0.00095}$	$\sigma_8/h^{0.5}$	$0.984^{+0.020}_{-0.019}$	$D_M(0.51)$	$1978^{+20}_{-20}$
$\ln(10^{10} A_s)$	$3.046^{+0.030}_{-0.027}$	$r_{\text{drag}} h$	$99.8^{+1.8}_{-1.8}$	$H(0.61)$	$95.42^{+0.41}_{-0.39}$
$n_s$	$0.9682^{+0.0099}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.051}_{-0.047}$	$D_M(0.61)$	$2302^{+21}_{-21}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	$< 9.09$	$H(2.33)$	$236.0^{+1.4}_{-1.5}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.103^{+0.063}_{-0.057}$	$D_M(2.33)$	$5758^{+18}_{-19}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.879^{+0.024}_{-0.023}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.9}$	$D_{40}$	$1230^{+29}_{-28}$	$\sigma_8(0.15)$	$0.749^{+0.012}_{-0.011}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-60}$	$D_{220}$	$5734^{+73}_{-75}$	$f\sigma_8(0.38)$	$0.474^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	$0.664^{+0.010}_{-0.0096}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.0^{+9.1}_{-9.0}$	$f\sigma_8(0.51)$	$0.473^{+0.010}_{-0.0098}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.2^{+3.0}_{-3.0}$	$\sigma_8(0.51)$	$0.6215^{+0.0093}_{-0.0089}$
$A^{\text{kSZ}}$	$< 7.88$	$n_{s,0.002}$	$0.9682^{+0.0099}_{-0.010}$	$f\sigma_8(0.61)$	$0.4684^{+0.0095}_{-0.0089}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.7}_{-3.6}$	$Y_P$	$0.24541^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5914^{+0.0088}_{-0.0085}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2983^{+0.0045}_{-0.0043}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.5}_{-6.5}$	$10^5 D/H$	$2.580^{+0.053}_{-0.050}$	$\sigma_8(2.33)$	$0.3076^{+0.0047}_{-0.0045}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.785^{+0.041}_{-0.042}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.074}_{-0.076}$	$z_*$	$1089.80^{+0.44}_{-0.44}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136^{+0.057}_{-0.059}$	$r_*$	$144.64^{+0.58}_{-0.57}$	$f_{2000}^{217}$	$106.8^{+3.6}_{-3.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04127^{+0.00075}_{-0.00077}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 2.2)$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.890^{+0.053}_{-0.051}$	$\chi_{\text{lowl}}^2$	$23.8 (\nu: 1.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1059.95^{+0.63}_{-0.63}$	$\chi_{\text{plik}}^2$	$2360.8 (\nu: 17.7)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$147.29^{+0.61}_{-0.61}$	$\chi_{6\text{DF}}^2$	$0.056 (\nu: 0.0)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$k_D$	$0.14068^{+0.00072}_{-0.00074}$	$\chi_{\text{MGS}}^2$	$1.36 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16077^{+0.00041}_{-0.00040}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.2)$
$H_0$	$67.8^{+1.0}_{-1.0}$	$z_{\text{eq}}$	$3382^{+53}_{-53}$	$\chi_{\text{prior}}^2$	$11.7 (\nu: 9.7)$
$\Omega_\Lambda$	$0.690^{+0.013}_{-0.014}$	$k_{\text{eq}}$	$0.01032^{+0.00016}_{-0.00016}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_m$	$0.310^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	$0.817^{+0.010}_{-0.0099}$	$\chi_{\text{CMB}}^2$	$2781.8 (\nu: 17.3)$
$\Omega_m h^2$	$0.1422^{+0.0022}_{-0.0022}$	$100\theta_{s,\text{eq}}$	$0.4514^{+0.0052}_{-0.0051}$		
$\Omega_m h^3$	$0.09631^{+0.00058}_{-0.00059}$	$H(0.15)$	$73.02^{+0.87}_{-0.86}$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.63; \Delta \bar{\chi}_{\text{eff}}^2 = 1.91; R - 1 = 0.02644$$

### 5.15 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02238^{+0.00029}_{-0.00029}$	$\Omega_{\text{m}}h^3$	$0.09633^{+0.00057}_{-0.00058}$	$100\theta_{\text{s,eq}}$	$0.4493^{+0.0067}_{-0.0062}$
$\Omega_{\text{c}}h^2$	$0.1200^{+0.0028}_{-0.0029}$	$\sigma_8$	$0.812^{+0.011}_{-0.011}$	$H(0.15)$	$72.7^{+1.1}_{-1.1}$
$100\theta_{\text{MC}}$	$1.04088^{+0.00086}_{-0.00084}$	$S_8$	$0.833^{+0.028}_{-0.030}$	$D_{\text{M}}(0.15)$	$644^{+11}_{-11}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.456^{+0.016}_{-0.016}$	$H(0.38)$	$82.86^{+0.82}_{-0.77}$
$\alpha_{-1}$	$-0.0001^{+0.0011}_{-0.0011}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.608^{+0.013}_{-0.014}$	$D_{\text{M}}(0.38)$	$1534^{+22}_{-22}$
$\ln(10^{10}A_{\text{s}})$	$3.046^{+0.026}_{-0.024}$	$\sigma_8/h^{0.5}$	$0.989^{+0.018}_{-0.019}$	$H(0.51)$	$89.62^{+0.64}_{-0.60}$
$n_{\text{s}}$	$0.965^{+0.012}_{-0.011}$	$r_{\text{drag}}h$	$99.0^{+2.4}_{-2.2}$	$D_{\text{M}}(0.51)$	$1986^{+25}_{-26}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0047}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.046}_{-0.047}$	$H(0.61)$	$95.27^{+0.52}_{-0.48}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$< 8.91$	$D_{\text{M}}(0.61)$	$2311^{+27}_{-28}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.104^{+0.055}_{-0.051}$	$H(2.33)$	$236.6^{+1.7}_{-1.8}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.884^{+0.023}_{-0.024}$	$D_{\text{M}}(2.33)$	$5764^{+22}_{-23}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-60}$	$D_{40}$	$1230^{+29}_{-27}$	$f\sigma_8(0.15)$	$0.460^{+0.014}_{-0.015}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{220}$	$5734^{+73}_{-74}$	$\sigma_8(0.15)$	$0.7497^{+0.0099}_{-0.0093}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.478^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.2^{+9.3}_{-9.4}$	$\sigma_8(0.38)$	$0.6641^{+0.0087}_{-0.0083}$
$A^{\text{kSZ}}$	$< 7.91$	$D_{2000}$	$230.9^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	$0.4758^{+0.0094}_{-0.0098}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$n_{\text{s},0.002}$	$0.965^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	$0.6213^{+0.0082}_{-0.0078}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_{\text{P}}$	$0.24540^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.4705^{+0.0084}_{-0.0086}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.4}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.5911^{+0.0079}_{-0.0075}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 \text{D/H}$	$2.584^{+0.055}_{-0.052}$	$f\sigma_8(2.33)$	$0.2979^{+0.0042}_{-0.0040}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.073}_{-0.076}$	Age/Gyr	$13.798^{+0.049}_{-0.051}$	$\sigma_8(2.33)$	$0.3069^{+0.0047}_{-0.0045}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.060}$	$z_*$	$1089.91^{+0.51}_{-0.51}$	$f_{2000}^{143}$	$30^{+5}_{-5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.41^{+0.71}_{-0.68}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	$1.04106^{+0.00085}_{-0.00084}$	$f_{2000}^{217}$	$107.0^{+3.5}_{-3.4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.15}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.872^{+0.063}_{-0.060}$	$\chi_{\text{lensing}}^2$	$9.34 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.54}$	$z_{\text{drag}}$	$1059.96^{+0.62}_{-0.64}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.6)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.07^{+0.73}_{-0.70}$	$\chi_{\text{lowl}}^2$	$23.4 (\nu: 1.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14090^{+0.00078}_{-0.00082}$	$\chi_{\text{plik}}^2$	$2361.0 (\nu: 17.7)$
$H_0$	$67.3^{+1.3}_{-1.3}$	$100\theta_{\text{D}}$	$0.16074^{+0.00041}_{-0.00040}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 9.9)$
$\Omega_{\Lambda}$	$0.684^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3403^{+65}_{-68}$	$\chi_{\text{CMB}}^2$	$2790.8 (\nu: 18.0)$
$\Omega_{\text{m}}$	$0.316^{+0.018}_{-0.018}$	$k_{\text{eq}}$	$0.01039^{+0.00020}_{-0.00021}$		
$\Omega_{\text{m}}h^2$	$0.1431^{+0.0027}_{-0.0028}$	$100\theta_{\text{eq}}$	$0.813^{+0.013}_{-0.012}$		

$$\bar{\chi}_{\text{eff}}^2 = 2802.36; \Delta\bar{\chi}_{\text{eff}}^2 = 1.86; R - 1 = 0.01801$$

## 5.16 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02241^{+0.00028}_{-0.00028}$	$\sigma_8$	$0.811^{+0.011}_{-0.011}$	$D_M(0.15)$	$640.2^{+7.7}_{-8.0}$
$\Omega_c h^2$	$0.1192^{+0.0020}_{-0.0021}$	$S_8$	$0.824^{+0.022}_{-0.022}$	$H(0.38)$	$83.10^{+0.59}_{-0.56}$
$100\theta_{MC}$	$1.04107^{+0.00075}_{-0.00075}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.012}_{-0.012}$	$D_M(0.38)$	$1527^{+15}_{-16}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.011}_{-0.011}$	$H(0.51)$	$89.80^{+0.48}_{-0.45}$
$\alpha_{-1}$	$0.00013^{+0.0011}_{-0.00095}$	$\sigma_8/h^{0.5}$	$0.985^{+0.016}_{-0.016}$	$D_M(0.51)$	$1978^{+18}_{-19}$
$\ln(10^{10} A_s)$	$3.047^{+0.027}_{-0.025}$	$r_{\text{drag}} h$	$99.8^{+1.7}_{-1.6}$	$H(0.61)$	$95.41^{+0.40}_{-0.37}$
$n_s$	$0.9679^{+0.0093}_{-0.0099}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.040}_{-0.039}$	$D_M(0.61)$	$2302^{+19}_{-20}$
$y_{\text{cal}}$	$1.0008^{+0.0048}_{-0.0048}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$236.1^{+1.3}_{-1.3}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.106^{+0.057}_{-0.053}$	$D_M(2.33)$	$5758^{+17}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.879^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	$0.456^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$D_{40}$	$1231^{+28}_{-27}$	$\sigma_8(0.15)$	$0.749^{+0.010}_{-0.0095}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-60}$	$D_{220}$	$5737^{+72}_{-74}$	$f\sigma_8(0.38)$	$0.4748^{+0.0091}_{-0.0092}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	$0.6644^{+0.0091}_{-0.0083}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.0^{+9.0}_{-9.0}$	$f\sigma_8(0.51)$	$0.4736^{+0.0081}_{-0.0082}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.2^{+2.9}_{-3.0}$	$\sigma_8(0.51)$	$0.6219^{+0.0086}_{-0.0078}$
$A^{\text{kSZ}}$	$< 7.81$	$n_{s,0.002}$	$0.9679^{+0.0093}_{-0.0099}$	$f\sigma_8(0.61)$	$0.4687^{+0.0075}_{-0.0076}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.24541^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5918^{+0.0082}_{-0.0075}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2984^{+0.0042}_{-0.0039}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.5}$	$10^5 D/H$	$2.579^{+0.053}_{-0.050}$	$\sigma_8(2.33)$	$0.3077^{+0.0045}_{-0.0044}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.785^{+0.040}_{-0.041}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.074}_{-0.077}$	$z_*$	$1089.80^{+0.43}_{-0.43}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136^{+0.057}_{-0.060}$	$r_*$	$144.62^{+0.54}_{-0.52}$	$f_{2000}^{217}$	$106.9^{+3.6}_{-3.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04125^{+0.00074}_{-0.00076}$	$\chi_{\text{lensing}}^2$	$9.12 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.889^{+0.049}_{-0.047}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.1)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1059.96^{+0.62}_{-0.64}$	$\chi_{\text{lowl}}^2$	$23.8 (\nu: 1.5)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.54}$	$r_{\text{drag}}$	$147.27^{+0.58}_{-0.55}$	$\chi_{\text{plik}}^2$	$2360.6 (\nu: 17.5)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$k_D$	$0.14070^{+0.00068}_{-0.00070}$	$\chi_{6\text{DF}}^2$	$0.052 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16076^{+0.00041}_{-0.00041}$	$\chi_{\text{MGS}}^2$	$1.34 (\nu: 0.1)$
$H_0$	$67.74^{+0.94}_{-0.90}$	$z_{\text{eq}}$	$3383^{+47}_{-49}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.0)$
$\Omega_\Lambda$	$0.690^{+0.013}_{-0.012}$	$k_{\text{eq}}$	$0.01032^{+0.00014}_{-0.00015}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 9.7)$
$\Omega_m$	$0.310^{+0.012}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8170^{+0.0093}_{-0.0087}$	$\chi_{\text{CMB}}^2$	$2790.8 (\nu: 17.9)$
$\Omega_m h^2$	$0.1422^{+0.0020}_{-0.0020}$	$100\theta_{s,\text{eq}}$	$0.4513^{+0.0048}_{-0.0045}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_m h^3$	$0.09632^{+0.00058}_{-0.00058}$	$H(0.15)$	$73.00^{+0.81}_{-0.77}$		

$$\bar{\chi}_{\text{eff}}^2 = 2808.47; \Delta\bar{\chi}_{\text{eff}}^2 = 1.75; R - 1 = 0.02935$$

## 6 mnu

### 6.1 base\_mnu\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022161	$0.02205^{+0.00047}_{-0.00049}$	$\sigma_8 \Omega_m^{0.5}$	0.4615	$0.457^{+0.026}_{-0.027}$	$H(0.15)$	72.80	$71.2^{+3.0}_{-3.9}$
$\Omega_c h^2$	0.12044	$0.1210^{+0.0044}_{-0.0043}$	$\sigma_8 \Omega_m^{0.25}$	0.6170	$0.600^{+0.035}_{-0.042}$	$D_M(0.15)$	642.2	$658^{+42}_{-31}$
$100\theta_{MC}$	1.04081	$1.04064^{+0.00097}_{-0.0010}$	$\sigma_8/h^{0.5}$	1.004	$0.973^{+0.056}_{-0.074}$	$H(0.38)$	82.94	$81.7^{+2.2}_{-2.9}$
$\tau$	0.0525	$0.052^{+0.016}_{-0.015}$	$r_{drag}h$	99.4	$96.7^{+5.6}_{-7.0}$	$D_M(0.38)$	1531	$1564^{+84}_{-62}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.537$	$\langle d^2 \rangle^{1/2}$	2.459	$2.448^{+0.073}_{-0.074}$	$H(0.51)$	89.68	$88.7^{+1.8}_{-2.4}$
$\ln(10^{10} A_s)$	3.0413	$3.040^{+0.032}_{-0.031}$	$z_{re}$	7.55	$7.5^{+1.6}_{-1.7}$	$D_M(0.51)$	1983	$2022^{+99}_{-73}$
$n_s$	0.9640	$0.961^{+0.012}_{-0.013}$	$10^9 A_s$	2.093	$2.091^{+0.068}_{-0.065}$	$H(0.61)$	95.31	$94.5^{+1.5}_{-2.0}$
$y_{cal}$	1.00038	$1.0005^{+0.0049}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	1.8845	$1.886^{+0.027}_{-0.027}$	$D_M(0.61)$	2308	$2350^{+110}_{-78}$
$A_{217}^{CIB}$	48.6	$48^{+10}_{-10}$	$D_{40}$	1231.4	$1234^{+30}_{-29}$	$H(2.33)$	236.30	$237.6^{+3.9}_{-3.5}$
$\xi^{tSZ \times CIB}$	0.35	—	$D_{220}$	5713	$5712^{+80}_{-80}$	$D_M(2.33)$	5763	$5806^{+110}_{-73}$
$A_{143}^{tSZ}$	6.96	$5.0^{+3.9}_{-4.0}$	$D_{810}$	2537.6	$2537^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4653	$0.460^{+0.025}_{-0.027}$
$A_{100}^{PS}$	254	$265^{+60}_{-60}$	$D_{1420}$	815.4	$814^{+10}_{-10}$	$\sigma_8(0.15)$	0.762	$0.727^{+0.047}_{-0.076}$
$A_{143}^{PS}$	49.8	$50^{+20}_{-20}$	$D_{2000}$	230.08	$229.2^{+3.6}_{-3.8}$	$f\sigma_8(0.38)$	0.4834	$0.473^{+0.026}_{-0.029}$
$A_{143 \times 217}^{PS}$	47.7	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9640	$0.961^{+0.012}_{-0.013}$	$\sigma_8(0.38)$	0.675	$0.642^{+0.042}_{-0.071}$
$A_{217}^{PS}$	119.6	$115^{+20}_{-20}$	$Y_P$	0.245310	$0.24525^{+0.00021}_{-0.00022}$	$f\sigma_8(0.51)$	0.4817	$0.469^{+0.026}_{-0.033}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246636	$0.24658^{+0.00021}_{-0.00022}$	$\sigma_8(0.51)$	0.632	$0.600^{+0.040}_{-0.068}$
$A_{100}^{dustTT}$	8.88	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	2.625	$2.648^{+0.092}_{-0.092}$	$f\sigma_8(0.61)$	0.4765	$0.463^{+0.026}_{-0.035}$
$A_{143}^{dustTT}$	10.82	$10.7^{+3.5}_{-3.6}$	Age/Gyr	13.795	$13.90^{+0.24}_{-0.17}$	$\sigma_8(0.61)$	0.601	$0.571^{+0.038}_{-0.066}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.4}_{-6.6}$	$z_*$	1090.22	$1090.45^{+0.96}_{-0.95}$	$f\sigma_8(2.33)$	0.3019	$0.288^{+0.018}_{-0.031}$
$A_{217}^{dustTT}$	94.7	$93^{+10}_{-10}$	$r_*$	144.48	$144.38^{+0.98}_{-1.0}$	$\sigma_8(2.33)$	0.3116	$0.296^{+0.021}_{-0.036}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04099	$1.04091^{+0.00092}_{-0.00093}$	$f_{2000}^{143}$	30.2	$32^{+6}_{-6}$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.879	$13.871^{+0.090}_{-0.094}$	$f_{2000}^{143 \times 217}$	33.18	$34^{+4}_{-4}$
$H_0$	67.50	$65.7^{+3.4}_{-4.5}$	$z_{drag}$	1059.47	$1059.28^{+0.92}_{-0.94}$	$f_{2000}^{217}$	107.60	$108.6^{+4.0}_{-3.9}$
$\Omega_\Lambda$	0.687	$0.663^{+0.048}_{-0.065}$	$r_{drag}$	147.22	$147.15^{+0.95}_{-0.99}$	$\chi_{small}^2$	395.87	$396.9 (\nu: 1.4)$
$\Omega_m$	0.313	$0.337^{+0.065}_{-0.048}$	$k_D$	0.14057	$0.1406^{+0.0010}_{-0.00099}$	$\chi_{lowl}^2$	23.66	$23.9 (\nu: 0.8)$
$\Omega_m h^2$	0.1426	$0.1450^{+0.0067}_{-0.0058}$	$100\theta_D$	0.16102	$0.16112^{+0.00053}_{-0.00052}$	$\chi_{plik}^2$	758.1	$772.5 (\nu: 16.3)$
$\Omega_\nu h^2$	0.00001	$< 0.00577$	$z_{eq}$	3408	$3419^{+99}_{-97}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.7)$
$\Omega_m h^3$	0.09626	$0.0952^{+0.0019}_{-0.0027}$	$k_{eq}$	0.010401	$0.01044^{+0.00030}_{-0.00030}$	$\chi_{CMB}^2$	1177.6	$1193.4 (\nu: 16.9)$
$\sigma_8$	0.825	$0.789^{+0.050}_{-0.079}$	$100\theta_{eq}$	0.8116	$0.809^{+0.018}_{-0.018}$			
$S_8$	0.8426	$0.834^{+0.048}_{-0.050}$	$100\theta_{s,eq}$	0.4486	$0.4476^{+0.0094}_{-0.0091}$			

Best-fit  $\chi_{eff}^2 = 1178.95$ ;  $\Delta\chi_{eff}^2 = -0.62$ ;  $\bar{\chi}_{eff}^2 = 1200.74$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.16$ ;  $R - 1 = 0.00818$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.00) commander\_dx12\_v3\_2\_29: 23.66 ( $\Delta$  0.06) plik\_rd12\_HM\_v22\_TT: 758.09 ( $\Delta$  -0.66)

## 6.2 base\_mnu\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02206^{+0.00046}_{-0.00049}$	$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.026}_{-0.027}$	$H(0.15)$	$71.3^{+3.0}_{-3.9}$
$\Omega_c h^2$	$0.1209^{+0.0044}_{-0.0043}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.035}_{-0.042}$	$D_M(0.15)$	$658^{+42}_{-31}$
$100\theta_{MC}$	$1.04065^{+0.00098}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.974^{+0.056}_{-0.074}$	$H(0.38)$	$81.8^{+2.2}_{-2.9}$
$\tau$	$0.053^{+0.013}_{-0.011}$	$r_{\text{drag}} h$	$96.8^{+5.5}_{-7.0}$	$D_M(0.38)$	$1563^{+84}_{-62}$
$\Sigma m_\nu [\text{eV}]$	$< 0.535$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.072}_{-0.073}$	$H(0.51)$	$88.7^{+1.8}_{-2.4}$
$\ln(10^{10} A_s)$	$3.043^{+0.028}_{-0.025}$	$z_{\text{re}}$	$< 8.84$	$D_M(0.51)$	$2021^{+98}_{-72}$
$n_s$	$0.962^{+0.012}_{-0.012}$	$10^9 A_s$	$2.098^{+0.058}_{-0.053}$	$H(0.61)$	$94.5^{+1.5}_{-2.0}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.027}_{-0.027}$	$D_M(0.61)$	$2349^{+110}_{-78}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1234^{+30}_{-29}$	$H(2.33)$	$237.5^{+3.9}_{-3.5}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5712^{+80}_{-80}$	$D_M(2.33)$	$5805^{+110}_{-73}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.9}_{-4.0}$	$D_{810}$	$2537^{+27}_{-28}$	$f\sigma_8(0.15)$	$0.461^{+0.024}_{-0.026}$
$A_{100}^{\text{PS}}$	$265^{+60}_{-60}$	$D_{1420}$	$814^{+10}_{-10}$	$\sigma_8(0.15)$	$0.728^{+0.046}_{-0.076}$
$A_{143}^{\text{PS}}$	$50^{+20}_{-20}$	$D_{2000}$	$229.2^{+3.6}_{-3.8}$	$f\sigma_8(0.38)$	$0.473^{+0.026}_{-0.029}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$n_{s,0.002}$	$0.962^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	$0.643^{+0.042}_{-0.071}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P$	$0.24526^{+0.00020}_{-0.00022}$	$f\sigma_8(0.51)$	$0.470^{+0.026}_{-0.033}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24658^{+0.00020}_{-0.00022}$	$\sigma_8(0.51)$	$0.601^{+0.039}_{-0.068}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$10^5 \text{D}/\text{H}$	$2.646^{+0.096}_{-0.088}$	$f\sigma_8(0.61)$	$0.463^{+0.025}_{-0.035}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.6}$	$\text{Age}/\text{Gyr}$	$13.89^{+0.24}_{-0.17}$	$\sigma_8(0.61)$	$0.571^{+0.038}_{-0.066}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$z_*$	$1090.43^{+0.96}_{-0.94}$	$f\sigma_8(2.33)$	$0.289^{+0.017}_{-0.031}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.40^{+0.98}_{-1.0}$	$\sigma_8(2.33)$	$0.296^{+0.020}_{-0.035}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04092^{+0.00092}_{-0.00093}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.872^{+0.090}_{-0.093}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$H_0$	$65.8^{+3.4}_{-4.5}$	$z_{\text{drag}}$	$1059.29^{+0.91}_{-0.92}$	$f_{2000}^{217}$	$108.5^{+4.0}_{-3.9}$
$\Omega_\Lambda$	$0.663^{+0.048}_{-0.064}$	$r_{\text{drag}}$	$147.17^{+0.95}_{-0.98}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.4)$
$\Omega_m$	$0.337^{+0.064}_{-0.048}$	$k_D$	$0.1406^{+0.0010}_{-0.00099}$	$\chi_{\text{lowl}}^2$	$23.9 (\nu: 0.8)$
$\Omega_m h^2$	$0.1449^{+0.0067}_{-0.0058}$	$100\theta_D$	$0.16112^{+0.00053}_{-0.00052}$	$\chi_{\text{plik}}^2$	$772.4 (\nu: 16.2)$
$\Omega_\nu h^2$	$< 0.00575$	$z_{\text{eq}}$	$3417^{+98}_{-97}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.7)$
$\Omega_m h^3$	$0.0952^{+0.0019}_{-0.0027}$	$k_{\text{eq}}$	$0.01043^{+0.00030}_{-0.00030}$	$\chi_{\text{CMB}}^2$	$1193.1 (\nu: 16.5)$
$\sigma_8$	$0.790^{+0.049}_{-0.079}$	$100\theta_{\text{eq}}$	$0.810^{+0.018}_{-0.018}$		
$S_8$	$0.835^{+0.048}_{-0.050}$	$100\theta_{s,\text{eq}}$	$0.4478^{+0.0094}_{-0.0091}$		

$$\bar{\chi}_{\text{eff}}^2 = 1200.49; \Delta \bar{\chi}_{\text{eff}}^2 = 1.17; R - 1 = 0.01089$$

### 6.3 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022395	$0.02235^{+0.00030}_{-0.00030}$	$\Omega_\nu h^2$	0.00001	$< 0.00277$	$100\theta_{\text{eq}}$	0.8131	$0.812^{+0.012}_{-0.012}$
$\Omega_c h^2$	0.12003	$0.1202^{+0.0028}_{-0.0027}$	$\Omega_m h^3$	0.09669	$0.0962^{+0.0010}_{-0.0013}$	$100\theta_{\text{s,eq}}$	0.4493	$0.4489^{+0.0059}_{-0.0060}$
$100\theta_{\text{MC}}$	1.04095	$1.04089^{+0.00063}_{-0.00063}$	$\sigma_8$	0.8258	$0.807^{+0.030}_{-0.040}$	$H(0.15)$	73.14	$72.4^{+1.6}_{-1.9}$
$\tau$	0.0552	$0.055^{+0.016}_{-0.015}$	$S_8$	0.8383	$0.833^{+0.033}_{-0.033}$	$D_{\text{M}}(0.15)$	638.9	$646^{+19}_{-16}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.257$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4592	$0.456^{+0.018}_{-0.018}$	$H(0.38)$	83.23	$82.7^{+1.2}_{-1.5}$
$\ln(10^{10} A_{\text{s}})$	3.0469	$3.045^{+0.033}_{-0.031}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6158	$0.607^{+0.022}_{-0.024}$	$D_{\text{M}}(0.38)$	1524.2	$1539^{+39}_{-33}$
$n_{\text{s}}$	0.9668	$0.9646^{+0.0085}_{-0.0089}$	$\sigma_8/h^{0.5}$	1.0024	$0.986^{+0.034}_{-0.040}$	$H(0.51)$	89.94	$89.5^{+1.0}_{-1.2}$
$y_{\text{cal}}$	1.00064	$1.0006^{+0.0049}_{-0.0048}$	$r_{\text{drag}} h$	99.82	$98.6^{+3.1}_{-3.4}$	$D_{\text{M}}(0.51)$	1974.8	$1993^{+46}_{-39}$
$A_{217}^{\text{CIB}}$	44.8	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.454	$2.446^{+0.055}_{-0.056}$	$H(0.61)$	95.55	$95.14^{+0.84}_{-1.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.79	—	$z_{\text{re}}$	7.76	$7.7^{+1.6}_{-1.6}$	$D_{\text{M}}(0.61)$	2298.3	$2318^{+50}_{-42}$
$A_{143}^{\text{tSZ}}$	6.98	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	2.105	$2.102^{+0.070}_{-0.065}$	$H(2.33)$	236.28	$236.9^{+2.0}_{-2.0}$
$A_{100}^{\text{PS}}$	246	$259^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8851	$1.884^{+0.023}_{-0.023}$	$D_{\text{M}}(2.33)$	5749.9	$5770^{+50}_{-40}$
$A_{143}^{\text{PS}}$	51.9	$46^{+20}_{-20}$	$D_{40}$	1228.3	$1232^{+25}_{-25}$	$f\sigma_8(0.15)$	0.4633	$0.460^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	56.3	$43^{+20}_{-20}$	$D_{220}$	5730	$5732^{+75}_{-76}$	$\sigma_8(0.15)$	0.7632	$0.745^{+0.028}_{-0.039}$
$A_{217}^{\text{PS}}$	123.6	$115^{+20}_{-20}$	$D_{810}$	2542.2	$2540^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4823	$0.477^{+0.016}_{-0.017}$
$A^{\text{kSZ}}$	0.01	$< 8.08$	$D_{1420}$	818.9	$817.4^{+9.2}_{-9.3}$	$\sigma_8(0.38)$	0.6766	$0.660^{+0.026}_{-0.036}$
$A_{100}^{\text{dustTT}}$	8.82	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	231.68	$230.9^{+3.0}_{-3.1}$	$f\sigma_8(0.51)$	0.4811	$0.475^{+0.016}_{-0.017}$
$A_{143}^{\text{dustTT}}$	11.02	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9668	$0.9646^{+0.0085}_{-0.0089}$	$\sigma_8(0.51)$	0.6332	$0.617^{+0.024}_{-0.034}$
$A_{143 \times 217}^{\text{dustTT}}$	20.2	$18.6^{+6.6}_{-6.6}$	$Y_{\text{P}}$	0.245405	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4761	$0.469^{+0.015}_{-0.018}$
$A_{217}^{\text{dustTT}}$	95.7	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246732	$0.24671^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.6025	$0.587^{+0.023}_{-0.033}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.074}_{-0.073}$	$10^5 D/\text{H}$	2.581	$2.590^{+0.057}_{-0.054}$	$f\sigma_8(2.33)$	0.3029	$0.296^{+0.011}_{-0.015}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.057}$	Age/Gyr	13.766	$13.81^{+0.11}_{-0.090}$	$\sigma_8(2.33)$	0.3128	$0.305^{+0.012}_{-0.018}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.89	$1089.97^{+0.59}_{-0.55}$	$f_{2000}^{143}$	28.2	$30^{+5}_{-5}$
$A_{143}^{\text{dustTE}}$	0.225	$0.23^{+0.10}_{-0.11}$	$r_*$	144.41	$144.38^{+0.60}_{-0.61}$	$f_{2000}^{143 \times 217}$	31.68	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.67^{+0.15}_{-0.16}$	$100\theta_*$	1.04110	$1.04110^{+0.00060}_{-0.00060}$	$f_{2000}^{217}$	106.25	$107.1^{+3.5}_{-3.5}$
$A_{217}^{\text{dustTE}}$	2.08	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.871	$13.868^{+0.056}_{-0.057}$	$\chi_{\text{simall}}^2$	396.20	$397.2 (\nu: 2.0)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.01	$1059.91^{+0.60}_{-0.59}$	$\chi_{\text{lowl}}^2$	23.24	$23.56 (\nu: 0.5)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.06	$147.05^{+0.59}_{-0.61}$	$\chi_{\text{plik}}^2$	2343.8	$2360.2 (\nu: 18.0)$
$H_0$	67.88	$67.0^{+1.9}_{-2.2}$	$k_{\text{D}}$	0.14091	$0.14090^{+0.00064}_{-0.00062}$	$\chi_{\text{prior}}^2$	1.5	$11.5 (\nu: 10.2)$
$\Omega_{\Lambda}$	0.6909	$0.680^{+0.025}_{-0.029}$	$100\theta_{\text{D}}$	0.160729	$0.16078^{+0.00034}_{-0.00034}$	$\chi_{\text{CMB}}^2$	2763.2	$2780.9 (\nu: 18.3)$
$\Omega_{\text{m}}$	0.3091	$0.320^{+0.029}_{-0.025}$	$z_{\text{eq}}$	3404	$3408^{+63}_{-61}$			
$\Omega_{\text{m}} h^2$	0.14244	$0.1436^{+0.0034}_{-0.0033}$	$k_{\text{eq}}$	0.010388	$0.01040^{+0.00019}_{-0.00019}$			

Best-fit  $\chi_{\text{eff}}^2 = 2764.74$ ;  $\Delta\chi_{\text{eff}}^2 = -1.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.41$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.65$ ;  $R - 1 = 0.01278$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 ( $\Delta$  0.15) commander\_dx12\_v3.2.29: 23.24 ( $\Delta$  -0.01) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.80 ( $\Delta$  -0.85)



## 6.4 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02235^{+0.00030}_{-0.00030}$	$\Omega_\nu h^2$	$< 0.00276$	$100\theta_{\text{eq}}$	$0.812^{+0.012}_{-0.012}$
$\Omega_c h^2$	$0.1202^{+0.0028}_{-0.0027}$	$\Omega_m h^3$	$0.0962^{+0.0010}_{-0.0012}$	$100\theta_{\text{s,eq}}$	$0.4490^{+0.0059}_{-0.0060}$
$100\theta_{\text{MC}}$	$1.04090^{+0.00063}_{-0.00063}$	$\sigma_8$	$0.808^{+0.030}_{-0.040}$	$H(0.15)$	$72.4^{+1.6}_{-1.9}$
$\tau$	$0.056^{+0.014}_{-0.012}$	$S_8$	$0.833^{+0.033}_{-0.032}$	$D_{\text{M}}(0.15)$	$646^{+19}_{-16}$
$\Sigma m_\nu [\text{eV}]$	$< 0.257$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.456^{+0.018}_{-0.018}$	$H(0.38)$	$82.7^{+1.2}_{-1.5}$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.029}_{-0.027}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.607^{+0.022}_{-0.024}$	$D_{\text{M}}(0.38)$	$1539^{+39}_{-33}$
$n_{\text{s}}$	$0.9647^{+0.0085}_{-0.0089}$	$\sigma_8/h^{0.5}$	$0.986^{+0.034}_{-0.040}$	$H(0.51)$	$89.5^{+1.0}_{-1.2}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$r_{\text{drag}} h$	$98.6^{+3.1}_{-3.4}$	$D_{\text{M}}(0.51)$	$1993^{+46}_{-39}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.054}_{-0.054}$	$H(0.61)$	$95.15^{+0.84}_{-1.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 9.01$	$D_{\text{M}}(0.61)$	$2318^{+50}_{-42}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	$2.106^{+0.061}_{-0.056}$	$H(2.33)$	$236.8^{+2.0}_{-2.0}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.884^{+0.023}_{-0.023}$	$D_{\text{M}}(2.33)$	$5770^{+50}_{-40}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{40}$	$1232^{+25}_{-25}$	$f\sigma_8(0.15)$	$0.461^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5732^{+74}_{-76}$	$\sigma_8(0.15)$	$0.746^{+0.028}_{-0.039}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.477^{+0.016}_{-0.017}$
$A^{\text{kSZ}}$	$< 8.07$	$D_{1420}$	$817.3^{+9.2}_{-9.3}$	$\sigma_8(0.38)$	$0.660^{+0.025}_{-0.036}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$230.9^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	$0.475^{+0.015}_{-0.017}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.5}$	$n_{\text{s},0.002}$	$0.9647^{+0.0085}_{-0.0089}$	$\sigma_8(0.51)$	$0.617^{+0.024}_{-0.034}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.6}_{-6.6}$	$Y_{\text{P}}$	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.469^{+0.015}_{-0.018}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.587^{+0.023}_{-0.033}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$10^5 \text{D}/\text{H}$	$2.589^{+0.057}_{-0.054}$	$f\sigma_8(2.33)$	$0.296^{+0.011}_{-0.015}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.057}$	Age/Gyr	$13.81^{+0.11}_{-0.090}$	$\sigma_8(2.33)$	$0.305^{+0.012}_{-0.017}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.96^{+0.58}_{-0.55}$	$f_{2000}^{143}$	$30^{+5}_{-5}$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.10}_{-0.11}$	$r_*$	$144.39^{+0.60}_{-0.61}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.15}_{-0.16}$	$100\theta_*$	$1.04110^{+0.00060}_{-0.00060}$	$f_{2000}^{217}$	$107.1^{+3.5}_{-3.5}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.869^{+0.055}_{-0.057}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 2.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.91^{+0.59}_{-0.59}$	$\chi_{\text{lowl}}^2$	$23.57 (\nu: 0.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.05^{+0.59}_{-0.61}$	$\chi_{\text{plik}}^2$	$2360.0 (\nu: 17.8)$
$H_0$	$67.0^{+1.9}_{-2.2}$	$k_{\text{D}}$	$0.14090^{+0.00064}_{-0.00062}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_\Lambda$	$0.680^{+0.025}_{-0.029}$	$100\theta_{\text{D}}$	$0.16077^{+0.00034}_{-0.00034}$	$\chi_{\text{CMB}}^2$	$2780.7 (\nu: 18.0)$
$\Omega_{\text{m}}$	$0.320^{+0.029}_{-0.025}$	$z_{\text{eq}}$	$3407^{+63}_{-61}$		
$\Omega_{\text{m}} h^2$	$0.1435^{+0.0034}_{-0.0033}$	$k_{\text{eq}}$	$0.01040^{+0.00019}_{-0.00019}$		

$$\bar{\chi}_{\text{eff}}^2 = 2792.20; \Delta \bar{\chi}_{\text{eff}}^2 = 0.67; R - 1 = 0.01347$$

## 6.5 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022207	$0.02206^{+0.00045}_{-0.00050}$	$\sigma_8 \Omega_m^{0.5}$	0.4564	$0.458^{+0.018}_{-0.017}$	$H(0.15)$	73.09	$71.4^{+2.7}_{-3.6}$
$\Omega_c h^2$	0.11967	$0.1210^{+0.0042}_{-0.0039}$	$\sigma_8 \Omega_m^{0.25}$	0.6125	$0.603^{+0.021}_{-0.024}$	$D_M(0.15)$	639.3	$656^{+38}_{-28}$
$100\theta_{MC}$	1.04091	$1.04066^{+0.00097}_{-0.0010}$	$\sigma_8/h^{0.5}$	0.9981	$0.978^{+0.036}_{-0.045}$	$H(0.38)$	83.15	$81.9^{+2.0}_{-2.7}$
$\tau$	0.0529	$0.052^{+0.016}_{-0.015}$	$r_{drag}h$	99.98	$97.0^{+5.0}_{-6.5}$	$D_M(0.38)$	1525	$1560^{+76}_{-55}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.436$	$\langle d^2 \rangle^{1/2}$	2.445	$2.451^{+0.055}_{-0.051}$	$H(0.51)$	89.84	$88.8^{+1.6}_{-2.2}$
$\ln(10^{10} A_s)$	3.0395	$3.042^{+0.031}_{-0.029}$	$z_{re}$	7.56	$7.6^{+1.6}_{-1.6}$	$D_M(0.51)$	1976	$2017^{+89}_{-65}$
$n_s$	0.9657	$0.961^{+0.011}_{-0.012}$	$10^9 A_s$	2.089	$2.095^{+0.065}_{-0.061}$	$H(0.61)$	95.43	$94.6^{+1.3}_{-1.8}$
$y_{cal}$	1.00016	$1.0006^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8797	$1.886^{+0.025}_{-0.024}$	$D_M(0.61)$	2300	$2345^{+96}_{-70}$
$A_{217}^{CIB}$	49.3	$48^{+10}_{-10}$	$D_{40}$	1226.5	$1235^{+27}_{-26}$	$H(2.33)$	235.85	$237.4^{+3.8}_{-3.1}$
$\xi^{tSZ \times CIB}$	0.22	—	$D_{220}$	5712	$5714^{+81}_{-81}$	$D_M(2.33)$	5757	$5800^{+92}_{-67}$
$A_{143}^{tSZ}$	7.16	$5.0^{+3.8}_{-3.9}$	$D_{810}$	2535.2	$2538^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4606	$0.462^{+0.016}_{-0.016}$
$A_{100}^{PS}$	254	$265^{+60}_{-50}$	$D_{1420}$	815.2	$814.5^{+9.9}_{-10}$	$\sigma_8(0.15)$	0.7598	$0.732^{+0.037}_{-0.057}$
$A_{143}^{PS}$	47.3	$50^{+20}_{-20}$	$D_{2000}$	230.06	$229.3^{+3.6}_{-3.7}$	$f\sigma_8(0.38)$	0.4797	$0.475^{+0.015}_{-0.016}$
$A_{143 \times 217}^{PS}$	44.0	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9657	$0.961^{+0.011}_{-0.012}$	$\sigma_8(0.38)$	0.6736	$0.647^{+0.035}_{-0.054}$
$A_{217}^{PS}$	117.8	$115^{+20}_{-20}$	$Y_P$	0.245329	$0.24526^{+0.00020}_{-0.00023}$	$f\sigma_8(0.51)$	0.4786	$0.471^{+0.016}_{-0.019}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246655	$0.24659^{+0.00020}_{-0.00023}$	$\sigma_8(0.51)$	0.6305	$0.605^{+0.033}_{-0.052}$
$A_{100}^{dustTT}$	8.90	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	2.617	$2.645^{+0.093}_{-0.090}$	$f\sigma_8(0.61)$	0.4738	$0.465^{+0.017}_{-0.021}$
$A_{143}^{dustTT}$	10.79	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.784	$13.88^{+0.21}_{-0.15}$	$\sigma_8(0.61)$	0.5999	$0.575^{+0.032}_{-0.051}$
$A_{143 \times 217}^{dustTT}$	19.2	$18.3^{+6.5}_{-6.4}$	$z_*$	1090.09	$1090.42^{+0.96}_{-0.87}$	$f\sigma_8(2.33)$	0.3016	$0.290^{+0.015}_{-0.024}$
$A_{217}^{dustTT}$	94.3	$93^{+10}_{-10}$	$r_*$	144.65	$144.39^{+0.89}_{-0.93}$	$\sigma_8(2.33)$	0.3116	$0.298^{+0.018}_{-0.028}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04109	$1.04092^{+0.00092}_{-0.00096}$	$f_{2000}^{143}$	30.2	$32^{+6}_{-6}$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.894	$13.871^{+0.082}_{-0.085}$	$f_{2000}^{143 \times 217}$	33.04	$34^{+4}_{-4}$
$H_0$	67.84	$65.9^{+3.1}_{-4.1}$	$z_{drag}$	1059.51	$1059.30^{+0.90}_{-0.97}$	$f_{2000}^{217}$	107.50	$108.5^{+3.9}_{-3.9}$
$\Omega_\Lambda$	0.692	$0.666^{+0.043}_{-0.060}$	$r_{drag}$	147.37	$147.15^{+0.84}_{-0.95}$	$\chi_{lensing}^2$	9.04	$9.43 (\nu: 0.5)$
$\Omega_m$	0.308	$0.334^{+0.060}_{-0.043}$	$k_D$	0.14044	$0.14057^{+0.00097}_{-0.00096}$	$\chi_{small}^2$	395.86	$397.0 (\nu: 1.5)$
$\Omega_m h^2$	0.1419	$0.1447^{+0.0065}_{-0.0052}$	$100\theta_D$	0.16100	$0.16111^{+0.00056}_{-0.00052}$	$\chi_{lowl}^2$	23.26	$24.0 (\nu: 0.7)$
$\Omega_\nu h^2$	0.00000	$< 0.00469$	$z_{eq}$	3390	$3419^{+92}_{-87}$	$\chi_{plik}^2$	758.5	$771.9 (\nu: 14.4)$
$\Omega_m h^3$	0.09625	$0.0953^{+0.0017}_{-0.0022}$	$k_{eq}$	0.010348	$0.01044^{+0.00028}_{-0.00027}$	$\chi_{prior}^2$	1.5	$7.3 (\nu: 6.8)$
$\sigma_8$	0.8221	$0.794^{+0.038}_{-0.057}$	$100\theta_{eq}$	0.8149	$0.810^{+0.015}_{-0.018}$	$\chi_{CMB}^2$	1186.6	$1202.3 (\nu: 16.6)$
$S_8$	0.8333	$0.836^{+0.032}_{-0.032}$	$100\theta_{s,eq}$	0.4503	$0.4476^{+0.0079}_{-0.0092}$			

Best-fit  $\chi_{\text{eff}}^2 = 1188.10$ ;  $\Delta\chi_{\text{eff}}^2 = -0.47$ ;  $\bar{\chi}_{\text{eff}}^2 = 1209.58$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.16$ ;  $R - 1 = 0.00659$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.04 ( $\Delta$  0.14) simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.86 ( $\Delta$  -0.00) commander\_dx12\_v3.2.29: 23.26 ( $\Delta$  0.03) plik\_rd12\_HM\_v22.TT: 758.46 ( $\Delta$  -0.86)

## 6.6 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}} h^2$	$0.02207^{+0.00045}_{-0.00051}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.458^{+0.018}_{-0.018}$	$H(0.15)$	$71.4^{+2.7}_{-3.6}$
$\Omega_{\text{c}} h^2$	$0.1209^{+0.0042}_{-0.0039}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.021}_{-0.024}$	$D_{\text{M}}(0.15)$	$656^{+39}_{-28}$
$100\theta_{\text{MC}}$	$1.04067^{+0.00097}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.978^{+0.036}_{-0.046}$	$H(0.38)$	$81.9^{+2.0}_{-2.7}$
$\tau$	$0.054^{+0.013}_{-0.012}$	$r_{\text{drag}} h$	$97.1^{+5.0}_{-6.6}$	$D_{\text{M}}(0.38)$	$1560^{+77}_{-56}$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.443$	$\langle d^2 \rangle^{1/2}$	$2.452^{+0.055}_{-0.051}$	$H(0.51)$	$88.8^{+1.6}_{-2.2}$
$\ln(10^{10} A_{\text{s}})$	$3.044^{+0.027}_{-0.025}$	$z_{\text{re}}$	$< 8.89$	$D_{\text{M}}(0.51)$	$2017^{+91}_{-65}$
$n_{\text{s}}$	$0.962^{+0.011}_{-0.013}$	$10^9 A_{\text{s}}$	$2.100^{+0.056}_{-0.052}$	$H(0.61)$	$94.6^{+1.3}_{-1.8}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0049}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.886^{+0.025}_{-0.024}$	$D_{\text{M}}(0.61)$	$2344^{+98}_{-71}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1235^{+27}_{-26}$	$H(2.33)$	$237.4^{+3.8}_{-3.1}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5714^{+81}_{-81}$	$D_{\text{M}}(2.33)$	$5800^{+94}_{-67}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.8}_{-3.9}$	$D_{810}$	$2537^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.462^{+0.016}_{-0.016}$
$A_{100}^{\text{PS}}$	$265^{+60}_{-50}$	$D_{1420}$	$814.5^{+9.9}_{-10}$	$\sigma_8(0.15)$	$0.732^{+0.037}_{-0.057}$
$A_{143}^{\text{PS}}$	$50^{+20}_{-20}$	$D_{2000}$	$229.3^{+3.6}_{-3.8}$	$f\sigma_8(0.38)$	$0.475^{+0.015}_{-0.016}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$n_{\text{s},0.002}$	$0.962^{+0.011}_{-0.013}$	$\sigma_8(0.38)$	$0.647^{+0.035}_{-0.055}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_{\text{P}}$	$0.24526^{+0.00020}_{-0.00023}$	$f\sigma_8(0.51)$	$0.471^{+0.016}_{-0.019}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24659^{+0.00020}_{-0.00023}$	$\sigma_8(0.51)$	$0.605^{+0.033}_{-0.053}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$10^5 \text{D}/\text{H}$	$2.643^{+0.093}_{-0.090}$	$f\sigma_8(0.61)$	$0.465^{+0.017}_{-0.022}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$\text{Age}/\text{Gyr}$	$13.88^{+0.22}_{-0.15}$	$\sigma_8(0.61)$	$0.575^{+0.032}_{-0.052}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.4}$	$z_*$	$1090.40^{+0.97}_{-0.87}$	$f\sigma_8(2.33)$	$0.291^{+0.015}_{-0.024}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.41^{+0.89}_{-0.93}$	$\sigma_8(2.33)$	$0.298^{+0.018}_{-0.029}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04093^{+0.00092}_{-0.00096}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.873^{+0.083}_{-0.085}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$H_0$	$65.9^{+3.1}_{-4.2}$	$z_{\text{drag}}$	$1059.31^{+0.93}_{-0.98}$	$f_{2000}^{217}$	$108.5^{+3.9}_{-3.9}$
$\Omega_{\Lambda}$	$0.666^{+0.043}_{-0.060}$	$r_{\text{drag}}$	$147.17^{+0.89}_{-0.90}$	$\chi_{\text{lensing}}^2$	$9.40 (\nu: 0.5)$
$\Omega_{\text{m}}$	$0.334^{+0.060}_{-0.043}$	$k_{\text{D}}$	$0.14056^{+0.00098}_{-0.00095}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$\Omega_{\text{m}} h^2$	$0.1447^{+0.0066}_{-0.0052}$	$100\theta_{\text{D}}$	$0.16111^{+0.00056}_{-0.00052}$	$\chi_{\text{lowl}}^2$	$23.9 (\nu: 0.7)$
$\Omega_{\nu} h^2$	$< 0.00477$	$z_{\text{eq}}$	$3417^{+92}_{-87}$	$\chi_{\text{plik}}^2$	$771.8 (\nu: 14.5)$
$\Omega_{\text{m}} h^3$	$0.0953^{+0.0017}_{-0.0022}$	$k_{\text{eq}}$	$0.01043^{+0.00028}_{-0.00027}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.794^{+0.038}_{-0.058}$	$100\theta_{\text{eq}}$	$0.810^{+0.016}_{-0.017}$	$\chi_{\text{CMB}}^2$	$1202.1 (\nu: 16.6)$
$S_8$	$0.836^{+0.032}_{-0.032}$	$100\theta_{\text{s,eq}}$	$0.4478^{+0.0083}_{-0.0087}$		

$$\bar{\chi}_{\text{eff}}^2 = 1209.38; \Delta \bar{\chi}_{\text{eff}}^2 = 1.22; R - 1 = 0.00698$$

## 6.7 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022421	$0.02236^{+0.00030}_{-0.00030}$	$\Omega_\nu h^2$	0.00000	$< 0.00259$	$100\theta_{\text{eq}}$	0.8145	$0.813^{+0.010}_{-0.011}$
$\Omega_c h^2$	0.11969	$0.1201^{+0.0026}_{-0.0024}$	$\Omega_m h^3$	0.09668	$0.09623^{+0.00094}_{-0.0012}$	$100\theta_{\text{s,eq}}$	0.4500	$0.4491^{+0.0052}_{-0.0054}$
$100\theta_{\text{MC}}$	1.04098	$1.04088^{+0.00061}_{-0.00063}$	$\sigma_8$	0.8224	$0.807^{+0.025}_{-0.033}$	$H(0.15)$	73.28	$72.4^{+1.6}_{-1.9}$
$\tau$	0.0532	$0.055^{+0.015}_{-0.014}$	$S_8$	0.8320	$0.832^{+0.025}_{-0.025}$	$D_{\text{M}}(0.15)$	637.6	$646^{+19}_{-16}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.241$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4557	$0.456^{+0.013}_{-0.014}$	$H(0.38)$	83.33	$82.7^{+1.2}_{-1.4}$
$\ln(10^{10} A_{\text{s}})$	3.0417	$3.046^{+0.030}_{-0.028}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6122	$0.606^{+0.016}_{-0.017}$	$D_{\text{M}}(0.38)$	1521.6	$1538^{+39}_{-32}$
$n_{\text{s}}$	0.9664	$0.9647^{+0.0081}_{-0.0084}$	$\sigma_8/h^{0.5}$	0.9970	$0.985^{+0.026}_{-0.030}$	$H(0.51)$	90.01	$89.48^{+0.98}_{-1.2}$
$y_{\text{cal}}$	1.00050	$1.0007^{+0.0048}_{-0.0048}$	$r_{\text{drag}} h$	100.09	$98.7^{+2.9}_{-3.4}$	$D_{\text{M}}(0.51)$	1971.8	$1992^{+46}_{-38}$
$A_{217}^{\text{CIB}}$	47.0	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.4451	$2.445^{+0.042}_{-0.041}$	$H(0.61)$	95.61	$95.16^{+0.81}_{-1.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.48	—	$z_{\text{re}}$	7.54	$7.7^{+1.5}_{-1.5}$	$D_{\text{M}}(0.61)$	2295.0	$2317^{+50}_{-41}$
$A_{143}^{\text{tSZ}}$	7.15	$5.5^{+3.7}_{-4.0}$	$10^9 A_{\text{s}}$	2.094	$2.103^{+0.063}_{-0.058}$	$H(2.33)$	236.08	$236.8^{+2.0}_{-1.8}$
$A_{100}^{\text{PS}}$	250	$259^{+60}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8828	$1.884^{+0.022}_{-0.021}$	$D_{\text{M}}(2.33)$	5747.6	$5769^{+49}_{-39}$
$A_{143}^{\text{PS}}$	48.2	$46^{+20}_{-20}$	$D_{40}$	1228.6	$1233^{+24}_{-23}$	$f\sigma_8(0.15)$	0.4599	$0.460^{+0.012}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	48.6	$42^{+20}_{-20}$	$D_{220}$	5736	$5736^{+76}_{-76}$	$\sigma_8(0.15)$	0.7602	$0.745^{+0.024}_{-0.033}$
$A_{217}^{\text{PS}}$	119.9	$115^{+20}_{-20}$	$D_{810}$	2540.2	$2540^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4794	$0.477^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	0.00	$< 8.04$	$D_{1420}$	818.1	$817.5^{+9.2}_{-9.2}$	$\sigma_8(0.38)$	0.6741	$0.660^{+0.023}_{-0.031}$
$A_{100}^{\text{dustTT}}$	8.76	$8.9^{+3.5}_{-3.6}$	$D_{2000}$	231.33	$230.9^{+3.0}_{-3.1}$	$f\sigma_8(0.51)$	0.4784	$0.474^{+0.012}_{-0.012}$
$A_{143}^{\text{dustTT}}$	10.99	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9664	$0.9647^{+0.0081}_{-0.0084}$	$\sigma_8(0.51)$	0.6310	$0.617^{+0.022}_{-0.030}$
$A_{143 \times 217}^{\text{dustTT}}$	19.9	$18.6^{+6.4}_{-6.5}$	$Y_{\text{P}}$	0.245415	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4736	$0.469^{+0.012}_{-0.013}$
$A_{217}^{\text{dustTT}}$	95.2	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246742	$0.24672^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.6004	$0.587^{+0.021}_{-0.029}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.074}_{-0.073}$	$10^5 D/\text{H}$	2.576	$2.587^{+0.057}_{-0.054}$	$f\sigma_8(2.33)$	0.3019	$0.2962^{+0.0098}_{-0.013}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	Age/Gyr	13.761	$13.81^{+0.11}_{-0.088}$	$\sigma_8(2.33)$	0.3119	$0.305^{+0.011}_{-0.016}$
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.82	$1089.94^{+0.57}_{-0.54}$	$f_{2000}^{143}$	28.7	$30^{+5}_{-5}$
$A_{143}^{\text{dustTE}}$	0.225	$0.23^{+0.11}_{-0.10}$	$r_*$	144.48	$144.40^{+0.53}_{-0.56}$	$f_{2000}^{143 \times 217}$	31.89	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.67^{+0.15}_{-0.16}$	$100\theta_*$	1.04112	$1.04108^{+0.00059}_{-0.00060}$	$f_{2000}^{217}$	106.51	$107.1^{+3.6}_{-3.5}$
$A_{217}^{\text{dustTE}}$	2.08	$2.09^{+0.53}_{-0.52}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.877	$13.870^{+0.050}_{-0.052}$	$\chi_{\text{lensing}}^2$	9.02	$9.29 (\nu: 0.3)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.01	$1059.93^{+0.61}_{-0.61}$	$\chi_{\text{small}}^2$	395.85	$397.1 (\nu: 1.7)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.13	$147.06^{+0.52}_{-0.55}$	$\chi_{\text{lowl}}^2$	23.26	$23.55 (\nu: 0.4)$
$H_0$	68.03	$67.1^{+1.8}_{-2.2}$	$k_{\text{D}}$	0.14087	$0.14089^{+0.00060}_{-0.00058}$	$\chi_{\text{plik}}^2$	2344.0	$2359.8 (\nu: 17.3)$
$\Omega_\Lambda$	0.6929	$0.681^{+0.024}_{-0.029}$	$100\theta_{\text{D}}$	0.160709	$0.16076^{+0.00035}_{-0.00035}$	$\chi_{\text{prior}}^2$	1.7	$11.5 (\nu: 10.4)$
$\Omega_{\text{m}}$	0.3071	$0.319^{+0.029}_{-0.024}$	$z_{\text{eq}}$	3396	$3405^{+57}_{-54}$	$\chi_{\text{CMB}}^2$	2772.2	$2789.8 (\nu: 18.5)$
$\Omega_{\text{m}} h^2$	0.14211	$0.1435^{+0.0034}_{-0.0031}$	$k_{\text{eq}}$	0.010365	$0.01039^{+0.00017}_{-0.00016}$			

Best-fit  $\chi_{\text{eff}}^2 = 2773.86$ ;  $\Delta\chi_{\text{eff}}^2 = -0.78$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.35$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.66$ ;  $R - 1 = 0.01138$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12.Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.02 ( $\Delta$  0.15) simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.85 ( $\Delta$  -0.20) commander\_dx12.v3.2.29: 23.26 ( $\Delta$  0.01) plik\_rd12\_HM.v22b.TTTEEE: 2344.04 ( $\Delta$  -0.89)

## 6.8 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02237^{+0.00030}_{-0.00030}$	$\Omega_{\nu}h^2$	$< 0.00262$	$100\theta_{\text{eq}}$	$0.813^{+0.010}_{-0.010}$
$\Omega_{\text{c}}h^2$	$0.1201^{+0.0025}_{-0.0024}$	$\Omega_{\text{m}}h^3$	$0.09622^{+0.00095}_{-0.0012}$	$100\theta_{\text{s,eq}}$	$0.4492^{+0.0052}_{-0.0053}$
$100\theta_{\text{MC}}$	$1.04089^{+0.00060}_{-0.00063}$	$\sigma_8$	$0.807^{+0.025}_{-0.034}$	$H(0.15)$	$72.5^{+1.6}_{-1.9}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$S_8$	$0.832^{+0.025}_{-0.025}$	$D_{\text{M}}(0.15)$	$646^{+19}_{-16}$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.244$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.456^{+0.013}_{-0.014}$	$H(0.38)$	$82.7^{+1.2}_{-1.5}$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.027}_{-0.025}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.606^{+0.016}_{-0.017}$	$D_{\text{M}}(0.38)$	$1538^{+39}_{-32}$
$n_{\text{s}}$	$0.9649^{+0.0081}_{-0.0083}$	$\sigma_8/h^{0.5}$	$0.985^{+0.026}_{-0.030}$	$H(0.51)$	$89.49^{+0.98}_{-1.2}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$r_{\text{drag}}h$	$98.7^{+2.9}_{-3.5}$	$D_{\text{M}}(0.51)$	$1991^{+46}_{-38}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.042}_{-0.041}$	$H(0.61)$	$95.16^{+0.82}_{-1.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.97$	$D_{\text{M}}(0.61)$	$2316^{+50}_{-41}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-4.0}$	$10^9 A_{\text{s}}$	$2.106^{+0.057}_{-0.052}$	$H(2.33)$	$236.8^{+2.0}_{-1.8}$
$A_{100}^{\text{PS}}$	$259^{+60}_{-50}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.884^{+0.022}_{-0.021}$	$D_{\text{M}}(2.33)$	$5769^{+49}_{-39}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{40}$	$1232^{+23}_{-23}$	$f\sigma_8(0.15)$	$0.460^{+0.012}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5736^{+76}_{-76}$	$\sigma_8(0.15)$	$0.745^{+0.024}_{-0.033}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.477^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	$< 8.01$	$D_{1420}$	$817.5^{+9.1}_{-9.1}$	$\sigma_8(0.38)$	$0.660^{+0.023}_{-0.031}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$230.9^{+3.0}_{-3.1}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.013}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.9649^{+0.0081}_{-0.0083}$	$\sigma_8(0.51)$	$0.617^{+0.022}_{-0.030}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$Y_{\text{P}}$	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.469^{+0.012}_{-0.013}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.587^{+0.021}_{-0.029}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.073}$	$10^5 \text{D}/\text{H}$	$2.587^{+0.057}_{-0.054}$	$f\sigma_8(2.33)$	$0.2963^{+0.0097}_{-0.013}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	Age/Gyr	$13.81^{+0.11}_{-0.088}$	$\sigma_8(2.33)$	$0.305^{+0.011}_{-0.016}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.93^{+0.57}_{-0.53}$	$f_{2000}^{143}$	$30^{+5}_{-5}$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.10}$	$r_*$	$144.41^{+0.53}_{-0.55}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.15}_{-0.16}$	$100\theta_*$	$1.04109^{+0.00058}_{-0.00060}$	$f_{2000}^{217}$	$107.1^{+3.6}_{-3.5}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.871^{+0.049}_{-0.052}$	$\chi_{\text{lensing}}^2$	$9.28 (\nu: 0.3)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.93^{+0.61}_{-0.61}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.07^{+0.52}_{-0.54}$	$\chi_{\text{lowl}}^2$	$23.54 (\nu: 0.4)$
$H_0$	$67.1^{+1.8}_{-2.2}$	$k_{\text{D}}$	$0.14088^{+0.00060}_{-0.00058}$	$\chi_{\text{plik}}^2$	$2359.7 (\nu: 17.3)$
$\Omega_{\Lambda}$	$0.681^{+0.024}_{-0.029}$	$100\theta_{\text{D}}$	$0.16076^{+0.00035}_{-0.00035}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.4)$
$\Omega_{\text{m}}$	$0.319^{+0.029}_{-0.024}$	$z_{\text{eq}}$	$3404^{+56}_{-53}$	$\chi_{\text{CMB}}^2$	$2789.7 (\nu: 18.3)$
$\Omega_{\text{m}}h^2$	$0.1434^{+0.0034}_{-0.0031}$	$k_{\text{eq}}$	$0.01039^{+0.00017}_{-0.00016}$		

$$\bar{\chi}_{\text{eff}}^2 = 2801.19; \Delta\bar{\chi}_{\text{eff}}^2 = 0.68; R - 1 = 0.01124$$

## 6.9 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022202	$0.02222^{+0.00037}_{-0.00037}$	$\sigma_8 \Omega_m^{0.25}$	0.6127	$0.603^{+0.021}_{-0.022}$	$H(0.38)$	83.15	$83.00^{+0.75}_{-0.80}$
$\Omega_c h^2$	0.11966	$0.1190^{+0.0025}_{-0.0025}$	$\sigma_8/h^{0.5}$	0.9983	$0.983^{+0.031}_{-0.035}$	$D_M(0.38)$	1525.2	$1529^{+21}_{-19}$
$100\theta_{MC}$	1.04094	$1.04100^{+0.00081}_{-0.00084}$	$r_{drag}h$	99.99	$99.8^{+1.9}_{-1.9}$	$H(0.51)$	89.84	$89.70^{+0.62}_{-0.68}$
$\tau$	0.0529	$0.053^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.446	$2.428^{+0.058}_{-0.060}$	$D_M(0.51)$	1976.3	$1981^{+25}_{-23}$
$\Sigma m_\nu$ [eV]	0.003	< 0.156	$z_{re}$	7.56	$7.6^{+1.6}_{-1.6}$	$H(0.61)$	95.44	$95.30^{+0.54}_{-0.60}$
$\ln(10^{10} A_s)$	3.0404	$3.039^{+0.034}_{-0.032}$	$10^9 A_s$	2.091	$2.090^{+0.072}_{-0.067}$	$D_M(0.61)$	2300.1	$2305^{+27}_{-25}$
$n_s$	0.9659	$0.9665^{+0.0084}_{-0.0081}$	$10^9 A_s e^{-2\tau}$	1.8812	$1.878^{+0.023}_{-0.023}$	$H(2.33)$	235.84	$235.8^{+1.5}_{-1.5}$
$y_{cal}$	1.0005	$1.0005^{+0.0050}_{-0.0050}$	$D_{40}$	1227.2	$1226^{+25}_{-25}$	$D_M(2.33)$	5757.3	$5765^{+29}_{-28}$
$A_{217}^{CIB}$	48.7	$48^{+10}_{-10}$	$D_{220}$	5716	$5720^{+79}_{-80}$	$f\sigma_8(0.15)$	0.4607	$0.455^{+0.017}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.30	—	$D_{810}$	2537.4	$2536^{+27}_{-28}$	$\sigma_8(0.15)$	0.7601	$0.748^{+0.022}_{-0.027}$
$A_{143}^{tSZ}$	7.02	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	815.9	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4799	$0.474^{+0.016}_{-0.016}$
$A_{100}^{PS}$	254	$262^{+50}_{-50}$	$D_{2000}$	230.27	$230.0^{+3.6}_{-3.4}$	$\sigma_8(0.38)$	0.6739	$0.663^{+0.020}_{-0.024}$
$A_{143}^{PS}$	48.7	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9659	$0.9665^{+0.0084}_{-0.0081}$	$f\sigma_8(0.51)$	0.4788	$0.472^{+0.015}_{-0.016}$
$A_{143 \times 217}^{PS}$	46.0	$43^{+20}_{-20}$	$Y_P$	0.245327	$0.24533^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	0.6307	$0.620^{+0.018}_{-0.023}$
$A_{217}^{PS}$	118.9	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246653	$0.24666^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	0.4739	$0.468^{+0.014}_{-0.016}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.618	$2.614^{+0.071}_{-0.069}$	$\sigma_8(0.61)$	0.6002	$0.590^{+0.017}_{-0.022}$
$A_{100}^{dustTT}$	8.85	$9.0^{+3.6}_{-3.6}$	Age/Gyr	13.784	$13.802^{+0.066}_{-0.065}$	$f\sigma_8(2.33)$	0.3018	$0.2977^{+0.0080}_{-0.0096}$
$A_{143}^{dustTT}$	10.83	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.10	$1090.02^{+0.56}_{-0.56}$	$\sigma_8(2.33)$	0.3117	$0.3070^{+0.0089}_{-0.011}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.4}_{-6.4}$	$r_*$	144.66	$144.80^{+0.64}_{-0.63}$	$f_{2000}^{143}$	30.1	$31^{+6}_{-6}$
$A_{217}^{dustTT}$	94.6	$93^{+10}_{-10}$	$100\theta_*$	1.04112	$1.04120^{+0.00081}_{-0.00084}$	$f_{2000}^{143 \times 217}$	33.01	$33^{+4}_{-4}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.894	$13.907^{+0.063}_{-0.061}$	$f_{2000}^{217}$	107.49	$107.8^{+3.8}_{-3.7}$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.51	$1059.52^{+0.84}_{-0.84}$	$\chi_{simall}^2$	395.87	$397.0 (\nu: 1.7)$
$H_0$	67.85	$67.7^{+1.1}_{-1.2}$	$r_{drag}$	147.38	$147.52^{+0.70}_{-0.68}$	$\chi_{lowl}^2$	23.25	$23.11 (\nu: 0.4)$
$\Omega_\Lambda$	0.6918	$0.690^{+0.014}_{-0.015}$	$k_D$	0.14043	$0.14030^{+0.00086}_{-0.00089}$	$\chi_{plik}^2$	758.6	$772.0 (\nu: 15.4)$
$\Omega_m$	0.3082	$0.310^{+0.015}_{-0.014}$	$100\theta_D$	0.161010	$0.16101^{+0.00050}_{-0.00049}$	$\chi_{6DF}^2$	0.010	$0.059 (\nu: 0.0)$
$\Omega_m h^2$	0.14189	$0.1419^{+0.0024}_{-0.0023}$	$z_{eq}$	3390	$3375^{+59}_{-58}$	$\chi_{MGS}^2$	1.41	$1.39 (\nu: 0.1)$
$\Omega_\nu h^2$	0.00003	< 0.00168	$k_{eq}$	0.010346	$0.01030^{+0.00018}_{-0.00018}$	$\chi_{DR12BAO}^2$	3.90	$4.7 (\nu: 1.4)$
$\Omega_m h^3$	0.09627	$0.0960^{+0.0010}_{-0.0010}$	$100\theta_{eq}$	0.8150	$0.818^{+0.011}_{-0.011}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.9)$
$\sigma_8$	0.8223	$0.809^{+0.024}_{-0.030}$	$100\theta_{s,eq}$	0.4504	$0.4519^{+0.0057}_{-0.0056}$	$\chi_{BAO}^2$	5.32	$6.2 (\nu: 1.0)$
$S_8$	0.8335	$0.822^{+0.033}_{-0.035}$	$H(0.15)$	73.10	$72.92^{+0.98}_{-1.0}$	$\chi_{CMB}^2$	1177.7	$1192.1 (\nu: 15.4)$
$\sigma_8 \Omega_m^{0.5}$	0.4565	$0.450^{+0.018}_{-0.019}$	$D_M(0.15)$	639.2	$641^{+10}_{-9.6}$			

Best-fit  $\chi_{eff}^2 = 1184.39$ ;  $\Delta\chi_{eff}^2 = -1.36$ ;  $\bar{\chi}_{eff}^2 = 1205.62$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.41$ ;  $R - 1 = 0.00712$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.01) MGS: 1.41 ( $\Delta$  0.13) DR12BAO: 3.90 ( $\Delta$  -0.28) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 23.25 ( $\Delta$  0.43) plik\_rd12\_HM\_v22.TT: 758.61 ( $\Delta$  -1.49)

## 6.10 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022194	$0.02223^{+0.00037}_{-0.00037}$	$\sigma_8 \Omega_m^{0.25}$	0.6118	$0.603^{+0.020}_{-0.022}$	$H(0.38)$	83.18	$83.06^{+0.71}_{-0.75}$
$\Omega_c h^2$	0.11950	$0.1189^{+0.0025}_{-0.0025}$	$\sigma_8/h^{0.5}$	0.9971	$0.983^{+0.031}_{-0.034}$	$D_M(0.38)$	1524.4	$1527^{+20}_{-18}$
$100\theta_{MC}$	1.04096	$1.04102^{+0.00080}_{-0.00085}$	$r_{drag}h$	100.11	$99.98^{+1.8}_{-1.8}$	$H(0.51)$	89.86	$89.75^{+0.60}_{-0.64}$
$\tau$	0.0529	$0.054^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.443	$2.426^{+0.057}_{-0.061}$	$D_M(0.51)$	1975.3	$1979^{+23}_{-22}$
$\Sigma m_\nu$ [eV]	0.001	< 0.150	$z_{re}$	7.56	$7.6^{+1.6}_{-1.6}$	$H(0.61)$	95.45	$95.34^{+0.53}_{-0.55}$
$\ln(10^{10} A_s)$	3.0395	$3.039^{+0.034}_{-0.032}$	$10^9 A_s$	2.090	$2.090^{+0.072}_{-0.066}$	$D_M(0.61)$	2299.1	$2303^{+25}_{-24}$
$n_s$	0.9660	$0.9668^{+0.0083}_{-0.0080}$	$10^9 A_s e^{-2\tau}$	1.8797	$1.877^{+0.023}_{-0.023}$	$H(2.33)$	235.73	$235.7^{+1.5}_{-1.4}$
$y_{cal}$	1.0003	$1.0005^{+0.0050}_{-0.0051}$	$D_{40}$	1226.2	$1225^{+25}_{-25}$	$D_M(2.33)$	5757.1	$5763^{+29}_{-26}$
$A_{217}^{CIB}$	49.0	$48^{+10}_{-10}$	$D_{220}$	5713	$5720^{+79}_{-80}$	$f\sigma_8(0.15)$	0.4597	$0.454^{+0.016}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.28	—	$D_{810}$	2535.9	$2535^{+28}_{-28}$	$\sigma_8(0.15)$	0.7595	$0.748^{+0.022}_{-0.027}$
$A_{143}^{tSZ}$	7.02	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	815.4	$816^{+10}_{-9.9}$	$f\sigma_8(0.38)$	0.4791	$0.473^{+0.015}_{-0.016}$
$A_{100}^{PS}$	256	$262^{+50}_{-60}$	$D_{2000}$	230.08	$230.0^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	0.6735	$0.663^{+0.019}_{-0.024}$
$A_{143}^{PS}$	48.6	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9660	$0.9668^{+0.0083}_{-0.0080}$	$f\sigma_8(0.51)$	0.4781	$0.472^{+0.014}_{-0.016}$
$A_{143 \times 217}^{PS}$	45.5	$43^{+20}_{-20}$	$Y_P$	0.245323	$0.24534^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	0.6304	$0.621^{+0.018}_{-0.022}$
$A_{217}^{PS}$	118.5	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246650	$0.24666^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	0.4733	$0.467^{+0.014}_{-0.015}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.619	$2.612^{+0.070}_{-0.068}$	$\sigma_8(0.61)$	0.5999	$0.591^{+0.017}_{-0.021}$
$A_{100}^{dustTT}$	8.87	$9.0^{+3.6}_{-3.6}$	Age/Gyr	13.784	$13.798^{+0.066}_{-0.060}$	$f\sigma_8(2.33)$	0.3017	$0.2980^{+0.0079}_{-0.0093}$
$A_{143}^{dustTT}$	10.81	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.09	$1089.99^{+0.55}_{-0.55}$	$\sigma_8(2.33)$	0.3116	$0.3073^{+0.0088}_{-0.010}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.4}_{-6.4}$	$r_*$	144.70	$144.84^{+0.62}_{-0.61}$	$f_{2000}^{143}$	30.3	$31^{+6}_{-6}$
$A_{217}^{dustTT}$	94.5	$94^{+10}_{-10}$	$100\theta_*$	1.04113	$1.04122^{+0.00080}_{-0.00084}$	$f_{2000}^{143 \times 217}$	33.13	$33^{+4}_{-4}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.898	$13.910^{+0.061}_{-0.060}$	$f_{2000}^{217}$	107.54	$107.8^{+3.8}_{-3.7}$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.47	$1059.53^{+0.82}_{-0.86}$	$\chi_{small}^2$	395.88	$397.0 (\nu: 1.7)$
$H_0$	67.90	$67.8^{+1.1}_{-1.1}$	$r_{drag}$	147.43	$147.55^{+0.69}_{-0.67}$	$\chi_{lowl}^2$	23.21	$23.05 (\nu: 0.4)$
$\Omega_\Lambda$	0.6927	$0.691^{+0.014}_{-0.015}$	$k_D$	0.14037	$0.14027^{+0.00086}_{-0.00089}$	$\chi_{plik}^2$	758.7	$772.1 (\nu: 15.4)$
$\Omega_m$	0.3073	$0.309^{+0.015}_{-0.014}$	$100\theta_D$	0.161026	$0.16101^{+0.00050}_{-0.00049}$	$\chi_{JLA}^2$	1034.88	$1035.03 (\nu: 0.1)$
$\Omega_m h^2$	0.14171	$0.1417^{+0.0022}_{-0.0022}$	$z_{eq}$	3386	$3372^{+57}_{-57}$	$\chi_{6DF}^2$	0.006	$0.047 (\nu: 0.0)$
$\Omega_\nu h^2$	0.00001	< 0.00161	$k_{eq}$	0.010335	$0.01029^{+0.00017}_{-0.00017}$	$\chi_{MGS}^2$	1.47	$1.47 (\nu: 0.1)$
$\Omega_m h^3$	0.09623	$0.09601^{+0.00095}_{-0.0011}$	$100\theta_{eq}$	0.8157	$0.818^{+0.011}_{-0.011}$	$\chi_{DR12BAO}^2$	3.77	$4.5 (\nu: 1.0)$
$\sigma_8$	0.8217	$0.809^{+0.024}_{-0.029}$	$100\theta_{s,eq}$	0.4507	$0.4522^{+0.0056}_{-0.0054}$	$\chi_{prior}^2$	1.4	$7.4 (\nu: 7.0)$
$S_8$	0.8317	$0.821^{+0.032}_{-0.034}$	$H(0.15)$	73.14	$73.00^{+0.93}_{-0.97}$	$\chi_{BAO}^2$	5.25	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.5}$	0.4555	$0.449^{+0.017}_{-0.019}$	$D_M(0.15)$	638.8	$640.1^{+9.7}_{-9.1}$	$\chi_{CMB}^2$	1177.8	$1192.2 (\nu: 15.3)$

Best-fit  $\chi_{eff}^2 = 2219.29$ ;  $\bar{\chi}_{eff}^2 = 2240.54$ ;  $R - 1 = 0.00739$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.77 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 23.21 plik\_rd12\_HM\_v22.TT: 758.69  
SN - JLA Pantheon18: 1034.88

# 6.11 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222^{+0.00038}_{-0.00037}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.020}_{-0.022}$	$H(0.38)$	$83.01^{+0.75}_{-0.79}$
$\Omega_{\mathrm{c}} h^2$	$0.1190^{+0.0025}_{-0.0025}$	$\sigma_8/h^{0.5}$	$0.984^{+0.031}_{-0.035}$	$D_{\mathrm{M}}(0.38)$	$1529^{+21}_{-19}$
$100\theta_{\mathrm{MC}}$	$1.04100^{+0.00081}_{-0.00084}$	$r_{\mathrm{drag}} h$	$99.8^{+1.9}_{-1.9}$	$H(0.51)$	$89.70^{+0.62}_{-0.68}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.057}_{-0.059}$	$D_{\mathrm{M}}(0.51)$	$1981^{+25}_{-23}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.157$	$z_{\mathrm{re}}$	$< 8.93$	$H(0.61)$	$95.30^{+0.54}_{-0.59}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.029}_{-0.027}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.061}_{-0.056}$	$D_{\mathrm{M}}(0.61)$	$2305^{+27}_{-25}$
$n_{\mathrm{s}}$	$0.9666^{+0.0084}_{-0.0081}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.023}_{-0.023}$	$H(2.33)$	$235.8^{+1.5}_{-1.5}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0050}_{-0.0050}$	$D_{40}$	$1226^{+25}_{-25}$	$D_{\mathrm{M}}(2.33)$	$5765^{+30}_{-27}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5719^{+79}_{-79}$	$f\sigma_8(0.15)$	$0.455^{+0.017}_{-0.018}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2535^{+27}_{-27}$	$\sigma_8(0.15)$	$0.748^{+0.022}_{-0.028}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	$815^{+10}_{-9.9}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.016}$
$A_{100}^{\mathrm{PS}}$	$262^{+50}_{-50}$	$D_{2000}$	$230.0^{+3.6}_{-3.4}$	$\sigma_8(0.38)$	$0.663^{+0.019}_{-0.025}$
$A_{143}^{\mathrm{PS}}$	$48^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.9666^{+0.0084}_{-0.0081}$	$f\sigma_8(0.51)$	$0.473^{+0.014}_{-0.016}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24533^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	$0.621^{+0.018}_{-0.023}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.016}$
$A^{\mathrm{kSZ}}$	$< 8.48$	$10^5 \mathrm{D}/\mathrm{H}$	$2.614^{+0.071}_{-0.069}$	$\sigma_8(0.61)$	$0.591^{+0.017}_{-0.022}$
$A_{100}^{\mathrm{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.802^{+0.070}_{-0.062}$	$f\sigma_8(2.33)$	$0.2981^{+0.0078}_{-0.0097}$
$A_{143}^{\mathrm{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$z_{*}$	$1090.02^{+0.56}_{-0.56}$	$\sigma_8(2.33)$	$0.3073^{+0.0087}_{-0.011}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3^{+6.3}_{-6.5}$	$r_{*}$	$144.81^{+0.64}_{-0.63}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$100\theta_{*}$	$1.04120^{+0.00081}_{-0.00084}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.908^{+0.063}_{-0.061}$	$f_{2000}^{217}$	$107.8^{+3.8}_{-3.7}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.52^{+0.83}_{-0.85}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.7)$
$H_0$	$67.7^{+1.1}_{-1.2}$	$r_{\mathrm{drag}}$	$147.53^{+0.70}_{-0.68}$	$\chi_{\mathrm{lowl}}^2$	$23.13 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.015}$	$k_{\mathrm{D}}$	$0.14029^{+0.00085}_{-0.00090}$	$\chi_{\mathrm{plik}}^2$	$771.8 (\nu: 15.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.015}_{-0.014}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00050}_{-0.00049}$	$\chi_{6\mathrm{DF}}^2$	$0.058 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0024}_{-0.0023}$	$z_{\mathrm{eq}}$	$3375^{+59}_{-58}$	$\chi_{\mathrm{MGS}}^2$	$1.39 (\nu: 0.2)$
$\Omega_{\nu} h^2$	$< 0.00169$	$k_{\mathrm{eq}}$	$0.01030^{+0.00018}_{-0.00018}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.4)$
$\Omega_{\mathrm{m}} h^3$	$0.09599^{+0.00099}_{-0.0010}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.9)$
$\sigma_8$	$0.810^{+0.024}_{-0.030}$	$100\theta_{\mathrm{s,eq}}$	$0.4519^{+0.0057}_{-0.0056}$	$\chi_{\mathrm{BAO}}^2$	$6.2 (\nu: 0.9)$
$S_8$	$0.823^{+0.033}_{-0.035}$	$H(0.15)$	$72.93^{+0.98}_{-1.0}$	$\chi_{\mathrm{CMB}}^2$	$1191.9 (\nu: 15.0)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.018}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	$641^{+10}_{-9.5}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1205.36$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = -0.40$ ;  $R - 1 = 0.00940$



## 6.12 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02223^{+0.00037}_{-0.00036}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.020}_{-0.022}$	$H(0.38)$	$83.06^{+0.71}_{-0.75}$
$\Omega_c h^2$	$0.1188^{+0.0025}_{-0.0025}$	$\sigma_8/h^{0.5}$	$0.984^{+0.030}_{-0.035}$	$D_M(0.38)$	$1527^{+20}_{-18}$
$100\theta_{MC}$	$1.04102^{+0.00081}_{-0.00085}$	$r_{drag}h$	$99.99^{+1.8}_{-1.8}$	$H(0.51)$	$89.75^{+0.60}_{-0.63}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.056}_{-0.059}$	$D_M(0.51)$	$1979^{+23}_{-22}$
$\Sigma m_\nu$ [eV]	$< 0.151$	$z_{re}$	$< 8.94$	$H(0.61)$	$95.34^{+0.53}_{-0.55}$
$\ln(10^{10} A_s)$	$3.042^{+0.029}_{-0.027}$	$10^9 A_s$	$2.095^{+0.061}_{-0.057}$	$D_M(0.61)$	$2303^{+25}_{-24}$
$n_s$	$0.9669^{+0.0082}_{-0.0080}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.023}_{-0.023}$	$H(2.33)$	$235.6^{+1.5}_{-1.4}$
$y_{cal}$	$1.0005^{+0.0050}_{-0.0051}$	$D_{40}$	$1225^{+25}_{-25}$	$D_M(2.33)$	$5763^{+29}_{-26}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{220}$	$5720^{+80}_{-79}$	$f\sigma_8(0.15)$	$0.455^{+0.016}_{-0.018}$
$\xi^{tSZ \times CIB}$	—	$D_{810}$	$2535^{+28}_{-27}$	$\sigma_8(0.15)$	$0.749^{+0.021}_{-0.027}$
$A_{143}^{tSZ}$	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	$815^{+10}_{-9.8}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.016}$
$A_{100}^{PS}$	$262^{+50}_{-60}$	$D_{2000}$	$230.0^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.664^{+0.019}_{-0.024}$
$A_{143}^{PS}$	$48^{+20}_{-20}$	$n_{s,0.002}$	$0.9669^{+0.0082}_{-0.0080}$	$f\sigma_8(0.51)$	$0.473^{+0.014}_{-0.016}$
$A_{143 \times 217}^{PS}$	$43^{+20}_{-20}$	$Y_P$	$0.24534^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	$0.621^{+0.018}_{-0.022}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$Y_P^{BBN}$	$0.24666^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.015}$
$A^{kSZ}$	—	$10^5 D/H$	$2.612^{+0.070}_{-0.069}$	$\sigma_8(0.61)$	$0.591^{+0.017}_{-0.021}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	Age/Gyr	$13.798^{+0.066}_{-0.061}$	$f\sigma_8(2.33)$	$0.2983^{+0.0077}_{-0.0094}$
$A_{143}^{dustTT}$	$10.7^{+3.5}_{-3.5}$	$z_*$	$1089.99^{+0.56}_{-0.55}$	$\sigma_8(2.33)$	$0.3076^{+0.0086}_{-0.011}$
$A_{143 \times 217}^{dustTT}$	$18.4^{+6.4}_{-6.4}$	$r_*$	$144.84^{+0.63}_{-0.61}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$100\theta_*$	$1.04122^{+0.00080}_{-0.00084}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.911^{+0.061}_{-0.060}$	$f_{2000}^{217}$	$107.8^{+3.8}_{-3.7}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	$1059.53^{+0.82}_{-0.82}$	$\chi_{simall}^2$	$396.9 (\nu: 1.7)$
$H_0$	$67.8^{+1.1}_{-1.1}$	$r_{drag}$	$147.56^{+0.69}_{-0.67}$	$\chi_{lowl}^2$	$23.06 (\nu: 0.4)$
$\Omega_\Lambda$	$0.691^{+0.014}_{-0.015}$	$k_D$	$0.14027^{+0.00084}_{-0.00089}$	$\chi_{plik}^2$	$771.9 (\nu: 15.1)$
$\Omega_m$	$0.309^{+0.015}_{-0.014}$	$100\theta_D$	$0.16101^{+0.00049}_{-0.00049}$	$\chi_{JLA}^2$	$1035.03 (\nu: 0.1)$
$\Omega_m h^2$	$0.1417^{+0.0023}_{-0.0022}$	$z_{eq}$	$3371^{+57}_{-56}$	$\chi_{6DF}^2$	$0.046 (\nu: 0.0)$
$\Omega_\nu h^2$	$< 0.00163$	$k_{eq}$	$0.01029^{+0.00017}_{-0.00017}$	$\chi_{MGS}^2$	$1.48 (\nu: 0.1)$
$\Omega_m h^3$	$0.09601^{+0.00095}_{-0.0010}$	$100\theta_{eq}$	$0.819^{+0.011}_{-0.011}$	$\chi_{DR12BAO}^2$	$4.4 (\nu: 1.0)$
$\sigma_8$	$0.810^{+0.024}_{-0.030}$	$100\theta_{s,eq}$	$0.4523^{+0.0056}_{-0.0054}$	$\chi_{prior}^2$	$7.3 (\nu: 7.0)$
$S_8$	$0.821^{+0.032}_{-0.034}$	$H(0.15)$	$73.01^{+0.93}_{-0.97}$	$\chi_{BAO}^2$	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.017}_{-0.019}$	$D_M(0.15)$	$640.0^{+9.7}_{-9.0}$	$\chi_{CMB}^2$	$1191.9 (\nu: 14.9)$

$$\bar{\chi}_{\text{eff}}^2 = 2240.29; R - 1 = 0.00886$$

### 6.13 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022420	$0.02241^{+0.00026}_{-0.00026}$	$\Omega_m h^3$	0.09670	$0.09648^{+0.00070}_{-0.00072}$	$H(0.15)$	73.29	$73.04^{+0.83}_{-0.90}$
$\Omega_c h^2$	0.11968	$0.1195^{+0.0020}_{-0.0020}$	$\sigma_8$	0.8236	$0.814^{+0.021}_{-0.024}$	$D_M(0.15)$	637.4	$639.9^{+8.9}_{-8.1}$
$100\theta_{MC}$	1.04100	$1.04100^{+0.00058}_{-0.00057}$	$S_8$	0.8331	$0.828^{+0.026}_{-0.027}$	$H(0.38)$	83.34	$83.13^{+0.63}_{-0.69}$
$\tau$	0.0546	$0.055^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4563	$0.453^{+0.014}_{-0.015}$	$D_M(0.38)$	1521.4	$1526^{+18}_{-16}$
$\Sigma m_\nu$ [eV]	0.001	< 0.126	$\sigma_8 \Omega_m^{0.25}$	0.6130	$0.607^{+0.017}_{-0.017}$	$H(0.51)$	90.02	$89.84^{+0.52}_{-0.58}$
$\ln(10^{10} A_s)$	3.0444	$3.045^{+0.032}_{-0.031}$	$\sigma_8/h^{0.5}$	0.9985	$0.989^{+0.026}_{-0.027}$	$D_M(0.51)$	1971.5	$1978^{+21}_{-19}$
$n_s$	0.9669	$0.9666^{+0.0073}_{-0.0074}$	$r_{drag} h$	100.11	$99.7^{+1.6}_{-1.7}$	$H(0.61)$	95.614	$95.46^{+0.43}_{-0.49}$
$y_{cal}$	1.00044	$1.0008^{+0.0048}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.447	$2.439^{+0.051}_{-0.051}$	$D_M(0.61)$	2294.7	$2301^{+23}_{-21}$
$A_{217}^{CIB}$	46.5	$47^{+10}_{-10}$	$z_{re}$	7.69	$7.7^{+1.5}_{-1.5}$	$H(2.33)$	236.08	$236.2^{+1.2}_{-1.2}$
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s$	2.100	$2.101^{+0.069}_{-0.064}$	$D_M(2.33)$	5747.2	$5755^{+24}_{-21}$
$A_{143}^{tSZ}$	7.12	$5.5^{+3.7}_{-3.7}$	$10^9 A_s e^{-2\tau}$	1.8826	$1.882^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	0.4605	$0.458^{+0.013}_{-0.014}$
$A_{100}^{PS}$	248	$258^{+50}_{-50}$	$D_{40}$	1227.6	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	0.7614	$0.752^{+0.019}_{-0.022}$
$A_{143}^{PS}$	49.1	$46^{+20}_{-20}$	$D_{220}$	5732	$5737^{+72}_{-75}$	$f\sigma_8(0.38)$	0.4800	$0.477^{+0.012}_{-0.013}$
$A_{143 \times 217}^{PS}$	50.7	$42^{+20}_{-20}$	$D_{810}$	2540.2	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	0.6752	$0.667^{+0.017}_{-0.020}$
$A_{217}^{PS}$	120.9	$115^{+20}_{-20}$	$D_{1420}$	818.2	$817.9^{+9.2}_{-9.4}$	$f\sigma_8(0.51)$	0.4791	$0.475^{+0.012}_{-0.012}$
$A^{kSZ}$	0.00	< 7.85	$D_{2000}$	231.43	$231.2^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6320	$0.624^{+0.016}_{-0.018}$
$A_{100}^{dustTT}$	8.78	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	0.9669	$0.9666^{+0.0073}_{-0.0074}$	$f\sigma_8(0.61)$	0.4743	$0.470^{+0.012}_{-0.012}$
$A_{143}^{dustTT}$	11.02	$10.9^{+3.5}_{-3.5}$	$Y_P$	0.245415	$0.245409^{+0.000097}_{-0.00011}$	$\sigma_8(0.61)$	0.6014	$0.594^{+0.015}_{-0.018}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.6^{+6.4}_{-6.5}$	$Y_P^{BBN}$	0.246742	$0.246736^{+0.000097}_{-0.00011}$	$f\sigma_8(2.33)$	0.3024	$0.2994^{+0.0071}_{-0.0078}$
$A_{217}^{dustTT}$	95.1	$94^{+10}_{-10}$	$10^5 D/H$	2.5763	$2.579^{+0.050}_{-0.047}$	$\sigma_8(2.33)$	0.3124	$0.3088^{+0.0078}_{-0.0089}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.074}_{-0.074}$	Age/Gyr	13.760	$13.779^{+0.056}_{-0.047}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.057}_{-0.058}$	$z_*$	1089.824	$1089.82^{+0.43}_{-0.44}$	$f_{2000}^{143 \times 217}$	31.83	$32^{+4}_{-4}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.16}_{-0.17}$	$r_*$	144.483	$144.55^{+0.47}_{-0.46}$	$f_{2000}^{217}$	106.42	$106.9^{+3.4}_{-3.5}$
$A_{143}^{dustTE}$	0.226	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	1.04116	$1.04118^{+0.00057}_{-0.00057}$	$\chi_{simall}^2$	396.08	$397.1 (\nu: 1.8)$
$A_{143 \times 217}^{dustTE}$	0.667	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8771	$13.883^{+0.045}_{-0.045}$	$\chi_{lowl}^2$	23.21	$23.25 (\nu: 0.4)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.52}$	$z_{drag}$	1060.01	$1059.99^{+0.56}_{-0.59}$	$\chi_{plik}^2$	2343.8	$2359.3 (\nu: 17.4)$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.129	$147.20^{+0.49}_{-0.48}$	$\chi_{6DF}^2$	0.006	$0.051 (\nu: 0.0)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14086	$0.14078^{+0.00057}_{-0.00059}$	$\chi_{MGS}^2$	1.47	$1.33 (\nu: 0.1)$
$H_0$	68.04	$67.76^{+0.96}_{-1.0}$	$100\theta_D$	0.160716	$0.16074^{+0.00034}_{-0.00033}$	$\chi_{DR12BAO}^2$	3.82	$4.7 (\nu: 1.1)$
$\Omega_\Lambda$	0.6931	$0.690^{+0.012}_{-0.013}$	$z_{eq}$	3395.8	$3390^{+45}_{-46}$	$\chi_{prior}^2$	1.7	$11.6 (\nu: 10.4)$
$\Omega_m$	0.3069	$0.310^{+0.013}_{-0.012}$	$k_{eq}$	0.010364	$0.01035^{+0.00014}_{-0.00014}$	$\chi_{BAO}^2$	5.30	$6.1 (\nu: 0.7)$
$\Omega_m h^2$	0.14211	$0.1424^{+0.0019}_{-0.0019}$	$100\theta_{eq}$	0.8146	$0.8156^{+0.0086}_{-0.0084}$	$\chi_{CMB}^2$	2763.1	$2779.7 (\nu: 17.0)$
$\Omega_\nu h^2$	0.00001	< 0.00135	$100\theta_{s,eq}$	0.45003	$0.4506^{+0.0044}_{-0.0043}$			

Best-fit  $\chi_{eff}^2 = 2770.08$ ;  $\Delta\chi_{eff}^2 = -1.83$ ;  $\bar{\chi}_{eff}^2 = 2797.32$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.59$ ;  $R - 1 = 0.00869$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.47 ( $\Delta$  0.26) DR12BAO: 3.82 ( $\Delta$  -0.60) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 ( $\Delta$  -0.12) commander\_dx12\_v3\_2\_29: 23.21 ( $\Delta$  0.34) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.84 ( $\Delta$  -1.67)

## 6.14 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022432	$0.02242^{+0.00026}_{-0.00026}$	$\Omega_m h^3$	0.09670	$0.09649^{+0.00069}_{-0.00071}$	$H(0.15)$	73.34	$73.10^{+0.79}_{-0.84}$
$\Omega_c h^2$	0.11954	$0.1193^{+0.0019}_{-0.0020}$	$\sigma_8$	0.8238	$0.814^{+0.020}_{-0.023}$	$D_M(0.15)$	636.9	$639.3^{+8.3}_{-7.7}$
$100\theta_{MC}$	1.04101	$1.04102^{+0.00057}_{-0.00057}$	$S_8$	0.8321	$0.827^{+0.026}_{-0.026}$	$H(0.38)$	83.38	$83.18^{+0.61}_{-0.65}$
$\tau$	0.0554	$0.055^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4558	$0.453^{+0.014}_{-0.014}$	$D_M(0.38)$	1520.3	$1525^{+17}_{-16}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.120$	$\sigma_8 \Omega_m^{0.25}$	0.6128	$0.607^{+0.016}_{-0.018}$	$H(0.51)$	90.05	$89.88^{+0.50}_{-0.54}$
$\ln(10^{10} A_s)$	3.0457	$3.045^{+0.032}_{-0.031}$	$\sigma_8/h^{0.5}$	0.9982	$0.989^{+0.025}_{-0.026}$	$D_M(0.51)$	1970.3	$1976^{+20}_{-19}$
$n_s$	0.9676	$0.9668^{+0.0073}_{-0.0073}$	$r_{drag} h$	100.22	$99.9^{+1.5}_{-1.6}$	$H(0.61)$	95.638	$95.49^{+0.42}_{-0.46}$
$y_{cal}$	1.00044	$1.0008^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.446	$2.438^{+0.050}_{-0.049}$	$D_M(0.61)$	2293.4	$2300^{+22}_{-20}$
$A_{217}^{CIB}$	45.6	$47^{+10}_{-10}$	$z_{re}$	7.76	$7.7^{+1.5}_{-1.5}$	$H(2.33)$	236.00	$236.1^{+1.2}_{-1.1}$
$\xi^{tSZ \times CIB}$	0.66	—	$10^9 A_s$	2.102	$2.101^{+0.068}_{-0.064}$	$D_M(2.33)$	5746.3	$5754^{+23}_{-20}$
$A_{143}^{tSZ}$	7.09	$5.5^{+3.8}_{-3.7}$	$10^9 A_s e^{-2\tau}$	1.8819	$1.881^{+0.021}_{-0.022}$	$f\sigma_8(0.15)$	0.4601	$0.457^{+0.013}_{-0.013}$
$A_{100}^{PS}$	247	$257^{+50}_{-50}$	$D_{40}$	1226.1	$1228^{+23}_{-22}$	$\sigma_8(0.15)$	0.7616	$0.753^{+0.019}_{-0.021}$
$A_{143}^{PS}$	50.1	$45^{+10}_{-20}$	$D_{220}$	5731	$5737^{+72}_{-76}$	$f\sigma_8(0.38)$	0.4798	$0.476^{+0.012}_{-0.013}$
$A_{143 \times 217}^{PS}$	52.8	$42^{+20}_{-20}$	$D_{810}$	2540.3	$2540^{+26}_{-27}$	$\sigma_8(0.38)$	0.6755	$0.667^{+0.017}_{-0.019}$
$A_{217}^{PS}$	122.0	$115^{+20}_{-20}$	$D_{1420}$	818.6	$817.9^{+9.3}_{-9.5}$	$f\sigma_8(0.51)$	0.4789	$0.475^{+0.011}_{-0.013}$
$A^{kSZ}$	0.01	$< 7.90$	$D_{2000}$	231.58	$231.2^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6323	$0.625^{+0.016}_{-0.017}$
$A_{100}^{dustTT}$	8.81	$8.9^{+3.6}_{-3.7}$	$n_{s,0.002}$	0.9676	$0.9668^{+0.0073}_{-0.0073}$	$f\sigma_8(0.61)$	0.4743	$0.470^{+0.011}_{-0.012}$
$A_{143}^{dustTT}$	11.05	$10.9^{+3.5}_{-3.5}$	$Y_P$	0.245420	$0.245412^{+0.000096}_{-0.00010}$	$\sigma_8(0.61)$	0.6017	$0.594^{+0.015}_{-0.017}$
$A_{143 \times 217}^{dustTT}$	20.2	$18.6^{+6.5}_{-6.4}$	$Y_P^{BBN}$	0.246746	$0.246739^{+0.000096}_{-0.00011}$	$f\sigma_8(2.33)$	0.3026	$0.2996^{+0.0069}_{-0.0075}$
$A_{217}^{dustTT}$	95.5	$94^{+10}_{-10}$	$10^5 D/H$	2.5740	$2.577^{+0.049}_{-0.046}$	$\sigma_8(2.33)$	0.3127	$0.3091^{+0.0076}_{-0.0085}$
$A_{100}^{dustTE}$	0.115	$0.115^{+0.074}_{-0.074}$	Age/Gyr	13.7580	$13.776^{+0.053}_{-0.045}$	$f_{2000}^{143}$	28.3	$29^{+5}_{-5}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.057}_{-0.058}$	$z_*$	1089.795	$1089.80^{+0.42}_{-0.43}$	$f_{2000}^{143 \times 217}$	31.63	$32^{+4}_{-4}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.16}$	$r_*$	144.510	$144.57^{+0.46}_{-0.45}$	$f_{2000}^{217}$	106.22	$106.8^{+3.4}_{-3.5}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.11}_{-0.10}$	$100\theta_*$	1.04116	$1.04119^{+0.00057}_{-0.00056}$	$\chi_{simall}^2$	396.22	$397.2 (\nu: 1.9)$
$A_{143 \times 217}^{dustTE}$	0.665	$0.66^{+0.15}_{-0.15}$	$D_M(z_*)/\text{Gpc}$	13.8797	$13.885^{+0.044}_{-0.044}$	$\chi_{lowl}^2$	23.08	$23.20 (\nu: 0.3)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.53}$	$z_{drag}$	1060.05	$1060.00^{+0.55}_{-0.60}$	$\chi_{plik}^2$	2344.0	$2359.3 (\nu: 17.4)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.151	$147.22^{+0.49}_{-0.47}$	$\chi_{JLA}^2$	1034.839	$1035.02 (\nu: 0.0)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14085	$0.14077^{+0.00057}_{-0.00058}$	$\chi_{6DF}^2$	0.003	$0.042 (\nu: 0.0)$
$H_0$	68.11	$67.83^{+0.91}_{-0.97}$	$100\theta_D$	0.160704	$0.16073^{+0.00034}_{-0.00033}$	$\chi_{MGS}^2$	1.54	$1.39 (\nu: 0.1)$
$\Omega_\Lambda$	0.6939	$0.691^{+0.012}_{-0.013}$	$z_{eq}$	3392.6	$3388^{+44}_{-44}$	$\chi_{DR12BAO}^2$	3.71	$4.5 (\nu: 0.8)$
$\Omega_m$	0.3061	$0.309^{+0.013}_{-0.012}$	$k_{eq}$	0.010354	$0.01034^{+0.00013}_{-0.00014}$	$\chi_{prior}^2$	1.6	$11.5 (\nu: 10.6)$
$\Omega_m h^2$	0.14198	$0.1423^{+0.0018}_{-0.0018}$	$100\theta_{eq}$	0.8152	$0.8161^{+0.0085}_{-0.0081}$	$\chi_{BAO}^2$	5.25	$5.93 (\nu: 0.5)$
$\Omega_\nu h^2$	0.00001	$< 0.00129$	$100\theta_{s,eq}$	0.45033	$0.4508^{+0.0043}_{-0.0042}$	$\chi_{CMB}^2$	2763.3	$2779.7 (\nu: 17.0)$

Best-fit  $\chi_{eff}^2 = 3804.95$ ;  $\bar{\chi}_{eff}^2 = 3832.15$ ;  $R - 1 = 0.01154$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.71 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.22 commander\_dx12\_v3\_2\_29: 23.08 plik\_rd12\_HM\_v22b\_TTTEEE: 2343.99 SN - JLA Pantheon18: 1034.84

## 6.15 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02241^{+0.00026}_{-0.00026}$	$\Omega_m h^3$	$0.09648^{+0.00070}_{-0.00072}$	$H(0.15)$	$73.04^{+0.83}_{-0.90}$
$\Omega_c h^2$	$0.1194^{+0.0020}_{-0.0020}$	$\sigma_8$	$0.815^{+0.021}_{-0.024}$	$D_M(0.15)$	$639.8^{+8.9}_{-8.1}$
$100\theta_{MC}$	$1.04101^{+0.00058}_{-0.00057}$	$S_8$	$0.828^{+0.026}_{-0.027}$	$H(0.38)$	$83.14^{+0.64}_{-0.69}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.014}_{-0.015}$	$D_M(0.38)$	$1526^{+18}_{-16}$
$\Sigma m_\nu$ [eV]	$< 0.127$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.017}_{-0.017}$	$H(0.51)$	$89.85^{+0.52}_{-0.57}$
$\ln(10^{10} A_s)$	$3.047^{+0.029}_{-0.027}$	$\sigma_8/h^{0.5}$	$0.990^{+0.026}_{-0.027}$	$D_M(0.51)$	$1977^{+21}_{-19}$
$n_s$	$0.9667^{+0.0073}_{-0.0074}$	$r_{\text{drag}} h$	$99.8^{+1.6}_{-1.7}$	$H(0.61)$	$95.46^{+0.44}_{-0.49}$
$y_{\text{cal}}$	$1.0008^{+0.0048}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.050}_{-0.049}$	$D_M(0.61)$	$2301^{+23}_{-21}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$< 9.01$	$H(2.33)$	$236.2^{+1.2}_{-1.2}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.104^{+0.061}_{-0.057}$	$D_M(2.33)$	$5755^{+24}_{-21}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.7}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	$0.458^{+0.013}_{-0.014}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{40}$	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	$0.753^{+0.019}_{-0.022}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{220}$	$5737^{+72}_{-75}$	$f\sigma_8(0.38)$	$0.477^{+0.012}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-27}$	$\sigma_8(0.38)$	$0.668^{+0.017}_{-0.020}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.9^{+9.2}_{-9.4}$	$f\sigma_8(0.51)$	$0.476^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	$< 7.82$	$D_{2000}$	$231.2^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.625^{+0.016}_{-0.018}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	$0.9667^{+0.0073}_{-0.0074}$	$f\sigma_8(0.61)$	$0.471^{+0.012}_{-0.012}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P$	$0.245410^{+0.000097}_{-0.00011}$	$\sigma_8(0.61)$	$0.595^{+0.015}_{-0.017}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$Y_P^{\text{BBN}}$	$0.246737^{+0.000097}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2997^{+0.0069}_{-0.0077}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.578^{+0.049}_{-0.047}$	$\sigma_8(2.33)$	$0.3091^{+0.0076}_{-0.0089}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.074}$	Age/Gyr	$13.779^{+0.056}_{-0.047}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$z_*$	$1089.82^{+0.43}_{-0.44}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$r_*$	$144.55^{+0.47}_{-0.46}$	$f_{2000}^{217}$	$106.8^{+3.4}_{-3.5}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	$1.04118^{+0.00057}_{-0.00057}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.883^{+0.045}_{-0.045}$	$\chi_{\text{lowl}}^2$	$23.25 (\nu: 0.4)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$z_{\text{drag}}$	$1059.99^{+0.55}_{-0.59}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 17.3)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.20^{+0.49}_{-0.48}$	$\chi_{6\text{DF}}^2$	$0.051 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14078^{+0.00057}_{-0.00059}$	$\chi_{\text{MGS}}^2$	$1.34 (\nu: 0.1)$
$H_0$	$67.77^{+0.96}_{-1.0}$	$100\theta_D$	$0.16074^{+0.00034}_{-0.00033}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\Omega_\Lambda$	$0.690^{+0.012}_{-0.013}$	$z_{\text{eq}}$	$3390^{+45}_{-45}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.4)$
$\Omega_m$	$0.310^{+0.013}_{-0.012}$	$k_{\text{eq}}$	$0.01035^{+0.00014}_{-0.00014}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\Omega_m h^2$	$0.1424^{+0.0019}_{-0.0019}$	$100\theta_{\text{eq}}$	$0.8157^{+0.0086}_{-0.0084}$	$\chi_{\text{CMB}}^2$	$2779.5 (\nu: 16.8)$
$\Omega_\nu h^2$	$< 0.00136$	$100\theta_{s,\text{eq}}$	$0.4506^{+0.0044}_{-0.0043}$		

$$\bar{\chi}_{\text{eff}}^2 = 2797.12; \Delta \bar{\chi}_{\text{eff}}^2 = -0.59; R - 1 = 0.00800$$

6.16 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02242^{+0.00026}_{-0.00026}$	$\Omega_m h^3$	$0.09649^{+0.00068}_{-0.00071}$	$H(0.15)$	$73.10^{+0.79}_{-0.85}$
$\Omega_c h^2$	$0.1193^{+0.0019}_{-0.0020}$	$\sigma_8$	$0.815^{+0.020}_{-0.022}$	$D_M(0.15)$	$639.2^{+8.3}_{-7.7}$
$100\theta_{MC}$	$1.04102^{+0.00057}_{-0.00057}$	$S_8$	$0.827^{+0.025}_{-0.026}$	$H(0.38)$	$83.18^{+0.61}_{-0.65}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.014}_{-0.014}$	$D_M(0.38)$	$1525^{+17}_{-16}$
$\Sigma m_\nu$ [eV]	$< 0.120$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.016}_{-0.017}$	$H(0.51)$	$89.88^{+0.50}_{-0.54}$
$\ln(10^{10} A_s)$	$3.047^{+0.029}_{-0.027}$	$\sigma_8/h^{0.5}$	$0.990^{+0.025}_{-0.026}$	$D_M(0.51)$	$1976^{+20}_{-19}$
$n_s$	$0.9669^{+0.0073}_{-0.0073}$	$r_{\text{drag}} h$	$99.9^{+1.5}_{-1.6}$	$H(0.61)$	$95.49^{+0.42}_{-0.46}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	$2.440^{+0.049}_{-0.048}$	$D_M(0.61)$	$2300^{+22}_{-20}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$< 9.02$	$H(2.33)$	$236.1^{+1.2}_{-1.2}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.105^{+0.061}_{-0.057}$	$D_M(2.33)$	$5754^{+23}_{-20}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.7}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.021}_{-0.022}$	$f\sigma_8(0.15)$	$0.458^{+0.013}_{-0.013}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$D_{40}$	$1228^{+23}_{-23}$	$\sigma_8(0.15)$	$0.753^{+0.018}_{-0.021}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$D_{220}$	$5737^{+72}_{-77}$	$f\sigma_8(0.38)$	$0.477^{+0.012}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-27}$	$\sigma_8(0.38)$	$0.668^{+0.016}_{-0.019}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.9^{+9.3}_{-9.5}$	$f\sigma_8(0.51)$	$0.476^{+0.011}_{-0.013}$
$A^{\text{kSZ}}$	$< 7.87$	$D_{2000}$	$231.2^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.625^{+0.015}_{-0.017}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.7}$	$n_{s,0.002}$	$0.9669^{+0.0073}_{-0.0073}$	$f\sigma_8(0.61)$	$0.471^{+0.011}_{-0.012}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$Y_P$	$0.245413^{+0.000095}_{-0.00010}$	$\sigma_8(0.61)$	$0.595^{+0.014}_{-0.017}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$Y_P^{\text{BBN}}$	$0.246740^{+0.000095}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2999^{+0.0067}_{-0.0073}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.577^{+0.049}_{-0.046}$	$\sigma_8(2.33)$	$0.3093^{+0.0074}_{-0.0084}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.074}_{-0.074}$	Age/Gyr	$13.776^{+0.053}_{-0.045}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.057}$	$z_*$	$1089.80^{+0.41}_{-0.42}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$r_*$	$144.57^{+0.45}_{-0.45}$	$f_{2000}^{217}$	$106.8^{+3.4}_{-3.5}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.10}$	$100\theta_*$	$1.04119^{+0.00057}_{-0.00057}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.15}$	$D_M(z_*)/\text{Gpc}$	$13.885^{+0.044}_{-0.044}$	$\chi_{\text{lowl}}^2$	$23.22 (\nu: 0.4)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$z_{\text{drag}}$	$1060.00^{+0.54}_{-0.56}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 17.4)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.22^{+0.48}_{-0.47}$	$\chi_{\text{JLA}}^2$	$1035.02 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14077^{+0.00056}_{-0.00058}$	$\chi_{6\text{DF}}^2$	$0.041 (\nu: 0.0)$
$H_0$	$67.84^{+0.91}_{-0.97}$	$100\theta_D$	$0.16073^{+0.00034}_{-0.00032}$	$\chi_{\text{MGS}}^2$	$1.40 (\nu: 0.1)$
$\Omega_\Lambda$	$0.691^{+0.012}_{-0.013}$	$z_{\text{eq}}$	$3387^{+44}_{-44}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.8)$
$\Omega_m$	$0.309^{+0.013}_{-0.012}$	$k_{\text{eq}}$	$0.01034^{+0.00013}_{-0.00014}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.6)$
$\Omega_m h^2$	$0.1422^{+0.0018}_{-0.0018}$	$100\theta_{\text{eq}}$	$0.8162^{+0.0084}_{-0.0081}$	$\chi_{\text{BAO}}^2$	$5.92 (\nu: 0.5)$
$\Omega_\nu h^2$	$< 0.00129$	$100\theta_{s,\text{eq}}$	$0.4509^{+0.0043}_{-0.0042}$	$\chi_{\text{CMB}}^2$	$2779.5 (\nu: 16.9)$

$$\bar{\chi}_{\text{eff}}^2 = 3831.97; R - 1 = 0.01168$$

## 6.17 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022232	$0.02222^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_m^{0.25}$	0.6115	$0.606^{+0.015}_{-0.015}$	$H(0.38)$	83.24	$83.01^{+0.73}_{-0.77}$
$\Omega_c h^2$	0.11936	$0.1192^{+0.0021}_{-0.0022}$	$\sigma_8/h^{0.5}$	0.9967	$0.987^{+0.023}_{-0.024}$	$D_M(0.38)$	1523.0	$1529^{+20}_{-19}$
$100\theta_{MC}$	1.04096	$1.04097^{+0.00083}_{-0.00081}$	$r_{drag}h$	100.22	$99.8^{+1.8}_{-1.8}$	$H(0.51)$	89.90	$89.71^{+0.61}_{-0.65}$
$\tau$	0.0542	$0.054^{+0.015}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.4437	$2.435^{+0.043}_{-0.044}$	$D_M(0.51)$	1973.7	$1980^{+24}_{-22}$
$\Sigma m_\nu$ [eV]	0.004	< 0.131	$z_{re}$	7.68	$7.7^{+1.4}_{-1.5}$	$H(0.61)$	95.49	$95.32^{+0.53}_{-0.57}$
$\ln(10^{10} A_s)$	3.0419	$3.042^{+0.029}_{-0.028}$	$10^9 A_s$	2.094	$2.095^{+0.062}_{-0.059}$	$D_M(0.61)$	2297.3	$2305^{+26}_{-24}$
$n_s$	0.9662	$0.9659^{+0.0081}_{-0.0077}$	$10^9 A_s e^{-2\tau}$	1.8794	$1.879^{+0.021}_{-0.022}$	$H(2.33)$	235.68	$235.8^{+1.4}_{-1.4}$
$y_{cal}$	1.00022	$1.0006^{+0.0048}_{-0.0050}$	$D_{40}$	1226.6	$1228^{+23}_{-23}$	$D_M(2.33)$	5755.2	$5764^{+29}_{-27}$
$A_{217}^{CIB}$	48.3	$48^{+10}_{-10}$	$D_{220}$	5718	$5723^{+78}_{-79}$	$f\sigma_8(0.15)$	0.4593	$0.457^{+0.012}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.36	—	$D_{810}$	2536.1	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	0.7598	$0.750^{+0.017}_{-0.020}$
$A_{143}^{tSZ}$	7.04	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	815.6	$815.5^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	0.4788	$0.475^{+0.011}_{-0.012}$
$A_{100}^{PS}$	253	$263^{+60}_{-50}$	$D_{2000}$	230.22	$230.0^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	0.6738	$0.665^{+0.015}_{-0.018}$
$A_{143}^{PS}$	49.3	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9662	$0.9659^{+0.0081}_{-0.0077}$	$f\sigma_8(0.51)$	0.4779	$0.474^{+0.011}_{-0.011}$
$A_{143 \times 217}^{PS}$	47.5	$43^{+20}_{-20}$	$Y_P$	0.245339	$0.24533^{+0.00016}_{-0.00016}$	$\sigma_8(0.51)$	0.6307	$0.623^{+0.015}_{-0.017}$
$A_{217}^{PS}$	119.5	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246666	$0.24666^{+0.00016}_{-0.00016}$	$f\sigma_8(0.61)$	0.4732	$0.469^{+0.010}_{-0.011}$
$A^{kSZ}$	0.00	< 8.43	$10^5 D/H$	2.612	$2.615^{+0.073}_{-0.071}$	$\sigma_8(0.61)$	0.6002	$0.592^{+0.014}_{-0.016}$
$A_{100}^{dustTT}$	8.88	$8.9^{+3.6}_{-3.6}$	Age/Gyr	13.779	$13.800^{+0.067}_{-0.061}$	$f\sigma_8(2.33)$	0.3019	$0.2987^{+0.0065}_{-0.0072}$
$A_{143}^{dustTT}$	10.78	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.04	$1090.04^{+0.56}_{-0.57}$	$\sigma_8(2.33)$	0.3119	$0.3080^{+0.0073}_{-0.0084}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.6}_{-6.5}$	$r_*$	144.71	$144.77^{+0.57}_{-0.55}$	$f_{2000}^{143}$	30.0	$31^{+6}_{-6}$
$A_{217}^{dustTT}$	94.7	$93^{+10}_{-10}$	$100\theta_*$	1.04113	$1.04116^{+0.00081}_{-0.00080}$	$f_{2000}^{143 \times 217}$	32.96	$33^{+4}_{-4}$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.899	$13.905^{+0.056}_{-0.054}$	$f_{2000}^{217}$	107.38	$107.9^{+3.7}_{-3.7}$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.55	$1059.52^{+0.87}_{-0.88}$	$\chi_{lensing}^2$	8.96	9.41 ( $\nu$ : 0.3)
$H_0$	67.98	$67.7^{+1.1}_{-1.2}$	$r_{drag}$	147.42	$147.49^{+0.63}_{-0.61}$	$\chi_{small}^2$	396.04	397.0 ( $\nu$ : 1.4)
$\Omega_\Lambda$	0.6935	$0.690^{+0.014}_{-0.015}$	$k_D$	0.14041	$0.14033^{+0.00081}_{-0.00083}$	$\chi_{lowl}^2$	23.24	23.28 ( $\nu$ : 0.4)
$\Omega_m$	0.3065	$0.310^{+0.015}_{-0.014}$	$100\theta_D$	0.16098	$0.16101^{+0.00051}_{-0.00050}$	$\chi_{plik}^2$	758.7	771.4 ( $\nu$ : 14.1)
$\Omega_m h^2$	0.14163	$0.1419^{+0.0021}_{-0.0021}$	$z_{eq}$	3384	$3379^{+50}_{-50}$	$\chi_{6DF}^2$	0.003	0.055 ( $\nu$ : 0.0)
$\Omega_\nu h^2$	0.00004	< 0.00141	$k_{eq}$	0.010327	$0.01031^{+0.00015}_{-0.00015}$	$\chi_{MGS}^2$	1.54	1.37 ( $\nu$ : 0.1)
$\Omega_m h^3$	0.09628	$0.09604^{+0.00094}_{-0.0010}$	$100\theta_{eq}$	0.8162	$0.8172^{+0.0094}_{-0.0091}$	$\chi_{DR12BAO}^2$	3.67	4.7 ( $\nu$ : 1.2)
$\sigma_8$	0.8218	$0.812^{+0.019}_{-0.021}$	$100\theta_{s,eq}$	0.45102	$0.4515^{+0.0048}_{-0.0047}$	$\chi_{prior}^2$	1.3	7.3 ( $\nu$ : 6.8)
$S_8$	0.8306	$0.825^{+0.024}_{-0.025}$	$H(0.15)$	73.21	$72.93^{+0.95}_{-1.0}$	$\chi_{CMB}^2$	1186.9	1201.0 ( $\nu$ : 15.2)
$\sigma_8 \Omega_m^{0.5}$	0.4550	$0.452^{+0.013}_{-0.014}$	$D_M(0.15)$	638.1	$641^{+10}_{-9.2}$	$\chi_{BAO}^2$	5.21	6.1 ( $\nu$ : 0.8)

Best-fit  $\chi_{eff}^2 = 1193.44$ ;  $\Delta\chi_{eff}^2 = -1.25$ ;  $\bar{\chi}_{eff}^2 = 1214.40$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.33$ ;  $R - 1 = 0.00805$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.54 ( $\Delta$  0.32) DR12BAO: 3.67 ( $\Delta$  -0.70) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.96 ( $\Delta$  0.09) small\_100x143\_offlike5\_EE\_Aplanck 396.04 ( $\Delta$  -0.05) commander\_dx12\_v3.2\_29: 23.24 ( $\Delta$  0.28) plik\_rd12\_HM\_v22.TT: 758.68 ( $\Delta$  -1.12)

# 6.18 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022235	$0.02223^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_m^{0.25}$	0.6103	$0.606^{+0.014}_{-0.015}$	$H(0.38)$	83.27	$83.07^{+0.70}_{-0.73}$
$\Omega_c h^2$	0.11922	$0.1190^{+0.0021}_{-0.0021}$	$\sigma_8/h^{0.5}$	0.9952	$0.987^{+0.022}_{-0.024}$	$D_M(0.38)$	1522.0	$1527^{+19}_{-18}$
$100\theta_{MC}$	1.04097	$1.04098^{+0.00082}_{-0.00080}$	$r_{drag}h$	100.33	$99.9^{+1.7}_{-1.7}$	$H(0.51)$	89.93	$89.75^{+0.59}_{-0.62}$
$\tau$	0.0531	$0.054^{+0.015}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.4387	$2.434^{+0.043}_{-0.044}$	$D_M(0.51)$	1972.5	$1979^{+23}_{-21}$
$\Sigma m_\nu$ [eV]	0.000	< 0.125	$z_{re}$	7.57	$7.7^{+1.4}_{-1.5}$	$H(0.61)$	95.51	$95.35^{+0.52}_{-0.54}$
$\ln(10^{10} A_s)$	3.0397	$3.042^{+0.029}_{-0.028}$	$10^9 A_s$	2.090	$2.095^{+0.062}_{-0.059}$	$D_M(0.61)$	2296.1	$2303^{+25}_{-23}$
$n_s$	0.9668	$0.9662^{+0.0080}_{-0.0077}$	$10^9 A_s e^{-2\tau}$	1.8792	$1.879^{+0.021}_{-0.022}$	$H(2.33)$	235.59	$235.7^{+1.3}_{-1.3}$
$y_{cal}$	1.00041	$1.0007^{+0.0049}_{-0.0049}$	$D_{40}$	1225.3	$1228^{+23}_{-23}$	$D_M(2.33)$	5754.5	$5762^{+28}_{-26}$
$A_{217}^{CIB}$	48.7	$48^{+10}_{-10}$	$D_{220}$	5718	$5724^{+77}_{-80}$	$f\sigma_8(0.15)$	0.4581	$0.456^{+0.012}_{-0.012}$
$\xi^{tSZ \times CIB}$	0.29	—	$D_{810}$	2536.8	$2537^{+27}_{-27}$	$\sigma_8(0.15)$	0.7590	$0.751^{+0.017}_{-0.019}$
$A_{143}^{tSZ}$	7.04	$5.1^{+3.7}_{-3.9}$	$D_{1420}$	816.0	$816^{+10}_{-9.9}$	$f\sigma_8(0.38)$	0.4778	$0.475^{+0.010}_{-0.012}$
$A_{100}^{PS}$	254	$262^{+50}_{-50}$	$D_{2000}$	230.33	$230.1^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	0.6732	$0.666^{+0.015}_{-0.017}$
$A_{143}^{PS}$	48.2	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9668	$0.9662^{+0.0080}_{-0.0077}$	$f\sigma_8(0.51)$	0.4770	$0.474^{+0.010}_{-0.011}$
$A_{143 \times 217}^{PS}$	45.7	$43^{+20}_{-20}$	$Y_P$	0.245340	$0.24533^{+0.00016}_{-0.00016}$	$\sigma_8(0.51)$	0.6302	$0.623^{+0.014}_{-0.016}$
$A_{217}^{PS}$	118.8	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246667	$0.24666^{+0.00016}_{-0.00016}$	$f\sigma_8(0.61)$	0.4724	$0.4692^{+0.0099}_{-0.010}$
$A^{kSZ}$	0.01	< 8.47	$10^5 D/H$	2.611	$2.613^{+0.073}_{-0.071}$	$\sigma_8(0.61)$	0.5997	$0.593^{+0.014}_{-0.016}$
$A_{100}^{dustTT}$	8.91	$8.9^{+3.6}_{-3.6}$	Age/Gyr	13.778	$13.796^{+0.064}_{-0.059}$	$f\sigma_8(2.33)$	0.3017	$0.2990^{+0.0063}_{-0.0070}$
$A_{143}^{dustTT}$	10.76	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.02	$1090.02^{+0.55}_{-0.56}$	$\sigma_8(2.33)$	0.3117	$0.3084^{+0.0071}_{-0.0081}$
$A_{143 \times 217}^{dustTT}$	19.2	$18.2^{+6.5}_{-6.4}$	$r_*$	144.74	$144.80^{+0.55}_{-0.54}$	$\chi^2_{lensing}$	8.91	9.40 ( $\nu$ : 0.3)
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$100\theta_*$	1.04113	$1.04118^{+0.00081}_{-0.00080}$	$\chi^2_{small}$	395.89	397.0 ( $\nu$ : 1.4)
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.902	$13.907^{+0.055}_{-0.054}$	$\chi^2_{lowl}$	23.08	23.23 ( $\nu$ : 0.4)
$c_{217}$	0.99824	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.55	$1059.53^{+0.86}_{-0.86}$	$\chi^2_{plik}$	758.9	771.4 ( $\nu$ : 14.2)
$H_0$	68.04	$67.8^{+1.0}_{-1.1}$	$r_{drag}$	147.46	$147.51^{+0.62}_{-0.61}$	$\chi^2_{JLA}$	1034.82	1035.03 ( $\nu$ : 0.0)
$\Omega_\Lambda$	0.6945	$0.691^{+0.013}_{-0.014}$	$k_D$	0.14037	$0.14031^{+0.00081}_{-0.00083}$	$\chi^2_{6DF}$	0.001	0.044 ( $\nu$ : 0.0)
$\Omega_m$	0.3055	$0.309^{+0.014}_{-0.013}$	$100\theta_D$	0.16098	$0.16100^{+0.00051}_{-0.00050}$	$\chi^2_{MGS}$	1.61	1.45 ( $\nu$ : 0.1)
$\Omega_m h^2$	0.14146	$0.1418^{+0.0021}_{-0.0020}$	$z_{eq}$	3380.3	$3376^{+49}_{-48}$	$\chi^2_{DR12BAO}$	3.58	4.4 ( $\nu$ : 0.9)
$\Omega_\nu h^2$	0.00000	< 0.00134	$k_{eq}$	0.010317	$0.01030^{+0.00015}_{-0.00015}$	$\chi^2_{prior}$	1.4	7.3 ( $\nu$ : 6.9)
$\Omega_m h^3$	0.09625	$0.09606^{+0.00094}_{-0.00098}$	$100\theta_{eq}$	0.8168	$0.8177^{+0.0091}_{-0.0090}$	$\chi^2_{CMB}$	1186.8	1201.1 ( $\nu$ : 15.2)
$\sigma_8$	0.8209	$0.812^{+0.018}_{-0.020}$	$100\theta_{s,eq}$	0.45133	$0.4518^{+0.0047}_{-0.0046}$	$\chi^2_{BAO}$	5.19	5.9 ( $\nu$ : 0.5)
$S_8$	0.8284	$0.824^{+0.024}_{-0.025}$	$H(0.15)$	73.26	$73.00^{+0.90}_{-0.95}$			
$\sigma_8 \Omega_m^{0.5}$	0.4538	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	637.6	$640.1^{+9.4}_{-8.7}$			

Best-fit  $\chi^2_{eff} = 2228.19$ ;  $\Delta\chi^2_{eff} = -1.52$ ;  $\bar{\chi}^2_{eff} = 2249.31$ ;  $\Delta\bar{\chi}^2_{eff} = -0.46$ ;  $R - 1 = 0.00867$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.61 ( $\Delta$  0.27) DR12BAO: 3.58 ( $\Delta$  -0.45) CMB - smicadx12.Dec5.ftl\_mv2\_ndclpp\_p.teb.consext8: 8.91 ( $\Delta$  0.03) small\_100x143\_offlike5.EE.Aplanck 395.89 ( $\Delta$  -0.48) commander\_dx12\_v3.2.29: 23.08 ( $\Delta$  0.27) plik\_rd12\_HM.v22.TT: 758.94 ( $\Delta$  -0.85) SN - JLA Pantheon18: 1034.82 ( $\Delta$  -0.13)

## 6.19 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02222^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.015}_{-0.016}$	$H(0.38)$	$83.02^{+0.73}_{-0.78}$
$\Omega_c h^2$	$0.1191^{+0.0021}_{-0.0021}$	$\sigma_8/h^{0.5}$	$0.987^{+0.022}_{-0.024}$	$D_M(0.38)$	$1528^{+21}_{-19}$
$100\theta_{MC}$	$1.04097^{+0.00083}_{-0.00081}$	$r_{\text{drag}} h$	$99.8^{+1.8}_{-1.9}$	$H(0.51)$	$89.72^{+0.61}_{-0.66}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.043}_{-0.043}$	$D_M(0.51)$	$1980^{+24}_{-22}$
$\Sigma m_\nu$ [eV]	$< 0.132$	$z_{\text{re}}$	$< 8.89$	$H(0.61)$	$95.32^{+0.53}_{-0.57}$
$\ln(10^{10} A_s)$	$3.043^{+0.026}_{-0.025}$	$10^9 A_s$	$2.098^{+0.055}_{-0.052}$	$D_M(0.61)$	$2304^{+26}_{-24}$
$n_s$	$0.9660^{+0.0081}_{-0.0077}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.021}_{-0.022}$	$H(2.33)$	$235.8^{+1.4}_{-1.4}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0050}$	$D_{40}$	$1228^{+23}_{-23}$	$D_M(2.33)$	$5764^{+29}_{-27}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5723^{+78}_{-79}$	$f\sigma_8(0.15)$	$0.457^{+0.012}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	$0.751^{+0.017}_{-0.020}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	$815.4^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	$0.476^{+0.011}_{-0.012}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-50}$	$D_{2000}$	$230.0^{+3.4}_{-3.4}$	$\sigma_8(0.38)$	$0.666^{+0.015}_{-0.018}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$n_{s,0.002}$	$0.9660^{+0.0081}_{-0.0077}$	$f\sigma_8(0.51)$	$0.474^{+0.010}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_P$	$0.24533^{+0.00016}_{-0.00016}$	$\sigma_8(0.51)$	$0.623^{+0.014}_{-0.017}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24666^{+0.00016}_{-0.00016}$	$f\sigma_8(0.61)$	$0.469^{+0.010}_{-0.011}$
$A^{\text{kSZ}}$	$< 8.44$	$10^5 D/H$	$2.614^{+0.073}_{-0.071}$	$\sigma_8(0.61)$	$0.593^{+0.014}_{-0.016}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	Age/Gyr	$13.800^{+0.068}_{-0.061}$	$f\sigma_8(2.33)$	$0.2989^{+0.0064}_{-0.0072}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$z_*$	$1090.03^{+0.55}_{-0.57}$	$\sigma_8(2.33)$	$0.3082^{+0.0072}_{-0.0084}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$r_*$	$144.78^{+0.56}_{-0.55}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04117^{+0.00082}_{-0.00080}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.056}_{-0.054}$	$f_{2000}^{217}$	$107.8^{+3.8}_{-3.7}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.52^{+0.87}_{-0.85}$	$\chi_{\text{lensing}}^2$	$9.38 (\nu: 0.3)$
$H_0$	$67.7^{+1.1}_{-1.2}$	$r_{\text{drag}}$	$147.50^{+0.63}_{-0.61}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$\Omega_\Lambda$	$0.690^{+0.014}_{-0.015}$	$k_D$	$0.14032^{+0.00081}_{-0.00083}$	$\chi_{\text{lowl}}^2$	$23.27 (\nu: 0.4)$
$\Omega_m$	$0.310^{+0.015}_{-0.014}$	$100\theta_D$	$0.16101^{+0.00051}_{-0.00050}$	$\chi_{\text{plik}}^2$	$771.3 (\nu: 14.2)$
$\Omega_m h^2$	$0.1419^{+0.0021}_{-0.0021}$	$z_{\text{eq}}$	$3378^{+49}_{-50}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_\nu h^2$	$< 0.00142$	$k_{\text{eq}}$	$0.01031^{+0.00015}_{-0.00015}$	$\chi_{\text{MGS}}^2$	$1.39 (\nu: 0.1)$
$\Omega_m h^3$	$0.09604^{+0.00094}_{-0.0010}$	$100\theta_{\text{eq}}$	$0.8173^{+0.0093}_{-0.0091}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$\sigma_8$	$0.812^{+0.018}_{-0.021}$	$100\theta_{s,\text{eq}}$	$0.4516^{+0.0048}_{-0.0047}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$S_8$	$0.825^{+0.024}_{-0.025}$	$H(0.15)$	$72.94^{+0.95}_{-1.0}$	$\chi_{\text{CMB}}^2$	$1200.9 (\nu: 15.0)$
$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.013}_{-0.014}$	$D_M(0.15)$	$641^{+10}_{-9.2}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$

$$\bar{\chi}_{\text{eff}}^2 = 1214.24; \Delta \bar{\chi}_{\text{eff}}^2 = -0.34; R - 1 = 0.00889$$



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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02223^{+0.00039}_{-0.00038}$	$\sigma_8/h^{0.5}$	$0.987^{+0.022}_{-0.024}$	$H(0.51)$	$89.76^{+0.59}_{-0.62}$
$\Omega_c h^2$	$0.1190^{+0.0021}_{-0.0021}$	$r_{\text{drag}} h$	$99.97^{+1.7}_{-1.8}$	$D_M(0.51)$	$1979^{+23}_{-21}$
$100\theta_{\text{MC}}$	$1.04099^{+0.00082}_{-0.00080}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.042}_{-0.042}$	$H(0.61)$	$95.35^{+0.52}_{-0.55}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 8.90$	$D_M(0.61)$	$2303^{+25}_{-23}$
$\Sigma m_\nu [\text{eV}]$	$< 0.125$	$10^9 A_s$	$2.098^{+0.056}_{-0.052}$	$H(2.33)$	$235.7^{+1.3}_{-1.3}$
$\ln(10^{10} A_s)$	$3.044^{+0.026}_{-0.025}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.021}_{-0.021}$	$D_M(2.33)$	$5762^{+28}_{-26}$
$n_s$	$0.9663^{+0.0080}_{-0.0077}$	$D_{40}$	$1227^{+23}_{-23}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.013}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0049}$	$D_{220}$	$5724^{+77}_{-79}$	$\sigma_8(0.15)$	$0.751^{+0.017}_{-0.019}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+27}_{-27}$	$f\sigma_8(0.38)$	$0.475^{+0.010}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$816^{+10}_{-9.9}$	$\sigma_8(0.38)$	$0.666^{+0.015}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.7}_{-3.9}$	$D_{2000}$	$230.1^{+3.4}_{-3.4}$	$f\sigma_8(0.51)$	$0.474^{+0.010}_{-0.011}$
$A_{100}^{\text{PS}}$	$262^{+50}_{-50}$	$n_{s,0.002}$	$0.9663^{+0.0080}_{-0.0077}$	$\sigma_8(0.51)$	$0.624^{+0.014}_{-0.016}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$Y_P$	$0.24534^{+0.00016}_{-0.00016}$	$f\sigma_8(0.61)$	$0.4694^{+0.0098}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24666^{+0.00016}_{-0.00016}$	$\sigma_8(0.61)$	$0.593^{+0.013}_{-0.016}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.613^{+0.072}_{-0.071}$	$f\sigma_8(2.33)$	$0.2991^{+0.0062}_{-0.0069}$
$A^{\text{kSZ}}$	$< 8.50$	$\text{Age}/\text{Gyr}$	$13.796^{+0.065}_{-0.059}$	$\sigma_8(2.33)$	$0.3086^{+0.0070}_{-0.0080}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.01^{+0.55}_{-0.56}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.4}$	$r_*$	$144.80^{+0.55}_{-0.54}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.2^{+6.5}_{-6.4}$	$100\theta_*$	$1.04118^{+0.00081}_{-0.00080}$	$f_{2000}^{217}$	$107.8^{+3.7}_{-3.9}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.907^{+0.055}_{-0.054}$	$\chi_{\text{lensing}}^2$	$9.37 (\nu: 0.3)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.53^{+0.86}_{-0.86}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{217}$	$0.9983^{+0.0013}_{-0.0012}$	$r_{\text{drag}}$	$147.52^{+0.62}_{-0.61}$	$\chi_{\text{lowl}}^2$	$23.22 (\nu: 0.4)$
$H_0$	$67.8^{+1.0}_{-1.1}$	$k_D$	$0.14031^{+0.00082}_{-0.00083}$	$\chi_{\text{plik}}^2$	$771.4 (\nu: 14.2)$
$\Omega_\Lambda$	$0.691^{+0.013}_{-0.014}$	$100\theta_D$	$0.16100^{+0.00051}_{-0.00050}$	$\chi_{\text{JLA}}^2$	$1035.02 (\nu: 0.0)$
$\Omega_m$	$0.309^{+0.014}_{-0.013}$	$z_{\text{eq}}$	$3375^{+49}_{-48}$	$\chi_{6\text{DF}}^2$	$0.043 (\nu: 0.0)$
$\Omega_m h^2$	$0.1418^{+0.0021}_{-0.0020}$	$k_{\text{eq}}$	$0.01030^{+0.00015}_{-0.00015}$	$\chi_{\text{MGS}}^2$	$1.46 (\nu: 0.1)$
$\Omega_\nu h^2$	$< 0.00135$	$100\theta_{\text{eq}}$	$0.8179^{+0.0090}_{-0.0088}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.9)$
$\Omega_m h^3$	$0.09606^{+0.00094}_{-0.00099}$	$100\theta_{s,\text{eq}}$	$0.4519^{+0.0046}_{-0.0046}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.9)$
$\sigma_8$	$0.813^{+0.018}_{-0.021}$	$H(0.15)$	$73.01^{+0.91}_{-0.96}$	$\chi_{\text{CMB}}^2$	$1200.9 (\nu: 15.0)$
$S_8$	$0.824^{+0.023}_{-0.025}$	$D_M(0.15)$	$640.0^{+9.5}_{-8.7}$	$\chi_{\text{BAO}}^2$	$5.9 (\nu: 0.5)$
$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.013}_{-0.014}$	$H(0.38)$	$83.07^{+0.70}_{-0.74}$		
$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.014}_{-0.015}$	$D_M(0.38)$	$1527^{+19}_{-18}$		

$$\bar{\chi}_{\text{eff}}^2 = 2249.16; \Delta \bar{\chi}_{\text{eff}}^2 = -0.47; R - 1 = 0.00928$$

## 6.21 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022417	$0.02242^{+0.00026}_{-0.00026}$	$\Omega_m h^3$	0.09666	$0.09649^{+0.00065}_{-0.00075}$	$H(0.15)$	73.33	$73.09^{+0.83}_{-0.92}$
$\Omega_c h^2$	0.11952	$0.1193^{+0.0018}_{-0.0018}$	$\sigma_8$	0.8220	$0.814^{+0.017}_{-0.020}$	$D_M(0.15)$	637.0	$639.4^{+9.0}_{-8.0}$
$100\theta_{MC}$	1.04100	$1.04100^{+0.00057}_{-0.00057}$	$S_8$	0.8303	$0.826^{+0.021}_{-0.021}$	$H(0.38)$	83.36	$83.17^{+0.63}_{-0.70}$
$\tau$	0.0533	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4548	$0.453^{+0.012}_{-0.012}$	$D_M(0.38)$	1520.5	$1525^{+18}_{-16}$
$\Sigma m_\nu$ [eV]	0.001	< 0.120	$\sigma_8 \Omega_m^{0.25}$	0.6114	$0.607^{+0.013}_{-0.014}$	$H(0.51)$	90.04	$89.87^{+0.52}_{-0.58}$
$\ln(10^{10} A_s)$	3.0415	$3.045^{+0.030}_{-0.028}$	$\sigma_8/h^{0.5}$	0.9961	$0.988^{+0.021}_{-0.022}$	$D_M(0.51)$	1970.6	$1976^{+22}_{-19}$
$n_s$	0.9672	$0.9666^{+0.0072}_{-0.0075}$	$r_{\text{drag}} h$	100.22	$99.9^{+1.6}_{-1.7}$	$H(0.61)$	95.625	$95.48^{+0.44}_{-0.50}$
$y_{\text{cal}}$	1.00055	$1.0006^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.4415	$2.438^{+0.041}_{-0.040}$	$D_M(0.61)$	2293.7	$2300^{+24}_{-21}$
$A_{217}^{\text{CIB}}$	46.5	$47^{+10}_{-10}$	$z_{\text{re}}$	7.55	$7.7^{+1.4}_{-1.5}$	$H(2.33)$	235.97	$236.1^{+1.2}_{-1.1}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.50	—	$10^9 A_s$	2.094	$2.101^{+0.063}_{-0.058}$	$D_M(2.33)$	5747.0	$5754^{+25}_{-21}$
$A_{143}^{\text{tSZ}}$	7.23	$5.5^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8820	$1.881^{+0.020}_{-0.020}$	$f\sigma_8(0.15)$	0.4591	$0.457^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	249	$258^{+60}_{-50}$	$D_{40}$	1226.5	$1229^{+23}_{-22}$	$\sigma_8(0.15)$	0.7599	$0.752^{+0.016}_{-0.018}$
$A_{143}^{\text{PS}}$	48.1	$45^{+20}_{-20}$	$D_{220}$	5733	$5738^{+75}_{-74}$	$f\sigma_8(0.38)$	0.4787	$0.4762^{+0.0098}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	49.2	$42^{+20}_{-20}$	$D_{810}$	2540.3	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	0.6740	$0.667^{+0.014}_{-0.017}$
$A_{217}^{\text{PS}}$	120.4	$115^{+20}_{-20}$	$D_{1420}$	818.3	$817.6^{+9.3}_{-9.2}$	$f\sigma_8(0.51)$	0.4779	$0.4751^{+0.0093}_{-0.010}$
$A^{\text{kSZ}}$	0.00	< 7.95	$D_{2000}$	231.42	$231.1^{+3.1}_{-3.0}$	$\sigma_8(0.51)$	0.6309	$0.624^{+0.014}_{-0.016}$
$A_{100}^{\text{dustTT}}$	8.86	$8.9^{+3.6}_{-3.7}$	$n_{s,0.002}$	0.9672	$0.9666^{+0.0072}_{-0.0075}$	$f\sigma_8(0.61)$	0.4732	$0.4702^{+0.0088}_{-0.010}$
$A_{143}^{\text{dustTT}}$	11.04	$10.9^{+3.5}_{-3.5}$	$Y_P$	0.245414	$0.245414^{+0.000096}_{-0.00011}$	$\sigma_8(0.61)$	0.6004	$0.594^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.6^{+6.4}_{-6.4}$	$Y_P^{\text{BBN}}$	0.246741	$0.246740^{+0.000097}_{-0.00011}$	$f\sigma_8(2.33)$	0.3020	$0.2995^{+0.0061}_{-0.0069}$
$A_{217}^{\text{dustTT}}$	95.5	$94^{+10}_{-10}$	$10^5 \text{D/H}$	2.5767	$2.576^{+0.049}_{-0.047}$	$\sigma_8(2.33)$	0.3120	$0.3090^{+0.0069}_{-0.0080}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.076}_{-0.075}$	Age/Gyr	13.760	$13.777^{+0.056}_{-0.048}$	$f_{2000}^{143}$	28.6	$29^{+5}_{-5}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.057}_{-0.059}$	$z_*$	1089.812	$1089.79^{+0.42}_{-0.42}$	$f_{2000}^{143 \times 217}$	31.85	$32^{+4}_{-4}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.17}_{-0.17}$	$r_*$	144.527	$144.57^{+0.43}_{-0.43}$	$f_{2000}^{217}$	106.44	$106.8^{+3.5}_{-3.5}$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.10}_{-0.10}$	$100\theta_*$	1.04115	$1.04117^{+0.00056}_{-0.00057}$	$\chi_{\text{lensing}}^2$	8.97	$9.24 (\nu: 0.2)$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8815	$13.885^{+0.042}_{-0.041}$	$\chi_{\text{simall}}^2$	395.88	$397.1 (\nu: 1.7)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.53}_{-0.53}$	$z_{\text{drag}}$	1060.01	$1060.00^{+0.58}_{-0.57}$	$\chi_{\text{lowl}}^2$	23.09	$23.25 (\nu: 0.3)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.173	$147.22^{+0.45}_{-0.45}$	$\chi_{\text{plik}}^2$	2344.2	$2359.3 (\nu: 16.7)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14081	$0.14077^{+0.00055}_{-0.00056}$	$\chi_{6\text{DF}}^2$	0.003	$0.046 (\nu: 0.0)$
$H_0$	68.10	$67.83^{+0.95}_{-1.1}$	$100\theta_D$	0.160723	$0.16073^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	1.54	$1.39 (\nu: 0.1)$
$\Omega_\Lambda$	0.6939	$0.691^{+0.013}_{-0.013}$	$z_{\text{eq}}$	3391.8	$3388^{+41}_{-41}$	$\chi_{\text{DR12BAO}}^2$	3.71	$4.6 (\nu: 1.0)$
$\Omega_m$	0.3061	$0.309^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010352	$0.01034^{+0.00013}_{-0.00013}$	$\chi_{\text{prior}}^2$	1.7	$11.6 (\nu: 10.3)$
$\Omega_m h^2$	0.14194	$0.1423^{+0.0019}_{-0.0018}$	$100\theta_{\text{eq}}$	0.8153	$0.8161^{+0.0078}_{-0.0077}$	$\chi_{\text{CMB}}^2$	2772.2	$2788.9 (\nu: 17.5)$
$\Omega_\nu h^2$	0.00001	< 0.00130	$100\theta_{s,\text{eq}}$	0.45039	$0.4508^{+0.0040}_{-0.0040}$	$\chi_{\text{BAO}}^2$	5.25	$6.0 (\nu: 0.6)$

Best-fit  $\chi_{\text{eff}}^2 = 2779.13$ ;  $\Delta\chi_{\text{eff}}^2 = -1.56$ ;  $\bar{\chi}_{\text{eff}}^2 = 2806.44$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.40$ ;  $R - 1 = 0.01008$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.54 ( $\Delta$  0.32) DR12BAO: 3.71 ( $\Delta$  -0.71) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb.consext8: 8.97 ( $\Delta$  0.24) simall\_100x143\_offlike5\_EE\_Aplanck 395.88 ( $\Delta$  -0.64) commander\_dx12\_v3.2\_29: 23.09 ( $\Delta$  0.19) plik\_rd12\_HM\_v22b.TTTEEE: 2344.24 ( $\Delta$  -1.08)

## 6.22 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022419	$0.02243^{+0.00026}_{-0.00026}$	$\sigma_8$	0.8217	$0.814^{+0.017}_{-0.019}$	$H(0.38)$	83.36	$83.22^{+0.60}_{-0.66}$
$\Omega_c h^2$	0.11950	$0.1192^{+0.0018}_{-0.0018}$	$S_8$	0.8300	$0.826^{+0.021}_{-0.021}$	$D_M(0.38)$	1520.5	$1524^{+17}_{-15}$
$100\theta_{MC}$	1.04100	$1.04101^{+0.00058}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	0.4546	$0.452^{+0.012}_{-0.011}$	$H(0.51)$	90.04	$89.91^{+0.50}_{-0.55}$
$\tau$	0.0533	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6112	$0.607^{+0.013}_{-0.014}$	$D_M(0.51)$	1970.6	$1975^{+21}_{-18}$
$\Sigma m_\nu$ [eV]	0.004	< 0.114	$\sigma_8/h^{0.5}$	0.9957	$0.988^{+0.019}_{-0.022}$	$H(0.61)$	95.624	$95.51^{+0.42}_{-0.47}$
$\ln(10^{10} A_s)$	3.0414	$3.045^{+0.029}_{-0.028}$	$r_{\text{drag}} h$	100.22	$99.96^{+1.5}_{-1.6}$	$D_M(0.61)$	2293.7	$2299^{+22}_{-20}$
$n_s$	0.9674	$0.9668^{+0.0071}_{-0.0074}$	$\langle d^2 \rangle^{1/2}$	2.4408	$2.438^{+0.040}_{-0.039}$	$H(2.33)$	235.96	$236.0^{+1.1}_{-1.1}$
$y_{\text{cal}}$	1.00052	$1.0007^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	7.55	$7.8^{+1.4}_{-1.5}$	$D_M(2.33)$	5747.1	$5753^{+23}_{-20}$
$A_{217}^{\text{CIB}}$	46.4	$47^{+10}_{-10}$	$10^9 A_s$	2.093	$2.101^{+0.062}_{-0.058}$	$f\sigma_8(0.15)$	0.4590	$0.457^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8820	$1.880^{+0.020}_{-0.020}$	$\sigma_8(0.15)$	0.7597	$0.753^{+0.016}_{-0.018}$
$A_{143}^{\text{tSZ}}$	7.12	$5.5^{+3.8}_{-3.8}$	$D_{40}$	1226.1	$1228^{+22}_{-21}$	$f\sigma_8(0.38)$	0.4786	$0.4761^{+0.0097}_{-0.010}$
$A_{100}^{\text{PS}}$	248	$258^{+50}_{-50}$	$D_{220}$	5732	$5738^{+74}_{-74}$	$\sigma_8(0.38)$	0.6738	$0.668^{+0.014}_{-0.016}$
$A_{143}^{\text{PS}}$	48.8	$45^{+10}_{-20}$	$D_{810}$	2540.4	$2539^{+26}_{-25}$	$f\sigma_8(0.51)$	0.4777	$0.4750^{+0.0091}_{-0.0099}$
$A_{143 \times 217}^{\text{PS}}$	50.3	$42^{+20}_{-20}$	$D_{1420}$	818.4	$817.7^{+9.3}_{-9.1}$	$\sigma_8(0.51)$	0.6307	$0.625^{+0.013}_{-0.015}$
$A_{217}^{\text{PS}}$	120.8	$115^{+20}_{-20}$	$D_{2000}$	231.46	$231.1^{+3.1}_{-3.0}$	$f\sigma_8(0.61)$	0.4731	$0.4703^{+0.0088}_{-0.0098}$
$A^{\text{kSZ}}$	0.00	< 7.93	$n_{s,0.002}$	0.9674	$0.9668^{+0.0071}_{-0.0074}$	$\sigma_8(0.61)$	0.6002	$0.595^{+0.013}_{-0.014}$
$A_{100}^{\text{dustTT}}$	8.91	$8.9^{+3.5}_{-3.7}$	$Y_{\text{P}}$	0.245415	$0.245417^{+0.000096}_{-0.00010}$	$f\sigma_8(2.33)$	0.3019	$0.2998^{+0.0059}_{-0.0064}$
$A_{143}^{\text{dustTT}}$	11.04	$10.9^{+3.5}_{-3.4}$	$Y_{\text{P}}^{\text{BBN}}$	0.246741	$0.246743^{+0.000096}_{-0.00010}$	$\sigma_8(2.33)$	0.3119	$0.3093^{+0.0067}_{-0.0075}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.6^{+6.4}_{-6.6}$	$10^5 D/H$	2.5765	$2.575^{+0.049}_{-0.047}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	95.4	$94^{+10}_{-10}$	Age/Gyr	13.7600	$13.774^{+0.053}_{-0.046}$	$f_{2000}^{143 \times 217}$	31.79	$32^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.076}_{-0.076}$	$z_*$	1089.809	$1089.78^{+0.41}_{-0.41}$	$f_{2000}^{217}$	106.39	$106.8^{+3.6}_{-3.4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	144.531	$144.59^{+0.42}_{-0.42}$	$\chi_{\text{lensing}}^2$	8.96	9.22 ( $\nu$ : 0.2)
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04115	$1.04118^{+0.00056}_{-0.00058}$	$\chi_{\text{simall}}^2$	395.88	397.1 ( $\nu$ : 1.7)
$A_{143}^{\text{dustTE}}$	0.226	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8819	$13.887^{+0.041}_{-0.041}$	$\chi_{\text{lowl}}^2$	23.05	23.22 ( $\nu$ : 0.3)
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.01	$1060.02^{+0.57}_{-0.58}$	$\chi_{\text{plik}}^2$	2344.3	2359.2 ( $\nu$ : 16.8)
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.50}_{-0.53}$	$r_{\text{drag}}$	147.177	$147.23^{+0.45}_{-0.43}$	$\chi_{\text{JLA}}^2$	1034.840	1034.99 ( $\nu$ : 0.0)
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14081	$0.14076^{+0.00054}_{-0.00056}$	$\chi_{6\text{DF}}^2$	0.003	0.037 ( $\nu$ : 0.0)
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	0.160721	$0.16072^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	1.54	1.45 ( $\nu$ : 0.1)
$H_0$	68.10	$67.89^{+0.89}_{-0.99}$	$z_{\text{eq}}$	3391.4	$3386^{+41}_{-40}$	$\chi_{\text{DR12BAO}}^2$	3.71	4.4 ( $\nu$ : 0.7)
$\Omega_\Lambda$	0.6939	$0.692^{+0.012}_{-0.012}$	$k_{\text{eq}}$	0.010351	$0.01033^{+0.00012}_{-0.00012}$	$\chi_{\text{prior}}^2$	1.7	11.6 ( $\nu$ : 10.8)
$\Omega_{\text{m}}$	0.3061	$0.308^{+0.012}_{-0.012}$	$100\theta_{\text{eq}}$	0.8154	$0.8165^{+0.0076}_{-0.0075}$	$\chi_{\text{CMB}}^2$	2772.2	2788.7 ( $\nu$ : 17.5)
$\Omega_{\text{m}} h^2$	0.14196	$0.1421^{+0.0018}_{-0.0017}$	$100\theta_{\text{s,eq}}$	0.45043	$0.4510^{+0.0039}_{-0.0039}$	$\chi_{\text{BAO}}^2$	5.25	5.86 ( $\nu$ : 0.4)
$\Omega_\nu h^2$	0.00004	< 0.00122	$H(0.15)$	73.33	$73.15^{+0.78}_{-0.87}$			
$\Omega_{\text{m}} h^3$	0.09667	$0.09650^{+0.00063}_{-0.00071}$	$D_M(0.15)$	637.0	$638.8^{+8.1}_{-7.9}$			

Best-fit  $\chi_{\text{eff}}^2 = 3813.97$ ;  $\Delta\chi_{\text{eff}}^2 = -1.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 3841.20$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.65$ ;  $R - 1 = 0.01317$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.54 ( $\Delta$  0.26) DR12BAO: 3.71 ( $\Delta$  -0.54) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.96 ( $\Delta$  0.24) simall\_100x143\_offlike5\_EE\_Aplanck  
395.88 ( $\Delta$  -0.64) commander\_dx12\_v3.2.29: 23.05 ( $\Delta$  0.17) plik\_rd12\_HM\_v22b.TTTEEE: 2344.32 ( $\Delta$  -0.95) SN - JLA Pantheon18: 1034.84 ( $\Delta$  -0.13)

### 6.23 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02242^{+0.00026}_{-0.00026}$	$\Omega_m h^3$	$0.09648^{+0.00065}_{-0.00075}$	$H(0.15)$	$73.09^{+0.82}_{-0.91}$
$\Omega_c h^2$	$0.1193^{+0.0018}_{-0.0018}$	$\sigma_8$	$0.814^{+0.017}_{-0.020}$	$D_M(0.15)$	$639.3^{+9.0}_{-8.0}$
$100\theta_{MC}$	$1.04100^{+0.00057}_{-0.00058}$	$S_8$	$0.827^{+0.021}_{-0.021}$	$H(0.38)$	$83.18^{+0.63}_{-0.70}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.012}_{-0.012}$	$D_M(0.38)$	$1525^{+18}_{-16}$
$\Sigma m_\nu$ [eV]	$< 0.121$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.013}_{-0.014}$	$H(0.51)$	$89.88^{+0.52}_{-0.58}$
$\ln(10^{10} A_s)$	$3.046^{+0.026}_{-0.025}$	$\sigma_8/h^{0.5}$	$0.989^{+0.019}_{-0.023}$	$D_M(0.51)$	$1976^{+22}_{-19}$
$n_s$	$0.9667^{+0.0072}_{-0.0075}$	$r_{\text{drag}} h$	$99.9^{+1.5}_{-1.7}$	$H(0.61)$	$95.48^{+0.44}_{-0.50}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.040}_{-0.039}$	$D_M(0.61)$	$2300^{+24}_{-21}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$H(2.33)$	$236.1^{+1.2}_{-1.1}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.104^{+0.056}_{-0.053}$	$D_M(2.33)$	$5754^{+25}_{-21}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.020}_{-0.020}$	$f\sigma_8(0.15)$	$0.457^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$D_{40}$	$1229^{+22}_{-22}$	$\sigma_8(0.15)$	$0.753^{+0.016}_{-0.018}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{220}$	$5737^{+74}_{-73}$	$f\sigma_8(0.38)$	$0.4764^{+0.0097}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	$0.667^{+0.014}_{-0.017}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.6^{+9.3}_{-9.2}$	$f\sigma_8(0.51)$	$0.4753^{+0.0091}_{-0.010}$
$A^{\text{kSZ}}$	$< 7.93$	$D_{2000}$	$231.1^{+3.1}_{-3.0}$	$\sigma_8(0.51)$	$0.625^{+0.013}_{-0.016}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.7}$	$n_{s,0.002}$	$0.9667^{+0.0072}_{-0.0075}$	$f\sigma_8(0.61)$	$0.4704^{+0.0087}_{-0.0099}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P$	$0.245414^{+0.000096}_{-0.00010}$	$\sigma_8(0.61)$	$0.595^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.4}$	$Y_P^{\text{BBN}}$	$0.246741^{+0.000096}_{-0.00010}$	$f\sigma_8(2.33)$	$0.2997^{+0.0060}_{-0.0068}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.576^{+0.049}_{-0.047}$	$\sigma_8(2.33)$	$0.3091^{+0.0068}_{-0.0079}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	Age/Gyr	$13.777^{+0.056}_{-0.048}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.059}$	$z_*$	$1089.79^{+0.41}_{-0.41}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.57^{+0.43}_{-0.42}$	$f_{2000}^{217}$	$106.8^{+3.5}_{-3.5}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.10}$	$100\theta_*$	$1.04118^{+0.00056}_{-0.00057}$	$\chi_{\text{lensing}}^2$	$9.22 (\nu: 0.2)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.886^{+0.042}_{-0.041}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$z_{\text{drag}}$	$1060.01^{+0.57}_{-0.57}$	$\chi_{\text{lowl}}^2$	$23.25 (\nu: 0.3)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.22^{+0.45}_{-0.44}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 16.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14077^{+0.00055}_{-0.00056}$	$\chi_{6\text{DF}}^2$	$0.045 (\nu: 0.0)$
$H_0$	$67.83^{+0.94}_{-1.0}$	$100\theta_D$	$0.16072^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.39 (\nu: 0.1)$
$\Omega_\Lambda$	$0.691^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3387^{+41}_{-41}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 1.0)$
$\Omega_m$	$0.309^{+0.013}_{-0.013}$	$k_{\text{eq}}$	$0.01034^{+0.00012}_{-0.00012}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_m h^2$	$0.1422^{+0.0019}_{-0.0018}$	$100\theta_{\text{eq}}$	$0.8162^{+0.0077}_{-0.0075}$	$\chi_{\text{CMB}}^2$	$2788.7 (\nu: 17.2)$
$\Omega_\nu h^2$	$< 0.00130$	$100\theta_{s,\text{eq}}$	$0.4509^{+0.0040}_{-0.0039}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$

$$\bar{\chi}_{\text{eff}}^2 = 2806.28; \Delta \bar{\chi}_{\text{eff}}^2 = -0.44; R - 1 = 0.01177$$

## 6.24 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00026}_{-0.00026}$	$\sigma_8$	$0.815^{+0.017}_{-0.019}$	$H(0.38)$	$83.22^{+0.60}_{-0.66}$
$\Omega_c h^2$	$0.1192^{+0.0017}_{-0.0017}$	$S_8$	$0.826^{+0.021}_{-0.020}$	$D_M(0.38)$	$1524^{+17}_{-15}$
$100\theta_{MC}$	$1.04102^{+0.00058}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.011}_{-0.011}$	$H(0.51)$	$89.91^{+0.49}_{-0.55}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.013}_{-0.014}$	$D_M(0.51)$	$1975^{+21}_{-18}$
$\Sigma m_\nu$ [eV]	$< 0.114$	$\sigma_8/h^{0.5}$	$0.989^{+0.019}_{-0.022}$	$H(0.61)$	$95.51^{+0.42}_{-0.47}$
$\ln(10^{10} A_s)$	$3.046^{+0.026}_{-0.025}$	$r_{\text{drag}} h$	$99.97^{+1.5}_{-1.6}$	$D_M(0.61)$	$2298^{+22}_{-20}$
$n_s$	$0.9669^{+0.0071}_{-0.0073}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.040}_{-0.038}$	$H(2.33)$	$236.0^{+1.1}_{-1.1}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$D_M(2.33)$	$5753^{+23}_{-20}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.104^{+0.056}_{-0.053}$	$f\sigma_8(0.15)$	$0.457^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.880^{+0.020}_{-0.020}$	$\sigma_8(0.15)$	$0.753^{+0.015}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.9}$	$D_{40}$	$1228^{+22}_{-21}$	$f\sigma_8(0.38)$	$0.4762^{+0.0096}_{-0.0098}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$D_{220}$	$5738^{+74}_{-74}$	$\sigma_8(0.38)$	$0.668^{+0.014}_{-0.016}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-25}$	$f\sigma_8(0.51)$	$0.4752^{+0.0090}_{-0.0097}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.7^{+9.3}_{-9.1}$	$\sigma_8(0.51)$	$0.625^{+0.013}_{-0.015}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.1^{+3.1}_{-3.0}$	$f\sigma_8(0.61)$	$0.4704^{+0.0087}_{-0.0096}$
$A^{\text{kSZ}}$	$< 7.94$	$n_{s,0.002}$	$0.9669^{+0.0071}_{-0.0073}$	$\sigma_8(0.61)$	$0.595^{+0.012}_{-0.014}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.7}$	$Y_P$	$0.245417^{+0.000095}_{-0.00010}$	$f\sigma_8(2.33)$	$0.2999^{+0.0058}_{-0.0064}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.246744^{+0.000096}_{-0.00010}$	$\sigma_8(2.33)$	$0.3094^{+0.0066}_{-0.0075}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.6}$	$10^5 D/H$	$2.575^{+0.048}_{-0.046}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.774^{+0.053}_{-0.046}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.076}_{-0.076}$	$z_*$	$1089.77^{+0.40}_{-0.40}$	$f_{2000}^{217}$	$106.8^{+3.6}_{-3.4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$r_*$	$144.59^{+0.42}_{-0.42}$	$\chi_{\text{lensing}}^2$	$9.20 (\nu: 0.2)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04119^{+0.00056}_{-0.00058}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.8)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.887^{+0.041}_{-0.040}$	$\chi_{\text{lowl}}^2$	$23.22 (\nu: 0.3)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.02^{+0.56}_{-0.58}$	$\chi_{\text{plik}}^2$	$2359.0 (\nu: 16.6)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.50}_{-0.53}$	$r_{\text{drag}}$	$147.24^{+0.45}_{-0.43}$	$\chi_{\text{JLA}}^2$	$1034.99 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14076^{+0.00054}_{-0.00056}$	$\chi_{6\text{DF}}^2$	$0.037 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16072^{+0.00032}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.45 (\nu: 0.1)$
$H_0$	$67.90^{+0.89}_{-0.99}$	$z_{\text{eq}}$	$3385^{+40}_{-39}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.7)$
$\Omega_\Lambda$	$0.692^{+0.012}_{-0.012}$	$k_{\text{eq}}$	$0.01033^{+0.00012}_{-0.00012}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.7)$
$\Omega_m$	$0.308^{+0.012}_{-0.012}$	$100\theta_{\text{eq}}$	$0.8166^{+0.0075}_{-0.0073}$	$\chi_{\text{CMB}}^2$	$2788.6 (\nu: 17.2)$
$\Omega_m h^2$	$0.1421^{+0.0018}_{-0.0017}$	$100\theta_{s,\text{eq}}$	$0.4511^{+0.0039}_{-0.0038}$	$\chi_{\text{BAO}}^2$	$5.84 (\nu: 0.4)$
$\Omega_\nu h^2$	$< 0.00123$	$H(0.15)$	$73.15^{+0.78}_{-0.87}$		
$\Omega_m h^3$	$0.09650^{+0.00064}_{-0.00072}$	$D_M(0.15)$	$638.7^{+8.1}_{-7.9}$		

$$\bar{\chi}_{\text{eff}}^2 = 3841.03; \Delta \bar{\chi}_{\text{eff}}^2 = -0.71; R - 1 = 0.01560$$

## 6.25 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022543	$0.02251^{+0.00030}_{-0.00031}$	$\Delta z_{\text{l,DES}}^1$	0.0034	$0.004^{+0.015}_{-0.015}$	$z_{\text{drag}}$	1060.20	$1060.12^{+0.62}_{-0.60}$
$\Omega_c h^2$	0.11794	$0.1180^{+0.0023}_{-0.0022}$	$\Delta z_{\text{l,DES}}^2$	0.0006	$0.001^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.45	$147.47^{+0.51}_{-0.53}$
$100\theta_{\text{MC}}$	1.04114	$1.04110^{+0.00059}_{-0.00063}$	$\Delta z_{\text{l,DES}}^3$	0.0036	$0.003^{+0.013}_{-0.013}$	$k_{\text{D}}$	0.14061	$0.14058^{+0.00060}_{-0.00060}$
$\tau$	0.0554	$0.055^{+0.016}_{-0.016}$	$\Delta z_{\text{l,DES}}^4$	0.0007	$0.001^{+0.018}_{-0.018}$	$100\theta_{\text{D}}$	0.160625	$0.16066^{+0.00035}_{-0.00034}$
$\Sigma m_\nu$ [eV]	0.000	< 0.348	$\Delta z_{\text{l,DES}}^5$	-0.0007	$-0.001^{+0.019}_{-0.019}$	$z_{\text{eq}}$	3357.0	$3357^{+51}_{-49}$
$\ln(10^{10} A_{\text{s}})$	3.0423	$3.040^{+0.032}_{-0.032}$	$\Delta z_{\text{s,DES}}^1$	0.0000	$-0.004^{+0.028}_{-0.028}$	$k_{\text{eq}}$	0.010246	$0.01025^{+0.00016}_{-0.00015}$
$n_{\text{s}}$	0.9706	$0.9694^{+0.0082}_{-0.0084}$	$\Delta z_{\text{s,DES}}^2$	-0.0300	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{eq}}$	0.8221	$0.8221^{+0.0095}_{-0.0096}$
$y_{\text{cal}}$	1.00057	$1.0005^{+0.0048}_{-0.0048}$	$\Delta z_{\text{s,DES}}^3$	0.0035	$0.004^{+0.019}_{-0.019}$	$100\theta_{\text{s,eq}}$	0.45383	$0.4539^{+0.0048}_{-0.0049}$
$A_{217}^{\text{CIB}}$	46.5	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^4$	-0.0307	$-0.029^{+0.036}_{-0.035}$	$H(0.15)$	73.95	$73.1^{+1.7}_{-2.5}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.57	—	$H_0$	68.82	$67.9^{+2.0}_{-2.9}$	$D_{\text{M}}(0.15)$	631.0	$639^{+25}_{-17}$
$A_{143}^{\text{tSZ}}$	7.16	$5.5^{+3.8}_{-3.8}$	$\Omega_{\Lambda}$	0.7034	$0.692^{+0.024}_{-0.035}$	$H(0.38)$	83.81	$83.2^{+1.3}_{-2.0}$
$A_{100}^{\text{PS}}$	248	$259^{+50}_{-50}$	$\Omega_{\text{m}}$	0.2966	$0.308^{+0.035}_{-0.024}$	$D_{\text{M}}(0.38)$	1508.4	$1525^{+51}_{-34}$
$A_{143}^{\text{PS}}$	48.3	$45^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	0.14048	$0.1416^{+0.0039}_{-0.0032}$	$H(0.51)$	90.39	$89.9^{+1.1}_{-1.6}$
$A_{143 \times 217}^{\text{PS}}$	50.1	$41^{+20}_{-20}$	$\Omega_{\nu} h^2$	0.00000	< 0.00375	$D_{\text{M}}(0.51)$	1956	$1976^{+60}_{-40}$
$A_{217}^{\text{PS}}$	120.0	$114^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	0.09668	$0.0961^{+0.0011}_{-0.0017}$	$H(0.61)$	95.90	$95.44^{+0.92}_{-1.4}$
$A^{\text{kSZ}}$	0.00	< 8.20	$\sigma_8$	0.8176	$0.795^{+0.034}_{-0.056}$	$D_{\text{M}}(0.61)$	2278	$2300^{+66}_{-44}$
$A_{100}^{\text{dustTT}}$	8.82	$9.0^{+3.6}_{-3.6}$	$S_8$	0.8129	$0.804^{+0.026}_{-0.029}$	$H(2.33)$	235.07	$235.6^{+2.2}_{-1.9}$
$A_{143}^{\text{dustTT}}$	11.07	$11.0^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4453	$0.440^{+0.014}_{-0.016}$	$D_{\text{M}}(2.33)$	5736	$5759^{+69}_{-44}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.7^{+6.5}_{-6.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6034	$0.591^{+0.022}_{-0.029}$	$f\sigma_8(0.15)$	0.4503	$0.446^{+0.014}_{-0.015}$
$A_{217}^{\text{dustTT}}$	95.2	$94^{+10}_{-10}$	$\sigma_8/h^{0.5}$	0.9855	$0.964^{+0.036}_{-0.051}$	$\sigma_8(0.15)$	0.7568	$0.735^{+0.032}_{-0.054}$
$A_{100}^{\text{dustTE}}$	0.113	$0.114^{+0.075}_{-0.075}$	$r_{\text{drag}} h$	101.48	$100.2^{+3.2}_{-4.4}$	$f\sigma_8(0.38)$	0.4720	$0.465^{+0.016}_{-0.019}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.058}_{-0.057}$	$\langle d^2 \rangle^{1/2}$	2.4189	$2.404^{+0.049}_{-0.048}$	$\sigma_8(0.38)$	0.6723	$0.652^{+0.029}_{-0.051}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_{\text{re}}$	7.72	$7.6^{+1.6}_{-1.6}$	$f\sigma_8(0.51)$	0.4722	$0.464^{+0.016}_{-0.021}$
$A_{143}^{\text{dustTE}}$	0.222	$0.22^{+0.11}_{-0.11}$	$10^9 A_{\text{s}}$	2.095	$2.090^{+0.068}_{-0.066}$	$\sigma_8(0.51)$	0.6298	$0.611^{+0.028}_{-0.048}$
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8754	$1.874^{+0.021}_{-0.021}$	$f\sigma_8(0.61)$	0.4684	$0.459^{+0.016}_{-0.023}$
$A_{217}^{\text{dustTE}}$	2.06	$2.06^{+0.53}_{-0.53}$	$D_{40}$	1220.0	$1221^{+24}_{-23}$	$\sigma_8(0.61)$	0.5996	$0.581^{+0.027}_{-0.047}$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$D_{220}$	5744	$5745^{+76}_{-76}$	$f\sigma_8(2.33)$	0.3019	$0.294^{+0.013}_{-0.021}$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$D_{810}$	2539.2	$2537^{+26}_{-26}$	$\sigma_8(2.33)$	0.3124	$0.303^{+0.015}_{-0.025}$
$b_{\text{DES}}^1$	1.484	$1.53^{+0.18}_{-0.18}$	$D_{1420}$	819.2	$818.2^{+9.2}_{-9.1}$	$f_{2000}^{143}$	28.2	$29^{+6}_{-5}$
$b_{\text{DES}}^2$	1.682	$1.73^{+0.16}_{-0.14}$	$D_{2000}$	231.80	$231.2^{+3.1}_{-3.1}$	$f_{2000}^{143 \times 217}$	31.49	$32^{+4}_{-4}$
$b_{\text{DES}}^3$	1.671	$1.72^{+0.15}_{-0.13}$	$n_{\text{s},0.002}$	0.9706	$0.9694^{+0.0082}_{-0.0084}$	$f_{2000}^{217}$	106.03	$106.8^{+3.6}_{-3.5}$
$b_{\text{DES}}^4$	2.026	$2.08^{+0.17}_{-0.15}$	$Y_{\text{P}}$	0.245460	$0.24545^{+0.00011}_{-0.00012}$	$\chi_{\text{small}}^2$	396.08	$397.0 (\nu: 1.6)$
$b_{\text{DES}}^5$	2.130	$2.18^{+0.20}_{-0.19}$	$Y_{\text{P}}^{\text{BBN}}$	0.246786	$0.24677^{+0.00011}_{-0.00012}$	$\chi_{\text{lowl}}^2$	22.51	$22.56 (\nu: 0.3)$
$m_{\text{DES}}^1$	0.0137	$0.012^{+0.045}_{-0.045}$	$10^5 \text{D}/\text{H}$	2.554	$2.560^{+0.057}_{-0.053}$	$\chi_{\text{plik}}^2$	2346.9	$2364.5 (\nu: 23.9)$
$m_{\text{DES}}^2$	0.0134	$0.013^{+0.044}_{-0.043}$	$\text{Age}/\text{Gyr}$	13.736	$13.79^{+0.16}_{-0.099}$	$\chi_{\text{DES}}^2$	508.9	$518.1 (\nu: 11.9)$
$m_{\text{DES}}^3$	-0.0026	$-0.002^{+0.039}_{-0.040}$	$z_*$	1089.52	$1089.57^{+0.56}_{-0.50}$	$\chi_{\text{prior}}^2$	3.9	$25 (\nu: 23.3)$
$m_{\text{DES}}^4$	0.0017	$0.003^{+0.040}_{-0.040}$	$r_*$	144.84	$144.85^{+0.50}_{-0.53}$	$\chi_{\text{CMB}}^2$	2765.5	$2784.0 (\nu: 23.5)$
$A_{\text{IA,DES}}$	0.454	$0.46^{+0.34}_{-0.31}$	$100\theta_*$	1.04129	$1.04129^{+0.00057}_{-0.00059}$			
$\alpha_{\text{IA,DES}}$	-2.29	< 3.04	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9098	$13.910^{+0.047}_{-0.050}$			

Best-fit  $\chi_{\text{eff}}^2 = 3278.36$ ;  $\Delta\chi_{\text{eff}}^2 = -1.33$ ;  $\bar{\chi}_{\text{eff}}^2 = 3326.78$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.09$ ;  $R - 1 = 0.00796$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 ( $\Delta$  -0.00) commander\_dx12\_v3.2\_29: 22.51 ( $\Delta$  0.02) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.89 ( $\Delta$  -1.11) WL - DES\_1YR\_final: 508.94 ( $\Delta$  -0.21)

## 6.26 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022502	$0.02252^{+0.00026}_{-0.00026}$	$\Delta z_{\text{l,DES}}^2$	0.0005	$0.001^{+0.013}_{-0.013}$	$k_D$	0.14065	$0.14058^{+0.00057}_{-0.00056}$
$\Omega_c h^2$	0.11837	$0.1180^{+0.0018}_{-0.0018}$	$\Delta z_{\text{l,DES}}^3$	0.0034	$0.003^{+0.013}_{-0.013}$	$100\theta_D$	0.160663	$0.16066^{+0.00033}_{-0.00033}$
$100\theta_{\text{MC}}$	1.04114	$1.04112^{+0.00055}_{-0.00056}$	$\Delta z_{\text{l,DES}}^4$	0.0009	$0.001^{+0.018}_{-0.018}$	$z_{\text{eq}}$	3366.3	$3357^{+41}_{-41}$
$\tau$	0.0538	$0.054^{+0.016}_{-0.015}$	$\Delta z_{\text{l,DES}}^5$	-0.0008	$-0.001^{+0.019}_{-0.019}$	$k_{\text{eq}}$	0.010274	$0.01025^{+0.00012}_{-0.00012}$
$\Sigma m_\nu$ [eV]	0.000	< 0.178	$\Delta z_{\text{s,DES}}^1$	0.0009	$-0.003^{+0.028}_{-0.028}$	$100\theta_{\text{eq}}$	0.8202	$0.8220^{+0.0078}_{-0.0077}$
$\ln(10^{10} A_s)$	3.0387	$3.039^{+0.032}_{-0.032}$	$\Delta z_{\text{s,DES}}^2$	-0.0303	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{s,eq}}$	0.45291	$0.4538^{+0.0040}_{-0.0039}$
$n_s$	0.9691	$0.9694^{+0.0074}_{-0.0072}$	$\Delta z_{\text{s,DES}}^3$	0.0025	$0.004^{+0.019}_{-0.019}$	$H(0.15)$	73.78	$73.43^{+0.92}_{-1.0}$
$y_{\text{cal}}$	0.99999	$1.0005^{+0.0048}_{-0.0049}$	$\Delta z_{\text{s,DES}}^4$	-0.0314	$-0.030^{+0.035}_{-0.035}$	$D_{\text{M}}(0.15)$	632.6	$636.0^{+9.8}_{-8.8}$
$A_{217}^{\text{CIB}}$	47.7	$47^{+10}_{-10}$	$H_0$	68.62	$68.2^{+1.0}_{-1.1}$	$H(0.38)$	83.69	$83.40^{+0.71}_{-0.80}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.40	—	$\Omega_\Lambda$	0.7009	$0.697^{+0.013}_{-0.014}$	$D_{\text{M}}(0.38)$	1511.7	$1519^{+20}_{-18}$
$A_{143}^{\text{tSZ}}$	7.34	$5.5^{+3.8}_{-3.8}$	$\Omega_{\text{m}}$	0.2991	$0.303^{+0.014}_{-0.013}$	$H(0.51)$	90.29	$90.04^{+0.60}_{-0.68}$
$A_{100}^{\text{PS}}$	250	$259^{+60}_{-50}$	$\Omega_{\text{m}} h^2$	0.14087	$0.1412^{+0.0018}_{-0.0018}$	$D_{\text{M}}(0.51)$	1960.2	$1969^{+24}_{-21}$
$A_{143}^{\text{PS}}$	46.2	$45^{+20}_{-20}$	$\Omega_\nu h^2$	0.00000	< 0.00192	$H(0.61)$	95.82	$95.60^{+0.51}_{-0.59}$
$A_{143 \times 217}^{\text{PS}}$	46.2	$41^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	0.09667	$0.09636^{+0.00080}_{-0.00089}$	$D_{\text{M}}(0.61)$	2282.6	$2292^{+26}_{-23}$
$A_{217}^{\text{PS}}$	118.3	$114^{+20}_{-20}$	$\sigma_8$	0.8173	$0.802^{+0.024}_{-0.029}$	$H(2.33)$	235.31	$235.4^{+1.1}_{-1.1}$
$A^{\text{kSZ}}$	0.00	< 8.19	$S_8$	0.8161	$0.807^{+0.024}_{-0.025}$	$D_{\text{M}}(2.33)$	5738.8	$5750^{+29}_{-25}$
$A_{100}^{\text{dustTT}}$	8.87	$8.9^{+3.6}_{-3.6}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4470	$0.442^{+0.013}_{-0.014}$	$f\sigma_8(0.15)$	0.4518	$0.447^{+0.012}_{-0.013}$
$A_{143}^{\text{dustTT}}$	11.02	$11.0^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6044	$0.596^{+0.017}_{-0.019}$	$\sigma_8(0.15)$	0.7563	$0.742^{+0.022}_{-0.027}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.6^{+6.4}_{-6.4}$	$\sigma_8/h^{0.5}$	0.9866	$0.971^{+0.027}_{-0.031}$	$f\sigma_8(0.38)$	0.4729	$0.467^{+0.012}_{-0.014}$
$A_{217}^{\text{dustTT}}$	94.6	$94^{+10}_{-10}$	$r_{\text{drag}} h$	101.14	$100.6^{+1.6}_{-1.9}$	$\sigma_8(0.38)$	0.6716	$0.659^{+0.020}_{-0.025}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.076}_{-0.075}$	$\langle d^2 \rangle^{1/2}$	2.4220	$2.408^{+0.048}_{-0.048}$	$f\sigma_8(0.51)$	0.4729	$0.467^{+0.012}_{-0.013}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.058}_{-0.057}$	$z_{\text{re}}$	7.56	$7.6^{+1.5}_{-1.6}$	$\sigma_8(0.51)$	0.6290	$0.617^{+0.019}_{-0.024}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.48^{+0.17}_{-0.16}$	$10^9 A_s$	2.088	$2.089^{+0.068}_{-0.065}$	$f\sigma_8(0.61)$	0.4688	$0.463^{+0.012}_{-0.014}$
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.11}_{-0.10}$	$10^9 A_s e^{-2\tau}$	1.8748	$1.874^{+0.021}_{-0.021}$	$\sigma_8(0.61)$	0.5987	$0.587^{+0.018}_{-0.023}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.16}_{-0.16}$	$D_{40}$	1221.3	$1222^{+23}_{-23}$	$f\sigma_8(2.33)$	0.3014	$0.2967^{+0.0081}_{-0.010}$
$A_{217}^{\text{dustTE}}$	2.08	$2.06^{+0.53}_{-0.53}$	$D_{220}$	5736	$5744^{+76}_{-77}$	$\sigma_8(2.33)$	0.3118	$0.3061^{+0.0093}_{-0.012}$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	2536.1	$2537^{+26}_{-26}$	$f_{2000}^{143}$	28.6	$29^{+5}_{-5}$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	817.6	$818.0^{+9.3}_{-9.3}$	$f_{2000}^{143 \times 217}$	31.78	$32^{+4}_{-4}$
$b_{\text{DES}}^1$	1.486	$1.51^{+0.15}_{-0.15}$	$D_{2000}$	231.24	$231.2^{+3.1}_{-3.0}$	$f_{2000}^{217}$	106.33	$106.7^{+3.4}_{-3.5}$
$b_{\text{DES}}^2$	1.684	$1.71^{+0.12}_{-0.11}$	$n_{\text{s},0.002}$	0.9691	$0.9694^{+0.0074}_{-0.0072}$	$\chi_{\text{small}}^2$	395.87	$396.9 (\nu: 1.5)$
$b_{\text{DES}}^3$	1.672	$1.70^{+0.10}_{-0.096}$	$Y_{\text{P}}$	0.245445	$0.245450^{+0.000098}_{-0.000099}$	$\chi_{\text{lowl}}^2$	22.73	$22.63 (\nu: 0.3)$
$b_{\text{DES}}^4$	2.029	$2.06^{+0.12}_{-0.11}$	$Y_{\text{P}}^{\text{BBN}}$	0.246772	$0.246776^{+0.000098}_{-0.00010}$	$\chi_{\text{plik}}^2$	2346.2	$2363.3 (\nu: 21.9)$
$b_{\text{DES}}^5$	2.133	$2.16^{+0.16}_{-0.16}$	$10^5 \text{D}/\text{H}$	2.5616	$2.559^{+0.047}_{-0.047}$	$\chi_{6\text{DF}}^2$	0.018	$0.033 (\nu: 0.0)$
$m_{\text{DES}}^1$	0.0138	$0.012^{+0.045}_{-0.045}$	Age/Gyr	13.742	$13.769^{+0.067}_{-0.057}$	$\chi_{\text{MGS}}^2$	2.12	$1.84 (\nu: 0.1)$
$m_{\text{DES}}^2$	0.0134	$0.013^{+0.043}_{-0.043}$	$z_*$	1089.610	$1089.56^{+0.41}_{-0.41}$	$\chi_{\text{DR12BAO}}^2$	3.42	$3.93 (\nu: 0.4)$
$m_{\text{DES}}^3$	-0.0046	$-0.003^{+0.039}_{-0.040}$	$r_*$	144.761	$144.85^{+0.43}_{-0.43}$	$\chi_{\text{DES}}^2$	509.5	$518.3 (\nu: 11.8)$
$m_{\text{DES}}^4$	0.0017	$0.003^{+0.040}_{-0.040}$	$100\theta_*$	1.04127	$1.04130^{+0.00055}_{-0.00055}$	$\chi_{\text{prior}}^2$	4.2	$25 (\nu: 22.8)$
$A_{\text{IA,DES}}$	0.444	$0.47^{+0.35}_{-0.30}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9023	$13.910^{+0.041}_{-0.042}$	$\chi_{\text{BAO}}^2$	5.56	$5.81 (\nu: 0.3)$
$\alpha_{\text{IA,DES}}$	-2.56	< 3.03	$z_{\text{drag}}$	1060.12	$1060.13^{+0.57}_{-0.58}$	$\chi_{\text{CMB}}^2$	2764.8	$2782.8 (\nu: 21.5)$
$\Delta z_{\text{l,DES}}^1$	0.0033	$0.004^{+0.015}_{-0.015}$	$r_{\text{drag}}$	147.385	$147.47^{+0.45}_{-0.46}$			

Best-fit  $\chi_{\text{eff}}^2 = 3284.12$ ;  $\Delta\chi_{\text{eff}}^2 = -0.81$ ;  $\bar{\chi}_{\text{eff}}^2 = 3331.54$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.52$ ;  $R - 1 = 0.01000$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.02) MGS: 2.12 ( $\Delta$  0.37) DR12BAO: 3.42 ( $\Delta$  -0.04) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.21) commander\_dx12\_v3\_2\_29: 22.73 ( $\Delta$  0.23) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.19 ( $\Delta$  -1.66) WL - DES\_1YR\_final: 509.52 ( $\Delta$  0.26)

## 6.27 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022566	$0.02252^{+0.00029}_{-0.00028}$	$\alpha_{\text{IA,DES}}$	-2.38	$< 2.88$	$100\theta_*$	1.04131	$1.04128^{+0.00056}_{-0.00058}$
$\Omega_c h^2$	0.11794	$0.1181^{+0.0021}_{-0.0020}$	$\Delta z_{\text{l,DES}}^1$	0.0033	$0.003^{+0.015}_{-0.015}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9076	$13.907^{+0.045}_{-0.046}$
$100\theta_{\text{MC}}$	1.04118	$1.04111^{+0.00057}_{-0.00060}$	$\Delta z_{\text{l,DES}}^2$	0.0007	$0.001^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.24	$1060.15^{+0.58}_{-0.60}$
$\tau$	0.0561	$0.057^{+0.016}_{-0.014}$	$\Delta z_{\text{l,DES}}^3$	0.0035	$0.003^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.426	$147.43^{+0.48}_{-0.49}$
$\Sigma m_\nu [\text{eV}]$	0.000	$< 0.187$	$\Delta z_{\text{l,DES}}^4$	0.0008	$0.001^{+0.018}_{-0.018}$	$k_{\text{D}}$	0.14066	$0.14062^{+0.00057}_{-0.00056}$
$\ln(10^{10} A_{\text{s}})$	3.0445	$3.045^{+0.031}_{-0.029}$	$\Delta z_{\text{l,DES}}^5$	-0.0007	$-0.001^{+0.019}_{-0.019}$	$100\theta_{\text{D}}$	0.160597	$0.16064^{+0.00034}_{-0.00034}$
$n_{\text{s}}$	0.9707	$0.9690^{+0.0079}_{-0.0078}$	$\Delta z_{\text{s,DES}}^1$	0.0009	$-0.003^{+0.028}_{-0.028}$	$z_{\text{eq}}$	3357.7	$3360^{+47}_{-46}$
$y_{\text{cal}}$	1.00084	$1.0007^{+0.0048}_{-0.0048}$	$\Delta z_{\text{s,DES}}^2$	-0.0303	$-0.031^{+0.021}_{-0.022}$	$k_{\text{eq}}$	0.010248	$0.01026^{+0.00014}_{-0.00014}$
$A_{217}^{\text{CIB}}$	45.4	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^3$	0.0033	$0.004^{+0.018}_{-0.019}$	$100\theta_{\text{eq}}$	0.8220	$0.8215^{+0.0089}_{-0.0089}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.69	—	$\Delta z_{\text{s,DES}}^4$	-0.0301	$-0.031^{+0.035}_{-0.035}$	$100\theta_{\text{s,eq}}$	0.45379	$0.4535^{+0.0045}_{-0.0046}$
$A_{143}^{\text{tSZ}}$	7.15	$5.5^{+3.8}_{-3.8}$	$H_0$	68.84	$68.2^{+1.5}_{-1.7}$	$H(0.15)$	73.97	$73.4^{+1.3}_{-1.5}$
$A_{100}^{\text{PS}}$	247	$258^{+50}_{-50}$	$\Omega_{\Lambda}$	0.7035	$0.696^{+0.018}_{-0.021}$	$D_{\text{M}}(0.15)$	630.8	$636^{+15}_{-12}$
$A_{143}^{\text{PS}}$	49.7	$45^{+20}_{-20}$	$\Omega_{\text{m}}$	0.2965	$0.304^{+0.021}_{-0.018}$	$H(0.38)$	83.84	$83.42^{+0.97}_{-1.2}$
$A_{143 \times 217}^{\text{PS}}$	53.2	$42^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	0.14051	$0.1413^{+0.0027}_{-0.0025}$	$D_{\text{M}}(0.38)$	1508.0	$1518^{+30}_{-25}$
$A_{217}^{\text{PS}}$	121.9	$115^{+20}_{-20}$	$\Omega_{\nu} h^2$	0.00000	$< 0.00201$	$H(0.51)$	90.41	$90.06^{+0.80}_{-0.97}$
$A^{\text{kSZ}}$	0.00	$< 8.03$	$\Omega_{\text{m}} h^3$	0.09674	$0.09642^{+0.00084}_{-0.00095}$	$D_{\text{M}}(0.51)$	1955.8	$1968^{+36}_{-30}$
$A_{100}^{\text{dustTT}}$	8.76	$8.9^{+3.6}_{-3.6}$	$\sigma_8$	0.8185	$0.807^{+0.021}_{-0.028}$	$H(0.61)$	95.92	$95.62^{+0.67}_{-0.82}$
$A_{143}^{\text{dustTT}}$	11.05	$10.9^{+3.4}_{-3.5}$	$S_8$	0.8136	$0.811^{+0.021}_{-0.021}$	$D_{\text{M}}(0.61)$	2277.8	$2291^{+39}_{-32}$
$A_{143 \times 217}^{\text{dustTT}}$	20.2	$18.6^{+6.3}_{-6.4}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4456	$0.444^{+0.012}_{-0.011}$	$H(2.33)$	235.10	$235.5^{+1.6}_{-1.5}$
$A_{217}^{\text{dustTT}}$	95.8	$94^{+10}_{-10}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6039	$0.599^{+0.014}_{-0.015}$	$D_{\text{M}}(2.33)$	5734.4	$5749^{+39}_{-32}$
$A_{100}^{\text{dustTE}}$	0.113	$0.114^{+0.076}_{-0.075}$	$\sigma_8/h^{0.5}$	0.9864	$0.977^{+0.023}_{-0.026}$	$f\sigma_8(0.15)$	0.4507	$0.450^{+0.011}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	0.133	$0.134^{+0.058}_{-0.057}$	$r_{\text{drag}} h$	101.49	$100.6^{+2.4}_{-2.7}$	$\sigma_8(0.15)$	0.7577	$0.746^{+0.020}_{-0.027}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.17}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	2.4212	$2.419^{+0.040}_{-0.038}$	$f\sigma_8(0.38)$	0.4724	$0.4696^{+0.0096}_{-0.011}$
$A_{143}^{\text{dustTE}}$	0.221	$0.22^{+0.11}_{-0.10}$	$z_{\text{re}}$	7.78	$7.8^{+1.5}_{-1.5}$	$\sigma_8(0.38)$	0.6731	$0.662^{+0.019}_{-0.026}$
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}}$	2.100	$2.102^{+0.065}_{-0.060}$	$f\sigma_8(0.51)$	0.4727	$0.469^{+0.010}_{-0.011}$
$A_{217}^{\text{dustTE}}$	2.06	$2.06^{+0.53}_{-0.53}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8771	$1.876^{+0.021}_{-0.020}$	$\sigma_8(0.51)$	0.6305	$0.620^{+0.018}_{-0.025}$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$D_{40}$	1221.1	$1225^{+23}_{-22}$	$f\sigma_8(0.61)$	0.4689	$0.465^{+0.010}_{-0.011}$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$D_{220}$	5750	$5750^{+74}_{-75}$	$\sigma_8(0.61)$	0.6003	$0.590^{+0.017}_{-0.024}$
$b_{\text{DES}}^1$	1.483	$1.50^{+0.15}_{-0.15}$	$D_{810}$	2541.4	$2539^{+26}_{-25}$	$f\sigma_8(2.33)$	0.3023	$0.2981^{+0.0081}_{-0.011}$
$b_{\text{DES}}^2$	1.680	$1.70^{+0.12}_{-0.11}$	$D_{1420}$	820.0	$818.4^{+9.3}_{-9.1}$	$\sigma_8(2.33)$	0.3128	$0.3077^{+0.0094}_{-0.013}$
$b_{\text{DES}}^3$	1.669	$1.69^{+0.11}_{-0.094}$	$D_{2000}$	232.12	$231.4^{+3.1}_{-3.0}$	$\chi_{\text{lensing}}^2$	8.81	$9.5 (\nu: 0.6)$
$b_{\text{DES}}^4$	2.025	$2.05^{+0.12}_{-0.11}$	$n_{\text{s},0.002}$	0.9707	$0.9690^{+0.0079}_{-0.0078}$	$\chi_{\text{small}}^2$	396.20	$397.3 (\nu: 2.2)$
$b_{\text{DES}}^5$	2.128	$2.15^{+0.16}_{-0.16}$	$Y_{\text{P}}$	0.245468	$0.24545^{+0.00011}_{-0.00011}$	$\chi_{\text{lowl}}^2$	22.54	$22.83 (\nu: 0.3)$
$m_{\text{DES}}^1$	0.0133	$0.012^{+0.045}_{-0.045}$	$Y_{\text{P}}^{\text{BBN}}$	0.246795	$0.24678^{+0.00011}_{-0.00011}$	$\chi_{\text{plik}}^2$	2346.8	$2362.1 (\nu: 18.8)$
$m_{\text{DES}}^2$	0.0135	$0.012^{+0.044}_{-0.044}$	$10^5 \text{D}/\text{H}$	2.550	$2.558^{+0.052}_{-0.052}$	$\chi_{\text{DES}}^2$	509.0	$518.5 (\nu: 12.7)$
$m_{\text{DES}}^3$	-0.0031	$-0.004^{+0.039}_{-0.039}$	$\text{Age}/\text{Gyr}$	13.733	$13.766^{+0.089}_{-0.071}$	$\chi_{\text{prior}}^2$	3.9	$25 (\nu: 23.1)$
$m_{\text{DES}}^4$	0.0020	$0.002^{+0.040}_{-0.040}$	$z_*$	1089.490	$1089.56^{+0.48}_{-0.48}$	$\chi_{\text{CMB}}^2$	2774.3	$2791.8 (\nu: 21.8)$
$A_{\text{IA,DES}}$	0.453	$0.47^{+0.35}_{-0.30}$	$r_*$	144.821	$144.81^{+0.47}_{-0.48}$			

Best-fit  $\chi_{\text{eff}}^2 = 3287.27$ ;  $\Delta\chi_{\text{eff}}^2 = -1.59$ ;  $\bar{\chi}_{\text{eff}}^2 = 3335.12$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.21$ ;  $R - 1 = 0.00852$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.81 ( $\Delta$  -0.24) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 22.54 ( $\Delta$  -0.16) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.80 ( $\Delta$  -0.37) WL - DES\_1YR\_final: 508.98 ( $\Delta$  -0.53)



## 6.28 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022515	$0.02252^{+0.00026}_{-0.00026}$	$\Delta z_{l,DES}^2$	0.0005	$0.001^{+0.013}_{-0.013}$	$k_D$	0.14070	$0.14063^{+0.00055}_{-0.00054}$
$\Omega_c h^2$	0.11843	$0.1182^{+0.0017}_{-0.0017}$	$\Delta z_{l,DES}^3$	0.0034	$0.003^{+0.013}_{-0.013}$	$100\theta_D$	0.160645	$0.16065^{+0.00033}_{-0.00033}$
$100\theta_{MC}$	1.04116	$1.04110^{+0.00055}_{-0.00055}$	$\Delta z_{l,DES}^4$	0.0008	$0.000^{+0.018}_{-0.018}$	$z_{eq}$	3368.2	$3362^{+38}_{-38}$
$\tau$	0.0558	$0.056^{+0.016}_{-0.014}$	$\Delta z_{l,DES}^5$	-0.0005	$-0.001^{+0.019}_{-0.019}$	$k_{eq}$	0.010280	$0.01026^{+0.00012}_{-0.00012}$
$\Sigma m_\nu$ [eV]	0.001	< 0.139	$\Delta z_{s,DES}^1$	0.00097	$-0.003^{+0.028}_{-0.028}$	$100\theta_{eq}$	0.8200	$0.8211^{+0.0073}_{-0.0072}$
$\ln(10^{10} A_s)$	3.0430	$3.044^{+0.030}_{-0.028}$	$\Delta z_{s,DES}^2$	-0.0303	$-0.031^{+0.021}_{-0.021}$	$100\theta_{s,eq}$	0.45275	$0.4533^{+0.0038}_{-0.0037}$
$n_s$	0.9686	$0.9688^{+0.0072}_{-0.0071}$	$\Delta z_{s,DES}^3$	0.0024	$0.003^{+0.018}_{-0.018}$	$H(0.15)$	73.78	$73.48^{+0.85}_{-0.92}$
$y_{cal}$	0.99998	$1.0007^{+0.0048}_{-0.0048}$	$\Delta z_{s,DES}^4$	-0.0323	$-0.031^{+0.035}_{-0.036}$	$D_M(0.15)$	632.7	$635.5^{+8.9}_{-8.2}$
$A_{217}^{CIB}$	48.3	$47^{+10}_{-10}$	$H_0$	68.62	$68.29^{+0.97}_{-1.0}$	$H(0.38)$	83.69	$83.45^{+0.66}_{-0.71}$
$\xi^{tSZ \times CIB}$	0.28	—	$\Omega_\Lambda$	0.7006	$0.697^{+0.012}_{-0.013}$	$D_M(0.38)$	1511.8	$1518^{+18}_{-17}$
$A_{143}^{tSZ}$	7.38	$5.5^{+3.8}_{-3.8}$	$\Omega_m$	0.2994	$0.303^{+0.013}_{-0.012}$	$H(0.51)$	90.30	$90.09^{+0.55}_{-0.60}$
$A_{100}^{PS}$	251	$258^{+60}_{-50}$	$\Omega_m h^2$	0.14096	$0.1413^{+0.0018}_{-0.0017}$	$D_M(0.51)$	1960.3	$1967^{+22}_{-20}$
$A_{143}^{PS}$	44.5	$45^{+20}_{-20}$	$\Omega_\nu h^2$	0.00001	< 0.00150	$H(0.61)$	95.832	$95.65^{+0.47}_{-0.52}$
$A_{143 \times 217}^{PS}$	42.8	$42^{+20}_{-20}$	$\Omega_m h^3$	0.09672	$0.09647^{+0.00072}_{-0.00075}$	$D_M(0.61)$	2282.6	$2290^{+23}_{-22}$
$A_{217}^{PS}$	117.0	$115^{+20}_{-20}$	$\sigma_8$	0.8190	$0.809^{+0.018}_{-0.021}$	$H(2.33)$	235.37	$235.5^{+1.1}_{-1.1}$
$A^{kSZ}$	0.00	< 8.05	$S_8$	0.8182	$0.813^{+0.019}_{-0.019}$	$D_M(2.33)$	5738.2	$5748^{+25}_{-23}$
$A_{100}^{dustTT}$	8.82	$8.9^{+3.6}_{-3.6}$	$\sigma_8 \Omega_m^{0.5}$	0.4481	$0.445^{+0.011}_{-0.011}$	$f\sigma_8(0.15)$	0.4530	$0.4502^{+0.0099}_{-0.010}$
$A_{143}^{dustTT}$	11.03	$10.9^{+3.4}_{-3.5}$	$\sigma_8 \Omega_m^{0.25}$	0.6058	$0.600^{+0.013}_{-0.014}$	$\sigma_8(0.15)$	0.7579	$0.748^{+0.017}_{-0.020}$
$A_{143 \times 217}^{dustTT}$	19.6	$18.6^{+6.4}_{-6.4}$	$\sigma_8/h^{0.5}$	0.9887	$0.978^{+0.020}_{-0.022}$	$f\sigma_8(0.38)$	0.4740	$0.4704^{+0.0091}_{-0.010}$
$A_{217}^{dustTT}$	94.5	$94^{+10}_{-10}$	$r_{drag} h$	101.11	$100.7^{+1.5}_{-1.7}$	$\sigma_8(0.38)$	0.6730	$0.664^{+0.015}_{-0.018}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.076}_{-0.075}$	$\langle d^2 \rangle^{1/2}$	2.4288	$2.420^{+0.039}_{-0.038}$	$f\sigma_8(0.51)$	0.4740	$0.4700^{+0.0087}_{-0.010}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.058}_{-0.057}$	$z_{re}$	7.77	$7.8^{+1.5}_{-1.4}$	$\sigma_8(0.51)$	0.6303	$0.622^{+0.015}_{-0.017}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.16}$	$10^9 A_s$	2.097	$2.099^{+0.063}_{-0.059}$	$f\sigma_8(0.61)$	0.4699	$0.4658^{+0.0090}_{-0.0098}$
$A_{143}^{dustTE}$	0.223	$0.22^{+0.10}_{-0.10}$	$10^9 A_s e^{-2\tau}$	1.8753	$1.876^{+0.020}_{-0.020}$	$\sigma_8(0.61)$	0.6000	$0.592^{+0.014}_{-0.017}$
$A_{143 \times 217}^{dustTE}$	0.662	$0.66^{+0.16}_{-0.16}$	$D_{40}$	1223.6	$1225^{+22}_{-22}$	$f\sigma_8(2.33)$	0.3020	$0.2987^{+0.0065}_{-0.0075}$
$A_{217}^{dustTE}$	2.07	$2.06^{+0.52}_{-0.54}$	$D_{220}$	5740	$5749^{+73}_{-75}$	$\sigma_8(2.33)$	0.3124	$0.3083^{+0.0074}_{-0.0088}$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	2535.9	$2539^{+26}_{-25}$	$f_{2000}^{143}$	28.7	$29^{+5}_{-5}$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	817.4	$818.2^{+9.3}_{-9.1}$	$f_{2000}^{143 \times 217}$	31.75	$32^{+4}_{-4}$
$b_{DES}^1$	1.485	$1.50^{+0.14}_{-0.15}$	$D_{2000}$	231.20	$231.3^{+3.1}_{-3.0}$	$f_{2000}^{217}$	106.37	$106.7^{+3.4}_{-3.5}$
$b_{DES}^2$	1.680	$1.70^{+0.11}_{-0.11}$	$n_{s,0.002}$	0.9686	$0.9688^{+0.0072}_{-0.0071}$	$\chi_{lensing}^2$	8.76	$9.45 (\nu: 0.5)$
$b_{DES}^3$	1.669	$1.688^{+0.092}_{-0.091}$	$Y_P$	0.245450	$0.245450^{+0.000098}_{-0.000099}$	$\chi_{simall}^2$	396.19	$397.2 (\nu: 1.9)$
$b_{DES}^4$	2.025	$2.05^{+0.11}_{-0.11}$	$Y_P^{BBN}$	0.246777	$0.246776^{+0.000098}_{-0.000099}$	$\chi_{lowl}^2$	22.92	$22.86 (\nu: 0.3)$
$b_{DES}^5$	2.127	$2.15^{+0.15}_{-0.15}$	$10^5 D/H$	2.5592	$2.559^{+0.047}_{-0.047}$	$\chi_{plik}^2$	2345.5	$2361.6 (\nu: 18.3)$
$m_{DES}^1$	0.0137	$0.012^{+0.045}_{-0.045}$	Age/Gyr	13.741	$13.763^{+0.058}_{-0.052}$	$\chi_{6DF}^2$	0.016	$0.029 (\nu: 0.0)$
$m_{DES}^2$	0.0136	$0.012^{+0.044}_{-0.044}$	$z_*$	1089.598	$1089.58^{+0.40}_{-0.40}$	$\chi_{MGS}^2$	2.12	$1.87 (\nu: 0.1)$
$m_{DES}^3$	-0.0050	$-0.005^{+0.039}_{-0.039}$	$r_*$	144.733	$144.80^{+0.40}_{-0.41}$	$\chi_{DR12BAO}^2$	3.41	$3.85 (\nu: 0.3)$
$m_{DES}^4$	0.0006	$0.001^{+0.039}_{-0.040}$	$100\theta_*$	1.04129	$1.04127^{+0.00054}_{-0.00055}$	$\chi_{DES}^2$	509.7	$518.6 (\nu: 12.2)$
$A_{IA,DES}$	0.443	$0.48^{+0.35}_{-0.30}$	$D_M(z_*)/\text{Gpc}$	13.8994	$13.906^{+0.039}_{-0.040}$	$\chi_{prior}^2$	4.5	$25 (\nu: 23.1)$
$\alpha_{IA,DES}$	-2.62	< 2.86	$z_{drag}$	1060.16	$1060.14^{+0.59}_{-0.55}$	$\chi_{CMB}^2$	2773.4	$2791.0 (\nu: 20.7)$
$\Delta z_{l,DES}^1$	0.0030	$0.003^{+0.015}_{-0.015}$	$r_{drag}$	147.352	$147.42^{+0.43}_{-0.44}$	$\chi_{BAO}^2$	5.55	$5.75 (\nu: 0.3)$

Best-fit  $\chi_{eff}^2 = 3293.06$ ;  $\Delta\chi_{eff}^2 = -1.03$ ;  $\bar{\chi}_{eff}^2 = 3340.25$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.08$ ;  $R - 1 = 0.00952$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.02) MGS: 2.12 ( $\Delta$  0.44) DR12BAO: 3.42 ( $\Delta$  -0.11) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p-teb\_consext8: 8.76 ( $\Delta$  -0.32) simall\_100x143\_offlike5\_EE\_Aplanck 396.19 ( $\Delta$  -0.09) commander\_dx12\_v3.2\_29: 22.92 ( $\Delta$  0.27) plik\_rd12\_HM\_v22b.TTTEEE: 2345.49 ( $\Delta$  -1.78) WL - DES\_1YR\_final: 509.67 ( $\Delta$  0.29)

## 6.29 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02251^{+0.00030}_{-0.00031}$	$\Delta z_{\text{l,DES}}^1$	$0.004^{+0.015}_{-0.015}$	$z_{\text{drag}}$	$1060.12^{+0.61}_{-0.61}$
$\Omega_c h^2$	$0.1179^{+0.0023}_{-0.0022}$	$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.48^{+0.51}_{-0.53}$
$100\theta_{\text{MC}}$	$1.04110^{+0.00059}_{-0.00063}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14057^{+0.00060}_{-0.00060}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\Delta z_{\text{l,DES}}^4$	$0.001^{+0.018}_{-0.018}$	$100\theta_{\text{D}}$	$0.16065^{+0.00035}_{-0.00035}$
$\Sigma m_\nu$ [eV]	$< 0.353$	$\Delta z_{\text{l,DES}}^5$	$-0.001^{+0.019}_{-0.019}$	$z_{\text{eq}}$	$3356^{+50}_{-48}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.028}_{-0.026}$	$\Delta z_{\text{s,DES}}^1$	$-0.004^{+0.028}_{-0.028}$	$k_{\text{eq}}$	$0.01024^{+0.00016}_{-0.00015}$
$n_{\text{s}}$	$0.9695^{+0.0081}_{-0.0084}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{eq}}$	$0.8223^{+0.0094}_{-0.0095}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0047}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.019}_{-0.019}$	$100\theta_{\text{s,eq}}$	$0.4540^{+0.0048}_{-0.0049}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^4$	$-0.029^{+0.036}_{-0.036}$	$H(0.15)$	$73.2^{+1.7}_{-2.5}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$H_0$	$67.9^{+2.0}_{-2.9}$	$D_{\text{M}}(0.15)$	$639^{+25}_{-17}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\Omega_{\Lambda}$	$0.693^{+0.024}_{-0.036}$	$H(0.38)$	$83.2^{+1.3}_{-2.0}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-50}$	$\Omega_{\text{m}}$	$0.307^{+0.036}_{-0.024}$	$D_{\text{M}}(0.38)$	$1525^{+52}_{-34}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	$0.1416^{+0.0039}_{-0.0032}$	$H(0.51)$	$89.9^{+1.1}_{-1.7}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$\Omega_{\nu} h^2$	$< 0.00380$	$D_{\text{M}}(0.51)$	$1976^{+61}_{-41}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	$0.0961^{+0.0012}_{-0.0017}$	$H(0.61)$	$95.44^{+0.92}_{-1.4}$
$A^{\text{kSZ}}$	$< 8.18$	$\sigma_8$	$0.795^{+0.034}_{-0.057}$	$D_{\text{M}}(0.61)$	$2299^{+67}_{-44}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$S_8$	$0.804^{+0.026}_{-0.029}$	$H(2.33)$	$235.6^{+2.2}_{-1.9}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.440^{+0.014}_{-0.016}$	$D_{\text{M}}(2.33)$	$5759^{+70}_{-44}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.592^{+0.022}_{-0.029}$	$f\sigma_8(0.15)$	$0.446^{+0.014}_{-0.015}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\sigma_8/h^{0.5}$	$0.965^{+0.036}_{-0.052}$	$\sigma_8(0.15)$	$0.735^{+0.032}_{-0.055}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.075}$	$r_{\text{drag}} h$	$100.2^{+3.2}_{-4.4}$	$f\sigma_8(0.38)$	$0.465^{+0.016}_{-0.019}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.057}$	$\langle d^2 \rangle^{1/2}$	$2.406^{+0.048}_{-0.045}$	$\sigma_8(0.38)$	$0.653^{+0.029}_{-0.051}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_{\text{re}}$	$< 8.96$	$f\sigma_8(0.51)$	$0.464^{+0.016}_{-0.022}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$10^9 A_{\text{s}}$	$2.095^{+0.060}_{-0.054}$	$\sigma_8(0.51)$	$0.611^{+0.028}_{-0.049}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.021}_{-0.021}$	$f\sigma_8(0.61)$	$0.460^{+0.016}_{-0.023}$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.53}_{-0.54}$	$D_{40}$	$1221^{+24}_{-23}$	$\sigma_8(0.61)$	$0.582^{+0.027}_{-0.047}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{220}$	$5745^{+76}_{-76}$	$f\sigma_8(2.33)$	$0.294^{+0.012}_{-0.022}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{810}$	$2537^{+26}_{-26}$	$\sigma_8(2.33)$	$0.303^{+0.014}_{-0.025}$
$b_{\text{DES}}^1$	$1.53^{+0.18}_{-0.18}$	$D_{1420}$	$818.2^{+9.2}_{-9.1}$	$f_{2000}^{143}$	$29^{+6}_{-5}$
$b_{\text{DES}}^2$	$1.73^{+0.16}_{-0.14}$	$D_{2000}$	$231.2^{+3.1}_{-3.1}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^3$	$1.71^{+0.15}_{-0.13}$	$n_{\text{s},0.002}$	$0.9695^{+0.0081}_{-0.0084}$	$f_{2000}^{217}$	$106.7^{+3.6}_{-3.5}$
$b_{\text{DES}}^4$	$2.08^{+0.17}_{-0.15}$	$Y_{\text{P}}$	$0.24545^{+0.00011}_{-0.00012}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$b_{\text{DES}}^5$	$2.18^{+0.20}_{-0.19}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00011}_{-0.00012}$	$\chi_{\text{lowl}}^2$	$22.56 (\nu: 0.3)$
$m_{\text{DES}}^1$	$0.012^{+0.045}_{-0.045}$	$10^5 \text{D/H}$	$2.560^{+0.057}_{-0.053}$	$\chi_{\text{plik}}^2$	$2364.3 (\nu: 23.8)$
$m_{\text{DES}}^2$	$0.013^{+0.044}_{-0.043}$	$\text{Age/Gyr}$	$13.79^{+0.16}_{-0.099}$	$\chi_{\text{DES}}^2$	$518.1 (\nu: 12.0)$
$m_{\text{DES}}^3$	$-0.003^{+0.039}_{-0.040}$	$z_*$	$1089.56^{+0.52}_{-0.52}$	$\chi_{\text{prior}}^2$	$25 (\nu: 23.3)$
$m_{\text{DES}}^4$	$0.003^{+0.040}_{-0.040}$	$r_*$	$144.85^{+0.50}_{-0.53}$	$\chi_{\text{CMB}}^2$	$2783.8 (\nu: 23.2)$
$A_{\text{IA,DES}}$	$0.46^{+0.34}_{-0.31}$	$100\theta_*$	$1.04130^{+0.00057}_{-0.00059}$		
$\alpha_{\text{IA,DES}}$	$< 3.04$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911^{+0.047}_{-0.050}$		

$$\bar{\chi}_{\text{eff}}^2 = 3326.52; \Delta \bar{\chi}_{\text{eff}}^2 = 1.08; R - 1 = 0.00752$$

### 6.30 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02252^{+0.00026}_{-0.00026}$	$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14057^{+0.00057}_{-0.00056}$
$\Omega_c h^2$	$0.1179^{+0.0018}_{-0.0018}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16065^{+0.00033}_{-0.00033}$
$100\theta_{\text{MC}}$	$1.04112^{+0.00055}_{-0.00056}$	$\Delta z_{\text{l,DES}}^4$	$0.001^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3356^{+40}_{-40}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\Delta z_{\text{l,DES}}^5$	$-0.001^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01024^{+0.00012}_{-0.00012}$
$\Sigma m_\nu$ [eV]	$< 0.180$	$\Delta z_{\text{s,DES}}^1$	$-0.003^{+0.028}_{-0.028}$	$100\theta_{\text{eq}}$	$0.8222^{+0.0078}_{-0.0076}$
$\ln(10^{10} A_{\text{s}})$	$3.041^{+0.028}_{-0.026}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$100\theta_{\text{s,eq}}$	$0.4539^{+0.0040}_{-0.0039}$
$n_{\text{s}}$	$0.9695^{+0.0074}_{-0.0071}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.019}_{-0.019}$	$H(0.15)$	$73.43^{+0.92}_{-1.0}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0049}$	$\Delta z_{\text{s,DES}}^4$	$-0.030^{+0.035}_{-0.036}$	$D_{\text{M}}(0.15)$	$636.0^{+9.8}_{-8.9}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$H_0$	$68.2^{+1.1}_{-1.1}$	$H(0.38)$	$83.40^{+0.72}_{-0.80}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Omega_{\Lambda}$	$0.697^{+0.013}_{-0.014}$	$D_{\text{M}}(0.38)$	$1519^{+20}_{-18}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\Omega_{\text{m}}$	$0.303^{+0.014}_{-0.013}$	$H(0.51)$	$90.04^{+0.60}_{-0.68}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$\Omega_{\text{m}} h^2$	$0.1412^{+0.0018}_{-0.0018}$	$D_{\text{M}}(0.51)$	$1969^{+24}_{-22}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\Omega_{\nu} h^2$	$< 0.00193$	$H(0.61)$	$95.60^{+0.52}_{-0.59}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	$0.09635^{+0.00080}_{-0.00089}$	$D_{\text{M}}(0.61)$	$2292^{+26}_{-23}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$\sigma_8$	$0.803^{+0.023}_{-0.029}$	$H(2.33)$	$235.4^{+1.1}_{-1.1}$
$A^{\text{kSZ}}$	$< 8.17$	$S_8$	$0.807^{+0.023}_{-0.025}$	$D_{\text{M}}(2.33)$	$5750^{+29}_{-25}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.442^{+0.013}_{-0.014}$	$f\sigma_8(0.15)$	$0.448^{+0.012}_{-0.013}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.596^{+0.017}_{-0.019}$	$\sigma_8(0.15)$	$0.743^{+0.022}_{-0.028}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.4}$	$\sigma_8/h^{0.5}$	$0.972^{+0.027}_{-0.031}$	$f\sigma_8(0.38)$	$0.468^{+0.012}_{-0.013}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$r_{\text{drag}} h$	$100.6^{+1.6}_{-1.9}$	$\sigma_8(0.38)$	$0.660^{+0.019}_{-0.025}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	$\langle d^2 \rangle^{1/2}$	$2.410^{+0.046}_{-0.045}$	$f\sigma_8(0.51)$	$0.467^{+0.012}_{-0.013}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.057}$	$z_{\text{re}}$	$< 8.91$	$\sigma_8(0.51)$	$0.618^{+0.018}_{-0.024}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$10^9 A_{\text{s}}$	$2.094^{+0.059}_{-0.053}$	$f\sigma_8(0.61)$	$0.463^{+0.012}_{-0.013}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.10}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.021}_{-0.021}$	$\sigma_8(0.61)$	$0.588^{+0.017}_{-0.023}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_{40}$	$1222^{+23}_{-23}$	$f\sigma_8(2.33)$	$0.2970^{+0.0080}_{-0.010}$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.52}_{-0.53}$	$D_{220}$	$5744^{+76}_{-77}$	$\sigma_8(2.33)$	$0.3064^{+0.0091}_{-0.012}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	$2537^{+26}_{-26}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	$818.0^{+9.3}_{-9.3}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^1$	$1.51^{+0.15}_{-0.15}$	$D_{2000}$	$231.2^{+3.0}_{-3.0}$	$f_{2000}^{217}$	$106.7^{+3.4}_{-3.5}$
$b_{\text{DES}}^2$	$1.71^{+0.12}_{-0.11}$	$n_{\text{s},0.002}$	$0.9695^{+0.0074}_{-0.0071}$	$\chi_{\text{small}}^2$	$396.9 (\nu: 1.5)$
$b_{\text{DES}}^3$	$1.70^{+0.10}_{-0.096}$	$Y_{\text{P}}$	$0.245451^{+0.000098}_{-0.000099}$	$\chi_{\text{lowl}}^2$	$22.64 (\nu: 0.3)$
$b_{\text{DES}}^4$	$2.06^{+0.12}_{-0.11}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246778^{+0.000099}_{-0.000099}$	$\chi_{\text{plik}}^2$	$2363.1 (\nu: 21.6)$
$b_{\text{DES}}^5$	$2.16^{+0.16}_{-0.16}$	$10^5 \text{D/H}$	$2.559^{+0.047}_{-0.047}$	$\chi_{6\text{DF}}^2$	$0.033 (\nu: 0.0)$
$m_{\text{DES}}^1$	$0.012^{+0.045}_{-0.045}$	Age/Gyr	$13.769^{+0.067}_{-0.057}$	$\chi_{\text{MGS}}^2$	$1.85 (\nu: 0.1)$
$m_{\text{DES}}^2$	$0.013^{+0.043}_{-0.043}$	$z_*$	$1089.55^{+0.40}_{-0.41}$	$\chi_{\text{DR12BAO}}^2$	$3.93 (\nu: 0.4)$
$m_{\text{DES}}^3$	$-0.003^{+0.039}_{-0.040}$	$r_*$	$144.86^{+0.42}_{-0.43}$	$\chi_{\text{DES}}^2$	$518.3 (\nu: 11.9)$
$m_{\text{DES}}^4$	$0.003^{+0.040}_{-0.040}$	$100\theta_*$	$1.04130^{+0.00055}_{-0.00055}$	$\chi_{\text{prior}}^2$	$25 (\nu: 22.8)$
$A_{\text{IA,DES}}$	$0.47^{+0.35}_{-0.30}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911^{+0.041}_{-0.042}$	$\chi_{\text{BAO}}^2$	$5.81 (\nu: 0.3)$
$\alpha_{\text{IA,DES}}$	$< 3.04$	$z_{\text{drag}}$	$1060.13^{+0.56}_{-0.58}$	$\chi_{\text{CMB}}^2$	$2782.6 (\nu: 21.0)$
$\Delta z_{\text{l,DES}}^1$	$0.004^{+0.015}_{-0.015}$	$r_{\text{drag}}$	$147.48^{+0.45}_{-0.46}$		

$\bar{\chi}_{\text{eff}}^2 = 3331.28$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = 0.53$ ;  $R - 1 = 0.00944$

### 6.31 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02252^{+0.00029}_{-0.00028}$	$\Delta z_{\text{l,DES}}^1$	$0.003^{+0.015}_{-0.015}$	$z_{\text{drag}}$	$1060.15^{+0.58}_{-0.60}$
$\Omega_c h^2$	$0.1181^{+0.0021}_{-0.0020}$	$\Delta z_{\text{l,DES}}^2$	$0.001^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.44^{+0.48}_{-0.49}$
$100\theta_{\text{MC}}$	$1.04111^{+0.00057}_{-0.00060}$	$\Delta z_{\text{l,DES}}^3$	$0.003^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14062^{+0.00057}_{-0.00056}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\Delta z_{\text{l,DES}}^4$	$0.001^{+0.018}_{-0.018}$	$100\theta_{\text{D}}$	$0.16064^{+0.00034}_{-0.00034}$
$\Sigma m_\nu$ [eV]	$< 0.188$	$\Delta z_{\text{l,DES}}^5$	$-0.001^{+0.019}_{-0.019}$	$z_{\text{eq}}$	$3360^{+46}_{-45}$
$\ln(10^{10} A_s)$	$3.046^{+0.028}_{-0.026}$	$\Delta z_{\text{s,DES}}^1$	$-0.003^{+0.028}_{-0.028}$	$k_{\text{eq}}$	$0.01025^{+0.00014}_{-0.00014}$
$n_s$	$0.9691^{+0.0079}_{-0.0078}$	$\Delta z_{\text{s,DES}}^2$	$-0.031^{+0.021}_{-0.022}$	$100\theta_{\text{eq}}$	$0.8216^{+0.0088}_{-0.0088}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.018}_{-0.019}$	$100\theta_{\text{s,eq}}$	$0.4536^{+0.0045}_{-0.0045}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\Delta z_{\text{s,DES}}^4$	$-0.031^{+0.035}_{-0.035}$	$H(0.15)$	$73.5^{+1.3}_{-1.5}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$H_0$	$68.3^{+1.5}_{-1.7}$	$D_{\text{M}}(0.15)$	$636^{+15}_{-12}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\Omega_\Lambda$	$0.697^{+0.018}_{-0.021}$	$H(0.38)$	$83.43^{+0.97}_{-1.2}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$\Omega_{\text{m}}$	$0.303^{+0.021}_{-0.018}$	$D_{\text{M}}(0.38)$	$1518^{+30}_{-25}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\Omega_{\text{m}} h^2$	$0.1413^{+0.0027}_{-0.0025}$	$H(0.51)$	$90.07^{+0.80}_{-0.98}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\Omega_\nu h^2$	$< 0.00202$	$D_{\text{M}}(0.51)$	$1968^{+36}_{-30}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\Omega_{\text{m}} h^3$	$0.09642^{+0.00085}_{-0.00095}$	$H(0.61)$	$95.63^{+0.68}_{-0.83}$
$A^{\text{kSZ}}$	$< 8.02$	$\sigma_8$	$0.807^{+0.021}_{-0.028}$	$D_{\text{M}}(0.61)$	$2291^{+39}_{-32}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$S_8$	$0.811^{+0.021}_{-0.021}$	$H(2.33)$	$235.5^{+1.6}_{-1.5}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.5}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.444^{+0.012}_{-0.011}$	$D_{\text{M}}(2.33)$	$5749^{+40}_{-32}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.4}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.599^{+0.014}_{-0.015}$	$f\sigma_8(0.15)$	$0.450^{+0.011}_{-0.011}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\sigma_8/h^{0.5}$	$0.977^{+0.023}_{-0.026}$	$\sigma_8(0.15)$	$0.747^{+0.020}_{-0.027}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	$r_{\text{drag}} h$	$100.6^{+2.4}_{-2.7}$	$f\sigma_8(0.38)$	$0.4697^{+0.0096}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.057}$	$\langle d^2 \rangle^{1/2}$	$2.419^{+0.039}_{-0.038}$	$\sigma_8(0.38)$	$0.663^{+0.018}_{-0.026}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.4}$	$f\sigma_8(0.51)$	$0.469^{+0.010}_{-0.011}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.10}$	$10^9 A_s$	$2.104^{+0.059}_{-0.055}$	$\sigma_8(0.51)$	$0.621^{+0.018}_{-0.025}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.021}_{-0.020}$	$f\sigma_8(0.61)$	$0.465^{+0.010}_{-0.011}$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.53}_{-0.53}$	$D_{40}$	$1225^{+23}_{-22}$	$\sigma_8(0.61)$	$0.591^{+0.017}_{-0.024}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{220}$	$5750^{+74}_{-75}$	$f\sigma_8(2.33)$	$0.2983^{+0.0080}_{-0.011}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{810}$	$2539^{+26}_{-25}$	$\sigma_8(2.33)$	$0.3078^{+0.0093}_{-0.013}$
$b_{\text{DES}}^1$	$1.50^{+0.15}_{-0.15}$	$D_{1420}$	$818.4^{+9.3}_{-9.1}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$b_{\text{DES}}^2$	$1.70^{+0.12}_{-0.11}$	$D_{2000}$	$231.4^{+3.1}_{-3.0}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^3$	$1.69^{+0.10}_{-0.099}$	$n_{\text{s},0.002}$	$0.9691^{+0.0079}_{-0.0078}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.5}$
$b_{\text{DES}}^4$	$2.05^{+0.12}_{-0.11}$	$Y_{\text{P}}$	$0.24545^{+0.00011}_{-0.00011}$	$\chi_{\text{lensing}}^2$	$9.5 (\nu: 0.5)$
$b_{\text{DES}}^5$	$2.15^{+0.16}_{-0.16}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00011}_{-0.00011}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.2)$
$m_{\text{DES}}^1$	$0.012^{+0.045}_{-0.045}$	$10^5 \text{D/H}$	$2.558^{+0.051}_{-0.052}$	$\chi_{\text{lowl}}^2$	$22.82 (\nu: 0.3)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.044}$	$\text{Age/Gyr}$	$13.766^{+0.089}_{-0.071}$	$\chi_{\text{plik}}^2$	$2362.0 (\nu: 18.8)$
$m_{\text{DES}}^3$	$-0.004^{+0.039}_{-0.039}$	$z_*$	$1089.56^{+0.47}_{-0.48}$	$\chi_{\text{DES}}^2$	$518.5 (\nu: 12.7)$
$m_{\text{DES}}^4$	$0.002^{+0.040}_{-0.040}$	$r_*$	$144.82^{+0.47}_{-0.48}$	$\chi_{\text{prior}}^2$	$25 (\nu: 23.1)$
$A_{\text{IA,DES}}$	$0.47^{+0.35}_{-0.30}$	$100\theta_*$	$1.04128^{+0.00056}_{-0.00058}$	$\chi_{\text{CMB}}^2$	$2791.7 (\nu: 21.7)$
$\alpha_{\text{IA,DES}}$	$< 2.89$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.908^{+0.045}_{-0.045}$		

$$\bar{\chi}_{\text{eff}}^2 = 3334.99; \Delta \bar{\chi}_{\text{eff}}^2 = 0.24; R - 1 = 0.00823$$

### 6.32 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02252^{+0.00026}_{-0.00026}$	$\Delta z_{1,\text{DES}}^2$	$0.001^{+0.013}_{-0.013}$	$k_D$	$0.14063^{+0.00055}_{-0.00053}$
$\Omega_c h^2$	$0.1182^{+0.0017}_{-0.0017}$	$\Delta z_{1,\text{DES}}^3$	$0.003^{+0.013}_{-0.013}$	$100\theta_D$	$0.16065^{+0.00033}_{-0.00033}$
$100\theta_{\text{MC}}$	$1.04111^{+0.00055}_{-0.00055}$	$\Delta z_{1,\text{DES}}^4$	$0.000^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3362^{+38}_{-38}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\Delta z_{1,\text{DES}}^5$	$-0.001^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01026^{+0.00012}_{-0.00012}$
$\Sigma m_\nu$ [eV]	$< 0.140$	$\Delta z_{s,\text{DES}}^1$	$-0.003^{+0.028}_{-0.028}$	$100\theta_{\text{eq}}$	$0.8212^{+0.0072}_{-0.0071}$
$\ln(10^{10} A_s)$	$3.045^{+0.027}_{-0.026}$	$\Delta z_{s,\text{DES}}^2$	$-0.031^{+0.021}_{-0.021}$	$100\theta_{s,\text{eq}}$	$0.4534^{+0.0037}_{-0.0036}$
$n_s$	$0.9688^{+0.0071}_{-0.0070}$	$\Delta z_{s,\text{DES}}^3$	$0.003^{+0.018}_{-0.019}$	$H(0.15)$	$73.49^{+0.85}_{-0.92}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$\Delta z_{s,\text{DES}}^4$	$-0.031^{+0.035}_{-0.036}$	$D_M(0.15)$	$635.4^{+8.9}_{-8.2}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$H_0$	$68.29^{+0.98}_{-1.0}$	$H(0.38)$	$83.46^{+0.66}_{-0.71}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Omega_\Lambda$	$0.697^{+0.012}_{-0.013}$	$D_M(0.38)$	$1518^{+18}_{-17}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\Omega_m$	$0.303^{+0.013}_{-0.012}$	$H(0.51)$	$90.09^{+0.55}_{-0.60}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$\Omega_m h^2$	$0.1413^{+0.0018}_{-0.0017}$	$D_M(0.51)$	$1967^{+22}_{-20}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\Omega_\nu h^2$	$< 0.00151$	$H(0.61)$	$95.65^{+0.47}_{-0.52}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\Omega_m h^3$	$0.09647^{+0.00072}_{-0.00075}$	$D_M(0.61)$	$2290^{+24}_{-22}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\sigma_8$	$0.809^{+0.018}_{-0.021}$	$H(2.33)$	$235.5^{+1.1}_{-1.1}$
$A^{\text{kSZ}}$	$< 8.04$	$S_8$	$0.813^{+0.019}_{-0.019}$	$D_M(2.33)$	$5748^{+25}_{-23}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$\sigma_8 \Omega_m^{0.5}$	$0.445^{+0.011}_{-0.011}$	$f\sigma_8(0.15)$	$0.4503^{+0.0099}_{-0.0099}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.5}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.013}_{-0.014}$	$\sigma_8(0.15)$	$0.748^{+0.017}_{-0.020}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.4}$	$\sigma_8/h^{0.5}$	$0.979^{+0.020}_{-0.022}$	$f\sigma_8(0.38)$	$0.4706^{+0.0091}_{-0.010}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$r_{\text{drag}} h$	$100.7^{+1.6}_{-1.6}$	$\sigma_8(0.38)$	$0.664^{+0.015}_{-0.019}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	$\langle d^2 \rangle^{1/2}$	$2.420^{+0.038}_{-0.037}$	$f\sigma_8(0.51)$	$0.4702^{+0.0087}_{-0.010}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.057}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$\sigma_8(0.51)$	$0.622^{+0.014}_{-0.018}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$10^9 A_s$	$2.102^{+0.057}_{-0.054}$	$f\sigma_8(0.61)$	$0.4659^{+0.0089}_{-0.0098}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.10}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.020}_{-0.020}$	$\sigma_8(0.61)$	$0.592^{+0.014}_{-0.017}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_{40}$	$1225^{+22}_{-22}$	$f\sigma_8(2.33)$	$0.2988^{+0.0064}_{-0.0075}$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.52}_{-0.54}$	$D_{220}$	$5749^{+73}_{-75}$	$\sigma_8(2.33)$	$0.3084^{+0.0073}_{-0.0088}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$D_{810}$	$2538^{+26}_{-25}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{1420}$	$818.2^{+9.3}_{-9.1}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$b_{\text{DES}}^1$	$1.50^{+0.14}_{-0.14}$	$D_{2000}$	$231.3^{+3.1}_{-3.0}$	$f_{2000}^{217}$	$106.7^{+3.4}_{-3.5}$
$b_{\text{DES}}^2$	$1.70^{+0.11}_{-0.11}$	$n_{s,0.002}$	$0.9688^{+0.0071}_{-0.0070}$	$\chi_{\text{lensing}}^2$	$9.40 (\nu: 0.4)$
$b_{\text{DES}}^3$	$1.687^{+0.092}_{-0.091}$	$Y_P$	$0.245450^{+0.000098}_{-0.000099}$	$\chi_{\text{small}}^2$	$397.2 (\nu: 1.9)$
$b_{\text{DES}}^4$	$2.05^{+0.11}_{-0.11}$	$Y_P^{\text{BBN}}$	$0.246777^{+0.000098}_{-0.000099}$	$\chi_{\text{lowl}}^2$	$22.86 (\nu: 0.3)$
$b_{\text{DES}}^5$	$2.15^{+0.15}_{-0.15}$	$10^5 D/H$	$2.559^{+0.047}_{-0.047}$	$\chi_{\text{plik}}^2$	$2361.5 (\nu: 18.2)$
$m_{\text{DES}}^1$	$0.012^{+0.045}_{-0.045}$	Age/Gyr	$13.763^{+0.058}_{-0.052}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.044}$	$z_*$	$1089.57^{+0.40}_{-0.40}$	$\chi_{\text{MGS}}^2$	$1.88 (\nu: 0.1)$
$m_{\text{DES}}^3$	$-0.005^{+0.039}_{-0.039}$	$r_*$	$144.80^{+0.40}_{-0.40}$	$\chi_{\text{DR12BAO}}^2$	$3.85 (\nu: 0.3)$
$m_{\text{DES}}^4$	$0.001^{+0.040}_{-0.040}$	$100\theta_*$	$1.04128^{+0.00054}_{-0.00055}$	$\chi_{\text{DES}}^2$	$518.6 (\nu: 12.2)$
$A_{\text{IA,DES}}$	$0.48^{+0.33}_{-0.31}$	$D_M(z_*)/\text{Gpc}$	$13.906^{+0.039}_{-0.039}$	$\chi_{\text{prior}}^2$	$25 (\nu: 23.1)$
$\alpha_{\text{IA,DES}}$	$< 2.86$	$z_{\text{drag}}$	$1060.14^{+0.59}_{-0.55}$	$\chi_{\text{CMB}}^2$	$2790.9 (\nu: 20.4)$
$\Delta z_{1,\text{DES}}^1$	$0.003^{+0.015}_{-0.015}$	$r_{\text{drag}}$	$147.42^{+0.43}_{-0.43}$	$\chi_{\text{BAO}}^2$	$5.76 (\nu: 0.3)$

$$\bar{\chi}_{\text{eff}}^2 = 3340.12; \Delta \bar{\chi}_{\text{eff}}^2 = 0.09; R - 1 = 0.00912$$

### 6.33 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022462	$0.02243^{+0.00029}_{-0.00028}$	$\Delta z_{s,DES}^2$	-0.0205	$-0.021^{+0.023}_{-0.023}$	$k_D$	0.14076	$0.14072^{+0.00060}_{-0.00060}$
$\Omega_c h^2$	0.11903	$0.1190^{+0.0023}_{-0.0022}$	$\Delta z_{s,DES}^3$	0.0047	$0.004^{+0.020}_{-0.020}$	$100\theta_D$	0.160687	$0.16072^{+0.00034}_{-0.00034}$
$100\theta_{MC}$	1.04107	$1.04100^{+0.00060}_{-0.00060}$	$\Delta z_{s,DES}^4$	-0.0213	$-0.022^{+0.039}_{-0.039}$	$z_{eq}$	3381	$3381^{+51}_{-50}$
$\tau$	0.0535	$0.054^{+0.016}_{-0.016}$	$H_0$	68.33	$67.6^{+1.7}_{-2.0}$	$k_{eq}$	0.010320	$0.01032^{+0.00016}_{-0.00015}$
$\Sigma m_\nu$ [eV]	0.002	< 0.248	$\Omega_\Lambda$	0.6969	$0.688^{+0.021}_{-0.026}$	$100\theta_{eq}$	0.8174	$0.8175^{+0.0096}_{-0.0095}$
$\ln(10^{10} A_s)$	3.0406	$3.040^{+0.031}_{-0.031}$	$\Omega_m$	0.3031	$0.312^{+0.026}_{-0.021}$	$100\theta_{s,eq}$	0.45144	$0.4515^{+0.0049}_{-0.0049}$
$n_s$	0.9682	$0.9672^{+0.0080}_{-0.0080}$	$\Omega_m h^2$	0.14152	$0.1424^{+0.0030}_{-0.0028}$	$H(0.15)$	73.53	$72.9^{+1.5}_{-1.8}$
$y_{cal}$	1.00044	$1.0004^{+0.0048}_{-0.0049}$	$\Omega_\nu h^2$	0.00003	< 0.00266	$D_M(0.15)$	635.1	$641^{+18}_{-14}$
$A_{217}^{CIB}$	47.0	$47^{+10}_{-10}$	$\Omega_m h^3$	0.09670	$0.09624^{+0.00097}_{-0.0012}$	$H(0.38)$	83.51	$83.0^{+1.1}_{-1.4}$
$\xi^{tSZ \times CIB}$	0.47	—	$\sigma_8$	0.8200	$0.802^{+0.028}_{-0.039}$	$D_M(0.38)$	1516.6	$1530^{+36}_{-29}$
$A_{143}^{tSZ}$	7.21	$5.5^{+3.7}_{-3.9}$	$S_8$	0.8243	$0.818^{+0.026}_{-0.027}$	$H(0.51)$	90.15	$89.72^{+0.92}_{-1.1}$
$A_{100}^{PS}$	249	$258^{+50}_{-50}$	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.448^{+0.014}_{-0.015}$	$D_M(0.51)$	1966.0	$1982^{+43}_{-35}$
$A_{143}^{PS}$	47.2	$45^{+10}_{-20}$	$\sigma_8 \Omega_m^{0.25}$	0.6085	$0.599^{+0.019}_{-0.022}$	$H(0.61)$	95.72	$95.34^{+0.78}_{-0.97}$
$A_{143 \times 217}^{PS}$	47.9	$42^{+20}_{-20}$	$\sigma_8/h^{0.5}$	0.9921	$0.976^{+0.031}_{-0.037}$	$D_M(0.61)$	2288.8	$2306^{+47}_{-38}$
$A_{217}^{PS}$	119.5	$114^{+20}_{-20}$	$r_{drag} h$	100.61	$99.6^{+2.7}_{-3.2}$	$H(2.33)$	235.70	$236.1^{+1.8}_{-1.7}$
$A^{kSZ}$	0.00	< 8.09	$\langle d^2 \rangle^{1/2}$	2.4331	$2.423^{+0.047}_{-0.048}$	$D_M(2.33)$	5743.1	$5762^{+48}_{-37}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.6}_{-3.6}$	$z_{re}$	7.55	$7.6^{+1.5}_{-1.6}$	$f\sigma_8(0.15)$	0.4560	$0.453^{+0.013}_{-0.014}$
$A_{143}^{dustTT}$	11.01	$11.0^{+3.5}_{-3.5}$	$10^9 A_s$	2.092	$2.091^{+0.066}_{-0.064}$	$\sigma_8(0.15)$	0.7585	$0.741^{+0.027}_{-0.037}$
$A_{143 \times 217}^{dustTT}$	19.8	$18.7^{+6.3}_{-6.4}$	$10^9 A_s e^{-2\tau}$	1.8796	$1.878^{+0.022}_{-0.022}$	$f\sigma_8(0.38)$	0.4763	$0.471^{+0.014}_{-0.015}$
$A_{217}^{dustTT}$	95.0	$94^{+10}_{-10}$	$D_{40}$	1224.2	$1226^{+24}_{-24}$	$\sigma_8(0.38)$	0.6731	$0.657^{+0.024}_{-0.035}$
$A_{100}^{dustTE}$	0.113	$0.114^{+0.076}_{-0.075}$	$D_{220}$	5736	$5736^{+76}_{-78}$	$f\sigma_8(0.51)$	0.4758	$0.470^{+0.014}_{-0.016}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.058}_{-0.058}$	$D_{810}$	2539.5	$2537^{+26}_{-27}$	$\sigma_8(0.51)$	0.6302	$0.615^{+0.023}_{-0.033}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.17}_{-0.17}$	$D_{1420}$	818.5	$817.4^{+9.3}_{-9.3}$	$f\sigma_8(0.61)$	0.4714	$0.465^{+0.014}_{-0.016}$
$A_{143}^{dustTE}$	0.226	$0.22^{+0.11}_{-0.11}$	$D_{2000}$	231.50	$230.9^{+3.1}_{-3.1}$	$\sigma_8(0.61)$	0.5998	$0.585^{+0.022}_{-0.032}$
$A_{143 \times 217}^{dustTE}$	0.666	$0.66^{+0.16}_{-0.16}$	$n_{s,0.002}$	0.9682	$0.9672^{+0.0080}_{-0.0080}$	$f\sigma_8(2.33)$	0.3018	$0.296^{+0.010}_{-0.014}$
$A_{217}^{dustTE}$	2.09	$2.07^{+0.53}_{-0.53}$	$Y_P$	0.245431	$0.24542^{+0.00011}_{-0.00011}$	$\sigma_8(2.33)$	0.3120	$0.304^{+0.012}_{-0.017}$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$Y_P^{BBN}$	0.246757	$0.24674^{+0.00011}_{-0.00011}$	$f_{2000}^{143}$	28.4	$29^{+5}_{-5}$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$10^5 D/H$	2.569	$2.575^{+0.052}_{-0.051}$	$f_{2000}^{143 \times 217}$	31.67	$32^{+4}_{-4}$
$m_{DES}^1$	0.0144	$0.014^{+0.045}_{-0.044}$	Age/Gyr	13.751	$13.79^{+0.11}_{-0.084}$	$f_{2000}^{217}$	106.30	$106.9^{+3.5}_{-3.5}$
$m_{DES}^2$	0.0124	$0.012^{+0.043}_{-0.043}$	$z_*$	1089.714	$1089.76^{+0.50}_{-0.49}$	$\chi_{small}^2$	395.86	$397.0 (\nu: 1.4)$
$m_{DES}^3$	-0.0067	$-0.008^{+0.039}_{-0.040}$	$r_*$	144.62	$144.63^{+0.51}_{-0.51}$	$\chi_{lowl}^2$	22.90	$22.99 (\nu: 0.3)$
$m_{DES}^4$	0.0119	$0.011^{+0.041}_{-0.040}$	$100\theta_*$	1.04121	$1.04119^{+0.00059}_{-0.00058}$	$\chi_{plik}^2$	2344.9	$2361.4 (\nu: 19.6)$
$A_{IA,DES}$	1.43	$1.24^{+0.96}_{-0.95}$	$D_M(z_*)/\text{Gpc}$	13.8894	$13.891^{+0.048}_{-0.048}$	$\chi_{DES}^2$	229.21	$232.0 (\nu: 3.2)$
$\alpha_{IA,DES}$	2.44	> -2.12	$z_{drag}$	1060.09	$1060.01^{+0.61}_{-0.57}$	$\chi_{prior}^2$	2.7	$19.6 (\nu: 17.8)$
$\Delta z_{s,DES}^1$	0.0045	$0.005^{+0.028}_{-0.029}$	$r_{drag}$	147.25	$147.28^{+0.52}_{-0.52}$	$\chi_{CMB}^2$	2763.6	$2781.4 (\nu: 19.3)$

Best-fit  $\chi_{eff}^2 = 2995.54$ ;  $\Delta\chi_{eff}^2 = -1.13$ ;  $\bar{\chi}_{eff}^2 = 3033.01$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.68$ ;  $R - 1 = 0.00759$   
 $\chi_{eff}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  -0.00) commander\_dx12\_v3.2.29: 22.90 ( $\Delta$  0.07) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.87 ( $\Delta$  -1.15) WL - DES\_1YR\_final: 229.21 ( $\Delta$  0.02)

### 6.34 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022444	$0.02246^{+0.00026}_{-0.00026}$	$\Delta z_{s,DES}^4$	-0.0221	$-0.022^{+0.039}_{-0.039}$	$100\theta_{eq}$	0.8173	$0.8186^{+0.0079}_{-0.0077}$
$\Omega_c h^2$	0.11906	$0.1188^{+0.0018}_{-0.0018}$	$H_0$	68.29	$67.99^{+0.95}_{-1.1}$	$100\theta_{s,eq}$	0.45139	$0.4521^{+0.0040}_{-0.0039}$
$100\theta_{MC}$	1.04104	$1.04105^{+0.00056}_{-0.00057}$	$\Omega_\Lambda$	0.6965	$0.693^{+0.012}_{-0.013}$	$H(0.15)$	73.49	$73.23^{+0.87}_{-0.90}$
$\tau$	0.0532	$0.054^{+0.015}_{-0.015}$	$\Omega_m$	0.3035	$0.307^{+0.013}_{-0.012}$	$D_M(0.15)$	635.4	$638.0^{+8.8}_{-8.4}$
$\Sigma m_\nu$ [eV]	0.002	< 0.146	$\Omega_m h^2$	0.14153	$0.1418^{+0.0018}_{-0.0018}$	$H(0.38)$	83.48	$83.27^{+0.67}_{-0.70}$
$\ln(10^{10} A_s)$	3.0387	$3.040^{+0.032}_{-0.031}$	$\Omega_\nu h^2$	0.00003	< 0.00157	$D_M(0.38)$	1517.3	$1523^{+18}_{-17}$
$n_s$	0.9684	$0.9680^{+0.0072}_{-0.0072}$	$\Omega_m h^3$	0.09665	$0.09643^{+0.00072}_{-0.00078}$	$H(0.51)$	90.13	$89.94^{+0.56}_{-0.59}$
$y_{cal}$	0.99984	$1.0004^{+0.0048}_{-0.0049}$	$\sigma_8$	0.8194	$0.808^{+0.021}_{-0.025}$	$D_M(0.51)$	1966.8	$1973^{+21}_{-20}$
$A_{217}^{CIB}$	46.8	$47^{+10}_{-10}$	$S_8$	0.8242	$0.818^{+0.023}_{-0.025}$	$H(0.61)$	95.693	$95.53^{+0.48}_{-0.51}$
$\xi^{tSZ \times CIB}$	0.48	—	$\sigma_8 \Omega_m^{0.5}$	0.4514	$0.448^{+0.013}_{-0.013}$	$D_M(0.61)$	2289.7	$2297^{+23}_{-22}$
$A_{143}^{tSZ}$	7.30	$5.6^{+3.8}_{-3.8}$	$\sigma_8 \Omega_m^{0.25}$	0.6082	$0.602^{+0.016}_{-0.017}$	$H(2.33)$	235.70	$235.8^{+1.1}_{-1.1}$
$A_{100}^{PS}$	248	$258^{+50}_{-50}$	$\sigma_8/h^{0.5}$	0.9916	$0.980^{+0.025}_{-0.027}$	$D_M(2.33)$	5744.3	$5753^{+25}_{-23}$
$A_{143}^{PS}$	47.3	$45^{+10}_{-20}$	$r_{drag} h$	100.57	$100.2^{+1.6}_{-1.7}$	$f\sigma_8(0.15)$	0.4559	$0.453^{+0.012}_{-0.013}$
$A_{143 \times 217}^{PS}$	48.3	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4310	$2.423^{+0.045}_{-0.047}$	$\sigma_8(0.15)$	0.7579	$0.748^{+0.019}_{-0.023}$
$A_{217}^{PS}$	119.7	$115^{+20}_{-20}$	$z_{re}$	7.53	$7.6^{+1.5}_{-1.6}$	$f\sigma_8(0.38)$	0.4761	$0.472^{+0.012}_{-0.012}$
$A^{kSZ}$	0.00	< 7.98	$10^9 A_s$	2.088	$2.091^{+0.068}_{-0.064}$	$\sigma_8(0.38)$	0.6725	$0.663^{+0.017}_{-0.021}$
$A_{100}^{dustTT}$	8.89	$8.9^{+3.6}_{-3.7}$	$10^9 A_s e^{-2\tau}$	1.8769	$1.877^{+0.021}_{-0.021}$	$f\sigma_8(0.51)$	0.4756	$0.471^{+0.011}_{-0.012}$
$A_{143}^{dustTT}$	11.07	$10.9^{+3.6}_{-3.5}$	$D_{40}$	1221.9	$1225^{+23}_{-22}$	$\sigma_8(0.51)$	0.6296	$0.621^{+0.016}_{-0.020}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.6^{+6.3}_{-6.4}$	$D_{220}$	5725	$5736^{+75}_{-76}$	$f\sigma_8(0.61)$	0.4712	$0.467^{+0.011}_{-0.012}$
$A_{217}^{dustTT}$	95.0	$94^{+10}_{-10}$	$D_{810}$	2536.0	$2537^{+26}_{-27}$	$\sigma_8(0.61)$	0.5992	$0.591^{+0.016}_{-0.019}$
$A_{100}^{dustTE}$	0.115	$0.114^{+0.074}_{-0.075}$	$D_{1420}$	817.4	$817.6^{+9.4}_{-9.2}$	$f\sigma_8(2.33)$	0.3015	$0.2981^{+0.0072}_{-0.0085}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.134^{+0.058}_{-0.058}$	$D_{2000}$	231.15	$231.1^{+3.0}_{-3.0}$	$\sigma_8(2.33)$	0.3116	$0.3075^{+0.0081}_{-0.0098}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.17}_{-0.17}$	$n_{s,0.002}$	0.9684	$0.9680^{+0.0072}_{-0.0072}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{143}^{dustTE}$	0.223	$0.22^{+0.11}_{-0.11}$	$Y_P$	0.245424	$0.245428^{+0.000097}_{-0.00010}$	$f_{2000}^{143 \times 217}$	31.74	$32^{+4}_{-4}$
$A_{143 \times 217}^{dustTE}$	0.663	$0.66^{+0.15}_{-0.15}$	$Y_P^{BBN}$	0.246751	$0.246754^{+0.000098}_{-0.00010}$	$f_{2000}^{217}$	106.27	$106.7^{+3.6}_{-3.5}$
$A_{217}^{dustTE}$	2.07	$2.07^{+0.51}_{-0.53}$	$10^5 D/H$	2.5719	$2.570^{+0.048}_{-0.047}$	$\chi_{simall}^2$	395.84	$397.0 (\nu: 1.4)$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	Age/Gyr	13.754	$13.774^{+0.057}_{-0.053}$	$\chi_{lowl}^2$	22.84	$22.92 (\nu: 0.3)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0013}$	$z_*$	1089.740	$1089.70^{+0.40}_{-0.41}$	$\chi_{plik}^2$	2345.0	$2360.9 (\nu: 18.4)$
$m_{DES}^1$	0.0155	$0.014^{+0.045}_{-0.045}$	$r_*$	144.625	$144.69^{+0.44}_{-0.43}$	$\chi_{6DF}^2$	0.000	$0.033 (\nu: 0.0)$
$m_{DES}^2$	0.0116	$0.012^{+0.043}_{-0.043}$	$100\theta_*$	1.04119	$1.04123^{+0.00057}_{-0.00057}$	$\chi_{MGS}^2$	1.75	$1.57 (\nu: 0.1)$
$m_{DES}^3$	-0.0071	$-0.007^{+0.040}_{-0.040}$	$D_M(z_*)/\text{Gpc}$	13.8904	$13.896^{+0.041}_{-0.041}$	$\chi_{DR12BAO}^2$	3.47	$4.2 (\nu: 0.6)$
$m_{DES}^4$	0.0121	$0.011^{+0.041}_{-0.039}$	$z_{drag}$	1060.05	$1060.05^{+0.57}_{-0.57}$	$\chi_{DES}^2$	229.17	$231.9 (\nu: 3.0)$
$A_{IA,DES}$	1.45	$1.23^{+0.97}_{-0.95}$	$r_{drag}$	147.264	$147.33^{+0.46}_{-0.45}$	$\chi_{prior}^2$	2.8	$19.4 (\nu: 17.8)$
$\alpha_{IA,DES}$	2.51	> -2.25	$k_D$	0.14073	$0.14068^{+0.00057}_{-0.00057}$	$\chi_{BAO}^2$	5.22	$5.78 (\nu: 0.3)$
$\Delta z_{s,DES}^1$	0.0044	$0.004^{+0.028}_{-0.029}$	$100\theta_D$	0.160707	$0.16070^{+0.00033}_{-0.00033}$	$\chi_{CMB}^2$	2763.7	$2780.8 (\nu: 18.0)$
$\Delta z_{s,DES}^2$	-0.0207	$-0.021^{+0.023}_{-0.023}$	$z_{eq}$	3381.5	$3375^{+41}_{-41}$			
$\Delta z_{s,DES}^3$	0.0050	$0.005^{+0.020}_{-0.020}$	$k_{eq}$	0.010320	$0.01030^{+0.00012}_{-0.00013}$			

Best-fit  $\chi_{eff}^2 = 3000.82$ ;  $\Delta\chi_{eff}^2 = -1.30$ ;  $\bar{\chi}_{eff}^2 = 3037.89$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.12$ ;  $R - 1 = 0.00772$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.75 ( $\Delta$  0.34) DR12BAO: 3.47 ( $\Delta$  -0.47) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 ( $\Delta$  -0.21) commander\_dx12\_v3\_2\_29: 22.84 ( $\Delta$  0.17) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.98 ( $\Delta$  -1.38) WL - DES\_1YR\_final: 229.17 ( $\Delta$  0.11)

### 6.35 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022472	$0.02244^{+0.00028}_{-0.00027}$	$\Delta z_{s,DES}^3$	0.0048	$0.004^{+0.019}_{-0.020}$	$z_{eq}$	3380.6	$3382^{+49}_{-47}$
$\Omega_c h^2$	0.11899	$0.1191^{+0.0022}_{-0.0021}$	$\Delta z_{s,DES}^4$	-0.0223	$-0.023^{+0.039}_{-0.039}$	$k_{eq}$	0.010318	$0.01032^{+0.00015}_{-0.00014}$
$100\theta_{MC}$	1.04104	$1.04100^{+0.00059}_{-0.00060}$	$H_0$	68.34	$67.7^{+1.5}_{-1.8}$	$100\theta_{eq}$	0.8175	$0.8172^{+0.0091}_{-0.0091}$
$\tau$	0.0540	$0.055^{+0.015}_{-0.015}$	$\Omega_\Lambda$	0.6971	$0.689^{+0.019}_{-0.022}$	$100\theta_{s,eq}$	0.45150	$0.4513^{+0.0047}_{-0.0047}$
$\Sigma m_\nu$ [eV]	0.001	< 0.198	$\Omega_m$	0.3029	$0.311^{+0.022}_{-0.019}$	$H(0.15)$	73.54	$73.0^{+1.3}_{-1.6}$
$\ln(10^{10} A_s)$	3.0418	$3.043^{+0.030}_{-0.029}$	$\Omega_m h^2$	0.14148	$0.1423^{+0.0028}_{-0.0026}$	$D_M(0.15)$	635.0	$640^{+15}_{-13}$
$n_s$	0.9689	$0.9670^{+0.0078}_{-0.0077}$	$\Omega_\nu h^2$	0.00001	< 0.00213	$H(0.38)$	83.52	$83.1^{+1.0}_{-1.2}$
$y_{cal}$	1.00052	$1.0006^{+0.0048}_{-0.0048}$	$\Omega_m h^3$	0.09669	$0.09635^{+0.00085}_{-0.00099}$	$D_M(0.38)$	1516.4	$1528^{+31}_{-26}$
$A_{217}^{CIB}$	45.1	$47^{+10}_{-10}$	$\sigma_8$	0.8206	$0.807^{+0.022}_{-0.028}$	$H(0.51)$	90.16	$89.80^{+0.83}_{-0.99}$
$\xi^{tSZ \times CIB}$	0.80	—	$S_8$	0.8246	$0.821^{+0.021}_{-0.021}$	$D_M(0.51)$	1965.7	$1979^{+37}_{-31}$
$A_{143}^{tSZ}$	7.09	$5.5^{+3.8}_{-3.8}$	$\sigma_8 \Omega_m^{0.5}$	0.4517	$0.450^{+0.012}_{-0.012}$	$H(0.61)$	95.72	$95.41^{+0.69}_{-0.83}$
$A_{100}^{PS}$	246	$258^{+50}_{-50}$	$\sigma_8 \Omega_m^{0.25}$	0.6088	$0.602^{+0.014}_{-0.015}$	$D_M(0.61)$	2288.5	$2303^{+40}_{-34}$
$A_{143}^{PS}$	51.7	$45^{+20}_{-20}$	$\sigma_8/h^{0.5}$	0.9927	$0.981^{+0.023}_{-0.026}$	$H(2.33)$	235.68	$236.1^{+1.6}_{-1.6}$
$A_{143 \times 217}^{PS}$	56.4	$42^{+20}_{-20}$	$r_{drag} h$	100.64	$99.7^{+2.5}_{-2.8}$	$D_M(2.33)$	5742.9	$5758^{+40}_{-33}$
$A_{217}^{PS}$	122.9	$115^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4330	$2.430^{+0.038}_{-0.038}$	$f\sigma_8(0.15)$	0.4562	$0.455^{+0.011}_{-0.011}$
$A^{kSZ}$	0.00	< 7.98	$z_{re}$	7.60	$7.7^{+1.5}_{-1.5}$	$\sigma_8(0.15)$	0.7590	$0.746^{+0.021}_{-0.027}$
$A_{100}^{dustTT}$	8.85	$8.9^{+3.6}_{-3.7}$	$10^9 A_s$	2.094	$2.098^{+0.064}_{-0.060}$	$f\sigma_8(0.38)$	0.4765	$0.473^{+0.010}_{-0.011}$
$A_{143}^{dustTT}$	10.99	$10.9^{+3.5}_{-3.5}$	$10^9 A_s e^{-2\tau}$	1.8801	$1.879^{+0.021}_{-0.020}$	$\sigma_8(0.38)$	0.6736	$0.661^{+0.019}_{-0.026}$
$A_{143 \times 217}^{dustTT}$	20.3	$18.6^{+6.3}_{-6.5}$	$D_{40}$	1223.3	$1228^{+23}_{-22}$	$f\sigma_8(0.51)$	0.4761	$0.472^{+0.010}_{-0.011}$
$A_{217}^{dustTT}$	95.8	$94^{+10}_{-10}$	$D_{220}$	5736	$5740^{+75}_{-76}$	$\sigma_8(0.51)$	0.6307	$0.619^{+0.019}_{-0.025}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.075}$	$D_{810}$	2540.7	$2539^{+26}_{-26}$	$f\sigma_8(0.61)$	0.4717	$0.467^{+0.010}_{-0.011}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.134^{+0.057}_{-0.057}$	$D_{1420}$	819.2	$817.7^{+9.3}_{-9.2}$	$\sigma_8(0.61)$	0.6002	$0.589^{+0.018}_{-0.024}$
$A_{100 \times 217}^{dustTE}$	0.479	$0.48^{+0.17}_{-0.17}$	$D_{2000}$	231.77	$231.1^{+3.0}_{-3.0}$	$f\sigma_8(2.33)$	0.3020	$0.2973^{+0.0084}_{-0.011}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.11}_{-0.11}$	$n_{s,0.002}$	0.9689	$0.9670^{+0.0078}_{-0.0077}$	$\sigma_8(2.33)$	0.3122	$0.3064^{+0.0098}_{-0.013}$
$A_{143 \times 217}^{dustTE}$	0.665	$0.66^{+0.15}_{-0.15}$	$Y_P$	0.245434	$0.24542^{+0.00010}_{-0.00011}$	$f_{2000}^{143}$	28.1	$29^{+5}_{-5}$
$A_{217}^{dustTE}$	2.07	$2.07^{+0.52}_{-0.54}$	$Y_P^{BBN}$	0.246761	$0.24675^{+0.00010}_{-0.00011}$	$f_{2000}^{143 \times 217}$	31.64	$32^{+4}_{-4}$
$c_{100}$	0.99977	$0.9997^{+0.0012}_{-0.0012}$	$10^5 D/H$	2.567	$2.573^{+0.051}_{-0.051}$	$f_{2000}^{217}$	106.07	$106.8^{+3.5}_{-3.5}$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0013}$	Age/Gyr	13.751	$13.786^{+0.092}_{-0.074}$	$\chi_{lensing}^2$	8.84	$9.29 (\nu: 0.3)$
$m_{DES}^1$	0.0151	$0.014^{+0.046}_{-0.045}$	$z_*$	1089.699	$1089.75^{+0.48}_{-0.48}$	$\chi_{small}^2$	395.92	$397.1 (\nu: 1.6)$
$m_{DES}^2$	0.0128	$0.011^{+0.043}_{-0.044}$	$r_*$	144.620	$144.61^{+0.48}_{-0.49}$	$\chi_{lowl}^2$	22.80	$23.13 (\nu: 0.3)$
$m_{DES}^3$	-0.0069	$-0.009^{+0.040}_{-0.039}$	$100\theta_*$	1.04118	$1.04118^{+0.00058}_{-0.00058}$	$\chi_{plik}^2$	2345.2	$2360.4 (\nu: 16.7)$
$m_{DES}^4$	0.0129	$0.010^{+0.041}_{-0.040}$	$D_M(z_*)/\text{Gpc}$	13.8900	$13.889^{+0.045}_{-0.046}$	$\chi_{DES}^2$	229.17	$232.1 (\nu: 3.3)$
$A_{IA,DES}$	1.46	$1.26^{+0.95}_{-0.94}$	$z_{drag}$	1060.09	$1060.03^{+0.59}_{-0.60}$	$\chi_{prior}^2$	2.5	$19.6 (\nu: 17.9)$
$\alpha_{IA,DES}$	2.50	> -2.14	$r_{drag}$	147.252	$147.25^{+0.48}_{-0.49}$	$\chi_{CMB}^2$	2772.7	$2789.9 (\nu: 18.2)$
$\Delta z_{s,DES}^1$	0.0050	$0.005^{+0.028}_{-0.029}$	$k_D$	0.14077	$0.14075^{+0.00057}_{-0.00057}$			
$\Delta z_{s,DES}^2$	-0.0205	$-0.021^{+0.023}_{-0.023}$	$100\theta_D$	0.160670	$0.16071^{+0.00034}_{-0.00033}$			

Best-fit  $\chi_{eff}^2 = 3004.39$ ;  $\Delta\chi_{eff}^2 = -1.10$ ;  $\bar{\chi}_{eff}^2 = 3041.59$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.43$ ;  $R - 1 = 0.00745$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.84 ( $\Delta$  0.07) simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.92 ( $\Delta$  -0.29) commander\_dx12.v3.2.29: 22.80 ( $\Delta$  -0.04) plik\_rd12\_HM.v22b\_TTTEEE: 2345.16 ( $\Delta$  -0.59) WL - DES.1YR\_final: 229.17 ( $\Delta$  -0.13)



### 6.36 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022459	$0.02246^{+0.00026}_{-0.00025}$	$\Delta z_{s,DES}^4$	-0.0219	$-0.022^{+0.039}_{-0.039}$	$100\theta_{eq}$	0.8171	$0.8182^{+0.0073}_{-0.0072}$
$\Omega_c h^2$	0.11909	$0.1189^{+0.0017}_{-0.0017}$	$H_0$	68.30	$68.01^{+0.93}_{-1.0}$	$100\theta_{s,eq}$	0.45130	$0.4519^{+0.0038}_{-0.0037}$
$100\theta_{MC}$	1.04105	$1.04104^{+0.00055}_{-0.00057}$	$\Omega_\Lambda$	0.6965	$0.693^{+0.012}_{-0.013}$	$H(0.15)$	73.50	$73.25^{+0.81}_{-0.90}$
$\tau$	0.0539	$0.055^{+0.015}_{-0.014}$	$\Omega_m$	0.3035	$0.307^{+0.013}_{-0.012}$	$D_M(0.15)$	635.3	$637.8^{+8.4}_{-8.2}$
$\Sigma m_\nu$ [eV]	0.000	< 0.128	$\Omega_m h^2$	0.14156	$0.1418^{+0.0017}_{-0.0017}$	$H(0.38)$	83.49	$83.29^{+0.65}_{-0.67}$
$\ln(10^{10} A_s)$	3.0415	$3.043^{+0.030}_{-0.028}$	$\Omega_\nu h^2$	0.00000	< 0.00138	$D_M(0.38)$	1517.1	$1522^{+17}_{-17}$
$n_s$	0.9684	$0.9676^{+0.0072}_{-0.0071}$	$\Omega_m h^3$	0.09668	$0.09647^{+0.00065}_{-0.00074}$	$H(0.51)$	90.14	$89.96^{+0.52}_{-0.59}$
$y_{cal}$	1.00034	$1.0005^{+0.0047}_{-0.0048}$	$\sigma_8$	0.8208	$0.811^{+0.017}_{-0.020}$	$D_M(0.51)$	1966.6	$1973^{+20}_{-20}$
$A_{217}^{CIB}$	45.6	$47^{+10}_{-10}$	$S_8$	0.8255	$0.820^{+0.019}_{-0.020}$	$H(0.61)$	95.705	$95.55^{+0.45}_{-0.51}$
$\xi^{tSZ \times CIB}$	0.71	—	$\sigma_8 \Omega_m^{0.5}$	0.4522	$0.449^{+0.011}_{-0.011}$	$D_M(0.61)$	2289.4	$2296^{+22}_{-22}$
$A_{143}^{tSZ}$	7.08	$5.6^{+3.8}_{-3.8}$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.604^{+0.013}_{-0.013}$	$H(2.33)$	235.73	$235.8^{+1.1}_{-1.1}$
$A_{100}^{PS}$	246	$257^{+50}_{-50}$	$\sigma_8/h^{0.5}$	0.9932	$0.984^{+0.020}_{-0.021}$	$D_M(2.33)$	5743.6	$5752^{+23}_{-22}$
$A_{143}^{PS}$	50.7	$45^{+10}_{-20}$	$r_{drag} h$	100.56	$100.2^{+1.5}_{-1.6}$	$f\sigma_8(0.15)$	0.4567	$0.4541^{+0.0099}_{-0.010}$
$A_{143 \times 217}^{PS}$	54.0	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	2.4346	$2.429^{+0.037}_{-0.038}$	$\sigma_8(0.15)$	0.7591	$0.750^{+0.016}_{-0.019}$
$A_{217}^{PS}$	122.1	$115^{+20}_{-20}$	$z_{re}$	7.59	$7.7^{+1.5}_{-1.5}$	$f\sigma_8(0.38)$	0.4769	$0.4735^{+0.0090}_{-0.0097}$
$A^{kSZ}$	0.00	< 7.92	$10^9 A_s$	2.094	$2.097^{+0.063}_{-0.059}$	$\sigma_8(0.38)$	0.6736	$0.665^{+0.015}_{-0.017}$
$A_{100}^{dustTT}$	8.80	$8.9^{+3.6}_{-3.7}$	$10^9 A_s e^{-2\tau}$	1.8798	$1.878^{+0.020}_{-0.020}$	$f\sigma_8(0.51)$	0.4763	$0.4727^{+0.0086}_{-0.0097}$
$A_{143}^{dustTT}$	11.06	$10.9^{+3.6}_{-3.5}$	$D_{40}$	1223.9	$1226^{+22}_{-21}$	$\sigma_8(0.51)$	0.6306	$0.623^{+0.014}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	20.2	$18.6^{+6.3}_{-6.4}$	$D_{220}$	5734	$5740^{+74}_{-76}$	$f\sigma_8(0.61)$	0.4719	$0.4681^{+0.0088}_{-0.0092}$
$A_{217}^{dustTT}$	95.5	$94^{+10}_{-10}$	$D_{810}$	2539.7	$2538^{+26}_{-26}$	$\sigma_8(0.61)$	0.6002	$0.593^{+0.013}_{-0.016}$
$A_{100}^{dustTE}$	0.116	$0.114^{+0.074}_{-0.076}$	$D_{1420}$	818.6	$817.8^{+9.3}_{-9.1}$	$f\sigma_8(2.33)$	0.3020	$0.2990^{+0.0062}_{-0.0069}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.134^{+0.057}_{-0.057}$	$D_{2000}$	231.57	$231.2^{+3.0}_{-3.0}$	$\sigma_8(2.33)$	0.3121	$0.3085^{+0.0070}_{-0.0081}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.17}$	$n_{s,0.002}$	0.9684	$0.9676^{+0.0072}_{-0.0071}$	$f_{2000}^{143}$	28.3	$29^{+5}_{-5}$
$A_{143}^{dustTE}$	0.223	$0.22^{+0.11}_{-0.11}$	$Y_P$	0.245430	$0.245428^{+0.000097}_{-0.00010}$	$f_{2000}^{143 \times 217}$	31.66	$32^{+4}_{-4}$
$A_{143 \times 217}^{dustTE}$	0.664	$0.66^{+0.15}_{-0.15}$	$Y_P^{BBN}$	0.246756	$0.246755^{+0.000097}_{-0.00010}$	$f_{2000}^{217}$	106.16	$106.7^{+3.5}_{-3.5}$
$A_{217}^{dustTE}$	2.07	$2.07^{+0.51}_{-0.53}$	$10^5 D/H$	2.5692	$2.569^{+0.047}_{-0.047}$	$\chi_{lensing}^2$	8.85	$9.24 (\nu: 0.2)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	Age/Gyr	13.752	$13.771^{+0.054}_{-0.051}$	$\chi_{simall}^2$	395.93	$397.0 (\nu: 1.5)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0013}$	$z_*$	1089.724	$1089.71^{+0.40}_{-0.41}$	$\chi_{lowl}^2$	22.90	$23.04 (\nu: 0.3)$
$m_{DES}^1$	0.0150	$0.014^{+0.045}_{-0.045}$	$r_*$	144.604	$144.66^{+0.41}_{-0.40}$	$\chi_{plik}^2$	2344.9	$2360.1 (\nu: 16.5)$
$m_{DES}^2$	0.0128	$0.011^{+0.043}_{-0.043}$	$100\theta_*$	1.04119	$1.04121^{+0.00056}_{-0.00056}$	$\chi_{6DF}^2$	0.000	$0.031 (\nu: 0.0)$
$m_{DES}^3$	-0.0081	$-0.008^{+0.039}_{-0.040}$	$D_M(z_*)/\text{Gpc}$	13.8883	$13.894^{+0.039}_{-0.039}$	$\chi_{MGS}^2$	1.75	$1.58 (\nu: 0.1)$
$m_{DES}^4$	0.0117	$0.011^{+0.040}_{-0.039}$	$z_{drag}$	1060.09	$1060.06^{+0.56}_{-0.55}$	$\chi_{DR12BAO}^2$	3.48	$4.1 (\nu: 0.5)$
$A_{IA,DES}$	1.46	$1.25^{+0.96}_{-0.94}$	$r_{drag}$	147.238	$147.30^{+0.43}_{-0.43}$	$\chi_{DES}^2$	229.18	$232.0 (\nu: 3.1)$
$\alpha_{IA,DES}$	2.52	> -2.16	$k_D$	0.14077	$0.14071^{+0.00055}_{-0.00055}$	$\chi_{prior}^2$	2.6	$19.4 (\nu: 17.9)$
$\Delta z_{s,DES}^1$	0.0049	$0.004^{+0.028}_{-0.029}$	$100\theta_D$	0.160686	$0.16069^{+0.00033}_{-0.00033}$	$\chi_{CMB}^2$	2772.6	$2789.4 (\nu: 17.5)$
$\Delta z_{s,DES}^2$	-0.0209	$-0.021^{+0.022}_{-0.023}$	$z_{eq}$	3382.7	$3377^{+38}_{-39}$	$\chi_{BAO}^2$	5.22	$5.75 (\nu: 0.3)$
$\Delta z_{s,DES}^3$	0.0049	$0.004^{+0.019}_{-0.020}$	$k_{eq}$	0.010324	$0.01031^{+0.00012}_{-0.00012}$			

Best-fit  $\chi_{eff}^2 = 3009.63$ ;  $\Delta\chi_{eff}^2 = -1.38$ ;  $\bar{\chi}_{eff}^2 = 3046.60$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.08$ ;  $R - 1 = 0.00939$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.75 ( $\Delta$  0.34) DR12BAO: 3.48 ( $\Delta$  -0.46) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p\_teb\_consext8: 8.85 ( $\Delta$  -0.01) simall\_100x143\_offlike5\_EE\_Aplanc  
395.93 ( $\Delta$  -0.27) commander\_dx12\_v3.2\_29: 22.90 ( $\Delta$  0.16) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.91 ( $\Delta$  -1.24) WL - DES\_1YR\_final: 229.18 ( $\Delta$  0.12)

### 6.37 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02244^{+0.00029}_{-0.00028}$	$\Delta z_{s,\text{DES}}^2$	$-0.021^{+0.023}_{-0.023}$	$k_D$	$0.14071^{+0.00059}_{-0.00060}$
$\Omega_c h^2$	$0.1190^{+0.0022}_{-0.0022}$	$\Delta z_{s,\text{DES}}^3$	$0.004^{+0.020}_{-0.020}$	$100\theta_D$	$0.16071^{+0.00034}_{-0.00034}$
$100\theta_{\text{MC}}$	$1.04101^{+0.00060}_{-0.00060}$	$\Delta z_{s,\text{DES}}^4$	$-0.023^{+0.039}_{-0.039}$	$z_{\text{eq}}$	$3379^{+51}_{-49}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$H_0$	$67.6^{+1.7}_{-2.0}$	$k_{\text{eq}}$	$0.01031^{+0.00016}_{-0.00015}$
$\Sigma m_\nu [\text{eV}]$	$< 0.251$	$\Omega_\Lambda$	$0.688^{+0.021}_{-0.026}$	$100\theta_{\text{eq}}$	$0.8177^{+0.0095}_{-0.0095}$
$\ln(10^{10} A_s)$	$3.043^{+0.027}_{-0.026}$	$\Omega_m$	$0.312^{+0.026}_{-0.021}$	$100\theta_{s,\text{eq}}$	$0.4516^{+0.0048}_{-0.0049}$
$n_s$	$0.9674^{+0.0079}_{-0.0080}$	$\Omega_m h^2$	$0.1424^{+0.0030}_{-0.0028}$	$H(0.15)$	$72.9^{+1.5}_{-1.8}$
$y_{\text{cal}}$	$1.0004^{+0.0048}_{-0.0049}$	$\Omega_\nu h^2$	$< 0.00269$	$D_M(0.15)$	$641^{+18}_{-14}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\Omega_m h^3$	$0.09624^{+0.00098}_{-0.0012}$	$H(0.38)$	$83.0^{+1.1}_{-1.4}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\sigma_8$	$0.803^{+0.028}_{-0.039}$	$D_M(0.38)$	$1529^{+36}_{-29}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-3.9}$	$S_8$	$0.818^{+0.026}_{-0.027}$	$H(0.51)$	$89.73^{+0.93}_{-1.2}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$\sigma_8 \Omega_m^{0.5}$	$0.448^{+0.014}_{-0.015}$	$D_M(0.51)$	$1981^{+43}_{-35}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.019}_{-0.022}$	$H(0.61)$	$95.35^{+0.78}_{-0.98}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\sigma_8/h^{0.5}$	$0.977^{+0.031}_{-0.038}$	$D_M(0.61)$	$2305^{+47}_{-38}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$r_{\text{drag}} h$	$99.6^{+2.7}_{-3.2}$	$H(2.33)$	$236.1^{+1.8}_{-1.7}$
$A^{\text{kSZ}}$	$< 8.05$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.046}_{-0.046}$	$D_M(2.33)$	$5761^{+48}_{-37}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_{\text{re}}$	$< 8.88$	$f\sigma_8(0.15)$	$0.453^{+0.013}_{-0.014}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$10^9 A_s$	$2.096^{+0.058}_{-0.054}$	$\sigma_8(0.15)$	$0.742^{+0.026}_{-0.038}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.3}_{-6.4}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.021}_{-0.022}$	$f\sigma_8(0.38)$	$0.471^{+0.014}_{-0.015}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{40}$	$1226^{+24}_{-24}$	$\sigma_8(0.38)$	$0.658^{+0.024}_{-0.035}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	$D_{220}$	$5735^{+76}_{-78}$	$f\sigma_8(0.51)$	$0.470^{+0.014}_{-0.016}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.058}$	$D_{810}$	$2537^{+26}_{-26}$	$\sigma_8(0.51)$	$0.616^{+0.023}_{-0.033}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$D_{1420}$	$817.4^{+9.3}_{-9.2}$	$f\sigma_8(0.61)$	$0.465^{+0.014}_{-0.017}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_{2000}$	$231.0^{+3.1}_{-3.1}$	$\sigma_8(0.61)$	$0.586^{+0.022}_{-0.032}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$n_{s,0.002}$	$0.9674^{+0.0079}_{-0.0080}$	$f\sigma_8(2.33)$	$0.296^{+0.010}_{-0.014}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.54}$	$Y_P$	$0.24542^{+0.00011}_{-0.00011}$	$\sigma_8(2.33)$	$0.305^{+0.012}_{-0.017}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$Y_P^{\text{BBN}}$	$0.24675^{+0.00011}_{-0.00011}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$10^5 D/H$	$2.574^{+0.052}_{-0.051}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$m_{\text{DES}}^1$	$0.014^{+0.045}_{-0.044}$	Age/Gyr	$13.79^{+0.11}_{-0.084}$	$f_{2000}^{217}$	$106.8^{+3.5}_{-3.5}$
$m_{\text{DES}}^2$	$0.012^{+0.044}_{-0.043}$	$z_*$	$1089.75^{+0.49}_{-0.48}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.4)$
$m_{\text{DES}}^3$	$-0.008^{+0.039}_{-0.040}$	$r_*$	$144.64^{+0.51}_{-0.51}$	$\chi_{\text{lowl}}^2$	$22.99 (\nu: 0.3)$
$m_{\text{DES}}^4$	$0.011^{+0.040}_{-0.040}$	$100\theta_*$	$1.04120^{+0.00058}_{-0.00059}$	$\chi_{\text{plik}}^2$	$2361.2 (\nu: 19.4)$
$A_{\text{IA,DES}}$	$1.25^{+0.96}_{-0.95}$	$D_M(z_*)/\text{Gpc}$	$13.892^{+0.047}_{-0.048}$	$\chi_{\text{DES}}^2$	$232.1 (\nu: 3.2)$
$\alpha_{\text{IA,DES}}$	$> -2.12$	$z_{\text{drag}}$	$1060.02^{+0.60}_{-0.58}$	$\chi_{\text{prior}}^2$	$19.6 (\nu: 17.9)$
$\Delta z_{s,\text{DES}}^1$	$0.005^{+0.028}_{-0.029}$	$r_{\text{drag}}$	$147.29^{+0.51}_{-0.52}$	$\chi_{\text{CMB}}^2$	$2781.1 (\nu: 18.7)$

$$\bar{\chi}_{\text{eff}}^2 = 3032.75; \Delta \bar{\chi}_{\text{eff}}^2 = 0.68; R - 1 = 0.00988$$

### 6.38 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02246^{+0.00026}_{-0.00026}$	$\Delta z_{s,DES}^4$	$-0.022^{+0.039}_{-0.039}$	$100\theta_{eq}$	$0.8187^{+0.0078}_{-0.0077}$
$\Omega_c h^2$	$0.1187^{+0.0018}_{-0.0018}$	$H_0$	$68.0^{+1.0}_{-1.0}$	$100\theta_{s,eq}$	$0.4522^{+0.0040}_{-0.0039}$
$100\theta_{MC}$	$1.04106^{+0.00057}_{-0.00057}$	$\Omega_\Lambda$	$0.693^{+0.012}_{-0.013}$	$H(0.15)$	$73.24^{+0.87}_{-0.90}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\Omega_m$	$0.307^{+0.013}_{-0.012}$	$D_M(0.15)$	$637.9^{+8.8}_{-8.5}$
$\Sigma m_\nu$ [eV]	$< 0.148$	$\Omega_m h^2$	$0.1418^{+0.0018}_{-0.0017}$	$H(0.38)$	$83.27^{+0.68}_{-0.70}$
$\ln(10^{10} A_s)$	$3.043^{+0.028}_{-0.026}$	$\Omega_\nu h^2$	$< 0.00159$	$D_M(0.38)$	$1522^{+18}_{-17}$
$n_s$	$0.9681^{+0.0072}_{-0.0072}$	$\Omega_m h^3$	$0.09643^{+0.00072}_{-0.00078}$	$H(0.51)$	$89.95^{+0.57}_{-0.59}$
$y_{cal}$	$1.0004^{+0.0048}_{-0.0049}$	$\sigma_8$	$0.809^{+0.020}_{-0.025}$	$D_M(0.51)$	$1973^{+21}_{-20}$
$A_{217}^{CIB}$	$47^{+10}_{-10}$	$S_8$	$0.818^{+0.023}_{-0.025}$	$H(0.61)$	$95.53^{+0.49}_{-0.51}$
$\xi^{tSZ \times CIB}$	—	$\sigma_8 \Omega_m^{0.5}$	$0.448^{+0.013}_{-0.013}$	$D_M(0.61)$	$2296^{+23}_{-22}$
$A_{143}^{tSZ}$	$5.6^{+3.8}_{-3.8}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.015}_{-0.017}$	$H(2.33)$	$235.8^{+1.1}_{-1.1}$
$A_{100}^{PS}$	$257^{+50}_{-50}$	$\sigma_8/h^{0.5}$	$0.981^{+0.024}_{-0.027}$	$D_M(2.33)$	$5753^{+25}_{-24}$
$A_{143}^{PS}$	$45^{+10}_{-20}$	$r_{drag} h$	$100.2^{+1.6}_{-1.7}$	$f\sigma_8(0.15)$	$0.453^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.044}_{-0.045}$	$\sigma_8(0.15)$	$0.748^{+0.019}_{-0.023}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$z_{re}$	$< 8.89$	$f\sigma_8(0.38)$	$0.472^{+0.011}_{-0.012}$
$A^{kSZ}$	$< 7.92$	$10^9 A_s$	$2.096^{+0.059}_{-0.054}$	$\sigma_8(0.38)$	$0.664^{+0.017}_{-0.021}$
$A_{100}^{dustTT}$	$8.9^{+3.6}_{-3.7}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.021}_{-0.021}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.012}$
$A_{143}^{dustTT}$	$10.9^{+3.6}_{-3.5}$	$D_{40}$	$1224^{+23}_{-23}$	$\sigma_8(0.51)$	$0.621^{+0.016}_{-0.020}$
$A_{143 \times 217}^{dustTT}$	$18.7^{+6.3}_{-6.3}$	$D_{220}$	$5736^{+75}_{-76}$	$f\sigma_8(0.61)$	$0.467^{+0.011}_{-0.012}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$D_{810}$	$2537^{+26}_{-26}$	$\sigma_8(0.61)$	$0.591^{+0.015}_{-0.019}$
$A_{100}^{dustTE}$	$0.114^{+0.074}_{-0.075}$	$D_{1420}$	$817.6^{+9.3}_{-9.2}$	$f\sigma_8(2.33)$	$0.2984^{+0.0070}_{-0.0084}$
$A_{100 \times 143}^{dustTE}$	$0.135^{+0.058}_{-0.057}$	$D_{2000}$	$231.1^{+3.0}_{-3.0}$	$\sigma_8(2.33)$	$0.3078^{+0.0079}_{-0.0098}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.17}_{-0.17}$	$n_{s,0.002}$	$0.9681^{+0.0072}_{-0.0072}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143}^{dustTE}$	$0.22^{+0.11}_{-0.11}$	$Y_P$	$0.245429^{+0.000097}_{-0.00010}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{dustTE}$	$0.66^{+0.15}_{-0.15}$	$Y_{P}^{BBN}$	$0.246755^{+0.000098}_{-0.00010}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.5}$
$A_{217}^{dustTE}$	$2.07^{+0.52}_{-0.53}$	$10^5 D/H$	$2.569^{+0.048}_{-0.047}$	$\chi_{simall}^2$	$396.9 (\nu: 1.5)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	Age/Gyr	$13.774^{+0.058}_{-0.054}$	$\chi_{lowl}^2$	$22.92 (\nu: 0.3)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0013}$	$z_*$	$1089.69^{+0.41}_{-0.41}$	$\chi_{plik}^2$	$2360.7 (\nu: 18.1)$
$m_{DES}^1$	$0.014^{+0.045}_{-0.045}$	$r_*$	$144.70^{+0.44}_{-0.43}$	$\chi_{6DF}^2$	$0.032 (\nu: 0.0)$
$m_{DES}^2$	$0.011^{+0.043}_{-0.043}$	$100\theta_*$	$1.04123^{+0.00057}_{-0.00057}$	$\chi_{MGS}^2$	$1.58 (\nu: 0.1)$
$m_{DES}^3$	$-0.007^{+0.040}_{-0.040}$	$D_M(z_*)/\text{Gpc}$	$13.897^{+0.041}_{-0.041}$	$\chi_{DR12BAO}^2$	$4.2 (\nu: 0.6)$
$m_{DES}^4$	$0.011^{+0.040}_{-0.040}$	$z_{drag}$	$1060.05^{+0.57}_{-0.58}$	$\chi_{DES}^2$	$231.9 (\nu: 3.0)$
$A_{IA,DES}$	$1.24^{+0.97}_{-0.95}$	$r_{drag}$	$147.33^{+0.46}_{-0.45}$	$\chi_{prior}^2$	$19.4 (\nu: 17.9)$
$\alpha_{IA,DES}$	$> -2.26$	$k_D$	$0.14068^{+0.00057}_{-0.00057}$	$\chi_{BAO}^2$	$5.77 (\nu: 0.3)$
$\Delta z_{s,DES}^1$	$0.004^{+0.028}_{-0.029}$	$100\theta_D$	$0.16070^{+0.00033}_{-0.00033}$	$\chi_{CMB}^2$	$2780.5 (\nu: 17.4)$
$\Delta z_{s,DES}^2$	$-0.021^{+0.023}_{-0.023}$	$z_{eq}$	$3374^{+41}_{-41}$		
$\Delta z_{s,DES}^3$	$0.005^{+0.019}_{-0.020}$	$k_{eq}$	$0.01030^{+0.00012}_{-0.00013}$		

$\bar{\chi}_{eff}^2 = 3037.64$ ;  $\Delta \bar{\chi}_{eff}^2 = 0.11$ ;  $R - 1 = 0.00834$

### 6.39 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02244^{+0.00028}_{-0.00028}$	$\Delta z_{\text{s,DES}}^3$	$0.004^{+0.019}_{-0.020}$	$z_{\text{eq}}$	$3381^{+48}_{-47}$
$\Omega_c h^2$	$0.1190^{+0.0021}_{-0.0021}$	$\Delta z_{\text{s,DES}}^4$	$-0.023^{+0.039}_{-0.038}$	$k_{\text{eq}}$	$0.01032^{+0.00015}_{-0.00014}$
$100\theta_{\text{MC}}$	$1.04100^{+0.00059}_{-0.00060}$	$H_0$	$67.7^{+1.5}_{-1.8}$	$100\theta_{\text{eq}}$	$0.8174^{+0.0090}_{-0.0089}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\Omega_{\Lambda}$	$0.690^{+0.019}_{-0.023}$	$100\theta_{\text{s,eq}}$	$0.4515^{+0.0046}_{-0.0046}$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.199$	$\Omega_{\text{m}}$	$0.310^{+0.023}_{-0.019}$	$H(0.15)$	$73.0^{+1.3}_{-1.6}$
$\ln(10^{10} A_{\text{s}})$	$3.045^{+0.027}_{-0.025}$	$\Omega_{\text{m}} h^2$	$0.1423^{+0.0028}_{-0.0026}$	$D_{\text{M}}(0.15)$	$640^{+15}_{-13}$
$n_{\text{s}}$	$0.9671^{+0.0077}_{-0.0076}$	$\Omega_{\nu} h^2$	$< 0.00214$	$H(0.38)$	$83.1^{+1.0}_{-1.2}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0048}$	$\Omega_{\text{m}} h^3$	$0.09634^{+0.00085}_{-0.0010}$	$D_{\text{M}}(0.38)$	$1527^{+31}_{-26}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\sigma_8$	$0.808^{+0.022}_{-0.028}$	$H(0.51)$	$89.80^{+0.83}_{-0.99}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$S_8$	$0.821^{+0.021}_{-0.021}$	$D_{\text{M}}(0.51)$	$1979^{+37}_{-31}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.012}_{-0.012}$	$H(0.61)$	$95.41^{+0.69}_{-0.84}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.014}_{-0.015}$	$D_{\text{M}}(0.61)$	$2303^{+40}_{-34}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$\sigma_8/h^{0.5}$	$0.981^{+0.023}_{-0.026}$	$H(2.33)$	$236.1^{+1.6}_{-1.5}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$r_{\text{drag}} h$	$99.7^{+2.5}_{-2.8}$	$D_{\text{M}}(2.33)$	$5758^{+41}_{-33}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.037}_{-0.037}$	$f\sigma_8(0.15)$	$0.455^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	$< 7.96$	$z_{\text{re}}$	$< 8.95$	$\sigma_8(0.15)$	$0.746^{+0.021}_{-0.028}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.7}$	$10^9 A_{\text{s}}$	$2.101^{+0.057}_{-0.053}$	$f\sigma_8(0.38)$	$0.473^{+0.010}_{-0.011}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.879^{+0.020}_{-0.020}$	$\sigma_8(0.38)$	$0.662^{+0.019}_{-0.026}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.5}$	$D_{40}$	$1227^{+23}_{-22}$	$f\sigma_8(0.51)$	$0.472^{+0.010}_{-0.011}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{220}$	$5740^{+75}_{-76}$	$\sigma_8(0.51)$	$0.619^{+0.018}_{-0.025}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.075}$	$D_{810}$	$2538^{+26}_{-26}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.057}_{-0.057}$	$D_{1420}$	$817.7^{+9.3}_{-9.2}$	$\sigma_8(0.61)$	$0.589^{+0.018}_{-0.024}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$D_{2000}$	$231.1^{+3.0}_{-3.0}$	$f\sigma_8(2.33)$	$0.2975^{+0.0083}_{-0.011}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$n_{\text{s},0.002}$	$0.9671^{+0.0077}_{-0.0076}$	$\sigma_8(2.33)$	$0.3066^{+0.0097}_{-0.013}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.15}$	$Y_{\text{P}}$	$0.24542^{+0.00010}_{-0.00011}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.54}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24675^{+0.00010}_{-0.00011}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$10^5 \text{D/H}$	$2.572^{+0.052}_{-0.050}$	$f_{2000}^{217}$	$106.8^{+3.5}_{-3.5}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0013}$	Age/Gyr	$13.786^{+0.092}_{-0.074}$	$\chi_{\text{lensing}}^2$	$9.25 (\nu: 0.3)$
$m_{\text{DES}}^1$	$0.014^{+0.046}_{-0.045}$	$z_*$	$1089.74^{+0.47}_{-0.47}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$m_{\text{DES}}^2$	$0.011^{+0.043}_{-0.044}$	$r_*$	$144.62^{+0.47}_{-0.48}$	$\chi_{\text{lowl}}^2$	$23.12 (\nu: 0.3)$
$m_{\text{DES}}^3$	$-0.009^{+0.040}_{-0.039}$	$100\theta_*$	$1.04119^{+0.00058}_{-0.00058}$	$\chi_{\text{plik}}^2$	$2360.3 (\nu: 16.6)$
$m_{\text{DES}}^4$	$0.010^{+0.041}_{-0.040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.890^{+0.044}_{-0.045}$	$\chi_{\text{DES}}^2$	$232.1 (\nu: 3.3)$
$A_{\text{IA,DES}}$	$1.26^{+0.96}_{-0.95}$	$z_{\text{drag}}$	$1060.04^{+0.58}_{-0.56}$	$\chi_{\text{prior}}^2$	$19.5 (\nu: 17.9)$
$\alpha_{\text{IA,DES}}$	$> -2.16$	$r_{\text{drag}}$	$147.26^{+0.47}_{-0.48}$	$\chi_{\text{CMB}}^2$	$2789.7 (\nu: 17.9)$
$\Delta z_{\text{s,DES}}^1$	$0.005^{+0.028}_{-0.029}$	$k_{\text{D}}$	$0.14074^{+0.00057}_{-0.00057}$		
$\Delta z_{\text{s,DES}}^2$	$-0.021^{+0.022}_{-0.023}$	$100\theta_{\text{D}}$	$0.16070^{+0.00034}_{-0.00033}$		

$\bar{\chi}_{\text{eff}}^2 = 3041.41$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = 0.47$ ;  $R - 1 = 0.00879$

# 6.40 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02246^{+0.00026}_{-0.00026}$	$\Delta z_{s,\text{DES}}^4$	$-0.023^{+0.039}_{-0.038}$	$100\theta_{\text{eq}}$	$0.8183^{+0.0072}_{-0.0071}$
$\Omega_c h^2$	$0.1188^{+0.0017}_{-0.0017}$	$H_0$	$68.02^{+0.93}_{-1.0}$	$100\theta_{s,\text{eq}}$	$0.4519^{+0.0037}_{-0.0037}$
$100\theta_{\text{MC}}$	$1.04104^{+0.00056}_{-0.00057}$	$\Omega_\Lambda$	$0.693^{+0.012}_{-0.013}$	$H(0.15)$	$73.26^{+0.81}_{-0.91}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\Omega_{\text{m}}$	$0.307^{+0.013}_{-0.012}$	$D_{\text{M}}(0.15)$	$637.7^{+8.5}_{-8.2}$
$\Sigma m_\nu [\text{eV}]$	$< 0.129$	$\Omega_{\text{m}} h^2$	$0.1418^{+0.0017}_{-0.0017}$	$H(0.38)$	$83.29^{+0.65}_{-0.67}$
$\ln(10^{10} A_{\text{s}})$	$3.045^{+0.027}_{-0.025}$	$\Omega_\nu h^2$	$< 0.00139$	$D_{\text{M}}(0.38)$	$1522^{+17}_{-17}$
$n_{\text{s}}$	$0.9678^{+0.0071}_{-0.0071}$	$\Omega_{\text{m}} h^3$	$0.09647^{+0.00065}_{-0.00074}$	$H(0.51)$	$89.96^{+0.55}_{-0.56}$
$y_{\text{cal}}$	$1.0005^{+0.0047}_{-0.0048}$	$\sigma_8$	$0.812^{+0.017}_{-0.020}$	$D_{\text{M}}(0.51)$	$1972^{+20}_{-20}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$S_8$	$0.820^{+0.019}_{-0.020}$	$H(0.61)$	$95.55^{+0.47}_{-0.48}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.011}_{-0.011}$	$D_{\text{M}}(0.61)$	$2296^{+22}_{-22}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.8}_{-3.8}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.012}_{-0.013}$	$H(2.33)$	$235.8^{+1.1}_{-1.1}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$\sigma_8/h^{0.5}$	$0.984^{+0.020}_{-0.021}$	$D_{\text{M}}(2.33)$	$5752^{+24}_{-23}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$r_{\text{drag}} h$	$100.2^{+1.5}_{-1.6}$	$f\sigma_8(0.15)$	$0.4542^{+0.0099}_{-0.0099}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.036}_{-0.036}$	$\sigma_8(0.15)$	$0.750^{+0.016}_{-0.019}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$z_{\text{re}}$	$< 8.94$	$f\sigma_8(0.38)$	$0.4737^{+0.0090}_{-0.0097}$
$A^{\text{kSZ}}$	$< 7.89$	$10^9 A_{\text{s}}$	$2.101^{+0.056}_{-0.052}$	$\sigma_8(0.38)$	$0.666^{+0.014}_{-0.017}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.7}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.878^{+0.020}_{-0.020}$	$f\sigma_8(0.51)$	$0.4728^{+0.0089}_{-0.0092}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.6}_{-3.5}$	$D_{40}$	$1226^{+22}_{-21}$	$\sigma_8(0.51)$	$0.623^{+0.014}_{-0.016}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.4}$	$D_{220}$	$5740^{+74}_{-76}$	$f\sigma_8(0.61)$	$0.4682^{+0.0087}_{-0.0092}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$D_{810}$	$2538^{+26}_{-26}$	$\sigma_8(0.61)$	$0.593^{+0.013}_{-0.016}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.076}$	$D_{1420}$	$817.7^{+9.3}_{-9.1}$	$f\sigma_8(2.33)$	$0.2991^{+0.0060}_{-0.0069}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.057}$	$D_{2000}$	$231.2^{+3.0}_{-3.0}$	$\sigma_8(2.33)$	$0.3086^{+0.0069}_{-0.0082}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$n_{\text{s},0.002}$	$0.9678^{+0.0071}_{-0.0071}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$Y_{\text{P}}$	$0.245429^{+0.000097}_{-0.00010}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.15}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246756^{+0.000097}_{-0.00010}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.5}$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.53}$	$10^5 \text{D/H}$	$2.569^{+0.048}_{-0.047}$	$\chi_{\text{lensing}}^2$	$9.21 (\nu: 0.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$\text{Age/Gyr}$	$13.771^{+0.054}_{-0.051}$	$\chi_{\text{small}}^2$	$397.0 (\nu: 1.6)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0013}$	$z_*$	$1089.70^{+0.40}_{-0.40}$	$\chi_{\text{lowl}}^2$	$23.04 (\nu: 0.3)$
$m_{\text{DES}}^1$	$0.014^{+0.046}_{-0.045}$	$r_*$	$144.67^{+0.40}_{-0.40}$	$\chi_{\text{plik}}^2$	$2360.0 (\nu: 16.3)$
$m_{\text{DES}}^2$	$0.011^{+0.043}_{-0.044}$	$100\theta_*$	$1.04121^{+0.00056}_{-0.00056}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$m_{\text{DES}}^3$	$-0.008^{+0.039}_{-0.039}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.895^{+0.038}_{-0.039}$	$\chi_{\text{MGS}}^2$	$1.59 (\nu: 0.1)$
$m_{\text{DES}}^4$	$0.011^{+0.040}_{-0.039}$	$z_{\text{drag}}$	$1060.06^{+0.56}_{-0.55}$	$\chi_{\text{DR12BAO}}^2$	$4.1 (\nu: 0.5)$
$A_{\text{IA,DES}}$	$1.25^{+0.96}_{-0.94}$	$r_{\text{drag}}$	$147.31^{+0.42}_{-0.43}$	$\chi_{\text{DES}}^2$	$232.0 (\nu: 3.1)$
$\alpha_{\text{IA,DES}}$	$> -2.17$	$k_{\text{D}}$	$0.14071^{+0.00055}_{-0.00054}$	$\chi_{\text{prior}}^2$	$19.4 (\nu: 18.0)$
$\Delta z_{s,\text{DES}}^1$	$0.004^{+0.029}_{-0.029}$	$100\theta_{\text{D}}$	$0.16069^{+0.00033}_{-0.00033}$	$\chi_{\text{CMB}}^2$	$2789.3 (\nu: 17.1)$
$\Delta z_{s,\text{DES}}^2$	$-0.021^{+0.022}_{-0.023}$	$z_{\text{eq}}$	$3376^{+38}_{-38}$	$\chi_{\text{BAO}}^2$	$5.74 (\nu: 0.3)$
$\Delta z_{s,\text{DES}}^3$	$0.004^{+0.019}_{-0.020}$	$k_{\text{eq}}$	$0.01030^{+0.00012}_{-0.00012}$		

$\bar{\chi}_{\text{eff}}^2 = 3046.43$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = -0.06$ ;  $R - 1 = 0.00976$

## 7 nnu

### 7.1 base\_nnu\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02202	$0.02207^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	0.4621	$0.460^{+0.027}_{-0.026}$	$100\theta_{s,eq}$	0.4460	$0.448^{+0.012}_{-0.012}$
$\Omega_c h^2$	0.1188	$0.1200^{+0.0081}_{-0.0076}$	$\sigma_8 \Omega_m^{0.25}$	0.6108	$0.610^{+0.023}_{-0.023}$	$H(0.15)$	71.12	$71.9^{+4.5}_{-4.3}$
$100\theta_{MC}$	1.04093	$1.0409^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	0.9958	$0.993^{+0.031}_{-0.031}$	$D_M(0.15)$	658.4	$652^{+43}_{-41}$
$\tau$	0.0519	$0.051^{+0.016}_{-0.016}$	$r_{drag}h$	97.65	$98.2^{+4.3}_{-4.1}$	$H(0.38)$	81.40	$82.2^{+4.3}_{-4.1}$
$N_{eff}$	2.90	$3.00^{+0.57}_{-0.53}$	$\langle d^2 \rangle^{1/2}$	2.467	$2.457^{+0.089}_{-0.087}$	$D_M(0.38)$	1566	$1551^{+95}_{-91}$
$\ln(10^{10} A_s)$	3.0355	$3.037^{+0.040}_{-0.040}$	$z_{re}$	7.47	$7.4^{+1.6}_{-1.7}$	$H(0.51)$	88.20	$89.0^{+4.3}_{-4.1}$
$n_s$	0.9575	$0.961^{+0.026}_{-0.025}$	$10^9 A_s$	2.081	$2.085^{+0.084}_{-0.083}$	$D_M(0.51)$	2026	$2007^{+120}_{-110}$
$y_{cal}$	1.00046	$1.0005^{+0.0049}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	1.8760	$1.881^{+0.043}_{-0.044}$	$H(0.61)$	93.88	$94.7^{+4.3}_{-4.1}$
$A_{217}^{CIB}$	46.8	$48^{+10}_{-10}$	$D_{40}$	1239.8	$1237^{+44}_{-42}$	$D_M(0.61)$	2356	$2334^{+130}_{-130}$
$\xi^{tSZ \times CIB}$	0.55	—	$D_{220}$	5710	$5713^{+81}_{-79}$	$H(2.33)$	235.0	$236.1^{+7.2}_{-6.9}$
$A_{143}^{tSZ}$	6.95	$5.1^{+3.8}_{-4.0}$	$D_{810}$	2536.8	$2536^{+28}_{-27}$	$D_M(2.33)$	5844	$5801^{+250}_{-240}$
$A_{100}^{PS}$	250	$262^{+60}_{-60}$	$D_{1420}$	816.5	$815^{+10}_{-10}$	$f\sigma_8(0.15)$	0.4653	$0.464^{+0.024}_{-0.024}$
$A_{143}^{PS}$	50.6	$49^{+20}_{-20}$	$D_{2000}$	230.89	$229.9^{+4.4}_{-4.5}$	$\sigma_8(0.15)$	0.7445	$0.747^{+0.026}_{-0.025}$
$A_{143 \times 217}^{PS}$	51.5	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9575	$0.961^{+0.026}_{-0.025}$	$f\sigma_8(0.38)$	0.4800	$0.479^{+0.019}_{-0.019}$
$A_{217}^{PS}$	121.2	$115^{+20}_{-20}$	$Y_P$	0.2432	$0.2446^{+0.0076}_{-0.0076}$	$\sigma_8(0.38)$	0.6582	$0.661^{+0.024}_{-0.024}$
$A^{kSZ}$	0.00	$< 8.45$	$Y_P^{BBN}$	0.2445	$0.2459^{+0.0076}_{-0.0076}$	$f\sigma_8(0.51)$	0.4767	$0.477^{+0.016}_{-0.017}$
$A_{100}^{dustTT}$	8.77	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	2.599	$2.62^{+0.14}_{-0.13}$	$\sigma_8(0.51)$	0.6153	$0.618^{+0.024}_{-0.023}$
$A_{143}^{dustTT}$	10.74	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.99	$13.89^{+0.59}_{-0.57}$	$f\sigma_8(0.61)$	0.4705	$0.471^{+0.015}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	19.7	$18.2^{+6.5}_{-6.5}$	$z_*$	1090.11	$1090.25^{+0.97}_{-0.95}$	$\sigma_8(0.61)$	0.5850	$0.588^{+0.023}_{-0.022}$
$A_{217}^{dustTT}$	95.2	$93^{+10}_{-10}$	$r_*$	145.76	$144.9^{+5.0}_{-4.9}$	$f\sigma_8(2.33)$	0.2944	$0.296^{+0.012}_{-0.012}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04126	$1.0411^{+0.0014}_{-0.0014}$	$\sigma_8(2.33)$	0.3028	$0.305^{+0.014}_{-0.013}$
$c_{217}$	0.99824	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.999	$13.92^{+0.46}_{-0.46}$	$f_{2000}^{143}$	29.2	$31^{+7}_{-7}$
$H_0$	65.73	$66.5^{+4.7}_{-4.4}$	$z_{drag}$	1058.94	$1059.2^{+2.1}_{-2.1}$	$f_{2000}^{143 \times 217}$	32.4	$33^{+5}_{-5}$
$\Omega_\Lambda$	0.6725	$0.677^{+0.034}_{-0.037}$	$r_{drag}$	148.6	$147.7^{+5.2}_{-5.2}$	$f_{2000}^{217}$	106.89	$107.9^{+4.6}_{-4.6}$
$\Omega_m$	0.3275	$0.323^{+0.037}_{-0.034}$	$k_D$	0.13965	$0.1402^{+0.0037}_{-0.0036}$	$\chi_{simall}^2$	395.85	$396.9 (\nu: 1.2)$
$\Omega_m h^2$	0.1415	$0.1428^{+0.0084}_{-0.0078}$	$100\theta_D$	0.16071	$0.1610^{+0.0013}_{-0.0012}$	$\chi_{lowl}^2$	24.50	$24.4 (\nu: 2.5)$
$\Omega_m h^3$	0.0930	$0.095^{+0.011}_{-0.010}$	$z_{eq}$	3436	$3419^{+130}_{-120}$	$\chi_{plik}^2$	757.7	$771.7 (\nu: 17.1)$
$\sigma_8$	0.8074	$0.810^{+0.027}_{-0.026}$	$k_{eq}$	0.010379	$0.01040^{+0.00032}_{-0.00031}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.5)$
$S_8$	0.8436	$0.840^{+0.049}_{-0.047}$	$100\theta_{eq}$	0.8063	$0.810^{+0.024}_{-0.023}$	$\chi_{CMB}^2$	1178.0	$1192.9 (\nu: 15.6)$

Best-fit  $\chi_{eff}^2 = 1179.27$ ;  $\Delta\chi_{eff}^2 = -0.31$ ;  $\bar{\chi}_{eff}^2 = 1200.18$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.61$ ;  $R - 1 = 0.00449$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 24.50 ( $\Delta$  0.89) plik\_rd12\_HM\_v22\_TT: 757.66 ( $\Delta$  -1.09)

## 7.2 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02201	$0.02206^{+0.00057}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	0.6060	$0.607^{+0.016}_{-0.016}$	$D_M(0.15)$	660.8	$653^{+39}_{-38}$
$\Omega_c h^2$	0.1175	$0.1190^{+0.0077}_{-0.0074}$	$\sigma_8/h^{0.5}$	0.9906	$0.990^{+0.021}_{-0.021}$	$H(0.38)$	81.07	$81.9^{+4.0}_{-3.8}$
$100\theta_{MC}$	1.04110	$1.0410^{+0.0011}_{-0.0011}$	$r_{drag}h$	97.78	$98.3^{+3.4}_{-3.3}$	$D_M(0.38)$	1572	$1555^{+86}_{-84}$
$\tau$	0.0503	$0.051^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.459	$2.454^{+0.060}_{-0.061}$	$H(0.51)$	87.84	$88.7^{+4.0}_{-3.9}$
$N_{eff}$	2.83	$2.95^{+0.55}_{-0.51}$	$z_{re}$	7.28	$7.4^{+1.6}_{-1.7}$	$D_M(0.51)$	2034	$2013^{+110}_{-100}$
$\ln(10^{10} A_s)$	3.0283	$3.034^{+0.039}_{-0.040}$	$10^9 A_s$	2.066	$2.078^{+0.083}_{-0.081}$	$H(0.61)$	93.48	$94.3^{+4.1}_{-3.9}$
$n_s$	0.9559	$0.959^{+0.023}_{-0.023}$	$10^9 A_s e^{-2\tau}$	1.8685	$1.876^{+0.042}_{-0.044}$	$D_M(0.61)$	2365	$2341^{+120}_{-120}$
$y_{cal}$	1.00025	$1.0005^{+0.0049}_{-0.0049}$	$D_{40}$	1240.1	$1237^{+37}_{-37}$	$H(2.33)$	233.8	$235.2^{+7.0}_{-6.8}$
$A_{217}^{CIB}$	46.8	$47^{+10}_{-10}$	$D_{220}$	5712	$5715^{+82}_{-80}$	$D_M(2.33)$	5869	$5821^{+240}_{-230}$
$\xi^{tSZ \times CIB}$	0.53	—	$D_{810}$	2534.5	$2535^{+28}_{-28}$	$f\sigma_8(0.15)$	0.4615	$0.461^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	6.99	$5.2^{+3.7}_{-4.0}$	$D_{1420}$	816.7	$815^{+10}_{-10}$	$\sigma_8(0.15)$	0.7393	$0.744^{+0.025}_{-0.024}$
$A_{100}^{PS}$	248	$261^{+60}_{-50}$	$D_{2000}$	231.20	$230.1^{+4.3}_{-4.5}$	$f\sigma_8(0.38)$	0.4762	$0.477^{+0.013}_{-0.013}$
$A_{143}^{PS}$	49.2	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9559	$0.959^{+0.023}_{-0.023}$	$\sigma_8(0.38)$	0.6538	$0.658^{+0.024}_{-0.023}$
$A_{143 \times 217}^{PS}$	50.2	$43^{+20}_{-20}$	$Y_P$	0.2423	$0.2439^{+0.0074}_{-0.0074}$	$f\sigma_8(0.51)$	0.4731	$0.474^{+0.013}_{-0.012}$
$A_{217}^{PS}$	120.4	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.2436	$0.2452^{+0.0074}_{-0.0074}$	$\sigma_8(0.51)$	0.6112	$0.616^{+0.023}_{-0.023}$
$A^{kSZ}$	0.01	$< 8.38$	$10^5 D/H$	2.578	$2.61^{+0.14}_{-0.13}$	$f\sigma_8(0.61)$	0.4670	$0.469^{+0.013}_{-0.012}$
$A_{100}^{dustTT}$	8.82	$9.0^{+3.6}_{-3.5}$	Age/Gyr	14.05	$13.93^{+0.56}_{-0.56}$	$\sigma_8(0.61)$	0.5812	$0.585^{+0.023}_{-0.022}$
$A_{143}^{dustTT}$	10.70	$10.7^{+3.6}_{-3.5}$	$z_*$	1089.93	$1090.12^{+0.93}_{-0.91}$	$f\sigma_8(2.33)$	0.2925	$0.295^{+0.012}_{-0.012}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.2^{+6.4}_{-6.6}$	$r_*$	146.47	$145.5^{+4.9}_{-4.8}$	$\sigma_8(2.33)$	0.3009	$0.303^{+0.014}_{-0.013}$
$A_{217}^{dustTT}$	94.7	$93^{+10}_{-10}$	$100\theta_*$	1.04145	$1.0412^{+0.0014}_{-0.0014}$	$f_{2000}^{143}$	28.7	$30^{+7}_{-7}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	14.064	$13.97^{+0.45}_{-0.45}$	$f_{2000}^{143 \times 217}$	32.0	$33^{+5}_{-5}$
$c_{217}$	0.99821	$0.9982^{+0.0012}_{-0.0012}$	$z_{drag}$	1058.75	$1059.1^{+2.1}_{-2.1}$	$f_{2000}^{217}$	106.46	$107.6^{+4.6}_{-4.6}$
$H_0$	65.50	$66.3^{+4.2}_{-3.9}$	$r_{drag}$	149.3	$148.3^{+5.1}_{-5.0}$	$\chi_{lensing}^2$	8.61	$9.37 (\nu: 0.5)$
$\Omega_\Lambda$	0.6734	$0.678^{+0.028}_{-0.029}$	$k_D$	0.13915	$0.1398^{+0.0036}_{-0.0036}$	$\chi_{small}^2$	395.69	$396.8 (\nu: 1.1)$
$\Omega_m$	0.3266	$0.322^{+0.029}_{-0.028}$	$100\theta_D$	0.16054	$0.1608^{+0.0013}_{-0.0012}$	$\chi_{lowl}^2$	24.61	$24.4 (\nu: 1.8)$
$\Omega_m h^2$	0.1401	$0.1417^{+0.0080}_{-0.0077}$	$z_{eq}$	3432	$3416^{+99}_{-99}$	$\chi_{plik}^2$	757.8	$771.1 (\nu: 15.2)$
$\Omega_m h^3$	0.0918	$0.0941^{+0.011}_{-0.0099}$	$k_{eq}$	0.010323	$0.01035^{+0.00027}_{-0.00027}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.6)$
$\sigma_8$	0.8017	$0.806^{+0.025}_{-0.025}$	$100\theta_{eq}$	0.8070	$0.810^{+0.019}_{-0.018}$	$\chi_{CMB}^2$	1186.7	$1201.7 (\nu: 15.8)$
$S_8$	0.8365	$0.835^{+0.032}_{-0.032}$	$100\theta_{s,eq}$	0.4464	$0.4479^{+0.0096}_{-0.0093}$			
$\sigma_8 \Omega_m^{0.5}$	0.4582	$0.458^{+0.018}_{-0.017}$	$H(0.15)$	70.86	$71.7^{+4.1}_{-3.9}$			

Best-fit  $\chi_{eff}^2 = 1188.03$ ;  $\Delta\chi_{eff}^2 = -0.54$ ;  $\bar{\chi}_{eff}^2 = 1208.98$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.57$ ;  $R - 1 = 0.00963$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.62 ( $\Delta$  -0.29) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.69 ( $\Delta$  -0.17) commander\_dx12\_v3\_2\_29: 24.61 ( $\Delta$  1.37) plik\_rd12\_HM\_v22\_TT: 757.83 ( $\Delta$  -1.49)

### 7.3 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02210^{+0.00059}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	$0.460^{+0.027}_{-0.026}$	$100\theta_{s,eq}$	$0.448^{+0.012}_{-0.012}$
$\Omega_c h^2$	$0.1202^{+0.0082}_{-0.0076}$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.023}_{-0.023}$	$H(0.15)$	$72.1^{+4.5}_{-4.3}$
$100\theta_{MC}$	$1.0408^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	$0.994^{+0.031}_{-0.031}$	$D_M(0.15)$	$650^{+43}_{-41}$
$\tau$	$0.053^{+0.013}_{-0.011}$	$r_{drag}h$	$98.4^{+4.2}_{-4.1}$	$H(0.38)$	$82.3^{+4.3}_{-4.1}$
$N_{eff}$	$3.02^{+0.56}_{-0.54}$	$\langle d^2 \rangle^{1/2}$	$2.459^{+0.088}_{-0.086}$	$D_M(0.38)$	$1548^{+94}_{-90}$
$\ln(10^{10} A_s)$	$3.041^{+0.037}_{-0.032}$	$z_{re}$	$< 8.80$	$H(0.51)$	$89.1^{+4.2}_{-4.1}$
$n_s$	$0.962^{+0.025}_{-0.025}$	$10^9 A_s$	$2.094^{+0.075}_{-0.070}$	$D_M(0.51)$	$2003^{+120}_{-110}$
$y_{cal}$	$1.0005^{+0.0049}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.043}_{-0.044}$	$H(0.61)$	$94.8^{+4.2}_{-4.1}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{40}$	$1235^{+43}_{-42}$	$D_M(0.61)$	$2330^{+130}_{-130}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5713^{+82}_{-78}$	$H(2.33)$	$236.3^{+7.2}_{-6.9}$
$A_{143}^{tSZ}$	$5.1^{+3.8}_{-4.0}$	$D_{810}$	$2536^{+28}_{-27}$	$D_M(2.33)$	$5793^{+250}_{-240}$
$A_{100}^{PS}$	$262^{+60}_{-60}$	$D_{1420}$	$815^{+10}_{-10}$	$f\sigma_8(0.15)$	$0.464^{+0.024}_{-0.024}$
$A_{143}^{PS}$	$49^{+20}_{-20}$	$D_{2000}$	$229.8^{+4.4}_{-4.4}$	$\sigma_8(0.15)$	$0.749^{+0.025}_{-0.024}$
$A_{143 \times 217}^{PS}$	$44^{+20}_{-20}$	$n_{s,0.002}$	$0.962^{+0.025}_{-0.025}$	$f\sigma_8(0.38)$	$0.480^{+0.018}_{-0.019}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$Y_P$	$0.2448^{+0.0075}_{-0.0076}$	$\sigma_8(0.38)$	$0.663^{+0.023}_{-0.022}$
$A^{kSZ}$	$< 8.49$	$Y_P^{BBN}$	$0.2461^{+0.0075}_{-0.0076}$	$f\sigma_8(0.51)$	$0.477^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	$2.63^{+0.14}_{-0.13}$	$\sigma_8(0.51)$	$0.620^{+0.023}_{-0.021}$
$A_{143}^{dustTT}$	$10.7^{+3.6}_{-3.5}$	Age/Gyr	$13.87^{+0.58}_{-0.56}$	$f\sigma_8(0.61)$	$0.472^{+0.015}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	$18.2^{+6.5}_{-6.5}$	$z_*$	$1090.25^{+0.97}_{-0.95}$	$\sigma_8(0.61)$	$0.589^{+0.022}_{-0.021}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$r_*$	$144.8^{+5.0}_{-4.9}$	$f\sigma_8(2.33)$	$0.297^{+0.012}_{-0.011}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.0411^{+0.0014}_{-0.0014}$	$\sigma_8(2.33)$	$0.306^{+0.013}_{-0.013}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.91^{+0.46}_{-0.46}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$H_0$	$66.7^{+4.6}_{-4.4}$	$z_{drag}$	$1059.3^{+2.1}_{-2.1}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$\Omega_\Lambda$	$0.678^{+0.033}_{-0.036}$	$r_{drag}$	$147.6^{+5.2}_{-5.1}$	$f_{2000}^{217}$	$107.9^{+4.6}_{-4.6}$
$\Omega_m$	$0.322^{+0.036}_{-0.033}$	$k_D$	$0.1403^{+0.0037}_{-0.0036}$	$\chi_{simall}^2$	$396.7 (\nu: 1.2)$
$\Omega_m h^2$	$0.1429^{+0.0084}_{-0.0078}$	$100\theta_D$	$0.1610^{+0.0013}_{-0.0013}$	$\chi_{lowl}^2$	$24.2 (\nu: 2.4)$
$\Omega_m h^3$	$0.095^{+0.011}_{-0.010}$	$z_{eq}$	$3415^{+120}_{-120}$	$\chi_{plik}^2$	$771.7 (\nu: 17.1)$
$\sigma_8$	$0.811^{+0.026}_{-0.025}$	$k_{eq}$	$0.01040^{+0.00032}_{-0.00031}$	$\chi_{prior}^2$	$7.3 (\nu: 6.5)$
$S_8$	$0.840^{+0.049}_{-0.047}$	$100\theta_{eq}$	$0.810^{+0.024}_{-0.023}$	$\chi_{CMB}^2$	$1192.7 (\nu: 15.3)$

$$\bar{\chi}_{eff}^2 = 1199.93; \Delta\bar{\chi}_{eff}^2 = 0.61; R - 1 = 0.00341$$



## 7.4 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02209^{+0.00056}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.016}_{-0.016}$	$D_M(0.15)$	$651^{+38}_{-37}$
$\Omega_c h^2$	$0.1191^{+0.0077}_{-0.0075}$	$\sigma_8/h^{0.5}$	$0.990^{+0.020}_{-0.020}$	$H(0.38)$	$82.1^{+4.0}_{-3.8}$
$100\theta_{MC}$	$1.0409^{+0.0011}_{-0.0011}$	$r_{\text{drag}} h$	$98.5^{+3.4}_{-3.2}$	$D_M(0.38)$	$1551^{+85}_{-82}$
$\tau$	$0.053^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.454^{+0.060}_{-0.061}$	$H(0.51)$	$88.9^{+4.0}_{-3.8}$
$N_{\text{eff}}$	$2.97^{+0.54}_{-0.52}$	$z_{\text{re}}$	$< 8.76$	$D_M(0.51)$	$2008^{+110}_{-100}$
$\ln(10^{10} A_s)$	$3.038^{+0.036}_{-0.032}$	$10^9 A_s$	$2.087^{+0.076}_{-0.066}$	$H(0.61)$	$94.5^{+4.0}_{-3.8}$
$n_s$	$0.961^{+0.023}_{-0.022}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.042}_{-0.045}$	$D_M(0.61)$	$2335^{+120}_{-120}$
$y_{\text{cal}}$	$1.0004^{+0.0049}_{-0.0049}$	$D_{40}$	$1236^{+36}_{-36}$	$H(2.33)$	$235.4^{+7.0}_{-6.9}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$D_{220}$	$5716^{+82}_{-79}$	$D_M(2.33)$	$5811^{+230}_{-230}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2535^{+28}_{-28}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.8}_{-3.9}$	$D_{1420}$	$815^{+10}_{-10}$	$\sigma_8(0.15)$	$0.746^{+0.024}_{-0.023}$
$A_{100}^{\text{PS}}$	$261^{+60}_{-50}$	$D_{2000}$	$230.1^{+4.4}_{-4.5}$	$f\sigma_8(0.38)$	$0.477^{+0.013}_{-0.013}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$n_{s,0.002}$	$0.961^{+0.023}_{-0.022}$	$\sigma_8(0.38)$	$0.660^{+0.023}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_P$	$0.2442^{+0.0073}_{-0.0073}$	$f\sigma_8(0.51)$	$0.475^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.2455^{+0.0073}_{-0.0073}$	$\sigma_8(0.51)$	$0.617^{+0.022}_{-0.022}$
$A^{\text{kSZ}}$	$< 8.42$	$10^5 D/H$	$2.61^{+0.14}_{-0.13}$	$f\sigma_8(0.61)$	$0.469^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.5}$	Age/Gyr	$13.91^{+0.55}_{-0.55}$	$\sigma_8(0.61)$	$0.587^{+0.022}_{-0.021}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.6}_{-3.6}$	$z_*$	$1090.11^{+0.94}_{-0.91}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.2^{+6.4}_{-6.6}$	$r_*$	$145.3^{+4.9}_{-4.8}$	$\sigma_8(2.33)$	$0.305^{+0.013}_{-0.012}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.0412^{+0.0014}_{-0.0014}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.45}_{-0.44}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.2^{+2.0}_{-2.0}$	$f_{2000}^{217}$	$107.7^{+4.6}_{-4.6}$
$H_0$	$66.6^{+4.1}_{-4.0}$	$r_{\text{drag}}$	$148.1^{+5.1}_{-5.0}$	$\chi_{\text{lensing}}^2$	$9.38 (\nu: 0.5)$
$\Omega_\Lambda$	$0.679^{+0.027}_{-0.028}$	$k_D$	$0.1399^{+0.0036}_{-0.0036}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.1)$
$\Omega_m$	$0.321^{+0.028}_{-0.027}$	$100\theta_D$	$0.1609^{+0.0013}_{-0.0012}$	$\chi_{\text{lowl}}^2$	$24.2 (\nu: 1.7)$
$\Omega_m h^2$	$0.1418^{+0.0080}_{-0.0079}$	$z_{\text{eq}}$	$3410^{+97}_{-96}$	$\chi_{\text{plik}}^2$	$771.2 (\nu: 15.2)$
$\Omega_m h^3$	$0.0944^{+0.011}_{-0.0098}$	$k_{\text{eq}}$	$0.01035^{+0.00027}_{-0.00027}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.6)$
$\sigma_8$	$0.808^{+0.024}_{-0.024}$	$100\theta_{\text{eq}}$	$0.811^{+0.018}_{-0.018}$	$\chi_{\text{CMB}}^2$	$1201.4 (\nu: 15.6)$
$S_8$	$0.835^{+0.032}_{-0.032}$	$100\theta_{s,\text{eq}}$	$0.4485^{+0.0093}_{-0.0091}$		
$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.018}_{-0.017}$	$H(0.15)$	$71.9^{+4.0}_{-3.8}$		

$$\bar{\chi}_{\text{eff}}^2 = 1208.73; \Delta \bar{\chi}_{\text{eff}}^2 = 0.57; R - 1 = 0.01118$$

## 7.5 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022194	$0.02225^{+0.00045}_{-0.00042}$	$\Omega_m h^2$	0.1401	$0.1413^{+0.0059}_{-0.0060}$	$k_{\text{eq}}$	0.010317	$0.01035^{+0.00023}_{-0.00023}$
$\Omega_c h^2$	0.1172	$0.1184^{+0.0057}_{-0.0057}$	$\Omega_m h^3$	0.0922	$0.0938^{+0.0073}_{-0.0072}$	$100\theta_{\text{eq}}$	0.8082	$0.810^{+0.013}_{-0.013}$
$100\theta_{\text{MC}}$	1.04123	$1.04111^{+0.00086}_{-0.00084}$	$\sigma_8$	0.8040	$0.806^{+0.022}_{-0.021}$	$100\theta_{\text{s,eq}}$	0.4468	$0.4477^{+0.0068}_{-0.0067}$
$\tau$	0.0538	$0.053^{+0.016}_{-0.015}$	$S_8$	0.8347	$0.833^{+0.031}_{-0.031}$	$H(0.15)$	71.15	$71.7^{+2.8}_{-2.7}$
$N_{\text{eff}}$	2.836	$2.92^{+0.36}_{-0.37}$	$\sigma_8 \Omega_m^{0.5}$	0.4572	$0.456^{+0.017}_{-0.017}$	$D_{\text{M}}(0.15)$	657.8	$653^{+27}_{-26}$
$\ln(10^{10} A_s)$	3.0365	$3.038^{+0.037}_{-0.035}$	$\sigma_8 \Omega_m^{0.25}$	0.6063	$0.607^{+0.017}_{-0.017}$	$H(0.38)$	81.33	$81.9^{+2.7}_{-2.7}$
$n_s$	0.9579	$0.960^{+0.017}_{-0.017}$	$\sigma_8/h^{0.5}$	0.9910	$0.989^{+0.023}_{-0.023}$	$D_{\text{M}}(0.38)$	1566	$1554^{+60}_{-58}$
$y_{\text{cal}}$	1.00052	$1.0008^{+0.0050}_{-0.0048}$	$r_{\text{drag}} h$	98.15	$98.5^{+2.5}_{-2.4}$	$H(0.51)$	88.07	$88.7^{+2.8}_{-2.7}$
$A_{217}^{\text{CIB}}$	43.5	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.460	$2.456^{+0.060}_{-0.058}$	$D_{\text{M}}(0.51)$	2026	$2012^{+75}_{-72}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.96	—	$z_{\text{re}}$	7.60	$7.5^{+1.5}_{-1.6}$	$H(0.61)$	93.70	$94.3^{+2.8}_{-2.8}$
$A_{143}^{\text{tSZ}}$	6.85	$5.6^{+3.8}_{-3.7}$	$10^9 A_s$	2.083	$2.086^{+0.077}_{-0.073}$	$D_{\text{M}}(0.61)$	2357	$2340^{+85}_{-82}$
$A_{100}^{\text{PS}}$	244	$256^{+60}_{-50}$	$10^9 A_s e^{-2\tau}$	1.8707	$1.876^{+0.034}_{-0.035}$	$H(2.33)$	233.9	$234.9^{+5.0}_{-5.2}$
$A_{143}^{\text{PS}}$	52.4	$45^{+20}_{-20}$	$D_{40}$	1239.7	$1239^{+32}_{-30}$	$D_{\text{M}}(2.33)$	5857	$5822^{+170}_{-160}$
$A_{143 \times 217}^{\text{PS}}$	58.7	$42^{+20}_{-20}$	$D_{220}$	5730	$5734^{+76}_{-74}$	$f\sigma_8(0.15)$	0.4608	$0.460^{+0.016}_{-0.016}$
$A_{217}^{\text{PS}}$	124.4	$115^{+20}_{-20}$	$D_{810}$	2539.3	$2539^{+27}_{-26}$	$\sigma_8(0.15)$	0.7418	$0.744^{+0.021}_{-0.020}$
$A^{\text{kSZ}}$	0.00	$< 7.77$	$D_{1420}$	819.7	$818.0^{+9.4}_{-9.2}$	$f\sigma_8(0.38)$	0.4763	$0.476^{+0.014}_{-0.013}$
$A_{100}^{\text{dustTT}}$	8.70	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	232.48	$231.6^{+3.5}_{-3.5}$	$\sigma_8(0.38)$	0.6563	$0.659^{+0.019}_{-0.018}$
$A_{143}^{\text{dustTT}}$	10.90	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9579	$0.960^{+0.017}_{-0.017}$	$f\sigma_8(0.51)$	0.4736	$0.474^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{dustTT}}$	20.2	$18.4^{+6.4}_{-6.5}$	$Y_{\text{P}}$	0.2425	$0.2436^{+0.0050}_{-0.0053}$	$\sigma_8(0.51)$	0.6137	$0.616^{+0.019}_{-0.018}$
$A_{217}^{\text{dustTT}}$	96.0	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.2438	$0.2449^{+0.0050}_{-0.0053}$	$f\sigma_8(0.61)$	0.4677	$0.468^{+0.013}_{-0.012}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.075}$	$10^5 D/H$	2.546	$2.564^{+0.085}_{-0.086}$	$\sigma_8(0.61)$	0.5836	$0.586^{+0.018}_{-0.017}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.058}_{-0.059}$	Age/Gyr	14.018	$13.94^{+0.40}_{-0.38}$	$f\sigma_8(2.33)$	0.2938	$0.2950^{+0.0094}_{-0.0088}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.69	$1089.81^{+0.66}_{-0.64}$	$\sigma_8(2.33)$	0.3024	$0.304^{+0.010}_{-0.0095}$
$A_{143}^{\text{dustTE}}$	0.225	$0.23^{+0.10}_{-0.11}$	$r_*$	146.36	$145.6^{+3.7}_{-3.4}$	$f_{2000}^{143}$	27.2	$29^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	0.668	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	1.04156	$1.0414^{+0.0011}_{-0.0010}$	$f_{2000}^{143 \times 217}$	30.88	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.09	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.052	$13.98^{+0.34}_{-0.32}$	$f_{2000}^{217}$	105.44	$106.5^{+3.8}_{-3.8}$
$c_{100}$	0.99976	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.17	$1059.4^{+1.6}_{-1.5}$	$\chi_{\text{small}}^2$	396.03	$397.0 (\nu: 1.5)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	149.11	$148.3^{+3.8}_{-3.6}$	$\chi_{\text{lowl}}^2$	24.41	$24.3 (\nu: 1.2)$
$H_0$	65.82	$66.4^{+2.8}_{-2.8}$	$k_{\text{D}}$	0.13944	$0.1400^{+0.0026}_{-0.0027}$	$\chi_{\text{plik}}^2$	2343.0	$2359.2 (\nu: 18.0)$
$\Omega_{\Lambda}$	0.6767	$0.679^{+0.020}_{-0.021}$	$100\theta_{\text{D}}$	0.16033	$0.16052^{+0.00077}_{-0.00080}$	$\chi_{\text{prior}}^2$	1.3	$11.6 (\nu: 10.5)$
$\Omega_{\text{m}}$	0.3233	$0.321^{+0.021}_{-0.020}$	$z_{\text{eq}}$	3429	$3420^{+72}_{-70}$	$\chi_{\text{CMB}}^2$	2763.4	$2780.5 (\nu: 17.8)$

Best-fit  $\chi_{\text{eff}}^2 = 2764.72$ ;  $\Delta\chi_{\text{eff}}^2 = -1.05$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.10$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.33$ ;  $R - 1 = 0.01315$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 24.41 ( $\Delta$  1.15) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.95 ( $\Delta$  -1.69)

## 7.6 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022195	$0.02224^{+0.00043}_{-0.00043}$	$\Omega_m h^3$	0.0918	$0.0933^{+0.0073}_{-0.0074}$	$100\theta_{s,eq}$	0.4472	$0.4478^{+0.0062}_{-0.0060}$
$\Omega_c h^2$	0.1167	$0.1179^{+0.0054}_{-0.0057}$	$\sigma_8$	0.8018	$0.804^{+0.020}_{-0.019}$	$H(0.15)$	71.10	$71.6^{+2.7}_{-2.7}$
$100\theta_{MC}$	1.04130	$1.04116^{+0.00084}_{-0.00083}$	$S_8$	0.8312	$0.831^{+0.025}_{-0.024}$	$D_M(0.15)$	658.2	$654^{+26}_{-25}$
$\tau$	0.0533	$0.053^{+0.014}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4553	$0.455^{+0.013}_{-0.013}$	$H(0.38)$	81.25	$81.8^{+2.7}_{-2.7}$
$N_{eff}$	2.815	$2.89^{+0.36}_{-0.38}$	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.605^{+0.014}_{-0.013}$	$D_M(0.38)$	1567	$1557^{+59}_{-57}$
$\ln(10^{10} A_s)$	3.0339	$3.036^{+0.033}_{-0.031}$	$\sigma_8/h^{0.5}$	0.9885	$0.988^{+0.017}_{-0.018}$	$H(0.51)$	87.97	$88.5^{+2.7}_{-2.8}$
$n_s$	0.9577	$0.959^{+0.016}_{-0.017}$	$r_{drag} h$	98.27	$98.5^{+2.3}_{-2.2}$	$D_M(0.51)$	2028	$2015^{+75}_{-71}$
$y_{cal}$	1.00049	$1.0007^{+0.0050}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.4559	$2.454^{+0.049}_{-0.047}$	$H(0.61)$	93.59	$94.1^{+2.7}_{-2.9}$
$A_{217}^{CIB}$	43.4	$46^{+10}_{-10}$	$z_{re}$	7.53	$7.5^{+1.4}_{-1.5}$	$D_M(0.61)$	2359	$2344^{+85}_{-81}$
$\xi^{tSZ \times CIB}$	0.98	—	$10^9 A_s$	2.078	$2.083^{+0.070}_{-0.065}$	$H(2.33)$	233.5	$234.5^{+4.9}_{-5.2}$
$A_{143}^{tSZ}$	6.95	$5.6^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8679	$1.873^{+0.033}_{-0.035}$	$D_M(2.33)$	5864	$5832^{+180}_{-160}$
$A_{100}^{PS}$	242	$256^{+60}_{-60}$	$D_{40}$	1239.1	$1240^{+30}_{-28}$	$f\sigma_8(0.15)$	0.4589	$0.459^{+0.012}_{-0.012}$
$A_{143}^{PS}$	52.0	$44^{+20}_{-20}$	$D_{220}$	5730	$5736^{+74}_{-74}$	$\sigma_8(0.15)$	0.7399	$0.742^{+0.019}_{-0.018}$
$A_{143 \times 217}^{PS}$	59.1	$42^{+20}_{-20}$	$D_{810}$	2538.8	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4747	$0.475^{+0.011}_{-0.011}$
$A_{217}^{PS}$	124.4	$115^{+20}_{-20}$	$D_{1420}$	819.9	$818.1^{+9.3}_{-9.2}$	$\sigma_8(0.38)$	0.6547	$0.657^{+0.018}_{-0.017}$
$A^{kSZ}$	0.01	$< 7.83$	$D_{2000}$	232.64	$231.7^{+3.5}_{-3.5}$	$f\sigma_8(0.51)$	0.4720	$0.473^{+0.010}_{-0.010}$
$A_{100}^{dustTT}$	8.69	$8.9^{+3.7}_{-3.7}$	$n_{s,0.002}$	0.9577	$0.959^{+0.016}_{-0.017}$	$\sigma_8(0.51)$	0.6122	$0.615^{+0.017}_{-0.017}$
$A_{143}^{dustTT}$	10.89	$10.8^{+3.5}_{-3.4}$	$Y_P$	0.2422	$0.2433^{+0.0050}_{-0.0055}$	$f\sigma_8(0.61)$	0.4662	$0.467^{+0.010}_{-0.010}$
$A_{143 \times 217}^{dustTT}$	20.3	$18.4^{+6.3}_{-6.6}$	$Y_P^{BBN}$	0.2435	$0.2446^{+0.0051}_{-0.0055}$	$\sigma_8(0.61)$	0.5822	$0.585^{+0.017}_{-0.016}$
$A_{217}^{dustTT}$	96.1	$94^{+10}_{-10}$	$10^5 D/H$	2.538	$2.558^{+0.082}_{-0.084}$	$f\sigma_8(2.33)$	0.2932	$0.2944^{+0.0090}_{-0.0086}$
$A_{100}^{dustTE}$	0.113	$0.114^{+0.075}_{-0.077}$	Age/Gyr	14.036	$13.96^{+0.42}_{-0.38}$	$\sigma_8(2.33)$	0.3018	$0.3031^{+0.0099}_{-0.0093}$
$A_{100 \times 143}^{dustTE}$	0.136	$0.135^{+0.057}_{-0.059}$	$z_*$	1089.62	$1089.75^{+0.63}_{-0.61}$	$f_{2000}^{143}$	26.9	$29^{+6}_{-6}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.18}$	$r_*$	146.61	$145.9^{+3.7}_{-3.4}$	$f_{2000}^{143 \times 217}$	30.75	$31^{+4}_{-4}$
$A_{143}^{dustTE}$	0.228	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	1.04165	$1.0415^{+0.0011}_{-0.0010}$	$f_{2000}^{217}$	105.29	$106.4^{+3.7}_{-3.9}$
$A_{143 \times 217}^{dustTE}$	0.669	$0.67^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	14.075	$14.01^{+0.35}_{-0.31}$	$\chi^2_{lensing}$	8.50	$9.02 (\nu: 0.2)$
$A_{217}^{dustTE}$	2.09	$2.08^{+0.54}_{-0.52}$	$z_{drag}$	1059.09	$1059.3^{+1.6}_{-1.5}$	$\chi^2_{small}$	395.95	$396.8 (\nu: 1.1)$
$c_{100}$	0.99976	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	149.36	$148.6^{+3.9}_{-3.5}$	$\chi^2_{lowl}$	24.36	$24.4 (\nu: 1.1)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.13926	$0.1398^{+0.0026}_{-0.0028}$	$\chi^2_{plik}$	2343.0	$2359.1 (\nu: 17.2)$
$H_0$	65.79	$66.3^{+2.8}_{-2.7}$	$100\theta_D$	0.16027	$0.16046^{+0.00076}_{-0.00080}$	$\chi^2_{prior}$	1.4	$11.6 (\nu: 10.5)$
$\Omega_\Lambda$	0.6776	$0.679^{+0.019}_{-0.019}$	$z_{eq}$	3426	$3419^{+64}_{-63}$	$\chi^2_{CMB}$	2771.9	$2789.3 (\nu: 17.7)$
$\Omega_m$	0.3224	$0.321^{+0.019}_{-0.019}$	$k_{eq}$	0.010292	$0.01033^{+0.00021}_{-0.00020}$			
$\Omega_m h^2$	0.1395	$0.1408^{+0.0057}_{-0.0059}$	$100\theta_{eq}$	0.8088	$0.810^{+0.012}_{-0.012}$			

Best-fit  $\chi^2_{eff} = 2773.28$ ;  $\Delta\chi^2_{eff} = -1.35$ ;  $\bar{\chi}^2_{eff} = 2800.86$ ;  $\Delta\bar{\chi}^2_{eff} = 0.17$ ;  $R - 1 = 0.01957$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.50 ( $\Delta$  -0.37) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.95 ( $\Delta$  -0.10) commander\_dx12\_v3\_2\_29: 24.36 ( $\Delta$  1.11) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.04 ( $\Delta$  -1.89)

## 7.7 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02225^{+0.00045}_{-0.00041}$	$\Omega_m h^2$	$0.1413^{+0.0059}_{-0.0060}$	$k_{\text{eq}}$	$0.01035^{+0.00023}_{-0.00023}$
$\Omega_c h^2$	$0.1184^{+0.0057}_{-0.0057}$	$\Omega_m h^3$	$0.0939^{+0.0073}_{-0.0072}$	$100\theta_{\text{eq}}$	$0.810^{+0.013}_{-0.013}$
$100\theta_{\text{MC}}$	$1.04111^{+0.00087}_{-0.00084}$	$\sigma_8$	$0.807^{+0.021}_{-0.020}$	$100\theta_{\text{s,eq}}$	$0.4479^{+0.0067}_{-0.0068}$
$\tau$	$0.055^{+0.013}_{-0.011}$	$S_8$	$0.834^{+0.031}_{-0.031}$	$H(0.15)$	$71.8^{+2.8}_{-2.7}$
$N_{\text{eff}}$	$2.92^{+0.36}_{-0.37}$	$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.017}_{-0.017}$	$D_{\text{M}}(0.15)$	$652^{+27}_{-26}$
$\ln(10^{10} A_s)$	$3.041^{+0.033}_{-0.030}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.017}_{-0.016}$	$H(0.38)$	$82.0^{+2.7}_{-2.7}$
$n_s$	$0.960^{+0.017}_{-0.017}$	$\sigma_8/h^{0.5}$	$0.991^{+0.022}_{-0.022}$	$D_{\text{M}}(0.38)$	$1553^{+60}_{-58}$
$y_{\text{cal}}$	$1.0007^{+0.0050}_{-0.0048}$	$r_{\text{drag}} h$	$98.5^{+2.4}_{-2.4}$	$H(0.51)$	$88.7^{+2.8}_{-2.7}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.458^{+0.059}_{-0.057}$	$D_{\text{M}}(0.51)$	$2011^{+75}_{-72}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.83$	$H(0.61)$	$94.3^{+2.8}_{-2.8}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.7}_{-3.7}$	$10^9 A_s$	$2.092^{+0.068}_{-0.064}$	$D_{\text{M}}(0.61)$	$2338^{+85}_{-81}$
$A_{100}^{\text{PS}}$	$256^{+60}_{-50}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.034}_{-0.035}$	$H(2.33)$	$235.0^{+5.0}_{-5.2}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{40}$	$1239^{+32}_{-30}$	$D_{\text{M}}(2.33)$	$5819^{+170}_{-160}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5734^{+75}_{-74}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-26}$	$\sigma_8(0.15)$	$0.745^{+0.020}_{-0.019}$
$A^{\text{kSZ}}$	$< 7.75$	$D_{1420}$	$818.0^{+9.3}_{-9.2}$	$f\sigma_8(0.38)$	$0.477^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$D_{2000}$	$231.6^{+3.5}_{-3.5}$	$\sigma_8(0.38)$	$0.660^{+0.019}_{-0.018}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.960^{+0.017}_{-0.017}$	$f\sigma_8(0.51)$	$0.475^{+0.013}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.4}_{-6.5}$	$Y_{\text{P}}$	$0.2437^{+0.0050}_{-0.0053}$	$\sigma_8(0.51)$	$0.617^{+0.018}_{-0.017}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2450^{+0.0050}_{-0.0053}$	$f\sigma_8(0.61)$	$0.469^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.075}$	$10^5 \text{D}/\text{H}$	$2.565^{+0.085}_{-0.086}$	$\sigma_8(0.61)$	$0.587^{+0.017}_{-0.016}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$\text{Age}/\text{Gyr}$	$13.93^{+0.40}_{-0.38}$	$f\sigma_8(2.33)$	$0.2955^{+0.0091}_{-0.0084}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.81^{+0.66}_{-0.64}$	$\sigma_8(2.33)$	$0.3043^{+0.0098}_{-0.0091}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$r_*$	$145.6^{+3.6}_{-3.4}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0010}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.52}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.98^{+0.34}_{-0.32}$	$f_{2000}^{217}$	$106.5^{+3.8}_{-3.8}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.4^{+1.6}_{-1.5}$	$\chi_{\text{small}}^2$	$396.9 (\nu: 1.6)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$148.3^{+3.8}_{-3.5}$	$\chi_{\text{lowl}}^2$	$24.3 (\nu: 1.2)$
$H_0$	$66.4^{+2.8}_{-2.8}$	$k_{\text{D}}$	$0.1400^{+0.0026}_{-0.0027}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 18.0)$
$\Omega_{\Lambda}$	$0.680^{+0.020}_{-0.021}$	$100\theta_{\text{D}}$	$0.16053^{+0.00077}_{-0.00080}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.5)$
$\Omega_{\text{m}}$	$0.320^{+0.021}_{-0.020}$	$z_{\text{eq}}$	$3418^{+72}_{-70}$	$\chi_{\text{CMB}}^2$	$2780.3 (\nu: 17.5)$

$$\bar{\chi}_{\text{eff}}^2 = 2791.81; \Delta\bar{\chi}_{\text{eff}}^2 = 0.28; R - 1 = 0.01491$$

## 7.8 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02224^{+0.00044}_{-0.00043}$	$\Omega_m h^3$	$0.0934^{+0.0072}_{-0.0074}$	$100\theta_{s,eq}$	$0.4480^{+0.0061}_{-0.0060}$
$\Omega_c h^2$	$0.1179^{+0.0055}_{-0.0057}$	$\sigma_8$	$0.805^{+0.020}_{-0.018}$	$H(0.15)$	$71.7^{+2.8}_{-2.7}$
$100\theta_{MC}$	$1.04116^{+0.00084}_{-0.00085}$	$S_8$	$0.831^{+0.025}_{-0.024}$	$D_M(0.15)$	$653^{+26}_{-25}$
$\tau$	$0.054^{+0.012}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.455^{+0.014}_{-0.013}$	$H(0.38)$	$81.8^{+2.7}_{-2.7}$
$N_{eff}$	$2.90^{+0.36}_{-0.38}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.014}_{-0.013}$	$D_M(0.38)$	$1555^{+59}_{-57}$
$\ln(10^{10} A_s)$	$3.038^{+0.030}_{-0.028}$	$\sigma_8/h^{0.5}$	$0.989^{+0.017}_{-0.017}$	$H(0.51)$	$88.6^{+2.7}_{-2.8}$
$n_s$	$0.959^{+0.016}_{-0.017}$	$r_{drag} h$	$98.6^{+2.2}_{-2.2}$	$D_M(0.51)$	$2014^{+74}_{-71}$
$y_{cal}$	$1.0007^{+0.0050}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.048}_{-0.047}$	$H(0.61)$	$94.2^{+2.7}_{-2.8}$
$A_{217}^{CIB}$	$46^{+10}_{-10}$	$z_{re}$	$< 8.73$	$D_M(0.61)$	$2342^{+84}_{-81}$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.087^{+0.063}_{-0.059}$	$H(2.33)$	$234.6^{+4.9}_{-5.2}$
$A_{143}^{tSZ}$	$5.6^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	$1.873^{+0.033}_{-0.034}$	$D_M(2.33)$	$5829^{+170}_{-160}$
$A_{100}^{PS}$	$256^{+60}_{-60}$	$D_{40}$	$1239^{+30}_{-28}$	$f\sigma_8(0.15)$	$0.459^{+0.012}_{-0.012}$
$A_{143}^{PS}$	$44^{+20}_{-20}$	$D_{220}$	$5735^{+73}_{-73}$	$\sigma_8(0.15)$	$0.743^{+0.019}_{-0.018}$
$A_{143 \times 217}^{PS}$	$42^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.476^{+0.011}_{-0.011}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$D_{1420}$	$818.0^{+9.3}_{-9.2}$	$\sigma_8(0.38)$	$0.658^{+0.018}_{-0.016}$
$A^{kSZ}$	$< 7.82$	$D_{2000}$	$231.6^{+3.5}_{-3.4}$	$f\sigma_8(0.51)$	$0.473^{+0.010}_{-0.010}$
$A_{100}^{dustTT}$	$8.9^{+3.7}_{-3.7}$	$n_{s,0.002}$	$0.959^{+0.016}_{-0.017}$	$\sigma_8(0.51)$	$0.615^{+0.017}_{-0.016}$
$A_{143}^{dustTT}$	$10.8^{+3.5}_{-3.4}$	$Y_P$	$0.2433^{+0.0050}_{-0.0054}$	$f\sigma_8(0.61)$	$0.468^{+0.010}_{-0.0097}$
$A_{143 \times 217}^{dustTT}$	$18.4^{+6.3}_{-6.6}$	$Y_P^{BBN}$	$0.2446^{+0.0050}_{-0.0054}$	$\sigma_8(0.61)$	$0.585^{+0.017}_{-0.015}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.558^{+0.082}_{-0.083}$	$f\sigma_8(2.33)$	$0.2948^{+0.0088}_{-0.0081}$
$A_{100}^{dustTE}$	$0.114^{+0.075}_{-0.077}$	Age/Gyr	$13.95^{+0.41}_{-0.38}$	$\sigma_8(2.33)$	$0.3036^{+0.0096}_{-0.0089}$
$A_{100 \times 143}^{dustTE}$	$0.135^{+0.057}_{-0.059}$	$z_*$	$1089.75^{+0.62}_{-0.61}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.17}_{-0.18}$	$r_*$	$145.9^{+3.8}_{-3.4}$	$f_{2000}^{143 \times 217}$	$31^{+4}_{-4}$
$A_{143}^{dustTE}$	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	$1.0415^{+0.0011}_{-0.0010}$	$f_{2000}^{217}$	$106.4^{+3.7}_{-3.9}$
$A_{143 \times 217}^{dustTE}$	$0.67^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$14.01^{+0.35}_{-0.31}$	$\chi_{lensing}^2$	$9.01 (\nu: 0.2)$
$A_{217}^{dustTE}$	$2.08^{+0.54}_{-0.52}$	$z_{drag}$	$1059.4^{+1.6}_{-1.6}$	$\chi_{simall}^2$	$396.8 (\nu: 1.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	$148.6^{+3.9}_{-3.6}$	$\chi_{lowl}^2$	$24.4 (\nu: 1.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.1398^{+0.0026}_{-0.0028}$	$\chi_{plik}^2$	$2358.9 (\nu: 17.3)$
$H_0$	$66.3^{+2.8}_{-2.7}$	$100\theta_D$	$0.16047^{+0.00077}_{-0.00079}$	$\chi_{prior}^2$	$11.5 (\nu: 10.4)$
$\Omega_\Lambda$	$0.680^{+0.018}_{-0.019}$	$z_{eq}$	$3417^{+63}_{-63}$	$\chi_{CMB}^2$	$2789.1 (\nu: 17.5)$
$\Omega_m$	$0.320^{+0.019}_{-0.018}$	$k_{eq}$	$0.01032^{+0.00021}_{-0.00020}$		
$\Omega_m h^2$	$0.1408^{+0.0057}_{-0.0059}$	$100\theta_{eq}$	$0.810^{+0.012}_{-0.012}$		

$$\bar{\chi}_{eff}^2 = 2800.61; \Delta \bar{\chi}_{eff}^2 = 0.11; R - 1 = 0.02136$$

## 7.9 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022244	$0.02227^{+0.00046}_{-0.00044}$	$\sigma_8/h^{0.5}$	0.9823	$0.983^{+0.024}_{-0.024}$	$D_M(0.38)$	1525	$1518^{+59}_{-58}$
$\Omega_c h^2$	0.1193	$0.1206^{+0.0080}_{-0.0074}$	$r_{\text{drag}} h$	99.87	$99.96^{+2.1}_{-2.0}$	$H(0.51)$	89.87	$90.3^{+3.1}_{-3.0}$
$100\theta_{\text{MC}}$	1.04094	$1.0408^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	2.425	$2.426^{+0.056}_{-0.055}$	$D_M(0.51)$	1976	$1967^{+74}_{-74}$
$\tau$	0.0545	$0.054^{+0.016}_{-0.016}$	$z_{\text{re}}$	7.72	$7.7^{+1.6}_{-1.7}$	$H(0.61)$	95.47	$96.0^{+3.2}_{-3.1}$
$N_{\text{eff}}$	3.075	$3.15^{+0.46}_{-0.44}$	$10^9 A_s$	2.095	$2.100^{+0.083}_{-0.082}$	$D_M(0.61)$	2300	$2289^{+85}_{-84}$
$\ln(10^{10} A_s)$	3.0421	$3.044^{+0.039}_{-0.040}$	$10^9 A_s e^{-2\tau}$	1.8787	$1.885^{+0.042}_{-0.042}$	$H(2.33)$	236.1	$237.1^{+6.8}_{-6.5}$
$n_s$	0.9686	$0.970^{+0.016}_{-0.017}$	$D_{40}$	1221.3	$1222^{+29}_{-29}$	$D_M(2.33)$	5754	$5728^{+180}_{-180}$
$y_{\text{cal}}$	1.00034	$1.0006^{+0.0048}_{-0.0049}$	$D_{220}$	5714	$5719^{+78}_{-80}$	$f\sigma_8(0.15)$	0.4546	$0.456^{+0.017}_{-0.017}$
$A_{217}^{\text{CIB}}$	49.7	$48^{+10}_{-10}$	$D_{810}$	2536.1	$2537^{+28}_{-28}$	$\sigma_8(0.15)$	0.7477	$0.750^{+0.026}_{-0.025}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.19	—	$D_{1420}$	815.8	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4734	$0.475^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	7.05	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	230.01	$229.4^{+4.3}_{-4.4}$	$\sigma_8(0.38)$	0.6630	$0.666^{+0.023}_{-0.022}$
$A_{100}^{\text{PS}}$	257	$266^{+60}_{-60}$	$n_{s,0.002}$	0.9686	$0.970^{+0.016}_{-0.017}$	$f\sigma_8(0.51)$	0.4723	$0.474^{+0.016}_{-0.015}$
$A_{143}^{\text{PS}}$	47.6	$50^{+20}_{-20}$	$Y_{\text{P}}$	0.2457	$0.2466^{+0.0061}_{-0.0060}$	$\sigma_8(0.51)$	0.6206	$0.623^{+0.022}_{-0.021}$
$A_{143 \times 217}^{\text{PS}}$	43.4	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.2471	$0.2480^{+0.0061}_{-0.0061}$	$f\sigma_8(0.61)$	0.4675	$0.469^{+0.016}_{-0.015}$
$A_{217}^{\text{PS}}$	117.6	$115^{+20}_{-20}$	$10^5 D/H$	2.620	$2.64^{+0.14}_{-0.13}$	$\sigma_8(0.61)$	0.5906	$0.593^{+0.021}_{-0.020}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.777	$13.71^{+0.44}_{-0.43}$	$f\sigma_8(2.33)$	0.2979	$0.299^{+0.011}_{-0.010}$
$A_{100}^{\text{dustTT}}$	8.86	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.05	$1090.19^{+0.98}_{-0.93}$	$\sigma_8(2.33)$	0.3072	$0.308^{+0.012}_{-0.011}$
$A_{143}^{\text{dustTT}}$	10.81	$10.8^{+3.5}_{-3.5}$	$r_*$	144.55	$143.9^{+4.3}_{-4.3}$	$f_{2000}^{143}$	30.5	$32^{+7}_{-7}$
$A_{143 \times 217}^{\text{dustTT}}$	19.1	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	1.04111	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	33.22	$34^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	94.1	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.884	$13.82^{+0.40}_{-0.40}$	$f_{2000}^{217}$	107.69	$108.5^{+4.5}_{-4.4}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.63	$1059.8^{+1.7}_{-1.7}$	$\chi_{\text{small}}^2$	396.05	$397.1 (\nu: 1.8)$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.26	$146.6^{+4.5}_{-4.4}$	$\chi_{\text{lowl}}^2$	22.69	$22.8 (\nu: 0.7)$
$H_0$	67.82	$68.2^{+2.9}_{-2.8}$	$k_{\text{D}}$	0.14048	$0.1410^{+0.0033}_{-0.0032}$	$\chi_{\text{plik}}^2$	760.2	$773.2 (\nu: 16.2)$
$\Omega_{\Lambda}$	0.6908	$0.691^{+0.016}_{-0.016}$	$100\theta_{\text{D}}$	0.16107	$0.1612^{+0.0012}_{-0.0011}$	$\chi_{6\text{DF}}^2$	0.016	$0.057 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3092	$0.309^{+0.016}_{-0.016}$	$z_{\text{eq}}$	3370	$3368^{+60}_{-62}$	$\chi_{\text{MGS}}^2$	1.34	$1.47 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	0.1422	$0.1435^{+0.0081}_{-0.0076}$	$k_{\text{eq}}$	0.010307	$0.01035^{+0.00030}_{-0.00028}$	$\chi_{\text{DR12BAO}}^2$	4.05	$4.7 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	0.0965	$0.0979^{+0.0094}_{-0.0086}$	$100\theta_{\text{eq}}$	0.8187	$0.819^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 6.7)$
$\sigma_8$	0.8089	$0.812^{+0.027}_{-0.026}$	$100\theta_{\text{s,eq}}$	0.4523	$0.4525^{+0.0060}_{-0.0057}$	$\chi_{\text{BAO}}^2$	5.41	$6.2 (\nu: 0.9)$
$S_8$	0.8213	$0.823^{+0.032}_{-0.032}$	$H(0.15)$	73.08	$73.5^{+2.9}_{-2.8}$	$\chi_{\text{CMB}}^2$	1178.9	$1193.0 (\nu: 15.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4498	$0.451^{+0.018}_{-0.017}$	$D_M(0.15)$	639.4	$636^{+26}_{-26}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6032	$0.605^{+0.021}_{-0.020}$	$H(0.38)$	83.17	$83.6^{+3.0}_{-2.9}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.72$ ;  $\Delta\chi_{\text{eff}}^2 = -0.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.54$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.52$ ;  $R - 1 = 0.01083$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.34 ( $\Delta$  0.06) DR12BAO: 4.05 ( $\Delta$  -0.14) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.16) commander\_dx12\_v3\_2\_29: 22.69 ( $\Delta$  -0.14) plik\_rd12\_HM\_v22\_TT: 760.20 ( $\Delta$  0.10)

## 7.10 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022279	$0.02228^{+0.00045}_{-0.00044}$	$\sigma_8/h^{0.5}$	0.9832	$0.984^{+0.018}_{-0.018}$	$D_M(0.38)$	1523	$1519^{+57}_{-56}$
$\Omega_c h^2$	0.1197	$0.1203^{+0.0073}_{-0.0069}$	$r_{\text{drag}} h$	99.88	$99.96^{+1.9}_{-1.8}$	$H(0.51)$	90.00	$90.2^{+3.0}_{-2.9}$
$100\theta_{\text{MC}}$	1.04093	$1.0409^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	2.4272	$2.430^{+0.045}_{-0.044}$	$D_M(0.51)$	1974	$1968^{+72}_{-70}$
$\tau$	0.0545	$0.055^{+0.015}_{-0.014}$	$z_{\text{re}}$	7.72	$7.8^{+1.5}_{-1.5}$	$H(0.61)$	95.61	$95.9^{+3.1}_{-3.0}$
$N_{\text{eff}}$	3.092	$3.13^{+0.44}_{-0.42}$	$10^9 A_s$	2.099	$2.106^{+0.071}_{-0.069}$	$D_M(0.61)$	2297	$2291^{+82}_{-80}$
$\ln(10^{10} A_s)$	3.0441	$3.047^{+0.033}_{-0.033}$	$10^9 A_s e^{-2\tau}$	1.8823	$1.885^{+0.038}_{-0.039}$	$H(2.33)$	236.4	$236.9^{+6.3}_{-6.2}$
$n_s$	0.9689	$0.969^{+0.016}_{-0.016}$	$D_{40}$	1222.7	$1224^{+28}_{-28}$	$D_M(2.33)$	5746	$5733^{+180}_{-170}$
$y_{\text{cal}}$	1.00071	$1.0007^{+0.0047}_{-0.0048}$	$D_{220}$	5722	$5725^{+78}_{-78}$	$f\sigma_8(0.15)$	0.4553	$0.456^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	49.2	$48^{+10}_{-10}$	$D_{810}$	2539.1	$2538^{+26}_{-26}$	$\sigma_8(0.15)$	0.7490	$0.751^{+0.022}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.25	—	$D_{1420}$	816.6	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4742	$0.475^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	7.08	$5.0^{+3.9}_{-3.9}$	$D_{2000}$	230.24	$229.6^{+4.3}_{-4.3}$	$\sigma_8(0.38)$	0.6642	$0.666^{+0.020}_{-0.020}$
$A_{100}^{\text{PS}}$	256	$265^{+60}_{-50}$	$n_{s,0.002}$	0.9689	$0.969^{+0.016}_{-0.016}$	$f\sigma_8(0.51)$	0.4731	$0.474^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	48.4	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.2460	$0.2464^{+0.0057}_{-0.0058}$	$\sigma_8(0.51)$	0.6217	$0.623^{+0.019}_{-0.019}$
$A_{143 \times 217}^{\text{PS}}$	45.1	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.2473	$0.2478^{+0.0057}_{-0.0058}$	$f\sigma_8(0.61)$	0.4683	$0.469^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	118.5	$115^{+20}_{-20}$	$10^5 D/H$	2.619	$2.63^{+0.13}_{-0.12}$	$\sigma_8(0.61)$	0.5916	$0.593^{+0.019}_{-0.018}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.758	$13.73^{+0.42}_{-0.41}$	$f\sigma_8(2.33)$	0.2984	$0.2993^{+0.0097}_{-0.0095}$
$A_{100}^{\text{dustTT}}$	8.89	$9.0^{+3.7}_{-3.6}$	$z_*$	1090.05	$1090.15^{+0.91}_{-0.88}$	$\sigma_8(2.33)$	0.3077	$0.309^{+0.010}_{-0.010}$
$A_{143}^{\text{dustTT}}$	10.78	$10.7^{+3.6}_{-3.5}$	$r_*$	144.35	$144.0^{+4.1}_{-4.0}$	$f_{2000}^{143}$	30.4	$31^{+7}_{-7}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	1.04109	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	33.22	$34^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	94.6	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.865	$13.84^{+0.38}_{-0.38}$	$f_{2000}^{217}$	107.74	$108.3^{+4.4}_{-4.4}$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.74	$1059.8^{+1.6}_{-1.6}$	$\chi_{\text{lensing}}^2$	8.98	$9.45 (\nu: 0.3)$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.04	$146.7^{+4.2}_{-4.2}$	$\chi_{\text{simall}}^2$	396.05	$397.2 (\nu: 1.8)$
$H_0$	67.92	$68.1^{+2.8}_{-2.7}$	$k_{\text{D}}$	0.14067	$0.1409^{+0.0031}_{-0.0031}$	$\chi_{\text{lowl}}^2$	22.70	$22.9 (\nu: 0.6)$
$\Omega_{\Lambda}$	0.6909	$0.691^{+0.015}_{-0.015}$	$100\theta_{\text{D}}$	0.16107	$0.1612^{+0.0011}_{-0.0011}$	$\chi_{\text{plik}}^2$	760.1	$772.6 (\nu: 15.2)$
$\Omega_{\text{m}}$	0.3091	$0.309^{+0.015}_{-0.015}$	$z_{\text{eq}}$	3372	$3369^{+55}_{-55}$	$\chi_{\text{JLA}}^2$	1034.95	$1035.04 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	0.1426	$0.1432^{+0.0075}_{-0.0071}$	$k_{\text{eq}}$	0.010323	$0.01034^{+0.00026}_{-0.00026}$	$\chi_{6\text{DF}}^2$	0.016	$0.048 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	0.0969	$0.0976^{+0.0088}_{-0.0082}$	$100\theta_{\text{eq}}$	0.8185	$0.819^{+0.010}_{-0.010}$	$\chi_{\text{MGS}}^2$	1.34	$1.45 (\nu: 0.1)$
$\sigma_8$	0.8103	$0.812^{+0.023}_{-0.023}$	$100\theta_{\text{s,eq}}$	0.4522	$0.4525^{+0.0053}_{-0.0052}$	$\chi_{\text{DR12BAO}}^2$	4.05	$4.5 (\nu: 0.9)$
$S_8$	0.8226	$0.824^{+0.024}_{-0.024}$	$H(0.15)$	73.19	$73.4^{+2.8}_{-2.7}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4506	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	638.4	$637^{+25}_{-24}$	$\chi_{\text{CMB}}^2$	1187.9	$1202.1 (\nu: 15.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6042	$0.605^{+0.016}_{-0.016}$	$H(0.38)$	83.29	$83.5^{+2.9}_{-2.8}$	$\chi_{\text{BAO}}^2$	5.41	$6.0 (\nu: 0.6)$

Best-fit  $\chi_{\text{eff}}^2 = 2229.65$ ;  $\Delta\chi_{\text{eff}}^2 = -0.06$ ;  $\bar{\chi}_{\text{eff}}^2 = 2250.41$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.64$ ;  $R - 1 = 0.01118$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.34 ( $\Delta$  0.00) DR12BAO: 4.05 ( $\Delta$  0.02) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.98 ( $\Delta$  0.10) simall\_100x143\_offlike5\_EE\_Aplanck.L  
396.06 ( $\Delta$  -0.31) commander\_dx12\_v3.2\_29: 22.70 ( $\Delta$  -0.11) plik\_rd12\_HM\_v22\_TT: 760.14 ( $\Delta$  0.35) SN - JLA Pantheon18: 1034.95 ( $\Delta$  -0.01)

## 7.11 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022244	$0.02225^{+0.00046}_{-0.00044}$	$\sigma_8/h^{0.5}$	0.9835	$0.985^{+0.018}_{-0.018}$	$D_M(0.38)$	1530	$1523^{+59}_{-58}$
$\Omega_c h^2$	0.1192	$0.1201^{+0.0073}_{-0.0070}$	$r_{\text{drag}} h$	99.65	$99.8^{+2.0}_{-1.9}$	$H(0.51)$	89.67	$90.1^{+3.0}_{-3.0}$
$100\theta_{\text{MC}}$	1.04095	$1.0409^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	2.4306	$2.432^{+0.045}_{-0.045}$	$D_M(0.51)$	1982	$1973^{+74}_{-73}$
$\tau$	0.0544	$0.055^{+0.015}_{-0.014}$	$z_{\text{re}}$	7.70	$7.8^{+1.5}_{-1.5}$	$H(0.61)$	95.29	$95.7^{+3.1}_{-3.1}$
$N_{\text{eff}}$	3.050	$3.11^{+0.44}_{-0.43}$	$10^9 A_s$	2.095	$2.103^{+0.072}_{-0.070}$	$D_M(0.61)$	2306	$2296^{+85}_{-83}$
$\ln(10^{10} A_s)$	3.0420	$3.046^{+0.034}_{-0.034}$	$10^9 A_s e^{-2\tau}$	1.8789	$1.884^{+0.038}_{-0.040}$	$H(2.33)$	235.9	$236.7^{+6.3}_{-6.3}$
$n_s$	0.9671	$0.968^{+0.016}_{-0.017}$	$D_{40}$	1224.7	$1225^{+29}_{-29}$	$D_M(2.33)$	5765	$5742^{+180}_{-180}$
$y_{\text{cal}}$	1.00054	$1.0007^{+0.0047}_{-0.0048}$	$D_{220}$	5720	$5724^{+78}_{-78}$	$f\sigma_8(0.15)$	0.4555	$0.456^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	49.2	$48^{+10}_{-10}$	$D_{810}$	2537.2	$2538^{+26}_{-26}$	$\sigma_8(0.15)$	0.7472	$0.750^{+0.022}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.23	—	$D_{1420}$	816.3	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4740	$0.475^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	7.15	$5.0^{+3.9}_{-3.9}$	$D_{2000}$	230.29	$229.7^{+4.3}_{-4.3}$	$\sigma_8(0.38)$	0.6624	$0.665^{+0.020}_{-0.020}$
$A_{100}^{\text{PS}}$	254	$265^{+60}_{-50}$	$n_{s,0.002}$	0.9671	$0.968^{+0.016}_{-0.017}$	$f\sigma_8(0.51)$	0.4726	$0.474^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	47.5	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.2454	$0.2462^{+0.0059}_{-0.0059}$	$\sigma_8(0.51)$	0.6199	$0.623^{+0.020}_{-0.019}$
$A_{143 \times 217}^{\text{PS}}$	44.2	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.2467	$0.2475^{+0.0059}_{-0.0059}$	$f\sigma_8(0.61)$	0.4677	$0.469^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	118.0	$115^{+20}_{-20}$	$10^5 D/H$	2.611	$2.63^{+0.13}_{-0.12}$	$\sigma_8(0.61)$	0.5899	$0.592^{+0.019}_{-0.019}$
$A^{\text{kSZ}}$	0.1	—	Age/Gyr	13.802	$13.75^{+0.43}_{-0.42}$	$f\sigma_8(2.33)$	0.2975	$0.2988^{+0.0099}_{-0.0096}$
$A_{100}^{\text{dustTT}}$	9.00	$9.0^{+3.7}_{-3.6}$	$z_*$	1090.01	$1090.14^{+0.91}_{-0.87}$	$\sigma_8(2.33)$	0.3067	$0.308^{+0.011}_{-0.010}$
$A_{143}^{\text{dustTT}}$	10.76	$10.7^{+3.6}_{-3.5}$	$r_*$	144.72	$144.2^{+4.2}_{-4.1}$	$f_{2000}^{143}$	30.2	$31^{+7}_{-7}$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	1.04113	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	33.07	$34^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.900	$13.85^{+0.39}_{-0.38}$	$f_{2000}^{217}$	107.57	$108.3^{+4.5}_{-4.3}$
$c_{100}$	0.99968	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.59	$1059.7^{+1.7}_{-1.7}$	$\chi_{\text{lensing}}^2$	8.90	$9.42 (\nu: 0.3)$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.43	$146.9^{+4.4}_{-4.2}$	$\chi_{\text{simall}}^2$	396.08	$397.1 (\nu: 1.7)$
$H_0$	67.59	$68.0^{+2.9}_{-2.8}$	$k_{\text{D}}$	0.14040	$0.1408^{+0.0031}_{-0.0031}$	$\chi_{\text{lowl}}^2$	22.94	$23.0 (\nu: 0.7)$
$\Omega_{\Lambda}$	0.6890	$0.690^{+0.016}_{-0.016}$	$100\theta_{\text{D}}$	0.16098	$0.1612^{+0.0011}_{-0.0011}$	$\chi_{\text{plik}}^2$	759.7	$772.4 (\nu: 15.2)$
$\Omega_{\text{m}}$	0.3110	$0.310^{+0.016}_{-0.016}$	$z_{\text{eq}}$	3378	$3373^{+57}_{-58}$	$\chi_{6\text{DF}}^2$	0.029	$0.060 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.1421	$0.1430^{+0.0075}_{-0.0073}$	$k_{\text{eq}}$	0.010313	$0.01034^{+0.00026}_{-0.00025}$	$\chi_{\text{MGS}}^2$	1.22	$1.37 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	0.0960	$0.0973^{+0.0089}_{-0.0083}$	$100\theta_{\text{eq}}$	0.8173	$0.818^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	4.38	$4.8 (\nu: 1.3)$
$\sigma_8$	0.8086	$0.812^{+0.023}_{-0.023}$	$100\theta_{\text{s,eq}}$	0.4516	$0.4521^{+0.0056}_{-0.0055}$	$\chi_{\text{prior}}^2$	1.5	$7.3 (\nu: 6.6)$
$S_8$	0.8233	$0.825^{+0.024}_{-0.025}$	$H(0.15)$	72.87	$73.2^{+2.9}_{-2.8}$	$\chi_{\text{CMB}}^2$	1187.6	$1201.9 (\nu: 15.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4509	$0.452^{+0.013}_{-0.013}$	$D_M(0.15)$	641.4	$638^{+26}_{-25}$	$\chi_{\text{BAO}}^2$	5.63	$6.2 (\nu: 0.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6038	$0.606^{+0.016}_{-0.016}$	$H(0.38)$	82.96	$83.4^{+3.0}_{-2.9}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.71$ ;  $\Delta\chi_{\text{eff}}^2 = 0.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.41$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.68$ ;  $R - 1 = 0.01056$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.38 ( $\Delta$  0.01) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.90 ( $\Delta$  0.03) simall\_100x143\_offlike5\_EE\_Aplanck.L  
396.08 ( $\Delta$  -0.01) commander\_dx12\_v3.2\_29: 22.94 ( $\Delta$  -0.02) plik\_rd12\_HM\_v22\_TT: 759.72 ( $\Delta$  -0.09)



## 7.12 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02227^{+0.00046}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.022}$	$D_M(0.38)$	$1517^{+58}_{-58}$
$\Omega_c h^2$	$0.1206^{+0.0080}_{-0.0074}$	$r_{\text{drag}} h$	$99.99^{+2.1}_{-2.0}$	$H(0.51)$	$90.4^{+3.1}_{-3.0}$
$100\theta_{\text{MC}}$	$1.0408^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.428^{+0.054}_{-0.053}$	$D_M(0.51)$	$1965^{+74}_{-74}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 9.03$	$H(0.61)$	$96.0^{+3.2}_{-3.1}$
$N_{\text{eff}}$	$3.15^{+0.47}_{-0.44}$	$10^9 A_s$	$2.105^{+0.075}_{-0.071}$	$D_M(0.61)$	$2287^{+84}_{-84}$
$\ln(10^{10} A_s)$	$3.047^{+0.035}_{-0.034}$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.041}_{-0.042}$	$H(2.33)$	$237.2^{+6.8}_{-6.5}$
$n_s$	$0.970^{+0.016}_{-0.016}$	$D_{40}$	$1222^{+30}_{-29}$	$D_M(2.33)$	$5725^{+180}_{-180}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0049}$	$D_{220}$	$5719^{+78}_{-80}$	$f\sigma_8(0.15)$	$0.456^{+0.017}_{-0.016}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+28}_{-28}$	$\sigma_8(0.15)$	$0.752^{+0.025}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	$0.475^{+0.016}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	$229.4^{+4.3}_{-4.4}$	$\sigma_8(0.38)$	$0.667^{+0.023}_{-0.021}$
$A_{100}^{\text{PS}}$	$266^{+60}_{-60}$	$n_{s,0.002}$	$0.970^{+0.016}_{-0.016}$	$f\sigma_8(0.51)$	$0.474^{+0.016}_{-0.015}$
$A_{143}^{\text{PS}}$	$50^{+20}_{-20}$	$Y_{\text{P}}$	$0.2467^{+0.0061}_{-0.0060}$	$\sigma_8(0.51)$	$0.624^{+0.021}_{-0.020}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2480^{+0.0061}_{-0.0060}$	$f\sigma_8(0.61)$	$0.470^{+0.015}_{-0.014}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.64^{+0.14}_{-0.13}$	$\sigma_8(0.61)$	$0.594^{+0.020}_{-0.019}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.71^{+0.44}_{-0.44}$	$f\sigma_8(2.33)$	$0.300^{+0.011}_{-0.0099}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$z_*$	$1090.20^{+0.98}_{-0.94}$	$\sigma_8(2.33)$	$0.309^{+0.011}_{-0.011}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$r_*$	$143.9^{+4.3}_{-4.3}$	$f_{2000}^{143}$	$32^{+7}_{-7}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.40}_{-0.40}$	$f_{2000}^{217}$	$108.4^{+4.5}_{-4.4}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.8^{+1.7}_{-1.7}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.9)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$146.6^{+4.5}_{-4.4}$	$\chi_{\text{lowl}}^2$	$22.8 (\nu: 0.7)$
$H_0$	$68.2^{+2.9}_{-2.8}$	$k_{\text{D}}$	$0.1410^{+0.0033}_{-0.0032}$	$\chi_{\text{plik}}^2$	$773.0 (\nu: 16.0)$
$\Omega_{\Lambda}$	$0.692^{+0.016}_{-0.016}$	$100\theta_{\text{D}}$	$0.1613^{+0.0012}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.056 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.308^{+0.016}_{-0.016}$	$z_{\text{eq}}$	$3368^{+60}_{-62}$	$\chi_{\text{MGS}}^2$	$1.48 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	$0.1436^{+0.0082}_{-0.0077}$	$k_{\text{eq}}$	$0.01035^{+0.00030}_{-0.00028}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	$0.0980^{+0.0094}_{-0.0086}$	$100\theta_{\text{eq}}$	$0.819^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.813^{+0.027}_{-0.025}$	$100\theta_{\text{s,eq}}$	$0.4526^{+0.0060}_{-0.0057}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$S_8$	$0.824^{+0.032}_{-0.031}$	$H(0.15)$	$73.5^{+2.9}_{-2.8}$	$\chi_{\text{CMB}}^2$	$1192.8 (\nu: 15.3)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.018}_{-0.017}$	$D_M(0.15)$	$636^{+26}_{-26}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.020}_{-0.019}$	$H(0.38)$	$83.6^{+3.0}_{-2.9}$		

$\bar{\chi}_{\text{eff}}^2 = 1206.29$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.53$ ;  $R - 1 = 0.01028$

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02228^{+0.00045}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.985^{+0.018}_{-0.018}$	$D_M(0.38)$	$1519^{+56}_{-55}$
$\Omega_c h^2$	$0.1203^{+0.0073}_{-0.0069}$	$r_{\text{drag}} h$	$99.98^{+1.8}_{-1.8}$	$H(0.51)$	$90.3^{+3.0}_{-2.9}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.044}_{-0.043}$	$D_M(0.51)$	$1968^{+72}_{-70}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(0.61)$	$95.9^{+3.0}_{-3.0}$
$N_{\text{eff}}$	$3.13^{+0.44}_{-0.42}$	$10^9 A_s$	$2.108^{+0.067}_{-0.064}$	$D_M(0.61)$	$2290^{+82}_{-80}$
$\ln(10^{10} A_s)$	$3.048^{+0.032}_{-0.029}$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.038}_{-0.040}$	$H(2.33)$	$236.9^{+6.3}_{-6.2}$
$n_s$	$0.969^{+0.016}_{-0.016}$	$D_{40}$	$1224^{+28}_{-28}$	$D_M(2.33)$	$5732^{+180}_{-170}$
$y_{\text{cal}}$	$1.0007^{+0.0047}_{-0.0048}$	$D_{220}$	$5725^{+78}_{-78}$	$f\sigma_8(0.15)$	$0.456^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2538^{+26}_{-26}$	$\sigma_8(0.15)$	$0.751^{+0.021}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	$0.475^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.9}_{-3.9}$	$D_{2000}$	$229.6^{+4.3}_{-4.3}$	$\sigma_8(0.38)$	$0.666^{+0.020}_{-0.019}$
$A_{100}^{\text{PS}}$	$265^{+60}_{-50}$	$n_{s,0.002}$	$0.969^{+0.016}_{-0.016}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.2465^{+0.0057}_{-0.0058}$	$\sigma_8(0.51)$	$0.624^{+0.019}_{-0.018}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2478^{+0.0058}_{-0.0058}$	$f\sigma_8(0.61)$	$0.470^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D/H}$	$2.63^{+0.13}_{-0.13}$	$\sigma_8(0.61)$	$0.594^{+0.018}_{-0.018}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.72^{+0.42}_{-0.41}$	$f\sigma_8(2.33)$	$0.2995^{+0.0096}_{-0.0091}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.7}_{-3.6}$	$z_*$	$1090.14^{+0.91}_{-0.88}$	$\sigma_8(2.33)$	$0.309^{+0.010}_{-0.0098}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.6}_{-3.5}$	$r_*$	$144.0^{+4.1}_{-4.0}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-5}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.38}_{-0.38}$	$f_{2000}^{217}$	$108.3^{+4.4}_{-4.4}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.8^{+1.6}_{-1.6}$	$\chi_{\text{lensing}}^2$	$9.42 (\nu: 0.3)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$146.7^{+4.2}_{-4.2}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$H_0$	$68.2^{+2.8}_{-2.7}$	$k_{\text{D}}$	$0.1409^{+0.0031}_{-0.0031}$	$\chi_{\text{lowl}}^2$	$22.9 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.692^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	$0.1612^{+0.0011}_{-0.0011}$	$\chi_{\text{plik}}^2$	$772.5 (\nu: 15.1)$
$\Omega_{\text{m}}$	$0.308^{+0.015}_{-0.014}$	$z_{\text{eq}}$	$3368^{+55}_{-55}$	$\chi_{\text{JLA}}^2$	$1035.03 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1432^{+0.0075}_{-0.0072}$	$k_{\text{eq}}$	$0.01034^{+0.00026}_{-0.00025}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.0977^{+0.0088}_{-0.0082}$	$100\theta_{\text{eq}}$	$0.819^{+0.010}_{-0.010}$	$\chi_{\text{MGS}}^2$	$1.47 (\nu: 0.1)$
$\sigma_8$	$0.813^{+0.022}_{-0.022}$	$100\theta_{\text{s,eq}}$	$0.4525^{+0.0053}_{-0.0051}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.9)$
$S_8$	$0.824^{+0.024}_{-0.024}$	$H(0.15)$	$73.4^{+2.8}_{-2.7}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	$636^{+25}_{-24}$	$\chi_{\text{CMB}}^2$	$1202.0 (\nu: 15.6)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.016}_{-0.016}$	$H(0.38)$	$83.5^{+2.9}_{-2.8}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$

$$\bar{\chi}_{\text{eff}}^2 = 2250.26; \Delta\bar{\chi}_{\text{eff}}^2 = 0.63; R - 1 = 0.01176$$

# 7.14 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226^{+0.00046}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.985^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1522^{+59}_{-57}$
$\Omega_{\mathrm{c}} h^2$	$0.1201^{+0.0073}_{-0.0070}$	$r_{\mathrm{drag}} h$	$99.8^{+2.0}_{-1.9}$	$H(0.51)$	$90.1^{+3.0}_{-3.0}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.044}_{-0.044}$	$D_{\mathrm{M}}(0.51)$	$1972^{+74}_{-72}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$z_{\mathrm{re}}$	$7.9^{+1.2}_{-1.3}$	$H(0.61)$	$95.7^{+3.1}_{-3.0}$
$N_{\mathrm{eff}}$	$3.11^{+0.44}_{-0.43}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.067}_{-0.065}$	$D_{\mathrm{M}}(0.61)$	$2295^{+85}_{-83}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.033}_{-0.030}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884^{+0.038}_{-0.040}$	$H(2.33)$	$236.8^{+6.3}_{-6.3}$
$n_{\mathrm{s}}$	$0.968^{+0.016}_{-0.016}$	$D_{40}$	$1225^{+29}_{-29}$	$D_{\mathrm{M}}(2.33)$	$5741^{+180}_{-180}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0047}_{-0.0048}$	$D_{220}$	$5724^{+78}_{-78}$	$f\sigma_8(0.15)$	$0.457^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2538^{+26}_{-26}$	$\sigma_8(0.15)$	$0.751^{+0.022}_{-0.021}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	$0.475^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$5.0^{+3.8}_{-3.9}$	$D_{2000}$	$229.7^{+4.3}_{-4.3}$	$\sigma_8(0.38)$	$0.666^{+0.020}_{-0.019}$
$A_{100}^{\mathrm{PS}}$	$265^{+60}_{-50}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.016}_{-0.016}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.2462^{+0.0058}_{-0.0059}$	$\sigma_8(0.51)$	$0.623^{+0.019}_{-0.019}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2475^{+0.0059}_{-0.0059}$	$f\sigma_8(0.61)$	$0.469^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.63^{+0.13}_{-0.13}$	$\sigma_8(0.61)$	$0.593^{+0.019}_{-0.018}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.74^{+0.43}_{-0.42}$	$f\sigma_8(2.33)$	$0.2991^{+0.0097}_{-0.0094}$
$A_{100}^{\mathrm{dustTT}}$	$9.0^{+3.7}_{-3.6}$	$z_*$	$1090.14^{+0.91}_{-0.88}$	$\sigma_8(2.33)$	$0.308^{+0.010}_{-0.010}$
$A_{143}^{\mathrm{dustTT}}$	$10.7^{+3.6}_{-3.5}$	$r_*$	$144.2^{+4.2}_{-4.1}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-5}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.85^{+0.39}_{-0.38}$	$f_{2000}^{217}$	$108.2^{+4.5}_{-4.3}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.7^{+1.6}_{-1.6}$	$\chi_{\mathrm{lensing}}^2$	$9.39 (\nu: 0.3)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$146.9^{+4.4}_{-4.2}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.8)$
$H_0$	$68.0^{+2.9}_{-2.8}$	$k_{\mathrm{D}}$	$0.1408^{+0.0031}_{-0.0031}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 0.7)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.016}$	$100\theta_{\mathrm{D}}$	$0.1612^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{plik}}^2$	$772.3 (\nu: 15.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.015}$	$z_{\mathrm{eq}}$	$3372^{+56}_{-58}$	$\chi_{6\mathrm{DF}}^2$	$0.058 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1430^{+0.0075}_{-0.0073}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00026}_{-0.00025}$	$\chi_{\mathrm{MGS}}^2$	$1.39 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0973^{+0.0089}_{-0.0084}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$\sigma_8$	$0.812^{+0.023}_{-0.022}$	$100\theta_{\mathrm{s,eq}}$	$0.4521^{+0.0056}_{-0.0053}$	$\chi_{\mathrm{prior}}^2$	$7.2 (\nu: 6.6)$
$S_8$	$0.825^{+0.024}_{-0.025}$	$H(0.15)$	$73.3^{+2.9}_{-2.8}$	$\chi_{\mathrm{CMB}}^2$	$1201.8 (\nu: 15.6)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.013}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$638^{+26}_{-25}$	$\chi_{\mathrm{BAO}}^2$	$6.2 (\nu: 0.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.016}_{-0.016}$	$H(0.38)$	$83.4^{+3.0}_{-2.9}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1215.24$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.67$ ;  $R - 1 = 0.01151$

# 7.15 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022382	$0.02239^{+0.00036}_{-0.00036}$	$\sigma_8$	0.8060	$0.808^{+0.023}_{-0.022}$	$D_M(0.15)$	645.7	$643^{+21}_{-21}$
$\Omega_c h^2$	0.1179	$0.1186^{+0.0060}_{-0.0059}$	$S_8$	0.8229	$0.823^{+0.027}_{-0.027}$	$H(0.38)$	82.48	$82.8^{+2.4}_{-2.3}$
$100\theta_{MC}$	1.04119	$1.04110^{+0.00088}_{-0.00086}$	$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.451^{+0.015}_{-0.015}$	$D_M(0.38)$	1539.6	$1534^{+47}_{-47}$
$\tau$	0.0551	$0.056^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6027	$0.603^{+0.017}_{-0.017}$	$H(0.51)$	89.17	$89.5^{+2.4}_{-2.4}$
$N_{\text{eff}}$	2.956	$3.01^{+0.35}_{-0.34}$	$\sigma_8/h^{0.5}$	0.9837	$0.984^{+0.022}_{-0.021}$	$D_M(0.51)$	1994	$1987^{+60}_{-59}$
$\ln(10^{10} A_s)$	3.0415	$3.043^{+0.038}_{-0.036}$	$r_{\text{drag}} h$	99.43	$99.6^{+1.7}_{-1.7}$	$H(0.61)$	94.77	$95.1^{+2.5}_{-2.5}$
$n_s$	0.9652	$0.966^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.436	$2.436^{+0.051}_{-0.050}$	$D_M(0.61)$	2320	$2312^{+68}_{-68}$
$y_{\text{cal}}$	1.00061	$1.0007^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	7.72	$7.8^{+1.6}_{-1.6}$	$H(2.33)$	234.9	$235.5^{+5.2}_{-5.2}$
$A_{217}^{\text{CIB}}$	44.0	$46^{+10}_{-10}$	$10^9 A_s$	2.094	$2.098^{+0.081}_{-0.075}$	$D_M(2.33)$	5795	$5777^{+150}_{-150}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.89	—	$10^9 A_s e^{-2\tau}$	1.8751	$1.877^{+0.035}_{-0.036}$	$f\sigma_8(0.15)$	0.4552	$0.455^{+0.014}_{-0.014}$
$A_{143}^{\text{tSZ}}$	7.01	$5.6^{+3.8}_{-3.7}$	$D_{40}$	1228.4	$1229^{+27}_{-26}$	$\sigma_8(0.15)$	0.7447	$0.746^{+0.022}_{-0.021}$
$A_{100}^{\text{PS}}$	244	$257^{+50}_{-50}$	$D_{220}$	5736	$5737^{+77}_{-76}$	$f\sigma_8(0.38)$	0.4732	$0.474^{+0.014}_{-0.014}$
$A_{143}^{\text{PS}}$	52.0	$45^{+20}_{-20}$	$D_{810}$	2541.0	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	0.6600	$0.662^{+0.020}_{-0.019}$
$A_{143 \times 217}^{\text{PS}}$	57.7	$42^{+20}_{-20}$	$D_{1420}$	820.1	$818.1^{+9.6}_{-9.8}$	$f\sigma_8(0.51)$	0.4716	$0.472^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	124.0	$115^{+20}_{-20}$	$D_{2000}$	232.28	$231.4^{+3.6}_{-3.7}$	$\sigma_8(0.51)$	0.6176	$0.619^{+0.019}_{-0.018}$
$A^{\text{kSZ}}$	0.01	$< 7.88$	$n_{s,0.002}$	0.9652	$0.966^{+0.014}_{-0.014}$	$f\sigma_8(0.61)$	0.4666	$0.467^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	8.76	$8.9^{+3.6}_{-3.6}$	$Y_{\text{P}}$	0.24418	$0.2448^{+0.0048}_{-0.0048}$	$\sigma_8(0.61)$	0.5876	$0.589^{+0.018}_{-0.017}$
$A_{143}^{\text{dustTT}}$	11.02	$10.9^{+3.5}_{-3.5}$	$Y_{\text{P}}^{\text{BBN}}$	0.24551	$0.2461^{+0.0048}_{-0.0048}$	$f\sigma_8(2.33)$	0.2962	$0.2970^{+0.0092}_{-0.0087}$
$A_{143 \times 217}^{\text{dustTT}}$	20.5	$18.6^{+6.4}_{-6.4}$	$10^5 D/H$	2.552	$2.569^{+0.089}_{-0.091}$	$\sigma_8(2.33)$	0.3053	$0.3062^{+0.0098}_{-0.0091}$
$A_{217}^{\text{dustTT}}$	96.2	$94^{+10}_{-10}$	Age/Gyr	13.874	$13.83^{+0.35}_{-0.35}$	$f_{2000}^{143}$	27.5	$29^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.074}$	$z_*$	1089.63	$1089.74^{+0.68}_{-0.70}$	$f_{2000}^{143 \times 217}$	31.16	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.057}_{-0.058}$	$r_*$	145.42	$145.0^{+3.5}_{-3.4}$	$f_{2000}^{217}$	105.72	$106.7^{+3.9}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04144	$1.0413^{+0.0011}_{-0.0010}$	$\chi_{\text{small}}^2$	396.16	$397.3 (\nu: 2.3)$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	13.964	$13.93^{+0.32}_{-0.32}$	$\chi_{\text{lowl}}^2$	23.21	$23.3 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	1059.74	$1059.8^{+1.4}_{-1.4}$	$\chi_{\text{plik}}^2$	2344.8	$2360.4 (\nu: 19.2)$
$A_{217}^{\text{dustTE}}$	2.07	$2.08^{+0.52}_{-0.52}$	$r_{\text{drag}}$	148.10	$147.7^{+3.6}_{-3.5}$	$\chi_{6\text{DF}}^2$	0.047	$0.066 (\nu: 0.0)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14017	$0.1404^{+0.0026}_{-0.0026}$	$\chi_{\text{MGS}}^2$	1.10	$1.23 (\nu: 0.1)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	0.16051	$0.16065^{+0.00078}_{-0.00080}$	$\chi_{\text{DR12BAO}}^2$	4.79	$5.0 (\nu: 1.3)$
$H_0$	67.14	$67.4^{+2.3}_{-2.2}$	$z_{\text{eq}}$	3393.6	$3389^{+50}_{-49}$	$\chi_{\text{prior}}^2$	1.5	$11.6 (\nu: 10.4)$
$\Omega_{\Lambda}$	0.6873	$0.688^{+0.013}_{-0.014}$	$k_{\text{eq}}$	0.010295	$0.01031^{+0.00023}_{-0.00023}$	$\chi_{\text{BAO}}^2$	5.93	$6.3 (\nu: 0.9)$
$\Omega_{\text{m}}$	0.3127	$0.312^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	0.8150	$0.8159^{+0.0094}_{-0.0093}$	$\chi_{\text{CMB}}^2$	2764.2	$2781.0 (\nu: 18.3)$
$\Omega_{\text{m}} h^2$	0.1409	$0.1417^{+0.0062}_{-0.0061}$	$100\theta_{\text{s,eq}}$	0.45027	$0.4507^{+0.0047}_{-0.0047}$			
$\Omega_{\text{m}} h^3$	0.0946	$0.0956^{+0.0071}_{-0.0067}$	$H(0.15)$	72.40	$72.7^{+2.3}_{-2.2}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.61$ ;  $\Delta\chi_{\text{eff}}^2 = -0.30$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.95$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.05$ ;  $R - 1 = 0.01038$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.02) MGS: 1.10 ( $\Delta$  -0.12) DR12BAO: 4.79 ( $\Delta$  0.38) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.16 ( $\Delta$  -0.04) commander\_dx12\_v3\_2\_29: 23.21 ( $\Delta$  0.34) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.84 ( $\Delta$  -0.67)

# 7.16 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022397	$0.02239^{+0.00035}_{-0.00034}$	$\sigma_8$	0.8068	$0.808^{+0.020}_{-0.019}$	$D_M(0.15)$	644.4	$643^{+20}_{-20}$
$\Omega_c h^2$	0.1180	$0.1185^{+0.0057}_{-0.0056}$	$S_8$	0.8225	$0.823^{+0.022}_{-0.021}$	$H(0.38)$	82.60	$82.8^{+2.3}_{-2.2}$
$100\theta_{MC}$	1.04115	$1.04111^{+0.00084}_{-0.00083}$	$\sigma_8 \Omega_m^{0.5}$	0.4505	$0.451^{+0.012}_{-0.012}$	$D_M(0.38)$	1536.9	$1534^{+46}_{-45}$
$\tau$	0.0559	$0.057^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6029	$0.603^{+0.014}_{-0.014}$	$H(0.51)$	89.30	$89.5^{+2.3}_{-2.3}$
$N_{\text{eff}}$	2.971	$3.00^{+0.34}_{-0.33}$	$\sigma_8/h^{0.5}$	0.9837	$0.984^{+0.017}_{-0.017}$	$D_M(0.51)$	1991	$1987^{+57}_{-57}$
$\ln(10^{10} A_s)$	3.0437	$3.045^{+0.033}_{-0.032}$	$r_{\text{drag}} h$	99.53	$99.6^{+1.6}_{-1.5}$	$H(0.61)$	94.89	$95.1^{+2.4}_{-2.3}$
$n_s$	0.9653	$0.966^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.4371	$2.438^{+0.041}_{-0.041}$	$D_M(0.61)$	2317	$2312^{+66}_{-65}$
$y_{\text{cal}}$	1.00085	$1.0008^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	7.80	$7.9^{+1.4}_{-1.4}$	$H(2.33)$	235.07	$235.4^{+5.0}_{-5.0}$
$A_{217}^{\text{CIB}}$	46.4	$46^{+10}_{-10}$	$10^9 A_s$	2.098	$2.102^{+0.070}_{-0.066}$	$D_M(2.33)$	5788	$5778^{+140}_{-140}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.50	—	$10^9 A_s e^{-2\tau}$	1.8762	$1.877^{+0.032}_{-0.034}$	$f\sigma_8(0.15)$	0.4550	$0.455^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	7.18	$5.6^{+3.7}_{-3.8}$	$D_{40}$	1229.6	$1230^{+26}_{-25}$	$\sigma_8(0.15)$	0.7455	$0.747^{+0.019}_{-0.018}$
$A_{100}^{\text{PS}}$	249	$257^{+50}_{-50}$	$D_{220}$	5741	$5740^{+77}_{-75}$	$f\sigma_8(0.38)$	0.4732	$0.474^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	46.9	$45^{+20}_{-20}$	$D_{810}$	2541.0	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	0.6608	$0.662^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	48.3	$42^{+20}_{-20}$	$D_{1420}$	819.7	$818.4^{+9.6}_{-9.8}$	$f\sigma_8(0.51)$	0.4718	$0.472^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	120.1	$115^{+20}_{-20}$	$D_{2000}$	232.05	$231.5^{+3.6}_{-3.7}$	$\sigma_8(0.51)$	0.6184	$0.620^{+0.016}_{-0.016}$
$A^{\text{kSZ}}$	0.00	$< 7.83$	$n_{s,0.002}$	0.9653	$0.966^{+0.013}_{-0.013}$	$f\sigma_8(0.61)$	0.4668	$0.467^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.79	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.24440	$0.2448^{+0.0045}_{-0.0046}$	$\sigma_8(0.61)$	0.5884	$0.590^{+0.016}_{-0.015}$
$A_{143}^{\text{dustTT}}$	11.00	$10.9^{+3.5}_{-3.6}$	$Y_P^{\text{BBN}}$	0.24573	$0.2461^{+0.0045}_{-0.0046}$	$f\sigma_8(2.33)$	0.2967	$0.2973^{+0.0082}_{-0.0079}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.6^{+6.3}_{-6.5}$	$10^5 D/H$	2.555	$2.565^{+0.085}_{-0.088}$	$\sigma_8(2.33)$	0.3058	$0.3065^{+0.0088}_{-0.0084}$
$A_{217}^{\text{dustTT}}$	95.1	$94^{+10}_{-10}$	Age/Gyr	13.858	$13.83^{+0.34}_{-0.33}$	$f_{2000}^{143}$	28.0	$29^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.074}_{-0.074}$	$z_*$	1089.64	$1089.71^{+0.64}_{-0.66}$	$f_{2000}^{143 \times 217}$	31.35	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	145.29	$145.1^{+3.3}_{-3.3}$	$f_{2000}^{217}$	106.12	$106.6^{+3.8}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04138	$1.0413^{+0.0010}_{-0.0010}$	$\chi_{\text{lensing}}^2$	8.62	$9.06 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.952	$13.93^{+0.31}_{-0.30}$	$\chi_{\text{small}}^2$	396	$230 (\nu: 17298.3)$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1059.78	$1059.8^{+1.3}_{-1.3}$	$\chi_{\text{lowl}}^2$	23	$191 (\nu: 17305.2)$
$A_{217}^{\text{dustTE}}$	2.08	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	147.96	$147.7^{+3.5}_{-3.4}$	$\chi_{\text{plik}}^2$	2344.6	$2359.9 (\nu: 18.0)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14026	$0.1404^{+0.0025}_{-0.0025}$	$\chi_{\text{JLA}}^2$	1035.07	$1035.12 (\nu: 0.1)$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16054	$0.16062^{+0.00076}_{-0.00077}$	$\chi_{6\text{DF}}^2$	0.04	$0.59 (\nu: 0.2)$
$H_0$	67.27	$67.4^{+2.2}_{-2.1}$	$z_{\text{eq}}$	3390.1	$3387^{+45}_{-45}$	$\chi_{\text{MGS}}^2$	1.16	$0.72 (\nu: 0.2)$
$\Omega_\Lambda$	0.6882	$0.689^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010295	$0.01030^{+0.00021}_{-0.00021}$	$\chi_{\text{DR12BAO}}^2$	4.60	$4.9 (\nu: 1.0)$
$\Omega_m$	0.3118	$0.311^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	0.8157	$0.8163^{+0.0087}_{-0.0085}$	$\chi_{\text{prior}}^2$	1.7	$11.6 (\nu: 10.2)$
$\Omega_m h^2$	0.1411	$0.1415^{+0.0059}_{-0.0058}$	$100\theta_{s,\text{eq}}$	0.45060	$0.4509^{+0.0044}_{-0.0043}$	$\chi_{\text{CMB}}^2$	2772.8	$2789.7 (\nu: 18.3)$
$\Omega_m h^3$	0.0949	$0.0955^{+0.0068}_{-0.0064}$	$H(0.15)$	72.53	$72.7^{+2.2}_{-2.1}$	$\chi_{\text{BAO}}^2$	5.79	$6.2 (\nu: 0.6)$

Best-fit  $\chi_{\text{eff}}^2 = 3815.38$ ;  $\Delta\chi_{\text{eff}}^2 = -0.29$ ;  $\bar{\chi}_{\text{eff}}^2 = 3842.56$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.70$ ;  $R - 1 = 0.01451$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.02) MGS: 1.16 ( $\Delta$  -0.12) DR12BAO: 4.60 ( $\Delta$  0.35) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.62 ( $\Delta$  -0.10) small\_100x143\_offlike5\_EE\_Aplanck  
396.33 ( $\Delta$  -0.19) commander\_dx12\_v3.2\_29: 23.25 ( $\Delta$  0.37) plik\_rd12\_HM\_v22b.TTTEEE: 2344.60 ( $\Delta$  -0.67) SN - JLA Pantheon18: 1035.07 ( $\Delta$  0.10)

## 7.17 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022341	$0.02237^{+0.00036}_{-0.00035}$	$\sigma_8$	0.8047	$0.808^{+0.020}_{-0.020}$	$D_M(0.15)$	648.2	$644^{+20}_{-21}$
$\Omega_c h^2$	0.1173	$0.1183^{+0.0057}_{-0.0056}$	$S_8$	0.8229	$0.824^{+0.022}_{-0.021}$	$H(0.38)$	82.19	$82.7^{+2.3}_{-2.2}$
$100\theta_{MC}$	1.04126	$1.04112^{+0.00084}_{-0.00083}$	$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.451^{+0.012}_{-0.012}$	$D_M(0.38)$	1545.4	$1537^{+46}_{-46}$
$\tau$	0.0558	$0.056^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6022	$0.604^{+0.014}_{-0.014}$	$H(0.51)$	88.88	$89.4^{+2.4}_{-2.3}$
$N_{\text{eff}}$	2.914	$2.99^{+0.34}_{-0.33}$	$\sigma_8/h^{0.5}$	0.9841	$0.984^{+0.017}_{-0.017}$	$D_M(0.51)$	2002	$1990^{+58}_{-59}$
$\ln(10^{10} A_s)$	3.0412	$3.044^{+0.033}_{-0.032}$	$r_{\text{drag}} h$	99.31	$99.5^{+1.6}_{-1.6}$	$H(0.61)$	94.46	$95.0^{+2.4}_{-2.4}$
$n_s$	0.9635	$0.965^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.4400	$2.440^{+0.041}_{-0.041}$	$D_M(0.61)$	2329	$2316^{+66}_{-67}$
$y_{\text{cal}}$	1.00056	$1.0008^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	7.78	$7.8^{+1.5}_{-1.5}$	$H(2.33)$	234.3	$235.3^{+5.0}_{-5.0}$
$A_{217}^{\text{CIB}}$	44.0	$46^{+10}_{-10}$	$10^9 A_s$	2.093	$2.100^{+0.070}_{-0.066}$	$D_M(2.33)$	5814	$5785^{+140}_{-140}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.92	—	$10^9 A_s e^{-2\tau}$	1.8719	$1.876^{+0.033}_{-0.034}$	$f\sigma_8(0.15)$	0.4551	$0.456^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	6.98	$5.6^{+3.7}_{-3.7}$	$D_{40}$	1230.9	$1231^{+25}_{-25}$	$\sigma_8(0.15)$	0.7434	$0.746^{+0.019}_{-0.019}$
$A_{100}^{\text{PS}}$	243	$256^{+50}_{-60}$	$D_{220}$	5736	$5739^{+77}_{-75}$	$f\sigma_8(0.38)$	0.4728	$0.474^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	51.9	$45^{+20}_{-20}$	$D_{810}$	2540.1	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	0.6587	$0.661^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	58.2	$42^{+20}_{-20}$	$D_{1420}$	820.1	$818.4^{+9.6}_{-9.8}$	$f\sigma_8(0.51)$	0.4712	$0.472^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	123.9	$115^{+20}_{-20}$	$D_{2000}$	232.41	$231.5^{+3.6}_{-3.7}$	$\sigma_8(0.51)$	0.6163	$0.619^{+0.016}_{-0.016}$
$A^{\text{kSZ}}$	0.01	$< 7.76$	$n_{s,0.002}$	0.9635	$0.965^{+0.013}_{-0.013}$	$f\sigma_8(0.61)$	0.4660	$0.467^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.73	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.24360	$0.2445^{+0.0046}_{-0.0046}$	$\sigma_8(0.61)$	0.5864	$0.589^{+0.016}_{-0.015}$
$A_{143}^{\text{dustTT}}$	10.94	$10.9^{+3.5}_{-3.6}$	$Y_P^{\text{BBN}}$	0.24492	$0.2459^{+0.0046}_{-0.0046}$	$f\sigma_8(2.33)$	0.2956	$0.2969^{+0.0083}_{-0.0078}$
$A_{143 \times 217}^{\text{dustTT}}$	20.3	$18.6^{+6.3}_{-6.5}$	$10^5 D/H$	2.545	$2.564^{+0.086}_{-0.088}$	$\sigma_8(2.33)$	0.3046	$0.3061^{+0.0090}_{-0.0083}$
$A_{217}^{\text{dustTT}}$	95.8	$94^{+10}_{-10}$	Age/Gyr	13.918	$13.85^{+0.34}_{-0.34}$	$f_{2000}^{143}$	27.3	$29^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.074}_{-0.074}$	$z_*$	1089.59	$1089.71^{+0.64}_{-0.66}$	$f_{2000}^{143 \times 217}$	31.03	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	145.84	$145.2^{+3.3}_{-3.3}$	$f_{2000}^{217}$	105.56	$106.6^{+3.8}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04153	$1.0413^{+0.0010}_{-0.0010}$	$\chi_{\text{lensing}}^2$	8.54	$9.05 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	14.002	$13.94^{+0.31}_{-0.31}$	$\chi_{\text{small}}^2$	396	$229 (\nu: 17290.5)$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1059.55	$1059.8^{+1.3}_{-1.3}$	$\chi_{\text{lowl}}^2$	23	$192 (\nu: 17299.5)$
$A_{217}^{\text{dustTE}}$	2.08	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	148.53	$147.9^{+3.4}_{-3.4}$	$\chi_{\text{plik}}^2$	2344.3	$2359.7 (\nu: 18.0)$
$c_{100}$	0.99977	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.13985	$0.1403^{+0.0025}_{-0.0025}$	$\chi_{6\text{DF}}^2$	0.06	$0.57 (\nu: 0.2)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16043	$0.16060^{+0.00076}_{-0.00078}$	$\chi_{\text{MGS}}^2$	1.04	$0.69 (\nu: 0.2)$
$H_0$	66.86	$67.3^{+2.3}_{-2.1}$	$z_{\text{eq}}$	3396.3	$3391^{+47}_{-47}$	$\chi_{\text{DR12BAO}}^2$	5.00	$5.1 (\nu: 1.3)$
$\Omega_\Lambda$	0.6863	$0.688^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010274	$0.01031^{+0.00022}_{-0.00021}$	$\chi_{\text{prior}}^2$	1.4	$11.6 (\nu: 10.1)$
$\Omega_m$	0.3137	$0.312^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	0.8144	$0.8155^{+0.0091}_{-0.0088}$	$\chi_{\text{CMB}}^2$	2772.7	$2789.5 (\nu: 18.3)$
$\Omega_m h^2$	0.1403	$0.1414^{+0.0059}_{-0.0058}$	$100\theta_{s,\text{eq}}$	0.45000	$0.4505^{+0.0046}_{-0.0044}$	$\chi_{\text{BAO}}^2$	6.09	$6.4 (\nu: 0.9)$
$\Omega_m h^3$	0.0938	$0.0952^{+0.0068}_{-0.0064}$	$H(0.15)$	72.12	$72.6^{+2.3}_{-2.1}$			

Best-fit  $\chi_{\text{eff}}^2 = 2780.19$ ;  $\Delta\chi_{\text{eff}}^2 = -0.51$ ;  $\bar{\chi}_{\text{eff}}^2 = 2807.45$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.60$ ;  $R - 1 = 0.01513$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.06 ( $\Delta$  0.03) MGS: 1.04 ( $\Delta$  -0.18) DR12BAO: 5.00 ( $\Delta$  0.58) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.54 ( $\Delta$  -0.19) small\_100x143\_offlike5\_EE\_Aplanck396.33 ( $\Delta$  -0.19) commander\_dx12\_v3.2\_29: 23.47 ( $\Delta$  0.57) plik\_rd12\_HM\_v22b.TTTEEE: 2344.34 ( $\Delta$  -0.98)

# 7.18 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02239^{+0.00036}_{-0.00036}$	$\sigma_8$	$0.809^{+0.023}_{-0.022}$	$D_M(0.15)$	$643^{+21}_{-21}$
$\Omega_c h^2$	$0.1186^{+0.0060}_{-0.0059}$	$S_8$	$0.824^{+0.027}_{-0.026}$	$H(0.38)$	$82.8^{+2.4}_{-2.3}$
$100\theta_{MC}$	$1.04110^{+0.00088}_{-0.00085}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.015}_{-0.014}$	$D_M(0.38)$	$1533^{+47}_{-47}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.017}_{-0.017}$	$H(0.51)$	$89.5^{+2.4}_{-2.4}$
$N_{\text{eff}}$	$3.01^{+0.35}_{-0.34}$	$\sigma_8/h^{0.5}$	$0.984^{+0.021}_{-0.020}$	$D_M(0.51)$	$1986^{+60}_{-59}$
$\ln(10^{10} A_s)$	$3.045^{+0.035}_{-0.032}$	$r_{\text{drag}} h$	$99.6^{+1.7}_{-1.6}$	$H(0.61)$	$95.1^{+2.5}_{-2.4}$
$n_s$	$0.966^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.050}_{-0.047}$	$D_M(0.61)$	$2311^{+68}_{-68}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	$< 9.10$	$H(2.33)$	$235.6^{+5.2}_{-5.2}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.102^{+0.073}_{-0.068}$	$D_M(2.33)$	$5776^{+150}_{-150}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.877^{+0.035}_{-0.036}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1229^{+27}_{-26}$	$\sigma_8(0.15)$	$0.747^{+0.021}_{-0.020}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$D_{220}$	$5737^{+77}_{-76}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	$0.662^{+0.019}_{-0.018}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.1^{+9.6}_{-9.8}$	$f\sigma_8(0.51)$	$0.473^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.4^{+3.6}_{-3.7}$	$\sigma_8(0.51)$	$0.620^{+0.018}_{-0.017}$
$A^{\text{kSZ}}$	$< 7.85$	$n_{s,0.002}$	$0.966^{+0.014}_{-0.014}$	$f\sigma_8(0.61)$	$0.468^{+0.013}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.2449^{+0.0048}_{-0.0048}$	$\sigma_8(0.61)$	$0.590^{+0.018}_{-0.016}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.2462^{+0.0048}_{-0.0048}$	$f\sigma_8(2.33)$	$0.2974^{+0.0090}_{-0.0083}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$10^5 D/H$	$2.569^{+0.088}_{-0.090}$	$\sigma_8(2.33)$	$0.3066^{+0.0096}_{-0.0087}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.83^{+0.35}_{-0.35}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$z_*$	$1089.74^{+0.67}_{-0.70}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$r_*$	$145.0^{+3.5}_{-3.4}$	$f_{2000}^{217}$	$106.6^{+3.9}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0010}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.4)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	$13.92^{+0.32}_{-0.31}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1059.8^{+1.3}_{-1.4}$	$\chi_{\text{plik}}^2$	$2360.2 (\nu: 19.1)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$r_{\text{drag}}$	$147.7^{+3.6}_{-3.5}$	$\chi_{6\text{DF}}^2$	$0.065 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1405^{+0.0026}_{-0.0026}$	$\chi_{\text{MGS}}^2$	$1.24 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16065^{+0.00077}_{-0.00080}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.3)$
$H_0$	$67.4^{+2.3}_{-2.2}$	$z_{\text{eq}}$	$3388^{+49}_{-49}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_\Lambda$	$0.688^{+0.013}_{-0.014}$	$k_{\text{eq}}$	$0.01031^{+0.00023}_{-0.00023}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.8)$
$\Omega_m$	$0.312^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8160^{+0.0093}_{-0.0092}$	$\chi_{\text{CMB}}^2$	$2780.8 (\nu: 18.1)$
$\Omega_m h^2$	$0.1417^{+0.0062}_{-0.0061}$	$100\theta_{s,\text{eq}}$	$0.4508^{+0.0047}_{-0.0046}$		
$\Omega_m h^3$	$0.0956^{+0.0071}_{-0.0067}$	$H(0.15)$	$72.7^{+2.3}_{-2.2}$		

$\bar{\chi}_{\text{eff}}^2 = 2798.76$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.04$ ;  $R - 1 = 0.01049$

7.19 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00035}_{-0.00035}$	$\sigma_8$	$0.808^{+0.020}_{-0.019}$	$D_M(0.15)$	$643^{+20}_{-20}$
$\Omega_c h^2$	$0.1184^{+0.0057}_{-0.0056}$	$S_8$	$0.823^{+0.022}_{-0.021}$	$H(0.38)$	$82.8^{+2.3}_{-2.2}$
$100\theta_{MC}$	$1.04111^{+0.00084}_{-0.00082}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.012}_{-0.011}$	$D_M(0.38)$	$1533^{+45}_{-45}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.014}_{-0.014}$	$H(0.51)$	$89.5^{+2.3}_{-2.3}$
$N_{\text{eff}}$	$3.00^{+0.34}_{-0.33}$	$\sigma_8/h^{0.5}$	$0.984^{+0.017}_{-0.016}$	$D_M(0.51)$	$1986^{+57}_{-57}$
$\ln(10^{10} A_s)$	$3.046^{+0.032}_{-0.029}$	$r_{\text{drag}} h$	$99.6^{+1.6}_{-1.5}$	$H(0.61)$	$95.1^{+2.4}_{-2.3}$
$n_s$	$0.966^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.041}_{-0.039}$	$D_M(0.61)$	$2311^{+65}_{-65}$
$y_{\text{cal}}$	$1.0008^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$235.4^{+5.0}_{-5.0}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.104^{+0.065}_{-0.062}$	$D_M(2.33)$	$5778^{+140}_{-140}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.877^{+0.032}_{-0.034}$	$f\sigma_8(0.15)$	$0.455^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.7}_{-3.8}$	$D_{40}$	$1230^{+26}_{-25}$	$\sigma_8(0.15)$	$0.747^{+0.019}_{-0.018}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$D_{220}$	$5740^{+77}_{-75}$	$f\sigma_8(0.38)$	$0.474^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.662^{+0.017}_{-0.016}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.4^{+9.6}_{-9.8}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.5^{+3.6}_{-3.7}$	$\sigma_8(0.51)$	$0.620^{+0.016}_{-0.015}$
$A^{\text{kSZ}}$	$< 7.80$	$n_{s,0.002}$	$0.966^{+0.013}_{-0.013}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.010}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_{\text{P}}$	$0.2448^{+0.0045}_{-0.0046}$	$\sigma_8(0.61)$	$0.590^{+0.016}_{-0.015}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.6}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2461^{+0.0045}_{-0.0046}$	$f\sigma_8(2.33)$	$0.2974^{+0.0081}_{-0.0076}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.5}$	$10^5 \text{D/H}$	$2.565^{+0.085}_{-0.088}$	$\sigma_8(2.33)$	$0.3066^{+0.0087}_{-0.0081}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.83^{+0.34}_{-0.33}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.074}$	$z_*$	$1089.70^{+0.64}_{-0.66}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$r_*$	$145.1^{+3.3}_{-3.2}$	$f_{2000}^{217}$	$106.6^{+3.8}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.0413^{+0.0010}_{-0.0010}$	$\chi_{\text{lensing}}^2$	$9.03 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.93^{+0.31}_{-0.30}$	$\chi_{\text{simall}}^2$	$230 (\nu: 17285.0)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.8^{+1.3}_{-1.3}$	$\chi_{\text{lowl}}^2$	$190 (\nu: 17292.0)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$147.7^{+3.4}_{-3.4}$	$\chi_{\text{plik}}^2$	$2359.8 (\nu: 17.9)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.1404^{+0.0025}_{-0.0025}$	$\chi_{\text{JLA}}^2$	$1035.11 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16063^{+0.00075}_{-0.00077}$	$\chi_{6\text{DF}}^2$	$0.59 (\nu: 0.2)$
$H_0$	$67.5^{+2.2}_{-2.1}$	$z_{\text{eq}}$	$3386^{+44}_{-45}$	$\chi_{\text{MGS}}^2$	$0.73 (\nu: 0.2)$
$\Omega_{\Lambda}$	$0.689^{+0.012}_{-0.013}$	$k_{\text{eq}}$	$0.01030^{+0.00021}_{-0.00022}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.0)$
$\Omega_{\text{m}}$	$0.311^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	$0.8163^{+0.0087}_{-0.0083}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.1)$
$\Omega_{\text{m}} h^2$	$0.1415^{+0.0059}_{-0.0058}$	$100\theta_{\text{s,eq}}$	$0.4510^{+0.0044}_{-0.0042}$	$\chi_{\text{CMB}}^2$	$2789.6 (\nu: 18.0)$
$\Omega_{\text{m}} h^3$	$0.0955^{+0.0068}_{-0.0064}$	$H(0.15)$	$72.7^{+2.2}_{-2.2}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$

$$\bar{\chi}_{\text{eff}}^2 = 3842.41; \Delta\bar{\chi}_{\text{eff}}^2 = 0.67; R - 1 = 0.01464$$



## 7.20 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00036}_{-0.00035}$	$\sigma_8$	$0.808^{+0.020}_{-0.019}$	$D_M(0.15)$	$644^{+20}_{-21}$
$\Omega_c h^2$	$0.1183^{+0.0057}_{-0.0056}$	$S_8$	$0.824^{+0.022}_{-0.021}$	$H(0.38)$	$82.7^{+2.3}_{-2.2}$
$100\theta_{MC}$	$1.04113^{+0.00084}_{-0.00083}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.012}_{-0.012}$	$D_M(0.38)$	$1536^{+46}_{-46}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.014}_{-0.014}$	$H(0.51)$	$89.4^{+2.4}_{-2.3}$
$N_{\text{eff}}$	$2.99^{+0.34}_{-0.33}$	$\sigma_8/h^{0.5}$	$0.985^{+0.017}_{-0.016}$	$D_M(0.51)$	$1990^{+57}_{-59}$
$\ln(10^{10} A_s)$	$3.045^{+0.031}_{-0.029}$	$r_{\text{drag}} h$	$99.5^{+1.6}_{-1.6}$	$H(0.61)$	$95.0^{+2.4}_{-2.4}$
$n_s$	$0.965^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.041}_{-0.040}$	$D_M(0.61)$	$2315^{+66}_{-67}$
$y_{\text{cal}}$	$1.0008^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$235.3^{+5.0}_{-5.0}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.102^{+0.065}_{-0.061}$	$D_M(2.33)$	$5785^{+140}_{-140}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.876^{+0.033}_{-0.034}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.7}_{-3.8}$	$D_{40}$	$1231^{+26}_{-25}$	$\sigma_8(0.15)$	$0.747^{+0.019}_{-0.018}$
$A_{100}^{\text{PS}}$	$256^{+50}_{-50}$	$D_{220}$	$5739^{+77}_{-75}$	$f\sigma_8(0.38)$	$0.474^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.662^{+0.017}_{-0.016}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.4^{+9.6}_{-9.8}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.5^{+3.6}_{-3.7}$	$\sigma_8(0.51)$	$0.619^{+0.016}_{-0.015}$
$A^{\text{kSZ}}$	$< 7.76$	$n_{s,0.002}$	$0.965^{+0.013}_{-0.013}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.010}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.2446^{+0.0046}_{-0.0046}$	$\sigma_8(0.61)$	$0.589^{+0.016}_{-0.015}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.6}$	$Y_P^{\text{BBN}}$	$0.2459^{+0.0046}_{-0.0046}$	$f\sigma_8(2.33)$	$0.2971^{+0.0082}_{-0.0076}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$10^5 D/H$	$2.564^{+0.085}_{-0.088}$	$\sigma_8(2.33)$	$0.3062^{+0.0088}_{-0.0081}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.85^{+0.34}_{-0.34}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.073}_{-0.074}$	$z_*$	$1089.71^{+0.64}_{-0.66}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$r_*$	$145.2^{+3.3}_{-3.3}$	$f_{2000}^{217}$	$106.5^{+3.8}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.0413^{+0.0010}_{-0.0010}$	$\chi_{\text{lensing}}^2$	$9.02 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.94^{+0.31}_{-0.30}$	$\chi_{\text{simall}}^2$	$230 (\nu: 17276.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.8^{+1.3}_{-1.3}$	$\chi_{\text{lowl}}^2$	$191 (\nu: 17285.7)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.52}$	$r_{\text{drag}}$	$147.9^{+3.4}_{-3.4}$	$\chi_{\text{plik}}^2$	$2359.6 (\nu: 17.9)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1403^{+0.0025}_{-0.0025}$	$\chi_{6\text{DF}}^2$	$0.57 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16060^{+0.00076}_{-0.00078}$	$\chi_{\text{MGS}}^2$	$0.69 (\nu: 0.2)$
$H_0$	$67.3^{+2.3}_{-2.1}$	$z_{\text{eq}}$	$3390^{+47}_{-47}$	$\chi_{\text{DR12BAO}}^2$	$5.1 (\nu: 1.2)$
$\Omega_\Lambda$	$0.688^{+0.013}_{-0.013}$	$k_{\text{eq}}$	$0.01030^{+0.00021}_{-0.00022}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.1)$
$\Omega_m$	$0.312^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8156^{+0.0091}_{-0.0087}$	$\chi_{\text{CMB}}^2$	$2789.4 (\nu: 18.0)$
$\Omega_m h^2$	$0.1414^{+0.0059}_{-0.0058}$	$100\theta_{s,\text{eq}}$	$0.4506^{+0.0045}_{-0.0044}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.8)$
$\Omega_m h^3$	$0.0952^{+0.0068}_{-0.0065}$	$H(0.15)$	$72.6^{+2.3}_{-2.1}$		

$$\bar{\chi}_{\text{eff}}^2 = 2807.29; \Delta\bar{\chi}_{\text{eff}}^2 = 0.57; R - 1 = 0.01488$$

## 8 nnu+meffsterile

### 8.1 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022161	$0.02223^{+0.00047}_{-0.00044}$	$S_8$	0.837	$0.816^{+0.053}_{-0.061}$	$100\theta_{s,eq}$	0.4490	$0.455^{+0.015}_{-0.013}$
$\Omega_c h^2$	0.1203	$0.1215^{+0.0079}_{-0.0081}$	$\sigma_8 \Omega_m^{0.5}$	0.4587	$0.447^{+0.029}_{-0.033}$	$H(0.15)$	72.33	$72.5^{+2.7}_{-2.3}$
$100\theta_{MC}$	1.04072	$1.04053^{+0.00099}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.591^{+0.037}_{-0.042}$	$D_M(0.15)$	646.8	$646^{+24}_{-26}$
$\tau$	0.0529	$0.053^{+0.016}_{-0.016}$	$\sigma_8/h^{0.5}$	0.992	$0.953^{+0.058}_{-0.069}$	$H(0.38)$	82.57	$83.0^{+2.4}_{-1.8}$
$m_{\nu, sterile}^{eff} [eV]$	0.011	$< 0.846$	$r_{drag} h$	98.58	$97.5^{+4.1}_{-4.4}$	$D_M(0.38)$	1541	$1537^{+48}_{-55}$
$N_{eff}$	3.046	$< 3.51$	$\langle d^2 \rangle^{1/2}$	2.451	$2.448^{+0.080}_{-0.082}$	$H(0.51)$	89.36	$90.0^{+2.2}_{-1.6}$
$\ln(10^{10} A_s)$	3.0415	$3.047^{+0.035}_{-0.035}$	$z_{re}$	7.59	$7.6^{+1.6}_{-1.7}$	$D_M(0.51)$	1995	$1988^{+56}_{-66}$
$n_s$	0.9637	$0.966^{+0.018}_{-0.017}$	$10^9 A_s$	2.094	$2.105^{+0.076}_{-0.072}$	$H(0.61)$	95.04	$95.8^{+2.2}_{-1.4}$
$y_{cal}$	1.0003	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	1.8833	$1.895^{+0.033}_{-0.030}$	$D_M(0.61)$	2320	$2311^{+61}_{-73}$
$A_{217}^{CIB}$	48.9	$49^{+10}_{-10}$	$D_{40}$	1231.0	$1228^{+35}_{-37}$	$H(2.33)$	236.62	$239.8^{+5.3}_{-4.5}$
$\xi^{tSZ \times CIB}$	0.30	—	$D_{220}$	5712	$5712^{+82}_{-79}$	$D_M(2.33)$	5776	$5729^{+78}_{-120}$
$A_{143}^{tSZ}$	7.00	$4.8^{+3.9}_{-3.9}$	$D_{810}$	2537.4	$2539^{+28}_{-27}$	$f\sigma_8(0.15)$	0.4626	$0.451^{+0.030}_{-0.031}$
$A_{100}^{PS}$	254	$269^{+60}_{-60}$	$D_{1420}$	815.1	$813^{+10}_{-10}$	$\sigma_8(0.15)$	0.749	$0.719^{+0.048}_{-0.059}$
$A_{143}^{PS}$	49.4	$52^{+20}_{-20}$	$D_{2000}$	229.95	$228.2^{+3.9}_{-4.1}$	$f\sigma_8(0.38)$	0.4792	$0.465^{+0.029}_{-0.033}$
$A_{143 \times 217}^{PS}$	46.5	$45^{+20}_{-20}$	$n_{s,0.002}$	0.9637	$0.966^{+0.018}_{-0.017}$	$\sigma_8(0.38)$	0.6632	$0.636^{+0.044}_{-0.054}$
$A_{217}^{PS}$	119.0	$116^{+20}_{-20}$	$Y_P$	0.24531	$0.2477^{+0.0039}_{-0.0025}$	$f\sigma_8(0.51)$	0.4769	$0.461^{+0.028}_{-0.033}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.24664	$0.2490^{+0.0039}_{-0.0025}$	$\sigma_8(0.51)$	0.6203	$0.595^{+0.042}_{-0.051}$
$A_{100}^{dustTT}$	8.78	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	2.625	$2.67^{+0.11}_{-0.097}$	$f\sigma_8(0.61)$	0.4712	$0.455^{+0.028}_{-0.033}$
$A_{143}^{dustTT}$	10.77	$10.8^{+3.5}_{-3.5}$	Age/Gyr	13.826	$13.71^{+0.18}_{-0.28}$	$\sigma_8(0.61)$	0.5900	$0.565^{+0.040}_{-0.049}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.4^{+6.4}_{-6.5}$	$z_*$	1090.22	$1090.63^{+0.95}_{-0.89}$	$f\sigma_8(2.33)$	0.2972	$0.285^{+0.021}_{-0.025}$
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$r_*$	144.48	$142.8^{+2.2}_{-2.8}$	$\sigma_8(2.33)$	0.3060	$0.293^{+0.022}_{-0.027}$
$c_{100}$	0.99962	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04093	$1.0406^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	30.4	$33^{+6}_{-6}$
$c_{217}$	0.99823	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	13.880	$13.72^{+0.21}_{-0.26}$	$f_{2000}^{143 \times 217}$	33.22	$35^{+5}_{-4}$
$H_0$	66.97	$67.0^{+3.0}_{-2.7}$	$z_{drag}$	1059.47	$1060.0^{+1.3}_{-1.2}$	$f_{2000}^{217}$	107.62	$109.5^{+4.2}_{-4.0}$
$\Omega_\Lambda$	0.6806	$0.671^{+0.035}_{-0.037}$	$r_{drag}$	147.21	$145.5^{+2.3}_{-2.9}$	$\chi_{simall}^2$	395.94	$397.0 (\nu: 1.6)$
$\Omega_m$	0.3194	$0.329^{+0.037}_{-0.035}$	$k_D$	0.14058	$0.1419^{+0.0023}_{-0.0020}$	$\chi_{lowl}^2$	23.58	$23.5 (\nu: 1.2)$
$\Omega_m h^2$	0.1432	$0.1474^{+0.0073}_{-0.0064}$	$100\theta_D$	0.16101	$0.16135^{+0.00084}_{-0.00074}$	$\chi_{plik}^2$	758.8	$774.5 (\nu: 17.4)$
$\Omega_\nu h^2$	0.00077	$0.0037^{+0.0060}_{-0.0032}$	$z_{eq}$	3405	$3355^{+130}_{-140}$	$\chi_{prior}^2$	1.4	$7.4 (\nu: 6.9)$
$\Omega_m h^3$	0.09592	$0.0988^{+0.0056}_{-0.0036}$	$k_{eq}$	0.010393	$0.01039^{+0.00039}_{-0.00041}$	$\chi_{CMB}^2$	1178.3	$1195.0 (\nu: 17.6)$
$\sigma_8$	0.812	$0.780^{+0.051}_{-0.062}$	$100\theta_{eq}$	0.8122	$0.823^{+0.029}_{-0.026}$			

Best-fit  $\chi_{eff}^2 = 1179.66$ ;  $\Delta\chi_{eff}^2 = 0.08$ ;  $\bar{\chi}_{eff}^2 = 1202.36$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.79$ ;  $R - 1 = 0.01778$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.94 ( $\Delta$  0.06) commander\_dx12\_v3.2.29: 23.58 ( $\Delta$  -0.02) plik\_rd12\_HM\_v22\_TT: 758.77 ( $\Delta$  0.03)

## 8.2 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022210	$0.02221^{+0.00044}_{-0.00042}$	$S_8$	0.8311	$0.819^{+0.041}_{-0.044}$	$100\theta_{s,eq}$	0.4600	$0.454^{+0.013}_{-0.011}$
$\Omega_c h^2$	0.1160	$0.1216^{+0.0075}_{-0.0078}$	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.448^{+0.023}_{-0.024}$	$H(0.15)$	72.55	$72.4^{+2.2}_{-2.0}$
$100\theta_{MC}$	1.04082	$1.04053^{+0.00097}_{-0.00099}$	$\sigma_8 \Omega_m^{0.25}$	0.6073	$0.592^{+0.028}_{-0.033}$	$D_M(0.15)$	644.5	$647^{+20}_{-22}$
$\tau$	0.0541	$0.053^{+0.016}_{-0.015}$	$\sigma_8/h^{0.5}$	0.988	$0.955^{+0.046}_{-0.056}$	$H(0.38)$	82.74	$82.9^{+1.9}_{-1.5}$
$m_{\nu, sterile}^{eff} [eV]$	0.361	$< 0.773$	$r_{drag} h$	99.03	$97.3^{+3.5}_{-3.9}$	$D_M(0.38)$	1536.1	$1539^{+40}_{-45}$
$N_{eff}$	3.047	$< 3.47$	$\langle d^2 \rangle^{1/2}$	2.444	$2.453^{+0.055}_{-0.056}$	$H(0.51)$	89.49	$89.8^{+1.8}_{-1.3}$
$\ln(10^{10} A_s)$	3.0425	$3.048^{+0.033}_{-0.031}$	$z_{re}$	7.70	$7.6^{+1.6}_{-1.6}$	$D_M(0.51)$	1989	$1991^{+47}_{-55}$
$n_s$	0.9653	$0.965^{+0.015}_{-0.014}$	$10^9 A_s$	2.096	$2.107^{+0.071}_{-0.065}$	$H(0.61)$	95.14	$95.7^{+1.8}_{-1.2}$
$y_{cal}$	1.0002	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	1.8808	$1.895^{+0.031}_{-0.027}$	$D_M(0.61)$	2314	$2315^{+51}_{-61}$
$A_{217}^{CIB}$	48.4	$49^{+10}_{-10}$	$D_{40}$	1227.7	$1230^{+30}_{-30}$	$H(2.33)$	236.32	$239.7^{+5.0}_{-4.2}$
$\xi^{tSZ \times CIB}$	0.34	—	$D_{220}$	5713	$5714^{+82}_{-79}$	$D_M(2.33)$	5771	$5735^{+67}_{-100}$
$A_{143}^{tSZ}$	7.00	$4.8^{+3.9}_{-4.0}$	$D_{810}$	2536.9	$2539^{+28}_{-27}$	$f\sigma_8(0.15)$	0.4595	$0.452^{+0.022}_{-0.024}$
$A_{100}^{PS}$	253	$269^{+60}_{-60}$	$D_{1420}$	815.6	$813^{+10}_{-10}$	$\sigma_8(0.15)$	0.7481	$0.720^{+0.042}_{-0.051}$
$A_{143}^{PS}$	49.0	$52^{+20}_{-20}$	$D_{2000}$	230.21	$228.3^{+3.9}_{-3.9}$	$f\sigma_8(0.38)$	0.4768	$0.465^{+0.022}_{-0.026}$
$A_{143 \times 217}^{PS}$	47.0	$45^{+20}_{-20}$	$n_{s,0.002}$	0.9653	$0.965^{+0.015}_{-0.014}$	$\sigma_8(0.38)$	0.6627	$0.636^{+0.039}_{-0.047}$
$A_{217}^{PS}$	119.3	$116^{+20}_{-20}$	$Y_P$	0.24535	$0.2475^{+0.0035}_{-0.0023}$	$f\sigma_8(0.51)$	0.4749	$0.462^{+0.023}_{-0.027}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.24667	$0.2488^{+0.0035}_{-0.0023}$	$\sigma_8(0.51)$	0.6200	$0.595^{+0.038}_{-0.045}$
$A_{100}^{dustTT}$	8.90	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	2.616	$2.67^{+0.11}_{-0.095}$	$f\sigma_8(0.61)$	0.4696	$0.456^{+0.023}_{-0.027}$
$A_{143}^{dustTT}$	10.87	$10.8^{+3.5}_{-3.5}$	Age/Gyr	13.816	$13.73^{+0.16}_{-0.24}$	$\sigma_8(0.61)$	0.5898	$0.565^{+0.036}_{-0.043}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.4^{+6.4}_{-6.5}$	$z_*$	1090.11	$1090.63^{+0.92}_{-0.82}$	$f\sigma_8(2.33)$	0.2972	$0.285^{+0.019}_{-0.022}$
$A_{217}^{dustTT}$	94.5	$93^{+10}_{-10}$	$r_*$	144.58	$142.9^{+2.1}_{-2.6}$	$\sigma_8(2.33)$	0.3062	$0.293^{+0.020}_{-0.024}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04102	$1.0406^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	30.0	$33^{+6}_{-6}$
$c_{217}$	0.99824	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	13.888	$13.73^{+0.19}_{-0.25}$	$f_{2000}^{143 \times 217}$	32.94	$35^{+4}_{-4}$
$H_0$	67.23	$66.8^{+2.5}_{-2.3}$	$z_{drag}$	1059.55	$1060.0^{+1.2}_{-1.2}$	$f_{2000}^{217}$	107.36	$109.5^{+4.2}_{-4.1}$
$\Omega_\Lambda$	0.6842	$0.670^{+0.029}_{-0.034}$	$r_{drag}$	147.30	$145.5^{+2.1}_{-2.7}$	$\chi_{lensing}^2$	8.88	$9.27 (\nu: 0.4)$
$\Omega_m$	0.3158	$0.330^{+0.034}_{-0.029}$	$k_D$	0.14052	$0.1419^{+0.0022}_{-0.0018}$	$\chi_{small}^2$	396	$502 (\nu: 14302.6)$
$\Omega_m h^2$	0.1427	$0.1474^{+0.0070}_{-0.0059}$	$100\theta_D$	0.16097	$0.16132^{+0.00080}_{-0.00072}$	$\chi_{lowl}^2$	23.29	$23.6 (\nu: 0.9)$
$\Omega_\nu h^2$	0.00449	$0.0037^{+0.0054}_{-0.0032}$	$z_{eq}$	3303	$3362^{+110}_{-120}$	$\chi_{plik}^2$	759	$668 (\nu: 14315.7)$
$\Omega_m h^3$	0.09597	$0.0985^{+0.0049}_{-0.0033}$	$k_{eq}$	0.010152	$0.01041^{+0.00036}_{-0.00039}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.8)$
$\sigma_8$	0.8101	$0.781^{+0.044}_{-0.053}$	$100\theta_{eq}$	0.8333	$0.822^{+0.026}_{-0.021}$	$\chi_{CMB}^2$	1187.2	$1203.6 (\nu: 17.4)$

Best-fit  $\chi_{eff}^2 = 1188.51$ ;  $\Delta\chi_{eff}^2 = -0.06$ ;  $\bar{\chi}_{eff}^2 = 1210.94$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.53$ ;  $R - 1 = 0.01963$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.88 ( $\Delta$  -0.02) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.04 ( $\Delta$  0.18) commander\_dx12\_v3.2.29: 23.29 ( $\Delta$  0.06) plik\_rd12\_HM\_v22.TT: 758.94 ( $\Delta$  -0.38)

### 8.3 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02223^{+0.00047}_{-0.00044}$	$S_8$	$0.817^{+0.054}_{-0.061}$	$100\theta_{s,eq}$	$0.455^{+0.015}_{-0.013}$
$\Omega_c h^2$	$0.1215^{+0.0080}_{-0.0081}$	$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.029}_{-0.033}$	$H(0.15)$	$72.6^{+2.7}_{-2.4}$
$100\theta_{MC}$	$1.0405^{+0.0010}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.037}_{-0.041}$	$D_M(0.15)$	$646^{+24}_{-26}$
$\tau$	$0.054^{+0.013}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.954^{+0.057}_{-0.069}$	$H(0.38)$	$83.1^{+2.4}_{-1.8}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.839$	$r_{drag} h$	$97.5^{+4.1}_{-4.5}$	$D_M(0.38)$	$1536^{+48}_{-55}$
$N_{eff}$	$< 3.51$	$\langle d^2 \rangle^{1/2}$	$2.449^{+0.080}_{-0.081}$	$H(0.51)$	$90.0^{+2.3}_{-1.6}$
$\ln(10^{10} A_s)$	$3.049^{+0.031}_{-0.029}$	$z_{re}$	$< 8.97$	$D_M(0.51)$	$1987^{+57}_{-67}$
$n_s$	$0.966^{+0.018}_{-0.016}$	$10^9 A_s$	$2.111^{+0.066}_{-0.060}$	$H(0.61)$	$95.8^{+2.2}_{-1.4}$
$y_{cal}$	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	$1.895^{+0.033}_{-0.030}$	$D_M(0.61)$	$2310^{+62}_{-74}$
$A_{217}^{CIB}$	$49^{+10}_{-10}$	$D_{40}$	$1227^{+35}_{-38}$	$H(2.33)$	$239.8^{+5.3}_{-4.5}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5712^{+82}_{-79}$	$D_M(2.33)$	$5728^{+78}_{-120}$
$A_{143}^{tSZ}$	$4.8^{+3.9}_{-3.9}$	$D_{810}$	$2539^{+28}_{-27}$	$f\sigma_8(0.15)$	$0.451^{+0.030}_{-0.031}$
$A_{100}^{PS}$	$268^{+60}_{-60}$	$D_{1420}$	$813^{+10}_{-10}$	$\sigma_8(0.15)$	$0.721^{+0.048}_{-0.058}$
$A_{143}^{PS}$	$52^{+20}_{-20}$	$D_{2000}$	$228.2^{+3.9}_{-4.1}$	$f\sigma_8(0.38)$	$0.465^{+0.029}_{-0.032}$
$A_{143 \times 217}^{PS}$	$45^{+20}_{-20}$	$n_{s,0.002}$	$0.966^{+0.018}_{-0.016}$	$\sigma_8(0.38)$	$0.637^{+0.044}_{-0.054}$
$A_{217}^{PS}$	$116^{+20}_{-20}$	$Y_P$	$0.2477^{+0.0039}_{-0.0025}$	$f\sigma_8(0.51)$	$0.462^{+0.028}_{-0.033}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.2490^{+0.0039}_{-0.0025}$	$\sigma_8(0.51)$	$0.596^{+0.042}_{-0.051}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	$2.67^{+0.11}_{-0.098}$	$f\sigma_8(0.61)$	$0.456^{+0.028}_{-0.033}$
$A_{143}^{dustTT}$	$10.8^{+3.5}_{-3.5}$	$Age/Gyr$	$13.71^{+0.18}_{-0.29}$	$\sigma_8(0.61)$	$0.566^{+0.040}_{-0.049}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.4}_{-6.5}$	$z_*$	$1090.62^{+0.95}_{-0.89}$	$f\sigma_8(2.33)$	$0.286^{+0.021}_{-0.025}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$r_*$	$142.8^{+2.2}_{-2.8}$	$\sigma_8(2.33)$	$0.293^{+0.022}_{-0.027}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.0406^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	$33^{+6}_{-6}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	$13.72^{+0.21}_{-0.26}$	$f_{2000}^{143 \times 217}$	$35^{+5}_{-4}$
$H_0$	$67.1^{+3.0}_{-2.7}$	$z_{drag}$	$1060.0^{+1.3}_{-1.2}$	$f_{2000}^{217}$	$109.5^{+4.2}_{-4.0}$
$\Omega_\Lambda$	$0.672^{+0.035}_{-0.037}$	$r_{drag}$	$145.5^{+2.3}_{-2.9}$	$\chi_{small}^2$	$396.9 (\nu: 1.6)$
$\Omega_m$	$0.328^{+0.037}_{-0.035}$	$k_D$	$0.1419^{+0.0023}_{-0.0020}$	$\chi_{lowl}^2$	$23.4 (\nu: 1.2)$
$\Omega_m h^2$	$0.1474^{+0.0073}_{-0.0064}$	$100\theta_D$	$0.16136^{+0.00085}_{-0.00075}$	$\chi_{plik}^2$	$774.4 (\nu: 17.4)$
$\Omega_\nu h^2$	$0.0037^{+0.0059}_{-0.0032}$	$z_{eq}$	$3354^{+130}_{-140}$	$\chi_{prior}^2$	$7.4 (\nu: 6.9)$
$\Omega_m h^3$	$0.0988^{+0.0057}_{-0.0037}$	$k_{eq}$	$0.01039^{+0.00039}_{-0.00041}$	$\chi_{CMB}^2$	$1194.8 (\nu: 17.3)$
$\sigma_8$	$0.781^{+0.050}_{-0.061}$	$100\theta_{eq}$	$0.823^{+0.029}_{-0.026}$		

$$\bar{\chi}_{eff}^2 = 1202.13; \Delta \bar{\chi}_{eff}^2 = 2.81; R - 1 = 0.02055$$

#### 8.4 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02222^{+0.00043}_{-0.00042}$	$S_8$	$0.819^{+0.041}_{-0.043}$	$100\theta_{s,eq}$	$0.454^{+0.013}_{-0.011}$
$\Omega_c h^2$	$0.1215^{+0.0076}_{-0.0078}$	$\sigma_8 \Omega_m^{0.5}$	$0.448^{+0.022}_{-0.024}$	$H(0.15)$	$72.4^{+2.2}_{-1.9}$
$100\theta_{MC}$	$1.04054^{+0.00097}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.028}_{-0.033}$	$D_M(0.15)$	$647^{+20}_{-22}$
$\tau$	$0.054^{+0.013}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.955^{+0.046}_{-0.056}$	$H(0.38)$	$82.9^{+2.0}_{-1.5}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.767$	$r_{drag} h$	$97.4^{+3.5}_{-3.9}$	$D_M(0.38)$	$1538^{+40}_{-45}$
$N_{eff}$	$< 3.47$	$\langle d^2 \rangle^{1/2}$	$2.454^{+0.055}_{-0.056}$	$H(0.51)$	$89.9^{+1.9}_{-1.3}$
$\ln(10^{10} A_s)$	$3.050^{+0.029}_{-0.027}$	$z_{re}$	$< 8.96$	$D_M(0.51)$	$1990^{+46}_{-55}$
$n_s$	$0.965^{+0.015}_{-0.014}$	$10^9 A_s$	$2.111^{+0.062}_{-0.057}$	$H(0.61)$	$95.7^{+1.8}_{-1.2}$
$y_{cal}$	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	$1.895^{+0.031}_{-0.027}$	$D_M(0.61)$	$2313^{+50}_{-61}$
$A_{217}^{CIB}$	$49^{+10}_{-10}$	$D_{40}$	$1229^{+29}_{-30}$	$H(2.33)$	$239.7^{+5.1}_{-4.2}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5714^{+82}_{-79}$	$D_M(2.33)$	$5734^{+67}_{-100}$
$A_{143}^{tSZ}$	$4.8^{+3.9}_{-4.0}$	$D_{810}$	$2539^{+27}_{-26}$	$f\sigma_8(0.15)$	$0.452^{+0.022}_{-0.024}$
$A_{100}^{PS}$	$268^{+60}_{-60}$	$D_{1420}$	$813^{+10}_{-10}$	$\sigma_8(0.15)$	$0.720^{+0.042}_{-0.051}$
$A_{143}^{PS}$	$52^{+20}_{-20}$	$D_{2000}$	$228.3^{+3.9}_{-3.9}$	$f\sigma_8(0.38)$	$0.466^{+0.022}_{-0.026}$
$A_{143 \times 217}^{PS}$	$45^{+20}_{-20}$	$n_{s,0.002}$	$0.965^{+0.015}_{-0.014}$	$\sigma_8(0.38)$	$0.637^{+0.039}_{-0.047}$
$A_{217}^{PS}$	$116^{+20}_{-20}$	$Y_P$	$0.2475^{+0.0035}_{-0.0023}$	$f\sigma_8(0.51)$	$0.462^{+0.022}_{-0.027}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.2488^{+0.0035}_{-0.0023}$	$\sigma_8(0.51)$	$0.595^{+0.038}_{-0.045}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	$2.67^{+0.11}_{-0.095}$	$f\sigma_8(0.61)$	$0.456^{+0.023}_{-0.027}$
$A_{143}^{dustTT}$	$10.8^{+3.5}_{-3.5}$	$Age/Gyr$	$13.72^{+0.16}_{-0.24}$	$\sigma_8(0.61)$	$0.566^{+0.036}_{-0.043}$
$A_{143 \times 217}^{dustTT}$	$18.4^{+6.4}_{-6.5}$	$z_*$	$1090.62^{+0.92}_{-0.82}$	$f\sigma_8(2.33)$	$0.285^{+0.019}_{-0.022}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$r_*$	$142.9^{+2.1}_{-2.6}$	$\sigma_8(2.33)$	$0.293^{+0.020}_{-0.024}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.0407^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	$33^{+6}_{-6}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	$13.73^{+0.19}_{-0.25}$	$f_{2000}^{143 \times 217}$	$35^{+4}_{-4}$
$H_0$	$66.9^{+2.4}_{-2.3}$	$z_{drag}$	$1060.0^{+1.2}_{-1.2}$	$f_{2000}^{217}$	$109.4^{+4.2}_{-4.0}$
$\Omega_\Lambda$	$0.670^{+0.029}_{-0.034}$	$r_{drag}$	$145.5^{+2.1}_{-2.7}$	$\chi^2_{lensing}$	$9.25 (\nu: 0.4)$
$\Omega_m$	$0.330^{+0.034}_{-0.029}$	$k_D$	$0.1419^{+0.0022}_{-0.0018}$	$\chi^2_{small}$	$501 (\nu: 14225.2)$
$\Omega_m h^2$	$0.1474^{+0.0070}_{-0.0059}$	$100\theta_D$	$0.16132^{+0.00080}_{-0.00072}$	$\chi^2_{lowl}$	$23.5 (\nu: 0.8)$
$\Omega_\nu h^2$	$0.0036^{+0.0052}_{-0.0031}$	$z_{eq}$	$3360^{+100}_{-120}$	$\chi^2_{plik}$	$669 (\nu: 14236.6)$
$\Omega_m h^3$	$0.0986^{+0.0050}_{-0.0033}$	$k_{eq}$	$0.01040^{+0.00036}_{-0.00038}$	$\chi^2_{prior}$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.781^{+0.044}_{-0.053}$	$100\theta_{eq}$	$0.822^{+0.025}_{-0.021}$	$\chi^2_{CMB}$	$1203.4 (\nu: 17.1)$

$$\bar{\chi}^2_{eff} = 1210.72; \Delta\bar{\chi}^2_{eff} = 2.56; R - 1 = 0.02178$$

## 8.5 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022445	$0.02243^{+0.00033}_{-0.00030}$	$\Omega_m h^2$	0.14339	$0.1459^{+0.0051}_{-0.0044}$	$k_{\text{eq}}$	0.010384	$0.01035^{+0.00030}_{-0.00037}$
$\Omega_c h^2$	0.1203	$0.1199^{+0.0058}_{-0.0068}$	$\Omega_\nu h^2$	0.00065	$0.0035^{+0.0052}_{-0.0030}$	$100\theta_{\text{eq}}$	0.8150	$0.824^{+0.028}_{-0.021}$
$100\theta_{\text{MC}}$	1.04088	$1.04074^{+0.00062}_{-0.00066}$	$\Omega_m h^3$	0.09713	$0.0979^{+0.0032}_{-0.0021}$	$100\theta_{\text{s,eq}}$	0.4502	$0.455^{+0.015}_{-0.011}$
$\tau$	0.0602	$0.055^{+0.016}_{-0.015}$	$\sigma_8$	0.8174	$0.783^{+0.044}_{-0.054}$	$H(0.15)$	73.05	$72.6^{+1.5}_{-1.3}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.000	$< 0.753$	$S_8$	0.8342	$0.813^{+0.045}_{-0.050}$	$D_{\text{M}}(0.15)$	639.9	$645^{+13}_{-15}$
$N_{\text{eff}}$	3.084	$< 3.32$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4569	$0.445^{+0.024}_{-0.028}$	$H(0.38)$	83.21	$83.0^{+1.3}_{-1.0}$
$\ln(10^{10} A_{\text{s}})$	3.0581	$3.049^{+0.034}_{-0.032}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6111	$0.590^{+0.031}_{-0.037}$	$D_{\text{M}}(0.38)$	1525.9	$1535^{+27}_{-30}$
$n_{\text{s}}$	0.9687	$0.966^{+0.011}_{-0.011}$	$\sigma_8/h^{0.5}$	0.993	$0.955^{+0.050}_{-0.062}$	$H(0.51)$	89.97	$89.9^{+1.2}_{-0.86}$
$y_{\text{cal}}$	1.00100	$1.0008^{+0.0050}_{-0.0048}$	$r_{\text{drag}} h$	99.40	$98.0^{+2.6}_{-3.0}$	$D_{\text{M}}(0.51)$	1976.5	$1987^{+31}_{-37}$
$A_{217}^{\text{CIB}}$	45.5	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.451	$2.448^{+0.056}_{-0.055}$	$H(0.61)$	95.61	$95.6^{+1.1}_{-0.79}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.74	—	$z_{\text{re}}$	8.27	$7.7^{+1.6}_{-1.6}$	$D_{\text{M}}(0.61)$	2299.8	$2310^{+34}_{-40}$
$A_{143}^{\text{tSZ}}$	7.03	$5.3^{+3.7}_{-3.9}$	$10^9 A_{\text{s}}$	2.129	$2.110^{+0.073}_{-0.067}$	$H(2.33)$	236.96	$238.7^{+3.6}_{-3.0}$
$A_{100}^{\text{PS}}$	247	$261^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8872	$1.891^{+0.025}_{-0.025}$	$D_{\text{M}}(2.33)$	5745	$5740^{+43}_{-64}$
$A_{143}^{\text{PS}}$	51.8	$48^{+20}_{-20}$	$D_{40}$	1227.2	$1230^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4615	$0.449^{+0.024}_{-0.028}$
$A_{143 \times 217}^{\text{PS}}$	55.4	$43^{+20}_{-20}$	$D_{220}$	5735	$5733^{+76}_{-75}$	$\sigma_8(0.15)$	0.7552	$0.722^{+0.041}_{-0.050}$
$A_{217}^{\text{PS}}$	122.9	$116^{+20}_{-20}$	$D_{810}$	2544.6	$2542^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4797	$0.464^{+0.024}_{-0.029}$
$A^{\text{kSZ}}$	0.00	$< 8.32$	$D_{1420}$	819.3	$816.6^{+9.6}_{-9.4}$	$\sigma_8(0.38)$	0.6694	$0.639^{+0.038}_{-0.046}$
$A_{100}^{\text{dustTT}}$	8.81	$9.0^{+3.6}_{-3.5}$	$D_{2000}$	231.71	$230.0^{+3.3}_{-3.3}$	$f\sigma_8(0.51)$	0.4782	$0.461^{+0.024}_{-0.029}$
$A_{143}^{\text{dustTT}}$	11.02	$11.0^{+3.5}_{-3.4}$	$n_{\text{s}, 0.002}$	0.9687	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	0.6264	$0.598^{+0.036}_{-0.043}$
$A_{143 \times 217}^{\text{dustTT}}$	20.3	$18.8^{+6.3}_{-6.5}$	$Y_{\text{P}}$	0.24593	$0.2468^{+0.0023}_{-0.0015}$	$f\sigma_8(0.61)$	0.4731	$0.456^{+0.024}_{-0.029}$
$A_{217}^{\text{dustTT}}$	95.7	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.24726	$0.2481^{+0.0023}_{-0.0015}$	$\sigma_8(0.61)$	0.5960	$0.568^{+0.034}_{-0.041}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.074}$	$10^5 \text{D/H}$	2.585	$2.612^{+0.068}_{-0.060}$	$f\sigma_8(2.33)$	0.3004	$0.286^{+0.017}_{-0.021}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.057}$	Age/Gyr	13.753	$13.74^{+0.10}_{-0.15}$	$\sigma_8(2.33)$	0.3097	$0.295^{+0.019}_{-0.022}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.89	$1090.16^{+0.66}_{-0.58}$	$f_{2000}^{143}$	28.5	$31^{+6}_{-5}$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.11}$	$r_*$	144.11	$143.3^{+1.4}_{-1.9}$	$f_{2000}^{143 \times 217}$	31.89	$33^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	1.04103	$1.04087^{+0.00064}_{-0.00071}$	$f_{2000}^{217}$	106.43	$108.0^{+3.7}_{-3.7}$
$A_{217}^{\text{dustTE}}$	2.08	$2.09^{+0.52}_{-0.52}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.843	$13.77^{+0.13}_{-0.17}$	$\chi_{\text{simall}}^2$	397.59	$397.2 (\nu: 2.0)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.16	$1060.33^{+0.89}_{-0.81}$	$\chi_{\text{lowl}}^2$	23.02	$23.4 (\nu: 0.6)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	146.74	$146.0^{+1.5}_{-1.9}$	$\chi_{\text{plik}}^2$	2344.4	$2362.4 (\nu: 19.5)$
$H_0$	67.74	$67.1^{+1.8}_{-1.5}$	$k_{\text{D}}$	0.14115	$0.1418^{+0.0016}_{-0.0013}$	$\chi_{\text{prior}}^2$	1.6	$11.7 (\nu: 11.0)$
$\Omega_{\Lambda}$	0.6875	$0.676^{+0.022}_{-0.024}$	$100\theta_{\text{D}}$	0.160784	$0.16090^{+0.00047}_{-0.00043}$	$\chi_{\text{CMB}}^2$	2765.0	$2783.1 (\nu: 19.7)$
$\Omega_{\text{m}}$	0.3125	$0.324^{+0.024}_{-0.022}$	$z_{\text{eq}}$	3394	$3355^{+100}_{-130}$			

Best-fit  $\chi_{\text{eff}}^2 = 2766.68$ ;  $\Delta\chi_{\text{eff}}^2 = 0.91$ ;  $\bar{\chi}_{\text{eff}}^2 = 2794.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 3.00$ ;  $R - 1 = 0.01444$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 397.59 ( $\Delta$  1.54) commander\_dx12\_v3.2.29: 23.02 ( $\Delta$  -0.24) plik\_rd12\_HM\_v22b\_TTTEE: 2344.43 ( $\Delta$  -0.22)

## 8.6 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022389	$0.02242^{+0.00031}_{-0.00030}$	$\Omega_m h^2$	0.14291	$0.1459^{+0.0049}_{-0.0042}$	$k_{\text{eq}}$	0.009249	$0.01035^{+0.00027}_{-0.00033}$
$\Omega_c h^2$	0.0995	$0.1200^{+0.0053}_{-0.0062}$	$\Omega_\nu h^2$	0.02100	$0.0034^{+0.0045}_{-0.0029}$	$100\theta_{\text{eq}}$	0.9283	$0.823^{+0.024}_{-0.018}$
$100\theta_{\text{MC}}$	1.04094	$1.04074^{+0.00060}_{-0.00066}$	$\Omega_m h^3$	0.09635	$0.0979^{+0.0030}_{-0.0020}$	$100\theta_{\text{s,eq}}$	0.5095	$0.454^{+0.013}_{-0.0094}$
$\tau$	0.0543	$0.055^{+0.015}_{-0.015}$	$\sigma_8$	0.8065	$0.784^{+0.038}_{-0.044}$	$H(0.15)$	72.74	$72.6^{+1.4}_{-1.3}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	1.915	$< 0.670$	$S_8$	0.8256	$0.815^{+0.036}_{-0.040}$	$D_{\text{M}}(0.15)$	642.8	$645^{+12}_{-15}$
$N_{\text{eff}}$	3.054	$< 3.31$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4522	$0.446^{+0.019}_{-0.022}$	$H(0.38)$	82.91	$82.9^{+1.2}_{-0.94}$
$\ln(10^{10} A_{\text{s}})$	3.0438	$3.050^{+0.032}_{-0.028}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6039	$0.591^{+0.025}_{-0.030}$	$D_{\text{M}}(0.38)$	1532.4	$1536^{+26}_{-29}$
$n_{\text{s}}$	0.9660	$0.965^{+0.011}_{-0.010}$	$\sigma_8/h^{0.5}$	0.9822	$0.957^{+0.041}_{-0.050}$	$H(0.51)$	89.66	$89.8^{+1.1}_{-0.79}$
$y_{\text{cal}}$	1.0005	$1.0009^{+0.0050}_{-0.0050}$	$r_{\text{drag}} h$	99.18	$98.0^{+2.5}_{-2.9}$	$D_{\text{M}}(0.51)$	1984.6	$1987^{+30}_{-34}$
$A_{217}^{\text{CIB}}$	47.7	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.4444	$2.451^{+0.044}_{-0.045}$	$H(0.61)$	95.30	$95.6^{+1.1}_{-0.73}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$z_{\text{re}}$	7.68	$7.8^{+1.5}_{-1.5}$	$D_{\text{M}}(0.61)$	2309.0	$2311^{+32}_{-38}$
$A_{143}^{\text{tSZ}}$	7.30	$5.3^{+3.7}_{-4.0}$	$10^9 A_{\text{s}}$	2.098	$2.112^{+0.066}_{-0.063}$	$H(2.33)$	236.50	$238.6^{+3.5}_{-2.9}$
$A_{100}^{\text{PS}}$	251	$262^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8823	$1.891^{+0.024}_{-0.024}$	$D_{\text{M}}(2.33)$	5762	$5742^{+40}_{-61}$
$A_{143}^{\text{PS}}$	45.9	$48^{+20}_{-20}$	$D_{40}$	1228.4	$1231^{+24}_{-24}$	$f\sigma_8(0.15)$	0.4565	$0.450^{+0.019}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	44.8	$43^{+20}_{-20}$	$D_{220}$	5730	$5734^{+75}_{-75}$	$\sigma_8(0.15)$	0.7449	$0.723^{+0.036}_{-0.042}$
$A_{217}^{\text{PS}}$	118.6	$116^{+20}_{-20}$	$D_{810}$	2539.8	$2542^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4741	$0.465^{+0.020}_{-0.023}$
$A^{\text{kSZ}}$	0.00	$< 8.42$	$D_{1420}$	817.6	$816.6^{+9.8}_{-9.5}$	$\sigma_8(0.38)$	0.6600	$0.640^{+0.033}_{-0.038}$
$A_{100}^{\text{dustTT}}$	8.90	$9.0^{+3.5}_{-3.5}$	$D_{2000}$	231.22	$230.1^{+3.4}_{-3.4}$	$f\sigma_8(0.51)$	0.4724	$0.462^{+0.020}_{-0.024}$
$A_{143}^{\text{dustTT}}$	11.04	$11.0^{+3.5}_{-3.4}$	$n_{\text{s}, 0.002}$	0.9660	$0.965^{+0.011}_{-0.010}$	$\sigma_8(0.51)$	0.6175	$0.598^{+0.031}_{-0.036}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.8^{+6.2}_{-6.4}$	$Y_{\text{P}}$	0.24551	$0.2468^{+0.0022}_{-0.0014}$	$f\sigma_8(0.61)$	0.4672	$0.456^{+0.020}_{-0.024}$
$A_{217}^{\text{dustTT}}$	95.0	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.24683	$0.2481^{+0.0022}_{-0.0014}$	$\sigma_8(0.61)$	0.5875	$0.569^{+0.030}_{-0.035}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.075}_{-0.074}$	$10^5 \text{D/H}$	2.585	$2.611^{+0.068}_{-0.060}$	$f\sigma_8(2.33)$	0.2961	$0.287^{+0.016}_{-0.018}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.057}_{-0.056}$	Age/Gyr	13.794	$13.744^{+0.095}_{-0.14}$	$\sigma_8(2.33)$	0.3052	$0.295^{+0.017}_{-0.019}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.16}_{-0.16}$	$z_*$	1089.89	$1090.16^{+0.63}_{-0.58}$	$f_{2000}^{143}$	28.9	$31^{+6}_{-5}$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.10}_{-0.11}$	$r_*$	144.45	$143.4^{+1.4}_{-1.8}$	$f_{2000}^{143 \times 217}$	31.96	$33^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.15}_{-0.16}$	$100\theta_*$	1.04111	$1.04087^{+0.00063}_{-0.00070}$	$f_{2000}^{217}$	106.62	$108.0^{+3.8}_{-3.7}$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.874	$13.78^{+0.13}_{-0.17}$	$\chi_{\text{lensing}}^2$	8.96	$9.03 (\nu: 0.2)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.97	$1060.31^{+0.84}_{-0.77}$	$\chi_{\text{simall}}^2$	396	$1646 (\nu: 447059.2)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.10	$146.0^{+1.4}_{-1.8}$	$\chi_{\text{lowl}}^2$	23.22	$23.5 (\nu: 0.5)$
$H_0$	67.42	$67.1^{+1.7}_{-1.4}$	$k_{\text{D}}$	0.14087	$0.1418^{+0.0015}_{-0.0012}$	$\chi_{\text{plik}}^2$	2344	$1113 (\nu: 446893.7)$
$\Omega_{\Lambda}$	0.6856	$0.676^{+0.020}_{-0.025}$	$100\theta_{\text{D}}$	0.160743	$0.16089^{+0.00046}_{-0.00044}$	$\chi_{\text{prior}}^2$	1.8	$11.6 (\nu: 10.9)$
$\Omega_{\text{m}}$	0.3144	$0.324^{+0.025}_{-0.020}$	$z_{\text{eq}}$	2910	$3359^{+90}_{-110}$	$\chi_{\text{CMB}}^2$	2772.3	$2791.6 (\nu: 19.6)$

Best-fit  $\chi_{\text{eff}}^2 = 2774.15$ ;  $\Delta\chi_{\text{eff}}^2 = -0.49$ ;  $\bar{\chi}_{\text{eff}}^2 = 2803.21$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.51$ ;  $R - 1 = 0.04894$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.96 ( $\Delta$  0.09) simall\_100x143\_offlike5\_EE\_Aplanck.B: 396.02 ( $\Delta$  -0.03) commander\_dx12.v3.2.29: 23.22 ( $\Delta$  -0.03) plik\_rd12\_HM\_v22b\_TTTEE: 2344.13 ( $\Delta$  -0.80)

## 8.7 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02243^{+0.00033}_{-0.00030}$	$\Omega_{\text{m}}h^2$	$0.1459^{+0.0052}_{-0.0044}$	$k_{\text{eq}}$	$0.01035^{+0.00030}_{-0.00036}$
$\Omega_{\text{c}}h^2$	$0.1200^{+0.0058}_{-0.0067}$	$\Omega_{\nu}h^2$	$0.0035^{+0.0051}_{-0.0030}$	$100\theta_{\text{eq}}$	$0.824^{+0.028}_{-0.021}$
$100\theta_{\text{MC}}$	$1.04074^{+0.00062}_{-0.00066}$	$\Omega_{\text{m}}h^3$	$0.0980^{+0.0032}_{-0.0021}$	$100\theta_{\text{s,eq}}$	$0.455^{+0.015}_{-0.011}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8$	$0.784^{+0.044}_{-0.054}$	$H(0.15)$	$72.6^{+1.5}_{-1.3}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.746$	$S_8$	$0.814^{+0.044}_{-0.050}$	$D_{\text{M}}(0.15)$	$645^{+13}_{-15}$
$N_{\text{eff}}$	$< 3.32$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.446^{+0.024}_{-0.027}$	$H(0.38)$	$83.0^{+1.3}_{-1.0}$
$\ln(10^{10}A_{\text{s}})$	$3.051^{+0.030}_{-0.028}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591^{+0.031}_{-0.037}$	$D_{\text{M}}(0.38)$	$1535^{+27}_{-30}$
$n_{\text{s}}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8/h^{0.5}$	$0.956^{+0.049}_{-0.062}$	$H(0.51)$	$89.9^{+1.2}_{-0.86}$
$y_{\text{cal}}$	$1.0008^{+0.0050}_{-0.0048}$	$r_{\text{drag}}h$	$98.0^{+2.6}_{-3.0}$	$D_{\text{M}}(0.51)$	$1986^{+31}_{-37}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.450^{+0.055}_{-0.053}$	$H(0.61)$	$95.6^{+1.2}_{-0.80}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 9.06$	$D_{\text{M}}(0.61)$	$2310^{+34}_{-41}$
$A_{143}^{\text{tSZ}}$	$5.3^{+3.7}_{-3.9}$	$10^9 A_{\text{s}}$	$2.113^{+0.064}_{-0.059}$	$H(2.33)$	$238.7^{+3.7}_{-3.0}$
$A_{100}^{\text{PS}}$	$261^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.891^{+0.025}_{-0.025}$	$D_{\text{M}}(2.33)$	$5740^{+44}_{-65}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$D_{40}$	$1230^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.449^{+0.024}_{-0.027}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5732^{+77}_{-75}$	$\sigma_8(0.15)$	$0.723^{+0.041}_{-0.050}$
$A_{217}^{\text{PS}}$	$116^{+20}_{-20}$	$D_{810}$	$2542^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.464^{+0.024}_{-0.029}$
$A^{\text{kSZ}}$	$< 8.32$	$D_{1420}$	$816.6^{+9.6}_{-9.4}$	$\sigma_8(0.38)$	$0.640^{+0.037}_{-0.046}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.5}$	$D_{2000}$	$230.0^{+3.3}_{-3.3}$	$f\sigma_8(0.51)$	$0.462^{+0.024}_{-0.029}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.4}$	$n_{\text{s}, 0.002}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.598^{+0.036}_{-0.043}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.3}_{-6.5}$	$Y_{\text{P}}$	$0.2468^{+0.0024}_{-0.0015}$	$f\sigma_8(0.61)$	$0.456^{+0.024}_{-0.029}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2482^{+0.0024}_{-0.0015}$	$\sigma_8(0.61)$	$0.569^{+0.034}_{-0.041}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$10^5 \text{D}/\text{H}$	$2.611^{+0.067}_{-0.060}$	$f\sigma_8(2.33)$	$0.287^{+0.017}_{-0.021}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.058}$	$\text{Age}/\text{Gyr}$	$13.74^{+0.10}_{-0.15}$	$\sigma_8(2.33)$	$0.295^{+0.019}_{-0.022}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1090.16^{+0.66}_{-0.58}$	$f_{2000}^{143}$	$31^{+6}_{-5}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$r_*$	$143.3^{+1.4}_{-1.9}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	$1.04087^{+0.00064}_{-0.00071}$	$f_{2000}^{217}$	$107.9^{+3.7}_{-3.7}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.52}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.13}_{-0.18}$	$\chi_{\text{small}}^2$	$397.2 (\nu: 2.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.33^{+0.89}_{-0.82}$	$\chi_{\text{lowl}}^2$	$23.4 (\nu: 0.6)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$146.0^{+1.5}_{-1.9}$	$\chi_{\text{plik}}^2$	$2362.2 (\nu: 19.3)$
$H_0$	$67.2^{+1.7}_{-1.5}$	$k_{\text{D}}$	$0.1418^{+0.0016}_{-0.0013}$	$\chi_{\text{prior}}^2$	$11.7 (\nu: 11.0)$
$\Omega_{\Lambda}$	$0.676^{+0.022}_{-0.024}$	$100\theta_{\text{D}}$	$0.16089^{+0.00046}_{-0.00043}$	$\chi_{\text{CMB}}^2$	$2782.9 (\nu: 19.3)$
$\Omega_{\text{m}}$	$0.324^{+0.024}_{-0.022}$	$z_{\text{eq}}$	$3355^{+100}_{-130}$		

$$\bar{\chi}_{\text{eff}}^2 = 2794.57; \Delta\bar{\chi}_{\text{eff}}^2 = 3.04; R - 1 = 0.01250$$



## 8.8 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00031}_{-0.00030}$	$\Omega_m h^2$	$0.1458^{+0.0050}_{-0.0042}$	$k_{\text{eq}}$	$0.01035^{+0.00027}_{-0.00033}$
$\Omega_c h^2$	$0.1200^{+0.0053}_{-0.0062}$	$\Omega_\nu h^2$	$0.0034^{+0.0044}_{-0.0029}$	$100\theta_{\text{eq}}$	$0.823^{+0.024}_{-0.018}$
$100\theta_{\text{MC}}$	$1.04075^{+0.00060}_{-0.00066}$	$\Omega_m h^3$	$0.0979^{+0.0030}_{-0.0020}$	$100\theta_{\text{s,eq}}$	$0.455^{+0.013}_{-0.0094}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$\sigma_8$	$0.784^{+0.038}_{-0.044}$	$H(0.15)$	$72.6^{+1.4}_{-1.3}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.668$	$S_8$	$0.815^{+0.036}_{-0.040}$	$D_{\text{M}}(0.15)$	$645^{+12}_{-15}$
$N_{\text{eff}}$	$< 3.31$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.446^{+0.019}_{-0.022}$	$H(0.38)$	$83.0^{+1.2}_{-0.94}$
$\ln(10^{10} A_{\text{s}})$	$3.051^{+0.029}_{-0.027}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.592^{+0.025}_{-0.030}$	$D_{\text{M}}(0.38)$	$1535^{+26}_{-29}$
$n_{\text{s}}$	$0.965^{+0.011}_{-0.010}$	$\sigma_8/h^{0.5}$	$0.957^{+0.041}_{-0.050}$	$H(0.51)$	$89.8^{+1.1}_{-0.79}$
$y_{\text{cal}}$	$1.0009^{+0.0050}_{-0.0050}$	$r_{\text{drag}} h$	$98.0^{+2.5}_{-2.9}$	$D_{\text{M}}(0.51)$	$1987^{+30}_{-34}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.043}_{-0.044}$	$H(0.61)$	$95.6^{+1.1}_{-0.73}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 9.07$	$D_{\text{M}}(0.61)$	$2311^{+32}_{-38}$
$A_{143}^{\text{tSZ}}$	$5.3^{+3.7}_{-4.0}$	$10^9 A_{\text{s}}$	$2.115^{+0.061}_{-0.056}$	$H(2.33)$	$238.6^{+3.5}_{-2.9}$
$A_{100}^{\text{PS}}$	$262^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.891^{+0.025}_{-0.024}$	$D_{\text{M}}(2.33)$	$5741^{+41}_{-61}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$D_{40}$	$1231^{+24}_{-24}$	$f\sigma_8(0.15)$	$0.450^{+0.019}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5734^{+76}_{-75}$	$\sigma_8(0.15)$	$0.724^{+0.036}_{-0.042}$
$A_{217}^{\text{PS}}$	$116^{+20}_{-20}$	$D_{810}$	$2542^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.465^{+0.020}_{-0.023}$
$A^{\text{kSZ}}$	$< 8.44$	$D_{1420}$	$816.6^{+9.9}_{-9.6}$	$\sigma_8(0.38)$	$0.640^{+0.033}_{-0.038}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.5}_{-3.6}$	$D_{2000}$	$230.1^{+3.4}_{-3.4}$	$f\sigma_8(0.51)$	$0.462^{+0.020}_{-0.024}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.4}$	$n_{\text{s}, 0.002}$	$0.965^{+0.011}_{-0.010}$	$\sigma_8(0.51)$	$0.599^{+0.031}_{-0.036}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.8^{+6.3}_{-6.4}$	$Y_{\text{P}}$	$0.2468^{+0.0022}_{-0.0014}$	$f\sigma_8(0.61)$	$0.457^{+0.020}_{-0.024}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2481^{+0.0022}_{-0.0015}$	$\sigma_8(0.61)$	$0.569^{+0.030}_{-0.035}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.073}_{-0.074}$	$10^5 \text{D}/\text{H}$	$2.611^{+0.067}_{-0.061}$	$f\sigma_8(2.33)$	$0.287^{+0.016}_{-0.018}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.057}_{-0.056}$	$\text{Age}/\text{Gyr}$	$13.742^{+0.096}_{-0.14}$	$\sigma_8(2.33)$	$0.295^{+0.017}_{-0.019}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.16}$	$z_*$	$1090.16^{+0.63}_{-0.58}$	$f_{2000}^{143}$	$31^{+6}_{-5}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$r_*$	$143.4^{+1.4}_{-1.8}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$100\theta_*$	$1.04088^{+0.00063}_{-0.00070}$	$f_{2000}^{217}$	$108.0^{+3.8}_{-3.7}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.13}_{-0.17}$	$\chi_{\text{lensing}}^2$	$9.01 (\nu: 0.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.32^{+0.85}_{-0.78}$	$\chi_{\text{small}}^2$	$1645 (\nu: 447270.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$146.0^{+1.4}_{-1.8}$	$\chi_{\text{lowl}}^2$	$23.5 (\nu: 0.5)$
$H_0$	$67.1^{+1.7}_{-1.4}$	$k_{\text{D}}$	$0.1418^{+0.0015}_{-0.0012}$	$\chi_{\text{plik}}^2$	$1114 (\nu: 447092.4)$
$\Omega_{\Lambda}$	$0.676^{+0.020}_{-0.025}$	$100\theta_{\text{D}}$	$0.16089^{+0.00047}_{-0.00044}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 11.0)$
$\Omega_{\text{m}}$	$0.324^{+0.025}_{-0.020}$	$z_{\text{eq}}$	$3358^{+89}_{-110}$	$\chi_{\text{CMB}}^2$	$2791.5 (\nu: 19.4)$

$$\bar{\chi}_{\text{eff}}^2 = 2803.10; \Delta\bar{\chi}_{\text{eff}}^2 = 2.59; R - 1 = 0.04623$$

## 8.9 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022314	$0.02235^{+0.00044}_{-0.00041}$	$\sigma_8 \Omega_m^{0.5}$	0.4502	$0.441^{+0.024}_{-0.027}$	$D_M(0.15)$	636.1	$633^{+16}_{-20}$
$\Omega_c h^2$	0.1199	$0.1203^{+0.0081}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.591^{+0.031}_{-0.036}$	$H(0.38)$	83.52	$84.0^{+2.3}_{-1.6}$
$100\theta_{MC}$	1.04093	$1.04074^{+0.00094}_{-0.0010}$	$\sigma_8/h^{0.5}$	0.9835	$0.957^{+0.044}_{-0.055}$	$D_M(0.38)$	1518.2	$1511^{+35}_{-46}$
$\tau$	0.0557	$0.055^{+0.016}_{-0.016}$	$r_{drag} h$	100.10	$99.8^{+2.0}_{-1.9}$	$H(0.51)$	90.23	$90.7^{+2.4}_{-1.6}$
$m_{\nu, sterile}^{eff} [eV]$	0.001	$< 0.687$	$\langle d^2 \rangle^{1/2}$	2.428	$2.412^{+0.058}_{-0.060}$	$D_M(0.51)$	1967	$1958^{+43}_{-58}$
$N_{eff}$	3.118	$< 3.59$	$z_{re}$	7.85	$7.8^{+1.6}_{-1.7}$	$H(0.61)$	95.84	$96.4^{+2.4}_{-1.6}$
$\ln(10^{10} A_s)$	3.0484	$3.048^{+0.037}_{-0.035}$	$10^9 A_s$	2.108	$2.107^{+0.080}_{-0.073}$	$D_M(0.61)$	2290	$2279^{+49}_{-66}$
$n_s$	0.9701	$0.973^{+0.016}_{-0.014}$	$10^9 A_s e^{-2\tau}$	1.8858	$1.888^{+0.034}_{-0.031}$	$H(2.33)$	236.69	$238.5^{+5.3}_{-3.9}$
$y_{cal}$	1.00131	$1.0006^{+0.0048}_{-0.0049}$	$D_{40}$	1223.1	$1215^{+30}_{-31}$	$D_M(2.33)$	5734	$5699^{+88}_{-140}$
$A_{217}^{CIB}$	49.8	$49^{+10}_{-10}$	$D_{220}$	5731	$5720^{+78}_{-80}$	$f\sigma_8(0.15)$	0.4552	$0.446^{+0.024}_{-0.027}$
$\xi^{tSZ \times CIB}$	0.20	—	$D_{810}$	2543.0	$2538^{+27}_{-27}$	$\sigma_8(0.15)$	0.7509	$0.732^{+0.039}_{-0.046}$
$A_{143}^{tSZ}$	7.10	$4.9^{+3.9}_{-3.9}$	$D_{1420}$	817.5	$814.3^{+9.7}_{-9.8}$	$f\sigma_8(0.38)$	0.4745	$0.464^{+0.024}_{-0.028}$
$A_{100}^{PS}$	256	$267^{+60}_{-60}$	$D_{2000}$	230.48	$228.7^{+3.7}_{-3.9}$	$\sigma_8(0.38)$	0.6660	$0.649^{+0.035}_{-0.042}$
$A_{143}^{PS}$	48.0	$51^{+20}_{-20}$	$n_{s,0.002}$	0.9701	$0.973^{+0.016}_{-0.014}$	$f\sigma_8(0.51)$	0.4736	$0.463^{+0.024}_{-0.028}$
$A_{143 \times 217}^{PS}$	43.9	$44^{+20}_{-20}$	$Y_P$	0.24634	$0.2480^{+0.0046}_{-0.0027}$	$\sigma_8(0.51)$	0.6235	$0.607^{+0.033}_{-0.039}$
$A_{217}^{PS}$	118.0	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.24767	$0.2493^{+0.0046}_{-0.0028}$	$f\sigma_8(0.61)$	0.4689	$0.458^{+0.024}_{-0.028}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.621	$2.66^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	0.5934	$0.578^{+0.032}_{-0.037}$
$A_{100}^{dustTT}$	8.89	$9.1^{+3.7}_{-3.6}$	Age/Gyr	13.728	$13.64^{+0.21}_{-0.33}$	$f\sigma_8(2.33)$	0.2993	$0.292^{+0.016}_{-0.019}$
$A_{143}^{dustTT}$	10.79	$10.8^{+3.5}_{-3.5}$	$z_*$	1090.05	$1090.29^{+0.82}_{-0.76}$	$\sigma_8(2.33)$	0.3088	$0.301^{+0.017}_{-0.020}$
$A_{143 \times 217}^{dustTT}$	19.2	$18.4^{+6.5}_{-6.5}$	$r_*$	144.14	$143.1^{+2.2}_{-3.3}$	$f_{2000}^{143}$	30.6	$33^{+6}_{-6}$
$A_{217}^{dustTT}$	94.2	$93^{+10}_{-10}$	$100\theta_*$	1.04108	$1.0408^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	33.32	$35^{+4}_{-4}$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	13.845	$13.75^{+0.21}_{-0.31}$	$f_{2000}^{217}$	107.92	$109.1^{+4.1}_{-4.0}$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.86	$1060.2^{+1.4}_{-1.3}$	$\chi_{small}^2$	396.28	$397.2 (\nu: 2.0)$
$H_0$	68.18	$68.5^{+2.3}_{-1.8}$	$r_{drag}$	146.82	$145.8^{+2.3}_{-3.4}$	$\chi_{lowl}^2$	22.61	$22.3 (\nu: 0.6)$
$\Omega_\Lambda$	0.6927	$0.690^{+0.015}_{-0.015}$	$k_D$	0.14084	$0.1416^{+0.0026}_{-0.0019}$	$\chi_{plik}^2$	760.1	$775.2 (\nu: 17.7)$
$\Omega_m$	0.3073	$0.310^{+0.015}_{-0.015}$	$100\theta_D$	0.16112	$0.16141^{+0.00099}_{-0.00085}$	$\chi_{6DF}^2$	0.006	$0.063 (\nu: 0.0)$
$\Omega_m h^2$	0.1429	$0.1451^{+0.0066}_{-0.0050}$	$z_{eq}$	3366	$3321^{+98}_{-140}$	$\chi_{MGS}^2$	1.47	$1.36 (\nu: 0.2)$
$\Omega_\nu h^2$	0.00065	$0.0025^{+0.0059}_{-0.0022}$	$k_{eq}$	0.010323	$0.01029^{+0.00037}_{-0.00045}$	$\chi_{DR12BAO}^2$	3.79	$4.9 (\nu: 1.5)$
$\Omega_m h^3$	0.0974	$0.0994^{+0.0071}_{-0.0043}$	$100\theta_{eq}$	0.8197	$0.829^{+0.030}_{-0.020}$	$\chi_{prior}^2$	1.7	$7.4 (\nu: 6.9)$
$\sigma_8$	0.8121	$0.792^{+0.042}_{-0.050}$	$100\theta_{s,eq}$	0.4528	$0.458^{+0.016}_{-0.010}$	$\chi_{BAO}^2$	5.27	$6.3 (\nu: 1.1)$
$S_8$	0.8220	$0.804^{+0.044}_{-0.050}$	$H(0.15)$	73.44	$73.8^{+2.3}_{-1.7}$	$\chi_{CMB}^2$	1179.0	$1194.7 (\nu: 17.0)$

Best-fit  $\chi_{eff}^2 = 1185.94$ ;  $\Delta\chi_{eff}^2 = 0.20$ ;  $\bar{\chi}_{eff}^2 = 1208.40$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.37$ ;  $R - 1 = 0.03028$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.47 ( $\Delta$  0.19) DR12BAO: 3.79 ( $\Delta$  -0.40) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.28 ( $\Delta$  0.39) commander\_dx12\_v3\_2\_29: 22.61 ( $\Delta$  -0.22) plik\_rd12\_HM\_v22\_TT: 760.13 ( $\Delta$  0.03)

## 8.10 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022246	$0.02236^{+0.00044}_{-0.00041}$	$\sigma_8 \Omega_m^{0.5}$	0.4472	$0.440^{+0.024}_{-0.027}$	$D_M(0.15)$	639.5	$632^{+16}_{-20}$
$\Omega_c h^2$	0.1189	$0.1204^{+0.0087}_{-0.0091}$	$\sigma_8 \Omega_m^{0.25}$	0.6002	$0.591^{+0.030}_{-0.035}$	$H(0.38)$	83.12	$84.1^{+2.3}_{-1.7}$
$100\theta_{MC}$	1.04093	$1.04074^{+0.00094}_{-0.0010}$	$\sigma_8/h^{0.5}$	0.9780	$0.957^{+0.043}_{-0.053}$	$D_M(0.38)$	1525.9	$1509^{+35}_{-45}$
$\tau$	0.0525	$0.055^{+0.016}_{-0.016}$	$r_{drag} h$	99.98	$99.9^{+1.9}_{-1.8}$	$H(0.51)$	89.81	$90.8^{+2.4}_{-1.6}$
$m_{\nu, sterile}^{eff} [eV]$	0.000	$< 0.623$	$\langle d^2 \rangle^{1/2}$	2.418	$2.409^{+0.057}_{-0.059}$	$D_M(0.51)$	1977	$1955^{+43}_{-57}$
$N_{eff}$	3.062	$< 3.60$	$z_{re}$	7.51	$7.8^{+1.6}_{-1.6}$	$H(0.61)$	95.40	$96.5^{+2.4}_{-1.6}$
$\ln(10^{10} A_s)$	3.0364	$3.048^{+0.038}_{-0.035}$	$10^9 A_s$	2.083	$2.108^{+0.080}_{-0.073}$	$D_M(0.61)$	2301	$2275^{+49}_{-65}$
$n_s$	0.9679	$0.974^{+0.015}_{-0.014}$	$10^9 A_s e^{-2\tau}$	1.8754	$1.888^{+0.035}_{-0.031}$	$H(2.33)$	235.79	$238.5^{+5.4}_{-4.0}$
$y_{cal}$	1.00006	$1.0006^{+0.0048}_{-0.0049}$	$D_{40}$	1220.8	$1214^{+29}_{-30}$	$D_M(2.33)$	5759	$5694^{+92}_{-140}$
$A_{217}^{CIB}$	50.4	$49^{+10}_{-10}$	$D_{220}$	5713	$5721^{+78}_{-80}$	$f\sigma_8(0.15)$	0.4521	$0.445^{+0.023}_{-0.027}$
$\xi^{tSZ \times CIB}$	0.12	—	$D_{810}$	2534.2	$2538^{+27}_{-27}$	$\sigma_8(0.15)$	0.7445	$0.733^{+0.038}_{-0.045}$
$A_{143}^{tSZ}$	7.14	$4.9^{+3.9}_{-3.9}$	$D_{1420}$	815.0	$814.3^{+9.7}_{-9.8}$	$f\sigma_8(0.38)$	0.4710	$0.464^{+0.024}_{-0.028}$
$A_{100}^{PS}$	256	$267^{+60}_{-60}$	$D_{2000}$	229.83	$228.7^{+3.7}_{-4.0}$	$\sigma_8(0.38)$	0.6603	$0.650^{+0.034}_{-0.041}$
$A_{143}^{PS}$	46.1	$51^{+20}_{-20}$	$n_{s,0.002}$	0.9679	$0.974^{+0.015}_{-0.014}$	$f\sigma_8(0.51)$	0.4699	$0.463^{+0.023}_{-0.028}$
$A_{143 \times 217}^{PS}$	41.3	$44^{+20}_{-20}$	$Y_P$	0.24556	$0.2481^{+0.0046}_{-0.0029}$	$\sigma_8(0.51)$	0.6180	$0.609^{+0.032}_{-0.038}$
$A_{217}^{PS}$	116.1	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.24689	$0.2494^{+0.0047}_{-0.0029}$	$f\sigma_8(0.61)$	0.4652	$0.459^{+0.023}_{-0.028}$
$A^{kSZ}$	0.1	—	$10^5 D/H$	2.615	$2.66^{+0.12}_{-0.10}$	$\sigma_8(0.61)$	0.5882	$0.579^{+0.031}_{-0.037}$
$A_{100}^{dustTT}$	8.88	$9.1^{+3.7}_{-3.6}$	Age/Gyr	13.788	$13.63^{+0.22}_{-0.33}$	$f\sigma_8(2.33)$	0.2967	$0.293^{+0.016}_{-0.019}$
$A_{143}^{dustTT}$	10.81	$10.8^{+3.5}_{-3.5}$	$z_*$	1090.00	$1090.28^{+0.83}_{-0.76}$	$\sigma_8(2.33)$	0.3060	$0.302^{+0.017}_{-0.020}$
$A_{143 \times 217}^{dustTT}$	19.1	$18.4^{+6.5}_{-6.5}$	$r_*$	144.72	$143.1^{+2.3}_{-3.3}$	$\chi_{small}^2$	396	312 ( $\nu$ : 12353.2)
$A_{217}^{dustTT}$	93.9	$93^{+10}_{-10}$	$100\theta_*$	1.04112	$1.0408^{+0.0011}_{-0.0012}$	$\chi_{lowl}^2$	23	107 ( $\nu$ : 12350.7)
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	13.900	$13.74^{+0.21}_{-0.31}$	$\chi_{plik}^2$	760.5	775.3 ( $\nu$ : 17.6)
$c_{217}$	0.99829	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.59	$1060.2^{+1.4}_{-1.3}$	$\chi_{JLA}^2$	1034.92	1035.04 ( $\nu$ : 0.1)
$H_0$	67.81	$68.6^{+2.3}_{-1.8}$	$r_{drag}$	147.43	$145.7^{+2.4}_{-3.4}$	$\chi_{6DF}^2$	0.01	0.36 ( $\nu$ : 0.2)
$\Omega_\Lambda$	0.6916	$0.691^{+0.014}_{-0.015}$	$k_D$	0.14035	$0.1416^{+0.0026}_{-0.0020}$	$\chi_{MGS}^2$	1.41	1.13 ( $\nu$ : 0.3)
$\Omega_m$	0.3084	$0.309^{+0.015}_{-0.014}$	$100\theta_D$	0.16103	$0.16142^{+0.00099}_{-0.00086}$	$\chi_{DR12BAO}^2$	3.91	4.6 ( $\nu$ : 1.1)
$\Omega_m h^2$	0.1418	$0.1451^{+0.0066}_{-0.0051}$	$z_{eq}$	3367	$3320^{+94}_{-120}$	$\chi_{prior}^2$	1.5	7.4 ( $\nu$ : 6.9)
$\Omega_\nu h^2$	0.00065	$0.0024^{+0.0060}_{-0.0021}$	$k_{eq}$	0.010286	$0.01029^{+0.00037}_{-0.00042}$	$\chi_{BAO}^2$	5.33	6.1 ( $\nu$ : 0.7)
$\Omega_m h^3$	0.0962	$0.0996^{+0.0071}_{-0.0045}$	$100\theta_{eq}$	0.8194	$0.829^{+0.027}_{-0.019}$	$\chi_{CMB}^2$	1179.0	1194.7 ( $\nu$ : 16.8)
$\sigma_8$	0.8053	$0.793^{+0.041}_{-0.049}$	$100\theta_{s,eq}$	0.4527	$0.458^{+0.014}_{-0.0098}$			
$S_8$	0.8166	$0.804^{+0.043}_{-0.049}$	$H(0.15)$	73.06	$73.9^{+2.3}_{-1.8}$			

Best-fit  $\chi_{eff}^2 = 2220.73$ ;  $\bar{\chi}_{eff}^2 = 2243.31$ ;  $R - 1 = 0.02477$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.91 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12\_v3.2.29: 22.70 plik\_rd12\_HM\_v22\_TT: 760.48  
SN - JLA Pantheon18: 1034.92

### 8.11 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02235^{+0.00044}_{-0.00041}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.441^{+0.024}_{-0.027}$	$D_{\text{M}}(0.15)$	$633^{+16}_{-20}$
$\Omega_{\text{c}}h^2$	$0.1203^{+0.0080}_{-0.010}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591^{+0.031}_{-0.036}$	$H(0.38)$	$84.0^{+2.3}_{-1.6}$
$100\theta_{\text{MC}}$	$1.04074^{+0.00094}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.958^{+0.044}_{-0.055}$	$D_{\text{M}}(0.38)$	$1511^{+35}_{-46}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$r_{\text{drag}}h$	$99.8^{+2.0}_{-1.9}$	$H(0.51)$	$90.8^{+2.4}_{-1.6}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.694$	$\langle d^2 \rangle^{1/2}$	$2.414^{+0.056}_{-0.058}$	$D_{\text{M}}(0.51)$	$1957^{+43}_{-58}$
$N_{\text{eff}}$	$< 3.59$	$z_{\text{re}}$	$< 9.15$	$H(0.61)$	$96.4^{+2.4}_{-1.6}$
$\ln(10^{10}A_{\text{s}})$	$3.050^{+0.033}_{-0.031}$	$10^9A_{\text{s}}$	$2.111^{+0.070}_{-0.065}$	$D_{\text{M}}(0.61)$	$2278^{+49}_{-66}$
$n_{\text{s}}$	$0.973^{+0.016}_{-0.014}$	$10^9A_{\text{s}}e^{-2\tau}$	$1.888^{+0.035}_{-0.031}$	$H(2.33)$	$238.5^{+5.3}_{-3.9}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0049}$	$D_{40}$	$1215^{+30}_{-31}$	$D_{\text{M}}(2.33)$	$5698^{+89}_{-140}$
$A_{217}^{\text{CIB}}$	$49^{+10}_{-10}$	$D_{220}$	$5720^{+78}_{-80}$	$f\sigma_8(0.15)$	$0.446^{+0.024}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2538^{+27}_{-27}$	$\sigma_8(0.15)$	$0.733^{+0.039}_{-0.046}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{1420}$	$814.3^{+9.7}_{-9.8}$	$f\sigma_8(0.38)$	$0.464^{+0.024}_{-0.028}$
$A_{100}^{\text{PS}}$	$267^{+60}_{-60}$	$D_{2000}$	$228.7^{+3.7}_{-3.9}$	$\sigma_8(0.38)$	$0.650^{+0.035}_{-0.042}$
$A_{143}^{\text{PS}}$	$51^{+20}_{-20}$	$n_{\text{s}, 0.002}$	$0.973^{+0.016}_{-0.014}$	$f\sigma_8(0.51)$	$0.463^{+0.024}_{-0.028}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}$	$0.2480^{+0.0046}_{-0.0028}$	$\sigma_8(0.51)$	$0.608^{+0.033}_{-0.039}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2493^{+0.0046}_{-0.0028}$	$f\sigma_8(0.61)$	$0.459^{+0.023}_{-0.028}$
$A^{\text{kSZ}}$	—	$10^5\text{D}/\text{H}$	$2.66^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	$0.579^{+0.031}_{-0.037}$
$A_{100}^{\text{dustTT}}$	$9.1^{+3.7}_{-3.6}$	$\text{Age}/\text{Gyr}$	$13.64^{+0.21}_{-0.33}$	$f\sigma_8(2.33)$	$0.292^{+0.016}_{-0.019}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$z_*$	$1090.29^{+0.82}_{-0.77}$	$\sigma_8(2.33)$	$0.301^{+0.017}_{-0.020}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.5}_{-6.5}$	$r_*$	$143.1^{+2.2}_{-3.3}$	$f_{2000}^{143}$	$33^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.0408^{+0.0011}_{-0.0012}$	$f_{2000}^{143 \times 217}$	$35^{+4}_{-4}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.75^{+0.21}_{-0.31}$	$f_{2000}^{217}$	$109.1^{+4.1}_{-4.1}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.2^{+1.4}_{-1.3}$	$\chi_{\text{small}}^2$	$397.2 (\nu: 2.0)$
$H_0$	$68.5^{+2.3}_{-1.8}$	$r_{\text{drag}}$	$145.7^{+2.3}_{-3.4}$	$\chi_{\text{lowl}}^2$	$22.3 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.015}$	$k_{\text{D}}$	$0.1416^{+0.0026}_{-0.0019}$	$\chi_{\text{plik}}^2$	$775.0 (\nu: 17.6)$
$\Omega_{\text{m}}$	$0.310^{+0.015}_{-0.015}$	$100\theta_{\text{D}}$	$0.16141^{+0.00099}_{-0.00085}$	$\chi_{6\text{DF}}^2$	$0.062 (\nu: 0.0)$
$\Omega_{\text{m}}h^2$	$0.1452^{+0.0066}_{-0.0051}$	$z_{\text{eq}}$	$3320^{+98}_{-140}$	$\chi_{\text{MGS}}^2$	$1.37 (\nu: 0.2)$
$\Omega_{\nu}h^2$	$0.0025^{+0.0060}_{-0.0022}$	$k_{\text{eq}}$	$0.01029^{+0.00037}_{-0.00045}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.5)$
$\Omega_{\text{m}}h^3$	$0.0994^{+0.0071}_{-0.0043}$	$100\theta_{\text{eq}}$	$0.829^{+0.030}_{-0.020}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 6.9)$
$\sigma_8$	$0.793^{+0.042}_{-0.050}$	$100\theta_{\text{s,eq}}$	$0.458^{+0.016}_{-0.010}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 1.0)$
$S_8$	$0.805^{+0.044}_{-0.050}$	$H(0.15)$	$73.8^{+2.3}_{-1.8}$	$\chi_{\text{CMB}}^2$	$1194.5 (\nu: 16.6)$

$$\bar{\chi}_{\text{eff}}^2 = 1208.20; \Delta\bar{\chi}_{\text{eff}}^2 = 2.44; R - 1 = 0.02851$$

## 8.12 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02237^{+0.00044}_{-0.00041}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591^{+0.030}_{-0.035}$	$D_{\text{M}}(0.38)$	$1509^{+35}_{-45}$
$\Omega_{\text{c}}h^2$	$0.1204^{+0.0087}_{-0.0091}$	$\sigma_8/h^{0.5}$	$0.958^{+0.043}_{-0.053}$	$H(0.51)$	$90.9^{+2.4}_{-1.6}$
$100\theta_{\text{MC}}$	$1.04074^{+0.00094}_{-0.0010}$	$r_{\text{drag}}h$	$99.9^{+1.9}_{-1.8}$	$D_{\text{M}}(0.51)$	$1955^{+44}_{-57}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.411^{+0.055}_{-0.057}$	$H(0.61)$	$96.5^{+2.4}_{-1.6}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.626$	$z_{\text{re}}$	$< 9.17$	$D_{\text{M}}(0.61)$	$2275^{+49}_{-65}$
$N_{\text{eff}}$	$< 3.60$	$10^9 A_{\text{s}}$	$2.112^{+0.071}_{-0.066}$	$H(2.33)$	$238.5^{+5.4}_{-4.0}$
$\ln(10^{10} A_{\text{s}})$	$3.050^{+0.033}_{-0.031}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.888^{+0.035}_{-0.031}$	$D_{\text{M}}(2.33)$	$5693^{+92}_{-140}$
$n_{\text{s}}$	$0.974^{+0.015}_{-0.014}$	$D_{40}$	$1214^{+29}_{-30}$	$f\sigma_8(0.15)$	$0.446^{+0.023}_{-0.027}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0049}$	$D_{220}$	$5721^{+78}_{-80}$	$\sigma_8(0.15)$	$0.734^{+0.038}_{-0.045}$
$A_{217}^{\text{CIB}}$	$49^{+10}_{-10}$	$D_{810}$	$2538^{+27}_{-27}$	$f\sigma_8(0.38)$	$0.465^{+0.024}_{-0.028}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.3^{+9.7}_{-9.8}$	$\sigma_8(0.38)$	$0.651^{+0.034}_{-0.040}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	$228.7^{+3.7}_{-4.0}$	$f\sigma_8(0.51)$	$0.464^{+0.023}_{-0.028}$
$A_{100}^{\text{PS}}$	$267^{+60}_{-60}$	$n_{\text{s}, 0.002}$	$0.974^{+0.015}_{-0.014}$	$\sigma_8(0.51)$	$0.609^{+0.032}_{-0.038}$
$A_{143}^{\text{PS}}$	$51^{+20}_{-20}$	$Y_{\text{P}}$	$0.2481^{+0.0047}_{-0.0029}$	$f\sigma_8(0.61)$	$0.459^{+0.023}_{-0.028}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2494^{+0.0047}_{-0.0029}$	$\sigma_8(0.61)$	$0.580^{+0.031}_{-0.036}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.66^{+0.12}_{-0.10}$	$f\sigma_8(2.33)$	$0.293^{+0.016}_{-0.019}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.63^{+0.22}_{-0.33}$	$\sigma_8(2.33)$	$0.302^{+0.016}_{-0.019}$
$A_{100}^{\text{dustTT}}$	$9.1^{+3.7}_{-3.6}$	$z_*$	$1090.28^{+0.83}_{-0.76}$	$f_{2000}^{143}$	$33^{+6}_{-6}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$r_*$	$143.0^{+2.3}_{-3.3}$	$f_{2000}^{143 \times 217}$	$35^{+5}_{-4}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.5}_{-6.5}$	$100\theta_*$	$1.0408^{+0.0011}_{-0.0012}$	$f_{2000}^{217}$	$109.1^{+4.2}_{-4.1}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.74^{+0.21}_{-0.31}$	$\chi_{\text{small}}^2$	$312 (\nu: 12352.2)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.2^{+1.5}_{-1.2}$	$\chi_{\text{lowl}}^2$	$107 (\nu: 12349.9)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$145.7^{+2.4}_{-3.4}$	$\chi_{\text{plik}}^2$	$775.2 (\nu: 17.4)$
$H_0$	$68.6^{+2.3}_{-1.8}$	$k_{\text{D}}$	$0.1416^{+0.0026}_{-0.0020}$	$\chi_{\text{JLA}}^2$	$1035.03 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.692^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	$0.16142^{+0.00099}_{-0.00087}$	$\chi_{6\text{DF}}^2$	$0.36 (\nu: 0.2)$
$\Omega_{\text{m}}$	$0.308^{+0.015}_{-0.014}$	$z_{\text{eq}}$	$3320^{+94}_{-120}$	$\chi_{\text{MGS}}^2$	$1.13 (\nu: 0.3)$
$\Omega_{\text{m}}h^2$	$0.1452^{+0.0067}_{-0.0051}$	$k_{\text{eq}}$	$0.01029^{+0.00037}_{-0.00042}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.1)$
$\Omega_{\nu}h^2$	$0.0024^{+0.0060}_{-0.0021}$	$100\theta_{\text{eq}}$	$0.829^{+0.027}_{-0.019}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 6.9)$
$\Omega_{\text{m}}h^3$	$0.0996^{+0.0071}_{-0.0045}$	$100\theta_{\text{s,eq}}$	$0.458^{+0.014}_{-0.0098}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8$	$0.794^{+0.041}_{-0.048}$	$H(0.15)$	$73.9^{+2.3}_{-1.8}$	$\chi_{\text{CMB}}^2$	$1194.6 (\nu: 16.4)$
$S_8$	$0.805^{+0.043}_{-0.049}$	$D_{\text{M}}(0.15)$	$632^{+16}_{-20}$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.441^{+0.024}_{-0.027}$	$H(0.38)$	$84.1^{+2.3}_{-1.7}$		

$$\bar{\chi}_{\text{eff}}^2 = 2243.12; R - 1 = 0.02260$$

### 8.13 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022412	$0.02250^{+0.00031}_{-0.00028}$	$\Omega_\nu h^2$	0.00386	$0.0027^{+0.0050}_{-0.0025}$	$100\theta_{s,eq}$	0.4595	$0.456^{+0.015}_{-0.0093}$
$\Omega_c h^2$	0.1161	$0.1187^{+0.0055}_{-0.0072}$	$\Omega_m h^3$	0.09632	$0.0977^{+0.0036}_{-0.0020}$	$H(0.15)$	72.95	$73.2^{+1.3}_{-1.1}$
$100\theta_{MC}$	1.04101	$1.04091^{+0.00060}_{-0.00065}$	$\sigma_8$	0.8085	$0.792^{+0.034}_{-0.041}$	$D_M(0.15)$	640.7	$639^{+10}_{-12}$
$\tau$	0.0546	$0.056^{+0.016}_{-0.014}$	$S_8$	0.8229	$0.808^{+0.037}_{-0.043}$	$H(0.38)$	83.06	$83.4^{+1.3}_{-0.94}$
$m_{\nu, sterile}^{eff} [eV]$	0.302	$< 0.649$	$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.443^{+0.020}_{-0.023}$	$D_M(0.38)$	1528.1	$1523^{+22}_{-27}$
$N_{eff}$	3.047	$< 3.30$	$\sigma_8 \Omega_m^{0.25}$	0.6037	$0.592^{+0.026}_{-0.030}$	$H(0.51)$	89.77	$90.2^{+1.3}_{-0.86}$
$\ln(10^{10} A_s)$	3.0434	$3.049^{+0.034}_{-0.032}$	$\sigma_8/h^{0.5}$	0.9828	$0.961^{+0.039}_{-0.048}$	$D_M(0.51)$	1979.7	$1972^{+27}_{-33}$
$n_s$	0.9678	$0.969^{+0.010}_{-0.0097}$	$r_{drag} h$	99.64	$99.4^{+1.6}_{-1.6}$	$H(0.61)$	95.39	$95.8^{+1.3}_{-0.81}$
$y_{cal}$	1.00074	$1.0008^{+0.0048}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.4324	$2.430^{+0.049}_{-0.050}$	$D_M(0.61)$	2303.7	$2295^{+29}_{-38}$
$A_{217}^{CIB}$	47.9	$47^{+10}_{-10}$	$z_{re}$	7.69	$7.9^{+1.6}_{-1.5}$	$H(2.33)$	236.13	$237.4^{+2.9}_{-2.2}$
$\xi^{tSZ \times CIB}$	0.33	—	$10^9 A_s$	2.098	$2.110^{+0.073}_{-0.066}$	$D_M(2.33)$	5759	$5733^{+44}_{-74}$
$A_{143}^{tSZ}$	7.17	$5.4^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8806	$1.885^{+0.025}_{-0.023}$	$f\sigma_8(0.15)$	0.4554	$0.447^{+0.020}_{-0.023}$
$A_{100}^{PS}$	251	$260^{+60}_{-50}$	$D_{40}$	1225.0	$1225^{+25}_{-26}$	$\sigma_8(0.15)$	0.7472	$0.732^{+0.032}_{-0.038}$
$A_{143}^{PS}$	45.9	$47^{+20}_{-20}$	$D_{220}$	5732	$5738^{+77}_{-75}$	$f\sigma_8(0.38)$	0.4738	$0.465^{+0.020}_{-0.024}$
$A_{143 \times 217}^{PS}$	44.5	$43^{+20}_{-20}$	$D_{810}$	2541.0	$2541^{+26}_{-27}$	$\sigma_8(0.38)$	0.6624	$0.648^{+0.029}_{-0.034}$
$A_{217}^{PS}$	118.3	$115^{+20}_{-20}$	$D_{1420}$	818.6	$817.3^{+9.4}_{-9.2}$	$f\sigma_8(0.51)$	0.4725	$0.463^{+0.020}_{-0.024}$
$A^{kSZ}$	0.00	$< 8.26$	$D_{2000}$	231.47	$230.6^{+3.2}_{-3.1}$	$\sigma_8(0.51)$	0.6199	$0.607^{+0.027}_{-0.032}$
$A_{100}^{dustTT}$	8.91	$9.0^{+3.6}_{-3.5}$	$n_{s,0.002}$	0.9678	$0.969^{+0.010}_{-0.0097}$	$f\sigma_8(0.61)$	0.4676	$0.459^{+0.020}_{-0.023}$
$A_{143}^{dustTT}$	10.97	$11.0^{+3.5}_{-3.5}$	$Y_P$	0.24543	$0.2466^{+0.0023}_{-0.0012}$	$\sigma_8(0.61)$	0.5899	$0.577^{+0.026}_{-0.031}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.7^{+6.4}_{-6.4}$	$Y_P^{BBN}$	0.24675	$0.2479^{+0.0024}_{-0.0012}$	$f\sigma_8(2.33)$	0.2974	$0.291^{+0.013}_{-0.015}$
$A_{217}^{dustTT}$	94.6	$94^{+10}_{-10}$	$10^5 D/H$	2.578	$2.591^{+0.061}_{-0.056}$	$\sigma_8(2.33)$	0.3067	$0.300^{+0.014}_{-0.016}$
$A_{100}^{dustTE}$	0.112	$0.114^{+0.075}_{-0.073}$	Age/Gyr	13.787	$13.73^{+0.10}_{-0.17}$	$f_{2000}^{143}$	28.8	$30^{+6}_{-5}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.058}_{-0.058}$	$z_*$	1089.804	$1089.89^{+0.51}_{-0.46}$	$f_{2000}^{143 \times 217}$	31.88	$33^{+4}_{-4}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.17}$	$r_*$	144.59	$143.8^{+1.1}_{-1.7}$	$f_{2000}^{217}$	106.57	$107.4^{+3.5}_{-3.5}$
$A_{143}^{dustTE}$	0.223	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	1.04119	$1.04104^{+0.00065}_{-0.00070}$	$\chi_{small}^2$	396.05	$397.4 (\nu: 2.5)$
$A_{143 \times 217}^{dustTE}$	0.663	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/Gpc$	13.887	$13.82^{+0.11}_{-0.16}$	$\chi_{lowl}^2$	22.87	$22.90 (\nu: 0.4)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.53}_{-0.53}$	$z_{drag}$	1059.97	$1060.34^{+0.86}_{-0.78}$	$\chi_{plik}^2$	2345.2	$2362.0 (\nu: 19.2)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.24	$146.4^{+1.2}_{-1.8}$	$\chi_{6DF}^2$	0.030	$0.077 (\nu: 0.0)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14074	$0.1414^{+0.0014}_{-0.0011}$	$\chi_{MGS}^2$	1.22	$1.15 (\nu: 0.1)$
$H_0$	67.67	$67.9^{+1.4}_{-1.2}$	$100\theta_D$	0.160740	$0.16084^{+0.00050}_{-0.00044}$	$\chi_{DR12BAO}^2$	4.44	$5.4 (\nu: 1.6)$
$\Omega_\Lambda$	0.6892	$0.688^{+0.013}_{-0.013}$	$z_{eq}$	3309	$3337^{+87}_{-130}$	$\chi_{prior}^2$	1.8	$11.7 (\nu: 10.5)$
$\Omega_m$	0.3108	$0.312^{+0.013}_{-0.013}$	$k_{eq}$	0.010157	$0.01027^{+0.00028}_{-0.00036}$	$\chi_{BAO}^2$	5.68	$6.6 (\nu: 1.1)$
$\Omega_m h^2$	0.14233	$0.1440^{+0.0037}_{-0.0031}$	$100\theta_{eq}$	0.8326	$0.827^{+0.028}_{-0.018}$	$\chi_{CMB}^2$	2764.1	$2782.3 (\nu: 18.5)$

Best-fit  $\chi_{eff}^2 = 2771.63$ ;  $\Delta\chi_{eff}^2 = -0.28$ ;  $\bar{\chi}_{eff}^2 = 2800.57$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.66$ ;  $R - 1 = 0.01553$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.44 ( $\Delta$  0.02) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  -0.15) commander\_dx12\_v3\_2\_29: 22.87 ( $\Delta$  0.00) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.20 ( $\Delta$  -0.30)

# 8.14 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022440	$0.02251^{+0.00031}_{-0.00028}$	$\Omega_m h^3$	0.09635	$0.0978^{+0.0038}_{-0.0020}$	$D_M(0.15)$	640.0	$638^{+10}_{-13}$
$\Omega_c h^2$	0.1189	$0.1187^{+0.0057}_{-0.0074}$	$\sigma_8$	0.8111	$0.792^{+0.034}_{-0.041}$	$H(0.38)$	83.11	$83.5^{+1.3}_{-0.94}$
$100\theta_{MC}$	1.04102	$1.04092^{+0.00061}_{-0.00065}$	$S_8$	0.8243	$0.807^{+0.037}_{-0.042}$	$D_M(0.38)$	1526.8	$1521^{+22}_{-28}$
$\tau$	0.0585	$0.057^{+0.016}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.442^{+0.020}_{-0.023}$	$H(0.51)$	89.81	$90.2^{+1.3}_{-0.87}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.025	$< 0.644$	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.592^{+0.025}_{-0.030}$	$D_M(0.51)$	1978.0	$1970^{+27}_{-35}$
$N_{\text{eff}}$	3.046	$< 3.31$	$\sigma_8/h^{0.5}$	0.9854	$0.961^{+0.038}_{-0.047}$	$H(0.61)$	95.42	$95.9^{+1.4}_{-0.82}$
$\ln(10^{10} A_s)$	3.0505	$3.049^{+0.035}_{-0.032}$	$r_{\text{drag}} h$	99.76	$99.6^{+1.6}_{-1.6}$	$D_M(0.61)$	2301.9	$2293^{+30}_{-39}$
$n_s$	0.9672	$0.969^{+0.010}_{-0.0096}$	$\langle d^2 \rangle^{1/2}$	2.4400	$2.428^{+0.049}_{-0.049}$	$H(2.33)$	236.07	$237.4^{+3.1}_{-2.3}$
$y_{\text{cal}}$	1.00052	$1.0007^{+0.0049}_{-0.0050}$	$z_{\text{re}}$	8.07	$7.9^{+1.6}_{-1.5}$	$D_M(2.33)$	5757	$5730^{+45}_{-78}$
$A_{217}^{\text{CIB}}$	48.2	$47^{+10}_{-10}$	$10^9 A_s$	2.113	$2.110^{+0.074}_{-0.066}$	$f\sigma_8(0.15)$	0.4562	$0.447^{+0.020}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$10^9 A_s e^{-2\tau}$	1.8796	$1.884^{+0.026}_{-0.024}$	$\sigma_8(0.15)$	0.7497	$0.732^{+0.032}_{-0.038}$
$A_{143}^{\text{tSZ}}$	7.23	$5.4^{+3.7}_{-3.9}$	$D_{40}$	1227.8	$1224^{+25}_{-26}$	$f\sigma_8(0.38)$	0.4749	$0.465^{+0.020}_{-0.024}$
$A_{100}^{\text{PS}}$	251	$260^{+60}_{-60}$	$D_{220}$	5738	$5739^{+76}_{-75}$	$\sigma_8(0.38)$	0.6647	$0.649^{+0.029}_{-0.034}$
$A_{143}^{\text{PS}}$	46.4	$47^{+20}_{-20}$	$D_{810}$	2539.4	$2540^{+26}_{-27}$	$f\sigma_8(0.51)$	0.4737	$0.463^{+0.020}_{-0.024}$
$A_{143 \times 217}^{\text{PS}}$	44.9	$43^{+20}_{-20}$	$D_{1420}$	817.8	$817.3^{+9.4}_{-9.3}$	$\sigma_8(0.51)$	0.6221	$0.607^{+0.027}_{-0.032}$
$A_{217}^{\text{PS}}$	118.0	$115^{+20}_{-20}$	$D_{2000}$	231.26	$230.6^{+3.2}_{-3.2}$	$f\sigma_8(0.61)$	0.4689	$0.458^{+0.020}_{-0.023}$
$A^{\text{kSZ}}$	0.00	$< 8.31$	$n_{s,0.002}$	0.9672	$0.969^{+0.010}_{-0.0096}$	$\sigma_8(0.61)$	0.5920	$0.578^{+0.026}_{-0.031}$
$A_{100}^{\text{dustTT}}$	8.79	$9.0^{+3.6}_{-3.5}$	$Y_P$	0.24542	$0.2466^{+0.0025}_{-0.0013}$	$f\sigma_8(2.33)$	0.2986	$0.292^{+0.013}_{-0.016}$
$A_{143}^{\text{dustTT}}$	11.04	$11.0^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	0.24675	$0.2479^{+0.0025}_{-0.0013}$	$\sigma_8(2.33)$	0.3079	$0.301^{+0.014}_{-0.016}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.6^{+6.5}_{-6.4}$	$10^5 D/H$	2.573	$2.590^{+0.062}_{-0.057}$	$f_{2000}^{143}$	29.0	$30^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	94.7	$94^{+10}_{-10}$	Age/Gyr	13.784	$13.72^{+0.10}_{-0.19}$	$f_{2000}^{143 \times 217}$	32.04	$33^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.113^{+0.074}_{-0.073}$	$z_*$	1089.756	$1089.87^{+0.52}_{-0.46}$	$f_{2000}^{217}$	106.65	$107.4^{+3.6}_{-3.6}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.059}_{-0.057}$	$r_*$	144.60	$143.8^{+1.2}_{-1.9}$	$\chi_{\text{simall}}^2$	397	291 ( $\nu$ : 14275.5)
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04120	$1.04105^{+0.00067}_{-0.00071}$	$\chi_{\text{lowl}}^2$	23	129 ( $\nu$ : 14277.5)
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.888	$13.82^{+0.11}_{-0.17}$	$\chi_{\text{plik}}^2$	2344.6	2362.3 ( $\nu$ : 19.5)
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.05	$1060.36^{+0.89}_{-0.80}$	$\chi_{\text{JLA}}^2$	1034.98	1035.12 ( $\nu$ : 0.1)
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	147.24	$146.4^{+1.2}_{-1.9}$	$\chi_{6\text{DF}}^2$	0.02	0.40 ( $\nu$ : 0.2)
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14076	$0.1414^{+0.0015}_{-0.0011}$	$\chi_{\text{MGS}}^2$	1.28	0.89 ( $\nu$ : 0.2)
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160706	$0.16084^{+0.00052}_{-0.00045}$	$\chi_{\text{DR12BAO}}^2$	4.25	5.0 ( $\nu$ : 1.2)
$H_0$	67.75	$68.0^{+1.4}_{-1.2}$	$z_{\text{eq}}$	3377	$3335^{+84}_{-130}$	$\chi_{\text{prior}}^2$	1.8	11.7 ( $\nu$ : 10.6)
$\Omega_\Lambda$	0.6902	$0.689^{+0.012}_{-0.013}$	$k_{\text{eq}}$	0.010311	$0.01026^{+0.00028}_{-0.00037}$	$\chi_{\text{BAO}}^2$	5.56	6.3 ( $\nu$ : 0.8)
$\Omega_m$	0.3098	$0.311^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	0.8183	$0.827^{+0.028}_{-0.017}$	$\chi_{\text{CMB}}^2$	2764.7	2782.5 ( $\nu$ : 18.6)
$\Omega_m h^2$	0.14222	$0.1438^{+0.0038}_{-0.0031}$	$100\theta_{s,\text{eq}}$	0.4520	$0.457^{+0.015}_{-0.0090}$			
$\Omega_\nu h^2$	0.00091	$0.0027^{+0.0050}_{-0.0024}$	$H(0.15)$	73.02	$73.3^{+1.4}_{-1.1}$			

Best-fit  $\chi_{\text{eff}}^2 = 3806.99$ ;  $\bar{\chi}_{\text{eff}}^2 = 3835.68$ ;  $R - 1 = 0.01641$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.25 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.96 commander\_dx12\_v3\_2\_29: 23.15 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.56 SN - JLA Pantheon18: 1034.98

# 8.15 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02250^{+0.00030}_{-0.00028}$	$\Omega_{\nu} h^2$	$0.0027^{+0.0050}_{-0.0025}$	$100\theta_{\mathrm{s,eq}}$	$0.456^{+0.015}_{-0.0093}$
$\Omega_{\mathrm{c}} h^2$	$0.1187^{+0.0056}_{-0.0073}$	$\Omega_{\mathrm{m}} h^3$	$0.0977^{+0.0036}_{-0.0020}$	$H(0.15)$	$73.2^{+1.3}_{-1.1}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00060}_{-0.00065}$	$\sigma_8$	$0.792^{+0.034}_{-0.041}$	$D_{\mathrm{M}}(0.15)$	$638^{+10}_{-12}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$S_8$	$0.808^{+0.037}_{-0.043}$	$H(0.38)$	$83.4^{+1.3}_{-0.94}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.649$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.020}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1523^{+22}_{-27}$
$N_{\mathrm{eff}}$	$< 3.30$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.592^{+0.025}_{-0.030}$	$H(0.51)$	$90.2^{+1.3}_{-0.86}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.050^{+0.031}_{-0.029}$	$\sigma_8/h^{0.5}$	$0.961^{+0.038}_{-0.048}$	$D_{\mathrm{M}}(0.51)$	$1972^{+27}_{-33}$
$n_{\mathrm{s}}$	$0.969^{+0.010}_{-0.0097}$	$r_{\mathrm{drag}} h$	$99.4^{+1.6}_{-1.6}$	$H(0.61)$	$95.8^{+1.3}_{-0.81}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0048}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.048}_{-0.048}$	$D_{\mathrm{M}}(0.61)$	$2295^{+29}_{-38}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$z_{\mathrm{re}}$	$7.9^{+1.3}_{-1.4}$	$H(2.33)$	$237.4^{+2.9}_{-2.2}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.112^{+0.066}_{-0.061}$	$D_{\mathrm{M}}(2.33)$	$5733^{+44}_{-74}$
$A_{143}^{\mathrm{tSZ}}$	$5.4^{+3.7}_{-3.9}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885^{+0.025}_{-0.023}$	$f\sigma_8(0.15)$	$0.447^{+0.020}_{-0.023}$
$A_{100}^{\mathrm{PS}}$	$260^{+60}_{-50}$	$D_{40}$	$1225^{+25}_{-26}$	$\sigma_8(0.15)$	$0.732^{+0.032}_{-0.038}$
$A_{143}^{\mathrm{PS}}$	$47^{+20}_{-20}$	$D_{220}$	$5738^{+77}_{-76}$	$f\sigma_8(0.38)$	$0.465^{+0.020}_{-0.024}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$D_{810}$	$2541^{+26}_{-27}$	$\sigma_8(0.38)$	$0.649^{+0.028}_{-0.034}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.3^{+9.4}_{-9.2}$	$f\sigma_8(0.51)$	$0.464^{+0.020}_{-0.024}$
$A^{\mathrm{kSZ}}$	$< 8.24$	$D_{2000}$	$230.6^{+3.2}_{-3.2}$	$\sigma_8(0.51)$	$0.607^{+0.027}_{-0.032}$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.6}_{-3.5}$	$n_{\mathrm{s},0.002}$	$0.969^{+0.010}_{-0.0097}$	$f\sigma_8(0.61)$	$0.459^{+0.019}_{-0.023}$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.5}_{-3.5}$	$Y_{\mathrm{P}}$	$0.2466^{+0.0024}_{-0.0012}$	$\sigma_8(0.61)$	$0.578^{+0.026}_{-0.031}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.7^{+6.4}_{-6.4}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2479^{+0.0024}_{-0.0012}$	$f\sigma_8(2.33)$	$0.292^{+0.013}_{-0.016}$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.591^{+0.061}_{-0.056}$	$\sigma_8(2.33)$	$0.300^{+0.014}_{-0.016}$
$A_{100}^{\mathrm{dust}TE}$	$0.114^{+0.075}_{-0.073}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.72^{+0.10}_{-0.18}$	$f_{2000}^{143}$	$30^{+6}_{-5}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135^{+0.058}_{-0.057}$	$z_*$	$1089.89^{+0.51}_{-0.46}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$143.8^{+1.1}_{-1.8}$	$f_{2000}^{217}$	$107.4^{+3.6}_{-3.5}$
$A_{143}^{\mathrm{dust}TE}$	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	$1.04104^{+0.00065}_{-0.00070}$	$\chi_{\mathrm{small}}^2$	$397.4 (\nu: 2.6)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.82^{+0.11}_{-0.16}$	$\chi_{\mathrm{lowl}}^2$	$22.90 (\nu: 0.4)$
$A_{217}^{\mathrm{dust}TE}$	$2.08^{+0.53}_{-0.53}$	$z_{\mathrm{drag}}$	$1060.34^{+0.86}_{-0.79}$	$\chi_{\mathrm{plik}}^2$	$2361.9 (\nu: 19.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$146.4^{+1.2}_{-1.8}$	$\chi_{6\mathrm{DF}}^2$	$0.076 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.1414^{+0.0014}_{-0.0011}$	$\chi_{\mathrm{MGS}}^2$	$1.15 (\nu: 0.1)$
$H_0$	$67.9^{+1.4}_{-1.2}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00051}_{-0.00044}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.688^{+0.013}_{-0.013}$	$z_{\mathrm{eq}}$	$3337^{+87}_{-130}$	$\chi_{\mathrm{prior}}^2$	$11.7 (\nu: 10.6)$
$\Omega_{\mathrm{m}}$	$0.312^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01027^{+0.00028}_{-0.00036}$	$\chi_{\mathrm{BAO}}^2$	$6.6 (\nu: 1.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1440^{+0.0037}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.827^{+0.028}_{-0.018}$	$\chi_{\mathrm{CMB}}^2$	$2782.2 (\nu: 18.4)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2800.45; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 2.74; R - 1 = 0.01583$$



## 8.16 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02251^{+0.00031}_{-0.00028}$	$\Omega_m h^3$	$0.0978^{+0.0038}_{-0.0020}$	$D_M(0.15)$	$638^{+10}_{-13}$
$\Omega_c h^2$	$0.1187^{+0.0057}_{-0.0074}$	$\sigma_8$	$0.793^{+0.034}_{-0.041}$	$H(0.38)$	$83.5^{+1.4}_{-0.95}$
$100\theta_{MC}$	$1.04092^{+0.00061}_{-0.00065}$	$S_8$	$0.807^{+0.036}_{-0.042}$	$D_M(0.38)$	$1521^{+22}_{-28}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.020}_{-0.023}$	$H(0.51)$	$90.2^{+1.4}_{-0.87}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.646$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.025}_{-0.030}$	$D_M(0.51)$	$1970^{+27}_{-35}$
$N_{\text{eff}}$	$< 3.32$	$\sigma_8/h^{0.5}$	$0.961^{+0.038}_{-0.047}$	$H(0.61)$	$95.9^{+1.4}_{-0.82}$
$\ln(10^{10} A_s)$	$3.050^{+0.031}_{-0.029}$	$r_{\text{drag}} h$	$99.6^{+1.6}_{-1.6}$	$D_M(0.61)$	$2292^{+30}_{-39}$
$n_s$	$0.969^{+0.010}_{-0.0096}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.048}_{-0.047}$	$H(2.33)$	$237.4^{+3.1}_{-2.3}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0050}$	$z_{\text{re}}$	$7.9^{+1.3}_{-1.4}$	$D_M(2.33)$	$5730^{+45}_{-79}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.112^{+0.067}_{-0.062}$	$f\sigma_8(0.15)$	$0.447^{+0.020}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.884^{+0.026}_{-0.024}$	$\sigma_8(0.15)$	$0.732^{+0.032}_{-0.038}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-3.9}$	$D_{40}$	$1224^{+25}_{-26}$	$f\sigma_8(0.38)$	$0.465^{+0.020}_{-0.024}$
$A_{100}^{\text{PS}}$	$260^{+60}_{-60}$	$D_{220}$	$5739^{+76}_{-75}$	$\sigma_8(0.38)$	$0.649^{+0.029}_{-0.034}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2540^{+26}_{-27}$	$f\sigma_8(0.51)$	$0.464^{+0.020}_{-0.024}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{1420}$	$817.3^{+9.4}_{-9.3}$	$\sigma_8(0.51)$	$0.608^{+0.027}_{-0.032}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.6^{+3.2}_{-3.2}$	$f\sigma_8(0.61)$	$0.459^{+0.019}_{-0.024}$
$A^{\text{kSZ}}$	$< 8.28$	$n_{s,0.002}$	$0.969^{+0.010}_{-0.0096}$	$\sigma_8(0.61)$	$0.578^{+0.026}_{-0.031}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$Y_P$	$0.2466^{+0.0025}_{-0.0013}$	$f\sigma_8(2.33)$	$0.292^{+0.013}_{-0.016}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.2479^{+0.0025}_{-0.0013}$	$\sigma_8(2.33)$	$0.301^{+0.014}_{-0.016}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$10^5 D/H$	$2.590^{+0.062}_{-0.057}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\text{Age/Gyr}$	$13.72^{+0.11}_{-0.19}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.074}_{-0.073}$	$z_*$	$1089.87^{+0.52}_{-0.46}$	$f_{2000}^{217}$	$107.4^{+3.6}_{-3.6}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.057}$	$r_*$	$143.8^{+1.2}_{-1.9}$	$\chi_{\text{small}}^2$	$291 (\nu: 14232.5)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04104^{+0.00067}_{-0.00071}$	$\chi_{\text{lowl}}^2$	$129 (\nu: 14235.3)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.11}_{-0.17}$	$\chi_{\text{plik}}^2$	$2362.2 (\nu: 19.5)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.37^{+0.89}_{-0.81}$	$\chi_{\text{JLA}}^2$	$1035.12 (\nu: 0.1)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$146.4^{+1.2}_{-1.9}$	$\chi_{\text{6DF}}^2$	$0.40 (\nu: 0.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1414^{+0.0015}_{-0.0011}$	$\chi_{\text{MGS}}^2$	$0.89 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16084^{+0.00053}_{-0.00045}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.2)$
$H_0$	$68.0^{+1.4}_{-1.2}$	$z_{\text{eq}}$	$3334^{+84}_{-130}$	$\chi_{\text{prior}}^2$	$11.7 (\nu: 10.6)$
$\Omega_\Lambda$	$0.689^{+0.012}_{-0.013}$	$k_{\text{eq}}$	$0.01026^{+0.00028}_{-0.00037}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.8)$
$\Omega_m$	$0.311^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	$0.828^{+0.028}_{-0.017}$	$\chi_{\text{CMB}}^2$	$2782.4 (\nu: 18.6)$
$\Omega_m h^2$	$0.1439^{+0.0038}_{-0.0031}$	$100\theta_{s,\text{eq}}$	$0.457^{+0.015}_{-0.0090}$		
$\Omega_\nu h^2$	$0.0027^{+0.0050}_{-0.0024}$	$H(0.15)$	$73.3^{+1.4}_{-1.1}$		

$$\bar{\chi}_{\text{eff}}^2 = 3835.56; R - 1 = 0.01701$$

## 8.17 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_{\text{b}} h^2$	0.022264	$0.02232^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6054	$0.596^{+0.024}_{-0.028}$	$D_{\text{M}}(0.38)$	1526.2	$1516^{+32}_{-42}$
$\Omega_{\text{c}} h^2$	0.1196	$0.1204^{+0.0073}_{-0.0081}$	$\sigma_8/h^{0.5}$	0.9853	$0.966^{+0.034}_{-0.041}$	$H(0.51)$	89.86	$90.5^{+2.1}_{-1.4}$
$100\theta_{\text{MC}}$	1.04091	$1.04076^{+0.00092}_{-0.00099}$	$r_{\text{drag}} h$	99.73	$99.5^{+1.9}_{-1.8}$	$D_{\text{M}}(0.51)$	1977.3	$1964^{+39}_{-53}$
$\tau$	0.0558	$0.057^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4345	$2.427^{+0.044}_{-0.045}$	$H(0.61)$	95.48	$96.2^{+2.2}_{-1.4}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.000	$< 0.551$	$z_{\text{re}}$	7.85	$8.0^{+1.6}_{-1.5}$	$D_{\text{M}}(0.61)$	2301	$2285^{+44}_{-60}$
$N_{\text{eff}}$	3.077	$< 3.52$	$10^9 A_{\text{s}}$	2.105	$2.116^{+0.072}_{-0.064}$	$H(2.33)$	236.27	$238.3^{+4.8}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	3.0467	$3.052^{+0.034}_{-0.031}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8825	$1.890^{+0.032}_{-0.029}$	$D_{\text{M}}(2.33)$	5754	$5710^{+79}_{-120}$
$n_{\text{s}}$	0.9679	$0.971^{+0.014}_{-0.013}$	$D_{40}$	1225.4	$1221^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4565	$0.450^{+0.019}_{-0.021}$
$y_{\text{cal}}$	1.00095	$1.0008^{+0.0049}_{-0.0048}$	$D_{220}$	5725	$5724^{+80}_{-77}$	$\sigma_8(0.15)$	0.7496	$0.737^{+0.031}_{-0.036}$
$A_{217}^{\text{CIB}}$	48.8	$49^{+10}_{-10}$	$D_{810}$	2540.4	$2540^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4751	$0.468^{+0.019}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.30	—	$D_{1420}$	816.8	$815^{+10}_{-9.9}$	$\sigma_8(0.38)$	0.6646	$0.653^{+0.028}_{-0.033}$
$A_{143}^{\text{tSZ}}$	7.05	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	230.43	$229.1^{+3.7}_{-3.8}$	$f\sigma_8(0.51)$	0.4739	$0.467^{+0.019}_{-0.022}$
$A_{100}^{\text{PS}}$	255	$267^{+60}_{-50}$	$n_{\text{s}, 0.002}$	0.9679	$0.971^{+0.014}_{-0.013}$	$\sigma_8(0.51)$	0.6220	$0.612^{+0.027}_{-0.031}$
$A_{143}^{\text{PS}}$	49.2	$51^{+20}_{-20}$	$Y_{\text{P}}$	0.24576	$0.2476^{+0.0041}_{-0.0024}$	$f\sigma_8(0.61)$	0.4690	$0.462^{+0.018}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	46.2	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.24709	$0.2489^{+0.0041}_{-0.0024}$	$\sigma_8(0.61)$	0.5919	$0.582^{+0.026}_{-0.029}$
$A_{217}^{\text{PS}}$	119.1	$115^{+20}_{-20}$	$10^5 D/H$	2.616	$2.65^{+0.11}_{-0.097}$	$f\sigma_8(2.33)$	0.2985	$0.294^{+0.013}_{-0.015}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.775	$13.67^{+0.19}_{-0.30}$	$\sigma_8(2.33)$	0.3078	$0.303^{+0.014}_{-0.016}$
$A_{100}^{\text{dustTT}}$	8.86	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.05	$1090.30^{+0.75}_{-0.71}$	$f_{2000}^{143}$	30.4	$32^{+6}_{-6}$
$A_{143}^{\text{dustTT}}$	10.78	$10.7^{+3.5}_{-3.5}$	$r_*$	144.47	$143.3^{+1.9}_{-2.9}$	$f_{2000}^{143 \times 217}$	33.18	$34^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.5}_{-6.6}$	$100\theta_*$	1.04109	$1.0409^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	107.69	$108.9^{+4.1}_{-3.8}$
$A_{217}^{\text{dustTT}}$	94.7	$93^{+10}_{-10}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.877	$13.76^{+0.18}_{-0.27}$	$\chi_{\text{lensing}}^2$	8.84	$9.5 (\nu: 0.5)$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.67	$1060.1^{+1.3}_{-1.2}$	$\chi_{\text{simall}}^2$	396.34	$397.5 (\nu: 2.4)$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.17	$145.9^{+2.0}_{-3.1}$	$\chi_{\text{lowl}}^2$	22.91	$22.6 (\nu: 0.5)$
$H_0$	67.77	$68.2^{+2.1}_{-1.7}$	$k_{\text{D}}$	0.14059	$0.1415^{+0.0023}_{-0.0017}$	$\chi_{\text{plik}}^2$	759.6	$773.6 (\nu: 15.5)$
$\Omega_{\Lambda}$	0.6897	$0.688^{+0.015}_{-0.015}$	$100\theta_{\text{D}}$	0.16103	$0.16134^{+0.00090}_{-0.00078}$	$\chi_{6\text{DF}}^2$	0.024	$0.076 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3103	$0.312^{+0.015}_{-0.015}$	$z_{\text{eq}}$	3376	$3337^{+81}_{-110}$	$\chi_{\text{MGS}}^2$	1.28	$1.21 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	0.1425	$0.1450^{+0.0059}_{-0.0045}$	$k_{\text{eq}}$	0.010324	$0.01032^{+0.00032}_{-0.00036}$	$\chi_{\text{DR12BAO}}^2$	4.25	$5.3 (\nu: 1.8)$
$\Omega_{\nu} h^2$	0.00065	$0.0022^{+0.0052}_{-0.0017}$	$100\theta_{\text{eq}}$	0.8178	$0.826^{+0.023}_{-0.016}$	$\chi_{\text{prior}}^2$	1.5	$7.3 (\nu: 6.9)$
$\Omega_{\text{m}} h^3$	0.0966	$0.0989^{+0.0063}_{-0.0037}$	$100\theta_{\text{s,eq}}$	0.4518	$0.456^{+0.012}_{-0.0084}$	$\chi_{\text{CMB}}^2$	1187.7	$1203.3 (\nu: 17.0)$
$\sigma_8$	0.8111	$0.798^{+0.033}_{-0.039}$	$H(0.15)$	73.04	$73.5^{+2.1}_{-1.6}$	$\chi_{\text{BAO}}^2$	5.56	$6.5 (\nu: 1.3)$
$S_8$	0.8249	$0.813^{+0.034}_{-0.038}$	$D_{\text{M}}(0.15)$	639.8	$636^{+15}_{-19}$			
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4518	$0.445^{+0.019}_{-0.021}$	$H(0.38)$	83.15	$83.7^{+2.1}_{-1.5}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.69$ ;  $\Delta\chi_{\text{eff}}^2 = 0.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 1217.17$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.44$ ;  $R - 1 = 0.01959$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.28 ( $\Delta$  0.06) DR12BAO: 4.25 ( $\Delta$  -0.12) CMB - smicadx12.Dec5.ftl.mv2.ndclpp-p.teb.consext8: 8.84 ( $\Delta$  -0.04) simall\_100x143.offlike5\_EE\_Aplanc  
396.34 ( $\Delta$  0.24) commander\_dx12.v3.2.29: 22.91 ( $\Delta$  -0.05) plik\_rd12\_HM.v22.TT: 759.57 ( $\Delta$  -0.24)

# 8.18 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022239	$0.02234^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.596^{+0.024}_{-0.028}$	$D_M(0.38)$	1530.2	$1514^{+32}_{-43}$
$\Omega_c h^2$	0.1171	$0.1205^{+0.0074}_{-0.0084}$	$\sigma_8/h^{0.5}$	0.9842	$0.966^{+0.033}_{-0.042}$	$H(0.51)$	89.66	$90.6^{+2.2}_{-1.5}$
$100\theta_{MC}$	1.04102	$1.04076^{+0.00092}_{-0.0010}$	$r_{drag}h$	99.65	$99.7^{+1.8}_{-1.7}$	$D_M(0.51)$	1982.3	$1961^{+40}_{-54}$
$\tau$	0.0567	$0.057^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4382	$2.426^{+0.044}_{-0.044}$	$H(0.61)$	95.27	$96.3^{+2.3}_{-1.5}$
$m_{\nu, sterile}^{eff} [eV]$	0.193	$< 0.567$	$z_{re}$	7.94	$8.0^{+1.5}_{-1.5}$	$D_M(0.61)$	2307	$2282^{+45}_{-62}$
$N_{eff}$	3.047	$< 3.54$	$10^9 A_s$	2.102	$2.119^{+0.071}_{-0.066}$	$H(2.33)$	235.88	$238.3^{+4.9}_{-3.5}$
$\ln(10^{10} A_s)$	3.0456	$3.053^{+0.033}_{-0.032}$	$10^9 A_s e^{-2\tau}$	1.8768	$1.890^{+0.032}_{-0.029}$	$D_M(2.33)$	5766	$5706^{+82}_{-130}$
$n_s$	0.9661	$0.972^{+0.014}_{-0.013}$	$D_{40}$	1226.6	$1220^{+28}_{-28}$	$f\sigma_8(0.15)$	0.4558	$0.450^{+0.018}_{-0.021}$
$y_{cal}$	1.00006	$1.0008^{+0.0049}_{-0.0048}$	$D_{220}$	5717	$5725^{+80}_{-78}$	$\sigma_8(0.15)$	0.7477	$0.738^{+0.031}_{-0.037}$
$A_{217}^{CIB}$	50.1	$49^{+10}_{-10}$	$D_{810}$	2534.5	$2540^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4742	$0.468^{+0.019}_{-0.022}$
$\xi^{tSZ \times CIB}$	0.18	—	$D_{1420}$	814.9	$815^{+10}_{-9.9}$	$\sigma_8(0.38)$	0.6628	$0.654^{+0.028}_{-0.033}$
$A_{143}^{tSZ}$	7.16	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	229.97	$229.1^{+3.7}_{-3.8}$	$f\sigma_8(0.51)$	0.4729	$0.467^{+0.018}_{-0.022}$
$A_{100}^{PS}$	256	$267^{+60}_{-50}$	$n_{s,0.002}$	0.9661	$0.972^{+0.014}_{-0.013}$	$\sigma_8(0.51)$	0.6203	$0.613^{+0.027}_{-0.031}$
$A_{143}^{PS}$	47.4	$51^{+20}_{-20}$	$Y_P$	0.24536	$0.2477^{+0.0042}_{-0.0025}$	$f\sigma_8(0.61)$	0.4680	$0.462^{+0.018}_{-0.022}$
$A_{143 \times 217}^{PS}$	42.9	$44^{+20}_{-20}$	$Y_P^{BBN}$	0.24668	$0.2490^{+0.0042}_{-0.0025}$	$\sigma_8(0.61)$	0.5902	$0.583^{+0.026}_{-0.030}$
$A_{217}^{PS}$	116.7	$115^{+20}_{-20}$	$10^5 D/H$	2.611	$2.65^{+0.11}_{-0.098}$	$f\sigma_8(2.33)$	0.2976	$0.294^{+0.013}_{-0.015}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.804	$13.66^{+0.20}_{-0.30}$	$\sigma_8(2.33)$	0.3068	$0.303^{+0.014}_{-0.016}$
$A_{100}^{dustTT}$	8.84	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.01	$1090.28^{+0.75}_{-0.72}$	$f_{2000}^{143}$	30.6	$32^{+6}_{-6}$
$A_{143}^{dustTT}$	10.87	$10.7^{+3.5}_{-3.5}$	$r_*$	144.75	$143.2^{+2.0}_{-3.0}$	$f_{2000}^{143 \times 217}$	33.29	$34^{+4}_{-4}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.3^{+6.5}_{-6.6}$	$100\theta_*$	1.04122	$1.0409^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	107.63	$108.9^{+4.1}_{-3.9}$
$A_{217}^{dustTT}$	94.2	$93^{+10}_{-10}$	$D_M(z_*)/Gpc$	13.902	$13.76^{+0.19}_{-0.28}$	$\chi_{lensing}^2$	8.78	$9.6 (\nu: 0.5)$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.59	$1060.1^{+1.3}_{-1.2}$	$\chi_{small}^2$	397	$290 (\nu: 14417.7)$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	147.46	$145.9^{+2.1}_{-3.1}$	$\chi_{lowl}^2$	23	$131 (\nu: 14415.5)$
$H_0$	67.58	$68.3^{+2.2}_{-1.7}$	$k_D$	0.14038	$0.1415^{+0.0024}_{-0.0018}$	$\chi_{plik}^2$	759.1	$773.8 (\nu: 15.6)$
$\Omega_\Lambda$	0.6890	$0.689^{+0.014}_{-0.014}$	$100\theta_D$	0.16098	$0.16135^{+0.00092}_{-0.00080}$	$\chi_{JLA}^2$	1035.03	$1035.12 (\nu: 0.1)$
$\Omega_m$	0.3110	$0.311^{+0.014}_{-0.014}$	$z_{eq}$	3329	$3334^{+80}_{-110}$	$\chi_{6DF}^2$	0.03	$0.41 (\nu: 0.2)$
$\Omega_m h^2$	0.1420	$0.1450^{+0.0060}_{-0.0046}$	$k_{eq}$	0.010199	$0.01031^{+0.00032}_{-0.00037}$	$\chi_{MGS}^2$	1.22	$0.93 (\nu: 0.2)$
$\Omega_\nu h^2$	0.00269	$0.0022^{+0.0062}_{-0.0016}$	$100\theta_{eq}$	0.8275	$0.827^{+0.024}_{-0.016}$	$\chi_{DR12BAO}^2$	4.37	$5.0 (\nu: 1.4)$
$\Omega_m h^3$	0.0960	$0.0991^{+0.0065}_{-0.0039}$	$100\theta_{s,eq}$	0.4570	$0.456^{+0.013}_{-0.0083}$	$\chi_{prior}^2$	1.5	$7.3 (\nu: 7.0)$
$\sigma_8$	0.8091	$0.799^{+0.033}_{-0.040}$	$H(0.15)$	72.85	$73.6^{+2.2}_{-1.6}$	$\chi_{CMB}^2$	1187.7	$1203.5 (\nu: 17.2)$
$S_8$	0.8238	$0.813^{+0.034}_{-0.038}$	$D_M(0.15)$	641.6	$635^{+15}_{-19}$	$\chi_{BAO}^2$	5.62	$6.3 (\nu: 0.9)$
$\sigma_8 \Omega_m^{0.5}$	0.4512	$0.445^{+0.019}_{-0.021}$	$H(0.38)$	82.95	$83.8^{+2.2}_{-1.5}$			

Best-fit  $\chi_{eff}^2 = 2229.80$ ;  $\Delta\chi_{eff}^2 = 0.09$ ;  $\bar{\chi}_{eff}^2 = 2252.23$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.45$ ;  $R - 1 = 0.01841$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.13) DR12BAO: 4.37 ( $\Delta$  0.34) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.78 ( $\Delta$  -0.10) small\_100x143\_offlike5\_EE\_Aplanck 396.58 ( $\Delta$  0.21) commander\_dx12\_v3\_2.29: 23.22 ( $\Delta$  0.40) plik\_rd12\_HM\_v22\_TT: 759.08 ( $\Delta$  -0.71) SN - JLA Pantheon18: 1035.03 ( $\Delta$  0.08)

# 8.19 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}} h^2$	$0.02232^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.596^{+0.024}_{-0.028}$	$D_{\text{M}}(0.38)$	$1516^{+32}_{-42}$
$\Omega_{\text{c}} h^2$	$0.1204^{+0.0073}_{-0.0081}$	$\sigma_8/h^{0.5}$	$0.966^{+0.034}_{-0.041}$	$H(0.51)$	$90.5^{+2.1}_{-1.4}$
$100\theta_{\text{MC}}$	$1.04076^{+0.00092}_{-0.00099}$	$r_{\text{drag}} h$	$99.5^{+1.9}_{-1.8}$	$D_{\text{M}}(0.51)$	$1964^{+39}_{-53}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.428^{+0.044}_{-0.044}$	$H(0.61)$	$96.2^{+2.2}_{-1.4}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.555$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$D_{\text{M}}(0.61)$	$2285^{+44}_{-60}$
$N_{\text{eff}}$	$< 3.52$	$10^9 A_{\text{s}}$	$2.118^{+0.065}_{-0.062}$	$H(2.33)$	$238.3^{+4.8}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	$3.053^{+0.031}_{-0.029}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.890^{+0.032}_{-0.028}$	$D_{\text{M}}(2.33)$	$5710^{+79}_{-120}$
$n_{\text{s}}$	$0.971^{+0.014}_{-0.012}$	$D_{40}$	$1221^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.450^{+0.019}_{-0.021}$
$y_{\text{cal}}$	$1.0008^{+0.0049}_{-0.0048}$	$D_{220}$	$5724^{+80}_{-78}$	$\sigma_8(0.15)$	$0.737^{+0.031}_{-0.036}$
$A_{217}^{\text{CIB}}$	$49^{+10}_{-10}$	$D_{810}$	$2540^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.468^{+0.019}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+10}_{-9.9}$	$\sigma_8(0.38)$	$0.654^{+0.028}_{-0.033}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	$229.1^{+3.7}_{-3.8}$	$f\sigma_8(0.51)$	$0.467^{+0.019}_{-0.022}$
$A_{100}^{\text{PS}}$	$267^{+60}_{-50}$	$n_{\text{s}, 0.002}$	$0.971^{+0.014}_{-0.012}$	$\sigma_8(0.51)$	$0.612^{+0.027}_{-0.031}$
$A_{143}^{\text{PS}}$	$51^{+20}_{-20}$	$Y_{\text{P}}$	$0.2476^{+0.0041}_{-0.0024}$	$f\sigma_8(0.61)$	$0.462^{+0.018}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2489^{+0.0041}_{-0.0024}$	$\sigma_8(0.61)$	$0.582^{+0.026}_{-0.029}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.65^{+0.11}_{-0.097}$	$f\sigma_8(2.33)$	$0.294^{+0.013}_{-0.015}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.67^{+0.19}_{-0.30}$	$\sigma_8(2.33)$	$0.303^{+0.014}_{-0.016}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$z_*$	$1090.29^{+0.75}_{-0.71}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$143.3^{+1.9}_{-2.9}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.0409^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	$108.9^{+4.1}_{-3.8}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.76^{+0.18}_{-0.27}$	$\chi_{\text{lensing}}^2$	$9.52 (\nu: 0.5)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.1^{+1.3}_{-1.2}$	$\chi_{\text{simall}}^2$	$397.5 (\nu: 2.4)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$145.9^{+2.0}_{-3.1}$	$\chi_{\text{lowl}}^2$	$22.6 (\nu: 0.5)$
$H_0$	$68.2^{+2.1}_{-1.7}$	$k_{\text{D}}$	$0.1415^{+0.0023}_{-0.0017}$	$\chi_{\text{plik}}^2$	$773.6 (\nu: 15.4)$
$\Omega_{\Lambda}$	$0.688^{+0.015}_{-0.014}$	$100\theta_{\text{D}}$	$0.16134^{+0.00091}_{-0.00078}$	$\chi_{6\text{DF}}^2$	$0.074 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.312^{+0.014}_{-0.015}$	$z_{\text{eq}}$	$3336^{+80}_{-110}$	$\chi_{\text{MGS}}^2$	$1.22 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1450^{+0.0059}_{-0.0045}$	$k_{\text{eq}}$	$0.01031^{+0.00032}_{-0.00036}$	$\chi_{\text{DR12BAO}}^2$	$5.2 (\nu: 1.7)$
$\Omega_{\nu} h^2$	$0.0023^{+0.0052}_{-0.0017}$	$100\theta_{\text{eq}}$	$0.826^{+0.023}_{-0.016}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.9)$
$\Omega_{\text{m}} h^3$	$0.0989^{+0.0063}_{-0.0038}$	$100\theta_{\text{s,eq}}$	$0.456^{+0.012}_{-0.0084}$	$\chi_{\text{CMB}}^2$	$1203.2 (\nu: 16.9)$
$\sigma_8$	$0.798^{+0.033}_{-0.039}$	$H(0.15)$	$73.5^{+2.1}_{-1.6}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 1.2)$
$S_8$	$0.813^{+0.034}_{-0.038}$	$D_{\text{M}}(0.15)$	$636^{+15}_{-19}$		
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.445^{+0.019}_{-0.021}$	$H(0.38)$	$83.8^{+2.1}_{-1.5}$		

$$\bar{\chi}_{\text{eff}}^2 = 1217.05; \Delta\bar{\chi}_{\text{eff}}^2 = 2.48; R - 1 = 0.01947$$

## 8.20 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02234^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.596^{+0.024}_{-0.028}$	$D_{\mathrm{M}}(0.38)$	$1514^{+32}_{-43}$
$\Omega_{\mathrm{c}} h^2$	$0.1205^{+0.0074}_{-0.0085}$	$\sigma_8/h^{0.5}$	$0.966^{+0.033}_{-0.042}$	$H(0.51)$	$90.6^{+2.2}_{-1.5}$
$100\theta_{\mathrm{MC}}$	$1.04076^{+0.00092}_{-0.0010}$	$r_{\mathrm{drag}} h$	$99.7^{+1.8}_{-1.7}$	$D_{\mathrm{M}}(0.51)$	$1961^{+40}_{-54}$
$\tau$	$0.058^{+0.014}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.044}_{-0.043}$	$H(0.61)$	$96.3^{+2.3}_{-1.5}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.570$	$z_{\mathrm{re}}$	$8.1^{+1.3}_{-1.4}$	$D_{\mathrm{M}}(0.61)$	$2282^{+45}_{-61}$
$N_{\mathrm{eff}}$	$< 3.54$	$10^9 A_{\mathrm{s}}$	$2.121^{+0.065}_{-0.063}$	$H(2.33)$	$238.3^{+4.9}_{-3.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.054^{+0.031}_{-0.030}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.890^{+0.032}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5705^{+82}_{-130}$
$n_{\mathrm{s}}$	$0.972^{+0.014}_{-0.013}$	$D_{40}$	$1220^{+27}_{-28}$	$f\sigma_8(0.15)$	$0.450^{+0.018}_{-0.021}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0049}_{-0.0048}$	$D_{220}$	$5725^{+79}_{-78}$	$\sigma_8(0.15)$	$0.738^{+0.031}_{-0.037}$
$A_{217}^{\mathrm{CIB}}$	$49^{+10}_{-10}$	$D_{810}$	$2540^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.468^{+0.019}_{-0.022}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815^{+10}_{-9.9}$	$\sigma_8(0.38)$	$0.655^{+0.028}_{-0.033}$
$A_{143}^{\mathrm{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	$229.1^{+3.7}_{-3.8}$	$f\sigma_8(0.51)$	$0.467^{+0.018}_{-0.023}$
$A_{100}^{\mathrm{PS}}$	$267^{+60}_{-50}$	$n_{\mathrm{s}, 0.002}$	$0.972^{+0.014}_{-0.013}$	$\sigma_8(0.51)$	$0.613^{+0.027}_{-0.031}$
$A_{143}^{\mathrm{PS}}$	$51^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.2477^{+0.0042}_{-0.0025}$	$f\sigma_8(0.61)$	$0.462^{+0.018}_{-0.022}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2490^{+0.0042}_{-0.0025}$	$\sigma_8(0.61)$	$0.583^{+0.026}_{-0.030}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.65^{+0.11}_{-0.098}$	$f\sigma_8(2.33)$	$0.294^{+0.013}_{-0.015}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.66^{+0.19}_{-0.30}$	$\sigma_8(2.33)$	$0.303^{+0.014}_{-0.016}$
$A_{100}^{\mathrm{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$z_*$	$1090.28^{+0.75}_{-0.72}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$A_{143}^{\mathrm{dustTT}}$	$10.7^{+3.5}_{-3.6}$	$r_*$	$143.2^{+2.0}_{-3.0}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	$1.0409^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	$108.9^{+4.1}_{-3.9}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.76^{+0.19}_{-0.28}$	$\chi_{\mathrm{lensing}}^2$	$9.6 (\nu: 0.5)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1060.1^{+1.3}_{-1.2}$	$\chi_{\mathrm{small}}^2$	$290 (\nu: 14384.6)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$145.9^{+2.1}_{-3.1}$	$\chi_{\mathrm{lowl}}^2$	$130 (\nu: 14382.1)$
$H_0$	$68.3^{+2.2}_{-1.7}$	$k_{\mathrm{D}}$	$0.1415^{+0.0024}_{-0.0018}$	$\chi_{\mathrm{plik}}^2$	$773.7 (\nu: 15.5)$
$\Omega_{\Lambda}$	$0.689^{+0.014}_{-0.014}$	$100\theta_{\mathrm{D}}$	$0.16135^{+0.00092}_{-0.00080}$	$\chi_{\mathrm{JLA}}^2$	$1035.11 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.014}_{-0.014}$	$z_{\mathrm{eq}}$	$3333^{+80}_{-110}$	$\chi_{6\mathrm{DF}}^2$	$0.41 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1450^{+0.0060}_{-0.0046}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00032}_{-0.00038}$	$\chi_{\mathrm{MGS}}^2$	$0.94 (\nu: 0.2)$
$\Omega_{\nu} h^2$	$0.0022^{+0.0062}_{-0.0016}$	$100\theta_{\mathrm{eq}}$	$0.827^{+0.024}_{-0.016}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 (\nu: 1.3)$
$\Omega_{\mathrm{m}} h^3$	$0.0991^{+0.0065}_{-0.0039}$	$100\theta_{\mathrm{s,eq}}$	$0.456^{+0.013}_{-0.0083}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 7.0)$
$\sigma_8$	$0.799^{+0.033}_{-0.040}$	$H(0.15)$	$73.7^{+2.2}_{-1.6}$	$\chi_{\mathrm{CMB}}^2$	$1203.4 (\nu: 17.1)$
$S_8$	$0.813^{+0.034}_{-0.038}$	$D_{\mathrm{M}}(0.15)$	$635^{+15}_{-19}$	$\chi_{\mathrm{BAO}}^2$	$6.3 (\nu: 0.9)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.445^{+0.019}_{-0.021}$	$H(0.38)$	$83.9^{+2.2}_{-1.5}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2252.12; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 2.50; R - 1 = 0.01798$$

## 8.21 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022461	$0.02249^{+0.00031}_{-0.00028}$	$\Omega_m h^3$	0.09644	$0.0976^{+0.0035}_{-0.0019}$	$D_M(0.15)$	640.3	$639^{+10}_{-12}$
$\Omega_c h^2$	0.1134	$0.1187^{+0.0055}_{-0.0072}$	$\sigma_8$	0.8100	$0.793^{+0.032}_{-0.037}$	$H(0.38)$	83.10	$83.3^{+1.3}_{-0.90}$
$100\theta_{MC}$	1.04106	$1.04091^{+0.00059}_{-0.00064}$	$S_8$	0.8242	$0.810^{+0.033}_{-0.037}$	$D_M(0.38)$	1527.3	$1524^{+21}_{-26}$
$\tau$	0.0564	$0.058^{+0.016}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4514	$0.444^{+0.018}_{-0.020}$	$H(0.51)$	89.81	$90.1^{+1.3}_{-0.81}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.555	$< 0.654$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.593^{+0.023}_{-0.027}$	$D_M(0.51)$	1978.6	$1974^{+26}_{-33}$
$N_{\text{eff}}$	3.048	$< 3.29$	$\sigma_8/h^{0.5}$	0.9843	$0.963^{+0.035}_{-0.041}$	$H(0.61)$	95.43	$95.8^{+1.3}_{-0.77}$
$\ln(10^{10} A_s)$	3.0481	$3.052^{+0.032}_{-0.029}$	$r_{\text{drag}} h$	99.65	$99.3^{+1.6}_{-1.6}$	$D_M(0.61)$	2302.5	$2297^{+29}_{-37}$
$n_s$	0.9674	$0.968^{+0.011}_{-0.0097}$	$\langle d^2 \rangle^{1/2}$	2.4392	$2.437^{+0.042}_{-0.042}$	$H(2.33)$	236.22	$237.4^{+2.8}_{-2.2}$
$y_{\text{cal}}$	1.00108	$1.0009^{+0.0049}_{-0.0047}$	$z_{\text{re}}$	7.86	$8.0^{+1.5}_{-1.4}$	$D_M(2.33)$	5756	$5735^{+42}_{-72}$
$A_{217}^{\text{CIB}}$	47.2	$47^{+10}_{-10}$	$10^9 A_s$	2.107	$2.116^{+0.069}_{-0.060}$	$f\sigma_8(0.15)$	0.4561	$0.448^{+0.018}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.46	—	$10^9 A_s e^{-2\tau}$	1.8828	$1.886^{+0.025}_{-0.022}$	$\sigma_8(0.15)$	0.7485	$0.733^{+0.030}_{-0.034}$
$A_{143}^{\text{tSZ}}$	7.20	$5.4^{+3.7}_{-3.9}$	$D_{40}$	1228.2	$1227^{+24}_{-24}$	$f\sigma_8(0.38)$	0.4746	$0.466^{+0.018}_{-0.021}$
$A_{100}^{\text{PS}}$	250	$260^{+50}_{-50}$	$D_{220}$	5743	$5741^{+74}_{-72}$	$\sigma_8(0.38)$	0.6636	$0.650^{+0.027}_{-0.031}$
$A_{143}^{\text{PS}}$	47.6	$47^{+20}_{-20}$	$D_{810}$	2543.4	$2542^{+26}_{-25}$	$f\sigma_8(0.51)$	0.4733	$0.465^{+0.018}_{-0.021}$
$A_{143 \times 217}^{\text{PS}}$	48.0	$43^{+20}_{-20}$	$D_{1420}$	819.4	$817.6^{+9.1}_{-9.0}$	$\sigma_8(0.51)$	0.6211	$0.608^{+0.026}_{-0.029}$
$A_{217}^{\text{PS}}$	119.4	$115^{+20}_{-20}$	$D_{2000}$	231.83	$230.7^{+3.0}_{-3.1}$	$f\sigma_8(0.61)$	0.4684	$0.460^{+0.018}_{-0.021}$
$A^{\text{kSZ}}$	0.00	$< 8.13$	$n_{s,0.002}$	0.9674	$0.968^{+0.011}_{-0.0097}$	$\sigma_8(0.61)$	0.5910	$0.578^{+0.024}_{-0.028}$
$A_{100}^{\text{dustTT}}$	8.81	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.24546	$0.2465^{+0.0023}_{-0.0012}$	$f\sigma_8(2.33)$	0.2980	$0.292^{+0.013}_{-0.014}$
$A_{143}^{\text{dustTT}}$	11.04	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	0.24678	$0.2478^{+0.0023}_{-0.0012}$	$\sigma_8(2.33)$	0.3073	$0.301^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.7^{+6.4}_{-6.5}$	$10^5 D/H$	2.569	$2.591^{+0.060}_{-0.057}$	$f_{2000}^{143}$	28.6	$30^{+6}_{-5}$
$A_{217}^{\text{dustTT}}$	95.1	$94^{+10}_{-10}$	Age/Gyr	13.781	$13.731^{+0.097}_{-0.17}$	$f_{2000}^{143 \times 217}$	31.82	$33^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.074}$	$z_*$	1089.747	$1089.90^{+0.51}_{-0.46}$	$f_{2000}^{217}$	106.47	$107.4^{+3.6}_{-3.6}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.057}_{-0.058}$	$r_*$	144.54	$143.8^{+1.1}_{-1.7}$	$\chi_{\text{lensing}}^2$	8.75	$9.14 (\nu: 0.3)$
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04123	$1.04104^{+0.00065}_{-0.00068}$	$\chi_{\text{simall}}^2$	396.42	$397.6 (\nu: 2.7)$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.881	$13.82^{+0.10}_{-0.16}$	$\chi_{\text{lowl}}^2$	23.05	$23.03 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.09	$1060.32^{+0.85}_{-0.77}$	$\chi_{\text{plik}}^2$	2344.6	$2361.3 (\nu: 18.3)$
$A_{217}^{\text{dustTE}}$	2.07	$2.08^{+0.52}_{-0.53}$	$r_{\text{drag}}$	147.17	$146.5^{+1.1}_{-1.8}$	$\chi_{6\text{DF}}^2$	0.029	$0.084 (\nu: 0.0)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14085	$0.1414^{+0.0014}_{-0.0010}$	$\chi_{\text{MGS}}^2$	1.22	$1.10 (\nu: 0.1)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160677	$0.16083^{+0.00050}_{-0.00045}$	$\chi_{\text{DR12BAO}}^2$	4.42	$5.5 (\nu: 1.7)$
$H_0$	67.71	$67.8^{+1.3}_{-1.2}$	$z_{\text{eq}}$	3246	$3339^{+84}_{-130}$	$\chi_{\text{prior}}^2$	1.9	$11.6 (\nu: 10.4)$
$\Omega_\Lambda$	0.6894	$0.687^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010016	$0.01027^{+0.00028}_{-0.00035}$	$\chi_{\text{CMB}}^2$	2772.9	$2791.1 (\nu: 19.5)$
$\Omega_m$	0.3106	$0.313^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	0.8464	$0.827^{+0.027}_{-0.017}$	$\chi_{\text{BAO}}^2$	5.67	$6.7 (\nu: 1.3)$
$\Omega_m h^2$	0.14243	$0.1440^{+0.0036}_{-0.0030}$	$100\theta_{s,\text{eq}}$	0.4667	$0.456^{+0.014}_{-0.0090}$			
$\Omega_\nu h^2$	0.00654	$0.0028^{+0.0050}_{-0.0022}$	$H(0.15)$	72.99	$73.1^{+1.3}_{-1.1}$			

Best-fit  $\chi_{\text{eff}}^2 = 2780.39$ ;  $\Delta\chi_{\text{eff}}^2 = -0.30$ ;  $\bar{\chi}_{\text{eff}}^2 = 2809.48$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.64$ ;  $R - 1 = 0.02379$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.42 ( $\Delta$  0.00) CMB - smicadx12\_Dec5\_ft1\_mv2\_ndclpp\_p.teb\_consext8: 8.75 ( $\Delta$  0.02) simall\_100x143\_offlike5\_EE\_Aplanck.L  
396.43 ( $\Delta$  -0.10) commander\_dx12\_v3.2.29: 23.05 ( $\Delta$  0.16) plik\_rd12\_HM\_v22b.TTTEEE: 2344.63 ( $\Delta$  -0.69)

## 8.22 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02250^{+0.00030}_{-0.00028}$	$\Omega_m h^3$	$0.0977^{+0.0038}_{-0.0019}$	$D_M(0.15)$	$638.4^{+9.9}_{-13}$
$\Omega_c h^2$	$0.1188^{+0.0055}_{-0.0070}$	$\sigma_8$	$0.795^{+0.031}_{-0.036}$	$H(0.38)$	$83.4^{+1.4}_{-0.89}$
$100\theta_{MC}$	$1.04091^{+0.00059}_{-0.00065}$	$S_8$	$0.811^{+0.033}_{-0.036}$	$D_M(0.38)$	$1522^{+21}_{-29}$
$\tau$	$0.058^{+0.016}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.018}_{-0.020}$	$H(0.51)$	$90.2^{+1.4}_{-0.83}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.607$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.023}_{-0.026}$	$D_M(0.51)$	$1972^{+25}_{-36}$
$N_{\text{eff}}$	$< 3.31$	$\sigma_8/h^{0.5}$	$0.964^{+0.034}_{-0.040}$	$H(0.61)$	$95.8^{+1.4}_{-0.79}$
$\ln(10^{10} A_s)$	$3.052^{+0.032}_{-0.029}$	$r_{\text{drag}} h$	$99.5^{+1.5}_{-1.5}$	$D_M(0.61)$	$2295^{+28}_{-41}$
$n_s$	$0.969^{+0.011}_{-0.0096}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.042}_{-0.041}$	$H(2.33)$	$237.4^{+3.0}_{-2.2}$
$y_{\text{cal}}$	$1.0009^{+0.0047}_{-0.0046}$	$z_{\text{re}}$	$8.0^{+1.5}_{-1.4}$	$D_M(2.33)$	$5733^{+43}_{-79}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.116^{+0.068}_{-0.062}$	$f\sigma_8(0.15)$	$0.449^{+0.018}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.886^{+0.026}_{-0.022}$	$\sigma_8(0.15)$	$0.734^{+0.029}_{-0.034}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-3.9}$	$D_{40}$	$1226^{+24}_{-24}$	$f\sigma_8(0.38)$	$0.466^{+0.018}_{-0.020}$
$A_{100}^{\text{PS}}$	$260^{+50}_{-50}$	$D_{220}$	$5741^{+74}_{-72}$	$\sigma_8(0.38)$	$0.651^{+0.026}_{-0.030}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2542^{+25}_{-25}$	$f\sigma_8(0.51)$	$0.465^{+0.018}_{-0.020}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{1420}$	$817.7^{+9.0}_{-8.9}$	$\sigma_8(0.51)$	$0.609^{+0.025}_{-0.028}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.7^{+3.0}_{-3.0}$	$f\sigma_8(0.61)$	$0.460^{+0.018}_{-0.020}$
$A^{\text{kSZ}}$	$< 8.14$	$n_{s,0.002}$	$0.969^{+0.011}_{-0.0096}$	$\sigma_8(0.61)$	$0.580^{+0.024}_{-0.027}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$Y_P$	$0.2465^{+0.0025}_{-0.0012}$	$f\sigma_8(2.33)$	$0.292^{+0.012}_{-0.014}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.2479^{+0.0025}_{-0.0012}$	$\sigma_8(2.33)$	$0.301^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.5}_{-6.5}$	$10^5 D/H$	$2.590^{+0.061}_{-0.057}$	$f_{2000}^{143}$	$30^{+6}_{-5}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\text{Age/Gyr}$	$13.72^{+0.10}_{-0.19}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.074}$	$z_*$	$1089.89^{+0.48}_{-0.47}$	$f_{2000}^{217}$	$107.4^{+3.6}_{-3.5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.057}$	$r_*$	$143.8^{+1.1}_{-1.8}$	$\chi_{\text{lensing}}^2$	$9.18 (\nu: 0.3)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.04104^{+0.00066}_{-0.00069}$	$\chi_{\text{small}}^2$	$262 (\nu: 16193.5)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.10}_{-0.17}$	$\chi_{\text{lowl}}^2$	$158 (\nu: 16184.7)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.34^{+0.88}_{-0.77}$	$\chi_{\text{plik}}^2$	$2361.5 (\nu: 18.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$146.4^{+1.2}_{-1.9}$	$\chi_{\text{JLA}}^2$	$1035.16 (\nu: 0.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1414^{+0.0015}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.47 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16083^{+0.00052}_{-0.00046}$	$\chi_{\text{MGS}}^2$	$0.76 (\nu: 0.2)$
$H_0$	$67.9^{+1.5}_{-1.1}$	$z_{\text{eq}}$	$3340^{+80}_{-120}$	$\chi_{\text{DR12BAO}}^2$	$5.2 (\nu: 1.3)$
$\Omega_\Lambda$	$0.688^{+0.012}_{-0.012}$	$k_{\text{eq}}$	$0.01028^{+0.00027}_{-0.00034}$	$\chi_{\text{prior}}^2$	$11.7 (\nu: 10.3)$
$\Omega_m$	$0.312^{+0.012}_{-0.012}$	$100\theta_{\text{eq}}$	$0.826^{+0.025}_{-0.016}$	$\chi_{\text{CMB}}^2$	$2791.2 (\nu: 19.0)$
$\Omega_m h^2$	$0.1439^{+0.0037}_{-0.0029}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.013}_{-0.0085}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 0.9)$
$\Omega_\nu h^2$	$0.0026^{+0.0047}_{-0.0020}$	$H(0.15)$	$73.2^{+1.4}_{-1.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 3844.44; \Delta \bar{\chi}_{\text{eff}}^2 = 2.59; R - 1 = 0.02316$$

### 8.23 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02249^{+0.00031}_{-0.00028}$	$\Omega_m h^3$	$0.0977^{+0.0035}_{-0.0019}$	$D_M(0.15)$	$639^{+10}_{-12}$
$\Omega_c h^2$	$0.1187^{+0.0055}_{-0.0072}$	$\sigma_8$	$0.794^{+0.032}_{-0.037}$	$H(0.38)$	$83.3^{+1.3}_{-0.90}$
$100\theta_{MC}$	$1.04091^{+0.00059}_{-0.00064}$	$S_8$	$0.811^{+0.033}_{-0.037}$	$D_M(0.38)$	$1524^{+21}_{-26}$
$\tau$	$0.058^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.018}_{-0.020}$	$H(0.51)$	$90.1^{+1.3}_{-0.81}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.652$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.023}_{-0.027}$	$D_M(0.51)$	$1974^{+26}_{-33}$
$N_{\text{eff}}$	$< 3.30$	$\sigma_8/h^{0.5}$	$0.964^{+0.034}_{-0.041}$	$H(0.61)$	$95.8^{+1.3}_{-0.77}$
$\ln(10^{10} A_s)$	$3.053^{+0.029}_{-0.028}$	$r_{\text{drag}} h$	$99.3^{+1.6}_{-1.6}$	$D_M(0.61)$	$2297^{+29}_{-37}$
$n_s$	$0.968^{+0.011}_{-0.0097}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.042}_{-0.040}$	$H(2.33)$	$237.4^{+2.8}_{-2.2}$
$y_{\text{cal}}$	$1.0009^{+0.0049}_{-0.0047}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$D_M(2.33)$	$5735^{+42}_{-73}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.118^{+0.062}_{-0.058}$	$f\sigma_8(0.15)$	$0.449^{+0.018}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.886^{+0.025}_{-0.022}$	$\sigma_8(0.15)$	$0.733^{+0.030}_{-0.034}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-3.9}$	$D_{40}$	$1226^{+24}_{-24}$	$f\sigma_8(0.38)$	$0.466^{+0.018}_{-0.021}$
$A_{100}^{\text{PS}}$	$260^{+50}_{-50}$	$D_{220}$	$5740^{+73}_{-72}$	$\sigma_8(0.38)$	$0.650^{+0.027}_{-0.031}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2542^{+26}_{-25}$	$f\sigma_8(0.51)$	$0.465^{+0.018}_{-0.021}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{1420}$	$817.6^{+9.0}_{-9.0}$	$\sigma_8(0.51)$	$0.608^{+0.025}_{-0.029}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.7^{+3.0}_{-3.1}$	$f\sigma_8(0.61)$	$0.460^{+0.018}_{-0.021}$
$A^{\text{kSZ}}$	$< 8.12$	$n_{s,0.002}$	$0.968^{+0.011}_{-0.0097}$	$\sigma_8(0.61)$	$0.579^{+0.024}_{-0.028}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.2465^{+0.0023}_{-0.0012}$	$f\sigma_8(2.33)$	$0.292^{+0.012}_{-0.014}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.2478^{+0.0023}_{-0.0012}$	$\sigma_8(2.33)$	$0.301^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$10^5 D/H$	$2.591^{+0.060}_{-0.057}$	$f_{2000}^{143}$	$30^{+6}_{-5}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\text{Age/Gyr}$	$13.730^{+0.098}_{-0.17}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$z_*$	$1089.90^{+0.51}_{-0.46}$	$f_{2000}^{217}$	$107.4^{+3.6}_{-3.6}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$r_*$	$143.8^{+1.1}_{-1.7}$	$\chi_{\text{lensing}}^2$	$9.12 (\nu: 0.3)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04104^{+0.00065}_{-0.00068}$	$\chi_{\text{small}}^2$	$397.6 (\nu: 2.7)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.10}_{-0.16}$	$\chi_{\text{lowl}}^2$	$23.03 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.32^{+0.85}_{-0.77}$	$\chi_{\text{plik}}^2$	$2361.3 (\nu: 18.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.53}$	$r_{\text{drag}}$	$146.5^{+1.2}_{-1.8}$	$\chi_{6\text{DF}}^2$	$0.084 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1414^{+0.0014}_{-0.0011}$	$\chi_{\text{MGS}}^2$	$1.10 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16083^{+0.00050}_{-0.00045}$	$\chi_{\text{DR12BAO}}^2$	$5.5 (\nu: 1.7)$
$H_0$	$67.8^{+1.3}_{-1.2}$	$z_{\text{eq}}$	$3339^{+84}_{-130}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.4)$
$\Omega_\Lambda$	$0.687^{+0.013}_{-0.013}$	$k_{\text{eq}}$	$0.01027^{+0.00028}_{-0.00035}$	$\chi_{\text{CMB}}^2$	$2791.1 (\nu: 19.4)$
$\Omega_m$	$0.313^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	$0.827^{+0.027}_{-0.017}$	$\chi_{\text{BAO}}^2$	$6.7 (\nu: 1.3)$
$\Omega_m h^2$	$0.1440^{+0.0036}_{-0.0030}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.014}_{-0.0089}$		
$\Omega_\nu h^2$	$0.0028^{+0.0051}_{-0.0022}$	$H(0.15)$	$73.1^{+1.3}_{-1.1}$		

$$\bar{\chi}_{\text{eff}}^2 = 2809.40; \Delta \bar{\chi}_{\text{eff}}^2 = 2.68; R - 1 = 0.02345$$



## 8.24 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02250^{+0.00030}_{-0.00028}$	$\Omega_m h^3$	$0.0978^{+0.0038}_{-0.0020}$	$D_M(0.15)$	$638.3^{+9.9}_{-13}$
$\Omega_c h^2$	$0.1188^{+0.0055}_{-0.0070}$	$\sigma_8$	$0.795^{+0.031}_{-0.036}$	$H(0.38)$	$83.4^{+1.4}_{-0.89}$
$100\theta_{MC}$	$1.04091^{+0.00059}_{-0.00065}$	$S_8$	$0.811^{+0.033}_{-0.036}$	$D_M(0.38)$	$1522^{+21}_{-29}$
$\tau$	$0.058^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.018}_{-0.020}$	$H(0.51)$	$90.2^{+1.4}_{-0.83}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.608$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.023}_{-0.026}$	$D_M(0.51)$	$1972^{+25}_{-36}$
$N_{\text{eff}}$	$< 3.31$	$\sigma_8/h^{0.5}$	$0.965^{+0.034}_{-0.040}$	$H(0.61)$	$95.8^{+1.4}_{-0.79}$
$\ln(10^{10} A_s)$	$3.053^{+0.029}_{-0.028}$	$r_{\text{drag}} h$	$99.5^{+1.5}_{-1.5}$	$D_M(0.61)$	$2294^{+28}_{-41}$
$n_s$	$0.969^{+0.011}_{-0.0096}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.041}_{-0.040}$	$H(2.33)$	$237.4^{+3.0}_{-2.2}$
$y_{\text{cal}}$	$1.0009^{+0.0047}_{-0.0046}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$D_M(2.33)$	$5732^{+43}_{-79}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.117^{+0.063}_{-0.059}$	$f\sigma_8(0.15)$	$0.449^{+0.018}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.886^{+0.026}_{-0.022}$	$\sigma_8(0.15)$	$0.735^{+0.029}_{-0.034}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.7}_{-3.9}$	$D_{40}$	$1226^{+24}_{-24}$	$f\sigma_8(0.38)$	$0.467^{+0.018}_{-0.021}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-50}$	$D_{220}$	$5741^{+73}_{-71}$	$\sigma_8(0.38)$	$0.651^{+0.026}_{-0.030}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2542^{+25}_{-25}$	$f\sigma_8(0.51)$	$0.465^{+0.018}_{-0.021}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{1420}$	$817.6^{+8.9}_{-8.9}$	$\sigma_8(0.51)$	$0.609^{+0.025}_{-0.029}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.7^{+3.0}_{-3.0}$	$f\sigma_8(0.61)$	$0.460^{+0.018}_{-0.020}$
$A^{\text{kSZ}}$	$< 8.13$	$n_{s,0.002}$	$0.969^{+0.011}_{-0.0096}$	$\sigma_8(0.61)$	$0.580^{+0.024}_{-0.027}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$Y_P$	$0.2465^{+0.0025}_{-0.0012}$	$f\sigma_8(2.33)$	$0.293^{+0.012}_{-0.014}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.2479^{+0.0025}_{-0.0012}$	$\sigma_8(2.33)$	$0.301^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.5}_{-6.5}$	$10^5 D/H$	$2.590^{+0.061}_{-0.057}$	$f_{2000}^{143}$	$30^{+6}_{-5}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$\text{Age/Gyr}$	$13.72^{+0.10}_{-0.19}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.074}$	$z_*$	$1089.89^{+0.48}_{-0.47}$	$f_{2000}^{217}$	$107.4^{+3.6}_{-3.5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.057}$	$r_*$	$143.8^{+1.1}_{-1.8}$	$\chi_{\text{lensing}}^2$	$9.16 (\nu: 0.3)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.04104^{+0.00066}_{-0.00069}$	$\chi_{\text{small}}^2$	$262 (\nu: 16204.5)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.10}_{-0.17}$	$\chi_{\text{lowl}}^2$	$158 (\nu: 16195.0)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.34^{+0.88}_{-0.77}$	$\chi_{\text{plik}}^2$	$2361.4 (\nu: 18.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.53}$	$r_{\text{drag}}$	$146.4^{+1.2}_{-1.9}$	$\chi_{\text{JLA}}^2$	$1035.16 (\nu: 0.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1414^{+0.0015}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.47 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16083^{+0.00052}_{-0.00046}$	$\chi_{\text{MGS}}^2$	$0.76 (\nu: 0.2)$
$H_0$	$67.9^{+1.5}_{-1.1}$	$z_{\text{eq}}$	$3340^{+80}_{-120}$	$\chi_{\text{DR12BAO}}^2$	$5.2 (\nu: 1.3)$
$\Omega_\Lambda$	$0.688^{+0.012}_{-0.012}$	$k_{\text{eq}}$	$0.01028^{+0.00027}_{-0.00034}$	$\chi_{\text{prior}}^2$	$11.7 (\nu: 10.3)$
$\Omega_m$	$0.312^{+0.012}_{-0.012}$	$100\theta_{\text{eq}}$	$0.826^{+0.026}_{-0.016}$	$\chi_{\text{CMB}}^2$	$2791.1 (\nu: 18.9)$
$\Omega_m h^2$	$0.1439^{+0.0037}_{-0.0029}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.013}_{-0.0085}$	$\chi_{\text{BAO}}^2$	$6.4 (\nu: 0.9)$
$\Omega_\nu h^2$	$0.0026^{+0.0047}_{-0.0020}$	$H(0.15)$	$73.2^{+1.4}_{-1.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 3844.37; \Delta \bar{\chi}_{\text{eff}}^2 = 2.63; R - 1 = 0.02468$$

## 9 nnu+mnu

### 9.1 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02201	$0.02193^{+0.00069}_{-0.00079}$	$S_8$	0.846	$0.836^{+0.051}_{-0.052}$	$100\theta_{s,eq}$	0.4461	$0.446^{+0.013}_{-0.013}$
$\Omega_c h^2$	0.1184	$0.1199^{+0.0081}_{-0.0079}$	$\sigma_8 \Omega_m^{0.5}$	0.4633	$0.458^{+0.028}_{-0.028}$	$H(0.15)$	71.5	$70.1^{+6.2}_{-7.2}$
$100\theta_{MC}$	1.04105	$1.0408^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	0.6156	$0.597^{+0.040}_{-0.052}$	$D_M(0.15)$	655	$672^{+80}_{-60}$
$\tau$	0.0504	$0.051^{+0.017}_{-0.016}$	$\sigma_8/h^{0.5}$	1.006	$0.969^{+0.063}_{-0.088}$	$H(0.38)$	81.6	$80.7^{+5.6}_{-6.2}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.725$	$r_{drag} h$	98.5	$95.5^{+7.5}_{-9.8}$	$D_M(0.38)$	1559	$1592^{+160}_{-130}$
$N_{eff}$	2.87	$2.93^{+0.58}_{-0.58}$	$\langle d^2 \rangle^{1/2}$	2.471	$2.461^{+0.095}_{-0.092}$	$H(0.51)$	88.4	$87.7^{+5.1}_{-5.9}$
$\ln(10^{10} A_s)$	3.0306	$3.035^{+0.042}_{-0.043}$	$z_{re}$	7.30	$7.4^{+1.7}_{-1.7}$	$D_M(0.51)$	2018	$2056^{+200}_{-160}$
$n_s$	0.9573	$0.956^{+0.028}_{-0.031}$	$10^9 A_s$	2.071	$2.080^{+0.089}_{-0.087}$	$H(0.61)$	94.0	$93.5^{+4.9}_{-5.6}$
$y_{cal}$	1.00012	$1.0005^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8726	$1.878^{+0.044}_{-0.047}$	$D_M(0.61)$	2347	$2388^{+220}_{-180}$
$A_{217}^{CIB}$	46.7	$48^{+10}_{-10}$	$D_{40}$	1238.4	$1240^{+46}_{-44}$	$H(2.33)$	234.2	$236.5^{+7.4}_{-7.4}$
$\xi^{tSZ \times CIB}$	0.58	—	$D_{220}$	5704	$5710^{+81}_{-82}$	$D_M(2.33)$	5839	$5869^{+330}_{-300}$
$A_{143}^{tSZ}$	6.92	$5.1^{+3.8}_{-4.0}$	$D_{810}$	2534.3	$2536^{+28}_{-28}$	$f\sigma_8(0.15)$	0.4663	$0.460^{+0.026}_{-0.029}$
$A_{100}^{PS}$	249	$263^{+60}_{-60}$	$D_{1420}$	816.0	$815^{+10}_{-10}$	$\sigma_8(0.15)$	0.755	$0.716^{+0.066}_{-0.10}$
$A_{143}^{PS}$	50.6	$49^{+20}_{-20}$	$D_{2000}$	230.94	$229.6^{+4.6}_{-4.6}$	$f\sigma_8(0.38)$	0.4825	$0.470^{+0.030}_{-0.037}$
$A_{143 \times 217}^{PS}$	51.9	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9573	$0.956^{+0.028}_{-0.031}$	$\sigma_8(0.38)$	0.668	$0.632^{+0.062}_{-0.099}$
$A_{217}^{PS}$	121.0	$115^{+20}_{-20}$	$Y_P$	0.2429	$0.2436^{+0.0079}_{-0.0084}$	$f\sigma_8(0.51)$	0.4799	$0.465^{+0.031}_{-0.043}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.2442	$0.2449^{+0.0079}_{-0.0085}$	$\sigma_8(0.51)$	0.624	$0.590^{+0.060}_{-0.095}$
$A_{100}^{dustTT}$	8.76	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	2.594	$2.63^{+0.14}_{-0.14}$	$f\sigma_8(0.61)$	0.4741	$0.458^{+0.032}_{-0.046}$
$A_{143}^{dustTT}$	10.72	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.98	$14.05^{+0.77}_{-0.70}$	$\sigma_8(0.61)$	0.594	$0.561^{+0.058}_{-0.092}$
$A_{143 \times 217}^{dustTT}$	19.6	$18.3^{+6.5}_{-6.4}$	$z_*$	1090.06	$1090.4^{+1.2}_{-1.0}$	$f\sigma_8(2.33)$	0.2981	$0.283^{+0.028}_{-0.045}$
$A_{217}^{dustTT}$	95.0	$93^{+10}_{-10}$	$r_*$	146.0	$145.4^{+5.3}_{-5.0}$	$\sigma_8(2.33)$	0.3073	$0.290^{+0.032}_{-0.050}$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04134	$1.0411^{+0.0015}_{-0.0014}$	$f_{2000}^{143}$	28.9	$31^{+7}_{-7}$
$c_{217}$	0.99824	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	14.021	$13.96^{+0.50}_{-0.47}$	$f_{2000}^{143 \times 217}$	32.2	$34^{+5}_{-5}$
$H_0$	66.2	$64.5^{+6.7}_{-7.9}$	$z_{drag}$	1058.83	$1058.8^{+2.3}_{-2.5}$	$f_{2000}^{217}$	106.54	$108.2^{+4.8}_{-4.7}$
$\Omega_\Lambda$	0.679	$0.650^{+0.069}_{-0.099}$	$r_{drag}$	148.8	$148.2^{+5.6}_{-5.2}$	$\chi_{simall}^2$	395.70	$396.9 (\nu: 1.5)$
$\Omega_m$	0.321	$0.350^{+0.099}_{-0.069}$	$k_D$	0.13945	$0.1399^{+0.0038}_{-0.0039}$	$\chi_{lowl}^2$	24.55	$24.9 (\nu: 3.3)$
$\Omega_m h^2$	0.1404	$0.1440^{+0.0098}_{-0.0089}$	$100\theta_D$	0.16067	$0.1609^{+0.0013}_{-0.0013}$	$\chi_{plik}^2$	757.2	$772.7 (\nu: 18.4)$
$\Omega_\nu h^2$	0.00001	$< 0.00718$	$z_{eq}$	3435	$3442^{+150}_{-140}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.6)$
$\Omega_m h^3$	0.0929	$0.093^{+0.012}_{-0.012}$	$k_{eq}$	0.010361	$0.01042^{+0.00034}_{-0.00032}$	$\chi_{CMB}^2$	1177.4	$1194.5 (\nu: 18.4)$
$\sigma_8$	0.818	$0.778^{+0.067}_{-0.11}$	$100\theta_{eq}$	0.8064	$0.805^{+0.026}_{-0.026}$			

Best-fit  $\chi_{eff}^2 = 1178.71$ ;  $\Delta\chi_{eff}^2 = -0.87$ ;  $\bar{\chi}_{eff}^2 = 1201.83$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.25$ ;  $R - 1 = 0.00661$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 ( $\Delta$  -0.18) commander\_dx12\_v3\_2\_29: 24.55 ( $\Delta$  0.95) plik\_rd12\_HM\_v22\_TT: 757.19 ( $\Delta$  -1.56)

## 9.2 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02208	$0.02190^{+0.00067}_{-0.00074}$	$S_8$	0.8336	$0.839^{+0.034}_{-0.033}$	$100\theta_{s,eq}$	0.4479	$0.445^{+0.012}_{-0.013}$
$\Omega_c h^2$	0.1171	$0.1192^{+0.0079}_{-0.0075}$	$\sigma_8 \Omega_m^{0.5}$	0.4566	$0.460^{+0.019}_{-0.018}$	$H(0.15)$	71.7	$69.8^{+5.7}_{-6.3}$
$100\theta_{MC}$	1.04119	$1.0408^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	0.6093	$0.599^{+0.025}_{-0.031}$	$D_M(0.15)$	652	$674^{+70}_{-59}$
$\tau$	0.0507	$0.051^{+0.016}_{-0.015}$	$\sigma_8/h^{0.5}$	0.9976	$0.973^{+0.040}_{-0.054}$	$H(0.38)$	81.7	$80.4^{+5.1}_{-5.7}$
$\Sigma m_\nu$ [eV]	0.001	< 0.569	$r_{drag} h$	99.2	$95.5^{+6.8}_{-8.5}$	$D_M(0.38)$	1554	$1597^{+150}_{-130}$
$N_{eff}$	2.85	$2.88^{+0.57}_{-0.56}$	$\langle d^2 \rangle^{1/2}$	2.456	$2.467^{+0.079}_{-0.069}$	$H(0.51)$	88.4	$87.4^{+4.9}_{-5.3}$
$\ln(10^{10} A_s)$	3.0280	$3.034^{+0.041}_{-0.041}$	$z_{re}$	7.29	$7.4^{+1.6}_{-1.7}$	$D_M(0.51)$	2013	$2062^{+180}_{-150}$
$n_s$	0.9580	$0.954^{+0.026}_{-0.028}$	$10^9 A_s$	2.066	$2.078^{+0.086}_{-0.084}$	$H(0.61)$	93.99	$93.2^{+4.8}_{-5.0}$
$y_{cal}$	1.00009	$1.0005^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8664	$1.875^{+0.043}_{-0.045}$	$D_M(0.61)$	2342	$2395^{+190}_{-170}$
$A_{217}^{CIB}$	47.1	$47^{+10}_{-10}$	$D_{40}$	1236.2	$1245^{+42}_{-40}$	$H(2.33)$	233.4	$235.8^{+7.4}_{-7.2}$
$\xi^{tSZ \times CIB}$	0.47	—	$D_{220}$	5713	$5711^{+82}_{-81}$	$D_M(2.33)$	5842	$5887^{+310}_{-270}$
$A_{143}^{tSZ}$	7.05	$5.2^{+3.8}_{-4.0}$	$D_{810}$	2532.6	$2536^{+28}_{-28}$	$f\sigma_8(0.15)$	0.4601	$0.462^{+0.016}_{-0.016}$
$A_{100}^{PS}$	250	$261^{+60}_{-60}$	$D_{1420}$	816.3	$815^{+10}_{-11}$	$\sigma_8(0.15)$	0.751	$0.718^{+0.056}_{-0.077}$
$A_{143}^{PS}$	48.0	$48^{+20}_{-20}$	$D_{2000}$	231.19	$230.0^{+4.5}_{-4.5}$	$f\sigma_8(0.38)$	0.4775	$0.472^{+0.018}_{-0.021}$
$A_{143 \times 217}^{PS}$	48.4	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9580	$0.954^{+0.026}_{-0.028}$	$\sigma_8(0.38)$	0.665	$0.633^{+0.054}_{-0.074}$
$A_{217}^{PS}$	119.5	$115^{+20}_{-20}$	$Y_P$	0.2426	$0.2429^{+0.0078}_{-0.0081}$	$f\sigma_8(0.51)$	0.4755	$0.467^{+0.021}_{-0.027}$
$A^{kSZ}$	0.00	< 8.43	$Y_P^{BBN}$	0.2439	$0.2442^{+0.0078}_{-0.0081}$	$\sigma_8(0.51)$	0.622	$0.592^{+0.053}_{-0.072}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	2.571	$2.62^{+0.14}_{-0.14}$	$f\sigma_8(0.61)$	0.4702	$0.460^{+0.023}_{-0.031}$
$A_{143}^{dustTT}$	10.81	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.99	$14.09^{+0.74}_{-0.65}$	$\sigma_8(0.61)$	0.592	$0.562^{+0.051}_{-0.069}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.2^{+6.5}_{-6.4}$	$z_*$	1089.83	$1090.3^{+1.2}_{-1.0}$	$f\sigma_8(2.33)$	0.2973	$0.284^{+0.025}_{-0.034}$
$A_{217}^{dustTT}$	95.0	$93^{+10}_{-10}$	$r_*$	146.4	$145.8^{+5.1}_{-4.9}$	$\sigma_8(2.33)$	0.3068	$0.291^{+0.029}_{-0.039}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04150	$1.0412^{+0.0015}_{-0.0014}$	$f_{2000}^{143}$	28.6	$31^{+7}_{-7}$
$c_{217}$	0.99824	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	14.059	$14.01^{+0.48}_{-0.46}$	$f_{2000}^{143 \times 217}$	31.9	$33^{+5}_{-5}$
$H_0$	66.4	$64.3^{+6.1}_{-6.9}$	$z_{drag}$	1058.90	$1058.7^{+2.2}_{-2.4}$	$f_{2000}^{217}$	106.39	$107.8^{+4.8}_{-4.7}$
$\Omega_\Lambda$	0.685	$0.651^{+0.061}_{-0.085}$	$r_{drag}$	149.2	$148.7^{+5.4}_{-5.1}$	$\chi^2_{lensing}$	8.74	$9.2 (\nu: 0.6)$
$\Omega_m$	0.315	$0.349^{+0.085}_{-0.061}$	$k_D$	0.13919	$0.1395^{+0.0037}_{-0.0037}$	$\chi^2_{small}$	395.68	$396.9 (\nu: 1.4)$
$\Omega_m h^2$	0.1392	$0.1432^{+0.0096}_{-0.0087}$	$100\theta_D$	0.16054	$0.1608^{+0.0013}_{-0.0013}$	$\chi^2_{lowl}$	24.31	$25.3 (\nu: 3.0)$
$\Omega_\nu h^2$	0.00001	< 0.00554	$z_{eq}$	3416	$3450^{+140}_{-120}$	$\chi^2_{plik}$	757.7	$771.6 (\nu: 15.5)$
$\Omega_m h^3$	0.0925	$0.092^{+0.012}_{-0.011}$	$k_{eq}$	0.010286	$0.01041^{+0.00033}_{-0.00029}$	$\chi^2_{prior}$	1.4	$7.3 (\nu: 6.6)$
$\sigma_8$	0.813	$0.780^{+0.056}_{-0.077}$	$100\theta_{eq}$	0.8101	$0.804^{+0.023}_{-0.026}$	$\chi^2_{CMB}$	1186.4	$1203.1 (\nu: 17.3)$

Best-fit  $\chi^2_{eff} = 1187.75$ ;  $\Delta\chi^2_{eff} = -0.82$ ;  $\bar{\chi}^2_{eff} = 1210.35$ ;  $\Delta\bar{\chi}^2_{eff} = 1.93$ ;  $R - 1 = 0.00978$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.74 ( $\Delta$  -0.16) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.18) commander\_dx12\_v3\_2\_29: 24.31 ( $\Delta$  1.07) plik\_rd12\_HM\_v22\_TT: 757.67 ( $\Delta$  -1.65)

### 9.3 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022244	$0.02222^{+0.00044}_{-0.00045}$	$\Omega_m h^2$	0.1394	$0.1416^{+0.0068}_{-0.0061}$	$k_{\text{eq}}$	0.010299	$0.01035^{+0.00024}_{-0.00023}$
$\Omega_c h^2$	0.1171	$0.1183^{+0.0061}_{-0.0057}$	$\Omega_\nu h^2$	0.00000	$< 0.00311$	$100\theta_{\text{eq}}$	0.8100	$0.809^{+0.014}_{-0.013}$
$100\theta_{\text{MC}}$	1.04128	$1.04111^{+0.00087}_{-0.00086}$	$\Omega_m h^3$	0.0928	$0.0934^{+0.0078}_{-0.0073}$	$100\theta_{\text{s,eq}}$	0.4477	$0.4475^{+0.0070}_{-0.0067}$
$\tau$	0.0540	$0.054^{+0.016}_{-0.015}$	$\sigma_8$	0.8167	$0.799^{+0.040}_{-0.051}$	$H(0.15)$	71.87	$71.3^{+3.3}_{-3.4}$
$\Sigma m_\nu [\text{eV}]$	0.000	$< 0.305$	$S_8$	0.8355	$0.832^{+0.033}_{-0.034}$	$D_{\text{M}}(0.15)$	650.5	$657^{+35}_{-33}$
$N_{\text{eff}}$	2.852	$2.91^{+0.38}_{-0.36}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4576	$0.456^{+0.018}_{-0.019}$	$H(0.38)$	81.91	$81.6^{+3.0}_{-3.3}$
$\ln(10^{10} A_{\text{s}})$	3.0369	$3.038^{+0.037}_{-0.036}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6113	$0.603^{+0.025}_{-0.028}$	$D_{\text{M}}(0.38)$	1551	$1562^{+74}_{-71}$
$n_{\text{s}}$	0.9593	$0.959^{+0.017}_{-0.017}$	$\sigma_8/h^{0.5}$	1.0006	$0.983^{+0.037}_{-0.045}$	$H(0.51)$	88.57	$88.4^{+3.0}_{-3.1}$
$y_{\text{cal}}$	1.00060	$1.0006^{+0.0049}_{-0.0049}$	$r_{\text{drag}} h$	99.27	$97.9^{+3.7}_{-4.1}$	$D_{\text{M}}(0.51)$	2009	$2022^{+91}_{-87}$
$A_{217}^{\text{CIB}}$	43.8	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.463	$2.454^{+0.060}_{-0.059}$	$H(0.61)$	94.15	$94.1^{+3.0}_{-3.1}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.88	—	$z_{\text{re}}$	7.60	$7.6^{+1.6}_{-1.6}$	$D_{\text{M}}(0.61)$	2337	$2351^{+100}_{-98}$
$A_{143}^{\text{tSZ}}$	6.91	$5.6^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	2.084	$2.086^{+0.078}_{-0.074}$	$H(2.33)$	233.6	$235.0^{+5.5}_{-5.2}$
$A_{100}^{\text{PS}}$	244	$256^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8708	$1.874^{+0.035}_{-0.035}$	$D_{\text{M}}(2.33)$	5833	$5835^{+180}_{-170}$
$A_{143}^{\text{PS}}$	50.8	$45^{+20}_{-20}$	$D_{40}$	1238.0	$1239^{+31}_{-31}$	$f\sigma_8(0.15)$	0.4613	$0.459^{+0.017}_{-0.018}$
$A_{143 \times 217}^{\text{PS}}$	56.5	$42^{+20}_{-20}$	$D_{220}$	5733	$5732^{+78}_{-75}$	$\sigma_8(0.15)$	0.7543	$0.737^{+0.038}_{-0.049}$
$A_{217}^{\text{PS}}$	123.6	$115^{+20}_{-20}$	$D_{810}$	2539.2	$2538^{+27}_{-27}$	$f\sigma_8(0.38)$	0.4790	$0.474^{+0.018}_{-0.019}$
$A^{\text{kSZ}}$	0.00	$< 7.82$	$D_{1420}$	819.6	$817.9^{+9.6}_{-9.5}$	$\sigma_8(0.38)$	0.6681	$0.652^{+0.036}_{-0.046}$
$A_{100}^{\text{dustTT}}$	8.70	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	232.57	$231.5^{+3.6}_{-3.6}$	$f\sigma_8(0.51)$	0.4772	$0.472^{+0.019}_{-0.021}$
$A_{143}^{\text{dustTT}}$	10.91	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9593	$0.959^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6250	$0.609^{+0.034}_{-0.044}$
$A_{143 \times 217}^{\text{dustTT}}$	20.1	$18.5^{+6.4}_{-6.4}$	$Y_{\text{P}}$	0.2427	$0.2434^{+0.0052}_{-0.0051}$	$f\sigma_8(0.61)$	0.4719	$0.466^{+0.019}_{-0.022}$
$A_{217}^{\text{dustTT}}$	95.9	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.2440	$0.2447^{+0.0053}_{-0.0052}$	$\sigma_8(0.61)$	0.5946	$0.580^{+0.033}_{-0.042}$
$A_{100}^{\text{dustTE}}$	0.113	$0.115^{+0.075}_{-0.074}$	$10^5 \text{D}/\text{H}$	2.542	$2.565^{+0.091}_{-0.086}$	$f\sigma_8(2.33)$	0.2987	$0.292^{+0.016}_{-0.020}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$\text{Age}/\text{Gyr}$	13.964	$13.97^{+0.44}_{-0.41}$	$\sigma_8(2.33)$	0.3083	$0.300^{+0.018}_{-0.023}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.63	$1089.82^{+0.71}_{-0.69}$	$f_{2000}^{143}$	27.0	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	0.226	$0.22^{+0.11}_{-0.11}$	$r_*$	146.28	$145.7^{+3.5}_{-3.6}$	$f_{2000}^{143 \times 217}$	30.74	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	1.04157	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	105.38	$106.5^{+3.9}_{-3.8}$
$A_{217}^{\text{dustTE}}$	2.07	$2.09^{+0.53}_{-0.52}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.044	$13.99^{+0.33}_{-0.34}$	$\chi_{\text{simall}}^2$	396.02	$397.1 (\nu: 1.7)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.28	$1059.4^{+1.6}_{-1.6}$	$\chi_{\text{lowl}}^2$	24.29	$24.4 (\nu: 1.1)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	149.01	$148.4^{+3.7}_{-3.8}$	$\chi_{\text{plik}}^2$	2342.0	$2360.0 (\nu: 20.3)$
$H_0$	66.62	$66.0^{+3.5}_{-3.7}$	$k_{\text{D}}$	0.13952	$0.1399^{+0.0028}_{-0.0026}$	$\chi_{\text{prior}}^2$	1.4	$11.6 (\nu: 10.0)$
$\Omega_\Lambda$	0.6860	$0.674^{+0.031}_{-0.036}$	$100\theta_{\text{D}}$	0.16033	$0.16051^{+0.00083}_{-0.00079}$	$\chi_{\text{CMB}}^2$	2762.3	$2781.4 (\nu: 20.2)$
$\Omega_{\text{m}}$	0.3140	$0.326^{+0.036}_{-0.031}$	$z_{\text{eq}}$	3419	$3423^{+72}_{-72}$			

Best-fit  $\chi_{\text{eff}}^2 = 2763.73$ ;  $\Delta\chi_{\text{eff}}^2 = -2.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.98$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.21$ ;  $R - 1 = 0.00589$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.02 ( $\Delta$  -0.03) commander\_dx12\_v3.2.29: 24.29 ( $\Delta$  1.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2341.98 ( $\Delta$  -2.66)

#### 9.4 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022236	$0.02221^{+0.00044}_{-0.00044}$	$\Omega_m h^2$	0.1386	$0.1411^{+0.0067}_{-0.0060}$	$k_{\text{eq}}$	0.010263	$0.01033^{+0.00023}_{-0.00022}$
$\Omega_c h^2$	0.1163	$0.1179^{+0.0059}_{-0.0055}$	$\Omega_\nu h^2$	0.00000	$< 0.00278$	$100\theta_{\text{eq}}$	0.8107	$0.809^{+0.013}_{-0.013}$
$100\theta_{\text{MC}}$	1.04134	$1.04116^{+0.00086}_{-0.00085}$	$\Omega_m h^3$	0.0922	$0.0930^{+0.0075}_{-0.0071}$	$100\theta_{\text{s,eq}}$	0.4481	$0.4474^{+0.0066}_{-0.0066}$
$\tau$	0.0528	$0.054^{+0.015}_{-0.015}$	$\sigma_8$	0.8129	$0.798^{+0.034}_{-0.041}$	$H(0.15)$	71.76	$71.2^{+3.1}_{-3.4}$
$\Sigma m_\nu [\text{eV}]$	0.000	$< 0.275$	$S_8$	0.8303	$0.831^{+0.025}_{-0.025}$	$D_{\text{M}}(0.15)$	651.4	$658^{+33}_{-31}$
$N_{\text{eff}}$	2.820	$2.88^{+0.37}_{-0.35}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4548	$0.455^{+0.014}_{-0.014}$	$H(0.38)$	81.76	$81.5^{+3.0}_{-3.1}$
$\ln(10^{10} A_{\text{s}})$	3.0318	$3.037^{+0.034}_{-0.034}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6080	$0.603^{+0.018}_{-0.020}$	$D_{\text{M}}(0.38)$	1553	$1565^{+71}_{-68}$
$n_{\text{s}}$	0.9587	$0.958^{+0.017}_{-0.017}$	$\sigma_8/h^{0.5}$	0.9965	$0.983^{+0.028}_{-0.033}$	$H(0.51)$	88.40	$88.3^{+2.9}_{-3.0}$
$y_{\text{cal}}$	1.00043	$1.0006^{+0.0049}_{-0.0049}$	$r_{\text{drag}} h$	99.41	$97.9^{+3.5}_{-4.0}$	$D_{\text{M}}(0.51)$	2012	$2025^{+88}_{-84}$
$A_{217}^{\text{CIB}}$	43.8	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.4557	$2.454^{+0.047}_{-0.048}$	$H(0.61)$	93.95	$93.9^{+2.9}_{-2.9}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.92	—	$z_{\text{re}}$	7.46	$7.6^{+1.5}_{-1.5}$	$D_{\text{M}}(0.61)$	2341	$2354^{+98}_{-95}$
$A_{143}^{\text{tSZ}}$	7.00	$5.6^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	2.073	$2.084^{+0.072}_{-0.069}$	$H(2.33)$	232.9	$234.6^{+5.4}_{-5.1}$
$A_{100}^{\text{PS}}$	243	$255^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8658	$1.872^{+0.034}_{-0.034}$	$D_{\text{M}}(2.33)$	5846	$5845^{+180}_{-170}$
$A_{143}^{\text{PS}}$	51.1	$45^{+20}_{-20}$	$D_{40}$	1237.0	$1240^{+31}_{-30}$	$f\sigma_8(0.15)$	0.4585	$0.459^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	57.4	$42^{+20}_{-20}$	$D_{220}$	5731	$5734^{+78}_{-76}$	$\sigma_8(0.15)$	0.7508	$0.736^{+0.033}_{-0.041}$
$A_{217}^{\text{PS}}$	123.5	$115^{+20}_{-20}$	$D_{810}$	2537.0	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4763	$0.474^{+0.013}_{-0.014}$
$A^{\text{kSZ}}$	0.01	$< 7.72$	$D_{1420}$	819.4	$818.0^{+9.6}_{-9.4}$	$\sigma_8(0.38)$	0.6652	$0.651^{+0.031}_{-0.038}$
$A_{100}^{\text{dustTT}}$	8.72	$8.8^{+3.6}_{-3.6}$	$D_{2000}$	232.61	$231.6^{+3.6}_{-3.6}$	$f\sigma_8(0.51)$	0.4747	$0.471^{+0.014}_{-0.015}$
$A_{143}^{\text{dustTT}}$	10.93	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9587	$0.958^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6223	$0.609^{+0.030}_{-0.037}$
$A_{143 \times 217}^{\text{dustTT}}$	20.2	$18.5^{+6.3}_{-6.4}$	$Y_{\text{P}}$	0.2423	$0.2431^{+0.0052}_{-0.0051}$	$f\sigma_8(0.61)$	0.4695	$0.465^{+0.015}_{-0.017}$
$A_{217}^{\text{dustTT}}$	95.8	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.2436	$0.2444^{+0.0052}_{-0.0051}$	$\sigma_8(0.61)$	0.5920	$0.579^{+0.029}_{-0.036}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.076}_{-0.074}$	$10^5 \text{D/H}$	2.532	$2.559^{+0.090}_{-0.084}$	$f\sigma_8(2.33)$	0.2975	$0.292^{+0.014}_{-0.017}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.057}_{-0.058}$	Age/Gyr	13.994	$13.99^{+0.42}_{-0.40}$	$\sigma_8(2.33)$	0.3071	$0.300^{+0.016}_{-0.020}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.54	$1089.77^{+0.70}_{-0.66}$	$f_{2000}^{143}$	26.9	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	0.226	$0.23^{+0.11}_{-0.11}$	$r_*$	146.67	$146.0^{+3.5}_{-3.5}$	$f_{2000}^{143 \times 217}$	30.65	$31^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.15}$	$100\theta_*$	1.04166	$1.0415^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	105.23	$106.4^{+3.9}_{-3.8}$
$A_{217}^{\text{dustTE}}$	2.07	$2.09^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.080	$14.02^{+0.32}_{-0.33}$	$\chi_{\text{lensing}}^2$	8.66	$9.09 (\nu: 0.3)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.17	$1059.3^{+1.5}_{-1.5}$	$\chi_{\text{small}}^2$	395.84	$397.0 (\nu: 1.5)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	149.40	$148.7^{+3.7}_{-3.7}$	$\chi_{\text{lowl}}^2$	24.25	$24.5 (\nu: 1.1)$
$H_0$	66.54	$65.9^{+3.2}_{-3.7}$	$k_{\text{D}}$	0.13923	$0.1397^{+0.0027}_{-0.0026}$	$\chi_{\text{plik}}^2$	2342.4	$2359.4 (\nu: 18.1)$
$\Omega_\Lambda$	0.6870	$0.674^{+0.029}_{-0.035}$	$100\theta_{\text{D}}$	0.16026	$0.16045^{+0.00081}_{-0.00078}$	$\chi_{\text{prior}}^2$	1.4	$11.5 (\nu: 9.8)$
$\Omega_{\text{m}}$	0.3130	$0.326^{+0.035}_{-0.029}$	$z_{\text{eq}}$	3415	$3423^{+70}_{-69}$	$\chi_{\text{CMB}}^2$	2771.2	$2790.0 (\nu: 19.4)$

Best-fit  $\chi_{\text{eff}}^2 = 2772.59$ ;  $\Delta\chi_{\text{eff}}^2 = -2.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.54$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.85$ ;  $R - 1 = 0.00830$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.66 ( $\Delta$  -0.21) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 ( $\Delta$  -0.21) commander\_dx12\_v3\_2\_29: 24.25 ( $\Delta$  1.00) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.41 ( $\Delta$  -2.52)

## 9.5 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022179	$0.02226^{+0.00046}_{-0.00046}$	$\sigma_8 \Omega_m^{0.5}$	0.4562	$0.451^{+0.019}_{-0.021}$	$D_M(0.15)$	639.9	$636^{+26}_{-25}$
$\Omega_c h^2$	0.1194	$0.1204^{+0.0077}_{-0.0076}$	$\sigma_8 \Omega_m^{0.25}$	0.6122	$0.605^{+0.024}_{-0.026}$	$H(0.38)$	83.07	$83.6^{+3.0}_{-2.9}$
$100\theta_{MC}$	1.04094	$1.0408^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	0.9980	$0.983^{+0.034}_{-0.038}$	$D_M(0.38)$	1527	$1519^{+59}_{-58}$
$\tau$	0.0529	$0.054^{+0.016}_{-0.016}$	$r_{drag}h$	99.99	$99.96^{+2.1}_{-2.0}$	$H(0.51)$	89.75	$90.3^{+3.1}_{-3.0}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.177$	$\langle d^2 \rangle^{1/2}$	2.446	$2.425^{+0.062}_{-0.067}$	$D_M(0.51)$	1978	$1968^{+75}_{-73}$
$N_{eff}$	3.034	$3.14^{+0.47}_{-0.46}$	$z_{re}$	7.56	$7.6^{+1.6}_{-1.7}$	$H(0.61)$	95.34	$95.9^{+3.2}_{-3.1}$
$\ln(10^{10} A_s)$	3.0396	$3.043^{+0.040}_{-0.040}$	$10^9 A_s$	2.090	$2.098^{+0.085}_{-0.082}$	$D_M(0.61)$	2303	$2290^{+86}_{-83}$
$n_s$	0.9653	$0.969^{+0.017}_{-0.017}$	$10^9 A_s e^{-2\tau}$	1.8799	$1.884^{+0.041}_{-0.042}$	$H(2.33)$	235.6	$237.0^{+6.7}_{-6.7}$
$y_{cal}$	1.00051	$1.0006^{+0.0049}_{-0.0049}$	$D_{40}$	1227.9	$1223^{+31}_{-31}$	$D_M(2.33)$	5763	$5730^{+190}_{-180}$
$A_{217}^{CIB}$	49.2	$48^{+10}_{-10}$	$D_{220}$	5716	$5719^{+78}_{-77}$	$f\sigma_8(0.15)$	0.4603	$0.456^{+0.018}_{-0.020}$
$\xi^{tSZ \times CIB}$	0.19	—	$D_{810}$	2536.7	$2537^{+28}_{-28}$	$\sigma_8(0.15)$	0.7594	$0.750^{+0.031}_{-0.033}$
$A_{143}^{tSZ}$	7.19	$5.0^{+3.9}_{-4.0}$	$D_{1420}$	815.7	$815^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4795	$0.475^{+0.018}_{-0.020}$
$A_{100}^{PS}$	254	$265^{+60}_{-60}$	$D_{2000}$	230.20	$229.4^{+4.3}_{-4.3}$	$\sigma_8(0.38)$	0.6733	$0.665^{+0.028}_{-0.030}$
$A_{143}^{PS}$	46.9	$50^{+20}_{-20}$	$n_{s,0.002}$	0.9653	$0.969^{+0.017}_{-0.017}$	$f\sigma_8(0.51)$	0.4783	$0.474^{+0.017}_{-0.020}$
$A_{143 \times 217}^{PS}$	43.2	$44^{+20}_{-20}$	$Y_P$	0.2452	$0.2465^{+0.0062}_{-0.0063}$	$\sigma_8(0.51)$	0.6301	$0.623^{+0.026}_{-0.028}$
$A_{217}^{PS}$	118.1	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.2465	$0.2479^{+0.0062}_{-0.0063}$	$f\sigma_8(0.61)$	0.4735	$0.469^{+0.018}_{-0.019}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.618	$2.64^{+0.13}_{-0.13}$	$\sigma_8(0.61)$	0.5996	$0.593^{+0.024}_{-0.028}$
$A_{100}^{dustTT}$	8.92	$9.0^{+3.6}_{-3.6}$	Age/Gyr	13.798	$13.72^{+0.45}_{-0.44}$	$f\sigma_8(2.33)$	0.3015	$0.299^{+0.012}_{-0.013}$
$A_{143}^{dustTT}$	10.74	$10.8^{+3.5}_{-3.5}$	$z_*$	1090.09	$1090.19^{+0.95}_{-0.97}$	$\sigma_8(2.33)$	0.3114	$0.308^{+0.013}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	19.2	$18.3^{+6.5}_{-6.5}$	$r_*$	144.80	$144.0^{+4.4}_{-4.3}$	$f_{2000}^{143}$	30.2	$32^{+7}_{-7}$
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$100\theta_*$	1.04113	$1.0410^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	33.04	$34^{+5}_{-5}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.908	$13.83^{+0.41}_{-0.40}$	$f_{2000}^{217}$	107.63	$108.4^{+4.4}_{-4.5}$
$c_{217}$	0.99824	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.44	$1059.8^{+1.7}_{-1.7}$	$\chi_{small}^2$	395.86	$397.1 (\nu: 1.7)$
$H_0$	67.78	$68.2^{+2.9}_{-2.8}$	$r_{drag}$	147.53	$146.7^{+4.6}_{-4.4}$	$\chi_{lowl}^2$	23.31	$22.8 (\nu: 0.8)$
$\Omega_\Lambda$	0.6917	$0.691^{+0.016}_{-0.016}$	$k_D$	0.14030	$0.1409^{+0.0033}_{-0.0033}$	$\chi_{plik}^2$	758.4	$773.3 (\nu: 17.5)$
$\Omega_m$	0.3083	$0.309^{+0.016}_{-0.016}$	$100\theta_D$	0.16100	$0.1612^{+0.0011}_{-0.0012}$	$\chi_{6DF}^2$	0.010	$0.057 (\nu: 0.0)$
$\Omega_m h^2$	0.1416	$0.1434^{+0.0081}_{-0.0080}$	$z_{eq}$	3389	$3368^{+65}_{-69}$	$\chi_{MGS}^2$	1.41	$1.47 (\nu: 0.2)$
$\Omega_\nu h^2$	0.00002	$< 0.00189$	$k_{eq}$	0.010336	$0.01034^{+0.00029}_{-0.00029}$	$\chi_{DR12BAO}^2$	3.91	$4.6 (\nu: 1.3)$
$\Omega_m h^3$	0.0960	$0.0978^{+0.0093}_{-0.0087}$	$100\theta_{eq}$	0.8150	$0.819^{+0.013}_{-0.012}$	$\chi_{prior}^2$	1.5	$7.4 (\nu: 6.8)$
$\sigma_8$	0.8216	$0.812^{+0.033}_{-0.036}$	$100\theta_{s,eq}$	0.4504	$0.4525^{+0.0068}_{-0.0062}$	$\chi_{BAO}^2$	5.32	$6.2 (\nu: 0.9)$
$S_8$	0.8329	$0.823^{+0.035}_{-0.038}$	$H(0.15)$	73.02	$73.4^{+2.9}_{-2.8}$	$\chi_{CMB}^2$	1177.6	$1193.2 (\nu: 16.7)$

Best-fit  $\chi_{eff}^2 = 1184.40$ ;  $\Delta\chi_{eff}^2 = -1.35$ ;  $\bar{\chi}_{eff}^2 = 1206.70$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.68$ ;  $R - 1 = 0.00673$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.01) MGS: 1.41 ( $\Delta$  0.13) DR12BAO: 3.91 ( $\Delta$  -0.28) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 23.31 ( $\Delta$  0.49) plik\_rd12\_HM\_v22\_TT: 758.38 ( $\Delta$  -1.72)

## 9.6 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022208	$0.02227^{+0.00045}_{-0.00044}$	$\sigma_8 \Omega_m^{0.25}$	0.6119	$0.605^{+0.024}_{-0.025}$	$D_M(0.38)$	1524	$1516^{+57}_{-56}$
$\Omega_c h^2$	0.1195	$0.1205^{+0.0077}_{-0.0077}$	$\sigma_8/h^{0.5}$	0.9973	$0.983^{+0.033}_{-0.038}$	$H(0.51)$	89.87	$90.4^{+3.1}_{-3.0}$
$100\theta_{MC}$	1.04097	$1.0408^{+0.0011}_{-0.0011}$	$r_{drag}h$	100.11	$100.1^{+2.0}_{-1.9}$	$D_M(0.51)$	1975	$1964^{+72}_{-71}$
$\tau$	0.0530	$0.054^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.444	$2.423^{+0.061}_{-0.066}$	$H(0.61)$	95.46	$96.0^{+3.2}_{-3.1}$
$\Sigma m_\nu$ [eV]	0.002	< 0.173	$z_{re}$	7.57	$7.7^{+1.6}_{-1.7}$	$D_M(0.61)$	2299	$2286^{+83}_{-81}$
$N_{eff}$	3.046	$3.15^{+0.47}_{-0.45}$	$10^9 A_s$	2.091	$2.099^{+0.085}_{-0.082}$	$H(2.33)$	235.8	$237.2^{+6.7}_{-6.8}$
$\ln(10^{10} A_s)$	3.0401	$3.044^{+0.040}_{-0.040}$	$10^9 A_s e^{-2\tau}$	1.8806	$1.885^{+0.041}_{-0.042}$	$D_M(2.33)$	5756	$5724^{+180}_{-180}$
$n_s$	0.9661	$0.970^{+0.017}_{-0.017}$	$D_{40}$	1226.8	$1222^{+30}_{-30}$	$f\sigma_8(0.15)$	0.4598	$0.455^{+0.018}_{-0.019}$
$y_{cal}$	1.00045	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	5717	$5719^{+79}_{-77}$	$\sigma_8(0.15)$	0.7597	$0.751^{+0.030}_{-0.033}$
$A_{217}^{CIB}$	48.8	$48^{+10}_{-10}$	$D_{810}$	2537.1	$2537^{+28}_{-28}$	$f\sigma_8(0.38)$	0.4792	$0.475^{+0.018}_{-0.020}$
$\xi^{tSZ \times CIB}$	0.31	—	$D_{1420}$	815.8	$815^{+10}_{-9.9}$	$\sigma_8(0.38)$	0.6737	$0.666^{+0.026}_{-0.031}$
$A_{143}^{tSZ}$	7.03	$5.0^{+3.9}_{-4.0}$	$D_{2000}$	230.24	$229.3^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	0.4782	$0.474^{+0.017}_{-0.019}$
$A_{100}^{PS}$	254	$265^{+50}_{-60}$	$n_{s,0.002}$	0.9661	$0.970^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6306	$0.624^{+0.024}_{-0.029}$
$A_{143}^{PS}$	49.0	$50^{+20}_{-20}$	$Y_P$	0.2453	$0.2467^{+0.0061}_{-0.0062}$	$f\sigma_8(0.61)$	0.4734	$0.469^{+0.017}_{-0.019}$
$A_{143 \times 217}^{PS}$	46.5	$44^{+20}_{-20}$	$Y_P^{BBN}$	0.2467	$0.2481^{+0.0061}_{-0.0062}$	$\sigma_8(0.61)$	0.6000	$0.594^{+0.023}_{-0.028}$
$A_{217}^{PS}$	119.0	$115^{+20}_{-20}$	$10^5 D/H$	2.616	$2.64^{+0.13}_{-0.13}$	$f\sigma_8(2.33)$	0.3017	$0.300^{+0.011}_{-0.013}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.782	$13.70^{+0.44}_{-0.43}$	$\sigma_8(2.33)$	0.3117	$0.309^{+0.012}_{-0.014}$
$A_{100}^{dustTT}$	8.87	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.08	$1090.19^{+0.96}_{-0.97}$	$f_{2000}^{143}$	30.2	$32^{+7}_{-7}$
$A_{143}^{dustTT}$	10.81	$10.8^{+3.4}_{-3.5}$	$r_*$	144.69	$143.9^{+4.4}_{-4.2}$	$f_{2000}^{143 \times 217}$	33.08	$34^{+5}_{-5}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	1.04113	$1.0410^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	107.55	$108.5^{+4.4}_{-4.5}$
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.897	$13.82^{+0.41}_{-0.40}$	$\chi_{small}^2$	395.88	$397.1 (\nu: 1.7)$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.51	$1059.8^{+1.7}_{-1.7}$	$\chi_{lowl}^2$	23.21	$22.7 (\nu: 0.7)$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	147.41	$146.6^{+4.6}_{-4.4}$	$\chi_{plik}^2$	758.6	$773.4 (\nu: 17.4)$
$H_0$	67.91	$68.3^{+2.8}_{-2.7}$	$k_D$	0.14041	$0.1410^{+0.0032}_{-0.0033}$	$\chi_{JLA}^2$	1034.88	$1035.01 (\nu: 0.1)$
$\Omega_\Lambda$	0.6927	$0.692^{+0.015}_{-0.015}$	$100\theta_D$	0.16101	$0.1613^{+0.0012}_{-0.0012}$	$\chi_{6DF}^2$	0.006	$0.047 (\nu: 0.0)$
$\Omega_m$	0.3073	$0.308^{+0.015}_{-0.015}$	$z_{eq}$	3387	$3365^{+63}_{-67}$	$\chi_{MGS}^2$	1.47	$1.55 (\nu: 0.2)$
$\Omega_m h^2$	0.1417	$0.1435^{+0.0081}_{-0.0080}$	$k_{eq}$	0.010336	$0.01034^{+0.00029}_{-0.00029}$	$\chi_{DR12BAO}^2$	3.78	$4.4 (\nu: 0.9)$
$\Omega_\nu h^2$	0.00002	< 0.00185	$100\theta_{eq}$	0.8156	$0.820^{+0.013}_{-0.012}$	$\chi_{prior}^2$	1.4	$7.3 (\nu: 6.7)$
$\Omega_m h^3$	0.0963	$0.0981^{+0.0093}_{-0.0087}$	$100\theta_{s,eq}$	0.4507	$0.4529^{+0.0066}_{-0.0060}$	$\chi_{BAO}^2$	5.26	$6.0 (\nu: 0.6)$
$\sigma_8$	0.8219	$0.812^{+0.033}_{-0.035}$	$H(0.15)$	73.15	$73.6^{+2.8}_{-2.7}$	$\chi_{CMB}^2$	1177.7	$1193.2 (\nu: 16.6)$
$S_8$	0.8318	$0.822^{+0.034}_{-0.037}$	$D_M(0.15)$	638.7	$635^{+25}_{-24}$			
$\sigma_8 \Omega_m^{0.5}$	0.4556	$0.450^{+0.019}_{-0.021}$	$H(0.38)$	83.19	$83.7^{+2.9}_{-2.8}$			

Best-fit  $\chi_{eff}^2 = 2219.27$ ;  $\bar{\chi}_{eff}^2 = 2241.49$ ;  $R - 1 = 0.00842$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.78 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 23.21 plik\_rd12\_HM\_v22.TT: 758.62  
SN - JLA Pantheon18: 1034.88

## 9.7 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02228^{+0.00045}_{-0.00044}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.024}_{-0.025}$	$D_M(0.38)$	$1515^{+57}_{-55}$
$\Omega_c h^2$	$0.1206^{+0.0076}_{-0.0077}$	$\sigma_8/h^{0.5}$	$0.984^{+0.033}_{-0.038}$	$H(0.51)$	$90.4^{+3.1}_{-3.0}$
$100\theta_{MC}$	$1.0408^{+0.0011}_{-0.0011}$	$r_{drag}h$	$100.1^{+2.0}_{-1.9}$	$D_M(0.51)$	$1963^{+73}_{-70}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.060}_{-0.064}$	$H(0.61)$	$96.1^{+3.2}_{-3.1}$
$\Sigma m_\nu$ [eV]	$< 0.176$	$z_{re}$	$< 9.04$	$D_M(0.61)$	$2285^{+83}_{-81}$
$N_{eff}$	$3.16^{+0.47}_{-0.45}$	$10^9 A_s$	$2.105^{+0.075}_{-0.071}$	$H(2.33)$	$237.2^{+6.7}_{-6.8}$
$\ln(10^{10} A_s)$	$3.047^{+0.036}_{-0.034}$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.041}_{-0.042}$	$D_M(2.33)$	$5721^{+180}_{-180}$
$n_s$	$0.970^{+0.017}_{-0.017}$	$D_{40}$	$1222^{+30}_{-30}$	$f\sigma_8(0.15)$	$0.456^{+0.018}_{-0.019}$
$y_{cal}$	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	$5719^{+79}_{-77}$	$\sigma_8(0.15)$	$0.752^{+0.030}_{-0.033}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+28}_{-28}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.020}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$815^{+10}_{-9.9}$	$\sigma_8(0.38)$	$0.667^{+0.027}_{-0.029}$
$A_{143}^{tSZ}$	$5.0^{+3.9}_{-4.0}$	$D_{2000}$	$229.4^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	$0.474^{+0.018}_{-0.018}$
$A_{100}^{PS}$	$265^{+50}_{-60}$	$n_{s,0.002}$	$0.970^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	$0.625^{+0.025}_{-0.027}$
$A_{143}^{PS}$	$50^{+20}_{-20}$	$Y_P$	$0.2468^{+0.0061}_{-0.0062}$	$f\sigma_8(0.61)$	$0.470^{+0.017}_{-0.019}$
$A_{143 \times 217}^{PS}$	$44^{+20}_{-20}$	$Y_P^{BBN}$	$0.2481^{+0.0061}_{-0.0062}$	$\sigma_8(0.61)$	$0.594^{+0.024}_{-0.026}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$10^5 D/H$	$2.64^{+0.13}_{-0.13}$	$f\sigma_8(2.33)$	$0.300^{+0.011}_{-0.013}$
$A^{kSZ}$	—	Age/Gyr	$13.70^{+0.44}_{-0.43}$	$\sigma_8(2.33)$	$0.309^{+0.012}_{-0.014}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	$z_*$	$1090.19^{+0.96}_{-0.97}$	$f_{2000}^{143}$	$32^{+7}_{-7}$
$A_{143}^{dustTT}$	$10.8^{+3.4}_{-3.5}$	$r_*$	$143.8^{+4.4}_{-4.2}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-5}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.0410^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	$108.5^{+4.4}_{-4.5}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.41}_{-0.40}$	$\chi_{simall}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	$1059.9^{+1.7}_{-1.7}$	$\chi_{lowl}^2$	$22.7 (\nu: 0.7)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	$146.5^{+4.6}_{-4.4}$	$\chi_{plik}^2$	$773.2 (\nu: 17.2)$
$H_0$	$68.4^{+2.8}_{-2.7}$	$k_D$	$0.1410^{+0.0032}_{-0.0033}$	$\chi_{JLA}^2$	$1035.00 (\nu: 0.1)$
$\Omega_\Lambda$	$0.693^{+0.015}_{-0.015}$	$100\theta_D$	$0.1613^{+0.0012}_{-0.0012}$	$\chi_{6DF}^2$	$0.046 (\nu: 0.0)$
$\Omega_m$	$0.307^{+0.015}_{-0.015}$	$z_{eq}$	$3364^{+63}_{-67}$	$\chi_{MGS}^2$	$1.56 (\nu: 0.2)$
$\Omega_m h^2$	$0.1436^{+0.0081}_{-0.0081}$	$k_{eq}$	$0.01034^{+0.00029}_{-0.00029}$	$\chi_{DR12BAO}^2$	$4.4 (\nu: 0.9)$
$\Omega_\nu h^2$	$< 0.00188$	$100\theta_{eq}$	$0.820^{+0.013}_{-0.012}$	$\chi_{prior}^2$	$7.3 (\nu: 6.7)$
$\Omega_m h^3$	$0.0982^{+0.0093}_{-0.0087}$	$100\theta_{s,eq}$	$0.4529^{+0.0066}_{-0.0060}$	$\chi_{BAO}^2$	$6.0 (\nu: 0.6)$
$\sigma_8$	$0.814^{+0.032}_{-0.035}$	$H(0.15)$	$73.6^{+2.8}_{-2.7}$	$\chi_{CMB}^2$	$1192.9 (\nu: 16.2)$
$S_8$	$0.823^{+0.034}_{-0.037}$	$D_M(0.15)$	$635^{+25}_{-24}$		
$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.018}_{-0.020}$	$H(0.38)$	$83.7^{+3.0}_{-2.9}$		

$$\bar{\chi}_{eff}^2 = 2241.24; R - 1 = 0.00999$$



## 9.8 base\_nnu\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022344	$0.02237^{+0.00038}_{-0.00036}$	$\Omega_\nu h^2$	0.00000	$< 0.00135$	$100\theta_{s,eq}$	0.44971	$0.4503^{+0.0048}_{-0.0049}$
$\Omega_c h^2$	0.1178	$0.1184^{+0.0061}_{-0.0059}$	$\Omega_m h^3$	0.0945	$0.0953^{+0.0072}_{-0.0068}$	$H(0.15)$	72.64	$72.7^{+2.3}_{-2.3}$
$100\theta_{MC}$	1.04122	$1.04113^{+0.00087}_{-0.00084}$	$\sigma_8$	0.8179	$0.811^{+0.025}_{-0.029}$	$D_M(0.15)$	643.2	$643^{+21}_{-21}$
$\tau$	0.0545	$0.055^{+0.016}_{-0.015}$	$S_8$	0.8290	$0.826^{+0.028}_{-0.028}$	$H(0.38)$	82.64	$82.7^{+2.4}_{-2.4}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.128$	$\sigma_8 \Omega_m^{0.5}$	0.4541	$0.452^{+0.015}_{-0.015}$	$D_M(0.38)$	1534.7	$1534^{+49}_{-47}$
$N_{eff}$	2.935	$2.98^{+0.36}_{-0.35}$	$\sigma_8 \Omega_m^{0.25}$	0.6094	$0.606^{+0.018}_{-0.020}$	$H(0.51)$	89.28	$89.4^{+2.5}_{-2.4}$
$\ln(10^{10} A_s)$	3.0394	$3.042^{+0.037}_{-0.036}$	$\sigma_8/h^{0.5}$	0.9961	$0.988^{+0.025}_{-0.029}$	$D_M(0.51)$	1989	$1988^{+61}_{-60}$
$n_s$	0.9629	$0.964^{+0.014}_{-0.014}$	$r_{drag} h$	99.99	$99.7^{+1.8}_{-1.8}$	$H(0.61)$	94.84	$95.0^{+2.5}_{-2.5}$
$y_{cal}$	1.00058	$1.0006^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.450	$2.441^{+0.051}_{-0.052}$	$D_M(0.61)$	2314	$2313^{+70}_{-68}$
$A_{217}^{CIB}$	46.9	$46^{+10}_{-10}$	$z_{re}$	7.65	$7.7^{+1.6}_{-1.6}$	$H(2.33)$	234.4	$235.2^{+5.4}_{-5.3}$
$\xi^{tSZ \times CIB}$	0.43	—	$10^9 A_s$	2.089	$2.095^{+0.078}_{-0.074}$	$D_M(2.33)$	5793	$5782^{+150}_{-150}$
$A_{143}^{tSZ}$	7.23	$5.5^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8735	$1.876^{+0.035}_{-0.035}$	$f\sigma_8(0.15)$	0.4582	$0.457^{+0.015}_{-0.014}$
$A_{100}^{PS}$	248	$257^{+60}_{-50}$	$D_{40}$	1232.7	$1231^{+27}_{-27}$	$\sigma_8(0.15)$	0.7560	$0.750^{+0.024}_{-0.027}$
$A_{143}^{PS}$	45.5	$45^{+20}_{-20}$	$D_{220}$	5737	$5736^{+74}_{-73}$	$f\sigma_8(0.38)$	0.4773	$0.475^{+0.014}_{-0.014}$
$A_{143 \times 217}^{PS}$	46.0	$42^{+20}_{-20}$	$D_{810}$	2538.3	$2538^{+27}_{-26}$	$\sigma_8(0.38)$	0.6703	$0.665^{+0.022}_{-0.025}$
$A_{217}^{PS}$	118.9	$115^{+20}_{-20}$	$D_{1420}$	818.6	$817.9^{+9.5}_{-9.3}$	$f\sigma_8(0.51)$	0.4762	$0.474^{+0.014}_{-0.014}$
$A^{kSZ}$	0.00	$< 7.82$	$D_{2000}$	231.94	$231.4^{+3.6}_{-3.6}$	$\sigma_8(0.51)$	0.6273	$0.622^{+0.020}_{-0.023}$
$A_{100}^{dustTT}$	8.81	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	0.9629	$0.964^{+0.014}_{-0.014}$	$f\sigma_8(0.61)$	0.4714	$0.469^{+0.014}_{-0.015}$
$A_{143}^{dustTT}$	10.98	$10.8^{+3.5}_{-3.5}$	$Y_P$	0.24388	$0.2445^{+0.0048}_{-0.0049}$	$\sigma_8(0.61)$	0.5969	$0.592^{+0.020}_{-0.022}$
$A_{143 \times 217}^{dustTT}$	19.6	$18.6^{+6.5}_{-6.6}$	$Y_P^{BBN}$	0.24520	$0.2458^{+0.0049}_{-0.0049}$	$f\sigma_8(2.33)$	0.3001	$0.2982^{+0.0097}_{-0.010}$
$A_{217}^{dustTT}$	94.9	$94^{+10}_{-10}$	$10^5 D/H$	2.552	$2.564^{+0.089}_{-0.090}$	$\sigma_8(2.33)$	0.3100	$0.308^{+0.011}_{-0.012}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.075}$	Age/Gyr	13.870	$13.84^{+0.36}_{-0.35}$	$f_{2000}^{143}$	28.0	$29^{+6}_{-6}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.134^{+0.058}_{-0.057}$	$z_*$	1089.64	$1089.72^{+0.68}_{-0.68}$	$f_{2000}^{143 \times 217}$	31.26	$32^{+4}_{-4}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.16}_{-0.16}$	$r_*$	145.60	$145.2^{+3.5}_{-3.5}$	$f_{2000}^{217}$	106.02	$106.5^{+3.9}_{-3.8}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	1.04145	$1.0413^{+0.0011}_{-0.0010}$	$\chi_{small}^2$	396.06	$397.2 (\nu: 2.1)$
$A_{143 \times 217}^{dustTE}$	0.664	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.981	$13.94^{+0.33}_{-0.32}$	$\chi_{lowl}^2$	23.72	$23.6 (\nu: 0.7)$
$A_{217}^{dustTE}$	2.09	$2.08^{+0.53}_{-0.53}$	$z_{drag}$	1059.63	$1059.8^{+1.4}_{-1.4}$	$\chi_{plik}^2$	2342.8	$2359.7 (\nu: 19.6)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	148.29	$147.9^{+3.7}_{-3.6}$	$\chi_{6DF}^2$	0.010	$0.062 (\nu: 0.0)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14001	$0.1403^{+0.0027}_{-0.0026}$	$\chi_{MGS}^2$	1.41	$1.29 (\nu: 0.1)$
$H_0$	67.43	$67.4^{+2.3}_{-2.3}$	$100\theta_D$	0.16049	$0.16060^{+0.00079}_{-0.00080}$	$\chi_{DR12BAO}^2$	3.91	$4.9 (\nu: 1.3)$
$\Omega_\Lambda$	0.6918	$0.689^{+0.014}_{-0.015}$	$z_{eq}$	3399	$3393^{+51}_{-50}$	$\chi_{prior}^2$	1.8	$11.5 (\nu: 10.2)$
$\Omega_m$	0.3082	$0.311^{+0.015}_{-0.014}$	$k_{eq}$	0.010296	$0.01031^{+0.00023}_{-0.00023}$	$\chi_{BAO}^2$	5.33	$6.2 (\nu: 0.9)$
$\Omega_m h^2$	0.1401	$0.1413^{+0.0065}_{-0.0062}$	$100\theta_{eq}$	0.8139	$0.8151^{+0.0096}_{-0.0096}$	$\chi_{CMB}^2$	2762.6	$2780.5 (\nu: 18.6)$

Best-fit  $\chi_{eff}^2 = 2769.67$ ;  $\Delta\chi_{eff}^2 = -2.25$ ;  $\bar{\chi}_{eff}^2 = 2798.17$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.26$ ;  $R - 1 = 0.00732$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.41 ( $\Delta$  0.19) DR12BAO: 3.91 ( $\Delta$  -0.50) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  -0.15) commander\_dx12\_v3\_2\_29: 23.72 ( $\Delta$  0.85) plik\_rd12\_HM\_v22b\_TTTEE: 2342.81 ( $\Delta$  -2.69)

## 9.9 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022340	$0.02239^{+0.00037}_{-0.00035}$	$\Omega_m h^3$	0.0945	$0.0955^{+0.0072}_{-0.0068}$	$D_M(0.15)$	643.0	$642^{+21}_{-20}$
$\Omega_c h^2$	0.1178	$0.1185^{+0.0061}_{-0.0059}$	$\sigma_8$	0.8170	$0.812^{+0.025}_{-0.028}$	$H(0.38)$	82.66	$82.9^{+2.4}_{-2.3}$
$100\theta_{MC}$	1.04120	$1.04112^{+0.00087}_{-0.00084}$	$S_8$	0.8281	$0.825^{+0.027}_{-0.027}$	$D_M(0.38)$	1534.4	$1532^{+48}_{-46}$
$\tau$	0.0531	$0.055^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.452^{+0.015}_{-0.015}$	$H(0.51)$	89.30	$89.5^{+2.4}_{-2.4}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.123$	$\sigma_8 \Omega_m^{0.25}$	0.6088	$0.606^{+0.018}_{-0.019}$	$D_M(0.51)$	1988	$1984^{+60}_{-59}$
$N_{\text{eff}}$	2.939	$3.00^{+0.36}_{-0.35}$	$\sigma_8/h^{0.5}$	0.9949	$0.988^{+0.024}_{-0.028}$	$H(0.61)$	94.87	$95.1^{+2.5}_{-2.5}$
$\ln(10^{10} A_s)$	3.0367	$3.042^{+0.037}_{-0.036}$	$r_{\text{drag}} h$	99.99	$99.8^{+1.7}_{-1.7}$	$D_M(0.61)$	2314	$2309^{+69}_{-67}$
$n_s$	0.9633	$0.965^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.446	$2.439^{+0.051}_{-0.051}$	$H(2.33)$	234.4	$235.3^{+5.3}_{-5.3}$
$y_{\text{cal}}$	1.00042	$1.0006^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	7.51	$7.7^{+1.6}_{-1.6}$	$D_M(2.33)$	5792	$5776^{+150}_{-150}$
$A_{217}^{\text{CIB}}$	46.0	$46^{+10}_{-10}$	$10^9 A_s$	2.084	$2.096^{+0.079}_{-0.074}$	$f\sigma_8(0.15)$	0.4577	$0.456^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8736	$1.876^{+0.035}_{-0.034}$	$\sigma_8(0.15)$	0.7552	$0.750^{+0.024}_{-0.026}$
$A_{143}^{\text{tSZ}}$	7.17	$5.5^{+3.9}_{-3.8}$	$D_{40}$	1231.1	$1230^{+26}_{-27}$	$f\sigma_8(0.38)$	0.4767	$0.475^{+0.014}_{-0.014}$
$A_{100}^{\text{PS}}$	247	$257^{+60}_{-50}$	$D_{220}$	5734	$5736^{+74}_{-73}$	$\sigma_8(0.38)$	0.6695	$0.665^{+0.021}_{-0.024}$
$A_{143}^{\text{PS}}$	47.4	$45^{+20}_{-20}$	$D_{810}$	2538.1	$2538^{+27}_{-26}$	$f\sigma_8(0.51)$	0.4756	$0.474^{+0.014}_{-0.014}$
$A_{143 \times 217}^{\text{PS}}$	49.5	$42^{+20}_{-20}$	$D_{1420}$	818.6	$817.9^{+9.5}_{-9.4}$	$\sigma_8(0.51)$	0.6266	$0.623^{+0.020}_{-0.022}$
$A_{217}^{\text{PS}}$	120.5	$115^{+20}_{-20}$	$D_{2000}$	231.90	$231.4^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	0.4708	$0.469^{+0.014}_{-0.014}$
$A^{\text{kSZ}}$	0.00	$< 7.81$	$n_{s,0.002}$	0.9633	$0.965^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	0.5963	$0.593^{+0.019}_{-0.021}$
$A_{100}^{\text{dustTT}}$	8.78	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.24394	$0.2447^{+0.0048}_{-0.0049}$	$f\sigma_8(2.33)$	0.2998	$0.2986^{+0.0097}_{-0.010}$
$A_{143}^{\text{dustTT}}$	10.96	$10.8^{+3.5}_{-3.6}$	$Y_P^{\text{BBN}}$	0.24526	$0.2460^{+0.0049}_{-0.0049}$	$\sigma_8(2.33)$	0.3097	$0.308^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.6^{+6.5}_{-6.6}$	$10^5 D/H$	2.554	$2.565^{+0.089}_{-0.089}$	$f_{2000}^{143}$	27.9	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	95.2	$94^{+10}_{-10}$	Age/Gyr	13.867	$13.83^{+0.36}_{-0.35}$	$f_{2000}^{143 \times 217}$	31.27	$32^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.115	$0.114^{+0.074}_{-0.075}$	$z_*$	1089.66	$1089.71^{+0.67}_{-0.68}$	$f_{2000}^{217}$	105.93	$106.5^{+3.9}_{-3.8}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.057}$	$r_*$	145.57	$145.1^{+3.5}_{-3.5}$	$\chi_{\text{small}}^2$	395.86	$397.2 (\nu: 2.1)$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04142	$1.0413^{+0.0011}_{-0.0010}$	$\chi_{\text{lowl}}^2$	23.60	$23.5 (\nu: 0.7)$
$A_{143}^{\text{dustTE}}$	0.226	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.978	$13.93^{+0.33}_{-0.32}$	$\chi_{\text{plik}}^2$	2343.2	$2359.9 (\nu: 19.6)$
$A_{143 \times 217}^{\text{dustTE}}$	0.663	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1059.63	$1059.8^{+1.4}_{-1.4}$	$\chi_{\text{JLA}}^2$	1034.91	$1035.07 (\nu: 0.1)$
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	148.25	$147.8^{+3.7}_{-3.6}$	$\chi_{6\text{DF}}^2$	0.010	$0.049 (\nu: 0.0)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14003	$0.1404^{+0.0027}_{-0.0026}$	$\chi_{\text{MGS}}^2$	1.41	$1.36 (\nu: 0.1)$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16050	$0.16062^{+0.00078}_{-0.00079}$	$\chi_{\text{DR12BAO}}^2$	3.92	$4.6 (\nu: 0.9)$
$H_0$	67.44	$67.6^{+2.2}_{-2.2}$	$z_{\text{eq}}$	3398.6	$3390^{+49}_{-48}$	$\chi_{\text{prior}}^2$	1.6	$11.4 (\nu: 10.4)$
$\Omega_\Lambda$	0.6918	$0.690^{+0.013}_{-0.014}$	$k_{\text{eq}}$	0.010298	$0.01031^{+0.00023}_{-0.00022}$	$\chi_{\text{BAO}}^2$	5.34	$6.0 (\nu: 0.6)$
$\Omega_m$	0.3082	$0.310^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	0.8139	$0.8157^{+0.0093}_{-0.0091}$	$\chi_{\text{CMB}}^2$	2762.7	$2780.6 (\nu: 18.7)$
$\Omega_m h^2$	0.1402	$0.1413^{+0.0064}_{-0.0062}$	$100\theta_{s,\text{eq}}$	0.44974	$0.4506^{+0.0047}_{-0.0046}$			
$\Omega_\nu h^2$	0.00001	$< 0.00129$	$H(0.15)$	72.66	$72.8^{+2.3}_{-2.2}$			

Best-fit  $\chi_{\text{eff}}^2 = 3804.54$ ;  $\bar{\chi}_{\text{eff}}^2 = 3833.11$ ;  $R - 1 = 0.00833$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.92 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 23.60 plik\_rd12\_HM\_v22b\_TTTEEE: 2343.21 SN - JLA Pantheon18: 1034.91

# 9.10 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02239^{+0.00037}_{-0.00035}$	$\Omega_m h^3$	$0.0956^{+0.0072}_{-0.0069}$	$D_M(0.15)$	$642^{+21}_{-20}$
$\Omega_c h^2$	$0.1185^{+0.0061}_{-0.0059}$	$\sigma_8$	$0.813^{+0.025}_{-0.028}$	$H(0.38)$	$82.9^{+2.4}_{-2.3}$
$100\theta_{MC}$	$1.04112^{+0.00086}_{-0.00085}$	$S_8$	$0.826^{+0.027}_{-0.027}$	$D_M(0.38)$	$1531^{+48}_{-46}$
$\tau$	$0.056^{+0.014}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.015}_{-0.015}$	$H(0.51)$	$89.6^{+2.4}_{-2.4}$
$\Sigma m_\nu$ [eV]	$< 0.123$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.018}_{-0.019}$	$D_M(0.51)$	$1984^{+60}_{-59}$
$N_{\text{eff}}$	$3.00^{+0.36}_{-0.35}$	$\sigma_8/h^{0.5}$	$0.989^{+0.025}_{-0.026}$	$H(0.61)$	$95.2^{+2.5}_{-2.5}$
$\ln(10^{10} A_s)$	$3.044^{+0.034}_{-0.031}$	$r_{\text{drag}} h$	$99.8^{+1.7}_{-1.7}$	$D_M(0.61)$	$2309^{+69}_{-67}$
$n_s$	$0.965^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.050}_{-0.050}$	$H(2.33)$	$235.3^{+5.4}_{-5.3}$
$y_{\text{cal}}$	$1.0006^{+0.0050}_{-0.0048}$	$z_{\text{re}}$	$< 9.06$	$D_M(2.33)$	$5775^{+150}_{-150}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.100^{+0.072}_{-0.066}$	$f\sigma_8(0.15)$	$0.457^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.876^{+0.035}_{-0.034}$	$\sigma_8(0.15)$	$0.751^{+0.023}_{-0.026}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$D_{40}$	$1230^{+26}_{-27}$	$f\sigma_8(0.38)$	$0.476^{+0.014}_{-0.014}$
$A_{100}^{\text{PS}}$	$257^{+60}_{-50}$	$D_{220}$	$5737^{+74}_{-72}$	$\sigma_8(0.38)$	$0.666^{+0.021}_{-0.023}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-26}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.014}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.9^{+9.5}_{-9.5}$	$\sigma_8(0.51)$	$0.623^{+0.020}_{-0.022}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.4^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	$0.470^{+0.013}_{-0.014}$
$A^{\text{kSZ}}$	$< 7.83$	$n_{s,0.002}$	$0.965^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	$0.593^{+0.019}_{-0.021}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.2447^{+0.0048}_{-0.0049}$	$f\sigma_8(2.33)$	$0.2989^{+0.0095}_{-0.010}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.6}$	$Y_{\text{BBN}}$	$0.2460^{+0.0049}_{-0.0049}$	$\sigma_8(2.33)$	$0.308^{+0.010}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.5}_{-6.7}$	$10^5 D/H$	$2.565^{+0.089}_{-0.089}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.83^{+0.36}_{-0.35}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.075}$	$z_*$	$1089.71^{+0.67}_{-0.68}$	$f_{2000}^{217}$	$106.5^{+3.9}_{-3.8}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.057}$	$r_*$	$145.1^{+3.5}_{-3.5}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 2.2)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0010}$	$\chi_{\text{lowl}}^2$	$23.5 (\nu: 0.6)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.93^{+0.33}_{-0.32}$	$\chi_{\text{plik}}^2$	$2359.7 (\nu: 19.5)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.8^{+1.4}_{-1.3}$	$\chi_{\text{JLA}}^2$	$1035.06 (\nu: 0.1)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$147.7^{+3.7}_{-3.6}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1404^{+0.0027}_{-0.0026}$	$\chi_{\text{MGS}}^2$	$1.37 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16062^{+0.00078}_{-0.00079}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.9)$
$H_0$	$67.6^{+2.3}_{-2.2}$	$z_{\text{eq}}$	$3389^{+49}_{-48}$	$\chi_{\text{prior}}^2$	$11.4 (\nu: 10.4)$
$\Omega_\Lambda$	$0.690^{+0.013}_{-0.014}$	$k_{\text{eq}}$	$0.01031^{+0.00023}_{-0.00023}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$
$\Omega_m$	$0.310^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8158^{+0.0093}_{-0.0091}$	$\chi_{\text{CMB}}^2$	$2780.4 (\nu: 18.5)$
$\Omega_m h^2$	$0.1414^{+0.0065}_{-0.0062}$	$100\theta_{s,\text{eq}}$	$0.4507^{+0.0046}_{-0.0046}$		
$\Omega_\nu h^2$	$< 0.00130$	$H(0.15)$	$72.8^{+2.3}_{-2.2}$		

$$\bar{\chi}_{\text{eff}}^2 = 3832.93; R - 1 = 0.00910$$

### 9.11 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022184	$0.02223^{+0.00048}_{-0.00046}$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.606^{+0.017}_{-0.018}$	$D_M(0.38)$	1531	$1524^{+61}_{-58}$
$\Omega_c h^2$	0.1183	$0.1199^{+0.0075}_{-0.0073}$	$\sigma_8/h^{0.5}$	0.9952	$0.986^{+0.023}_{-0.024}$	$H(0.51)$	89.45	$90.0^{+3.1}_{-3.1}$
$100\theta_{MC}$	1.04106	$1.0409^{+0.0011}_{-0.0011}$	$r_{drag}h$	100.10	$99.9^{+2.1}_{-2.0}$	$D_M(0.51)$	1985	$1974^{+77}_{-73}$
$\tau$	0.0530	$0.054^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4418	$2.433^{+0.047}_{-0.048}$	$H(0.61)$	95.01	$95.6^{+3.2}_{-3.2}$
$\Sigma m_\nu$ [eV]	0.000	< 0.146	$z_{re}$	7.55	$7.7^{+1.5}_{-1.5}$	$D_M(0.61)$	2310	$2298^{+87}_{-84}$
$N_{eff}$	2.978	$3.09^{+0.47}_{-0.46}$	$10^9 A_s$	2.083	$2.098^{+0.078}_{-0.072}$	$H(2.33)$	234.7	$236.4^{+6.7}_{-6.7}$
$\ln(10^{10} A_s)$	3.0366	$3.044^{+0.036}_{-0.035}$	$10^9 A_s e^{-2\tau}$	1.8739	$1.882^{+0.040}_{-0.041}$	$D_M(2.33)$	5783	$5748^{+190}_{-180}$
$n_s$	0.9646	$0.967^{+0.017}_{-0.017}$	$D_{40}$	1227.2	$1226^{+29}_{-29}$	$f\sigma_8(0.15)$	0.4578	$0.457^{+0.013}_{-0.013}$
$y_{cal}$	1.00030	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	5715	$5722^{+80}_{-78}$	$\sigma_8(0.15)$	0.7563	$0.751^{+0.024}_{-0.025}$
$A_{217}^{CIB}$	47.4	$48^{+10}_{-10}$	$D_{810}$	2535.4	$2537^{+28}_{-27}$	$f\sigma_8(0.38)$	0.4771	$0.476^{+0.013}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.46	—	$D_{1420}$	816.3	$815^{+10}_{-10}$	$\sigma_8(0.38)$	0.6706	$0.666^{+0.022}_{-0.023}$
$A_{143}^{tSZ}$	7.02	$5.0^{+3.8}_{-3.9}$	$D_{2000}$	230.71	$229.7^{+4.4}_{-4.4}$	$f\sigma_8(0.51)$	0.4761	$0.475^{+0.013}_{-0.013}$
$A_{100}^{PS}$	251	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9646	$0.967^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6276	$0.624^{+0.021}_{-0.022}$
$A_{143}^{PS}$	49.7	$49^{+20}_{-20}$	$Y_P$	0.2444	$0.2459^{+0.0062}_{-0.0063}$	$f\sigma_8(0.61)$	0.4713	$0.470^{+0.013}_{-0.013}$
$A_{143 \times 217}^{PS}$	49.4	$43^{+20}_{-20}$	$Y_P^{BBN}$	0.2457	$0.2472^{+0.0062}_{-0.0063}$	$\sigma_8(0.61)$	0.5972	$0.593^{+0.020}_{-0.021}$
$A_{217}^{PS}$	120.2	$115^{+20}_{-20}$	$10^5 D/H$	2.597	$2.63^{+0.13}_{-0.13}$	$f\sigma_8(2.33)$	0.3003	$0.299^{+0.010}_{-0.010}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.847	$13.76^{+0.45}_{-0.44}$	$\sigma_8(2.33)$	0.3102	$0.309^{+0.011}_{-0.012}$
$A_{100}^{dustTT}$	8.87	$8.9^{+3.6}_{-3.6}$	$z_*$	1089.93	$1090.12^{+0.93}_{-0.92}$	$f_{2000}^{143}$	29.4	$31^{+7}_{-7}$
$A_{143}^{dustTT}$	10.82	$10.7^{+3.5}_{-3.5}$	$r_*$	145.37	$144.4^{+4.5}_{-4.3}$	$f_{2000}^{143 \times 217}$	32.52	$34^{+5}_{-5}$
$A_{143 \times 217}^{dustTT}$	19.6	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	1.04128	$1.0411^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	106.94	$108.2^{+4.5}_{-4.4}$
$A_{217}^{dustTT}$	95.1	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.961	$13.87^{+0.41}_{-0.40}$	$\chi^2_{lensing}$	8.81	$9.52 (\nu: 0.4)$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.32	$1059.6^{+1.7}_{-1.7}$	$\chi^2_{small}$	395.85	$397.1 (\nu: 1.6)$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	148.11	$147.1^{+4.6}_{-4.4}$	$\chi^2_{lowl}$	23.32	$23.2 (\nu: 0.8)$
$H_0$	67.58	$67.9^{+2.9}_{-2.8}$	$k_D$	0.13991	$0.1406^{+0.0033}_{-0.0033}$	$\chi^2_{plik}$	758.7	$772.4 (\nu: 15.5)$
$\Omega_\Lambda$	0.6925	$0.691^{+0.016}_{-0.017}$	$100\theta_D$	0.16084	$0.1611^{+0.0011}_{-0.0011}$	$\chi^2_{6DF}$	0.006	$0.060 (\nu: 0.0)$
$\Omega_m$	0.3075	$0.309^{+0.017}_{-0.016}$	$z_{eq}$	3387	$3375^{+60}_{-61}$	$\chi^2_{MGS}$	1.47	$1.42 (\nu: 0.2)$
$\Omega_m h^2$	0.1404	$0.1427^{+0.0081}_{-0.0078}$	$k_{eq}$	0.010290	$0.01033^{+0.00027}_{-0.00026}$	$\chi^2_{DR12BAO}$	3.77	$4.7 (\nu: 1.4)$
$\Omega_\nu h^2$	0.00000	< 0.00155	$100\theta_{eq}$	0.8155	$0.818^{+0.012}_{-0.011}$	$\chi^2_{prior}$	1.3	$7.3 (\nu: 6.6)$
$\Omega_m h^3$	0.0949	$0.0970^{+0.0092}_{-0.0087}$	$100\theta_{s,eq}$	0.4507	$0.4519^{+0.0059}_{-0.0057}$	$\chi^2_{CMB}$	1186.6	$1202.1 (\nu: 16.5)$
$\sigma_8$	0.8181	$0.813^{+0.025}_{-0.027}$	$H(0.15)$	72.80	$73.2^{+2.9}_{-2.9}$	$\chi^2_{BAO}$	5.24	$6.2 (\nu: 1.0)$
$S_8$	0.8283	$0.825^{+0.026}_{-0.026}$	$D_M(0.15)$	641.7	$639^{+27}_{-26}$			
$\sigma_8 \Omega_m^{0.5}$	0.4537	$0.452^{+0.014}_{-0.014}$	$H(0.38)$	82.80	$83.3^{+3.0}_{-3.0}$			

Best-fit  $\chi^2_{eff} = 1193.21$ ;  $\Delta\chi^2_{eff} = -1.47$ ;  $\bar{\chi}^2_{eff} = 1215.63$ ;  $\Delta\bar{\chi}^2_{eff} = 0.90$ ;  $R - 1 = 0.00858$

$\chi^2_{eff}$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.47 ( $\Delta$  0.26) DR12BAO: 3.77 ( $\Delta$  -0.61) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consect8: 8.81 ( $\Delta$  -0.06) small\_100x143\_offlike5\_EE\_Aplanc 395.85 ( $\Delta$  -0.24) commander\_dx12\_v3.2\_29: 23.32 ( $\Delta$  0.37) plik\_rd12\_HM\_v22.TT: 758.66 ( $\Delta$  -1.14)

## 9.12 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022226	$0.02225^{+0.00047}_{-0.00045}$	$\sigma_8 \Omega_m^{0.25}$	0.6090	$0.606^{+0.017}_{-0.018}$	$D_M(0.38)$	1528	$1521^{+58}_{-56}$
$\Omega_c h^2$	0.1185	$0.1200^{+0.0075}_{-0.0072}$	$\sigma_8/h^{0.5}$	0.9943	$0.986^{+0.023}_{-0.024}$	$H(0.51)$	89.63	$90.1^{+3.0}_{-3.0}$
$100\theta_{MC}$	1.04103	$1.0409^{+0.0011}_{-0.0011}$	$r_{drag}h$	100.22	$100.0^{+1.9}_{-1.9}$	$D_M(0.51)$	1980	$1970^{+74}_{-70}$
$\tau$	0.0531	$0.055^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4407	$2.431^{+0.046}_{-0.047}$	$H(0.61)$	95.19	$95.8^{+3.1}_{-3.1}$
$\Sigma m_\nu$ [eV]	0.001	< 0.141	$z_{re}$	7.55	$7.7^{+1.5}_{-1.5}$	$D_M(0.61)$	2304	$2293^{+85}_{-81}$
$N_{eff}$	3.000	$3.11^{+0.46}_{-0.45}$	$10^9 A_s$	2.085	$2.101^{+0.077}_{-0.071}$	$H(2.33)$	235.0	$236.6^{+6.7}_{-6.6}$
$\ln(10^{10} A_s)$	3.0373	$3.045^{+0.036}_{-0.034}$	$10^9 A_s e^{-2\tau}$	1.8749	$1.883^{+0.039}_{-0.041}$	$D_M(2.33)$	5773	$5740^{+190}_{-180}$
$n_s$	0.9649	$0.968^{+0.017}_{-0.017}$	$D_{40}$	1227.5	$1225^{+29}_{-29}$	$f\sigma_8(0.15)$	0.4574	$0.457^{+0.013}_{-0.013}$
$y_{cal}$	1.00035	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	5720	$5723^{+81}_{-77}$	$\sigma_8(0.15)$	0.7567	$0.752^{+0.023}_{-0.025}$
$A_{217}^{CIB}$	49.4	$48^{+10}_{-10}$	$D_{810}$	2534.8	$2537^{+28}_{-27}$	$f\sigma_8(0.38)$	0.4769	$0.476^{+0.013}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.22	—	$D_{1420}$	815.8	$815^{+10}_{-10}$	$\sigma_8(0.38)$	0.6711	$0.667^{+0.021}_{-0.023}$
$A_{143}^{tSZ}$	7.20	$5.0^{+3.8}_{-3.9}$	$D_{2000}$	230.47	$229.7^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	0.4760	$0.475^{+0.013}_{-0.013}$
$A_{100}^{PS}$	254	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9649	$0.968^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6282	$0.625^{+0.021}_{-0.022}$
$A_{143}^{PS}$	46.4	$49^{+20}_{-20}$	$Y_P$	0.2447	$0.2461^{+0.0060}_{-0.0062}$	$f\sigma_8(0.61)$	0.4713	$0.470^{+0.013}_{-0.013}$
$A_{143 \times 217}^{PS}$	43.2	$43^{+20}_{-20}$	$Y_P^{BBN}$	0.2460	$0.2475^{+0.0061}_{-0.0062}$	$\sigma_8(0.61)$	0.5978	$0.594^{+0.020}_{-0.021}$
$A_{217}^{PS}$	117.1	$115^{+20}_{-20}$	$10^5 D/H$	2.597	$2.63^{+0.13}_{-0.13}$	$f\sigma_8(2.33)$	0.3006	$0.300^{+0.010}_{-0.010}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.822	$13.74^{+0.44}_{-0.43}$	$\sigma_8(2.33)$	0.3106	$0.309^{+0.011}_{-0.011}$
$A_{100}^{dustTT}$	8.87	$8.9^{+3.6}_{-3.6}$	$z_*$	1089.92	$1090.12^{+0.93}_{-0.91}$	$f_{2000}^{143}$	29.8	$31^{+7}_{-7}$
$A_{143}^{dustTT}$	10.86	$10.7^{+3.5}_{-3.5}$	$r_*$	145.16	$144.3^{+4.4}_{-4.3}$	$f_{2000}^{143 \times 217}$	32.74	$34^{+5}_{-5}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	1.04123	$1.0410^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	107.23	$108.2^{+4.4}_{-4.4}$
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.941	$13.86^{+0.41}_{-0.40}$	$\chi^2_{lensing}$	8.80	$9.54 (\nu: 0.4)$
$c_{100}$	0.99961	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.44	$1059.7^{+1.7}_{-1.7}$	$\chi^2_{small}$	395.86	$397.1 (\nu: 1.6)$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	147.88	$147.0^{+4.5}_{-4.4}$	$\chi^2_{lowl}$	23.32	$23.1 (\nu: 0.7)$
$H_0$	67.77	$68.1^{+2.8}_{-2.7}$	$k_D$	0.14010	$0.1407^{+0.0033}_{-0.0032}$	$\chi^2_{plik}$	758.5	$772.5 (\nu: 15.4)$
$\Omega_\Lambda$	0.6935	$0.692^{+0.015}_{-0.015}$	$100\theta_D$	0.16085	$0.1612^{+0.0011}_{-0.0011}$	$\chi^2_{JLA}$	1034.85	$1035.03 (\nu: 0.1)$
$\Omega_m$	0.3065	$0.308^{+0.015}_{-0.015}$	$z_{eq}$	3384	$3371^{+58}_{-58}$	$\chi^2_{6DF}$	0.003	$0.048 (\nu: 0.0)$
$\Omega_m h^2$	0.1408	$0.1428^{+0.0080}_{-0.0076}$	$k_{eq}$	0.010297	$0.01033^{+0.00027}_{-0.00026}$	$\chi^2_{MGS}$	1.54	$1.51 (\nu: 0.2)$
$\Omega_\nu h^2$	0.00001	< 0.00150	$100\theta_{eq}$	0.8161	$0.819^{+0.011}_{-0.011}$	$\chi^2_{DR12BAO}$	3.67	$4.5 (\nu: 0.9)$
$\Omega_m h^3$	0.0954	$0.0973^{+0.0090}_{-0.0086}$	$100\theta_{s,eq}$	0.4509	$0.4523^{+0.0057}_{-0.0055}$	$\chi^2_{prior}$	1.6	$7.3 (\nu: 6.6)$
$\sigma_8$	0.8185	$0.814^{+0.025}_{-0.026}$	$H(0.15)$	72.98	$73.4^{+2.8}_{-2.8}$	$\chi^2_{CMB}$	1186.5	$1202.2 (\nu: 16.4)$
$S_8$	0.8273	$0.825^{+0.025}_{-0.025}$	$D_M(0.15)$	640.1	$637^{+26}_{-24}$	$\chi^2_{BAO}$	5.21	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.5}$	0.4531	$0.452^{+0.014}_{-0.014}$	$H(0.38)$	82.98	$83.4^{+2.9}_{-2.9}$			

Best-fit  $\chi^2_{eff} = 2228.14$ ;  $\Delta\chi^2_{eff} = -1.57$ ;  $\bar{\chi}^2_{eff} = 2250.50$ ;  $\Delta\bar{\chi}^2_{eff} = 0.73$ ;  $R - 1 = 0.00908$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.54 ( $\Delta$  0.20) DR12BAO: 3.67 ( $\Delta$  -0.37) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.80 ( $\Delta$  -0.08) small\_100x143\_offlike5\_EE\_Aplanc 395.86 ( $\Delta$  -0.51) commander\_dx12\_v3.2\_29: 23.32 ( $\Delta$  0.51) plik\_rd12\_HM\_v22.TT: 758.53 ( $\Delta$  -1.26) SN - JLA Pantheon18: 1034.85 ( $\Delta$  -0.10)

### 9.13 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02226^{+0.00047}_{-0.00045}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.017}_{-0.018}$	$D_M(0.38)$	$1520^{+58}_{-55}$
$\Omega_c h^2$	$0.1200^{+0.0074}_{-0.0072}$	$\sigma_8/h^{0.5}$	$0.987^{+0.023}_{-0.024}$	$H(0.51)$	$90.2^{+3.0}_{-3.0}$
$100\theta_{MC}$	$1.0409^{+0.0011}_{-0.0011}$	$r_{drag}h$	$100.1^{+1.9}_{-1.9}$	$D_M(0.51)$	$1970^{+74}_{-70}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.045}_{-0.046}$	$H(0.61)$	$95.8^{+3.1}_{-3.1}$
$\Sigma m_\nu$ [eV]	$< 0.142$	$z_{re}$	$< 9.04$	$D_M(0.61)$	$2292^{+84}_{-80}$
$N_{eff}$	$3.11^{+0.46}_{-0.45}$	$10^9 A_s$	$2.104^{+0.071}_{-0.067}$	$H(2.33)$	$236.6^{+6.7}_{-6.5}$
$\ln(10^{10} A_s)$	$3.046^{+0.035}_{-0.031}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.039}_{-0.041}$	$D_M(2.33)$	$5739^{+190}_{-180}$
$n_s$	$0.968^{+0.017}_{-0.017}$	$D_{40}$	$1225^{+29}_{-29}$	$f\sigma_8(0.15)$	$0.457^{+0.013}_{-0.013}$
$y_{cal}$	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	$5723^{+81}_{-77}$	$\sigma_8(0.15)$	$0.753^{+0.023}_{-0.025}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+28}_{-27}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.013}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$815^{+10}_{-10}$	$\sigma_8(0.38)$	$0.668^{+0.021}_{-0.023}$
$A_{143}^{tSZ}$	$5.0^{+3.8}_{-3.9}$	$D_{2000}$	$229.7^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	$0.475^{+0.013}_{-0.013}$
$A_{100}^{PS}$	$264^{+60}_{-60}$	$n_{s,0.002}$	$0.968^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	$0.625^{+0.020}_{-0.022}$
$A_{143}^{PS}$	$49^{+20}_{-20}$	$Y_P$	$0.2462^{+0.0060}_{-0.0062}$	$f\sigma_8(0.61)$	$0.470^{+0.013}_{-0.013}$
$A_{143 \times 217}^{PS}$	$43^{+20}_{-20}$	$Y_P^{BBN}$	$0.2475^{+0.0061}_{-0.0062}$	$\sigma_8(0.61)$	$0.595^{+0.020}_{-0.021}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$10^5 D/H$	$2.63^{+0.13}_{-0.13}$	$f\sigma_8(2.33)$	$0.3000^{+0.0099}_{-0.010}$
$A^{kSZ}$	—	Age/Gyr	$13.74^{+0.44}_{-0.43}$	$\sigma_8(2.33)$	$0.309^{+0.011}_{-0.011}$
$A_{100}^{dustTT}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.12^{+0.92}_{-0.92}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143}^{dustTT}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.3^{+4.4}_{-4.2}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-5}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.0410^{+0.0013}_{-0.0013}$	$f_{2000}^{217}$	$108.2^{+4.4}_{-4.4}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.86^{+0.41}_{-0.39}$	$\chi_{lensing}^2$	$9.51 (\nu: 0.4)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	$1059.7^{+1.7}_{-1.7}$	$\chi_{simall}^2$	$397.1 (\nu: 1.7)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	$147.0^{+4.5}_{-4.4}$	$\chi_{lowl}^2$	$23.0 (\nu: 0.7)$
$H_0$	$68.1^{+2.8}_{-2.7}$	$k_D$	$0.1407^{+0.0033}_{-0.0032}$	$\chi_{plik}^2$	$772.4 (\nu: 15.3)$
$\Omega_\Lambda$	$0.692^{+0.015}_{-0.015}$	$100\theta_D$	$0.1612^{+0.0011}_{-0.0011}$	$\chi_{JLA}^2$	$1035.02 (\nu: 0.1)$
$\Omega_m$	$0.308^{+0.015}_{-0.015}$	$z_{eq}$	$3370^{+57}_{-57}$	$\chi_{6DF}^2$	$0.046 (\nu: 0.0)$
$\Omega_m h^2$	$0.1428^{+0.0080}_{-0.0076}$	$k_{eq}$	$0.01033^{+0.00027}_{-0.00026}$	$\chi_{MGS}^2$	$1.52 (\nu: 0.2)$
$\Omega_\nu h^2$	$< 0.00152$	$100\theta_{eq}$	$0.819^{+0.011}_{-0.011}$	$\chi_{DR12BAO}^2$	$4.4 (\nu: 0.9)$
$\Omega_m h^3$	$0.0973^{+0.0090}_{-0.0086}$	$100\theta_{s,eq}$	$0.4524^{+0.0056}_{-0.0055}$	$\chi_{prior}^2$	$7.3 (\nu: 6.6)$
$\sigma_8$	$0.814^{+0.024}_{-0.026}$	$H(0.15)$	$73.4^{+2.8}_{-2.8}$	$\chi_{CMB}^2$	$1202.0 (\nu: 16.2)$
$S_8$	$0.825^{+0.025}_{-0.026}$	$D_M(0.15)$	$637^{+26}_{-24}$	$\chi_{BAO}^2$	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.014}_{-0.014}$	$H(0.38)$	$83.5^{+2.9}_{-2.9}$		

$$\bar{\chi}_{eff}^2 = 2250.35; \Delta \bar{\chi}_{eff}^2 = 0.72; R - 1 = 0.00891$$

## 9.14 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022329	$0.02236^{+0.00036}_{-0.00037}$	$\Omega_m h^3$	0.0936	$0.0948^{+0.0070}_{-0.0066}$	$D_M(0.15)$	645.3	$644^{+21}_{-21}$
$\Omega_c h^2$	0.1169	$0.1180^{+0.0058}_{-0.0055}$	$\sigma_8$	0.8158	$0.811^{+0.022}_{-0.023}$	$H(0.38)$	82.38	$82.6^{+2.3}_{-2.3}$
$100\theta_{MC}$	1.04128	$1.04116^{+0.00086}_{-0.00086}$	$S_8$	0.8271	$0.825^{+0.022}_{-0.022}$	$D_M(0.38)$	1539.7	$1537^{+48}_{-47}$
$\tau$	0.0546	$0.055^{+0.015}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.452^{+0.012}_{-0.012}$	$H(0.51)$	89.00	$89.3^{+2.4}_{-2.4}$
$\Sigma m_\nu$ [eV]	0.000	< 0.116	$\sigma_8 \Omega_m^{0.25}$	0.6079	$0.605^{+0.015}_{-0.015}$	$D_M(0.51)$	1995	$1991^{+60}_{-59}$
$N_{\text{eff}}$	2.890	$2.96^{+0.35}_{-0.34}$	$\sigma_8/h^{0.5}$	0.9952	$0.988^{+0.020}_{-0.021}$	$H(0.61)$	94.55	$94.9^{+2.5}_{-2.4}$
$\ln(10^{10} A_s)$	3.0376	$3.041^{+0.034}_{-0.032}$	$r_{\text{drag}} h$	99.98	$99.7^{+1.7}_{-1.8}$	$D_M(0.61)$	2322	$2317^{+69}_{-67}$
$n_s$	0.9627	$0.964^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.4478	$2.442^{+0.043}_{-0.043}$	$H(2.33)$	233.7	$234.8^{+5.2}_{-5.0}$
$y_{\text{cal}}$	1.00055	$1.0006^{+0.0048}_{-0.0048}$	$z_{\text{re}}$	7.64	$7.7^{+1.5}_{-1.5}$	$D_M(2.33)$	5811	$5791^{+150}_{-140}$
$A_{217}^{\text{CIB}}$	43.5	$46^{+10}_{-10}$	$10^9 A_s$	2.086	$2.093^{+0.071}_{-0.066}$	$f\sigma_8(0.15)$	0.4571	$0.457^{+0.012}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.98	—	$10^9 A_s e^{-2\tau}$	1.8698	$1.874^{+0.033}_{-0.033}$	$\sigma_8(0.15)$	0.7540	$0.749^{+0.021}_{-0.022}$
$A_{143}^{\text{tSZ}}$	7.02	$5.6^{+3.8}_{-3.8}$	$D_{40}$	1231.5	$1232^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4761	$0.475^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	242	$256^{+60}_{-50}$	$D_{220}$	5734	$5738^{+76}_{-71}$	$\sigma_8(0.38)$	0.6685	$0.664^{+0.019}_{-0.020}$
$A_{143}^{\text{PS}}$	52.2	$44^{+20}_{-20}$	$D_{810}$	2538.6	$2538^{+26}_{-26}$	$f\sigma_8(0.51)$	0.4750	$0.474^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	59.1	$42^{+20}_{-20}$	$D_{1420}$	819.8	$818.1^{+9.4}_{-9.2}$	$\sigma_8(0.51)$	0.6257	$0.622^{+0.018}_{-0.019}$
$A_{217}^{\text{PS}}$	124.3	$115^{+20}_{-20}$	$D_{2000}$	232.54	$231.6^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	0.4702	$0.469^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	0.01	< 7.76	$n_{s,0.002}$	0.9627	$0.964^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	0.5954	$0.591^{+0.017}_{-0.018}$
$A_{100}^{\text{dustTT}}$	8.77	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.24327	$0.2442^{+0.0048}_{-0.0048}$	$f\sigma_8(2.33)$	0.2993	$0.2980^{+0.0087}_{-0.0087}$
$A_{143}^{\text{dustTT}}$	10.97	$10.8^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	0.24459	$0.2455^{+0.0048}_{-0.0048}$	$\sigma_8(2.33)$	0.3092	$0.3073^{+0.0095}_{-0.0098}$
$A_{143 \times 217}^{\text{dustTT}}$	20.5	$18.5^{+6.4}_{-6.5}$	$10^5 D/H$	2.539	$2.558^{+0.090}_{-0.085}$	$f_{2000}^{143}$	27.1	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	96.2	$94^{+10}_{-10}$	Age/Gyr	13.913	$13.87^{+0.35}_{-0.34}$	$f_{2000}^{143 \times 217}$	30.84	$31^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.076}_{-0.074}$	$z_*$	1089.54	$1089.67^{+0.66}_{-0.64}$	$f_{2000}^{217}$	105.33	$106.4^{+3.9}_{-3.9}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	146.06	$145.4^{+3.4}_{-3.4}$	$\chi_{\text{lensing}}^2$	8.66	9.11 ( $\nu$ : 0.2)
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04154	$1.0414^{+0.0010}_{-0.0010}$	$\chi_{\text{small}}^2$	396.05	397.1 ( $\nu$ : 1.8)
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	14.024	$13.97^{+0.31}_{-0.31}$	$\chi_{\text{lowl}}^2$	23.64	23.7 ( $\nu$ : 0.7)
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1059.47	$1059.7^{+1.4}_{-1.4}$	$\chi_{\text{plik}}^2$	2343.0	2359.2 ( $\nu$ : 17.5)
$A_{217}^{\text{dustTE}}$	2.07	$2.08^{+0.52}_{-0.53}$	$r_{\text{drag}}$	148.76	$148.1^{+3.5}_{-3.5}$	$\chi_{6\text{DF}}^2$	0.011	0.060 ( $\nu$ : 0.0)
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.13969	$0.1401^{+0.0026}_{-0.0025}$	$\chi_{\text{MGS}}^2$	1.41	1.29 ( $\nu$ : 0.1)
$c_{217}$	0.99814	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16037	$0.16054^{+0.00079}_{-0.00076}$	$\chi_{\text{DR12BAO}}^2$	3.91	4.9 ( $\nu$ : 1.3)
$H_0$	67.21	$67.3^{+2.3}_{-2.2}$	$z_{\text{eq}}$	3399.3	$3394^{+48}_{-47}$	$\chi_{\text{prior}}^2$	1.5	11.5 ( $\nu$ : 10.2)
$\Omega_\Lambda$	0.6917	$0.689^{+0.014}_{-0.015}$	$k_{\text{eq}}$	0.010266	$0.01030^{+0.00022}_{-0.00021}$	$\chi_{\text{CMB}}^2$	2771.4	2789.1 ( $\nu$ : 18.0)
$\Omega_m$	0.3083	$0.311^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	0.8138	$0.8149^{+0.0090}_{-0.0091}$	$\chi_{\text{BAO}}^2$	5.33	6.2 ( $\nu$ : 0.9)
$\Omega_m h^2$	0.1393	$0.1408^{+0.0061}_{-0.0059}$	$100\theta_{s,\text{eq}}$	0.44968	$0.4502^{+0.0045}_{-0.0046}$			
$\Omega_\nu h^2$	0.00000	< 0.00122	$H(0.15)$	72.41	$72.6^{+2.3}_{-2.2}$			

Best-fit  $\chi_{\text{eff}}^2 = 2778.17$ ;  $\Delta\chi_{\text{eff}}^2 = -2.53$ ;  $\bar{\chi}_{\text{eff}}^2 = 2806.81$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.03$ ;  $R - 1 = 0.00810$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.41 ( $\Delta$  0.19) DR12BAO: 3.91 ( $\Delta$  -0.51) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb.consext8: 8.66 ( $\Delta$  -0.07) small\_100x143\_offlike5\_EE\_Aplanc  
396.05 ( $\Delta$  -0.47) commander\_dx12\_v3.2.29: 23.64 ( $\Delta$  0.74) plik\_rd12\_HM\_v22b.TTTEEE: 2343.02 ( $\Delta$  -2.29)

# 9.15 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022338	$0.02238^{+0.00036}_{-0.00036}$	$\Omega_m h^3$	0.0936	$0.0951^{+0.0069}_{-0.0064}$	$D_M(0.15)$	644.6	$643^{+21}_{-20}$
$\Omega_c h^2$	0.1168	$0.1181^{+0.0058}_{-0.0055}$	$\sigma_8$	0.8146	$0.812^{+0.021}_{-0.022}$	$H(0.38)$	82.43	$82.7^{+2.3}_{-2.2}$
$100\theta_{MC}$	1.04130	$1.04116^{+0.00086}_{-0.00086}$	$S_8$	0.8245	$0.825^{+0.022}_{-0.022}$	$D_M(0.38)$	1538.4	$1534^{+46}_{-45}$
$\tau$	0.0537	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4516	$0.452^{+0.012}_{-0.012}$	$H(0.51)$	89.04	$89.4^{+2.4}_{-2.3}$
$\Sigma m_\nu$ [eV]	0.001	< 0.111	$\sigma_8 \Omega_m^{0.25}$	0.6065	$0.605^{+0.015}_{-0.015}$	$D_M(0.51)$	1993	$1987^{+58}_{-57}$
$N_{\text{eff}}$	2.891	$2.97^{+0.35}_{-0.33}$	$\sigma_8/h^{0.5}$	0.9930	$0.988^{+0.020}_{-0.020}$	$H(0.61)$	94.58	$95.0^{+2.4}_{-2.4}$
$\ln(10^{10} A_s)$	3.0354	$3.042^{+0.033}_{-0.032}$	$r_{\text{drag}} h$	100.11	$99.8^{+1.6}_{-1.7}$	$D_M(0.61)$	2320	$2313^{+67}_{-65}$
$n_s$	0.9631	$0.964^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.4425	$2.441^{+0.042}_{-0.042}$	$H(2.33)$	233.6	$234.9^{+5.2}_{-4.9}$
$y_{\text{cal}}$	1.00048	$1.0006^{+0.0048}_{-0.0048}$	$z_{\text{re}}$	7.55	$7.7^{+1.5}_{-1.5}$	$D_M(2.33)$	5810	$5785^{+140}_{-140}$
$A_{217}^{\text{CIB}}$	43.5	$46^{+10}_{-10}$	$10^9 A_s$	2.081	$2.095^{+0.071}_{-0.066}$	$f\sigma_8(0.15)$	0.4558	$0.456^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.95	—	$10^9 A_s e^{-2\tau}$	1.8692	$1.875^{+0.033}_{-0.033}$	$\sigma_8(0.15)$	0.7530	$0.750^{+0.020}_{-0.021}$
$A_{143}^{\text{tSZ}}$	6.93	$5.6^{+3.8}_{-3.8}$	$D_{40}$	1230.2	$1231^{+26}_{-25}$	$f\sigma_8(0.38)$	0.4749	$0.475^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	243	$256^{+60}_{-50}$	$D_{220}$	5734	$5739^{+76}_{-72}$	$\sigma_8(0.38)$	0.6677	$0.665^{+0.019}_{-0.019}$
$A_{143}^{\text{PS}}$	51.6	$44^{+20}_{-20}$	$D_{810}$	2538.6	$2538^{+26}_{-26}$	$f\sigma_8(0.51)$	0.4739	$0.474^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	58.1	$42^{+20}_{-20}$	$D_{1420}$	819.9	$818.2^{+9.4}_{-9.2}$	$\sigma_8(0.51)$	0.6249	$0.622^{+0.018}_{-0.018}$
$A_{217}^{\text{PS}}$	124.1	$115^{+20}_{-20}$	$D_{2000}$	232.56	$231.6^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	0.4692	$0.469^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	0.01	< 7.82	$n_{s,0.002}$	0.9631	$0.964^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	0.5947	$0.592^{+0.017}_{-0.018}$
$A_{100}^{\text{dustTT}}$	8.79	$8.9^{+3.6}_{-3.5}$	$Y_P$	0.24329	$0.2444^{+0.0047}_{-0.0046}$	$f\sigma_8(2.33)$	0.2990	$0.2984^{+0.0086}_{-0.0086}$
$A_{143}^{\text{dustTT}}$	10.96	$10.8^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	0.24461	$0.2457^{+0.0047}_{-0.0046}$	$\sigma_8(2.33)$	0.3089	$0.3079^{+0.0094}_{-0.0095}$
$A_{143 \times 217}^{\text{dustTT}}$	20.3	$18.5^{+6.4}_{-6.5}$	$10^5 D/H$	2.538	$2.559^{+0.091}_{-0.085}$	$f_{2000}^{143}$	26.9	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	96.1	$94^{+10}_{-10}$	Age/Gyr	13.910	$13.85^{+0.34}_{-0.34}$	$f_{2000}^{143 \times 217}$	30.72	$31^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.076}_{-0.074}$	$z_*$	1089.52	$1089.67^{+0.66}_{-0.64}$	$f_{2000}^{217}$	105.29	$106.4^{+3.9}_{-3.8}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.058}_{-0.058}$	$r_*$	146.09	$145.3^{+3.3}_{-3.3}$	$\chi_{\text{lensing}}^2$	8.61	9.12 ( $\nu$ : 0.2)
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	1.04156	$1.0414^{+0.0010}_{-0.0010}$	$\chi_{\text{small}}^2$	395.92	397.2 ( $\nu$ : 1.9)
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	14.026	$13.96^{+0.31}_{-0.31}$	$\chi_{\text{lowl}}^2$	23.52	23.6 ( $\nu$ : 0.6)
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1059.51	$1059.7^{+1.3}_{-1.3}$	$\chi_{\text{plik}}^2$	2343.5	2359.3 ( $\nu$ : 17.7)
$A_{217}^{\text{dustTE}}$	2.07	$2.08^{+0.52}_{-0.54}$	$r_{\text{drag}}$	148.78	$148.0^{+3.4}_{-3.5}$	$\chi_{\text{JLA}}^2$	1034.88	1035.07 ( $\nu$ : 0.1)
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.13967	$0.1402^{+0.0026}_{-0.0025}$	$\chi_{6\text{DF}}^2$	0.006	0.048 ( $\nu$ : 0.0)
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16037	$0.16056^{+0.00080}_{-0.00076}$	$\chi_{\text{MGS}}^2$	1.47	1.37 ( $\nu$ : 0.1)
$H_0$	67.28	$67.4^{+2.2}_{-2.2}$	$z_{\text{eq}}$	3395.7	$3391^{+46}_{-46}$	$\chi_{\text{DR12BAO}}^2$	3.77	4.6 ( $\nu$ : 0.9)
$\Omega_\Lambda$	0.6926	$0.690^{+0.013}_{-0.014}$	$k_{\text{eq}}$	0.010256	$0.01030^{+0.00022}_{-0.00021}$	$\chi_{\text{prior}}^2$	1.4	11.5 ( $\nu$ : 10.1)
$\Omega_m$	0.3074	$0.310^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	0.8145	$0.8155^{+0.0087}_{-0.0088}$	$\chi_{\text{CMB}}^2$	2771.6	2789.2 ( $\nu$ : 18.1)
$\Omega_m h^2$	0.1392	$0.1409^{+0.0062}_{-0.0058}$	$100\theta_{s,\text{eq}}$	0.45004	$0.4505^{+0.0044}_{-0.0044}$	$\chi_{\text{BAO}}^2$	5.25	6.0 ( $\nu$ : 0.6)
$\Omega_\nu h^2$	0.00001	< 0.00117	$H(0.15)$	72.48	$72.7^{+2.2}_{-2.2}$			

Best-fit  $\chi_{\text{eff}}^2 = 3813.11$ ;  $\Delta\chi_{\text{eff}}^2 = -2.56$ ;  $\bar{\chi}_{\text{eff}}^2 = 3841.73$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.12$ ;  $R - 1 = 0.00935$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.47 ( $\Delta$  0.19) DR12BAO: 3.77 ( $\Delta$  -0.47) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.61 ( $\Delta$  -0.11) small\_100x143\_offlike5\_EE\_Aplanc  
395.92 ( $\Delta$  -0.60) commander\_dx12\_v3.2.29: 23.52 ( $\Delta$  0.64) plik\_rd12\_HM\_v22b.TTTEEE: 2343.54 ( $\Delta$  -1.73) SN - JLA Pantheon18: 1034.88 ( $\Delta$  -0.09)



9.16 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00036}_{-0.00036}$	$\Omega_m h^3$	$0.0951^{+0.0069}_{-0.0064}$	$D_M(0.15)$	$643^{+20}_{-20}$
$\Omega_c h^2$	$0.1181^{+0.0058}_{-0.0055}$	$\sigma_8$	$0.812^{+0.021}_{-0.022}$	$H(0.38)$	$82.7^{+2.3}_{-2.2}$
$100\theta_{MC}$	$1.04116^{+0.00086}_{-0.00086}$	$S_8$	$0.825^{+0.022}_{-0.021}$	$D_M(0.38)$	$1534^{+46}_{-45}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.012}_{-0.012}$	$H(0.51)$	$89.4^{+2.4}_{-2.3}$
$\Sigma m_\nu$ [eV]	$< 0.112$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.014}_{-0.015}$	$D_M(0.51)$	$1987^{+58}_{-57}$
$N_{\text{eff}}$	$2.97^{+0.35}_{-0.33}$	$\sigma_8/h^{0.5}$	$0.989^{+0.020}_{-0.020}$	$H(0.61)$	$95.0^{+2.4}_{-2.4}$
$\ln(10^{10} A_s)$	$3.043^{+0.030}_{-0.029}$	$r_{\text{drag}} h$	$99.8^{+1.6}_{-1.7}$	$D_M(0.61)$	$2312^{+66}_{-66}$
$n_s$	$0.964^{+0.013}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.442^{+0.042}_{-0.041}$	$H(2.33)$	$234.9^{+5.2}_{-4.9}$
$y_{\text{cal}}$	$1.0006^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$D_M(2.33)$	$5784^{+140}_{-140}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.098^{+0.064}_{-0.061}$	$f\sigma_8(0.15)$	$0.456^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.874^{+0.033}_{-0.033}$	$\sigma_8(0.15)$	$0.751^{+0.020}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.8}_{-3.8}$	$D_{40}$	$1231^{+26}_{-25}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	$256^{+60}_{-50}$	$D_{220}$	$5738^{+76}_{-71}$	$\sigma_8(0.38)$	$0.665^{+0.019}_{-0.019}$
$A_{143}^{\text{PS}}$	$44^{+20}_{-20}$	$D_{810}$	$2538^{+26}_{-26}$	$f\sigma_8(0.51)$	$0.474^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.1^{+9.4}_{-9.1}$	$\sigma_8(0.51)$	$0.623^{+0.018}_{-0.018}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.6^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	$< 7.82$	$n_{s,0.002}$	$0.964^{+0.013}_{-0.014}$	$\sigma_8(0.61)$	$0.593^{+0.017}_{-0.018}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$Y_P$	$0.2444^{+0.0047}_{-0.0046}$	$f\sigma_8(2.33)$	$0.2987^{+0.0085}_{-0.0084}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$Y_{\text{BBN}}$	$0.2457^{+0.0047}_{-0.0046}$	$\sigma_8(2.33)$	$0.3081^{+0.0093}_{-0.0095}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.4}_{-6.5}$	$10^5 D/H$	$2.559^{+0.091}_{-0.085}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.85^{+0.34}_{-0.34}$	$f_{2000}^{143 \times 217}$	$31^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.074}$	$z_*$	$1089.66^{+0.67}_{-0.64}$	$f_{2000}^{217}$	$106.4^{+3.9}_{-3.8}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$r_*$	$145.3^{+3.3}_{-3.3}$	$\chi_{\text{lensing}}^2$	$9.10 (\nu: 0.2)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.0414^{+0.0010}_{-0.0010}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.9)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.31}_{-0.31}$	$\chi_{\text{lowl}}^2$	$23.6 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.8^{+1.4}_{-1.3}$	$\chi_{\text{plik}}^2$	$2359.2 (\nu: 17.6)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.54}$	$r_{\text{drag}}$	$148.0^{+3.4}_{-3.5}$	$\chi_{\text{JLA}}^2$	$1035.06 (\nu: 0.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1402^{+0.0026}_{-0.0025}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16056^{+0.00080}_{-0.00076}$	$\chi_{\text{MGS}}^2$	$1.38 (\nu: 0.1)$
$H_0$	$67.5^{+2.2}_{-2.2}$	$z_{\text{eq}}$	$3390^{+46}_{-45}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.9)$
$\Omega_\Lambda$	$0.690^{+0.013}_{-0.014}$	$k_{\text{eq}}$	$0.01029^{+0.00022}_{-0.00021}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.0)$
$\Omega_m$	$0.310^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8156^{+0.0086}_{-0.0087}$	$\chi_{\text{CMB}}^2$	$2789.0 (\nu: 17.9)$
$\Omega_m h^2$	$0.1409^{+0.0062}_{-0.0058}$	$100\theta_{s,\text{eq}}$	$0.4506^{+0.0043}_{-0.0044}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$
$\Omega_\nu h^2$	$< 0.00118$	$H(0.15)$	$72.7^{+2.2}_{-2.2}$		

$$\bar{\chi}_{\text{eff}}^2 = 3841.56; \Delta\bar{\chi}_{\text{eff}}^2 = -0.18; R - 1 = 0.01012$$

# 10 nnu+nrn

## 10.1 base\_nnu\_nrn\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022135	$0.02216^{+0.00044}_{-0.00045}$	$\Omega_m h^2$	0.1385	$0.1390^{+0.0069}_{-0.0065}$	$100\theta_{\text{eq}}$	0.8044	$0.805^{+0.015}_{-0.015}$
$\Omega_c h^2$	0.1157	$0.1162^{+0.0066}_{-0.0062}$	$\Omega_m h^3$	0.0899	$0.0906^{+0.0085}_{-0.0080}$	$100\theta_{\text{s,eq}}$	0.4449	$0.4452^{+0.0076}_{-0.0075}$
$100\theta_{\text{MC}}$	1.04144	$1.04139^{+0.00093}_{-0.00095}$	$\sigma_8$	0.7989	$0.800^{+0.023}_{-0.022}$	$H(0.15)$	70.25	$70.5^{+3.2}_{-3.1}$
$\tau$	0.0548	$0.055^{+0.016}_{-0.015}$	$S_8$	0.8365	$0.836^{+0.032}_{-0.031}$	$D_{\text{M}}(0.15)$	666.7	$665^{+32}_{-31}$
$N_{\text{eff}}$	2.711	$2.74^{+0.44}_{-0.42}$	$\sigma_8 \Omega_m^{0.5}$	0.4582	$0.458^{+0.018}_{-0.017}$	$H(0.38)$	80.43	$80.7^{+3.2}_{-3.1}$
$\ln(10^{10} A_s)$	3.0364	$3.037^{+0.037}_{-0.035}$	$\sigma_8 \Omega_m^{0.25}$	0.6050	$0.605^{+0.018}_{-0.017}$	$D_{\text{M}}(0.38)$	1586	$1582^{+72}_{-69}$
$n_s$	0.9500	$0.950^{+0.021}_{-0.022}$	$\sigma_8/h^{0.5}$	0.9917	$0.991^{+0.024}_{-0.023}$	$H(0.51)$	87.17	$87.4^{+3.2}_{-3.1}$
$dn_s/d \ln k$	-0.0105	$-0.012^{+0.016}_{-0.015}$	$r_{\text{drag}} h$	97.52	$97.6^{+2.7}_{-2.6}$	$D_{\text{M}}(0.51)$	2051	$2046^{+89}_{-86}$
$y_{\text{cal}}$	1.00054	$1.0005^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.458	$2.455^{+0.060}_{-0.057}$	$H(0.61)$	92.79	$93.0^{+3.2}_{-3.1}$
$A_{217}^{\text{CIB}}$	46.8	$47^{+10}_{-10}$	$z_{\text{re}}$	7.68	$7.7^{+1.6}_{-1.5}$	$D_{\text{M}}(0.61)$	2385	$2379^{+100}_{-97}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.49	—	$10^9 A_s$	2.083	$2.085^{+0.079}_{-0.073}$	$H(2.33)$	232.4	$232.9^{+6.0}_{-5.7}$
$A_{143}^{\text{tSZ}}$	7.06	$5.2^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8666	$1.868^{+0.036}_{-0.036}$	$D_{\text{M}}(2.33)$	5912	$5899^{+200}_{-190}$
$A_{100}^{\text{PS}}$	250	$261^{+50}_{-60}$	$D_{40}$	1225.2	$1223^{+37}_{-37}$	$f\sigma_8(0.15)$	0.4613	$0.461^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	48.8	$47^{+20}_{-20}$	$D_{220}$	5729	$5729^{+75}_{-74}$	$\sigma_8(0.15)$	0.7366	$0.737^{+0.022}_{-0.021}$
$A_{143 \times 217}^{\text{PS}}$	49.0	$42^{+20}_{-20}$	$D_{810}$	2540.0	$2539^{+27}_{-27}$	$f\sigma_8(0.38)$	0.4755	$0.475^{+0.014}_{-0.013}$
$A_{217}^{\text{PS}}$	120.4	$115^{+20}_{-20}$	$D_{1420}$	817.6	$816.0^{+9.7}_{-9.9}$	$\sigma_8(0.38)$	0.6511	$0.652^{+0.021}_{-0.020}$
$A^{\text{kSZ}}$	0.00	< 8.35	$D_{2000}$	231.55	$230.8^{+3.7}_{-3.7}$	$f\sigma_8(0.51)$	0.4721	$0.472^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	8.71	$8.8^{+3.6}_{-3.6}$	$n_{\text{s},0.002}$	0.9838	$0.988^{+0.041}_{-0.041}$	$\sigma_8(0.51)$	0.6086	$0.609^{+0.020}_{-0.019}$
$A_{143}^{\text{dustTT}}$	10.87	$10.8^{+3.6}_{-3.5}$	$Y_{\text{P}}$	0.2407	$0.2411^{+0.0062}_{-0.0061}$	$f\sigma_8(0.61)$	0.4659	$0.466^{+0.013}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.5^{+6.3}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	0.2420	$0.2424^{+0.0062}_{-0.0061}$	$\sigma_8(0.61)$	0.5787	$0.579^{+0.020}_{-0.018}$
$A_{217}^{\text{dustTT}}$	95.1	$94^{+10}_{-10}$	$10^5 D/H$	2.513	$2.52^{+0.11}_{-0.099}$	$f\sigma_8(2.33)$	0.2912	$0.291^{+0.010}_{-0.0097}$
$A_{100}^{\text{dustTE}}$	0.115	$0.114^{+0.075}_{-0.074}$	Age/Gyr	14.148	$14.12^{+0.47}_{-0.46}$	$\sigma_8(2.33)$	0.2994	$0.300^{+0.011}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.058}$	$z_*$	1089.51	$1089.55^{+0.76}_{-0.72}$	$f_{2000}^{143}$	28.8	$30^{+6}_{-6}$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.48^{+0.17}_{-0.17}$	$r_*$	147.47	$147.2^{+4.2}_{-4.2}$	$f_{2000}^{143 \times 217}$	31.94	$33^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.11}_{-0.10}$	$100\theta_*$	1.04186	$1.0418^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	106.53	$107.3^{+3.9}_{-4.0}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.154	$14.13^{+0.39}_{-0.39}$	$\chi_{\text{simall}}^2$	396.09	$397.1 (\nu: 1.5)$
$A_{217}^{\text{dustTE}}$	2.09	$2.08^{+0.53}_{-0.53}$	$z_{\text{drag}}$	1058.83	$1058.9^{+1.7}_{-1.7}$	$\chi_{\text{lowl}}^2$	22.41	$22.5 (\nu: 1.1)$
$c_{100}$	0.99976	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	150.24	$150.0^{+4.4}_{-4.3}$	$\chi_{\text{plik}}^2$	2343.2	$2360.1 (\nu: 18.4)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.13872	$0.1389^{+0.0031}_{-0.0030}$	$\chi_{\text{prior}}^2$	1.5	$11.4 (\nu: 10.1)$
$H_0$	64.90	$65.1^{+3.3}_{-3.2}$	$100\theta_{\text{D}}$	0.16000	$0.1601^{+0.0010}_{-0.00096}$	$\chi_{\text{CMB}}^2$	2761.7	$2779.7 (\nu: 18.5)$
$\Omega_{\Lambda}$	0.6712	$0.672^{+0.023}_{-0.024}$	$z_{\text{eq}}$	3450	$3448^{+81}_{-80}$			
$\Omega_{\text{m}}$	0.3288	$0.328^{+0.024}_{-0.023}$	$k_{\text{eq}}$	0.010290	$0.01031^{+0.00024}_{-0.00023}$			

Best-fit  $\chi_{\text{eff}}^2 = 2763.19$ ;  $\Delta\chi_{\text{eff}}^2 = -2.59$ ;  $\bar{\chi}_{\text{eff}}^2 = 2791.11$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.66$ ;  $R - 1 = 0.01356$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.09 ( $\Delta$  0.04) commander\_dx12\_v3.2.29: 22.41 ( $\Delta$  -0.85) plik\_rd12\_HM\_v22b\_TTTEE: 2343.18 ( $\Delta$  -1.47)

## 10.2 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022331	$0.02236^{+0.00035}_{-0.00036}$	$\Omega_m h^3$	0.0929	$0.0937^{+0.0078}_{-0.0072}$	$H(0.15)$	71.85	$72.1^{+2.6}_{-2.4}$
$\Omega_c h^2$	0.1166	$0.1172^{+0.0068}_{-0.0060}$	$\sigma_8$	0.8022	$0.803^{+0.024}_{-0.022}$	$D_M(0.15)$	650.8	$649^{+23}_{-24}$
$100\theta_{MC}$	1.04131	$1.04127^{+0.00094}_{-0.00095}$	$S_8$	0.8217	$0.822^{+0.027}_{-0.026}$	$H(0.38)$	81.90	$82.1^{+2.7}_{-2.5}$
$\tau$	0.0568	$0.057^{+0.015}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4500	$0.450^{+0.015}_{-0.014}$	$D_M(0.38)$	1551	$1547^{+53}_{-54}$
$N_{\text{eff}}$	2.870	$2.91^{+0.41}_{-0.37}$	$\sigma_8 \Omega_m^{0.25}$	0.6008	$0.601^{+0.017}_{-0.017}$	$H(0.51)$	88.58	$88.8^{+2.8}_{-2.5}$
$\ln(10^{10} A_s)$	3.0423	$3.043^{+0.036}_{-0.034}$	$\sigma_8/h^{0.5}$	0.9830	$0.982^{+0.021}_{-0.020}$	$D_M(0.51)$	2009	$2003^{+66}_{-68}$
$n_s$	0.9605	$0.960^{+0.016}_{-0.017}$	$r_{\text{drag}} h$	99.19	$99.3^{+1.6}_{-1.7}$	$H(0.61)$	94.16	$94.4^{+2.8}_{-2.6}$
$dn_s/d \ln k$	-0.0064	$-0.008^{+0.015}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4329	$2.431^{+0.050}_{-0.049}$	$D_M(0.61)$	2337	$2331^{+75}_{-78}$
$y_{\text{cal}}$	1.00065	$1.0006^{+0.0048}_{-0.0050}$	$z_{\text{re}}$	7.86	$7.8^{+1.5}_{-1.5}$	$H(2.33)$	233.7	$234.3^{+5.8}_{-5.4}$
$A_{217}^{\text{CIB}}$	47.1	$47^{+10}_{-10}$	$10^9 A_s$	2.095	$2.098^{+0.077}_{-0.070}$	$D_M(2.33)$	5832	$5817^{+160}_{-170}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.51	—	$10^9 A_s e^{-2\tau}$	1.8705	$1.873^{+0.036}_{-0.035}$	$f\sigma_8(0.15)$	0.4543	$0.454^{+0.014}_{-0.014}$
$A_{143}^{\text{tSZ}}$	7.11	$5.3^{+3.7}_{-3.9}$	$D_{40}$	1219.0	$1217^{+38}_{-36}$	$\sigma_8(0.15)$	0.7409	$0.742^{+0.022}_{-0.021}$
$A_{100}^{\text{PS}}$	249	$262^{+60}_{-60}$	$D_{220}$	5735	$5738^{+75}_{-75}$	$f\sigma_8(0.38)$	0.4718	$0.472^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	48.7	$47^{+20}_{-20}$	$D_{810}$	2540.2	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	0.6564	$0.657^{+0.020}_{-0.019}$
$A_{143 \times 217}^{\text{PS}}$	49.4	$42^{+20}_{-20}$	$D_{1420}$	818.5	$817.0^{+9.3}_{-9.3}$	$f\sigma_8(0.51)$	0.4700	$0.470^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	120.0	$115^{+20}_{-20}$	$D_{2000}$	231.61	$230.8^{+3.5}_{-3.5}$	$\sigma_8(0.51)$	0.6142	$0.615^{+0.019}_{-0.018}$
$A^{\text{kSZ}}$	0.0	—	$n_{s,0.002}$	0.9812	$0.986^{+0.041}_{-0.040}$	$f\sigma_8(0.61)$	0.4648	$0.465^{+0.013}_{-0.012}$
$A_{100}^{\text{dustTT}}$	8.80	$8.8^{+3.5}_{-3.5}$	$Y_P$	0.2430	$0.2435^{+0.0055}_{-0.0053}$	$\sigma_8(0.61)$	0.5843	$0.585^{+0.018}_{-0.017}$
$A_{143}^{\text{dustTT}}$	10.95	$10.9^{+3.3}_{-3.5}$	$Y_P^{\text{BBN}}$	0.2443	$0.2448^{+0.0055}_{-0.0053}$	$f\sigma_8(2.33)$	0.2945	$0.2949^{+0.0094}_{-0.0088}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.5^{+6.0}_{-6.5}$	$10^5 D/H$	2.532	$2.54^{+0.11}_{-0.098}$	$\sigma_8(2.33)$	0.3035	$0.3039^{+0.0099}_{-0.0093}$
$A_{217}^{\text{dustTT}}$	94.8	$94^{+10}_{-10}$	Age/Gyr	13.962	$13.93^{+0.39}_{-0.39}$	$f_{2000}^{143}$	28.7	$30^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.074}_{-0.074}$	$z_*$	1089.50	$1089.55^{+0.78}_{-0.72}$	$f_{2000}^{143 \times 217}$	31.90	$33^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.134^{+0.060}_{-0.056}$	$r_*$	146.25	$145.9^{+3.7}_{-3.8}$	$f_{2000}^{217}$	106.47	$107.3^{+4.2}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	1.04162	$1.0415^{+0.0012}_{-0.0012}$	$\chi_{\text{small}}^2$	396.37	$397.2 (\nu: 1.8)$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	14.041	$14.01^{+0.34}_{-0.36}$	$\chi_{\text{lowl}}^2$	22.08	$22.2 (\nu: 1.1)$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1059.47	$1059.6^{+1.4}_{-1.4}$	$\chi_{\text{plik}}^2$	2344.7	$2361.1 (\nu: 19.5)$
$A_{217}^{\text{dustTE}}$	2.07	$2.06^{+0.53}_{-0.54}$	$r_{\text{drag}}$	148.95	$148.6^{+3.9}_{-4.0}$	$\chi_{6\text{DF}}^2$	0.070	$0.095 (\nu: 0.0)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.13957	$0.1399^{+0.0029}_{-0.0027}$	$\chi_{\text{MGS}}^2$	0.98	$1.07 (\nu: 0.1)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0013}$	$100\theta_D$	0.16031	$0.16038^{+0.00095}_{-0.00090}$	$\chi_{\text{DR12BAO}}^2$	5.26	$5.6 (\nu: 2.0)$
$H_0$	66.59	$66.8^{+2.6}_{-2.4}$	$z_{\text{eq}}$	3400	$3399^{+52}_{-52}$	$\chi_{\text{prior}}^2$	1.6	$11.6 (\nu: 10.8)$
$\Omega_\Lambda$	0.6852	$0.686^{+0.013}_{-0.014}$	$k_{\text{eq}}$	0.010255	$0.01028^{+0.00024}_{-0.00022}$	$\chi_{\text{BAO}}^2$	6.31	$6.8 (\nu: 1.5)$
$\Omega_m$	0.3148	$0.314^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	0.8137	$0.8140^{+0.0098}_{-0.0097}$	$\chi_{\text{CMB}}^2$	2763.1	$2780.6 (\nu: 19.1)$
$\Omega_m h^2$	0.1396	$0.1402^{+0.0069}_{-0.0062}$	$100\theta_{s,\text{eq}}$	0.4496	$0.4497^{+0.0050}_{-0.0049}$			

Best-fit  $\chi_{\text{eff}}^2 = 2770.98$ ;  $\Delta\chi_{\text{eff}}^2 = -0.93$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.94$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.03$ ;  $R - 1 = 0.03824$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 ( $\Delta$  0.04) MGS: 0.98 ( $\Delta$  -0.24) DR12BAO: 5.26 ( $\Delta$  0.85) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.37 ( $\Delta$  0.16) commander\_dx12.v3.2.29: 22.08 ( $\Delta$  -0.79) plik\_rd12\_HM.v22b\_TTTEEE: 2344.66 ( $\Delta$  -0.85)

### 10.3 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022113	$0.02216^{+0.00043}_{-0.00043}$	$\Omega_m h^2$	0.1376	$0.1385^{+0.0067}_{-0.0064}$	$100\theta_{\text{eq}}$	0.8049	$0.806^{+0.014}_{-0.013}$
$\Omega_c h^2$	0.1149	$0.1157^{+0.0065}_{-0.0061}$	$\Omega_m h^3$	0.0891	$0.0903^{+0.0085}_{-0.0079}$	$100\theta_{\text{s,eq}}$	0.4452	$0.4457^{+0.0069}_{-0.0068}$
$100\theta_{\text{MC}}$	1.04153	$1.04144^{+0.00093}_{-0.00097}$	$\sigma_8$	0.7952	$0.797^{+0.022}_{-0.021}$	$H(0.15)$	70.08	$70.5^{+3.1}_{-3.0}$
$\tau$	0.0536	$0.054^{+0.015}_{-0.014}$	$S_8$	0.8317	$0.831^{+0.026}_{-0.025}$	$D_{\text{M}}(0.15)$	668.2	$665^{+31}_{-30}$
$N_{\text{eff}}$	2.672	$2.73^{+0.44}_{-0.41}$	$\sigma_8 \Omega_m^{0.5}$	0.4556	$0.455^{+0.014}_{-0.013}$	$H(0.38)$	80.22	$80.6^{+3.1}_{-3.0}$
$\ln(10^{10} A_s)$	3.0309	$3.034^{+0.034}_{-0.033}$	$\sigma_8 \Omega_m^{0.25}$	0.6019	$0.602^{+0.014}_{-0.014}$	$D_{\text{M}}(0.38)$	1590	$1581^{+68}_{-67}$
$n_s$	0.9494	$0.950^{+0.020}_{-0.021}$	$\sigma_8/h^{0.5}$	0.9881	$0.988^{+0.018}_{-0.018}$	$H(0.51)$	86.94	$87.4^{+3.1}_{-3.0}$
$dn_s/d \ln k$	-0.0098	$-0.011^{+0.015}_{-0.015}$	$r_{\text{drag}} h$	97.61	$97.8^{+2.4}_{-2.4}$	$D_{\text{M}}(0.51)$	2056	$2046^{+85}_{-83}$
$y_{\text{cal}}$	1.00027	$1.0004^{+0.0050}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.4525	$2.450^{+0.048}_{-0.046}$	$H(0.61)$	92.54	$93.0^{+3.2}_{-3.1}$
$A_{217}^{\text{CIB}}$	45.6	$47^{+10}_{-10}$	$z_{\text{re}}$	7.53	$7.6^{+1.5}_{-1.4}$	$D_{\text{M}}(0.61)$	2391	$2379^{+97}_{-95}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.68	—	$10^9 A_s$	2.072	$2.078^{+0.072}_{-0.068}$	$H(2.33)$	231.7	$232.5^{+5.9}_{-5.7}$
$A_{143}^{\text{tSZ}}$	6.95	$5.2^{+3.7}_{-4.0}$	$10^9 A_s e^{-2\tau}$	1.8611	$1.865^{+0.036}_{-0.035}$	$D_{\text{M}}(2.33)$	5928	$5903^{+190}_{-190}$
$A_{100}^{\text{PS}}$	247	$261^{+60}_{-60}$	$D_{40}$	1225.8	$1223^{+37}_{-36}$	$f\sigma_8(0.15)$	0.4587	$0.459^{+0.013}_{-0.012}$
$A_{143}^{\text{PS}}$	50.6	$46^{+20}_{-20}$	$D_{220}$	5727	$5731^{+76}_{-73}$	$\sigma_8(0.15)$	0.7332	$0.735^{+0.021}_{-0.020}$
$A_{143 \times 217}^{\text{PS}}$	53.1	$42^{+20}_{-20}$	$D_{810}$	2538.1	$2537^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4730	$0.473^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	121.8	$115^{+20}_{-20}$	$D_{1420}$	817.9	$816.1^{+9.4}_{-9.8}$	$\sigma_8(0.38)$	0.6482	$0.650^{+0.020}_{-0.019}$
$A^{\text{kSZ}}$	0.00	< 8.36	$D_{2000}$	231.82	$230.9^{+3.6}_{-3.6}$	$f\sigma_8(0.51)$	0.4697	$0.470^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.72	$8.8^{+3.6}_{-3.5}$	$n_{\text{s},0.002}$	0.9809	$0.986^{+0.041}_{-0.040}$	$\sigma_8(0.51)$	0.6059	$0.608^{+0.019}_{-0.019}$
$A_{143}^{\text{dustTT}}$	10.90	$10.8^{+3.5}_{-3.6}$	$Y_{\text{P}}$	0.2401	$0.2410^{+0.0061}_{-0.0061}$	$f\sigma_8(0.61)$	0.4636	$0.464^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.5^{+6.0}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	0.2415	$0.2423^{+0.0061}_{-0.0061}$	$\sigma_8(0.61)$	0.5761	$0.578^{+0.019}_{-0.018}$
$A_{217}^{\text{dustTT}}$	95.4	$94^{+10}_{-10}$	$10^5 D/H$	2.503	$2.51^{+0.11}_{-0.10}$	$f\sigma_8(2.33)$	0.2899	$0.2909^{+0.0099}_{-0.0097}$
$A_{100}^{\text{dustTE}}$	0.113	$0.115^{+0.076}_{-0.074}$	Age/Gyr	14.188	$14.13^{+0.46}_{-0.46}$	$\sigma_8(2.33)$	0.2981	$0.299^{+0.011}_{-0.011}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.060}_{-0.058}$	$z_*$	1089.42	$1089.49^{+0.75}_{-0.70}$	$f_{2000}^{143}$	28.3	$30^{+6}_{-6}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.48^{+0.16}_{-0.17}$	$r_*$	147.93	$147.4^{+4.2}_{-4.1}$	$f_{2000}^{143 \times 217}$	31.60	$32^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	0.226	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	1.04198	$1.0419^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	106.09	$107.1^{+3.9}_{-4.0}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.197	$14.15^{+0.38}_{-0.38}$	$\chi_{\text{lensing}}^2$	8.63	$9.17 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.54}_{-0.53}$	$z_{\text{drag}}$	1058.67	$1058.9^{+1.6}_{-1.7}$	$\chi_{\text{small}}^2$	395.91	$396.8 (\nu: 1.1)$
$c_{100}$	0.99976	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	150.72	$150.2^{+4.3}_{-4.3}$	$\chi_{\text{lowl}}^2$	22.56	$22.6 (\nu: 1.2)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0013}$	$k_{\text{D}}$	0.13837	$0.1388^{+0.0030}_{-0.0029}$	$\chi_{\text{plik}}^2$	2343.4	$2359.8 (\nu: 17.4)$
$H_0$	64.76	$65.2^{+3.1}_{-3.1}$	$100\theta_{\text{D}}$	0.15992	$0.1600^{+0.0010}_{-0.00097}$	$\chi_{\text{prior}}^2$	1.4	$11.4 (\nu: 10.1)$
$\Omega_{\Lambda}$	0.6718	$0.673^{+0.021}_{-0.022}$	$z_{\text{eq}}$	3447	$3441^{+73}_{-72}$	$\chi_{\text{CMB}}^2$	2770.6	$2788.4 (\nu: 18.5)$
$\Omega_{\text{m}}$	0.3282	$0.327^{+0.022}_{-0.021}$	$k_{\text{eq}}$	0.010253	$0.01028^{+0.00023}_{-0.00021}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.94$ ;  $\Delta\chi_{\text{eff}}^2 = -2.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 2799.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.92$ ;  $R - 1 = 0.01835$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.63 ( $\Delta$  -0.24) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.92 ( $\Delta$  -0.13) commander\_dx12\_v3\_2\_29: 22.56 ( $\Delta$  -0.70) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.45 ( $\Delta$  -1.48)

#### 10.4 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02235^{+0.00035}_{-0.00036}$	$\Omega_m h^3$	$0.0934^{+0.0077}_{-0.0071}$	$H(0.15)$	$71.9^{+2.6}_{-2.4}$
$\Omega_c h^2$	$0.1169^{+0.0064}_{-0.0059}$	$\sigma_8$	$0.803^{+0.021}_{-0.020}$	$D_M(0.15)$	$650^{+23}_{-24}$
$100\theta_{MC}$	$1.04130^{+0.00095}_{-0.00093}$	$S_8$	$0.822^{+0.022}_{-0.022}$	$H(0.38)$	$82.0^{+2.7}_{-2.5}$
$\tau$	$0.057^{+0.014}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.012}_{-0.012}$	$D_M(0.38)$	$1550^{+52}_{-54}$
$N_{\text{eff}}$	$2.89^{+0.39}_{-0.37}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.014}_{-0.014}$	$H(0.51)$	$88.7^{+2.7}_{-2.5}$
$\ln(10^{10} A_s)$	$3.044^{+0.031}_{-0.031}$	$\sigma_8/h^{0.5}$	$0.983^{+0.016}_{-0.016}$	$D_M(0.51)$	$2007^{+66}_{-68}$
$n_s$	$0.959^{+0.016}_{-0.017}$	$r_{\text{drag}} h$	$99.2^{+1.7}_{-1.6}$	$H(0.61)$	$94.3^{+2.8}_{-2.6}$
$dn_s/d \ln k$	$-0.008^{+0.015}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.043}_{-0.044}$	$D_M(0.61)$	$2335^{+76}_{-78}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0049}$	$z_{\text{re}}$	$7.9^{+1.3}_{-1.4}$	$H(2.33)$	$234.0^{+5.6}_{-5.4}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.099^{+0.066}_{-0.064}$	$D_M(2.33)$	$5826^{+160}_{-170}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.872^{+0.034}_{-0.034}$	$f\sigma_8(0.15)$	$0.455^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.3^{+3.7}_{-3.9}$	$D_{40}$	$1220^{+37}_{-37}$	$\sigma_8(0.15)$	$0.741^{+0.020}_{-0.019}$
$A_{100}^{\text{PS}}$	$261^{+50}_{-60}$	$D_{220}$	$5741^{+74}_{-75}$	$f\sigma_8(0.38)$	$0.472^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{810}$	$2540^{+27}_{-27}$	$\sigma_8(0.38)$	$0.657^{+0.019}_{-0.018}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.2^{+9.3}_{-9.3}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.4}_{-3.5}$	$\sigma_8(0.51)$	$0.615^{+0.018}_{-0.017}$
$A^{\text{kSZ}}$	$< 8.47$	$n_{s,0.002}$	$0.984^{+0.041}_{-0.040}$	$f\sigma_8(0.61)$	$0.465^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTT}}$	$8.8^{+3.6}_{-3.5}$	$Y_P$	$0.2432^{+0.0054}_{-0.0053}$	$\sigma_8(0.61)$	$0.585^{+0.017}_{-0.016}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.3}_{-3.4}$	$Y_{\text{BBN}}$	$0.2445^{+0.0054}_{-0.0053}$	$f\sigma_8(2.33)$	$0.2947^{+0.0087}_{-0.0085}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+5.9}_{-6.4}$	$10^5 D/H$	$2.54^{+0.10}_{-0.099}$	$\sigma_8(2.33)$	$0.3037^{+0.0094}_{-0.0091}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.95^{+0.39}_{-0.39}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.075}$	$z_*$	$1089.52^{+0.76}_{-0.70}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.061}_{-0.056}$	$r_*$	$146.1^{+3.8}_{-3.7}$	$f_{2000}^{217}$	$107.2^{+4.0}_{-4.0}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.0416^{+0.0011}_{-0.0012}$	$\chi_{\text{lensing}}^2$	$9.09 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$14.03^{+0.35}_{-0.34}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.6)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.5^{+1.4}_{-1.4}$	$\chi_{\text{lowl}}^2$	$22.4 (\nu: 1.2)$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.52}_{-0.53}$	$r_{\text{drag}}$	$148.8^{+3.9}_{-3.9}$	$\chi_{\text{plik}}^2$	$2360.6 (\nu: 18.6)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.1397^{+0.0027}_{-0.0027}$	$\chi_{6\text{DF}}^2$	$0.099 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16033^{+0.00092}_{-0.00089}$	$\chi_{\text{MGS}}^2$	$1.04 (\nu: 0.1)$
$H_0$	$66.7^{+2.6}_{-2.4}$	$z_{\text{eq}}$	$3401^{+49}_{-51}$	$\chi_{\text{DR12BAO}}^2$	$5.7 (\nu: 1.9)$
$\Omega_\Lambda$	$0.685^{+0.013}_{-0.014}$	$k_{\text{eq}}$	$0.01027^{+0.00023}_{-0.00021}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.4)$
$\Omega_m$	$0.315^{+0.014}_{-0.013}$	$100\theta_{\text{eq}}$	$0.8137^{+0.0093}_{-0.0092}$	$\chi_{\text{CMB}}^2$	$2789.2 (\nu: 19.4)$
$\Omega_m h^2$	$0.1399^{+0.0066}_{-0.0061}$	$100\theta_{s,\text{eq}}$	$0.4496^{+0.0048}_{-0.0047}$	$\chi_{\text{BAO}}^2$	$6.8 (\nu: 1.4)$

$$\bar{\chi}_{\text{eff}}^2 = 2807.63; \Delta \bar{\chi}_{\text{eff}}^2 = 0.78; R - 1 = 0.03868$$

# 10.5 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216^{+0.00044}_{-0.00044}$	$\Omega_{\mathrm{m}}h^2$	$0.1390^{+0.0069}_{-0.0065}$	$100\theta_{\mathrm{eq}}$	$0.805^{+0.015}_{-0.015}$
$\Omega_{\mathrm{c}}h^2$	$0.1162^{+0.0066}_{-0.0062}$	$\Omega_{\mathrm{m}}h^3$	$0.0906^{+0.0085}_{-0.0079}$	$100\theta_{\mathrm{s,eq}}$	$0.4452^{+0.0076}_{-0.0075}$
$100\theta_{\mathrm{MC}}$	$1.04140^{+0.00094}_{-0.00095}$	$\sigma_8$	$0.800^{+0.023}_{-0.021}$	$H(0.15)$	$70.5^{+3.2}_{-3.1}$
$\tau$	$0.056^{+0.014}_{-0.012}$	$S_8$	$0.837^{+0.032}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$665^{+32}_{-31}$
$N_{\mathrm{eff}}$	$2.75^{+0.44}_{-0.42}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.458^{+0.018}_{-0.017}$	$H(0.38)$	$80.7^{+3.2}_{-3.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039^{+0.034}_{-0.032}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.017}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1581^{+71}_{-69}$
$n_{\mathrm{s}}$	$0.950^{+0.021}_{-0.021}$	$\sigma_8/h^{0.5}$	$0.992^{+0.023}_{-0.022}$	$H(0.51)$	$87.4^{+3.2}_{-3.1}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.012^{+0.016}_{-0.016}$	$r_{\mathrm{drag}}h$	$97.6^{+2.7}_{-2.6}$	$D_{\mathrm{M}}(0.51)$	$2045^{+89}_{-86}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	$2.457^{+0.059}_{-0.057}$	$H(0.61)$	$93.1^{+3.2}_{-3.1}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$z_{\mathrm{re}}$	$< 8.97$	$D_{\mathrm{M}}(0.61)$	$2378^{+100}_{-97}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.089^{+0.071}_{-0.066}$	$H(2.33)$	$232.9^{+6.0}_{-5.7}$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+3.7}_{-3.9}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.868^{+0.036}_{-0.036}$	$D_{\mathrm{M}}(2.33)$	$5898^{+200}_{-190}$
$A_{100}^{\mathrm{PS}}$	$261^{+60}_{-60}$	$D_{40}$	$1222^{+37}_{-37}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$47^{+20}_{-20}$	$D_{220}$	$5729^{+74}_{-74}$	$\sigma_8(0.15)$	$0.738^{+0.022}_{-0.020}$
$A_{143\times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-27}$	$f\sigma_8(0.38)$	$0.476^{+0.014}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$816.0^{+9.5}_{-9.8}$	$\sigma_8(0.38)$	$0.652^{+0.021}_{-0.019}$
$A^{\mathrm{kSZ}}$	$< 8.33$	$D_{2000}$	$230.8^{+3.6}_{-3.7}$	$f\sigma_8(0.51)$	$0.473^{+0.013}_{-0.012}$
$A_{100}^{\mathrm{dustTT}}$	$8.8^{+3.6}_{-3.6}$	$n_{\mathrm{s},0.002}$	$0.989^{+0.040}_{-0.041}$	$\sigma_8(0.51)$	$0.610^{+0.020}_{-0.019}$
$A_{143}^{\mathrm{dustTT}}$	$10.8^{+3.6}_{-3.5}$	$Y_{\mathrm{P}}$	$0.2412^{+0.0062}_{-0.0061}$	$f\sigma_8(0.61)$	$0.466^{+0.013}_{-0.012}$
$A_{143\times 217}^{\mathrm{dustTT}}$	$18.5^{+6.3}_{-6.5}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2425^{+0.0062}_{-0.0061}$	$\sigma_8(0.61)$	$0.580^{+0.019}_{-0.018}$
$A_{217}^{\mathrm{dustTT}}$	$94^{+10}_{-10}$	$10^5\mathrm{D}/\mathrm{H}$	$2.52^{+0.11}_{-0.099}$	$f\sigma_8(2.33)$	$0.292^{+0.010}_{-0.0094}$
$A_{100}^{\mathrm{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$\mathrm{Age}/\mathrm{Gyr}$	$14.12^{+0.47}_{-0.45}$	$\sigma_8(2.33)$	$0.300^{+0.011}_{-0.010}$
$A_{100\times 143}^{\mathrm{dustTE}}$	$0.134^{+0.058}_{-0.059}$	$z_*$	$1089.55^{+0.76}_{-0.72}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100\times 217}^{\mathrm{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$147.2^{+4.2}_{-4.2}$	$f_{2000}^{143\times 217}$	$33^{+4}_{-4}$
$A_{143}^{\mathrm{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	$1.0418^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	$107.3^{+3.9}_{-4.0}$
$A_{143\times 217}^{\mathrm{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.13^{+0.39}_{-0.38}$	$\chi_{\mathrm{simall}}^2$	$397.0\ (\nu: 1.6)$
$A_{217}^{\mathrm{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$z_{\mathrm{drag}}$	$1058.9^{+1.6}_{-1.7}$	$\chi_{\mathrm{lowl}}^2$	$22.5\ (\nu: 1.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$149.9^{+4.3}_{-4.3}$	$\chi_{\mathrm{plik}}^2$	$2360.0\ (\nu: 18.3)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.1390^{+0.0031}_{-0.0030}$	$\chi_{\mathrm{prior}}^2$	$11.4\ (\nu: 10.1)$
$H_0$	$65.1^{+3.3}_{-3.2}$	$100\theta_{\mathrm{D}}$	$0.1601^{+0.0010}_{-0.00096}$	$\chi_{\mathrm{CMB}}^2$	$2779.5\ (\nu: 18.1)$
$\Omega_{\Lambda}$	$0.672^{+0.022}_{-0.024}$	$z_{\mathrm{eq}}$	$3447^{+82}_{-80}$		
$\Omega_{\mathrm{m}}$	$0.328^{+0.024}_{-0.022}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00024}_{-0.00022}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2790.91; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -0.63; R - 1 = 0.01332$$

## 10.6 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236^{+0.00035}_{-0.00036}$	$\Omega_{\mathrm{m}}h^3$	$0.0937^{+0.0078}_{-0.0072}$	$H(0.15)$	$72.1^{+2.6}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1172^{+0.0068}_{-0.0060}$	$\sigma_8$	$0.803^{+0.023}_{-0.022}$	$D_{\mathrm{M}}(0.15)$	$649^{+23}_{-24}$
$100\theta_{\mathrm{MC}}$	$1.04128^{+0.00095}_{-0.00094}$	$S_8$	$0.822^{+0.027}_{-0.025}$	$H(0.38)$	$82.1^{+2.7}_{-2.5}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1547^{+52}_{-54}$
$N_{\mathrm{eff}}$	$2.91^{+0.41}_{-0.37}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.017}_{-0.016}$	$H(0.51)$	$88.8^{+2.8}_{-2.5}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.034}_{-0.032}$	$\sigma_8/h^{0.5}$	$0.983^{+0.021}_{-0.019}$	$D_{\mathrm{M}}(0.51)$	$2003^{+66}_{-69}$
$n_{\mathrm{s}}$	$0.960^{+0.016}_{-0.017}$	$r_{\mathrm{drag}}h$	$99.3^{+1.6}_{-1.7}$	$H(0.61)$	$94.4^{+2.8}_{-2.6}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.008^{+0.014}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.049}_{-0.047}$	$D_{\mathrm{M}}(0.61)$	$2331^{+75}_{-79}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0048}_{-0.0050}$	$z_{\mathrm{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$234.2^{+5.8}_{-5.4}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.071}_{-0.066}$	$D_{\mathrm{M}}(2.33)$	$5818^{+160}_{-170}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873^{+0.036}_{-0.035}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+3.7}_{-3.9}$	$D_{40}$	$1217^{+38}_{-36}$	$\sigma_8(0.15)$	$0.742^{+0.022}_{-0.020}$
$A_{100}^{\mathrm{PS}}$	$262^{+60}_{-60}$	$D_{220}$	$5737^{+75}_{-75}$	$f\sigma_8(0.38)$	$0.472^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	$0.658^{+0.019}_{-0.018}$
$A_{143\times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$816.9^{+9.1}_{-9.3}$	$f\sigma_8(0.51)$	$0.471^{+0.013}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.8^{+3.4}_{-3.6}$	$\sigma_8(0.51)$	$0.615^{+0.018}_{-0.017}$
$A^{\mathrm{kSZ}}$	—	$n_{\mathrm{s},0.002}$	$0.986^{+0.041}_{-0.040}$	$f\sigma_8(0.61)$	$0.465^{+0.013}_{-0.012}$
$A_{100}^{\mathrm{dust}TT}$	$8.8^{+3.6}_{-3.5}$	$Y_{\mathrm{P}}$	$0.2435^{+0.0055}_{-0.0053}$	$\sigma_8(0.61)$	$0.585^{+0.018}_{-0.017}$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.3}_{-3.5}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2448^{+0.0055}_{-0.0053}$	$f\sigma_8(2.33)$	$0.2951^{+0.0093}_{-0.0085}$
$A_{143\times 217}^{\mathrm{dust}TT}$	$18.6^{+6.0}_{-6.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.54^{+0.11}_{-0.098}$	$\sigma_8(2.33)$	$0.3041^{+0.0098}_{-0.0092}$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.93^{+0.39}_{-0.39}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100}^{\mathrm{dust}TE}$	$0.115^{+0.074}_{-0.074}$	$z_*$	$1089.54^{+0.78}_{-0.71}$	$f_{2000}^{143\times 217}$	$33^{+4}_{-4}$
$A_{100\times 143}^{\mathrm{dust}TE}$	$0.134^{+0.061}_{-0.057}$	$r_*$	$145.9^{+3.8}_{-3.8}$	$f_{2000}^{217}$	$107.3^{+4.2}_{-3.9}$
$A_{100\times 217}^{\mathrm{dust}TE}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.0416^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{simall}}^2$	$397.2\ (\nu: 1.8)$
$A_{143}^{\mathrm{dust}TE}$	$0.22^{+0.11}_{-0.11}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01^{+0.34}_{-0.36}$	$\chi_{\mathrm{lowl}}^2$	$22.2\ (\nu: 1.1)$
$A_{143\times 217}^{\mathrm{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$z_{\mathrm{drag}}$	$1059.6^{+1.4}_{-1.4}$	$\chi_{\mathrm{plik}}^2$	$2361.0\ (\nu: 19.2)$
$A_{217}^{\mathrm{dust}TE}$	$2.06^{+0.53}_{-0.54}$	$r_{\mathrm{drag}}$	$148.6^{+3.9}_{-4.0}$	$\chi_{6\mathrm{DF}}^2$	$0.094\ (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.1398^{+0.0028}_{-0.0027}$	$\chi_{\mathrm{MGS}}^2$	$1.08\ (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0013}$	$100\theta_{\mathrm{D}}$	$0.16037^{+0.00097}_{-0.00090}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.6\ (\nu: 1.9)$
$H_0$	$66.8^{+2.6}_{-2.4}$	$z_{\mathrm{eq}}$	$3399^{+52}_{-52}$	$\chi_{\mathrm{prior}}^2$	$11.6\ (\nu: 10.8)$
$\Omega_{\Lambda}$	$0.686^{+0.013}_{-0.014}$	$k_{\mathrm{eq}}$	$0.01028^{+0.00024}_{-0.00022}$	$\chi_{\mathrm{BAO}}^2$	$6.8\ (\nu: 1.4)$
$\Omega_{\mathrm{m}}$	$0.314^{+0.014}_{-0.013}$	$100\theta_{\mathrm{eq}}$	$0.8140^{+0.0097}_{-0.0096}$	$\chi_{\mathrm{CMB}}^2$	$2780.4\ (\nu: 18.8)$
$\Omega_{\mathrm{m}}h^2$	$0.1402^{+0.0069}_{-0.0062}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4498^{+0.0050}_{-0.0049}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.78; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.06; R - 1 = 0.04433$$

## 10.7 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02217^{+0.00043}_{-0.00043}$	$\Omega_{\text{m}}h^2$	$0.1385^{+0.0067}_{-0.0063}$	$100\theta_{\text{eq}}$	$0.806^{+0.013}_{-0.013}$
$\Omega_{\text{c}}h^2$	$0.1157^{+0.0065}_{-0.0060}$	$\Omega_{\text{m}}h^3$	$0.0904^{+0.0085}_{-0.0078}$	$100\theta_{\text{s,eq}}$	$0.4459^{+0.0068}_{-0.0068}$
$100\theta_{\text{MC}}$	$1.04145^{+0.00093}_{-0.00097}$	$\sigma_8$	$0.798^{+0.021}_{-0.020}$	$H(0.15)$	$70.5^{+3.1}_{-3.0}$
$\tau$	$0.055^{+0.013}_{-0.011}$	$S_8$	$0.832^{+0.026}_{-0.025}$	$D_{\text{M}}(0.15)$	$664^{+31}_{-30}$
$N_{\text{eff}}$	$2.73^{+0.44}_{-0.41}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.455^{+0.014}_{-0.014}$	$H(0.38)$	$80.7^{+3.1}_{-3.0}$
$\ln(10^{10}A_{\text{s}})$	$3.036^{+0.031}_{-0.029}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.603^{+0.014}_{-0.014}$	$D_{\text{M}}(0.38)$	$1580^{+68}_{-66}$
$n_{\text{s}}$	$0.950^{+0.020}_{-0.020}$	$\sigma_8/h^{0.5}$	$0.988^{+0.018}_{-0.017}$	$H(0.51)$	$87.4^{+3.1}_{-3.0}$
$\text{d}n_{\text{s}}/\text{d}\ln k$	$-0.011^{+0.016}_{-0.015}$	$r_{\text{drag}}h$	$97.9^{+2.4}_{-2.4}$	$D_{\text{M}}(0.51)$	$2045^{+85}_{-83}$
$y_{\text{cal}}$	$1.0004^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.047}_{-0.046}$	$H(0.61)$	$93.0^{+3.2}_{-3.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$< 8.81$	$D_{\text{M}}(0.61)$	$2377^{+97}_{-94}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.082^{+0.065}_{-0.061}$	$H(2.33)$	$232.5^{+5.9}_{-5.7}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.8}_{-4.0}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.865^{+0.036}_{-0.035}$	$D_{\text{M}}(2.33)$	$5901^{+190}_{-190}$
$A_{100}^{\text{PS}}$	$261^{+60}_{-60}$	$D_{40}$	$1223^{+36}_{-36}$	$f\sigma_8(0.15)$	$0.459^{+0.013}_{-0.013}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{220}$	$5731^{+75}_{-73}$	$\sigma_8(0.15)$	$0.736^{+0.021}_{-0.020}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2537^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.474^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{1420}$	$816.1^{+9.3}_{-9.7}$	$\sigma_8(0.38)$	$0.651^{+0.020}_{-0.019}$
$A^{\text{kSZ}}$	$< 8.35$	$D_{2000}$	$230.9^{+3.6}_{-3.6}$	$f\sigma_8(0.51)$	$0.471^{+0.011}_{-0.011}$
$A_{100}^{\text{dust}TT}$	$8.8^{+3.6}_{-3.5}$	$n_{\text{s},0.002}$	$0.986^{+0.041}_{-0.041}$	$\sigma_8(0.51)$	$0.608^{+0.019}_{-0.018}$
$A_{143}^{\text{dust}TT}$	$10.8^{+3.5}_{-3.6}$	$Y_{\text{P}}$	$0.2410^{+0.0061}_{-0.0060}$	$f\sigma_8(0.61)$	$0.465^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dust}TT}$	$18.5^{+6.1}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2423^{+0.0061}_{-0.0060}$	$\sigma_8(0.61)$	$0.579^{+0.018}_{-0.017}$
$A_{217}^{\text{dust}TT}$	$94^{+10}_{-10}$	$10^5 \text{D}/\text{H}$	$2.51^{+0.11}_{-0.099}$	$f\sigma_8(2.33)$	$0.2912^{+0.0097}_{-0.0093}$
$A_{100}^{\text{dust}TE}$	$0.115^{+0.076}_{-0.073}$	$\text{Age}/\text{Gyr}$	$14.12^{+0.46}_{-0.45}$	$\sigma_8(2.33)$	$0.300^{+0.011}_{-0.010}$
$A_{100 \times 143}^{\text{dust}TE}$	$0.134^{+0.060}_{-0.058}$	$z_*$	$1089.48^{+0.74}_{-0.69}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100 \times 217}^{\text{dust}TE}$	$0.48^{+0.16}_{-0.17}$	$r_*$	$147.4^{+4.1}_{-4.1}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143}^{\text{dust}TE}$	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	$1.0419^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	$107.1^{+3.8}_{-4.0}$
$A_{143 \times 217}^{\text{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.14^{+0.38}_{-0.38}$	$\chi_{\text{lensing}}^2$	$9.18 (\nu: 0.3)$
$A_{217}^{\text{dust}TE}$	$2.07^{+0.54}_{-0.52}$	$z_{\text{drag}}$	$1058.9^{+1.6}_{-1.6}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$150.1^{+4.3}_{-4.3}$	$\chi_{\text{lowl}}^2$	$22.6 (\nu: 1.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0013}$	$k_{\text{D}}$	$0.1388^{+0.0030}_{-0.0029}$	$\chi_{\text{plik}}^2$	$2359.6 (\nu: 17.3)$
$H_0$	$65.2^{+3.1}_{-3.0}$	$100\theta_{\text{D}}$	$0.1600^{+0.0010}_{-0.00096}$	$\chi_{\text{prior}}^2$	$11.4 (\nu: 10.1)$
$\Omega_{\Lambda}$	$0.674^{+0.020}_{-0.022}$	$z_{\text{eq}}$	$3440^{+74}_{-71}$	$\chi_{\text{CMB}}^2$	$2788.2 (\nu: 18.0)$
$\Omega_{\text{m}}$	$0.326^{+0.022}_{-0.020}$	$k_{\text{eq}}$	$0.01027^{+0.00023}_{-0.00020}$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.54; \Delta\bar{\chi}_{\text{eff}}^2 = -0.96; R - 1 = 0.01748$$



# 10.8 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235^{+0.00035}_{-0.00036}$	$\Omega_{\mathrm{m}}h^3$	$0.0933^{+0.0077}_{-0.0071}$	$H(0.15)$	$72.0^{+2.6}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1169^{+0.0064}_{-0.0059}$	$\sigma_8$	$0.803^{+0.021}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$650^{+23}_{-24}$
$100\theta_{\mathrm{MC}}$	$1.04130^{+0.00095}_{-0.00093}$	$S_8$	$0.822^{+0.022}_{-0.022}$	$H(0.38)$	$82.0^{+2.7}_{-2.5}$
$\tau$	$0.057^{+0.013}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.012}_{-0.012}$	$D_{\mathrm{M}}(0.38)$	$1550^{+52}_{-54}$
$N_{\mathrm{eff}}$	$2.89^{+0.40}_{-0.37}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.014}_{-0.014}$	$H(0.51)$	$88.7^{+2.7}_{-2.5}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.030}_{-0.028}$	$\sigma_8/h^{0.5}$	$0.983^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.51)$	$2007^{+67}_{-68}$
$n_{\mathrm{s}}$	$0.959^{+0.016}_{-0.017}$	$r_{\mathrm{drag}}h$	$99.2^{+1.6}_{-1.6}$	$H(0.61)$	$94.3^{+2.8}_{-2.6}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.008^{+0.015}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.042}_{-0.043}$	$D_{\mathrm{M}}(0.61)$	$2335^{+76}_{-78}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0048}_{-0.0049}$	$z_{\mathrm{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$234.0^{+5.6}_{-5.4}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.064}_{-0.059}$	$D_{\mathrm{M}}(2.33)$	$5826^{+160}_{-170}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872^{+0.034}_{-0.034}$	$f\sigma_8(0.15)$	$0.455^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+3.7}_{-3.9}$	$D_{40}$	$1219^{+37}_{-37}$	$\sigma_8(0.15)$	$0.742^{+0.020}_{-0.019}$
$A_{100}^{\mathrm{PS}}$	$261^{+50}_{-60}$	$D_{220}$	$5741^{+74}_{-75}$	$f\sigma_8(0.38)$	$0.472^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	$46^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	$0.657^{+0.018}_{-0.018}$
$A_{143\times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.1^{+9.1}_{-9.2}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.3}_{-3.5}$	$\sigma_8(0.51)$	$0.615^{+0.018}_{-0.017}$
$A^{\mathrm{kSZ}}$	$< 8.45$	$n_{\mathrm{s},0.002}$	$0.984^{+0.041}_{-0.040}$	$f\sigma_8(0.61)$	$0.465^{+0.011}_{-0.011}$
$A_{100}^{\mathrm{dust}TT}$	$8.8^{+3.6}_{-3.5}$	$Y_{\mathrm{P}}$	$0.2432^{+0.0054}_{-0.0053}$	$\sigma_8(0.61)$	$0.585^{+0.017}_{-0.016}$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.3}_{-3.4}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2445^{+0.0054}_{-0.0053}$	$f\sigma_8(2.33)$	$0.2948^{+0.0088}_{-0.0084}$
$A_{143\times 217}^{\mathrm{dust}TT}$	$18.6^{+5.8}_{-6.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.53^{+0.10}_{-0.099}$	$\sigma_8(2.33)$	$0.3038^{+0.0093}_{-0.0090}$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.95^{+0.39}_{-0.39}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100}^{\mathrm{dust}TE}$	$0.115^{+0.075}_{-0.075}$	$z_*$	$1089.52^{+0.75}_{-0.70}$	$f_{2000}^{143\times 217}$	$32^{+4}_{-4}$
$A_{100\times 143}^{\mathrm{dust}TE}$	$0.134^{+0.062}_{-0.056}$	$r_*$	$146.1^{+3.8}_{-3.7}$	$f_{2000}^{217}$	$107.2^{+4.0}_{-4.0}$
$A_{100\times 217}^{\mathrm{dust}TE}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.0416^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{lensing}}^2$	$9.07\ (\nu: 0.2)$
$A_{143}^{\mathrm{dust}TE}$	$0.22^{+0.11}_{-0.11}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.03^{+0.35}_{-0.34}$	$\chi_{\mathrm{simall}}^2$	$397.2\ (\nu: 1.6)$
$A_{143\times 217}^{\mathrm{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$z_{\mathrm{drag}}$	$1059.5^{+1.4}_{-1.4}$	$\chi_{\mathrm{lowl}}^2$	$22.4\ (\nu: 1.2)$
$A_{217}^{\mathrm{dust}TE}$	$2.06^{+0.52}_{-0.53}$	$r_{\mathrm{drag}}$	$148.8^{+3.9}_{-3.9}$	$\chi_{\mathrm{plik}}^2$	$2360.5\ (\nu: 18.5)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.1397^{+0.0027}_{-0.0027}$	$\chi_{6\mathrm{DF}}^2$	$0.097\ (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\mathrm{D}}$	$0.16033^{+0.00092}_{-0.00089}$	$\chi_{\mathrm{MGS}}^2$	$1.05\ (\nu: 0.1)$
$H_0$	$66.7^{+2.6}_{-2.4}$	$z_{\mathrm{eq}}$	$3401^{+49}_{-51}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.7\ (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.685^{+0.013}_{-0.014}$	$k_{\mathrm{eq}}$	$0.01027^{+0.00023}_{-0.00020}$	$\chi_{\mathrm{prior}}^2$	$11.5\ (\nu: 10.4)$
$\Omega_{\mathrm{m}}$	$0.315^{+0.014}_{-0.013}$	$100\theta_{\mathrm{eq}}$	$0.8137^{+0.0093}_{-0.0091}$	$\chi_{\mathrm{CMB}}^2$	$2789.2\ (\nu: 19.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1399^{+0.0066}_{-0.0061}$	$100\theta_{\mathrm{s,eq}}$	$0.4496^{+0.0048}_{-0.0046}$	$\chi_{\mathrm{BAO}}^2$	$6.8\ (\nu: 1.3)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.49; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.77; R - 1 = 0.04192$$

# 11 nnu+yhe

## 11.1 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02200	$0.02207^{+0.00063}_{-0.00063}$	$S_8$	0.8463	$0.841^{+0.050}_{-0.047}$	$100\theta_{s,eq}$	0.4442	$0.447^{+0.015}_{-0.014}$
$\Omega_c h^2$	0.1168	$0.119^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4635	$0.461^{+0.027}_{-0.026}$	$H(0.15)$	70.2	$71.5^{+6.9}_{-6.1}$
$100\theta_{MC}$	1.04151	$1.0413^{+0.0038}_{-0.0040}$	$\sigma_8 \Omega_m^{0.25}$	0.6107	$0.610^{+0.024}_{-0.023}$	$D_M(0.15)$	667	$657^{+62}_{-61}$
$\tau$	0.0521	$0.052^{+0.016}_{-0.016}$	$\sigma_8/h^{0.5}$	0.9994	$0.994^{+0.034}_{-0.034}$	$H(0.38)$	80.5	$81.7^{+7.0}_{-6.1}$
$N_{eff}$	2.74	$2.92^{+1.1}_{-0.99}$	$r_{drag} h$	97.18	$98.0^{+4.7}_{-4.5}$	$D_M(0.38)$	1586	$1562^{+140}_{-140}$
$Y_P$	0.253	$0.251^{+0.058}_{-0.064}$	$\langle d^2 \rangle^{1/2}$	2.474	$2.459^{+0.091}_{-0.088}$	$H(0.51)$	87.3	$88.5^{+7.2}_{-6.2}$
$\ln(10^{10} A_s)$	3.0334	$3.036^{+0.044}_{-0.045}$	$z_{re}$	7.50	$7.4^{+1.6}_{-1.7}$	$D_M(0.51)$	2051	$2022^{+170}_{-170}$
$n_s$	0.9561	$0.960^{+0.027}_{-0.027}$	$10^9 A_s$	2.077	$2.082^{+0.092}_{-0.093}$	$H(0.61)$	92.9	$94.1^{+7.0}_{-6.6}$
$y_{cal}$	1.0005	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	1.871	$1.878^{+0.053}_{-0.053}$	$D_M(0.61)$	2384	$2351^{+200}_{-200}$
$A_{217}^{CIB}$	47.0	$48^{+10}_{-10}$	$D_{40}$	1240.3	$1236^{+46}_{-44}$	$H(2.33)$	233.1	$235^{+13}_{-13}$
$\xi^{tSZ \times CIB}$	0.57	—	$D_{220}$	5708	$5712^{+83}_{-83}$	$D_M(2.33)$	5903	$5837^{+400}_{-420}$
$A_{143}^{tSZ}$	6.89	$5.0^{+3.9}_{-4.0}$	$D_{810}$	2537.2	$2536^{+28}_{-29}$	$f\sigma_8(0.15)$	0.4664	$0.464^{+0.024}_{-0.024}$
$A_{100}^{PS}$	251	$264^{+60}_{-60}$	$D_{1420}$	816.5	$814^{+10}_{-10}$	$\sigma_8(0.15)$	0.7417	$0.745^{+0.034}_{-0.032}$
$A_{143}^{PS}$	51.7	$50^{+20}_{-20}$	$D_{2000}$	230.78	$229.5^{+4.7}_{-4.7}$	$f\sigma_8(0.38)$	0.4801	$0.479^{+0.019}_{-0.019}$
$A_{143 \times 217}^{PS}$	52.6	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9561	$0.960^{+0.027}_{-0.027}$	$\sigma_8(0.38)$	0.6553	$0.659^{+0.032}_{-0.031}$
$A_{217}^{PS}$	121.7	$115^{+20}_{-20}$	$Y_P$	0.253	$0.251^{+0.058}_{-0.064}$	$f\sigma_8(0.51)$	0.4763	$0.476^{+0.018}_{-0.017}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.254	$0.253^{+0.058}_{-0.064}$	$\sigma_8(0.51)$	0.6124	$0.616^{+0.031}_{-0.030}$
$A_{100}^{dustTT}$	8.82	$8.9^{+3.6}_{-3.6}$	Age/Gyr	14.13	$13.97^{+0.95}_{-1.0}$	$f\sigma_8(0.61)$	0.4698	$0.470^{+0.018}_{-0.017}$
$A_{143}^{dustTT}$	10.74	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.28	$1090.4^{+1.4}_{-1.4}$	$\sigma_8(0.61)$	0.5822	$0.586^{+0.030}_{-0.029}$
$A_{143 \times 217}^{dustTT}$	19.6	$18.3^{+6.5}_{-6.4}$	$r_*$	147.1	$145.7^{+8.7}_{-9.4}$	$f\sigma_8(2.33)$	0.2928	$0.295^{+0.016}_{-0.015}$
$A_{217}^{dustTT}$	95.0	$93^{+10}_{-10}$	$100\theta_*$	1.04163	$1.0414^{+0.0027}_{-0.0028}$	$\sigma_8(2.33)$	0.3010	$0.304^{+0.018}_{-0.017}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	14.12	$13.99^{+0.80}_{-0.87}$	$f_{2000}^{143}$	29.4	$31^{+7}_{-8}$
$c_{217}$	0.99824	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1058.98	$1059.3^{+2.4}_{-2.4}$	$f_{2000}^{143 \times 217}$	32.7	$34^{+6}_{-6}$
$H_0$	64.8	$66.1^{+6.9}_{-6.1}$	$r_{drag}$	149.9	$148.5^{+9.0}_{-9.7}$	$f_{2000}^{217}$	107.1	$108.3^{+5.1}_{-5.0}$
$\Omega_\Lambda$	0.6682	$0.675^{+0.039}_{-0.042}$	$k_D$	0.1384	$0.1395^{+0.0085}_{-0.0081}$	$\chi_{simall}^2$	395.90	$396.9 (\nu: 1.3)$
$\Omega_m$	0.3318	$0.325^{+0.042}_{-0.039}$	$100\theta_D$	0.16080	$0.1611^{+0.0015}_{-0.0015}$	$\chi_{lowl}^2$	24.59	$24.3 (\nu: 2.6)$
$\Omega_m h^2$	0.1395	$0.142^{+0.015}_{-0.014}$	$z_{eq}$	3457	$3432^{+160}_{-160}$	$\chi_{plik}^2$	757.4	$772.6 (\nu: 18.9)$
$\Omega_m h^3$	0.0904	$0.094^{+0.019}_{-0.017}$	$k_{eq}$	0.010337	$0.01037^{+0.00044}_{-0.00042}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.6)$
$\sigma_8$	0.8047	$0.808^{+0.035}_{-0.032}$	$100\theta_{eq}$	0.8028	$0.808^{+0.030}_{-0.028}$	$\chi_{CMB}^2$	1177.9	$1193.8 (\nu: 17.5)$

Best-fit  $\chi_{eff}^2 = 1179.18$ ;  $\Delta\chi_{eff}^2 = -0.40$ ;  $\bar{\chi}_{eff}^2 = 1201.13$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.55$ ;  $R - 1 = 0.01463$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 ( $\Delta$  0.02) commander\_dx12\_v3.2.29: 24.59 ( $\Delta$  0.99) plik\_rd12\_HM\_v22\_TT: 757.43 ( $\Delta$  -1.32)

## 11.2 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022258	$0.02226^{+0.00048}_{-0.00048}$	$\sigma_8 \Omega_m^{0.25}$	0.6026	$0.606^{+0.023}_{-0.022}$	$D_M(0.38)$	1526	$1516^{+90}_{-94}$
$\Omega_c h^2$	0.1192	$0.121^{+0.015}_{-0.014}$	$\sigma_8/h^{0.5}$	0.9814	$0.983^{+0.024}_{-0.023}$	$H(0.51)$	89.8	$90.5^{+5.5}_{-4.8}$
$100\theta_{MC}$	1.04105	$1.0408^{+0.0037}_{-0.0038}$	$r_{drag}h$	99.88	$99.9^{+2.1}_{-2.0}$	$D_M(0.51)$	1977	$1964^{+110}_{-120}$
$\tau$	0.0533	$0.054^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.423	$2.426^{+0.055}_{-0.055}$	$H(0.61)$	95.4	$96.1^{+5.8}_{-5.0}$
$N_{eff}$	3.06	$3.18^{+0.93}_{-0.86}$	$z_{re}$	7.60	$7.7^{+1.6}_{-1.7}$	$D_M(0.61)$	2301	$2286^{+130}_{-140}$
$Y_P$	0.247	$0.245^{+0.060}_{-0.064}$	$10^9 A_s$	2.091	$2.100^{+0.085}_{-0.083}$	$H(2.33)$	236.0	$238^{+12}_{-12}$
$\ln(10^{10} A_s)$	3.0402	$3.044^{+0.040}_{-0.040}$	$10^9 A_s e^{-2\tau}$	1.8797	$1.886^{+0.048}_{-0.045}$	$D_M(2.33)$	5757	$5721^{+300}_{-330}$
$n_s$	0.9685	$0.970^{+0.017}_{-0.017}$	$D_{40}$	1221.8	$1222^{+33}_{-33}$	$f\sigma_8(0.15)$	0.4541	$0.456^{+0.018}_{-0.017}$
$y_{cal}$	1.0005	$1.0006^{+0.0050}_{-0.0051}$	$D_{220}$	5718	$5719^{+81}_{-82}$	$\sigma_8(0.15)$	0.7469	$0.751^{+0.031}_{-0.029}$
$A_{217}^{CIB}$	50.2	$48^{+10}_{-10}$	$D_{810}$	2537.1	$2537^{+29}_{-27}$	$f\sigma_8(0.38)$	0.4729	$0.475^{+0.018}_{-0.017}$
$\xi^{tSZ \times CIB}$	0.11	—	$D_{1420}$	815.9	$815^{+10}_{-11}$	$\sigma_8(0.38)$	0.6623	$0.666^{+0.028}_{-0.026}$
$A_{143}^{tSZ}$	7.13	$5.0^{+3.9}_{-4.0}$	$D_{2000}$	229.94	$229.3^{+4.8}_{-4.8}$	$f\sigma_8(0.51)$	0.4718	$0.474^{+0.018}_{-0.017}$
$A_{100}^{PS}$	256	$266^{+60}_{-60}$	$n_{s,0.002}$	0.9685	$0.970^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6199	$0.623^{+0.027}_{-0.025}$
$A_{143}^{PS}$	46.6	$50^{+20}_{-20}$	$Y_P$	0.247	$0.245^{+0.060}_{-0.064}$	$f\sigma_8(0.61)$	0.4670	$0.469^{+0.018}_{-0.017}$
$A_{143 \times 217}^{PS}$	41.4	$44^{+20}_{-20}$	$Y_P^{BBN}$	0.249	$0.246^{+0.060}_{-0.064}$	$\sigma_8(0.61)$	0.5899	$0.593^{+0.026}_{-0.024}$
$A_{217}^{PS}$	116.9	$115^{+20}_{-20}$	Age/Gyr	13.78	$13.70^{+0.72}_{-0.78}$	$f\sigma_8(2.33)$	0.2975	$0.299^{+0.013}_{-0.012}$
$A^{kSZ}$	0.0	—	$z_*$	1090.08	$1090.2^{+1.4}_{-1.3}$	$\sigma_8(2.33)$	0.3068	$0.309^{+0.014}_{-0.013}$
$A_{100}^{dustTT}$	8.95	$9.0^{+3.7}_{-3.5}$	$r_*$	144.6	$143.7^{+7.5}_{-8.0}$	$f_{2000}^{143}$	30.7	$32^{+7}_{-7}$
$A_{143}^{dustTT}$	10.80	$10.8^{+3.5}_{-3.5}$	$100\theta_*$	1.04118	$1.0409^{+0.0025}_{-0.0025}$	$f_{2000}^{143 \times 217}$	33.4	$34^{+6}_{-6}$
$A_{143 \times 217}^{dustTT}$	19.1	$18.4^{+6.4}_{-6.4}$	$D_M(z_*)/\text{Gpc}$	13.89	$13.81^{+0.69}_{-0.74}$	$f_{2000}^{217}$	107.9	$108.4^{+5.2}_{-5.4}$
$A_{217}^{dustTT}$	94.1	$93^{+10}_{-10}$	$z_{drag}$	1059.70	$1059.8^{+2.1}_{-2.1}$	$\chi_{small}^2$	395.88	$397.0 (\nu: 1.6)$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$r_{drag}$	147.3	$146.4^{+7.6}_{-8.2}$	$\chi_{lowl}^2$	22.69	$22.8 (\nu: 0.9)$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$k_D$	0.1404	$0.1412^{+0.0081}_{-0.0070}$	$\chi_{plik}^2$	760.2	$774.2 (\nu: 17.6)$
$H_0$	67.80	$68.3^{+4.6}_{-4.1}$	$100\theta_D$	0.16110	$0.1613^{+0.0015}_{-0.0015}$	$\chi_{6DF}^2$	0.015	$0.059 (\nu: 0.0)$
$\Omega_\Lambda$	0.6908	$0.691^{+0.017}_{-0.017}$	$z_{eq}$	3372	$3368^{+87}_{-87}$	$\chi_{MGS}^2$	1.34	$1.45 (\nu: 0.2)$
$\Omega_m$	0.3092	$0.309^{+0.017}_{-0.017}$	$k_{eq}$	0.010306	$0.01037^{+0.00046}_{-0.00043}$	$\chi_{DR12BAO}^2$	4.04	$4.7 (\nu: 1.3)$
$\Omega_m h^2$	0.1421	$0.144^{+0.015}_{-0.014}$	$100\theta_{eq}$	0.8185	$0.819^{+0.015}_{-0.014}$	$\chi_{prior}^2$	1.5	$7.3 (\nu: 6.6)$
$\Omega_m h^3$	0.0964	$0.099^{+0.017}_{-0.015}$	$100\theta_{s,eq}$	0.4522	$0.4525^{+0.0076}_{-0.0073}$	$\chi_{BAO}^2$	5.39	$6.2 (\nu: 0.9)$
$\sigma_8$	0.8080	$0.813^{+0.033}_{-0.030}$	$H(0.15)$	73.06	$73.6^{+4.8}_{-4.2}$	$\chi_{CMB}^2$	1178.8	$1194.0 (\nu: 17.1)$
$S_8$	0.8204	$0.824^{+0.034}_{-0.032}$	$D_M(0.15)$	639.6	$635^{+39}_{-40}$			
$\sigma_8 \Omega_m^{0.5}$	0.4493	$0.451^{+0.018}_{-0.017}$	$H(0.38)$	83.13	$83.7^{+5.2}_{-4.6}$			

Best-fit  $\chi_{eff}^2 = 1185.69$ ;  $\Delta\chi_{eff}^2 = -0.05$ ;  $\bar{\chi}_{eff}^2 = 1207.58$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.55$ ;  $R - 1 = 0.02042$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.01) MGS: 1.34 ( $\Delta$  0.06) DR12BAO: 4.04 ( $\Delta$  -0.15) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.01) commander\_dx12\_v3\_2\_29: 22.69 ( $\Delta$  -0.14) plik\_rd12\_HM\_v22\_TT: 760.21 ( $\Delta$  0.11)

### 11.3 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02200	$0.02207^{+0.00058}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	0.4582	$0.458^{+0.018}_{-0.017}$	$D_M(0.15)$	672	$661^{+58}_{-58}$
$\Omega_c h^2$	0.1145	$0.117^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	0.6043	$0.606^{+0.018}_{-0.017}$	$H(0.38)$	79.9	$81.1^{+6.6}_{-5.7}$
$100\theta_{MC}$	1.04200	$1.0417^{+0.0037}_{-0.0039}$	$\sigma_8/h^{0.5}$	0.9930	$0.992^{+0.023}_{-0.023}$	$D_M(0.38)$	1597	$1573^{+130}_{-130}$
$\tau$	0.0502	$0.051^{+0.016}_{-0.015}$	$r_{drag} h$	97.35	$98.0^{+3.9}_{-3.7}$	$H(0.51)$	86.6	$87.8^{+6.7}_{-5.9}$
$N_{eff}$	2.63	$2.81^{+0.99}_{-0.93}$	$\langle d^2 \rangle^{1/2}$	2.462	$2.455^{+0.063}_{-0.062}$	$D_M(0.51)$	2066	$2036^{+160}_{-170}$
$Y_P$	0.256	$0.256^{+0.058}_{-0.060}$	$z_{re}$	7.27	$7.4^{+1.6}_{-1.7}$	$H(0.61)$	92.2	$93.5^{+6.5}_{-6.2}$
$\ln(10^{10} A_s)$	3.0242	$3.031^{+0.043}_{-0.045}$	$10^9 A_s$	2.058	$2.073^{+0.091}_{-0.092}$	$D_M(0.61)$	2401	$2367^{+190}_{-190}$
$n_s$	0.9547	$0.959^{+0.024}_{-0.024}$	$10^9 A_s e^{-2\tau}$	1.861	$1.871^{+0.051}_{-0.051}$	$H(2.33)$	231.3	$233^{+13}_{-11}$
$y_{cal}$	1.0003	$1.0004^{+0.0051}_{-0.0049}$	$D_{40}$	1239.1	$1235^{+38}_{-38}$	$D_M(2.33)$	5948	$5878^{+380}_{-400}$
$A_{217}^{CIB}$	46.5	$48^{+10}_{-10}$	$D_{220}$	5711	$5714^{+83}_{-82}$	$f\sigma_8(0.15)$	0.4612	$0.461^{+0.016}_{-0.016}$
$\xi^{tSZ \times CIB}$	0.62	—	$D_{810}$	2534.9	$2535^{+29}_{-28}$	$\sigma_8(0.15)$	0.7346	$0.741^{+0.031}_{-0.030}$
$A_{143}^{tSZ}$	6.87	$5.0^{+3.9}_{-4.0}$	$D_{1420}$	816.6	$814^{+10}_{-10}$	$f\sigma_8(0.38)$	0.4750	$0.476^{+0.014}_{-0.013}$
$A_{100}^{PS}$	250	$263^{+60}_{-60}$	$D_{2000}$	230.93	$229.6^{+4.7}_{-4.7}$	$\sigma_8(0.38)$	0.6492	$0.655^{+0.031}_{-0.029}$
$A_{143}^{PS}$	52.2	$49^{+20}_{-20}$	$n_{s,0.002}$	0.9547	$0.959^{+0.024}_{-0.024}$	$f\sigma_8(0.51)$	0.4714	$0.473^{+0.014}_{-0.013}$
$A_{143 \times 217}^{PS}$	53.5	$44^{+20}_{-20}$	$Y_P$	0.256	$0.256^{+0.058}_{-0.060}$	$\sigma_8(0.51)$	0.6067	$0.613^{+0.030}_{-0.028}$
$A_{217}^{PS}$	122.2	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.258	$0.257^{+0.059}_{-0.061}$	$f\sigma_8(0.61)$	0.4651	$0.467^{+0.015}_{-0.014}$
$A^{kSZ}$	0.0	—	Age/Gyr	14.23	$14.07^{+0.91}_{-0.94}$	$\sigma_8(0.61)$	0.5768	$0.583^{+0.029}_{-0.027}$
$A_{100}^{dustTT}$	8.83	$8.9^{+3.6}_{-3.5}$	$z_*$	1090.17	$1090.4^{+1.4}_{-1.4}$	$f\sigma_8(2.33)$	0.2902	$0.293^{+0.016}_{-0.015}$
$A_{143}^{dustTT}$	10.81	$10.7^{+3.5}_{-3.4}$	$r_*$	148.3	$146.8^{+8.4}_{-8.9}$	$\sigma_8(2.33)$	0.2983	$0.302^{+0.017}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	19.8	$18.3^{+6.4}_{-6.4}$	$100\theta_*$	1.04205	$1.0417^{+0.0027}_{-0.0027}$	$f_{2000}^{143}$	29.4	$31^{+7}_{-7}$
$A_{217}^{dustTT}$	95.4	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	14.23	$14.09^{+0.77}_{-0.82}$	$f_{2000}^{143 \times 217}$	32.6	$34^{+6}_{-6}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1058.90	$1059.3^{+2.3}_{-2.3}$	$f_{2000}^{217}$	106.9	$108.2^{+5.1}_{-5.1}$
$c_{217}$	0.99822	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	151.1	$149.6^{+8.6}_{-9.1}$	$\chi_{lensing}^2$	8.48	$9.3 (\nu: 0.5)$
$H_0$	64.4	$65.6^{+6.4}_{-5.6}$	$k_D$	0.1374	$0.1385^{+0.0080}_{-0.0077}$	$\chi_{small}^2$	395.70	$396.8 (\nu: 1.1)$
$\Omega_\Lambda$	0.6694	$0.675^{+0.032}_{-0.034}$	$100\theta_D$	0.16070	$0.1610^{+0.0015}_{-0.0014}$	$\chi_{lowl}^2$	24.56	$24.3 (\nu: 1.9)$
$\Omega_m$	0.3306	$0.325^{+0.034}_{-0.032}$	$z_{eq}$	3457	$3435^{+140}_{-140}$	$\chi_{plik}^2$	757.9	$772.0 (\nu: 16.8)$
$\Omega_m h^2$	0.1372	$0.140^{+0.014}_{-0.013}$	$k_{eq}$	0.010251	$0.01031^{+0.00038}_{-0.00037}$	$\chi_{prior}^2$	1.2	$7.3 (\nu: 6.5)$
$\Omega_m h^3$	0.0884	$0.092^{+0.018}_{-0.016}$	$100\theta_{eq}$	0.8031	$0.807^{+0.025}_{-0.024}$	$\chi_{CMB}^2$	1186.7	$1202.4 (\nu: 17.5)$
$\sigma_8$	0.7969	$0.803^{+0.032}_{-0.030}$	$100\theta_{s,eq}$	0.4443	$0.446^{+0.013}_{-0.012}$			
$S_8$	0.8366	$0.836^{+0.032}_{-0.032}$	$H(0.15)$	69.7	$70.9^{+6.4}_{-5.6}$			

Best-fit  $\chi_{eff}^2 = 1187.84$ ;  $\Delta\chi_{eff}^2 = -0.73$ ;  $\bar{\chi}_{eff}^2 = 1209.69$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.28$ ;  $R - 1 = 0.01748$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.48 ( $\Delta$  -0.42) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 ( $\Delta$  -0.16) commander\_dx12\_v3\_2\_29: 24.56 ( $\Delta$  1.32) plik\_rd12\_HM\_v22\_TT: 757.94 ( $\Delta$  -1.38)

#### 11.4 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022245	$0.02226^{+0.00048}_{-0.00048}$	$\sigma_8 \Omega_m^{0.5}$	0.4511	$0.452^{+0.014}_{-0.014}$	$D_M(0.15)$	641.9	$639^{+38}_{-39}$
$\Omega_c h^2$	0.1190	$0.120^{+0.013}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	0.6040	$0.605^{+0.018}_{-0.017}$	$H(0.38)$	82.90	$83.3^{+4.7}_{-4.5}$
$100\theta_{MC}$	1.04108	$1.0410^{+0.0036}_{-0.0037}$	$\sigma_8/h^{0.5}$	0.9842	$0.985^{+0.019}_{-0.019}$	$D_M(0.38)$	1531	$1525^{+87}_{-91}$
$\tau$	0.0544	$0.055^{+0.015}_{-0.014}$	$r_{\text{drag}} h$	99.65	$99.8^{+2.0}_{-2.0}$	$H(0.51)$	89.61	$90.0^{+5.2}_{-4.5}$
$N_{\text{eff}}$	3.04	$3.10^{+0.86}_{-0.80}$	$\langle d^2 \rangle^{1/2}$	2.4306	$2.432^{+0.044}_{-0.044}$	$D_M(0.51)$	1983	$1976^{+110}_{-120}$
$Y_P$	0.247	$0.247^{+0.058}_{-0.063}$	$z_{\text{re}}$	7.71	$7.8^{+1.5}_{-1.5}$	$H(0.61)$	95.2	$95.6^{+5.3}_{-4.7}$
$\ln(10^{10} A_s)$	3.0425	$3.045^{+0.033}_{-0.034}$	$10^9 A_s$	2.096	$2.102^{+0.071}_{-0.070}$	$D_M(0.61)$	2308	$2299^{+130}_{-130}$
$n_s$	0.9675	$0.968^{+0.017}_{-0.016}$	$10^9 A_s e^{-2\tau}$	1.8796	$1.883^{+0.043}_{-0.043}$	$H(2.33)$	235.8	$237^{+11}_{-11}$
$y_{\text{cal}}$	1.0005	$1.0007^{+0.0050}_{-0.0050}$	$D_{40}$	1224.0	$1225^{+32}_{-33}$	$D_M(2.33)$	5769	$5749^{+290}_{-300}$
$A_{217}^{\text{CIB}}$	48.4	$48^{+10}_{-10}$	$D_{220}$	5720	$5723^{+81}_{-80}$	$f\sigma_8(0.15)$	0.4557	$0.456^{+0.014}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$D_{810}$	2538.3	$2538^{+28}_{-27}$	$\sigma_8(0.15)$	0.7475	$0.750^{+0.026}_{-0.025}$
$A_{143}^{\text{tSZ}}$	7.06	$5.0^{+3.9}_{-3.9}$	$D_{1420}$	816.5	$815^{+11}_{-10}$	$f\sigma_8(0.38)$	0.4741	$0.475^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	253	$266^{+60}_{-60}$	$D_{2000}$	230.28	$229.6^{+4.9}_{-4.8}$	$\sigma_8(0.38)$	0.6626	$0.665^{+0.024}_{-0.023}$
$A_{143}^{\text{PS}}$	49.2	$50^{+20}_{-20}$	$n_{s,0.002}$	0.9675	$0.968^{+0.017}_{-0.016}$	$f\sigma_8(0.51)$	0.4728	$0.474^{+0.014}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	47.3	$44^{+20}_{-20}$	$Y_P$	0.247	$0.247^{+0.058}_{-0.063}$	$\sigma_8(0.51)$	0.6201	$0.622^{+0.023}_{-0.021}$
$A_{217}^{\text{PS}}$	119.8	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.249	$0.249^{+0.058}_{-0.064}$	$f\sigma_8(0.61)$	0.4678	$0.469^{+0.014}_{-0.014}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.81	$13.76^{+0.69}_{-0.73}$	$\sigma_8(0.61)$	0.5901	$0.592^{+0.022}_{-0.021}$
$A_{100}^{\text{dustTT}}$	8.90	$8.9^{+3.7}_{-3.5}$	$z_*$	1090.07	$1090.2^{+1.3}_{-1.4}$	$f\sigma_8(2.33)$	0.2975	$0.299^{+0.012}_{-0.011}$
$A_{143}^{\text{dustTT}}$	10.75	$10.7^{+3.5}_{-3.4}$	$r_*$	144.8	$144.4^{+7.0}_{-7.5}$	$\sigma_8(2.33)$	0.3068	$0.308^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	1.04123	$1.0411^{+0.0024}_{-0.0024}$	$\chi^2_{\text{lensing}}$	8.87	$9.43 (\nu: 0.4)$
$A_{217}^{\text{dustTT}}$	94.6	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.91	$13.87^{+0.64}_{-0.69}$	$\chi^2_{\text{small}}$	396.08	$397.1 (\nu: 1.5)$
$c_{100}$	0.99968	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.63	$1059.8^{+2.1}_{-2.1}$	$\chi^2_{\text{lowl}}$	22.88	$23.0 (\nu: 0.9)$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.5	$147.1^{+7.1}_{-7.6}$	$\chi^2_{\text{plik}}$	759.9	$773.4 (\nu: 16.6)$
$H_0$	67.54	$67.9^{+4.5}_{-3.9}$	$k_D$	0.1403	$0.1406^{+0.0076}_{-0.0066}$	$\chi^2_{6\text{DF}}$	0.029	$0.064 (\nu: 0.0)$
$\Omega_\Lambda$	0.6890	$0.690^{+0.016}_{-0.017}$	$100\theta_D$	0.16104	$0.1612^{+0.0014}_{-0.0015}$	$\chi^2_{\text{MGS}}$	1.22	$1.36 (\nu: 0.2)$
$\Omega_m$	0.3110	$0.310^{+0.017}_{-0.016}$	$z_{\text{eq}}$	3380	$3376^{+86}_{-86}$	$\chi^2_{\text{DR12BAO}}$	4.36	$4.9 (\nu: 1.4)$
$\Omega_m h^2$	0.1419	$0.143^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010308	$0.01034^{+0.00040}_{-0.00038}$	$\chi^2_{\text{prior}}$	1.3	$7.3 (\nu: 6.7)$
$\Omega_m h^3$	0.0958	$0.097^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	0.8171	$0.818^{+0.014}_{-0.014}$	$\chi^2_{\text{CMB}}$	1187.7	$1202.9 (\nu: 17.4)$
$\sigma_8$	0.8088	$0.811^{+0.027}_{-0.026}$	$100\theta_{s,\text{eq}}$	0.4515	$0.4518^{+0.0075}_{-0.0071}$	$\chi^2_{\text{BAO}}$	5.61	$6.3 (\nu: 1.0)$
$S_8$	0.8236	$0.825^{+0.026}_{-0.025}$	$H(0.15)$	72.81	$73.2^{+4.6}_{-4.0}$			

Best-fit  $\chi^2_{\text{eff}} = 1194.67$ ;  $\Delta\chi^2_{\text{eff}} = -0.01$ ;  $\bar{\chi}^2_{\text{eff}} = 1216.49$ ;  $\Delta\bar{\chi}^2_{\text{eff}} = 1.76$ ;  $R - 1 = 0.01644$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.36 ( $\Delta$  -0.01) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.87 ( $\Delta$  -0.01) simall\_100x143\_offlike5\_EE\_Aplanck 396.08 ( $\Delta$  -0.01) commander\_dx12\_v3.2\_29: 22.88 ( $\Delta$  -0.08) plik\_rd12\_HM\_v22\_TT: 759.91 ( $\Delta$  0.10)

# 11.5 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02210^{+0.00062}_{-0.00062}$	$S_8$	$0.841^{+0.050}_{-0.047}$	$100\theta_{s,eq}$	$0.447^{+0.015}_{-0.014}$
$\Omega_c h^2$	$0.119^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	$0.460^{+0.027}_{-0.026}$	$H(0.15)$	$71.6^{+6.8}_{-6.0}$
$100\theta_{MC}$	$1.0413^{+0.0038}_{-0.0039}$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.024}_{-0.023}$	$D_M(0.15)$	$655^{+61}_{-60}$
$\tau$	$0.053^{+0.013}_{-0.011}$	$\sigma_8/h^{0.5}$	$0.995^{+0.034}_{-0.033}$	$H(0.38)$	$81.9^{+7.0}_{-6.0}$
$N_{eff}$	$2.94^{+1.1}_{-0.98}$	$r_{drag}h$	$98.2^{+4.7}_{-4.5}$	$D_M(0.38)$	$1558^{+140}_{-140}$
$Y_P$	$0.251^{+0.058}_{-0.064}$	$\langle d^2 \rangle^{1/2}$	$2.460^{+0.091}_{-0.088}$	$H(0.51)$	$88.7^{+7.2}_{-6.1}$
$\ln(10^{10} A_s)$	$3.040^{+0.041}_{-0.037}$	$z_{re}$	$< 8.86$	$D_M(0.51)$	$2017^{+170}_{-170}$
$n_s$	$0.961^{+0.026}_{-0.026}$	$10^9 A_s$	$2.091^{+0.087}_{-0.077}$	$H(0.61)$	$94.3^{+7.0}_{-6.5}$
$y_{cal}$	$1.0005^{+0.0050}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.052}_{-0.052}$	$D_M(0.61)$	$2345^{+190}_{-200}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{40}$	$1235^{+45}_{-44}$	$H(2.33)$	$235^{+13}_{-12}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5712^{+83}_{-83}$	$D_M(2.33)$	$5827^{+390}_{-420}$
$A_{143}^{tSZ}$	$5.0^{+3.9}_{-4.0}$	$D_{810}$	$2536^{+28}_{-28}$	$f\sigma_8(0.15)$	$0.464^{+0.024}_{-0.024}$
$A_{100}^{PS}$	$264^{+60}_{-60}$	$D_{1420}$	$814^{+10}_{-10}$	$\sigma_8(0.15)$	$0.747^{+0.033}_{-0.030}$
$A_{143}^{PS}$	$50^{+20}_{-20}$	$D_{2000}$	$229.5^{+4.8}_{-4.7}$	$f\sigma_8(0.38)$	$0.479^{+0.019}_{-0.019}$
$A_{143 \times 217}^{PS}$	$44^{+20}_{-20}$	$n_{s,0.002}$	$0.961^{+0.026}_{-0.026}$	$\sigma_8(0.38)$	$0.661^{+0.032}_{-0.029}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$Y_P$	$0.251^{+0.058}_{-0.064}$	$f\sigma_8(0.51)$	$0.477^{+0.018}_{-0.017}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.253^{+0.059}_{-0.064}$	$\sigma_8(0.51)$	$0.618^{+0.031}_{-0.028}$
$A_{100}^{dustTT}$	$8.9^{+3.6}_{-3.6}$	Age/Gyr	$13.95^{+0.93}_{-0.99}$	$f\sigma_8(0.61)$	$0.471^{+0.017}_{-0.016}$
$A_{143}^{dustTT}$	$10.7^{+3.5}_{-3.5}$	$z_*$	$1090.4^{+1.4}_{-1.4}$	$\sigma_8(0.61)$	$0.588^{+0.030}_{-0.027}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.5}_{-6.3}$	$r_*$	$145.6^{+8.6}_{-9.3}$	$f\sigma_8(2.33)$	$0.296^{+0.016}_{-0.015}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$100\theta_*$	$1.0413^{+0.0027}_{-0.0027}$	$\sigma_8(2.33)$	$0.305^{+0.018}_{-0.016}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.98^{+0.79}_{-0.86}$	$f_{2000}^{143}$	$31^{+7}_{-8}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	$1059.4^{+2.4}_{-2.3}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$H_0$	$66.3^{+6.8}_{-6.0}$	$r_{drag}$	$148.4^{+8.8}_{-9.6}$	$f_{2000}^{217}$	$108.3^{+5.1}_{-5.1}$
$\Omega_\Lambda$	$0.676^{+0.038}_{-0.041}$	$k_D$	$0.1396^{+0.0085}_{-0.0080}$	$\chi_{simall}^2$	$396.8 (\nu: 1.3)$
$\Omega_m$	$0.324^{+0.041}_{-0.038}$	$100\theta_D$	$0.1611^{+0.0015}_{-0.0015}$	$\chi_{lowl}^2$	$24.2 (\nu: 2.5)$
$\Omega_m h^2$	$0.142^{+0.015}_{-0.014}$	$z_{eq}$	$3427^{+160}_{-160}$	$\chi_{plik}^2$	$772.5 (\nu: 19.0)$
$\Omega_m h^3$	$0.094^{+0.019}_{-0.017}$	$k_{eq}$	$0.01037^{+0.00044}_{-0.00042}$	$\chi_{prior}^2$	$7.3 (\nu: 6.6)$
$\sigma_8$	$0.810^{+0.034}_{-0.031}$	$100\theta_{eq}$	$0.809^{+0.029}_{-0.027}$	$\chi_{CMB}^2$	$1193.5 (\nu: 17.1)$

$\bar{\chi}_{eff}^2 = 1200.83$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.51$ ;  $R - 1 = 0.01329$

## 11.6 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02227^{+0.00048}_{-0.00048}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.023}_{-0.020}$	$D_M(0.38)$	$1516^{+90}_{-93}$
$\Omega_c h^2$	$0.121^{+0.015}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.022}$	$H(0.51)$	$90.5^{+5.4}_{-4.8}$
$100\theta_{MC}$	$1.0408^{+0.0037}_{-0.0038}$	$r_{drag}h$	$99.96^{+2.1}_{-2.0}$	$D_M(0.51)$	$1964^{+110}_{-120}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.054}_{-0.053}$	$H(0.61)$	$96.1^{+5.7}_{-5.0}$
$N_{eff}$	$3.18^{+0.92}_{-0.86}$	$z_{re}$	$< 8.99$	$D_M(0.61)$	$2286^{+130}_{-140}$
$Y_P$	$0.245^{+0.060}_{-0.063}$	$10^9 A_s$	$2.105^{+0.077}_{-0.073}$	$H(2.33)$	$238^{+13}_{-11}$
$\ln(10^{10} A_s)$	$3.047^{+0.036}_{-0.035}$	$10^9 A_s e^{-2\tau}$	$1.886^{+0.048}_{-0.045}$	$D_M(2.33)$	$5721^{+300}_{-320}$
$n_s$	$0.970^{+0.017}_{-0.017}$	$D_{40}$	$1222^{+33}_{-33}$	$f\sigma_8(0.15)$	$0.457^{+0.018}_{-0.017}$
$y_{cal}$	$1.0006^{+0.0050}_{-0.0051}$	$D_{220}$	$5719^{+81}_{-82}$	$\sigma_8(0.15)$	$0.752^{+0.030}_{-0.028}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+29}_{-27}$	$f\sigma_8(0.38)$	$0.476^{+0.018}_{-0.016}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$815^{+10}_{-11}$	$\sigma_8(0.38)$	$0.667^{+0.028}_{-0.025}$
$A_{143}^{tSZ}$	$5.0^{+3.9}_{-4.0}$	$D_{2000}$	$229.3^{+4.9}_{-4.8}$	$f\sigma_8(0.51)$	$0.475^{+0.018}_{-0.016}$
$A_{100}^{PS}$	$266^{+60}_{-60}$	$n_{s,0.002}$	$0.970^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	$0.624^{+0.026}_{-0.025}$
$A_{143}^{PS}$	$50^{+20}_{-20}$	$Y_P$	$0.245^{+0.060}_{-0.063}$	$f\sigma_8(0.61)$	$0.470^{+0.018}_{-0.016}$
$A_{143 \times 217}^{PS}$	$44^{+20}_{-20}$	$Y_P^{BBN}$	$0.247^{+0.060}_{-0.063}$	$\sigma_8(0.61)$	$0.594^{+0.026}_{-0.023}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	Age/Gyr	$13.70^{+0.72}_{-0.77}$	$f\sigma_8(2.33)$	$0.300^{+0.013}_{-0.012}$
$A^{kSZ}$	—	$z_*$	$1090.2^{+1.4}_{-1.3}$	$\sigma_8(2.33)$	$0.309^{+0.014}_{-0.012}$
$A_{100}^{dustTT}$	$9.0^{+3.7}_{-3.5}$	$r_*$	$143.7^{+7.5}_{-7.9}$	$f_{2000}^{143}$	$32^{+7}_{-7}$
$A_{143}^{dustTT}$	$10.8^{+3.5}_{-3.5}$	$100\theta_*$	$1.0409^{+0.0025}_{-0.0025}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-6}$
$A_{143 \times 217}^{dustTT}$	$18.4^{+6.5}_{-6.3}$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.68}_{-0.73}$	$f_{2000}^{217}$	$108.4^{+5.2}_{-5.4}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$z_{drag}$	$1059.8^{+2.1}_{-2.2}$	$\chi_{simall}^2$	$397.0 (\nu: 1.6)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$r_{drag}$	$146.4^{+7.6}_{-8.0}$	$\chi_{lowl}^2$	$22.8 (\nu: 0.9)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$k_D$	$0.1412^{+0.0079}_{-0.0071}$	$\chi_{plik}^2$	$774.0 (\nu: 17.6)$
$H_0$	$68.3^{+4.6}_{-4.1}$	$100\theta_D$	$0.1613^{+0.0015}_{-0.0015}$	$\chi_{6DF}^2$	$0.058 (\nu: 0.0)$
$\Omega_\Lambda$	$0.691^{+0.017}_{-0.017}$	$z_{eq}$	$3368^{+87}_{-87}$	$\chi_{MGS}^2$	$1.47 (\nu: 0.2)$
$\Omega_m$	$0.309^{+0.017}_{-0.017}$	$k_{eq}$	$0.01036^{+0.00045}_{-0.00043}$	$\chi_{DR12BAO}^2$	$4.7 (\nu: 1.3)$
$\Omega_m h^2$	$0.144^{+0.015}_{-0.014}$	$100\theta_{eq}$	$0.819^{+0.015}_{-0.014}$	$\chi_{prior}^2$	$7.3 (\nu: 6.6)$
$\Omega_m h^3$	$0.099^{+0.016}_{-0.015}$	$100\theta_{s,eq}$	$0.4526^{+0.0076}_{-0.0073}$	$\chi_{BAO}^2$	$6.2 (\nu: 0.9)$
$\sigma_8$	$0.813^{+0.032}_{-0.029}$	$H(0.15)$	$73.6^{+4.8}_{-4.2}$	$\chi_{CMB}^2$	$1193.8 (\nu: 16.7)$
$S_8$	$0.825^{+0.033}_{-0.031}$	$D_M(0.15)$	$635^{+39}_{-40}$		
$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.018}_{-0.017}$	$H(0.38)$	$83.8^{+5.1}_{-4.6}$		

$$\bar{\chi}_{eff}^2 = 1207.34; \Delta \bar{\chi}_{eff}^2 = 1.58; R - 1 = 0.02392$$

## 11.7 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02210^{+0.00057}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.018}_{-0.017}$	$D_M(0.15)$	$659^{+57}_{-57}$
$\Omega_c h^2$	$0.117^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.017}_{-0.017}$	$H(0.38)$	$81.3^{+6.5}_{-5.7}$
$100\theta_{MC}$	$1.0416^{+0.0037}_{-0.0038}$	$\sigma_8/h^{0.5}$	$0.992^{+0.023}_{-0.023}$	$D_M(0.38)$	$1568^{+130}_{-130}$
$\tau$	$0.053^{+0.013}_{-0.011}$	$r_{\text{drag}} h$	$98.3^{+3.8}_{-3.6}$	$H(0.51)$	$88.0^{+6.7}_{-5.8}$
$N_{\text{eff}}$	$2.83^{+0.99}_{-0.92}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.063}_{-0.061}$	$D_M(0.51)$	$2030^{+160}_{-160}$
$Y_P$	$0.255^{+0.059}_{-0.060}$	$z_{\text{re}}$	$< 8.78$	$H(0.61)$	$93.7^{+6.8}_{-5.9}$
$\ln(10^{10} A_s)$	$3.036^{+0.040}_{-0.036}$	$10^9 A_s$	$2.082^{+0.081}_{-0.079}$	$D_M(0.61)$	$2360^{+180}_{-190}$
$n_s$	$0.960^{+0.023}_{-0.024}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.050}_{-0.051}$	$H(2.33)$	$234^{+13}_{-11}$
$y_{\text{cal}}$	$1.0005^{+0.0051}_{-0.0049}$	$D_{40}$	$1234^{+38}_{-37}$	$D_M(2.33)$	$5866^{+380}_{-390}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5714^{+83}_{-82}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2535^{+28}_{-28}$	$\sigma_8(0.15)$	$0.742^{+0.031}_{-0.028}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.9}_{-4.0}$	$D_{1420}$	$814^{+10}_{-10}$	$f\sigma_8(0.38)$	$0.476^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$D_{2000}$	$229.6^{+4.8}_{-4.7}$	$\sigma_8(0.38)$	$0.657^{+0.030}_{-0.028}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$n_{s,0.002}$	$0.960^{+0.023}_{-0.024}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_P$	$0.255^{+0.059}_{-0.060}$	$\sigma_8(0.51)$	$0.614^{+0.029}_{-0.027}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.257^{+0.059}_{-0.060}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.014}$
$A^{\text{kSZ}}$	—	Age/Gyr	$14.04^{+0.90}_{-0.93}$	$\sigma_8(0.61)$	$0.584^{+0.028}_{-0.026}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$z_*$	$1090.3^{+1.4}_{-1.4}$	$f\sigma_8(2.33)$	$0.294^{+0.015}_{-0.014}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.4}$	$r_*$	$146.6^{+8.4}_{-8.8}$	$\sigma_8(2.33)$	$0.303^{+0.017}_{-0.015}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.3}$	$100\theta_*$	$1.0416^{+0.0027}_{-0.0027}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$14.08^{+0.78}_{-0.81}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.4^{+2.3}_{-2.3}$	$f_{2000}^{217}$	$108.2^{+5.1}_{-5.1}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$149.4^{+8.6}_{-9.0}$	$\chi_{\text{lensing}}^2$	$9.3 (\nu: 0.5)$
$H_0$	$65.8^{+6.3}_{-5.5}$	$k_D$	$0.1387^{+0.0080}_{-0.0076}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.1)$
$\Omega_\Lambda$	$0.677^{+0.031}_{-0.033}$	$100\theta_D$	$0.1611^{+0.0015}_{-0.0014}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 1.8)$
$\Omega_m$	$0.323^{+0.033}_{-0.031}$	$z_{\text{eq}}$	$3428^{+140}_{-140}$	$\chi_{\text{plik}}^2$	$772.0 (\nu: 16.8)$
$\Omega_m h^2$	$0.140^{+0.014}_{-0.013}$	$k_{\text{eq}}$	$0.01030^{+0.00038}_{-0.00036}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.5)$
$\Omega_m h^3$	$0.092^{+0.018}_{-0.016}$	$100\theta_{\text{eq}}$	$0.809^{+0.025}_{-0.022}$	$\chi_{\text{CMB}}^2$	$1202.1 (\nu: 17.0)$
$\sigma_8$	$0.805^{+0.031}_{-0.029}$	$100\theta_{s,\text{eq}}$	$0.447^{+0.013}_{-0.011}$		
$S_8$	$0.835^{+0.032}_{-0.032}$	$H(0.15)$	$71.2^{+6.3}_{-5.5}$		

$$\bar{\chi}_{\text{eff}}^2 = 1209.43; \Delta \bar{\chi}_{\text{eff}}^2 = 1.27; R - 1 = 0.01928$$



## 11.8 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02226^{+0.00047}_{-0.00048}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.018}_{-0.017}$	$D_M(0.38)$	$1525^{+86}_{-90}$
$\Omega_c h^2$	$0.120^{+0.013}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.985^{+0.018}_{-0.018}$	$H(0.51)$	$90.0^{+5.1}_{-4.5}$
$100\theta_{MC}$	$1.0410^{+0.0036}_{-0.0037}$	$r_{drag}h$	$99.8^{+2.0}_{-1.9}$	$D_M(0.51)$	$1976^{+110}_{-120}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.044}_{-0.044}$	$H(0.61)$	$95.6^{+5.3}_{-4.7}$
$N_{eff}$	$3.10^{+0.85}_{-0.80}$	$z_{re}$	$7.8^{+1.2}_{-1.3}$	$D_M(0.61)$	$2299^{+130}_{-130}$
$Y_P$	$0.248^{+0.058}_{-0.063}$	$10^9 A_s$	$2.105^{+0.069}_{-0.062}$	$H(2.33)$	$237^{+11}_{-11}$
$\ln(10^{10} A_s)$	$3.047^{+0.032}_{-0.030}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.043}_{-0.042}$	$D_M(2.33)$	$5750^{+290}_{-300}$
$n_s$	$0.968^{+0.017}_{-0.016}$	$D_{40}$	$1225^{+32}_{-33}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.013}$
$y_{cal}$	$1.0007^{+0.0050}_{-0.0050}$	$D_{220}$	$5723^{+81}_{-80}$	$\sigma_8(0.15)$	$0.750^{+0.026}_{-0.024}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$D_{810}$	$2538^{+28}_{-27}$	$f\sigma_8(0.38)$	$0.475^{+0.014}_{-0.013}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$815^{+11}_{-11}$	$\sigma_8(0.38)$	$0.665^{+0.024}_{-0.022}$
$A_{143}^{tSZ}$	$5.0^{+3.9}_{-3.9}$	$D_{2000}$	$229.6^{+4.9}_{-4.8}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.013}$
$A_{100}^{PS}$	$266^{+60}_{-60}$	$n_{s,0.002}$	$0.968^{+0.017}_{-0.016}$	$\sigma_8(0.51)$	$0.622^{+0.023}_{-0.021}$
$A_{143}^{PS}$	$50^{+20}_{-20}$	$Y_P$	$0.248^{+0.058}_{-0.063}$	$f\sigma_8(0.61)$	$0.469^{+0.014}_{-0.013}$
$A_{143 \times 217}^{PS}$	$44^{+20}_{-20}$	$Y_P^{BBN}$	$0.249^{+0.058}_{-0.063}$	$\sigma_8(0.61)$	$0.592^{+0.022}_{-0.020}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	Age/Gyr	$13.77^{+0.69}_{-0.72}$	$f\sigma_8(2.33)$	$0.299^{+0.011}_{-0.011}$
$A^{kSZ}$	—	$z_*$	$1090.2^{+1.3}_{-1.4}$	$\sigma_8(2.33)$	$0.308^{+0.012}_{-0.011}$
$A_{100}^{dustTT}$	$8.9^{+3.7}_{-3.5}$	$r_*$	$144.4^{+6.9}_{-7.3}$	$f_{2000}^{143}$	$32^{+7}_{-7}$
$A_{143}^{dustTT}$	$10.7^{+3.5}_{-3.4}$	$100\theta_*$	$1.0411^{+0.0024}_{-0.0024}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$A_{143 \times 217}^{dustTT}$	$18.3^{+6.6}_{-6.4}$	$D_M(z_*)/\text{Gpc}$	$13.87^{+0.63}_{-0.67}$	$f_{2000}^{217}$	$108.3^{+5.2}_{-5.4}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$z_{drag}$	$1059.8^{+2.1}_{-2.1}$	$\chi_{lensing}^2$	$9.39 (\nu: 0.3)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$r_{drag}$	$147.1^{+7.1}_{-7.5}$	$\chi_{simall}^2$	$397.0 (\nu: 1.5)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$k_D$	$0.1406^{+0.0076}_{-0.0066}$	$\chi_{lowl}^2$	$23.0 (\nu: 0.9)$
$H_0$	$67.9^{+4.5}_{-3.9}$	$100\theta_D$	$0.1612^{+0.0014}_{-0.0015}$	$\chi_{plik}^2$	$773.3 (\nu: 16.5)$
$\Omega_\Lambda$	$0.690^{+0.016}_{-0.017}$	$z_{eq}$	$3376^{+86}_{-85}$	$\chi_{6DF}^2$	$0.062 (\nu: 0.0)$
$\Omega_m$	$0.310^{+0.017}_{-0.016}$	$k_{eq}$	$0.01033^{+0.00039}_{-0.00038}$	$\chi_{MGS}^2$	$1.37 (\nu: 0.2)$
$\Omega_m h^2$	$0.143^{+0.013}_{-0.012}$	$100\theta_{eq}$	$0.818^{+0.014}_{-0.014}$	$\chi_{DR12BAO}^2$	$4.8 (\nu: 1.4)$
$\Omega_m h^3$	$0.097^{+0.015}_{-0.014}$	$100\theta_{s,eq}$	$0.4519^{+0.0074}_{-0.0071}$	$\chi_{prior}^2$	$7.3 (\nu: 6.7)$
$\sigma_8$	$0.812^{+0.027}_{-0.026}$	$H(0.15)$	$73.2^{+4.6}_{-4.0}$	$\chi_{CMB}^2$	$1202.8 (\nu: 17.1)$
$S_8$	$0.825^{+0.026}_{-0.025}$	$D_M(0.15)$	$639^{+37}_{-39}$	$\chi_{BAO}^2$	$6.2 (\nu: 0.9)$
$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.014}_{-0.014}$	$H(0.38)$	$83.3^{+4.9}_{-4.3}$		

$$\bar{\chi}_{eff}^2 = 1216.32; \Delta \bar{\chi}_{eff}^2 = 1.75; R - 1 = 0.01882$$

## 11.9 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022215	$0.02225^{+0.00044}_{-0.00043}$	$\Omega_m$	0.3227	$0.321^{+0.022}_{-0.021}$	$k_{\text{eq}}$	0.010297	$0.01033^{+0.00031}_{-0.00029}$
$\Omega_c h^2$	0.1167	$0.1179^{+0.0097}_{-0.0088}$	$\Omega_m h^2$	0.1395	$0.1408^{+0.0098}_{-0.0089}$	$100\theta_{\text{eq}}$	0.8083	$0.809^{+0.016}_{-0.015}$
$100\theta_{\text{MC}}$	1.04140	$1.0413^{+0.0024}_{-0.0024}$	$\Omega_m h^3$	0.0918	$0.093^{+0.011}_{-0.010}$	$100\theta_{\text{s,eq}}$	0.4469	$0.4474^{+0.0079}_{-0.0078}$
$\tau$	0.0539	$0.054^{+0.016}_{-0.016}$	$\sigma_8$	0.8029	$0.806^{+0.025}_{-0.025}$	$H(0.15)$	71.08	$71.6^{+3.8}_{-3.4}$
$N_{\text{eff}}$	2.81	$2.89^{+0.63}_{-0.57}$	$S_8$	0.8327	$0.833^{+0.032}_{-0.034}$	$D_{\text{M}}(0.15)$	658.4	$654^{+34}_{-34}$
$Y_{\text{P}}$	0.2449	$0.246^{+0.034}_{-0.036}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4561	$0.456^{+0.018}_{-0.018}$	$H(0.38)$	81.22	$81.7^{+3.9}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	3.0357	$3.038^{+0.039}_{-0.038}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6051	$0.606^{+0.019}_{-0.019}$	$D_{\text{M}}(0.38)$	1568	$1558^{+76}_{-78}$
$n_{\text{s}}$	0.9584	$0.960^{+0.017}_{-0.017}$	$\sigma_8/h^{0.5}$	0.9901	$0.990^{+0.023}_{-0.024}$	$H(0.51)$	87.95	$88.5^{+4.0}_{-3.6}$
$y_{\text{cal}}$	1.00047	$1.0007^{+0.0048}_{-0.0047}$	$r_{\text{drag}} h$	98.23	$98.4^{+2.6}_{-2.5}$	$D_{\text{M}}(0.51)$	2029	$2017^{+96}_{-98}$
$A_{217}^{\text{CIB}}$	43.8	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.457	$2.456^{+0.059}_{-0.060}$	$H(0.61)$	93.57	$94.1^{+4.1}_{-3.7}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.89	—	$z_{\text{re}}$	7.60	$7.6^{+1.6}_{-1.7}$	$D_{\text{M}}(0.61)$	2359	$2345^{+110}_{-110}$
$A_{143}^{\text{tSZ}}$	6.90	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	2.082	$2.086^{+0.082}_{-0.077}$	$H(2.33)$	233.5	$234.5^{+8.2}_{-7.7}$
$A_{100}^{\text{PS}}$	244	$257^{+60}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8689	$1.874^{+0.040}_{-0.040}$	$D_{\text{M}}(2.33)$	5865	$5834^{+230}_{-240}$
$A_{143}^{\text{PS}}$	51.4	$45^{+20}_{-20}$	$D_{40}$	1238.1	$1238^{+33}_{-32}$	$f\sigma_8(0.15)$	0.4597	$0.460^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	57.2	$42^{+20}_{-20}$	$D_{220}$	5730	$5733^{+75}_{-75}$	$\sigma_8(0.15)$	0.7408	$0.743^{+0.024}_{-0.023}$
$A_{217}^{\text{PS}}$	124.0	$115^{+20}_{-20}$	$D_{810}$	2539.1	$2538^{+27}_{-27}$	$f\sigma_8(0.38)$	0.4754	$0.476^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	0.00	$< 7.89$	$D_{1420}$	819.7	$817.9^{+9.3}_{-9.2}$	$\sigma_8(0.38)$	0.6555	$0.658^{+0.022}_{-0.021}$
$A_{100}^{\text{dustTT}}$	8.69	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	232.45	$231.5^{+3.5}_{-3.5}$	$f\sigma_8(0.51)$	0.4727	$0.474^{+0.014}_{-0.014}$
$A_{143}^{\text{dustTT}}$	10.86	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9584	$0.960^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	0.6130	$0.615^{+0.021}_{-0.021}$
$A_{143 \times 217}^{\text{dustTT}}$	20.1	$18.5^{+6.4}_{-6.4}$	$Y_{\text{P}}$	0.2449	$0.246^{+0.034}_{-0.036}$	$f\sigma_8(0.61)$	0.4669	$0.468^{+0.014}_{-0.014}$
$A_{217}^{\text{dustTT}}$	95.8	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.2463	$0.247^{+0.034}_{-0.036}$	$\sigma_8(0.61)$	0.5829	$0.585^{+0.021}_{-0.020}$
$A_{100}^{\text{dustTE}}$	0.115	$0.115^{+0.074}_{-0.075}$	Age/Gyr	14.04	$13.97^{+0.56}_{-0.57}$	$f\sigma_8(2.33)$	0.2935	$0.295^{+0.011}_{-0.010}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.058}_{-0.058}$	$z_*$	1089.70	$1089.85^{+0.87}_{-0.87}$	$\sigma_8(2.33)$	0.3021	$0.303^{+0.012}_{-0.011}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.16}$	$r_*$	146.6	$145.9^{+5.4}_{-5.5}$	$f_{2000}^{143}$	27.2	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	0.222	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	1.04168	$1.0415^{+0.0019}_{-0.0018}$	$f_{2000}^{143 \times 217}$	30.92	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.08	$14.01^{+0.50}_{-0.50}$	$f_{2000}^{217}$	105.51	$106.6^{+4.1}_{-4.1}$
$A_{217}^{\text{dustTE}}$	2.09	$2.09^{+0.53}_{-0.53}$	$z_{\text{drag}}$	1059.25	$1059.5^{+1.6}_{-1.6}$	$\chi_{\text{simall}}^2$	396.03	$397.1 (\nu: 1.6)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	149.4	$148.7^{+5.6}_{-5.6}$	$\chi_{\text{lowl}}^2$	24.26	$24.3 (\nu: 1.2)$
$c_{217}$	0.99814	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.13918	$0.1397^{+0.0051}_{-0.0048}$	$\chi_{\text{plik}}^2$	2343.1	$2360.3 (\nu: 19.0)$
$H_0$	65.76	$66.2^{+3.7}_{-3.4}$	$100\theta_{\text{D}}$	0.16035	$0.16056^{+0.00093}_{-0.00095}$	$\chi_{\text{prior}}^2$	1.4	$11.5 (\nu: 10.3)$
$\Omega_{\Lambda}$	0.6773	$0.679^{+0.021}_{-0.022}$	$z_{\text{eq}}$	3429	$3424^{+88}_{-87}$	$\chi_{\text{CMB}}^2$	2763.3	$2781.7 (\nu: 18.8)$

Best-fit  $\chi_{\text{eff}}^2 = 2764.72$ ;  $\Delta\chi_{\text{eff}}^2 = -1.05$ ;  $\bar{\chi}_{\text{eff}}^2 = 2793.18$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.41$ ;  $R - 1 = 0.01243$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 24.26 ( $\Delta$  1.00) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.05 ( $\Delta$  -1.59)

# 11.10 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022350	$0.02239^{+0.00037}_{-0.00037}$	$\Omega_m h^3$	0.0946	$0.096^{+0.011}_{-0.010}$	$D_M(0.15)$	645.7	$643^{+29}_{-28}$
$\Omega_c h^2$	0.1179	$0.1186^{+0.0098}_{-0.0092}$	$\sigma_8$	0.8053	$0.807^{+0.026}_{-0.026}$	$H(0.38)$	82.48	$82.8^{+3.4}_{-3.3}$
$100\theta_{MC}$	1.04108	$1.0411^{+0.0024}_{-0.0024}$	$S_8$	0.8222	$0.823^{+0.028}_{-0.028}$	$D_M(0.38)$	1540	$1534^{+67}_{-65}$
$\tau$	0.0551	$0.055^{+0.016}_{-0.016}$	$\sigma_8 \Omega_m^{0.5}$	0.4503	$0.451^{+0.015}_{-0.016}$	$H(0.51)$	89.17	$89.5^{+3.6}_{-3.4}$
$N_{\text{eff}}$	2.96	$3.01^{+0.61}_{-0.57}$	$\sigma_8 \Omega_m^{0.25}$	0.6022	$0.603^{+0.019}_{-0.019}$	$D_M(0.51)$	1994	$1987^{+85}_{-83}$
$Y_P$	0.2422	$0.244^{+0.034}_{-0.036}$	$\sigma_8/h^{0.5}$	0.9829	$0.983^{+0.022}_{-0.022}$	$H(0.61)$	94.77	$95.1^{+3.7}_{-3.6}$
$\ln(10^{10} A_s)$	3.0401	$3.043^{+0.038}_{-0.037}$	$r_{\text{drag}} h$	99.42	$99.5^{+1.7}_{-1.7}$	$D_M(0.61)$	2320	$2313^{+97}_{-95}$
$n_s$	0.9648	$0.965^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.435	$2.437^{+0.051}_{-0.052}$	$H(2.33)$	234.9	$235.5^{+8.2}_{-7.9}$
$y_{\text{cal}}$	1.00029	$1.0007^{+0.0047}_{-0.0046}$	$z_{\text{re}}$	7.71	$7.7^{+1.6}_{-1.6}$	$D_M(2.33)$	5796	$5779^{+220}_{-220}$
$A_{217}^{\text{CIB}}$	44.5	$46^{+10}_{-10}$	$10^9 A_s$	2.091	$2.097^{+0.080}_{-0.077}$	$f\sigma_8(0.15)$	0.4548	$0.455^{+0.015}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.82	—	$10^9 A_s e^{-2\tau}$	1.8726	$1.877^{+0.039}_{-0.041}$	$\sigma_8(0.15)$	0.7440	$0.746^{+0.024}_{-0.024}$
$A_{143}^{\text{tSZ}}$	7.03	$5.6^{+3.8}_{-3.8}$	$D_{40}$	1227.9	$1230^{+29}_{-28}$	$f\sigma_8(0.38)$	0.4728	$0.474^{+0.015}_{-0.015}$
$A_{100}^{\text{PS}}$	244	$257^{+50}_{-60}$	$D_{220}$	5729	$5738^{+73}_{-76}$	$\sigma_8(0.38)$	0.6594	$0.661^{+0.022}_{-0.022}$
$A_{143}^{\text{PS}}$	50.7	$45^{+20}_{-20}$	$D_{810}$	2538.4	$2539^{+26}_{-27}$	$f\sigma_8(0.51)$	0.4712	$0.472^{+0.015}_{-0.015}$
$A_{143 \times 217}^{\text{PS}}$	55.6	$42^{+20}_{-20}$	$D_{1420}$	819.4	$818.2^{+9.1}_{-9.1}$	$\sigma_8(0.51)$	0.6170	$0.619^{+0.021}_{-0.021}$
$A_{217}^{\text{PS}}$	122.8	$115^{+20}_{-20}$	$D_{2000}$	232.14	$231.4^{+3.5}_{-3.6}$	$f\sigma_8(0.61)$	0.4662	$0.467^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	0.01	$< 7.93$	$n_{s,0.002}$	0.9648	$0.965^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	0.5871	$0.589^{+0.020}_{-0.020}$
$A_{100}^{\text{dustTT}}$	8.83	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.2422	$0.244^{+0.034}_{-0.036}$	$f\sigma_8(2.33)$	0.2960	$0.297^{+0.010}_{-0.010}$
$A_{143}^{\text{dustTT}}$	10.99	$10.9^{+3.5}_{-3.6}$	$Y_P^{\text{BBN}}$	0.2435	$0.246^{+0.034}_{-0.036}$	$\sigma_8(2.33)$	0.3051	$0.306^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	20.3	$18.6^{+6.4}_{-6.3}$	Age/Gyr	13.87	$13.83^{+0.52}_{-0.51}$	$f_{2000}^{143}$	27.5	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	95.9	$94^{+10}_{-10}$	$z_*$	1089.60	$1089.73^{+0.85}_{-0.85}$	$f_{2000}^{143 \times 217}$	31.06	$32^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.072}_{-0.074}$	$r_*$	145.4	$145.1^{+5.4}_{-5.3}$	$f_{2000}^{217}$	105.56	$106.7^{+4.0}_{-4.2}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.059}_{-0.058}$	$100\theta_*$	1.04138	$1.0413^{+0.0018}_{-0.0018}$	$\chi_{\text{small}}^2$	396.16	$397.3 (\nu: 2.0)$
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.48^{+0.17}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.964	$13.93^{+0.49}_{-0.49}$	$\chi_{\text{lowl}}^2$	23.25	$23.4 (\nu: 0.7)$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.11}$	$z_{\text{drag}}$	1059.59	$1059.8^{+1.5}_{-1.5}$	$\chi_{\text{plik}}^2$	2344.8	$2361.2 (\nu: 19.0)$
$A_{143 \times 217}^{\text{dustTE}}$	0.667	$0.66^{+0.16}_{-0.16}$	$r_{\text{drag}}$	148.1	$147.7^{+5.5}_{-5.4}$	$\chi_{6\text{DF}}^2$	0.047	$0.069 (\nu: 0.0)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.52}_{-0.52}$	$k_D$	0.14020	$0.1405^{+0.0050}_{-0.0048}$	$\chi_{\text{MGS}}^2$	1.10	$1.23 (\nu: 0.1)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16047	$0.16063^{+0.00092}_{-0.00093}$	$\chi_{\text{DR12BAO}}^2$	4.80	$5.1 (\nu: 1.4)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3391	$3389^{+64}_{-62}$	$\chi_{\text{prior}}^2$	1.5	$11.6 (\nu: 10.2)$
$H_0$	67.13	$67.4^{+3.2}_{-3.0}$	$k_{\text{eq}}$	0.010291	$0.01031^{+0.00032}_{-0.00031}$	$\chi_{\text{BAO}}^2$	5.94	$6.4 (\nu: 1.0)$
$\Omega_\Lambda$	0.6873	$0.688^{+0.013}_{-0.014}$	$100\theta_{\text{eq}}$	0.8153	$0.816^{+0.011}_{-0.011}$	$\chi_{\text{CMB}}^2$	2764.2	$2781.9 (\nu: 18.1)$
$\Omega_m$	0.3127	$0.312^{+0.014}_{-0.013}$	$100\theta_{s,\text{eq}}$	0.4505	$0.4507^{+0.0056}_{-0.0056}$			
$\Omega_m h^2$	0.1409	$0.1417^{+0.0099}_{-0.0093}$	$H(0.15)$	72.40	$72.7^{+3.2}_{-3.1}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.61$ ;  $\Delta\chi_{\text{eff}}^2 = -0.31$ ;  $\bar{\chi}_{\text{eff}}^2 = 2799.87$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.96$ ;  $R - 1 = 0.02630$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.02) MGS: 1.10 ( $\Delta$  -0.12) DR12BAO: 4.80 ( $\Delta$  0.39) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.16 ( $\Delta$  -0.04) commander\_dx12\_v3\_2\_29: 23.25 ( $\Delta$  0.38) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.78 ( $\Delta$  -0.73)

### 11.11 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022215	$0.02224^{+0.00043}_{-0.00043}$	$\Omega_m h^2$	0.1391	$0.1400^{+0.0093}_{-0.0083}$	$100\theta_{s,eq}$	0.4470	$0.4474^{+0.0074}_{-0.0073}$
$\Omega_c h^2$	0.1163	$0.1171^{+0.0092}_{-0.0082}$	$\Omega_m h^3$	0.0914	$0.092^{+0.011}_{-0.010}$	$H(0.15)$	71.01	$71.3^{+3.7}_{-3.4}$
$100\theta_{MC}$	1.04151	$1.0415^{+0.0023}_{-0.0024}$	$\sigma_8$	0.8019	$0.803^{+0.023}_{-0.022}$	$D_M(0.15)$	659.0	$656^{+34}_{-34}$
$\tau$	0.0539	$0.053^{+0.015}_{-0.015}$	$S_8$	0.8312	$0.831^{+0.025}_{-0.026}$	$H(0.38)$	81.14	$81.5^{+3.8}_{-3.4}$
$N_{eff}$	2.79	$2.84^{+0.62}_{-0.55}$	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.455^{+0.014}_{-0.014}$	$D_M(0.38)$	1569	$1563^{+76}_{-76}$
$Y_P$	0.2458	$0.247^{+0.034}_{-0.036}$	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.605^{+0.015}_{-0.015}$	$H(0.51)$	87.85	$88.2^{+3.9}_{-3.5}$
$\ln(10^{10} A_s)$	3.0349	$3.036^{+0.035}_{-0.034}$	$\sigma_8/h^{0.5}$	0.9893	$0.989^{+0.018}_{-0.019}$	$D_M(0.51)$	2031	$2023^{+95}_{-97}$
$n_s$	0.9583	$0.959^{+0.017}_{-0.017}$	$r_{drag} h$	98.28	$98.4^{+2.4}_{-2.3}$	$H(0.61)$	93.46	$93.8^{+4.0}_{-3.6}$
$y_{cal}$	1.00046	$1.0007^{+0.0048}_{-0.0046}$	$\langle d^2 \rangle^{1/2}$	2.4559	$2.454^{+0.046}_{-0.048}$	$D_M(0.61)$	2362	$2353^{+110}_{-110}$
$A_{217}^{CIB}$	44.0	$46^{+10}_{-10}$	$z_{re}$	7.60	$7.6^{+1.5}_{-1.5}$	$H(2.33)$	233.1	$233.8^{+8.1}_{-7.4}$
$\xi^{tSZ \times CIB}$	0.89	—	$10^9 A_s$	2.080	$2.082^{+0.075}_{-0.071}$	$D_M(2.33)$	5872	$5853^{+220}_{-240}$
$A_{143}^{tSZ}$	6.95	$5.6^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8673	$1.871^{+0.038}_{-0.038}$	$f\sigma_8(0.15)$	0.4589	$0.459^{+0.013}_{-0.013}$
$A_{100}^{PS}$	244	$256^{+50}_{-50}$	$D_{40}$	1237.7	$1238^{+31}_{-30}$	$\sigma_8(0.15)$	0.7399	$0.741^{+0.022}_{-0.021}$
$A_{143}^{PS}$	51.6	$45^{+20}_{-20}$	$D_{220}$	5730	$5734^{+74}_{-74}$	$f\sigma_8(0.38)$	0.4747	$0.475^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	57.1	$42^{+20}_{-20}$	$D_{810}$	2538.7	$2538^{+26}_{-26}$	$\sigma_8(0.38)$	0.6547	$0.656^{+0.021}_{-0.020}$
$A_{217}^{PS}$	123.5	$115^{+20}_{-20}$	$D_{1420}$	819.6	$817.9^{+9.2}_{-9.1}$	$f\sigma_8(0.51)$	0.4720	$0.472^{+0.012}_{-0.012}$
$A^{kSZ}$	0.00	$< 7.89$	$D_{2000}$	232.44	$231.6^{+3.5}_{-3.6}$	$\sigma_8(0.51)$	0.6123	$0.614^{+0.020}_{-0.019}$
$A_{100}^{dustTT}$	8.71	$8.9^{+3.5}_{-3.6}$	$n_{s,0.002}$	0.9583	$0.959^{+0.017}_{-0.017}$	$f\sigma_8(0.61)$	0.4663	$0.467^{+0.012}_{-0.012}$
$A_{143}^{dustTT}$	10.92	$10.8^{+3.6}_{-3.5}$	$Y_P$	0.2458	$0.247^{+0.034}_{-0.036}$	$\sigma_8(0.61)$	0.5823	$0.584^{+0.019}_{-0.019}$
$A_{143 \times 217}^{dustTT}$	20.3	$18.5^{+6.3}_{-6.3}$	$Y_P^{BBN}$	0.2472	$0.249^{+0.034}_{-0.036}$	$f\sigma_8(2.33)$	0.2932	$0.294^{+0.010}_{-0.0099}$
$A_{217}^{dustTT}$	96.0	$94^{+10}_{-10}$	Age/Gyr	14.06	$14.01^{+0.53}_{-0.56}$	$\sigma_8(2.33)$	0.3018	$0.303^{+0.011}_{-0.011}$
$A_{100}^{dustTE}$	0.114	$0.115^{+0.073}_{-0.074}$	$z_*$	1089.69	$1089.82^{+0.86}_{-0.86}$	$f_{2000}^{143}$	27.3	$29^{+6}_{-6}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	146.8	$146.4^{+5.2}_{-5.4}$	$f_{2000}^{143 \times 217}$	30.98	$32^{+4}_{-4}$
$A_{100 \times 217}^{dustTE}$	0.483	$0.48^{+0.17}_{-0.16}$	$100\theta_*$	1.04177	$1.0417^{+0.0018}_{-0.0017}$	$f_{2000}^{217}$	105.51	$106.6^{+4.1}_{-4.2}$
$A_{143}^{dustTE}$	0.227	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	14.096	$14.05^{+0.48}_{-0.50}$	$\chi_{lensing}^2$	8.49	$9.01 (\nu: 0.3)$
$A_{143 \times 217}^{dustTE}$	0.667	$0.67^{+0.16}_{-0.16}$	$z_{drag}$	1059.25	$1059.4^{+1.6}_{-1.7}$	$\chi_{small}^2$	396.03	$396.9 (\nu: 1.3)$
$A_{217}^{dustTE}$	2.09	$2.09^{+0.52}_{-0.52}$	$r_{drag}$	149.6	$149.1^{+5.4}_{-5.6}$	$\chi_{lowl}^2$	24.24	$24.3 (\nu: 1.1)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.13899	$0.1393^{+0.0050}_{-0.0046}$	$\chi_{plik}^2$	2343.0	$2359.9 (\nu: 18.0)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16035	$0.16052^{+0.00094}_{-0.00096}$	$\chi_{prior}^2$	1.5	$11.5 (\nu: 10.0)$
$H_0$	65.70	$66.0^{+3.7}_{-3.4}$	$z_{eq}$	3429	$3425^{+84}_{-82}$	$\chi_{CMB}^2$	2771.8	$2790.2 (\nu: 19.0)$
$\Omega_\Lambda$	0.6777	$0.679^{+0.020}_{-0.021}$	$k_{eq}$	0.010281	$0.01030^{+0.00029}_{-0.00026}$			
$\Omega_m$	0.3223	$0.321^{+0.021}_{-0.020}$	$100\theta_{eq}$	0.8085	$0.809^{+0.015}_{-0.014}$			

Best-fit  $\chi_{eff}^2 = 2773.24$ ;  $\Delta\chi_{eff}^2 = -1.39$ ;  $\bar{\chi}_{eff}^2 = 2801.64$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.95$ ;  $R - 1 = 0.01539$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.49 ( $\Delta$  -0.37) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 24.23 ( $\Delta$  0.98) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.02 ( $\Delta$  -1.91)

### 11.12 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022358	$0.02238^{+0.00037}_{-0.00037}$	$\Omega_m h^2$	0.1404	$0.1412^{+0.0093}_{-0.0086}$	$100\theta_{s,eq}$	0.4503	$0.4504^{+0.0055}_{-0.0054}$
$\Omega_c h^2$	0.1174	$0.1182^{+0.0091}_{-0.0085}$	$\Omega_m h^3$	0.0940	$0.0950^{+0.010}_{-0.0094}$	$H(0.15)$	72.24	$72.5^{+3.2}_{-3.0}$
$100\theta_{MC}$	1.04126	$1.0412^{+0.0023}_{-0.0023}$	$\sigma_8$	0.8054	$0.807^{+0.023}_{-0.022}$	$D_M(0.15)$	647.1	$645^{+28}_{-28}$
$\tau$	0.0563	$0.056^{+0.015}_{-0.014}$	$S_8$	0.8225	$0.824^{+0.023}_{-0.023}$	$H(0.38)$	82.30	$82.6^{+3.4}_{-3.2}$
$N_{eff}$	2.93	$2.97^{+0.58}_{-0.54}$	$\sigma_8 \Omega_m^{0.5}$	0.4505	$0.451^{+0.012}_{-0.013}$	$D_M(0.38)$	1543	$1538^{+65}_{-65}$
$Y_P$	0.2443	$0.245^{+0.035}_{-0.035}$	$\sigma_8 \Omega_m^{0.25}$	0.6024	$0.603^{+0.015}_{-0.016}$	$H(0.51)$	88.98	$89.3^{+3.5}_{-3.3}$
$\ln(10^{10} A_s)$	3.0426	$3.044^{+0.034}_{-0.032}$	$\sigma_8/h^{0.5}$	0.9841	$0.984^{+0.018}_{-0.017}$	$D_M(0.51)$	1999	$1993^{+82}_{-83}$
$n_s$	0.9644	$0.964^{+0.014}_{-0.014}$	$r_{drag} h$	99.42	$99.5^{+1.7}_{-1.6}$	$H(0.61)$	94.57	$94.9^{+3.6}_{-3.4}$
$y_{cal}$	1.00073	$1.0008^{+0.0047}_{-0.0047}$	$\langle d^2 \rangle^{1/2}$	2.4386	$2.440^{+0.042}_{-0.042}$	$D_M(0.61)$	2325	$2319^{+95}_{-95}$
$A_{217}^{CIB}$	44.4	$46^{+10}_{-10}$	$z_{re}$	7.83	$7.8^{+1.4}_{-1.4}$	$H(2.33)$	234.4	$235.1^{+7.9}_{-7.4}$
$\xi^{tSZ \times CIB}$	0.80	—	$10^9 A_s$	2.096	$2.099^{+0.072}_{-0.067}$	$D_M(2.33)$	5808	$5791^{+210}_{-210}$
$A_{143}^{tSZ}$	7.00	$5.6^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8727	$1.875^{+0.036}_{-0.037}$	$f\sigma_8(0.15)$	0.4550	$0.456^{+0.012}_{-0.012}$
$A_{100}^{PS}$	245	$257^{+50}_{-60}$	$D_{40}$	1229.6	$1231^{+28}_{-28}$	$\sigma_8(0.15)$	0.7441	$0.746^{+0.022}_{-0.021}$
$A_{143}^{PS}$	50.5	$45^{+20}_{-20}$	$D_{220}$	5737	$5741^{+73}_{-76}$	$f\sigma_8(0.38)$	0.4729	$0.474^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	55.2	$42^{+20}_{-20}$	$D_{810}$	2540.5	$2539^{+25}_{-26}$	$\sigma_8(0.38)$	0.6595	$0.661^{+0.020}_{-0.020}$
$A_{217}^{PS}$	123.0	$115^{+20}_{-20}$	$D_{1420}$	820.1	$818.4^{+9.0}_{-9.2}$	$f\sigma_8(0.51)$	0.4713	$0.472^{+0.012}_{-0.012}$
$A^{kSZ}$	0.00	$< 7.88$	$D_{2000}$	232.36	$231.5^{+3.5}_{-3.6}$	$\sigma_8(0.51)$	0.6171	$0.618^{+0.019}_{-0.019}$
$A_{100}^{dustTT}$	8.82	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	0.9644	$0.964^{+0.014}_{-0.014}$	$f\sigma_8(0.61)$	0.4663	$0.467^{+0.012}_{-0.012}$
$A_{143}^{dustTT}$	10.98	$10.8^{+3.6}_{-3.5}$	$Y_P$	0.2443	$0.245^{+0.035}_{-0.035}$	$\sigma_8(0.61)$	0.5871	$0.588^{+0.018}_{-0.018}$
$A_{143 \times 217}^{dustTT}$	20.2	$18.6^{+6.4}_{-6.4}$	$Y_P^{BBN}$	0.2456	$0.246^{+0.035}_{-0.035}$	$f\sigma_8(2.33)$	0.2960	$0.2967^{+0.0093}_{-0.0093}$
$A_{217}^{dustTT}$	96.0	$94^{+10}_{-10}$	Age/Gyr	13.90	$13.86^{+0.50}_{-0.50}$	$\sigma_8(2.33)$	0.3051	$0.306^{+0.010}_{-0.0099}$
$A_{100}^{dustTE}$	0.115	$0.114^{+0.072}_{-0.074}$	$z_*$	1089.61	$1089.71^{+0.85}_{-0.85}$	$\chi^2_{lensing}$	8.56	$9.06 (\nu: 0.2)$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.059}_{-0.058}$	$r_*$	145.7	$145.3^{+5.1}_{-5.1}$	$\chi^2_{small}$	396.43	$397.3 (\nu: 1.8)$
$A_{100 \times 217}^{dustTE}$	0.484	$0.48^{+0.16}_{-0.16}$	$100\theta_*$	1.04150	$1.0414^{+0.0017}_{-0.0017}$	$\chi^2_{lowl}$	23.32	$23.5 (\nu: 0.7)$
$A_{143}^{dustTE}$	0.223	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.993	$13.96^{+0.47}_{-0.47}$	$\chi^2_{plik}$	2344.5	$2360.6 (\nu: 17.9)$
$A_{143 \times 217}^{dustTE}$	0.665	$0.66^{+0.16}_{-0.16}$	$z_{drag}$	1059.63	$1059.8^{+1.5}_{-1.5}$	$\chi^2_{6DF}$	0.048	$0.074 (\nu: 0.0)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.52}$	$r_{drag}$	148.4	$148.0^{+5.2}_{-5.2}$	$\chi^2_{MGS}$	1.10	$1.18 (\nu: 0.1)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.13991	$0.1402^{+0.0048}_{-0.0046}$	$\chi^2_{DR12BAO}$	4.79	$5.2 (\nu: 1.4)$
$c_{217}$	0.99816	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16047	$0.16060^{+0.00093}_{-0.00093}$	$\chi^2_{prior}$	1.5	$11.6 (\nu: 10.1)$
$H_0$	66.98	$67.2^{+3.1}_{-2.9}$	$z_{eq}$	3393	$3393^{+63}_{-62}$	$\chi^2_{CMB}$	2772.8	$2790.5 (\nu: 18.3)$
$\Omega_\Lambda$	0.6872	$0.687^{+0.014}_{-0.014}$	$k_{eq}$	0.010274	$0.01030^{+0.00029}_{-0.00027}$	$\chi^2_{BAO}$	5.94	$6.4 (\nu: 1.0)$
$\Omega_m$	0.3128	$0.313^{+0.014}_{-0.014}$	$100\theta_{eq}$	0.8150	$0.815^{+0.011}_{-0.011}$			

Best-fit  $\chi^2_{eff} = 2780.20$ ;  $\Delta\chi^2_{eff} = -0.50$ ;  $\bar{\chi}^2_{eff} = 2808.46$ ;  $\Delta\bar{\chi}^2_{eff} = 1.62$ ;  $R - 1 = 0.02254$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.05 ( $\Delta$  0.02) MGS: 1.10 ( $\Delta$  -0.12) DR12BAO: 4.79 ( $\Delta$  0.37) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.56 ( $\Delta$  -0.17) simall\_100x143\_offlike5\_EE\_Aplanck 396.44 ( $\Delta$  -0.09) commander\_dx12\_v3.2\_29: 23.32 ( $\Delta$  0.42) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.47 ( $\Delta$  -0.85)

### 11.13 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02226^{+0.00043}_{-0.00042}$	$\Omega_m$	$0.321^{+0.022}_{-0.021}$	$k_{\text{eq}}$	$0.01033^{+0.00031}_{-0.00030}$
$\Omega_c h^2$	$0.1179^{+0.0097}_{-0.0088}$	$\Omega_m h^2$	$0.1409^{+0.0098}_{-0.0089}$	$100\theta_{\text{eq}}$	$0.810^{+0.015}_{-0.015}$
$100\theta_{\text{MC}}$	$1.0413^{+0.0024}_{-0.0024}$	$\Omega_m h^3$	$0.093^{+0.011}_{-0.010}$	$100\theta_{\text{s,eq}}$	$0.4476^{+0.0079}_{-0.0076}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8$	$0.807^{+0.025}_{-0.024}$	$H(0.15)$	$71.6^{+3.7}_{-3.4}$
$N_{\text{eff}}$	$2.89^{+0.62}_{-0.56}$	$S_8$	$0.834^{+0.032}_{-0.033}$	$D_{\text{M}}(0.15)$	$654^{+33}_{-34}$
$Y_{\text{P}}$	$0.246^{+0.034}_{-0.036}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.457^{+0.018}_{-0.018}$	$H(0.38)$	$81.8^{+3.9}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	$3.041^{+0.035}_{-0.033}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.607^{+0.018}_{-0.019}$	$D_{\text{M}}(0.38)$	$1557^{+75}_{-77}$
$n_{\text{s}}$	$0.960^{+0.017}_{-0.017}$	$\sigma_8/h^{0.5}$	$0.991^{+0.023}_{-0.023}$	$H(0.51)$	$88.5^{+4.0}_{-3.6}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$r_{\text{drag}} h$	$98.5^{+2.6}_{-2.5}$	$D_{\text{M}}(0.51)$	$2015^{+95}_{-97}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.458^{+0.058}_{-0.058}$	$H(0.61)$	$94.2^{+4.1}_{-3.7}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.91$	$D_{\text{M}}(0.61)$	$2344^{+110}_{-110}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	$2.092^{+0.073}_{-0.068}$	$H(2.33)$	$234.6^{+8.3}_{-7.7}$
$A_{100}^{\text{PS}}$	$256^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.040}_{-0.039}$	$D_{\text{M}}(2.33)$	$5832^{+230}_{-240}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{40}$	$1238^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5733^{+74}_{-74}$	$\sigma_8(0.15)$	$0.745^{+0.024}_{-0.023}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.477^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	$< 7.88$	$D_{1420}$	$817.8^{+9.3}_{-9.2}$	$\sigma_8(0.38)$	$0.659^{+0.022}_{-0.021}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$231.5^{+3.5}_{-3.6}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.014}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.960^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	$0.616^{+0.021}_{-0.020}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.4}_{-6.5}$	$Y_{\text{P}}$	$0.246^{+0.034}_{-0.036}$	$f\sigma_8(0.61)$	$0.469^{+0.014}_{-0.014}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.248^{+0.034}_{-0.036}$	$\sigma_8(0.61)$	$0.586^{+0.020}_{-0.019}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.074}_{-0.075}$	Age/Gyr	$13.96^{+0.55}_{-0.57}$	$f\sigma_8(2.33)$	$0.295^{+0.011}_{-0.0097}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.057}$	$z_*$	$1089.85^{+0.87}_{-0.88}$	$\sigma_8(2.33)$	$0.304^{+0.011}_{-0.010}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$r_*$	$145.9^{+5.4}_{-5.5}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	$1.0415^{+0.0019}_{-0.0018}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.01^{+0.49}_{-0.50}$	$f_{2000}^{217}$	$106.6^{+4.1}_{-4.1}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.53}_{-0.53}$	$z_{\text{drag}}$	$1059.5^{+1.6}_{-1.6}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$148.6^{+5.6}_{-5.6}$	$\chi_{\text{lowl}}^2$	$24.3 (\nu: 1.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.1397^{+0.0051}_{-0.0048}$	$\chi_{\text{plik}}^2$	$2360.1 (\nu: 18.9)$
$H_0$	$66.3^{+3.7}_{-3.4}$	$100\theta_{\text{D}}$	$0.16057^{+0.00093}_{-0.00095}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.3)$
$\Omega_{\Lambda}$	$0.679^{+0.021}_{-0.022}$	$z_{\text{eq}}$	$3422^{+87}_{-86}$	$\chi_{\text{CMB}}^2$	$2781.4 (\nu: 18.3)$

$$\bar{\chi}_{\text{eff}}^2 = 2792.90; \Delta\bar{\chi}_{\text{eff}}^2 = 1.36; R - 1 = 0.01223$$

# 11.14 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239^{+0.00036}_{-0.00037}$	$\Omega_{\mathrm{m}}h^3$	$0.096^{+0.011}_{-0.010}$	$D_{\mathrm{M}}(0.15)$	$643^{+29}_{-29}$
$\Omega_{\mathrm{c}}h^2$	$0.1186^{+0.0099}_{-0.0092}$	$\sigma_8$	$0.808^{+0.025}_{-0.026}$	$H(0.38)$	$82.8^{+3.4}_{-3.3}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0024}_{-0.0024}$	$S_8$	$0.824^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(0.38)$	$1534^{+67}_{-66}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.015}_{-0.015}$	$H(0.51)$	$89.5^{+3.6}_{-3.4}$
$N_{\mathrm{eff}}$	$3.01^{+0.61}_{-0.57}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.018}_{-0.019}$	$D_{\mathrm{M}}(0.51)$	$1987^{+85}_{-83}$
$Y_{\mathrm{P}}$	$0.244^{+0.034}_{-0.036}$	$\sigma_8/h^{0.5}$	$0.984^{+0.021}_{-0.020}$	$H(0.61)$	$95.1^{+3.7}_{-3.6}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.036}_{-0.033}$	$r_{\mathrm{drag}}h$	$99.6^{+1.7}_{-1.7}$	$D_{\mathrm{M}}(0.61)$	$2312^{+98}_{-95}$
$n_{\mathrm{s}}$	$0.965^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.049}_{-0.048}$	$H(2.33)$	$235.5^{+8.2}_{-7.9}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0047}_{-0.0046}$	$z_{\mathrm{re}}$	$< 9.06$	$D_{\mathrm{M}}(2.33)$	$5778^{+220}_{-220}$
$A_{217}^{\mathrm{CIB}}$	$46^{+10}_{-10}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.077}_{-0.068}$	$f\sigma_8(0.15)$	$0.456^{+0.015}_{-0.015}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877^{+0.039}_{-0.041}$	$\sigma_8(0.15)$	$0.747^{+0.024}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+3.8}_{-3.8}$	$D_{40}$	$1230^{+29}_{-28}$	$f\sigma_8(0.38)$	$0.474^{+0.014}_{-0.015}$
$A_{100}^{\mathrm{PS}}$	$257^{+50}_{-50}$	$D_{220}$	$5738^{+72}_{-76}$	$\sigma_8(0.38)$	$0.662^{+0.021}_{-0.022}$
$A_{143}^{\mathrm{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-27}$	$f\sigma_8(0.51)$	$0.473^{+0.014}_{-0.014}$
$A_{143\times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.1^{+9.2}_{-9.0}$	$\sigma_8(0.51)$	$0.619^{+0.020}_{-0.020}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.4^{+3.5}_{-3.5}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.014}$
$A^{\mathrm{kSZ}}$	$< 7.93$	$n_{\mathrm{s},0.002}$	$0.965^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	$0.589^{+0.020}_{-0.020}$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.6}_{-3.6}$	$Y_{\mathrm{P}}$	$0.244^{+0.034}_{-0.036}$	$f\sigma_8(2.33)$	$0.297^{+0.010}_{-0.010}$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.5}_{-3.6}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246^{+0.034}_{-0.036}$	$\sigma_8(2.33)$	$0.306^{+0.011}_{-0.011}$
$A_{143\times 217}^{\mathrm{dust}TT}$	$18.6^{+6.4}_{-6.3}$	Age/Gyr	$13.83^{+0.53}_{-0.51}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$z_*$	$1089.73^{+0.85}_{-0.85}$	$f_{2000}^{143\times 217}$	$32^{+4}_{-4}$
$A_{100}^{\mathrm{dust}TE}$	$0.114^{+0.072}_{-0.075}$	$r_*$	$145.0^{+5.4}_{-5.3}$	$f_{2000}^{217}$	$106.7^{+4.0}_{-4.2}$
$A_{100\times 143}^{\mathrm{dust}TE}$	$0.135^{+0.058}_{-0.058}$	$100\theta_*$	$1.0413^{+0.0018}_{-0.0018}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 2.1)$
$A_{100\times 217}^{\mathrm{dust}TE}$	$0.48^{+0.17}_{-0.16}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.93^{+0.49}_{-0.49}$	$\chi_{\mathrm{lowl}}^2$	$23.4 (\nu: 0.7)$
$A_{143}^{\mathrm{dust}TE}$	$0.22^{+0.11}_{-0.11}$	$z_{\mathrm{drag}}$	$1059.8^{+1.5}_{-1.5}$	$\chi_{\mathrm{plik}}^2$	$2361.0 (\nu: 18.7)$
$A_{143\times 217}^{\mathrm{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$r_{\mathrm{drag}}$	$147.7^{+5.5}_{-5.4}$	$\chi_{6\mathrm{DF}}^2$	$0.068 (\nu: 0.0)$
$A_{217}^{\mathrm{dust}TE}$	$2.08^{+0.52}_{-0.51}$	$k_{\mathrm{D}}$	$0.1405^{+0.0051}_{-0.0049}$	$\chi_{\mathrm{MGS}}^2$	$1.23 (\nu: 0.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_{\mathrm{D}}$	$0.16064^{+0.00092}_{-0.00094}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 (\nu: 1.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\mathrm{eq}}$	$3389^{+64}_{-63}$	$\chi_{\mathrm{prior}}^2$	$11.6 (\nu: 10.3)$
$H_0$	$67.4^{+3.2}_{-3.0}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00032}_{-0.00031}$	$\chi_{\mathrm{BAO}}^2$	$6.3 (\nu: 0.9)$
$\Omega_{\Lambda}$	$0.688^{+0.013}_{-0.014}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.011}_{-0.011}$	$\chi_{\mathrm{CMB}}^2$	$2781.7 (\nu: 17.7)$
$\Omega_{\mathrm{m}}$	$0.312^{+0.014}_{-0.013}$	$100\theta_{\mathrm{s,eq}}$	$0.4507^{+0.0056}_{-0.0056}$		
$\Omega_{\mathrm{m}}h^2$	$0.1417^{+0.0099}_{-0.0093}$	$H(0.15)$	$72.7^{+3.3}_{-3.1}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2799.64; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.93; R - 1 = 0.02640$$

# 11.15 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225^{+0.00042}_{-0.00042}$	$\Omega_{\mathrm{m}}h^2$	$0.1400^{+0.0093}_{-0.0083}$	$100\theta_{\mathrm{s,eq}}$	$0.4476^{+0.0073}_{-0.0071}$
$\Omega_{\mathrm{c}}h^2$	$0.1171^{+0.0092}_{-0.0082}$	$\Omega_{\mathrm{m}}h^3$	$0.093^{+0.011}_{-0.010}$	$H(0.15)$	$71.4^{+3.7}_{-3.3}$
$100\theta_{\mathrm{MC}}$	$1.0415^{+0.0023}_{-0.0024}$	$\sigma_8$	$0.804^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.15)$	$656^{+33}_{-34}$
$\tau$	$0.055^{+0.013}_{-0.011}$	$S_8$	$0.831^{+0.025}_{-0.026}$	$H(0.38)$	$81.5^{+3.8}_{-3.4}$
$N_{\mathrm{eff}}$	$2.85^{+0.62}_{-0.55}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.455^{+0.014}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1561^{+73}_{-76}$
$Y_{\mathrm{P}}$	$0.248^{+0.033}_{-0.036}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.015}_{-0.015}$	$H(0.51)$	$88.3^{+3.9}_{-3.5}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.034}_{-0.029}$	$\sigma_8/h^{0.5}$	$0.989^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.51)$	$2021^{+92}_{-96}$
$n_{\mathrm{s}}$	$0.959^{+0.016}_{-0.017}$	$r_{\mathrm{drag}}h$	$98.5^{+2.4}_{-2.2}$	$H(0.61)$	$93.9^{+4.0}_{-3.6}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0048}_{-0.0046}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.046}_{-0.047}$	$D_{\mathrm{M}}(0.61)$	$2351^{+110}_{-110}$
$A_{217}^{\mathrm{CIB}}$	$46^{+10}_{-10}$	$z_{\mathrm{re}}$	$< 8.82$	$H(2.33)$	$233.8^{+8.1}_{-7.4}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.087^{+0.067}_{-0.064}$	$D_{\mathrm{M}}(2.33)$	$5850^{+220}_{-240}$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+3.8}_{-3.8}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870^{+0.037}_{-0.037}$	$f\sigma_8(0.15)$	$0.459^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{PS}}$	$256^{+50}_{-60}$	$D_{40}$	$1238^{+31}_{-29}$	$\sigma_8(0.15)$	$0.742^{+0.022}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$45^{+20}_{-20}$	$D_{220}$	$5734^{+73}_{-75}$	$f\sigma_8(0.38)$	$0.475^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2537^{+26}_{-25}$	$\sigma_8(0.38)$	$0.657^{+0.020}_{-0.019}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.9^{+9.2}_{-9.1}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.012}$
$A^{\mathrm{kSZ}}$	$< 7.90$	$D_{2000}$	$231.5^{+3.5}_{-3.6}$	$\sigma_8(0.51)$	$0.614^{+0.019}_{-0.019}$
$A_{100}^{\mathrm{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$n_{\mathrm{s},0.002}$	$0.959^{+0.016}_{-0.017}$	$f\sigma_8(0.61)$	$0.467^{+0.011}_{-0.012}$
$A_{143}^{\mathrm{dustTT}}$	$10.8^{+3.6}_{-3.5}$	$Y_{\mathrm{P}}$	$0.248^{+0.033}_{-0.036}$	$\sigma_8(0.61)$	$0.584^{+0.019}_{-0.018}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.5^{+6.3}_{-6.3}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249^{+0.034}_{-0.036}$	$f\sigma_8(2.33)$	$0.294^{+0.010}_{-0.0094}$
$A_{217}^{\mathrm{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$14.00^{+0.53}_{-0.56}$	$\sigma_8(2.33)$	$0.303^{+0.011}_{-0.010}$
$A_{100}^{\mathrm{dustTE}}$	$0.115^{+0.074}_{-0.074}$	$z_*$	$1089.81^{+0.85}_{-0.86}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$r_*$	$146.4^{+5.2}_{-5.4}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.48^{+0.16}_{-0.16}$	$100\theta_*$	$1.0417^{+0.0018}_{-0.0018}$	$f_{2000}^{217}$	$106.5^{+4.1}_{-4.2}$
$A_{143}^{\mathrm{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.05^{+0.48}_{-0.50}$	$\chi_{\mathrm{lensing}}^2$	$9.00 (\nu: 0.3)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$z_{\mathrm{drag}}$	$1059.5^{+1.6}_{-1.6}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$A_{217}^{\mathrm{dustTE}}$	$2.09^{+0.53}_{-0.53}$	$r_{\mathrm{drag}}$	$149.1^{+5.4}_{-5.6}$	$\chi_{\mathrm{lowl}}^2$	$24.3 (\nu: 1.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.1393^{+0.0050}_{-0.0046}$	$\chi_{\mathrm{plik}}^2$	$2359.7 (\nu: 17.9)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\mathrm{D}}$	$0.16053^{+0.00094}_{-0.00096}$	$\chi_{\mathrm{prior}}^2$	$11.4 (\nu: 10.0)$
$H_0$	$66.1^{+3.6}_{-3.3}$	$z_{\mathrm{eq}}$	$3423^{+82}_{-81}$	$\chi_{\mathrm{CMB}}^2$	$2789.9 (\nu: 18.5)$
$\Omega_{\Lambda}$	$0.679^{+0.020}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00029}_{-0.00026}$		
$\Omega_{\mathrm{m}}$	$0.321^{+0.020}_{-0.020}$	$100\theta_{\mathrm{eq}}$	$0.810^{+0.014}_{-0.014}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2801.36$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.85$ ;  $R - 1 = 0.01489$



# 11.16 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00037}_{-0.00037}$	$\Omega_m h^3$	$0.0950^{+0.011}_{-0.0095}$	$D_M(0.15)$	$645^{+28}_{-28}$
$\Omega_c h^2$	$0.1181^{+0.0091}_{-0.0085}$	$\sigma_8$	$0.807^{+0.022}_{-0.022}$	$H(0.38)$	$82.6^{+3.4}_{-3.2}$
$100\theta_{MC}$	$1.0412^{+0.0023}_{-0.0023}$	$S_8$	$0.824^{+0.023}_{-0.023}$	$D_M(0.38)$	$1538^{+65}_{-65}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.012}_{-0.013}$	$H(0.51)$	$89.3^{+3.5}_{-3.3}$
$N_{\text{eff}}$	$2.97^{+0.58}_{-0.54}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.015}_{-0.015}$	$D_M(0.51)$	$1993^{+82}_{-83}$
$Y_P$	$0.245^{+0.035}_{-0.035}$	$\sigma_8/h^{0.5}$	$0.985^{+0.017}_{-0.017}$	$H(0.61)$	$94.9^{+3.6}_{-3.4}$
$\ln(10^{10} A_s)$	$3.045^{+0.031}_{-0.030}$	$r_{\text{drag}} h$	$99.5^{+1.7}_{-1.6}$	$D_M(0.61)$	$2318^{+95}_{-95}$
$n_s$	$0.964^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.041}_{-0.041}$	$H(2.33)$	$235.1^{+7.9}_{-7.4}$
$y_{\text{cal}}$	$1.0008^{+0.0047}_{-0.0047}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$D_M(2.33)$	$5791^{+210}_{-210}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.101^{+0.066}_{-0.063}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.875^{+0.036}_{-0.037}$	$\sigma_8(0.15)$	$0.746^{+0.021}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$5.6^{+3.8}_{-3.8}$	$D_{40}$	$1231^{+28}_{-28}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-60}$	$D_{220}$	$5740^{+73}_{-76}$	$\sigma_8(0.38)$	$0.661^{+0.020}_{-0.019}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+25}_{-26}$	$f\sigma_8(0.51)$	$0.472^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.3^{+9.0}_{-9.1}$	$\sigma_8(0.51)$	$0.619^{+0.019}_{-0.018}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.5^{+3.5}_{-3.5}$	$f\sigma_8(0.61)$	$0.467^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	$< 7.89$	$n_{s,0.002}$	$0.964^{+0.014}_{-0.014}$	$\sigma_8(0.61)$	$0.589^{+0.018}_{-0.017}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.245^{+0.035}_{-0.035}$	$f\sigma_8(2.33)$	$0.2968^{+0.0093}_{-0.0091}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.6}_{-3.5}$	$Y_{\text{PBBN}}$	$0.247^{+0.035}_{-0.035}$	$\sigma_8(2.33)$	$0.3060^{+0.0099}_{-0.0097}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.4}$	Age/Gyr	$13.86^{+0.50}_{-0.50}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$z_*$	$1089.71^{+0.85}_{-0.85}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.072}_{-0.074}$	$r_*$	$145.3^{+5.1}_{-5.1}$	$f_{2000}^{217}$	$106.6^{+4.0}_{-4.2}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.059}_{-0.058}$	$100\theta_*$	$1.0414^{+0.0017}_{-0.0017}$	$\chi_{\text{lensing}}^2$	$9.03 (\nu: 0.2)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.46}_{-0.47}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 1.9)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$z_{\text{drag}}$	$1059.8^{+1.5}_{-1.5}$	$\chi_{\text{lowl}}^2$	$23.5 (\nu: 0.7)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$r_{\text{drag}}$	$148.0^{+5.2}_{-5.3}$	$\chi_{\text{plik}}^2$	$2360.5 (\nu: 17.8)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$k_D$	$0.1402^{+0.0048}_{-0.0046}$	$\chi_{6\text{DF}}^2$	$0.072 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16060^{+0.00092}_{-0.00094}$	$\chi_{\text{MGS}}^2$	$1.19 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3392^{+63}_{-62}$	$\chi_{\text{DR12BAO}}^2$	$5.1 (\nu: 1.4)$
$H_0$	$67.2^{+3.1}_{-2.9}$	$k_{\text{eq}}$	$0.01030^{+0.00029}_{-0.00027}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.1)$
$\Omega_\Lambda$	$0.688^{+0.014}_{-0.014}$	$100\theta_{\text{eq}}$	$0.815^{+0.011}_{-0.011}$	$\chi_{\text{CMB}}^2$	$2790.3 (\nu: 18.1)$
$\Omega_m$	$0.312^{+0.014}_{-0.014}$	$100\theta_{s,\text{eq}}$	$0.4504^{+0.0054}_{-0.0054}$	$\chi_{\text{BAO}}^2$	$6.4 (\nu: 0.9)$
$\Omega_m h^2$	$0.1412^{+0.0092}_{-0.0086}$	$H(0.15)$	$72.5^{+3.2}_{-3.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 2808.31; \Delta\bar{\chi}_{\text{eff}}^2 = 1.59; R - 1 = 0.02301$$

## 12 nrun

### 12.1 base\_nrun\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022178	$0.02216^{+0.00046}_{-0.00045}$	$\sigma_8 \Omega_m^{0.5}$	0.4595	$0.460^{+0.026}_{-0.025}$	$100\theta_{s,eq}$	0.4483	$0.4480^{+0.0091}_{-0.0089}$
$\Omega_c h^2$	0.12059	$0.1208^{+0.0041}_{-0.0041}$	$\sigma_8 \Omega_m^{0.25}$	0.6110	$0.612^{+0.023}_{-0.023}$	$H(0.15)$	72.32	$72.3^{+1.6}_{-1.5}$
$100\theta_{MC}$	1.04080	$1.04078^{+0.00095}_{-0.00092}$	$\sigma_8/h^{0.5}$	0.9928	$0.994^{+0.031}_{-0.031}$	$D_M(0.15)$	646.9	$648^{+16}_{-15}$
$\tau$	0.0531	$0.053^{+0.016}_{-0.016}$	$r_{drag}h$	98.52	$98.4^{+3.2}_{-3.1}$	$H(0.38)$	82.57	$82.5^{+1.1}_{-1.1}$
$\ln(10^{10} A_s)$	3.0432	$3.044^{+0.034}_{-0.035}$	$\langle d^2 \rangle^{1/2}$	2.447	$2.451^{+0.074}_{-0.075}$	$D_M(0.38)$	1540.8	$1542^{+31}_{-31}$
$n_s$	0.9635	$0.962^{+0.012}_{-0.012}$	$z_{re}$	7.60	$7.6^{+1.6}_{-1.7}$	$H(0.51)$	89.37	$89.34^{+0.89}_{-0.84}$
$dn_s/d \ln k$	$-288 \cdot 10^{-5}$	$-0.004^{+0.015}_{-0.015}$	$10^9 A_s$	2.097	$2.100^{+0.073}_{-0.072}$	$D_M(0.51)$	1994.7	$1996^{+36}_{-36}$
$y_{cal}$	1.00044	$1.0004^{+0.0048}_{-0.0050}$	$10^9 A_s e^{-2\tau}$	1.8860	$1.887^{+0.028}_{-0.028}$	$H(0.61)$	95.06	$95.03^{+0.71}_{-0.67}$
$A_{217}^{CIB}$	49.4	$48^{+10}_{-10}$	$D_{40}$	1224.5	$1225^{+42}_{-41}$	$D_M(0.61)$	2320.0	$2322^{+39}_{-39}$
$\xi^{tSZ \times CIB}$	0.24	—	$D_{220}$	5712	$5713^{+81}_{-81}$	$H(2.33)$	236.75	$236.8^{+2.6}_{-2.5}$
$A_{143}^{tSZ}$	7.04	$4.9^{+3.9}_{-4.0}$	$D_{810}$	2539.2	$2538^{+27}_{-28}$	$D_M(2.33)$	5774.7	$5776^{+32}_{-33}$
$A_{100}^{PS}$	256	$266^{+60}_{-60}$	$D_{1420}$	815.3	$814^{+10}_{-10}$	$f\sigma_8(0.15)$	0.4634	$0.464^{+0.024}_{-0.023}$
$A_{143}^{PS}$	49.3	$50^{+20}_{-20}$	$D_{2000}$	229.77	$229.1^{+3.8}_{-3.8}$	$\sigma_8(0.15)$	0.7498	$0.750^{+0.015}_{-0.015}$
$A_{143 \times 217}^{PS}$	45.4	$44^{+20}_{-20}$	$n_{s,0.002}$	0.9728	$0.976^{+0.046}_{-0.046}$	$f\sigma_8(0.38)$	0.4799	$0.480^{+0.019}_{-0.019}$
$A_{217}^{PS}$	118.7	$115^{+20}_{-20}$	$Y_P$	0.245317	$0.24530^{+0.00018}_{-0.00021}$	$\sigma_8(0.38)$	0.6637	$0.664^{+0.012}_{-0.012}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246643	$0.24663^{+0.00018}_{-0.00021}$	$f\sigma_8(0.51)$	0.4775	$0.478^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	8.89	$9.0^{+3.7}_{-3.5}$	$10^5 D/H$	2.622	$2.626^{+0.086}_{-0.085}$	$\sigma_8(0.51)$	0.6208	$0.621^{+0.011}_{-0.011}$
$A_{143}^{dustTT}$	10.86	$10.8^{+3.5}_{-3.5}$	Age/Gyr	13.823	$13.826^{+0.072}_{-0.073}$	$f\sigma_8(0.61)$	0.4718	$0.472^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.6}_{-6.5}$	$z_*$	1090.21	$1090.26^{+0.81}_{-0.80}$	$\sigma_8(0.61)$	0.5904	$0.590^{+0.010}_{-0.010}$
$A_{217}^{dustTT}$	94.4	$93^{+10}_{-10}$	$r_*$	144.43	$144.40^{+0.96}_{-0.97}$	$f\sigma_8(2.33)$	0.2974	$0.2972^{+0.0050}_{-0.0051}$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04100	$1.04098^{+0.00093}_{-0.00090}$	$\sigma_8(2.33)$	0.3062	$0.3060^{+0.0053}_{-0.0053}$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.874	$13.872^{+0.090}_{-0.090}$	$f_{2000}^{143}$	30.9	$32^{+6}_{-6}$
$H_0$	66.95	$66.9^{+1.8}_{-1.8}$	$z_{drag}$	1059.55	$1059.50^{+0.97}_{-0.98}$	$f_{2000}^{143 \times 217}$	33.62	$34^{+4}_{-4}$
$\Omega_\Lambda$	0.6801	$0.679^{+0.025}_{-0.026}$	$r_{drag}$	147.15	$147.13^{+0.98}_{-0.99}$	$f_{2000}^{217}$	108.00	$108.6^{+4.1}_{-4.0}$
$\Omega_m$	0.3199	$0.321^{+0.026}_{-0.025}$	$k_D$	0.14066	$0.1407^{+0.0011}_{-0.0011}$	$\chi_{simall}^2$	395.91	$397.1 (\nu: 1.5)$
$\Omega_m h^2$	0.14341	$0.1436^{+0.0040}_{-0.0039}$	$100\theta_D$	0.16099	$0.16101^{+0.00057}_{-0.00056}$	$\chi_{lowl}^2$	22.74	$23.1 (\nu: 2.2)$
$\Omega_m h^3$	0.09601	$0.09599^{+0.00097}_{-0.00096}$	$z_{eq}$	3412	$3415^{+95}_{-94}$	$\chi_{plik}^2$	759.4	$772.7 (\nu: 16.2)$
$\sigma_8$	0.8123	$0.812^{+0.018}_{-0.018}$	$k_{eq}$	0.010413	$0.01042^{+0.00029}_{-0.00029}$	$\chi_{prior}^2$	1.4	$7.3 (\nu: 6.7)$
$S_8$	0.8389	$0.841^{+0.048}_{-0.046}$	$100\theta_{eq}$	0.8110	$0.810^{+0.018}_{-0.017}$	$\chi_{CMB}^2$	1178.0	$1192.9 (\nu: 15.8)$

Best-fit  $\chi_{eff}^2 = 1179.45$ ;  $\Delta\chi_{eff}^2 = -0.13$ ;  $\bar{\chi}_{eff}^2 = 1200.22$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.64$ ;  $R - 1 = 0.00668$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.91 ( $\Delta$  0.03) commander\_dx12\_v3.2.29: 22.74 ( $\Delta$  -0.86) plik\_rd12\_HM\_v22\_TT: 759.37 ( $\Delta$  0.62)

## 12.2 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022255	$0.02225^{+0.00042}_{-0.00043}$	$\sigma_8/h^{0.5}$	0.9819	$0.982^{+0.023}_{-0.022}$	$D_M(0.38)$	1529.2	$1529^{+19}_{-18}$
$\Omega_c h^2$	0.11900	$0.1190^{+0.0024}_{-0.0024}$	$r_{\text{drag}} h$	99.76	$99.8^{+1.8}_{-1.8}$	$H(0.51)$	89.69	$89.69^{+0.59}_{-0.57}$
$100\theta_{\text{MC}}$	1.04101	$1.04100^{+0.00085}_{-0.00084}$	$\langle d^2 \rangle^{1/2}$	2.423	$2.424^{+0.056}_{-0.056}$	$D_M(0.51)$	1981.1	$1981^{+22}_{-22}$
$\tau$	0.0549	$0.055^{+0.017}_{-0.016}$	$z_{\text{re}}$	7.75	$7.7^{+1.6}_{-1.7}$	$H(0.61)$	95.29	$95.29^{+0.50}_{-0.49}$
$\ln(10^{10} A_s)$	3.0428	$3.043^{+0.035}_{-0.035}$	$10^9 A_s$	2.096	$2.098^{+0.075}_{-0.072}$	$D_M(0.61)$	2305.4	$2305^{+24}_{-23}$
$n_s$	0.9663	$0.9660^{+0.0088}_{-0.0087}$	$10^9 A_s e^{-2\tau}$	1.8784	$1.879^{+0.024}_{-0.024}$	$H(2.33)$	235.79	$235.8^{+1.6}_{-1.6}$
$dn_s/d \ln k$	-0.0034	$-0.004^{+0.015}_{-0.015}$	$D_{40}$	1216.8	$1218^{+39}_{-40}$	$D_M(2.33)$	5765.1	$5765^{+25}_{-25}$
$y_{\text{cal}}$	1.00027	$1.0006^{+0.0048}_{-0.0050}$	$D_{220}$	5717	$5721^{+80}_{-80}$	$f\sigma_8(0.15)$	0.4544	$0.454^{+0.015}_{-0.015}$
$A_{217}^{\text{CIB}}$	51.1	$48^{+10}_{-10}$	$D_{810}$	2536.4	$2537^{+27}_{-27}$	$\sigma_8(0.15)$	0.7463	$0.746^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.06	—	$D_{1420}$	815.0	$815.0^{+9.8}_{-10}$	$f\sigma_8(0.38)$	0.4730	$0.473^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	7.16	$5.0^{+4.0}_{-4.0}$	$D_{2000}$	229.65	$229.6^{+3.6}_{-3.7}$	$\sigma_8(0.38)$	0.6617	$0.662^{+0.012}_{-0.012}$
$A_{100}^{\text{PS}}$	258	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9773	$0.977^{+0.046}_{-0.045}$	$f\sigma_8(0.51)$	0.4718	$0.472^{+0.012}_{-0.011}$
$A_{143}^{\text{PS}}$	46.5	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245348	$0.24534^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	0.6193	$0.619^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	40.2	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246675	$0.24667^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	0.4669	$0.467^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	115.5	$114^{+20}_{-20}$	$10^5 D/H$	2.607	$2.608^{+0.082}_{-0.077}$	$\sigma_8(0.61)$	0.5893	$0.589^{+0.010}_{-0.010}$
$A^{\text{kSZ}}$	0.1	—	Age/Gyr	13.802	$13.802^{+0.058}_{-0.058}$	$f\sigma_8(2.33)$	0.2972	$0.2972^{+0.0051}_{-0.0051}$
$A_{100}^{\text{dustTT}}$	8.98	$9.0^{+3.6}_{-3.5}$	$z_*$	1089.98	$1089.98^{+0.62}_{-0.59}$	$\sigma_8(2.33)$	0.3065	$0.3065^{+0.0054}_{-0.0053}$
$A_{143}^{\text{dustTT}}$	10.79	$10.8^{+3.5}_{-3.5}$	$r_*$	144.78	$144.79^{+0.66}_{-0.65}$	$f_{2000}^{143}$	31.1	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.0	$18.4^{+6.4}_{-6.4}$	$100\theta_*$	1.04120	$1.04120^{+0.00083}_{-0.00083}$	$f_{2000}^{143 \times 217}$	33.66	$34^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	93.6	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.905	$13.906^{+0.065}_{-0.064}$	$f_{2000}^{217}$	108.00	$108.3^{+4.0}_{-4.0}$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.59	$1059.59^{+0.95}_{-0.99}$	$\chi_{\text{small}}^2$	396.07	$397.2 (\nu: 1.7)$
$c_{217}$	0.99828	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.49	$147.49^{+0.74}_{-0.73}$	$\chi_{\text{lowl}}^2$	22.13	$22.6 (\nu: 1.7)$
$H_0$	67.64	$67.6^{+1.1}_{-1.1}$	$k_{\text{D}}$	0.14036	$0.14035^{+0.00097}_{-0.00097}$	$\chi_{\text{plik}}^2$	760.4	$773.1 (\nu: 16.1)$
$\Omega_{\Lambda}$	0.6898	$0.690^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	0.16096	$0.16097^{+0.00057}_{-0.00056}$	$\chi_{6\text{DF}}^2$	0.022	$0.058 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3102	$0.310^{+0.015}_{-0.014}$	$z_{\text{eq}}$	3376	$3375^{+57}_{-56}$	$\chi_{\text{MGS}}^2$	1.28	$1.36 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	0.14190	$0.1419^{+0.0024}_{-0.0023}$	$k_{\text{eq}}$	0.010303	$0.01030^{+0.00017}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	4.20	$4.8 (\nu: 1.3)$
$\Omega_{\text{m}} h^3$	0.09598	$0.09597^{+0.00099}_{-0.00099}$	$100\theta_{\text{eq}}$	0.8178	$0.818^{+0.010}_{-0.010}$	$\chi_{\text{prior}}^2$	1.6	$7.4 (\nu: 6.9)$
$\sigma_8$	0.8075	$0.808^{+0.015}_{-0.015}$	$100\theta_{s,\text{eq}}$	0.4518	$0.4519^{+0.0054}_{-0.0054}$	$\chi_{\text{BAO}}^2$	5.50	$6.2 (\nu: 0.9)$
$S_8$	0.8211	$0.821^{+0.029}_{-0.028}$	$H(0.15)$	72.90	$72.91^{+0.93}_{-0.92}$	$\chi_{\text{CMB}}^2$	1178.6	$1192.9 (\nu: 15.5)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4497	$0.450^{+0.016}_{-0.016}$	$D_M(0.15)$	641.0	$641.0^{+9.2}_{-9.0}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6026	$0.603^{+0.016}_{-0.016}$	$H(0.38)$	82.99	$82.99^{+0.70}_{-0.69}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.71$ ;  $\Delta\chi_{\text{eff}}^2 = -0.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.47$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.44$ ;  $R - 1 = 0.01307$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.28 ( $\Delta$  0.00) DR12BAO: 4.20 ( $\Delta$  0.02) CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 396.07 ( $\Delta$  0.19) commander\_dx12\_v3\_2\_29: 22.13 ( $\Delta$  -0.70) plik\_rd12\_HM\_v22\_TT: 760.40 ( $\Delta$  0.30)

### 12.3 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022169	$0.02218^{+0.00045}_{-0.00044}$	$\sigma_8 \Omega_m^{0.25}$	0.6087	$0.609^{+0.015}_{-0.015}$	$D_M(0.15)$	646.0	$646^{+12}_{-12}$
$\Omega_c h^2$	0.12026	$0.1202^{+0.0032}_{-0.0031}$	$\sigma_8/h^{0.5}$	0.9898	$0.990^{+0.021}_{-0.021}$	$H(0.38)$	82.63	$82.66^{+0.91}_{-0.89}$
$100\theta_{MC}$	1.04081	$1.04082^{+0.00090}_{-0.00090}$	$r_{drag}h$	98.75	$98.8^{+2.4}_{-2.4}$	$D_M(0.38)$	1539.0	$1538^{+25}_{-24}$
$\tau$	0.0527	$0.053^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.445	$2.443^{+0.052}_{-0.053}$	$H(0.51)$	89.41	$89.44^{+0.73}_{-0.71}$
$\ln(10^{10} A_s)$	3.0407	$3.043^{+0.030}_{-0.031}$	$z_{re}$	7.56	$7.6^{+1.5}_{-1.7}$	$D_M(0.51)$	1992.6	$1992^{+29}_{-28}$
$n_s$	0.9634	$0.963^{+0.010}_{-0.010}$	$10^9 A_s$	2.092	$2.096^{+0.064}_{-0.065}$	$H(0.61)$	95.08	$95.10^{+0.61}_{-0.60}$
$dn_s/d \ln k$	-0.0016	$-0.003^{+0.014}_{-0.015}$	$10^9 A_s e^{-2\tau}$	1.8827	$1.884^{+0.024}_{-0.024}$	$D_M(0.61)$	2317.8	$2317^{+31}_{-31}$
$y_{cal}$	1.00017	$1.0005^{+0.0049}_{-0.0049}$	$D_{40}$	1227.4	$1225^{+40}_{-39}$	$H(2.33)$	236.52	$236.5^{+1.9}_{-1.9}$
$A_{217}^{CIB}$	51.0	$48^{+10}_{-10}$	$D_{220}$	5713	$5716^{+80}_{-81}$	$D_M(2.33)$	5774.2	$5773^{+29}_{-29}$
$\xi^{tSZ \times CIB}$	0.01	—	$D_{810}$	2535.9	$2537^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4612	$0.461^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	7.22	$5.0^{+4.0}_{-4.1}$	$D_{1420}$	814.3	$814.2^{+9.9}_{-10}$	$\sigma_8(0.15)$	0.7483	$0.748^{+0.011}_{-0.011}$
$A_{100}^{PS}$	258	$265^{+60}_{-50}$	$D_{2000}$	229.47	$229.3^{+3.7}_{-3.9}$	$f\sigma_8(0.38)$	0.4781	$0.478^{+0.012}_{-0.012}$
$A_{143}^{PS}$	45.8	$50^{+20}_{-20}$	$n_{s,0.002}$	0.9684	$0.973^{+0.046}_{-0.045}$	$\sigma_8(0.38)$	0.6626	$0.6627^{+0.0095}_{-0.0096}$
$A_{143 \times 217}^{PS}$	39.3	$43^{+20}_{-20}$	$Y_P$	0.245313	$0.24531^{+0.00018}_{-0.00021}$	$f\sigma_8(0.51)$	0.4759	$0.476^{+0.011}_{-0.011}$
$A_{217}^{PS}$	115.9	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246639	$0.24664^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	0.6198	$0.6199^{+0.0090}_{-0.0092}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.624	$2.623^{+0.086}_{-0.083}$	$f\sigma_8(0.61)$	0.4704	$0.4702^{+0.0093}_{-0.0095}$
$A_{100}^{dustTT}$	8.95	$9.0^{+3.6}_{-3.5}$	Age/Gyr	13.822	$13.820^{+0.066}_{-0.066}$	$\sigma_8(0.61)$	0.5896	$0.5897^{+0.0087}_{-0.0088}$
$A_{143}^{dustTT}$	10.82	$10.7^{+3.5}_{-3.4}$	$z_*$	1090.20	$1090.18^{+0.72}_{-0.71}$	$f\sigma_8(2.33)$	0.29700	$0.2971^{+0.0046}_{-0.0046}$
$A_{143 \times 217}^{dustTT}$	19.0	$18.4^{+6.4}_{-6.5}$	$r_*$	144.52	$144.53^{+0.76}_{-0.75}$	$\sigma_8(2.33)$	0.3059	$0.3060^{+0.0051}_{-0.0051}$
$A_{217}^{dustTT}$	93.8	$93^{+10}_{-10}$	$100\theta_*$	1.04102	$1.04103^{+0.00088}_{-0.00088}$	$f_{2000}^{143}$	31.2	$32^{+6}_{-6}$
$c_{100}$	0.99962	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	13.882	$13.884^{+0.071}_{-0.070}$	$f_{2000}^{143 \times 217}$	33.71	$34^{+4}_{-4}$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.47	$1059.50^{+0.97}_{-1.0}$	$f_{2000}^{217}$	108.15	$108.5^{+4.0}_{-4.0}$
$H_0$	67.06	$67.1^{+1.4}_{-1.4}$	$r_{drag}$	147.25	$147.26^{+0.79}_{-0.78}$	$\chi_{lensing}^2$	8.93	9.59 ( $\nu$ : 0.5)
$\Omega_\Lambda$	0.6819	$0.682^{+0.019}_{-0.020}$	$k_D$	0.14055	$0.14054^{+0.00096}_{-0.00098}$	$\chi_{small}^2$	395.89	397.0 ( $\nu$ : 1.3)
$\Omega_m$	0.3181	$0.318^{+0.020}_{-0.019}$	$100\theta_D$	0.16102	$0.16101^{+0.00059}_{-0.00057}$	$\chi_{lowl}^2$	23.13	23.2 ( $\nu$ : 2.2)
$\Omega_m h^2$	0.14307	$0.1430^{+0.0030}_{-0.0029}$	$z_{eq}$	3404	$3402^{+72}_{-70}$	$\chi_{plik}^2$	758.9	772.1 ( $\nu$ : 15.2)
$\Omega_m h^3$	0.09595	$0.09595^{+0.00097}_{-0.00096}$	$k_{eq}$	0.010388	$0.01038^{+0.00022}_{-0.00021}$	$\chi_{prior}^2$	1.6	7.3 ( $\nu$ : 6.8)
$\sigma_8$	0.8105	$0.811^{+0.012}_{-0.013}$	$100\theta_{eq}$	0.8124	$0.813^{+0.013}_{-0.013}$	$\chi_{CMB}^2$	1186.9	1201.9 ( $\nu$ : 15.7)
$S_8$	0.8347	$0.834^{+0.033}_{-0.032}$	$100\theta_{s,eq}$	0.4491	$0.4493^{+0.0069}_{-0.0069}$			
$\sigma_8 \Omega_m^{0.5}$	0.4572	$0.457^{+0.018}_{-0.017}$	$H(0.15)$	72.41	$72.4^{+1.2}_{-1.2}$			

Best-fit  $\chi_{eff}^2 = 1188.47$ ;  $\Delta\chi_{eff}^2 = -0.10$ ;  $\bar{\chi}_{eff}^2 = 1209.27$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.86$ ;  $R - 1 = 0.01153$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.93 ( $\Delta$  0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 ( $\Delta$  0.02) commander\_dx12\_v3.2\_29: 23.13 ( $\Delta$  -0.10) plik\_rd12\_HM\_v22\_TT: 758.91 ( $\Delta$  -0.41)

## 12.4 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022258	$0.02225^{+0.00042}_{-0.00043}$	$\sigma_8/h^{0.5}$	0.9836	$0.984^{+0.017}_{-0.017}$	$D_M(0.38)$	1529.3	$1530^{+17}_{-17}$
$\Omega_c h^2$	0.11902	$0.1191^{+0.0022}_{-0.0021}$	$r_{\text{drag}} h$	99.74	$99.7^{+1.6}_{-1.6}$	$H(0.51)$	89.68	$89.67^{+0.55}_{-0.55}$
$100\theta_{\text{MC}}$	1.04101	$1.04099^{+0.00083}_{-0.00084}$	$\langle d^2 \rangle^{1/2}$	2.4298	$2.431^{+0.046}_{-0.046}$	$D_M(0.51)$	1981.2	$1982^{+20}_{-20}$
$\tau$	0.0553	$0.056^{+0.015}_{-0.015}$	$z_{\text{re}}$	7.79	$7.9^{+1.4}_{-1.5}$	$H(0.61)$	95.291	$95.28^{+0.48}_{-0.48}$
$\ln(10^{10} A_s)$	3.0442	$3.046^{+0.031}_{-0.031}$	$10^9 A_s$	2.099	$2.104^{+0.065}_{-0.064}$	$D_M(0.61)$	2305.6	$2306^{+22}_{-22}$
$n_s$	0.9672	$0.9657^{+0.0084}_{-0.0084}$	$10^9 A_s e^{-2\tau}$	1.8795	$1.880^{+0.022}_{-0.022}$	$H(2.33)$	235.81	$235.8^{+1.4}_{-1.4}$
$dn_s/d \ln k$	-0.0008	$-0.003^{+0.014}_{-0.015}$	$D_{40}$	1223.0	$1221^{+38}_{-38}$	$D_M(2.33)$	5765.1	$5766^{+25}_{-25}$
$y_{\text{cal}}$	1.00066	$1.0007^{+0.0049}_{-0.0049}$	$D_{220}$	5723	$5725^{+79}_{-78}$	$f\sigma_8(0.15)$	0.4553	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	48.8	$48^{+10}_{-10}$	$D_{810}$	2538.8	$2538^{+27}_{-27}$	$\sigma_8(0.15)$	0.7476	$0.748^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.32	—	$D_{1420}$	816.8	$815.3^{+9.8}_{-10}$	$f\sigma_8(0.38)$	0.4739	$0.4741^{+0.0099}_{-0.0099}$
$A_{143}^{\text{tSZ}}$	7.02	$5.0^{+3.9}_{-4.1}$	$D_{2000}$	230.43	$229.8^{+3.7}_{-3.7}$	$\sigma_8(0.38)$	0.6628	$0.6629^{+0.0097}_{-0.0096}$
$A_{100}^{\text{PS}}$	254	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9699	$0.975^{+0.046}_{-0.044}$	$f\sigma_8(0.51)$	0.4726	$0.4728^{+0.0088}_{-0.0088}$
$A_{143}^{\text{PS}}$	49.0	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245350	$0.24534^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	0.6204	$0.6204^{+0.0091}_{-0.0090}$
$A_{143 \times 217}^{\text{PS}}$	46.7	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246676	$0.24667^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	0.4677	$0.4679^{+0.0082}_{-0.0082}$
$A_{217}^{\text{PS}}$	119.1	$114^{+20}_{-20}$	$10^5 D/H$	2.607	$2.609^{+0.082}_{-0.076}$	$\sigma_8(0.61)$	0.5903	$0.5903^{+0.0088}_{-0.0086}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.802	$13.803^{+0.058}_{-0.057}$	$f\sigma_8(2.33)$	0.29769	$0.2977^{+0.0045}_{-0.0045}$
$A_{100}^{\text{dustTT}}$	8.86	$9.0^{+3.6}_{-3.5}$	$z_*$	1089.98	$1089.99^{+0.62}_{-0.60}$	$\sigma_8(2.33)$	0.30696	$0.3069^{+0.0049}_{-0.0048}$
$A_{143}^{\text{dustTT}}$	10.79	$10.7^{+3.5}_{-3.5}$	$r_*$	144.77	$144.76^{+0.59}_{-0.58}$	$f_{2000}^{143}$	30.1	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.4^{+6.3}_{-6.5}$	$100\theta_*$	1.04120	$1.04119^{+0.00083}_{-0.00082}$	$f_{2000}^{143 \times 217}$	33.07	$34^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.904	$13.903^{+0.059}_{-0.057}$	$f_{2000}^{217}$	107.56	$108.2^{+4.0}_{-4.0}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.59	$1059.59^{+0.95}_{-0.96}$	$\chi_{\text{lensing}}^2$	8.88	$9.35 (\nu: 0.3)$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.48	$147.47^{+0.67}_{-0.66}$	$\chi_{\text{small}}^2$	396.19	$397.2 (\nu: 1.7)$
$H_0$	67.63	$67.60^{+0.97}_{-0.98}$	$k_{\text{D}}$	0.14038	$0.14038^{+0.00091}_{-0.00092}$	$\chi_{\text{lowl}}^2$	22.70	$22.8 (\nu: 1.8)$
$\Omega_\Lambda$	0.6897	$0.689^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	0.16096	$0.16097^{+0.00056}_{-0.00056}$	$\chi_{\text{plik}}^2$	759.9	$772.4 (\nu: 15.2)$
$\Omega_{\text{m}}$	0.3103	$0.311^{+0.013}_{-0.013}$	$z_{\text{eq}}$	3376	$3378^{+50}_{-51}$	$\chi_{\text{6DF}}^2$	0.023	$0.056 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.14193	$0.1420^{+0.0021}_{-0.0021}$	$k_{\text{eq}}$	0.010305	$0.01031^{+0.00015}_{-0.00015}$	$\chi_{\text{MGS}}^2$	1.28	$1.30 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	0.09599	$0.09598^{+0.00097}_{-0.00096}$	$100\theta_{\text{eq}}$	0.8177	$0.8175^{+0.0092}_{-0.0092}$	$\chi_{\text{DR12BAO}}^2$	4.23	$4.8 (\nu: 1.1)$
$\sigma_8$	0.8089	$0.809^{+0.012}_{-0.012}$	$100\theta_{s,\text{eq}}$	0.45178	$0.4517^{+0.0048}_{-0.0047}$	$\chi_{\text{prior}}^2$	1.4	$7.4 (\nu: 6.9)$
$S_8$	0.8227	$0.823^{+0.024}_{-0.023}$	$H(0.15)$	72.90	$72.87^{+0.84}_{-0.85}$	$\chi_{\text{CMB}}^2$	1187.7	$1201.8 (\nu: 15.5)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4506	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	641.1	$641.4^{+8.5}_{-8.3}$	$\chi_{\text{BAO}}^2$	5.53	$6.1 (\nu: 0.7)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6037	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	82.98	$82.96^{+0.64}_{-0.65}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.63$ ;  $\Delta\chi_{\text{eff}}^2 = -0.05$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.34$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.61$ ;  $R - 1 = 0.01612$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.28 ( $\Delta$  0.06) DR12BAO: 4.23 ( $\Delta$  -0.15) CMB - smicadx12.Dec5.ftl\_mv2.ndclpp.p.teb.consext8: 8.88 ( $\Delta$  0.01) simall\_100x143\_offlike5.EE.Aplanck 396.19 ( $\Delta$  0.09) commander\_dx12.v3.2.29: 22.70 ( $\Delta$  -0.26) plik\_rd12\_HM.v22.TT: 759.95 ( $\Delta$  0.14)

## 12.5 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02217^{+0.00045}_{-0.00044}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.461^{+0.026}_{-0.025}$	$100\theta_{\mathrm{s,eq}}$	$0.4482^{+0.0091}_{-0.0089}$
$\Omega_{\mathrm{c}} h^2$	$0.1207^{+0.0041}_{-0.0041}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.612^{+0.023}_{-0.023}$	$H(0.15)$	$72.3^{+1.5}_{-1.5}$
$100\theta_{\mathrm{MC}}$	$1.04079^{+0.00094}_{-0.00091}$	$\sigma_8/h^{0.5}$	$0.994^{+0.031}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$647^{+16}_{-15}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$r_{\mathrm{drag}} h$	$98.5^{+3.2}_{-3.1}$	$H(0.38)$	$82.6^{+1.1}_{-1.1}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.030}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.452^{+0.073}_{-0.074}$	$D_{\mathrm{M}}(0.38)$	$1542^{+31}_{-31}$
$n_{\mathrm{s}}$	$0.962^{+0.012}_{-0.011}$	$z_{\mathrm{re}}$	$< 8.99$	$H(0.51)$	$89.36^{+0.88}_{-0.83}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.005^{+0.015}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.063}_{-0.060}$	$D_{\mathrm{M}}(0.51)$	$1996^{+36}_{-36}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0048}_{-0.0050}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.887^{+0.028}_{-0.028}$	$H(0.61)$	$95.05^{+0.71}_{-0.66}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1224^{+41}_{-41}$	$D_{\mathrm{M}}(0.61)$	$2321^{+38}_{-39}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5713^{+81}_{-81}$	$H(2.33)$	$236.8^{+2.6}_{-2.5}$
$A_{143}^{\mathrm{tSZ}}$	$4.9^{+3.9}_{-4.0}$	$D_{810}$	$2538^{+27}_{-28}$	$D_{\mathrm{M}}(2.33)$	$5775^{+31}_{-33}$
$A_{100}^{\mathrm{PS}}$	$266^{+60}_{-60}$	$D_{1420}$	$814^{+10}_{-10}$	$f\sigma_8(0.15)$	$0.464^{+0.024}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$50^{+20}_{-20}$	$D_{2000}$	$229.2^{+3.8}_{-3.8}$	$\sigma_8(0.15)$	$0.751^{+0.014}_{-0.014}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.977^{+0.046}_{-0.045}$	$f\sigma_8(0.38)$	$0.481^{+0.018}_{-0.019}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00018}_{-0.00021}$	$\sigma_8(0.38)$	$0.664^{+0.011}_{-0.010}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00018}_{-0.00021}$	$f\sigma_8(0.51)$	$0.478^{+0.016}_{-0.016}$
$A_{100}^{\mathrm{dustTT}}$	$9.0^{+3.7}_{-3.5}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.624^{+0.085}_{-0.084}$	$\sigma_8(0.51)$	$0.621^{+0.010}_{-0.0093}$
$A_{143}^{\mathrm{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.824^{+0.070}_{-0.073}$	$f\sigma_8(0.61)$	$0.473^{+0.014}_{-0.014}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$z_*$	$1090.24^{+0.80}_{-0.79}$	$\sigma_8(0.61)$	$0.5911^{+0.0095}_{-0.0086}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.41^{+0.96}_{-0.97}$	$f\sigma_8(2.33)$	$0.2977^{+0.0044}_{-0.0042}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04099^{+0.00092}_{-0.00090}$	$\sigma_8(2.33)$	$0.3065^{+0.0046}_{-0.0044}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.872^{+0.089}_{-0.090}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$H_0$	$66.9^{+1.8}_{-1.8}$	$z_{\mathrm{drag}}$	$1059.52^{+0.99}_{-0.96}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$\Omega_{\Lambda}$	$0.679^{+0.025}_{-0.026}$	$r_{\mathrm{drag}}$	$147.14^{+0.98}_{-0.99}$	$f_{2000}^{217}$	$108.6^{+4.1}_{-4.0}$
$\Omega_{\mathrm{m}}$	$0.321^{+0.026}_{-0.025}$	$k_{\mathrm{D}}$	$0.1407^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.5)$
$\Omega_{\mathrm{m}} h^2$	$0.1435^{+0.0040}_{-0.0039}$	$100\theta_{\mathrm{D}}$	$0.16100^{+0.00057}_{-0.00056}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 2.0)$
$\Omega_{\mathrm{m}} h^3$	$0.09601^{+0.00096}_{-0.00096}$	$z_{\mathrm{eq}}$	$3414^{+94}_{-94}$	$\chi_{\mathrm{plik}}^2$	$772.6 (\nu: 16.2)$
$\sigma_8$	$0.813^{+0.017}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01042^{+0.00029}_{-0.00029}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.8)$
$S_8$	$0.841^{+0.048}_{-0.046}$	$100\theta_{\mathrm{eq}}$	$0.811^{+0.018}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	$1192.6 (\nu: 15.4)$

$\bar{\chi}_{\mathrm{eff}}^2 = 1199.98$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.66$ ;  $R - 1 = 0.00614$

## 12.6 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02226^{+0.00042}_{-0.00042}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$D_M(0.38)$	$1529^{+18}_{-18}$
$\Omega_c h^2$	$0.1190^{+0.0024}_{-0.0024}$	$r_{\text{drag}} h$	$99.8^{+1.8}_{-1.8}$	$H(0.51)$	$89.70^{+0.58}_{-0.57}$
$100\theta_{\text{MC}}$	$1.04101^{+0.00084}_{-0.00083}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.054}_{-0.054}$	$D_M(0.51)$	$1981^{+22}_{-21}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$z_{\text{re}}$	$< 9.07$	$H(0.61)$	$95.30^{+0.50}_{-0.49}$
$\ln(10^{10} A_s)$	$3.046^{+0.030}_{-0.030}$	$10^9 A_s$	$2.103^{+0.064}_{-0.063}$	$D_M(0.61)$	$2305^{+23}_{-23}$
$n_s$	$0.9661^{+0.0088}_{-0.0088}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.024}_{-0.024}$	$H(2.33)$	$235.8^{+1.6}_{-1.6}$
$dn_s/d \ln k$	$-0.004^{+0.015}_{-0.015}$	$D_{40}$	$1218^{+39}_{-40}$	$D_M(2.33)$	$5765^{+25}_{-25}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0050}$	$D_{220}$	$5721^{+80}_{-80}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+28}_{-28}$	$\sigma_8(0.15)$	$0.747^{+0.013}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.0^{+9.8}_{-10}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$5.0^{+4.0}_{-4.0}$	$D_{2000}$	$229.6^{+3.6}_{-3.7}$	$\sigma_8(0.38)$	$0.662^{+0.011}_{-0.010}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$n_{s,0.002}$	$0.978^{+0.046}_{-0.045}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.010}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24535^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	$0.6200^{+0.0098}_{-0.0095}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24667^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0096}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.607^{+0.081}_{-0.076}$	$\sigma_8(0.61)$	$0.5900^{+0.0093}_{-0.0089}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.801^{+0.059}_{-0.057}$	$f\sigma_8(2.33)$	$0.2976^{+0.0046}_{-0.0044}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.5}$	$z_*$	$1089.97^{+0.62}_{-0.59}$	$\sigma_8(2.33)$	$0.3068^{+0.0048}_{-0.0046}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$r_*$	$144.78^{+0.66}_{-0.65}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.3}_{-6.5}$	$100\theta_*$	$1.04120^{+0.00083}_{-0.00083}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.065}_{-0.064}$	$f_{2000}^{217}$	$108.3^{+4.1}_{-4.0}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.61^{+0.94}_{-0.97}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.8)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.49^{+0.74}_{-0.73}$	$\chi_{\text{lowl}}^2$	$22.6 (\nu: 1.6)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$k_{\text{D}}$	$0.14036^{+0.00097}_{-0.00097}$	$\chi_{\text{plik}}^2$	$773.0 (\nu: 16.0)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	$0.16096^{+0.00056}_{-0.00056}$	$\chi_{6\text{DF}}^2$	$0.057 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.310^{+0.015}_{-0.014}$	$z_{\text{eq}}$	$3375^{+57}_{-56}$	$\chi_{\text{MGS}}^2$	$1.36 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1419^{+0.0024}_{-0.0023}$	$k_{\text{eq}}$	$0.01030^{+0.00017}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.3)$
$\Omega_{\text{m}} h^3$	$0.09598^{+0.00099}_{-0.00098}$	$100\theta_{\text{eq}}$	$0.818^{+0.010}_{-0.010}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 6.9)$
$\sigma_8$	$0.808^{+0.015}_{-0.013}$	$100\theta_{\text{s,eq}}$	$0.4519^{+0.0054}_{-0.0054}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.9)$
$S_8$	$0.822^{+0.029}_{-0.028}$	$H(0.15)$	$72.92^{+0.92}_{-0.92}$	$\chi_{\text{CMB}}^2$	$1192.6 (\nu: 15.1)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.016}_{-0.015}$	$D_M(0.15)$	$640.9^{+9.2}_{-8.9}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.016}_{-0.015}$	$H(0.38)$	$83.00^{+0.70}_{-0.69}$		

$$\bar{\chi}_{\text{eff}}^2 = 1206.22; \Delta \bar{\chi}_{\text{eff}}^2 = 0.46; R - 1 = 0.01231$$

## 12.7 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02219^{+0.00044}_{-0.00044}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	$645^{+12}_{-12}$
$\Omega_{\mathrm{c}} h^2$	$0.1200^{+0.0030}_{-0.0030}$	$\sigma_8/h^{0.5}$	$0.990^{+0.021}_{-0.021}$	$H(0.38)$	$82.70^{+0.88}_{-0.85}$
$100\theta_{\mathrm{MC}}$	$1.04084^{+0.00090}_{-0.00089}$	$r_{\mathrm{drag}} h$	$98.9^{+2.4}_{-2.3}$	$D_{\mathrm{M}}(0.38)$	$1537^{+23}_{-23}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.444^{+0.052}_{-0.053}$	$H(0.51)$	$89.47^{+0.71}_{-0.68}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.027}_{-0.026}$	$z_{\mathrm{re}}$	$< 8.89$	$D_{\mathrm{M}}(0.51)$	$1991^{+27}_{-27}$
$n_{\mathrm{s}}$	$0.9635^{+0.0099}_{-0.0098}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.056}_{-0.054}$	$H(0.61)$	$95.12^{+0.60}_{-0.57}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.003^{+0.015}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.61)$	$2316^{+30}_{-30}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0049}_{-0.0050}$	$D_{40}$	$1224^{+39}_{-39}$	$H(2.33)$	$236.4^{+1.9}_{-1.9}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5717^{+80}_{-81}$	$D_{\mathrm{M}}(2.33)$	$5772^{+29}_{-29}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2537^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{tSZ}}$	$5.0^{+4.0}_{-4.1}$	$D_{1420}$	$814.2^{+9.9}_{-10}$	$\sigma_8(0.15)$	$0.749^{+0.010}_{-0.010}$
$A_{100}^{\mathrm{PS}}$	$265^{+60}_{-60}$	$D_{2000}$	$229.3^{+3.7}_{-3.9}$	$f\sigma_8(0.38)$	$0.478^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$50^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.974^{+0.046}_{-0.044}$	$\sigma_8(0.38)$	$0.6634^{+0.0090}_{-0.0084}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24532^{+0.00017}_{-0.00021}$	$f\sigma_8(0.51)$	$0.476^{+0.011}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$114^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00017}_{-0.00021}$	$\sigma_8(0.51)$	$0.6206^{+0.0085}_{-0.0078}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.620^{+0.084}_{-0.081}$	$f\sigma_8(0.61)$	$0.4704^{+0.0093}_{-0.0094}$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.6}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.818^{+0.065}_{-0.065}$	$\sigma_8(0.61)$	$0.5904^{+0.0082}_{-0.0074}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.5}_{-3.4}$	$z_{*}$	$1090.15^{+0.70}_{-0.70}$	$f\sigma_8(2.33)$	$0.2975^{+0.0041}_{-0.0039}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4^{+6.4}_{-6.5}$	$r_{*}$	$144.56^{+0.74}_{-0.74}$	$\sigma_8(2.33)$	$0.3065^{+0.0045}_{-0.0043}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$100\theta_{*}$	$1.04104^{+0.00087}_{-0.00088}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.886^{+0.070}_{-0.069}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.52^{+0.98}_{-1.0}$	$f_{2000}^{217}$	$108.4^{+4.0}_{-4.0}$
$H_0$	$67.2^{+1.4}_{-1.3}$	$r_{\mathrm{drag}}$	$147.28^{+0.78}_{-0.78}$	$\chi_{\mathrm{lensing}}^2$	$9.58 (\nu: 0.5)$
$\Omega_{\Lambda}$	$0.683^{+0.018}_{-0.019}$	$k_{\mathrm{D}}$	$0.14053^{+0.00096}_{-0.00098}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.317^{+0.019}_{-0.018}$	$100\theta_{\mathrm{D}}$	$0.16100^{+0.00057}_{-0.00056}$	$\chi_{\mathrm{lowl}}^2$	$23.1 (\nu: 2.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1429^{+0.0029}_{-0.0029}$	$z_{\mathrm{eq}}$	$3399^{+70}_{-69}$	$\chi_{\mathrm{plik}}^2$	$772.1 (\nu: 15.3)$
$\Omega_{\mathrm{m}} h^3$	$0.09596^{+0.00097}_{-0.00095}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.811^{+0.012}_{-0.012}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.013}_{-0.013}$	$\chi_{\mathrm{CMB}}^2$	$1201.7 (\nu: 15.3)$
$S_8$	$0.834^{+0.033}_{-0.032}$	$100\theta_{\mathrm{s,eq}}$	$0.4495^{+0.0067}_{-0.0066}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.457^{+0.018}_{-0.017}$	$H(0.15)$	$72.5^{+1.2}_{-1.2}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1209.03; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.87; R - 1 = 0.01103$$



## 12.8 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02226^{+0.00042}_{-0.00042}$	$\sigma_8/h^{0.5}$	$0.984^{+0.017}_{-0.017}$	$D_M(0.38)$	$1530^{+17}_{-17}$
$\Omega_c h^2$	$0.1191^{+0.0021}_{-0.0021}$	$r_{\text{drag}} h$	$99.7^{+1.6}_{-1.6}$	$H(0.51)$	$89.68^{+0.54}_{-0.54}$
$100\theta_{\text{MC}}$	$1.04099^{+0.00083}_{-0.00083}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.045}_{-0.045}$	$D_M(0.51)$	$1982^{+20}_{-20}$
$\tau$	$0.057^{+0.013}_{-0.013}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.4}$	$H(0.61)$	$95.29^{+0.48}_{-0.48}$
$\ln(10^{10} A_s)$	$3.047^{+0.027}_{-0.027}$	$10^9 A_s$	$2.106^{+0.058}_{-0.057}$	$D_M(0.61)$	$2306^{+22}_{-21}$
$n_s$	$0.9658^{+0.0084}_{-0.0084}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.022}_{-0.022}$	$H(2.33)$	$235.8^{+1.4}_{-1.4}$
$dn_s/d \ln k$	$-0.003^{+0.015}_{-0.015}$	$D_{40}$	$1221^{+38}_{-38}$	$D_M(2.33)$	$5765^{+25}_{-25}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$D_{220}$	$5725^{+79}_{-78}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2538^{+27}_{-27}$	$\sigma_8(0.15)$	$0.748^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.3^{+9.7}_{-10}$	$f\sigma_8(0.38)$	$0.4743^{+0.0098}_{-0.0098}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.9}_{-4.0}$	$D_{2000}$	$229.8^{+3.7}_{-3.7}$	$\sigma_8(0.38)$	$0.6632^{+0.0094}_{-0.0088}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$n_{s,0.002}$	$0.976^{+0.046}_{-0.044}$	$f\sigma_8(0.51)$	$0.4730^{+0.0087}_{-0.0087}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24535^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	$0.6207^{+0.0088}_{-0.0082}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24667^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	$0.4681^{+0.0080}_{-0.0079}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.608^{+0.081}_{-0.076}$	$\sigma_8(0.61)$	$0.5906^{+0.0085}_{-0.0078}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.803^{+0.058}_{-0.057}$	$f\sigma_8(2.33)$	$0.2979^{+0.0043}_{-0.0039}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.4}$	$z_*$	$1089.98^{+0.61}_{-0.59}$	$\sigma_8(2.33)$	$0.3071^{+0.0045}_{-0.0043}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.4}_{-3.5}$	$r_*$	$144.76^{+0.59}_{-0.57}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.2}_{-6.5}$	$100\theta_*$	$1.04119^{+0.00083}_{-0.00082}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.904^{+0.058}_{-0.056}$	$f_{2000}^{217}$	$108.2^{+4.0}_{-4.0}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.60^{+0.94}_{-0.97}$	$\chi_{\text{lensing}}^2$	$9.32 (\nu: 0.2)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.47^{+0.67}_{-0.66}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.7)$
$H_0$	$67.62^{+0.97}_{-0.97}$	$k_{\text{D}}$	$0.14038^{+0.00091}_{-0.00092}$	$\chi_{\text{lowl}}^2$	$22.8 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.689^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16096^{+0.00056}_{-0.00055}$	$\chi_{\text{plik}}^2$	$772.4 (\nu: 15.2)$
$\Omega_{\text{m}}$	$0.311^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3377^{+49}_{-50}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1420^{+0.0021}_{-0.0021}$	$k_{\text{eq}}$	$0.01031^{+0.00015}_{-0.00015}$	$\chi_{\text{MGS}}^2$	$1.31 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.09599^{+0.00097}_{-0.00095}$	$100\theta_{\text{eq}}$	$0.8176^{+0.0091}_{-0.0090}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\sigma_8$	$0.809^{+0.012}_{-0.011}$	$100\theta_{\text{s,eq}}$	$0.4517^{+0.0047}_{-0.0047}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 6.9)$
$S_8$	$0.824^{+0.024}_{-0.023}$	$H(0.15)$	$72.89^{+0.84}_{-0.84}$	$\chi_{\text{CMB}}^2$	$1201.7 (\nu: 15.2)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	$641.2^{+8.4}_{-8.2}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.012}_{-0.012}$	$H(0.38)$	$82.97^{+0.64}_{-0.65}$		

$$\bar{\chi}_{\text{eff}}^2 = 1215.17; \Delta \bar{\chi}_{\text{eff}}^2 = 0.60; R - 1 = 0.01603$$

## 12.9 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022392	$0.02239^{+0.00030}_{-0.00030}$	$\Omega_m h^2$	0.14339	$0.1434^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	0.010411	$0.01041^{+0.00018}_{-0.00018}$
$\Omega_c h^2$	0.12035	$0.1203^{+0.0027}_{-0.0026}$	$\Omega_m h^3$	0.09641	$0.09640^{+0.00060}_{-0.00060}$	$100\theta_{\text{eq}}$	0.8117	$0.812^{+0.011}_{-0.011}$
$100\theta_{\text{MC}}$	1.04089	$1.04090^{+0.00061}_{-0.00063}$	$\sigma_8$	0.8122	$0.813^{+0.015}_{-0.015}$	$100\theta_{\text{s,eq}}$	0.4486	$0.4486^{+0.0057}_{-0.0057}$
$\tau$	0.0548	$0.056^{+0.016}_{-0.015}$	$S_8$	0.8351	$0.836^{+0.032}_{-0.032}$	$H(0.15)$	72.58	$72.6^{+1.0}_{-1.0}$
$\ln(10^{10} A_s)$	3.0469	$3.049^{+0.035}_{-0.033}$	$\sigma_8 \Omega_m^{0.5}$	0.4574	$0.458^{+0.018}_{-0.018}$	$D_M(0.15)$	644.4	$644^{+10}_{-10}$
$n_s$	0.9643	$0.9635^{+0.0089}_{-0.0091}$	$\sigma_8 \Omega_m^{0.25}$	0.6095	$0.610^{+0.017}_{-0.017}$	$H(0.38)$	82.81	$82.81^{+0.75}_{-0.72}$
$dn_s/d \ln k$	-0.0047	$-0.006^{+0.013}_{-0.013}$	$\sigma_8/h^{0.5}$	0.9905	$0.991^{+0.024}_{-0.024}$	$D_M(0.38)$	1535.4	$1535^{+20}_{-20}$
$y_{\text{cal}}$	1.00040	$1.0007^{+0.0049}_{-0.0050}$	$r_{\text{drag}} h$	98.82	$98.8^{+2.1}_{-2.0}$	$H(0.51)$	89.59	$89.59^{+0.59}_{-0.57}$
$A_{217}^{\text{CIB}}$	48.9	$48^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.445^{+0.058}_{-0.058}$	$D_M(0.51)$	1988.0	$1988^{+24}_{-24}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.24	—	$z_{\text{re}}$	7.73	$7.8^{+1.6}_{-1.6}$	$H(0.61)$	95.256	$95.26^{+0.47}_{-0.46}$
$A_{143}^{\text{tSZ}}$	7.28	$5.2^{+3.8}_{-4.0}$	$10^9 A_s$	2.105	$2.111^{+0.074}_{-0.069}$	$D_M(0.61)$	2312.6	$2313^{+25}_{-26}$
$A_{100}^{\text{PS}}$	254	$263^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8867	$1.887^{+0.024}_{-0.024}$	$H(2.33)$	236.81	$236.8^{+1.6}_{-1.6}$
$A_{143}^{\text{PS}}$	46.8	$48^{+20}_{-20}$	$D_{40}$	1220.4	$1221^{+37}_{-37}$	$D_M(2.33)$	5763.9	$5764^{+21}_{-22}$
$A_{143 \times 217}^{\text{PS}}$	43.9	$42^{+20}_{-20}$	$D_{220}$	5728	$5733^{+76}_{-77}$	$f\sigma_8(0.15)$	0.4615	$0.462^{+0.016}_{-0.016}$
$A_{217}^{\text{PS}}$	118.2	$115^{+20}_{-20}$	$D_{810}$	2541.5	$2542^{+27}_{-27}$	$\sigma_8(0.15)$	0.7499	$0.750^{+0.013}_{-0.013}$
$A^{\text{kSZ}}$	0.0	—	$D_{1420}$	816.8	$816.3^{+9.7}_{-9.6}$	$f\sigma_8(0.38)$	0.4786	$0.479^{+0.013}_{-0.014}$
$A_{100}^{\text{dustTT}}$	8.93	$8.9^{+3.5}_{-3.6}$	$D_{2000}$	230.48	$230.2^{+3.6}_{-3.5}$	$\sigma_8(0.38)$	0.6642	$0.665^{+0.011}_{-0.011}$
$A_{143}^{\text{dustTT}}$	11.07	$11.0^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9794	$0.981^{+0.040}_{-0.040}$	$f\sigma_8(0.51)$	0.4766	$0.477^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.6^{+6.5}_{-6.4}$	$Y_{\text{P}}$	0.245404	$0.24540^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	0.6213	$0.622^{+0.011}_{-0.010}$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246731	$0.24673^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	0.4711	$0.471^{+0.011}_{-0.011}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.076}_{-0.074}$	$10^5 D/H$	2.581	$2.583^{+0.056}_{-0.053}$	$\sigma_8(0.61)$	0.5910	$0.591^{+0.010}_{-0.0098}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.057}_{-0.058}$	Age/Gyr	13.7975	$13.798^{+0.048}_{-0.049}$	$f\sigma_8(2.33)$	0.29777	$0.2980^{+0.0050}_{-0.0048}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.92	$1089.93^{+0.53}_{-0.54}$	$\sigma_8(2.33)$	0.3067	$0.3070^{+0.0052}_{-0.0050}$
$A_{143}^{\text{dustTE}}$	0.226	$0.22^{+0.10}_{-0.11}$	$r_*$	144.32	$144.33^{+0.59}_{-0.60}$	$f_{2000}^{143}$	29.9	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	0.667	$0.66^{+0.16}_{-0.16}$	$100\theta_*$	1.04107	$1.04108^{+0.00060}_{-0.00061}$	$f_{2000}^{143 \times 217}$	32.80	$33^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.09	$2.09^{+0.52}_{-0.52}$	$D_M(z_*)/\text{Gpc}$	13.863	$13.864^{+0.055}_{-0.056}$	$f_{2000}^{217}$	107.41	$107.8^{+3.9}_{-4.0}$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.01	$1060.00^{+0.62}_{-0.64}$	$\chi_{\text{small}}^2$	396.07	397.3 ( $\nu$ : 2.0)
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	146.97	$146.99^{+0.59}_{-0.59}$	$\chi_{\text{lowl}}^2$	22.25	22.6 ( $\nu$ : 1.3)
$H_0$	67.24	$67.2^{+1.2}_{-1.2}$	$k_{\text{D}}$	0.14101	$0.14099^{+0.00066}_{-0.00065}$	$\chi_{\text{plik}}^2$	2345.3	2360.9 ( $\nu$ : 17.7)
$\Omega_{\Lambda}$	0.6828	$0.683^{+0.016}_{-0.017}$	$100\theta_{\text{D}}$	0.160712	$0.16072^{+0.00036}_{-0.00035}$	$\chi_{\text{prior}}^2$	1.8	11.5 ( $\nu$ : 10.4)
$\Omega_{\text{m}}$	0.3172	$0.317^{+0.017}_{-0.016}$	$z_{\text{eq}}$	3411	$3411^{+61}_{-59}$	$\chi_{\text{CMB}}^2$	2763.6	2780.7 ( $\nu$ : 17.5)

Best-fit  $\chi_{\text{eff}}^2 = 2765.41$ ;  $\Delta\chi_{\text{eff}}^2 = -0.36$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.22$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.45$ ;  $R - 1 = 0.01212$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 ( $\Delta$  0.02) commander\_dx12\_v3.2.29: 22.25 ( $\Delta$  -1.00) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.28 ( $\Delta$  0.63)

## 12.10 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022465	$0.02245^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8102	$0.810^{+0.015}_{-0.014}$	$D_M(0.15)$	640.3	$640.8^{+7.5}_{-7.6}$
$\Omega_c h^2$	0.11929	$0.1194^{+0.0020}_{-0.0020}$	$S_8$	0.8243	$0.825^{+0.025}_{-0.026}$	$H(0.38)$	83.09	$83.06^{+0.58}_{-0.55}$
$100\theta_{MC}$	1.04100	$1.04101^{+0.00056}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.452^{+0.014}_{-0.014}$	$D_M(0.38)$	1527.3	$1528^{+15}_{-15}$
$\tau$	0.0566	$0.057^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6048	$0.605^{+0.014}_{-0.014}$	$H(0.51)$	89.808	$89.78^{+0.47}_{-0.44}$
$\ln(10^{10} A_s)$	3.0483	$3.049^{+0.036}_{-0.034}$	$\sigma_8/h^{0.5}$	0.9846	$0.985^{+0.021}_{-0.021}$	$D_M(0.51)$	1978.7	$1980^{+17}_{-18}$
$n_s$	0.9674	$0.9658^{+0.0080}_{-0.0081}$	$r_{drag} h$	99.66	$99.6^{+1.5}_{-1.5}$	$H(0.61)$	95.425	$95.41^{+0.38}_{-0.37}$
$dn_s/d \ln k$	-0.0034	$-0.005^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.429	$2.431^{+0.052}_{-0.052}$	$D_M(0.61)$	2302.6	$2304^{+19}_{-20}$
$y_{cal}$	1.00057	$1.0007^{+0.0048}_{-0.0048}$	$z_{re}$	7.88	$7.9^{+1.6}_{-1.6}$	$H(2.33)$	236.19	$236.2^{+1.2}_{-1.2}$
$A_{217}^{CIB}$	47.4	$48^{+10}_{-10}$	$10^9 A_s$	2.108	$2.110^{+0.077}_{-0.071}$	$D_M(2.33)$	5756.8	$5758^{+17}_{-18}$
$\xi^{tSZ \times CIB}$	0.48	—	$10^9 A_s e^{-2\tau}$	1.8824	$1.883^{+0.023}_{-0.022}$	$f\sigma_8(0.15)$	0.4562	$0.457^{+0.013}_{-0.013}$
$A_{143}^{tSZ}$	7.17	$5.2^{+3.8}_{-4.0}$	$D_{40}$	1218.0	$1218^{+35}_{-35}$	$\sigma_8(0.15)$	0.7487	$0.749^{+0.013}_{-0.013}$
$A_{100}^{PS}$	251	$262^{+60}_{-60}$	$D_{220}$	5735	$5737^{+74}_{-75}$	$f\sigma_8(0.38)$	0.4747	$0.475^{+0.011}_{-0.012}$
$A_{143}^{PS}$	49.3	$47^{+20}_{-20}$	$D_{810}$	2541.7	$2541^{+27}_{-26}$	$\sigma_8(0.38)$	0.6638	$0.664^{+0.011}_{-0.011}$
$A_{143 \times 217}^{PS}$	49.4	$42^{+20}_{-20}$	$D_{1420}$	818.3	$816.9^{+9.3}_{-9.0}$	$f\sigma_8(0.51)$	0.4734	$0.474^{+0.010}_{-0.011}$
$A_{217}^{PS}$	120.2	$114^{+20}_{-20}$	$D_{2000}$	231.12	$230.5^{+3.4}_{-3.4}$	$\sigma_8(0.51)$	0.6212	$0.621^{+0.011}_{-0.010}$
$A^{kSZ}$	0.0	—	$n_{s,0.002}$	0.9784	$0.982^{+0.041}_{-0.040}$	$f\sigma_8(0.61)$	0.4685	$0.4686^{+0.0097}_{-0.0099}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245432	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5912	$0.591^{+0.010}_{-0.0097}$
$A_{143}^{dustTT}$	11.05	$11.0^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246758	$0.24675^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.29810	$0.2980^{+0.0051}_{-0.0048}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.6^{+6.4}_{-6.4}$	$10^5 D/H$	2.568	$2.572^{+0.052}_{-0.049}$	$\sigma_8(2.33)$	0.3074	$0.3072^{+0.0052}_{-0.0051}$
$A_{217}^{dustTT}$	95.0	$93^{+10}_{-10}$	Age/Gyr	13.7823	$13.784^{+0.039}_{-0.041}$	$f_{2000}^{143}$	29.3	$30^{+6}_{-6}$
$A_{100}^{dustTE}$	0.114	$0.115^{+0.077}_{-0.075}$	$z_*$	1089.739	$1089.77^{+0.44}_{-0.44}$	$f_{2000}^{143 \times 217}$	32.34	$33^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.134^{+0.060}_{-0.058}$	$r_*$	144.543	$144.53^{+0.45}_{-0.48}$	$f_{2000}^{217}$	106.86	$107.6^{+4.0}_{-3.8}$
$A_{100 \times 217}^{dustTE}$	0.484	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04118	$1.04119^{+0.00055}_{-0.00059}$	$\chi_{small}^2$	396.37	$397.4 (\nu: 2.4)$
$A_{143}^{dustTE}$	0.225	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8826	$13.881^{+0.044}_{-0.046}$	$\chi_{lowl}^2$	22.10	$22.3 (\nu: 1.2)$
$A_{143 \times 217}^{dustTE}$	0.662	$0.66^{+0.15}_{-0.16}$	$z_{drag}$	1060.09	$1060.07^{+0.59}_{-0.60}$	$\chi_{plik}^2$	2345.8	$2360.9 (\nu: 17.3)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.51}$	$r_{drag}$	147.177	$147.17^{+0.48}_{-0.50}$	$\chi_{6DF}^2$	0.029	$0.060 (\nu: 0.0)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14085	$0.14085^{+0.00060}_{-0.00060}$	$\chi_{MGS}^2$	1.22	$1.23 (\nu: 0.1)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160664	$0.16069^{+0.00036}_{-0.00034}$	$\chi_{DR12BAO}^2$	4.42	$5.0 (\nu: 1.1)$
$H_0$	67.71	$67.66^{+0.89}_{-0.87}$	$z_{eq}$	3387.4	$3390^{+45}_{-45}$	$\chi_{prior}^2$	1.7	$11.6 (\nu: 10.5)$
$\Omega_\Lambda$	0.6894	$0.689^{+0.012}_{-0.012}$	$k_{eq}$	0.010339	$0.01035^{+0.00014}_{-0.00014}$	$\chi_{BAO}^2$	5.67	$6.3 (\nu: 0.7)$
$\Omega_m$	0.3106	$0.311^{+0.012}_{-0.012}$	$100\theta_{eq}$	0.8163	$0.8159^{+0.0085}_{-0.0085}$	$\chi_{CMB}^2$	2764.3	$2780.6 (\nu: 16.8)$
$\Omega_m h^2$	0.14240	$0.1425^{+0.0019}_{-0.0019}$	$100\theta_{s,eq}$	0.45087	$0.4507^{+0.0044}_{-0.0043}$			
$\Omega_m h^3$	0.09642	$0.09641^{+0.00061}_{-0.00059}$	$H(0.15)$	72.99	$72.95^{+0.77}_{-0.74}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.68$ ;  $\Delta\chi_{\text{eff}}^2 = -0.24$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.48$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.57$ ;  $R - 1 = 0.02043$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.42 ( $\Delta$  0.01) CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 396.37 ( $\Delta$  0.16) commander\_dx12.v3.2.29: 22.11 ( $\Delta$  -0.77) plik\_rd12\_HM.v22b\_TTTEEE: 2345.83 ( $\Delta$  0.33)

### 12.11 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022396	$0.02240^{+0.00029}_{-0.00029}$	$\Omega_m h^3$	0.09638	$0.09639^{+0.00060}_{-0.00059}$	$100\theta_{s,eq}$	0.44926	$0.4492^{+0.0049}_{-0.0050}$
$\Omega_c h^2$	0.12003	$0.1200^{+0.0023}_{-0.0023}$	$\sigma_8$	0.8113	$0.811^{+0.012}_{-0.012}$	$H(0.15)$	72.69	$72.69^{+0.91}_{-0.89}$
$100\theta_{MC}$	1.04091	$1.04092^{+0.00060}_{-0.00061}$	$S_8$	0.8317	$0.832^{+0.025}_{-0.025}$	$D_M(0.15)$	643.3	$643.3^{+9.0}_{-8.9}$
$\tau$	0.0546	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4555	$0.456^{+0.014}_{-0.014}$	$H(0.38)$	82.87	$82.88^{+0.67}_{-0.64}$
$\ln(10^{10} A_s)$	3.0457	$3.047^{+0.029}_{-0.029}$	$\sigma_8 \Omega_m^{0.25}$	0.6079	$0.608^{+0.012}_{-0.013}$	$D_M(0.38)$	1533.3	$1533^{+18}_{-18}$
$n_s$	0.9650	$0.9641^{+0.0084}_{-0.0085}$	$\sigma_8/h^{0.5}$	0.9885	$0.989^{+0.017}_{-0.018}$	$H(0.51)$	89.64	$89.64^{+0.53}_{-0.51}$
$dn_s/d \ln k$	-0.0025	$-0.005^{+0.013}_{-0.013}$	$r_{drag} h$	99.06	$99.1^{+1.8}_{-1.8}$	$D_M(0.51)$	1985.7	$1986^{+21}_{-21}$
$y_{cal}$	1.00056	$1.0007^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.4413	$2.441^{+0.046}_{-0.046}$	$H(0.61)$	95.290	$95.30^{+0.43}_{-0.41}$
$A_{217}^{CIB}$	48.9	$48^{+10}_{-10}$	$z_{re}$	7.71	$7.8^{+1.4}_{-1.5}$	$D_M(0.61)$	2310.1	$2310^{+22}_{-23}$
$\xi^{tSZ \times CIB}$	0.23	—	$10^9 A_s$	2.102	$2.106^{+0.062}_{-0.060}$	$H(2.33)$	236.61	$236.6^{+1.4}_{-1.3}$
$A_{143}^{tSZ}$	7.27	$5.2^{+3.8}_{-4.0}$	$10^9 A_s e^{-2\tau}$	1.8848	$1.886^{+0.022}_{-0.022}$	$D_M(2.33)$	5762.7	$5762^{+19}_{-20}$
$A_{100}^{PS}$	253	$263^{+60}_{-60}$	$D_{40}$	1225.1	$1222^{+37}_{-35}$	$f\sigma_8(0.15)$	0.4598	$0.460^{+0.013}_{-0.013}$
$A_{143}^{PS}$	45.9	$47^{+20}_{-20}$	$D_{220}$	5733	$5735^{+75}_{-76}$	$\sigma_8(0.15)$	0.7493	$0.749^{+0.011}_{-0.011}$
$A_{143 \times 217}^{PS}$	42.9	$42^{+20}_{-20}$	$D_{810}$	2541.0	$2541^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4773	$0.477^{+0.010}_{-0.010}$
$A_{217}^{PS}$	117.7	$115^{+20}_{-20}$	$D_{1420}$	817.3	$816.4^{+9.6}_{-9.5}$	$\sigma_8(0.38)$	0.6638	$0.6638^{+0.0095}_{-0.0094}$
$A^{kSZ}$	0.0	—	$D_{2000}$	230.77	$230.3^{+3.5}_{-3.5}$	$f\sigma_8(0.51)$	0.4755	$0.4755^{+0.0088}_{-0.0093}$
$A_{100}^{dustTT}$	8.90	$8.9^{+3.5}_{-3.6}$	$n_{s,0.002}$	0.9729	$0.979^{+0.041}_{-0.039}$	$\sigma_8(0.51)$	0.6210	$0.6210^{+0.0089}_{-0.0088}$
$A_{143}^{dustTT}$	11.01	$11.0^{+3.6}_{-3.5}$	$Y_P$	0.245406	$0.24540^{+0.00011}_{-0.00011}$	$f\sigma_8(0.61)$	0.4702	$0.4702^{+0.0081}_{-0.0084}$
$A_{143 \times 217}^{dustTT}$	19.6	$18.6^{+6.6}_{-6.4}$	$Y_P^{BBN}$	0.246732	$0.24673^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.5908	$0.5908^{+0.0085}_{-0.0084}$
$A_{217}^{dustTT}$	94.5	$93^{+10}_{-10}$	$10^5 D/H$	2.581	$2.581^{+0.054}_{-0.051}$	$f\sigma_8(2.33)$	0.29773	$0.2977^{+0.0045}_{-0.0043}$
$A_{100}^{dustTE}$	0.116	$0.115^{+0.077}_{-0.075}$	Age/Gyr	13.7951	$13.795^{+0.044}_{-0.045}$	$\sigma_8(2.33)$	0.30678	$0.3068^{+0.0048}_{-0.0047}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.134^{+0.058}_{-0.059}$	$z_*$	1089.89	$1089.89^{+0.50}_{-0.50}$	$f_{2000}^{143}$	29.7	$31^{+6}_{-6}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.17}_{-0.17}$	$r_*$	144.40	$144.40^{+0.51}_{-0.53}$	$f_{2000}^{143 \times 217}$	32.55	$33^{+4}_{-4}$
$A_{143}^{dustTE}$	0.225	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	1.04110	$1.04110^{+0.00059}_{-0.00061}$	$f_{2000}^{217}$	107.20	$107.7^{+4.0}_{-3.9}$
$A_{143 \times 217}^{dustTE}$	0.665	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8702	$13.870^{+0.048}_{-0.049}$	$\chi^2_{lensing}$	8.89	$9.43 (\nu: 0.3)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.52}$	$z_{drag}$	1060.01	$1060.00^{+0.58}_{-0.61}$	$\chi^2_{small}$	396.06	$397.1 (\nu: 1.5)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.05	$147.05^{+0.52}_{-0.53}$	$\chi^2_{lowl}$	22.71	$22.7 (\nu: 1.4)$
$c_{217}$	0.99821	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14093	$0.14093^{+0.00061}_{-0.00060}$	$\chi^2_{plik}$	2345.0	$2360.5 (\nu: 16.8)$
$H_0$	67.36	$67.4^{+1.0}_{-1.0}$	$100\theta_D$	0.160720	$0.16072^{+0.00036}_{-0.00034}$	$\chi^2_{prior}$	1.8	$11.6 (\nu: 10.6)$
$\Omega_\Lambda$	0.6847	$0.685^{+0.014}_{-0.014}$	$z_{eq}$	3404	$3404^{+53}_{-50}$	$\chi^2_{CMB}$	2772.6	$2789.7 (\nu: 17.3)$
$\Omega_m$	0.3153	$0.315^{+0.014}_{-0.014}$	$k_{eq}$	0.010388	$0.01039^{+0.00016}_{-0.00015}$			
$\Omega_m h^2$	0.14308	$0.1431^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	0.8131	$0.8131^{+0.0096}_{-0.0097}$			

Best-fit  $\chi^2_{eff} = 2774.42$ ;  $\Delta\chi^2_{eff} = -0.22$ ;  $\bar{\chi}^2_{eff} = 2801.27$ ;  $\Delta\bar{\chi}^2_{eff} = 0.58$ ;  $R - 1 = 0.02010$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.89 ( $\Delta$  0.02) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.01) commander\_dx12\_v3.2\_29: 22.71 ( $\Delta$  -0.54) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.96 ( $\Delta$  0.03)

## 12.12 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022447	$0.02245^{+0.00027}_{-0.00027}$	$\sigma_8$	0.8101	$0.810^{+0.012}_{-0.012}$	$D_M(0.15)$	640.4	$640.7^{+7.0}_{-7.0}$
$\Omega_c h^2$	0.11930	$0.1194^{+0.0018}_{-0.0018}$	$S_8$	0.8245	$0.825^{+0.021}_{-0.021}$	$H(0.38)$	83.08	$83.07^{+0.54}_{-0.52}$
$100\theta_{MC}$	1.04103	$1.04101^{+0.00056}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	0.4516	$0.452^{+0.012}_{-0.011}$	$D_M(0.38)$	1527.6	$1528^{+14}_{-14}$
$\tau$	0.0565	$0.057^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6048	$0.605^{+0.011}_{-0.012}$	$H(0.51)$	89.798	$89.79^{+0.44}_{-0.42}$
$\ln(10^{10} A_s)$	3.0482	$3.049^{+0.029}_{-0.029}$	$\sigma_8/h^{0.5}$	0.9846	$0.985^{+0.017}_{-0.017}$	$D_M(0.51)$	1979.0	$1980^{+16}_{-17}$
$n_s$	0.9669	$0.9659^{+0.0078}_{-0.0080}$	$r_{drag} h$	99.65	$99.6^{+1.4}_{-1.4}$	$H(0.61)$	95.415	$95.41^{+0.36}_{-0.35}$
$dn_s/d \ln k$	-0.0033	$-0.004^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.4307	$2.433^{+0.041}_{-0.044}$	$D_M(0.61)$	2302.9	$2304^{+18}_{-18}$
$y_{cal}$	1.00058	$1.0008^{+0.0048}_{-0.0047}$	$z_{re}$	7.88	$7.9^{+1.4}_{-1.4}$	$H(2.33)$	236.19	$236.2^{+1.1}_{-1.1}$
$A_{217}^{CIB}$	48.6	$47^{+10}_{-10}$	$10^9 A_s$	2.108	$2.111^{+0.062}_{-0.060}$	$D_M(2.33)$	5757.3	$5758^{+17}_{-18}$
$\xi^{tSZ \times CIB}$	0.31	—	$10^9 A_s e^{-2\tau}$	1.8823	$1.883^{+0.022}_{-0.021}$	$f\sigma_8(0.15)$	0.4562	$0.457^{+0.011}_{-0.011}$
$A_{143}^{tSZ}$	7.22	$5.3^{+3.8}_{-4.0}$	$D_{40}$	1219.2	$1220^{+35}_{-35}$	$\sigma_8(0.15)$	0.7487	$0.749^{+0.011}_{-0.011}$
$A_{100}^{PS}$	253	$262^{+60}_{-60}$	$D_{220}$	5735	$5739^{+73}_{-73}$	$f\sigma_8(0.38)$	0.4747	$0.4751^{+0.0091}_{-0.0093}$
$A_{143}^{PS}$	46.9	$47^{+20}_{-20}$	$D_{810}$	2541.3	$2541^{+26}_{-26}$	$\sigma_8(0.38)$	0.6637	$0.6639^{+0.0096}_{-0.0096}$
$A_{143 \times 217}^{PS}$	44.8	$42^{+20}_{-20}$	$D_{1420}$	817.9	$817.1^{+9.2}_{-9.1}$	$f\sigma_8(0.51)$	0.4734	$0.4737^{+0.0083}_{-0.0085}$
$A_{217}^{PS}$	118.2	$114^{+20}_{-20}$	$D_{2000}$	230.96	$230.6^{+3.4}_{-3.4}$	$\sigma_8(0.51)$	0.6212	$0.6213^{+0.0090}_{-0.0089}$
$A^{kSZ}$	0.01	$< 8.46$	$n_{s,0.002}$	0.9776	$0.979^{+0.041}_{-0.039}$	$f\sigma_8(0.61)$	0.4685	$0.4687^{+0.0078}_{-0.0079}$
$A_{100}^{dustTT}$	8.93	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245425	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5911	$0.5912^{+0.0086}_{-0.0084}$
$A_{143}^{dustTT}$	11.07	$11.0^{+3.6}_{-3.5}$	$Y_P^{BBN}$	0.246752	$0.24675^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.29807	$0.2981^{+0.0044}_{-0.0044}$
$A_{143 \times 217}^{dustTT}$	19.7	$18.6^{+6.5}_{-6.3}$	$10^5 D/H$	2.571	$2.572^{+0.051}_{-0.049}$	$\sigma_8(2.33)$	0.30733	$0.3073^{+0.0046}_{-0.0046}$
$A_{217}^{dustTT}$	94.6	$93^{+10}_{-10}$	Age/Gyr	13.7835	$13.784^{+0.038}_{-0.040}$	$f_{2000}^{143}$	29.5	$30^{+6}_{-6}$
$A_{100}^{dustTE}$	0.115	$0.115^{+0.078}_{-0.076}$	$z_*$	1089.762	$1089.77^{+0.43}_{-0.42}$	$f_{2000}^{143 \times 217}$	32.45	$33^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.134^{+0.060}_{-0.059}$	$r_*$	144.552	$144.54^{+0.42}_{-0.44}$	$f_{2000}^{217}$	107.07	$107.5^{+4.0}_{-3.8}$
$A_{100 \times 217}^{dustTE}$	0.483	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04120	$1.04118^{+0.00056}_{-0.00059}$	$\chi_{lensing}^2$	8.84	$9.25 (\nu: 0.2)$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8832	$13.882^{+0.040}_{-0.042}$	$\chi_{small}^2$	396.36	$397.3 (\nu: 1.9)$
$A_{143 \times 217}^{dustTE}$	0.663	$0.66^{+0.15}_{-0.16}$	$z_{drag}$	1060.05	$1060.07^{+0.59}_{-0.63}$	$\chi_{lowl}^2$	22.20	$22.5 (\nu: 1.3)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.51}$	$r_{drag}$	147.191	$147.17^{+0.45}_{-0.46}$	$\chi_{plik}^2$	2345.6	$2360.5 (\nu: 16.5)$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14082	$0.14084^{+0.00058}_{-0.00057}$	$\chi_{6DF}^2$	0.030	$0.055 (\nu: 0.0)$
$c_{217}$	0.99821	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160691	$0.16069^{+0.00036}_{-0.00034}$	$\chi_{MGS}^2$	1.22	$1.24 (\nu: 0.1)$
$H_0$	67.70	$67.67^{+0.83}_{-0.81}$	$z_{eq}$	3387.4	$3389^{+41}_{-40}$	$\chi_{DR12BAO}^2$	4.44	$4.9 (\nu: 0.9)$
$\Omega_\Lambda$	0.6893	$0.689^{+0.011}_{-0.011}$	$k_{eq}$	0.010339	$0.01034^{+0.00013}_{-0.00012}$	$\chi_{prior}^2$	1.8	$11.6 (\nu: 10.5)$
$\Omega_m$	0.3107	$0.311^{+0.011}_{-0.011}$	$100\theta_{eq}$	0.8162	$0.8160^{+0.0077}_{-0.0077}$	$\chi_{CMB}^2$	2773.0	$2789.6 (\nu: 16.7)$
$\Omega_m h^2$	0.14240	$0.1425^{+0.0017}_{-0.0017}$	$100\theta_{s,eq}$	0.45087	$0.4507^{+0.0039}_{-0.0039}$	$\chi_{BAO}^2$	5.68	$6.2 (\nu: 0.6)$
$\Omega_m h^3$	0.09640	$0.09640^{+0.00061}_{-0.00059}$	$H(0.15)$	72.98	$72.95^{+0.71}_{-0.70}$			

Best-fit  $\chi_{eff}^2 = 2780.51$ ;  $\Delta\chi_{eff}^2 = -0.19$ ;  $\bar{\chi}_{eff}^2 = 2807.32$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.48$ ;  $R - 1 = 0.02542$

$\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.43 ( $\Delta$  0.01) CMB - smicadx12\_Dec5\_ft1\_mv2\_ndclpp\_p.teb\_consext8: 8.84 ( $\Delta$  0.11) small\_100x143\_offlike5\_EE\_Aplanck.L 396.36 ( $\Delta$  -0.16) commander\_dx12\_v3.2\_29: 22.20 ( $\Delta$  -0.70) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.61 ( $\Delta$  0.30)

### 12.13 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239^{+0.00030}_{-0.00029}$	$\Omega_{\mathrm{m}}h^2$	$0.1434^{+0.0025}_{-0.0025}$	$k_{\mathrm{eq}}$	$0.01041^{+0.00018}_{-0.00018}$
$\Omega_{\mathrm{c}}h^2$	$0.1203^{+0.0027}_{-0.0026}$	$\Omega_{\mathrm{m}}h^3$	$0.09641^{+0.00061}_{-0.00060}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.011}_{-0.011}$
$100\theta_{\mathrm{MC}}$	$1.04090^{+0.00061}_{-0.00063}$	$\sigma_8$	$0.813^{+0.015}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4487^{+0.0057}_{-0.0057}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$S_8$	$0.836^{+0.032}_{-0.032}$	$H(0.15)$	$72.6^{+1.0}_{-0.99}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.051^{+0.031}_{-0.029}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.458^{+0.018}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$644^{+10}_{-10}$
$n_{\mathrm{s}}$	$0.9636^{+0.0089}_{-0.0090}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.016}_{-0.016}$	$H(0.38)$	$82.82^{+0.74}_{-0.72}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.006^{+0.013}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.992^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1535^{+20}_{-20}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$r_{\mathrm{drag}}h$	$98.9^{+2.0}_{-2.0}$	$H(0.51)$	$89.60^{+0.59}_{-0.57}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.057}_{-0.057}$	$D_{\mathrm{M}}(0.51)$	$1988^{+23}_{-24}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$7.9^{+1.2}_{-1.4}$	$H(0.61)$	$95.26^{+0.47}_{-0.46}$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+3.8}_{-3.9}$	$10^9 A_{\mathrm{s}}$	$2.114^{+0.066}_{-0.062}$	$D_{\mathrm{M}}(0.61)$	$2312^{+25}_{-26}$
$A_{100}^{\mathrm{PS}}$	$263^{+60}_{-60}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887^{+0.024}_{-0.024}$	$H(2.33)$	$236.8^{+1.6}_{-1.6}$
$A_{143}^{\mathrm{PS}}$	$48^{+20}_{-20}$	$D_{40}$	$1221^{+37}_{-37}$	$D_{\mathrm{M}}(2.33)$	$5764^{+21}_{-22}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5733^{+76}_{-77}$	$f\sigma_8(0.15)$	$0.462^{+0.016}_{-0.016}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2542^{+27}_{-27}$	$\sigma_8(0.15)$	$0.751^{+0.013}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$D_{1420}$	$816.2^{+9.6}_{-9.6}$	$f\sigma_8(0.38)$	$0.479^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$D_{2000}$	$230.2^{+3.6}_{-3.4}$	$\sigma_8(0.38)$	$0.665^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$n_{\mathrm{s},0.002}$	$0.982^{+0.040}_{-0.040}$	$f\sigma_8(0.51)$	$0.477^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$Y_{\mathrm{P}}$	$0.24540^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	$0.6222^{+0.0097}_{-0.0094}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24673^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.472^{+0.011}_{-0.011}$
$A_{100}^{\mathrm{dustTE}}$	$0.115^{+0.076}_{-0.074}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583^{+0.056}_{-0.053}$	$\sigma_8(0.61)$	$0.5919^{+0.0091}_{-0.0088}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134^{+0.057}_{-0.059}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797^{+0.048}_{-0.049}$	$f\sigma_8(2.33)$	$0.2982^{+0.0045}_{-0.0043}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.93^{+0.53}_{-0.54}$	$\sigma_8(2.33)$	$0.3072^{+0.0047}_{-0.0044}$
$A_{143}^{\mathrm{dustTE}}$	$0.22^{+0.10}_{-0.10}$	$r_*$	$144.34^{+0.59}_{-0.59}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$100\theta_*$	$1.04108^{+0.00060}_{-0.00061}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\mathrm{dustTE}}$	$2.09^{+0.52}_{-0.53}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.864^{+0.055}_{-0.055}$	$f_{2000}^{217}$	$107.8^{+3.9}_{-4.0}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1060.00^{+0.62}_{-0.60}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 2.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$146.99^{+0.59}_{-0.59}$	$\chi_{\mathrm{lowl}}^2$	$22.6 (\nu: 1.3)$
$H_0$	$67.3^{+1.2}_{-1.2}$	$k_{\mathrm{D}}$	$0.14099^{+0.00066}_{-0.00065}$	$\chi_{\mathrm{plik}}^2$	$2360.7 (\nu: 17.5)$
$\Omega_{\Lambda}$	$0.683^{+0.016}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16072^{+0.00036}_{-0.00035}$	$\chi_{\mathrm{prior}}^2$	$11.5 (\nu: 10.3)$
$\Omega_{\mathrm{m}}$	$0.317^{+0.017}_{-0.016}$	$z_{\mathrm{eq}}$	$3410^{+60}_{-59}$	$\chi_{\mathrm{CMB}}^2$	$2780.5 (\nu: 17.2)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2792.02; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.49; R - 1 = 0.01357$$

## 12.14 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02245^{+0.00027}_{-0.00028}$	$\sigma_8$	$0.811^{+0.014}_{-0.014}$	$D_M(0.15)$	$640.7^{+7.5}_{-7.5}$
$\Omega_c h^2$	$0.1194^{+0.0020}_{-0.0020}$	$S_8$	$0.826^{+0.025}_{-0.025}$	$H(0.38)$	$83.07^{+0.58}_{-0.55}$
$100\theta_{MC}$	$1.04101^{+0.00056}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.014}_{-0.014}$	$D_M(0.38)$	$1528^{+15}_{-15}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.014}_{-0.014}$	$H(0.51)$	$89.79^{+0.47}_{-0.44}$
$\ln(10^{10} A_s)$	$3.050^{+0.032}_{-0.030}$	$\sigma_8/h^{0.5}$	$0.986^{+0.020}_{-0.020}$	$D_M(0.51)$	$1980^{+18}_{-18}$
$n_s$	$0.9659^{+0.0080}_{-0.0081}$	$r_{\text{drag}} h$	$99.6^{+1.5}_{-1.5}$	$H(0.61)$	$95.41^{+0.39}_{-0.37}$
$dn_s/d \ln k$	$-0.005^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.051}_{-0.051}$	$D_M(0.61)$	$2304^{+19}_{-20}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$H(2.33)$	$236.2^{+1.2}_{-1.2}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$10^9 A_s$	$2.113^{+0.068}_{-0.064}$	$D_M(2.33)$	$5758^{+17}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.883^{+0.023}_{-0.022}$	$f\sigma_8(0.15)$	$0.457^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.8}_{-4.0}$	$D_{40}$	$1218^{+35}_{-36}$	$\sigma_8(0.15)$	$0.749^{+0.013}_{-0.012}$
$A_{100}^{\text{PS}}$	$262^{+60}_{-60}$	$D_{220}$	$5737^{+74}_{-75}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2541^{+26}_{-26}$	$\sigma_8(0.38)$	$0.664^{+0.011}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$816.9^{+9.2}_{-9.0}$	$f\sigma_8(0.51)$	$0.474^{+0.010}_{-0.010}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{2000}$	$230.5^{+3.4}_{-3.4}$	$\sigma_8(0.51)$	$0.6215^{+0.0099}_{-0.0096}$
$A^{\text{kSZ}}$	$< 8.48$	$n_{s,0.002}$	$0.982^{+0.041}_{-0.040}$	$f\sigma_8(0.61)$	$0.4689^{+0.0095}_{-0.0093}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5914^{+0.0094}_{-0.0090}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.6}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24675^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2982^{+0.0047}_{-0.0045}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.3}$	$10^5 D/H$	$2.571^{+0.052}_{-0.049}$	$\sigma_8(2.33)$	$0.3074^{+0.0048}_{-0.0046}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	Age/Gyr	$13.784^{+0.039}_{-0.041}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.077}_{-0.075}$	$z_*$	$1089.77^{+0.44}_{-0.44}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.060}_{-0.059}$	$r_*$	$144.53^{+0.45}_{-0.48}$	$f_{2000}^{217}$	$107.6^{+3.9}_{-3.8}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04119^{+0.00055}_{-0.00059}$	$\chi_{\text{simall}}^2$	$397.4 (\nu: 2.5)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.881^{+0.043}_{-0.046}$	$\chi_{\text{lowl}}^2$	$22.3 (\nu: 1.2)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1060.07^{+0.58}_{-0.60}$	$\chi_{\text{plik}}^2$	$2360.8 (\nu: 17.1)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.51}$	$r_{\text{drag}}$	$147.17^{+0.48}_{-0.50}$	$\chi_{6\text{DF}}^2$	$0.059 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14085^{+0.00060}_{-0.00059}$	$\chi_{\text{MGS}}^2$	$1.24 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16068^{+0.00036}_{-0.00034}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.1)$
$H_0$	$67.67^{+0.89}_{-0.87}$	$z_{\text{eq}}$	$3389^{+45}_{-45}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.4)$
$\Omega_\Lambda$	$0.689^{+0.012}_{-0.012}$	$k_{\text{eq}}$	$0.01034^{+0.00014}_{-0.00014}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.7)$
$\Omega_m$	$0.311^{+0.012}_{-0.012}$	$100\theta_{\text{eq}}$	$0.8159^{+0.0084}_{-0.0085}$	$\chi_{\text{CMB}}^2$	$2780.5 (\nu: 16.5)$
$\Omega_m h^2$	$0.1425^{+0.0019}_{-0.0019}$	$100\theta_{s,\text{eq}}$	$0.4507^{+0.0044}_{-0.0043}$		
$\Omega_m h^3$	$0.09641^{+0.00061}_{-0.00059}$	$H(0.15)$	$72.95^{+0.77}_{-0.75}$		

$$\bar{\chi}_{\text{eff}}^2 = 2798.32; \Delta \bar{\chi}_{\text{eff}}^2 = 0.61; R - 1 = 0.02163$$

12.15 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00029}_{-0.00029}$	$\Omega_m h^3$	$0.09639^{+0.00061}_{-0.00059}$	$100\theta_{s,eq}$	$0.4493^{+0.0049}_{-0.0049}$
$\Omega_c h^2$	$0.1200^{+0.0023}_{-0.0022}$	$\sigma_8$	$0.812^{+0.012}_{-0.011}$	$H(0.15)$	$72.71^{+0.90}_{-0.87}$
$100\theta_{MC}$	$1.04093^{+0.00060}_{-0.00062}$	$S_8$	$0.832^{+0.025}_{-0.025}$	$D_M(0.15)$	$643.2^{+8.8}_{-8.9}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.456^{+0.014}_{-0.014}$	$H(0.38)$	$82.89^{+0.66}_{-0.63}$
$\ln(10^{10} A_s)$	$3.049^{+0.027}_{-0.026}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.012}_{-0.013}$	$D_M(0.38)$	$1533^{+18}_{-18}$
$n_s$	$0.9643^{+0.0083}_{-0.0084}$	$\sigma_8/h^{0.5}$	$0.989^{+0.017}_{-0.018}$	$H(0.51)$	$89.65^{+0.52}_{-0.50}$
$dn_s/d \ln k$	$-0.005^{+0.013}_{-0.013}$	$r_{drag} h$	$99.1^{+1.8}_{-1.7}$	$D_M(0.51)$	$1985^{+20}_{-21}$
$y_{cal}$	$1.0006^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.045}_{-0.045}$	$H(0.61)$	$95.30^{+0.43}_{-0.41}$
$A_{217}^{CIB}$	$48^{+10}_{-10}$	$z_{re}$	$7.8^{+1.2}_{-1.3}$	$D_M(0.61)$	$2310^{+22}_{-23}$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.109^{+0.058}_{-0.054}$	$H(2.33)$	$236.6^{+1.4}_{-1.3}$
$A_{143}^{tSZ}$	$5.2^{+3.8}_{-3.9}$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.022}_{-0.022}$	$D_M(2.33)$	$5762^{+19}_{-20}$
$A_{100}^{PS}$	$263^{+60}_{-60}$	$D_{40}$	$1222^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.460^{+0.013}_{-0.013}$
$A_{143}^{PS}$	$47^{+20}_{-20}$	$D_{220}$	$5734^{+75}_{-76}$	$\sigma_8(0.15)$	$0.750^{+0.010}_{-0.0097}$
$A_{143 \times 217}^{PS}$	$42^{+20}_{-20}$	$D_{810}$	$2541^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.478^{+0.010}_{-0.010}$
$A_{217}^{PS}$	$114^{+20}_{-20}$	$D_{1420}$	$816.4^{+9.5}_{-9.4}$	$\sigma_8(0.38)$	$0.6642^{+0.0088}_{-0.0086}$
$A^{kSZ}$	—	$D_{2000}$	$230.3^{+3.5}_{-3.5}$	$f\sigma_8(0.51)$	$0.4757^{+0.0087}_{-0.0092}$
$A_{100}^{dustTT}$	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	$0.979^{+0.041}_{-0.039}$	$\sigma_8(0.51)$	$0.6214^{+0.0082}_{-0.0080}$
$A_{143}^{dustTT}$	$11.0^{+3.6}_{-3.5}$	$Y_P$	$0.24541^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.4704^{+0.0079}_{-0.0082}$
$A_{143 \times 217}^{dustTT}$	$18.6^{+6.6}_{-6.3}$	$Y_P^{BBN}$	$0.24673^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.5912^{+0.0078}_{-0.0076}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	$10^5 D/H$	$2.580^{+0.054}_{-0.051}$	$f\sigma_8(2.33)$	$0.2980^{+0.0041}_{-0.0039}$
$A_{100}^{dustTE}$	$0.115^{+0.077}_{-0.075}$	Age/Gyr	$13.794^{+0.044}_{-0.045}$	$\sigma_8(2.33)$	$0.3070^{+0.0044}_{-0.0041}$
$A_{100 \times 143}^{dustTE}$	$0.134^{+0.058}_{-0.059}$	$z_*$	$1089.88^{+0.49}_{-0.49}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.41^{+0.50}_{-0.52}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143}^{dustTE}$	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	$1.04111^{+0.00059}_{-0.00061}$	$f_{2000}^{217}$	$107.7^{+4.0}_{-3.9}$
$A_{143 \times 217}^{dustTE}$	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.871^{+0.048}_{-0.049}$	$\chi_{lensing}^2$	$9.42 (\nu: 0.3)$
$A_{217}^{dustTE}$	$2.08^{+0.52}_{-0.52}$	$z_{drag}$	$1060.01^{+0.61}_{-0.61}$	$\chi_{simall}^2$	$397.0 (\nu: 1.5)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	$147.06^{+0.51}_{-0.52}$	$\chi_{lowl}^2$	$22.7 (\nu: 1.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	$0.14093^{+0.00061}_{-0.00059}$	$\chi_{plik}^2$	$2360.4 (\nu: 16.7)$
$H_0$	$67.4^{+1.0}_{-1.0}$	$100\theta_D$	$0.16072^{+0.00036}_{-0.00034}$	$\chi_{prior}^2$	$11.6 (\nu: 10.5)$
$\Omega_\Lambda$	$0.685^{+0.014}_{-0.014}$	$z_{eq}$	$3403^{+52}_{-50}$	$\chi_{CMB}^2$	$2789.5 (\nu: 17.1)$
$\Omega_m$	$0.315^{+0.014}_{-0.014}$	$k_{eq}$	$0.01039^{+0.00016}_{-0.00015}$		
$\Omega_m h^2$	$0.1431^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	$0.8133^{+0.0095}_{-0.0096}$		

$$\bar{\chi}_{eff}^2 = 2801.11; \Delta \bar{\chi}_{eff}^2 = 0.60; R - 1 = 0.02119$$



12.16 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02245^{+0.00027}_{-0.00028}$	$\sigma_8$	$0.811^{+0.012}_{-0.011}$	$D_M(0.15)$	$640.6^{+7.0}_{-6.9}$
$\Omega_c h^2$	$0.1194^{+0.0018}_{-0.0018}$	$S_8$	$0.825^{+0.021}_{-0.021}$	$H(0.38)$	$83.07^{+0.54}_{-0.51}$
$100\theta_{MC}$	$1.04101^{+0.00056}_{-0.00061}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.012}_{-0.011}$	$D_M(0.38)$	$1528^{+14}_{-14}$
$\tau$	$0.057^{+0.013}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.011}_{-0.011}$	$H(0.51)$	$89.79^{+0.43}_{-0.42}$
$\ln(10^{10} A_s)$	$3.050^{+0.029}_{-0.026}$	$\sigma_8/h^{0.5}$	$0.985^{+0.016}_{-0.016}$	$D_M(0.51)$	$1979^{+16}_{-17}$
$n_s$	$0.9659^{+0.0078}_{-0.0079}$	$r_{\text{drag}} h$	$99.6^{+1.4}_{-1.4}$	$H(0.61)$	$95.41^{+0.37}_{-0.35}$
$dn_s/d \ln k$	$-0.004^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.041}_{-0.044}$	$D_M(0.61)$	$2303^{+18}_{-18}$
$y_{\text{cal}}$	$1.0008^{+0.0048}_{-0.0047}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.3}$	$H(2.33)$	$236.2^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.112^{+0.059}_{-0.056}$	$D_M(2.33)$	$5758^{+17}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.883^{+0.022}_{-0.021}$	$f\sigma_8(0.15)$	$0.457^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.3^{+3.8}_{-4.0}$	$D_{40}$	$1220^{+35}_{-36}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0099}$
$A_{100}^{\text{PS}}$	$262^{+60}_{-60}$	$D_{220}$	$5739^{+73}_{-73}$	$f\sigma_8(0.38)$	$0.4752^{+0.0091}_{-0.0093}$
$A_{143}^{\text{PS}}$	$47^{+20}_{-20}$	$D_{810}$	$2541^{+26}_{-26}$	$\sigma_8(0.38)$	$0.6641^{+0.0094}_{-0.0085}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.1^{+9.2}_{-9.1}$	$f\sigma_8(0.51)$	$0.4738^{+0.0082}_{-0.0083}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{2000}$	$230.6^{+3.4}_{-3.4}$	$\sigma_8(0.51)$	$0.6215^{+0.0088}_{-0.0080}$
$A^{\text{kSZ}}$	$< 8.46$	$n_{s,0.002}$	$0.979^{+0.041}_{-0.039}$	$f\sigma_8(0.61)$	$0.4689^{+0.0076}_{-0.0077}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5914^{+0.0084}_{-0.0075}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.6}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24675^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2982^{+0.0043}_{-0.0038}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.3}$	$10^5 D/H$	$2.572^{+0.051}_{-0.049}$	$\sigma_8(2.33)$	$0.3075^{+0.0044}_{-0.0042}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	Age/Gyr	$13.784^{+0.038}_{-0.040}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.078}_{-0.076}$	$z_*$	$1089.77^{+0.43}_{-0.41}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.060}_{-0.059}$	$r_*$	$144.54^{+0.42}_{-0.43}$	$f_{2000}^{217}$	$107.5^{+4.0}_{-3.9}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04118^{+0.00055}_{-0.00060}$	$\chi_{\text{lensing}}^2$	$9.23 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.882^{+0.040}_{-0.042}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1060.07^{+0.59}_{-0.63}$	$\chi_{\text{lowl}}^2$	$22.5 (\nu: 1.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.51}$	$r_{\text{drag}}$	$147.18^{+0.45}_{-0.46}$	$\chi_{\text{plik}}^2$	$2360.4 (\nu: 16.4)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14084^{+0.00058}_{-0.00057}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16069^{+0.00036}_{-0.00034}$	$\chi_{\text{MGS}}^2$	$1.24 (\nu: 0.1)$
$H_0$	$67.68^{+0.83}_{-0.81}$	$z_{\text{eq}}$	$3389^{+41}_{-41}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 0.9)$
$\Omega_\Lambda$	$0.689^{+0.011}_{-0.011}$	$k_{\text{eq}}$	$0.01034^{+0.00013}_{-0.00012}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.4)$
$\Omega_m$	$0.311^{+0.011}_{-0.011}$	$100\theta_{\text{eq}}$	$0.8160^{+0.0077}_{-0.0076}$	$\chi_{\text{CMB}}^2$	$2789.5 (\nu: 16.5)$
$\Omega_m h^2$	$0.1424^{+0.0017}_{-0.0017}$	$100\theta_{s,\text{eq}}$	$0.4508^{+0.0039}_{-0.0039}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_m h^3$	$0.09640^{+0.00061}_{-0.00059}$	$H(0.15)$	$72.96^{+0.71}_{-0.70}$		

$$\bar{\chi}_{\text{eff}}^2 = 2807.20; \Delta \bar{\chi}_{\text{eff}}^2 = 0.48; R - 1 = 0.02657$$

## 13 nrun+nrnunrun

### 13.1 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022332	$0.02234^{+0.00033}_{-0.00032}$	$\Omega_m h^2$	0.14367	$0.1436^{+0.0027}_{-0.0026}$	$100\theta_{\text{eq}}$	0.8103	$0.811^{+0.012}_{-0.012}$
$\Omega_c h^2$	0.12070	$0.1206^{+0.0029}_{-0.0028}$	$\Omega_m h^3$	0.09633	$0.09636^{+0.00062}_{-0.00059}$	$100\theta_{\text{s,eq}}$	0.4479	$0.4480^{+0.0060}_{-0.0061}$
$100\theta_{\text{MC}}$	1.04082	$1.04086^{+0.00062}_{-0.00062}$	$\sigma_8$	0.8178	$0.817^{+0.018}_{-0.017}$	$H(0.15)$	72.42	$72.5^{+1.1}_{-1.1}$
$\tau$	0.0570	$0.058^{+0.018}_{-0.016}$	$S_8$	0.8441	$0.843^{+0.036}_{-0.034}$	$D_{\text{M}}(0.15)$	646.0	$646^{+11}_{-11}$
$\ln(10^{10} A_s)$	3.0513	$3.053^{+0.036}_{-0.033}$	$\sigma_8 \Omega_m^{0.5}$	0.4623	$0.462^{+0.020}_{-0.019}$	$H(0.38)$	82.68	$82.71^{+0.79}_{-0.78}$
$n_s$	0.9624	$0.961^{+0.010}_{-0.011}$	$\sigma_8 \Omega_m^{0.25}$	0.6149	$0.614^{+0.019}_{-0.018}$	$D_{\text{M}}(0.38)$	1538.7	$1538^{+22}_{-22}$
$dn_s/d \ln k$	0.0053	$0.001^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9987	$0.997^{+0.027}_{-0.026}$	$H(0.51)$	89.48	$89.51^{+0.63}_{-0.61}$
$d^2 n_s/d \ln k^2$	0.0139	$0.012^{+0.024}_{-0.025}$	$r_{\text{drag}} h$	98.53	$98.6^{+2.2}_{-2.2}$	$D_{\text{M}}(0.51)$	1992.0	$1991^{+26}_{-25}$
$y_{\text{cal}}$	1.00047	$1.0006^{+0.0048}_{-0.0047}$	$\langle d^2 \rangle^{1/2}$	2.448	$2.446^{+0.057}_{-0.056}$	$H(0.61)$	95.169	$95.20^{+0.50}_{-0.48}$
$A_{217}^{\text{CIB}}$	45.2	$47^{+10}_{-10}$	$z_{\text{re}}$	7.98	$8.0^{+1.7}_{-1.7}$	$D_{\text{M}}(0.61)$	2316.9	$2316^{+28}_{-27}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.70	—	$10^9 A_s$	2.114	$2.118^{+0.077}_{-0.068}$	$H(2.33)$	236.97	$237.0^{+1.7}_{-1.7}$
$A_{143}^{\text{tSZ}}$	7.08	$5.4^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8864	$1.887^{+0.023}_{-0.023}$	$D_{\text{M}}(2.33)$	5768.0	$5767^{+22}_{-23}$
$A_{100}^{\text{PS}}$	247	$259^{+60}_{-60}$	$D_{40}$	1221.4	$1218^{+37}_{-35}$	$f\sigma_8(0.15)$	0.4663	$0.465^{+0.018}_{-0.018}$
$A_{143}^{\text{PS}}$	49.0	$45^{+20}_{-20}$	$D_{220}$	5739	$5740^{+76}_{-77}$	$\sigma_8(0.15)$	0.7549	$0.754^{+0.016}_{-0.015}$
$A_{143 \times 217}^{\text{PS}}$	52.6	$41^{+20}_{-20}$	$D_{810}$	2540.2	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4829	$0.482^{+0.015}_{-0.015}$
$A_{217}^{\text{PS}}$	121.3	$114^{+20}_{-20}$	$D_{1420}$	818.9	$817.0^{+9.7}_{-9.6}$	$\sigma_8(0.38)$	0.6683	$0.668^{+0.014}_{-0.012}$
$A^{\text{kSZ}}$	0.00	$< 8.12$	$D_{2000}$	232.19	$231.2^{+4.0}_{-4.0}$	$f\sigma_8(0.51)$	0.4806	$0.480^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	8.80	$8.9^{+3.6}_{-3.6}$	$n_{\text{s},0.002}$	1.017	$1.019^{+0.087}_{-0.088}$	$\sigma_8(0.51)$	0.6250	$0.624^{+0.013}_{-0.011}$
$A_{143}^{\text{dustTT}}$	11.05	$10.9^{+3.5}_{-3.4}$	$Y_{\text{P}}$	0.245380	$0.24538^{+0.00012}_{-0.00013}$	$f\sigma_8(0.61)$	0.4749	$0.474^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	20.1	$18.5^{+6.5}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	0.246707	$0.24671^{+0.00012}_{-0.00013}$	$\sigma_8(0.61)$	0.5945	$0.594^{+0.012}_{-0.011}$
$A_{217}^{\text{dustTT}}$	95.6	$94^{+10}_{-10}$	$10^5 \text{D/H}$	2.593	$2.591^{+0.060}_{-0.059}$	$f\sigma_8(2.33)$	0.2994	$0.2992^{+0.0059}_{-0.0053}$
$A_{100}^{\text{dustTE}}$	0.115	$0.115^{+0.073}_{-0.074}$	Age/Gyr	13.807	$13.804^{+0.050}_{-0.051}$	$\sigma_8(2.33)$	0.3084	$0.3081^{+0.0061}_{-0.0055}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.135^{+0.057}_{-0.058}$	$z_*$	1090.03	$1090.01^{+0.58}_{-0.58}$	$f_{2000}^{143}$	27.5	$29^{+7}_{-7}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.17}_{-0.17}$	$r_*$	144.28	$144.29^{+0.61}_{-0.64}$	$f_{2000}^{143 \times 217}$	30.98	$32^{+5}_{-5}$
$A_{143}^{\text{dustTE}}$	0.225	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	1.04101	$1.04104^{+0.00060}_{-0.00061}$	$f_{2000}^{217}$	105.57	$106.7^{+4.6}_{-4.4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.668	$0.67^{+0.15}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.860	$13.860^{+0.057}_{-0.059}$	$\chi_{\text{simall}}^2$	396.42	$397.5 (\nu: 2.1)$
$A_{217}^{\text{dustTE}}$	2.09	$2.10^{+0.53}_{-0.53}$	$z_{\text{drag}}$	1059.89	$1059.92^{+0.66}_{-0.64}$	$\chi_{\text{lowl}}^2$	21.69	$22.4 (\nu: 1.1)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	146.95	$146.95^{+0.60}_{-0.62}$	$\chi_{\text{plik}}^2$	2344.6	$2360.7 (\nu: 17.5)$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14099	$0.14099^{+0.00067}_{-0.00066}$	$\chi_{\text{prior}}^2$	1.5	$11.5 (\nu: 10.4)$
$H_0$	67.05	$67.1^{+1.3}_{-1.3}$	$100\theta_{\text{D}}$	0.160775	$0.16077^{+0.00038}_{-0.00038}$	$\chi_{\text{CMB}}^2$	2762.7	$2780.6 (\nu: 18.7)$
$\Omega_{\Lambda}$	0.6804	$0.681^{+0.017}_{-0.018}$	$z_{\text{eq}}$	3418	$3417^{+65}_{-62}$			
$\Omega_{\text{m}}$	0.3196	$0.319^{+0.018}_{-0.017}$	$k_{\text{eq}}$	0.010432	$0.01043^{+0.00020}_{-0.00019}$			

Best-fit  $\chi_{\text{eff}}^2 = 2764.20$ ;  $\Delta\chi_{\text{eff}}^2 = -1.57$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.05$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.29$ ;  $R - 1 = 0.02103$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.42 ( $\Delta$  0.37) commander\_dx12\_v3.2.29: 21.69 ( $\Delta$  -1.57) plik\_rd12\_HM\_v22b\_TTTEE: 2344.61 ( $\Delta$  -0.04)

### 13.2 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022418	$0.02243^{+0.00028}_{-0.00029}$	$\Omega_m h^3$	0.09639	$0.09638^{+0.00060}_{-0.00060}$	$H(0.15)$	72.87	$72.90^{+0.78}_{-0.79}$
$\Omega_c h^2$	0.11958	$0.1195^{+0.0020}_{-0.0020}$	$\sigma_8$	0.8146	$0.814^{+0.017}_{-0.015}$	$D_M(0.15)$	641.5	$641.2^{+7.9}_{-7.7}$
$100\theta_{MC}$	1.04101	$1.04100^{+0.00055}_{-0.00056}$	$S_8$	0.8313	$0.830^{+0.028}_{-0.027}$	$H(0.38)$	83.00	$83.03^{+0.58}_{-0.58}$
$\tau$	0.0586	$0.059^{+0.019}_{-0.016}$	$\sigma_8 \Omega_m^{0.5}$	0.4553	$0.454^{+0.015}_{-0.015}$	$D_M(0.38)$	1529.8	$1529^{+16}_{-15}$
$\ln(10^{10} A_s)$	3.0524	$3.053^{+0.036}_{-0.034}$	$\sigma_8 \Omega_m^{0.25}$	0.6090	$0.608^{+0.016}_{-0.015}$	$H(0.51)$	89.735	$89.75^{+0.47}_{-0.47}$
$n_s$	0.9652	$0.9644^{+0.0085}_{-0.0087}$	$\sigma_8/h^{0.5}$	0.9910	$0.990^{+0.024}_{-0.022}$	$D_M(0.51)$	1981.5	$1981^{+18}_{-18}$
$dn_s/d \ln k$	0.0033	$0.000^{+0.020}_{-0.019}$	$r_{drag} h$	99.43	$99.5^{+1.6}_{-1.6}$	$H(0.61)$	95.366	$95.38^{+0.39}_{-0.38}$
$d^2 n_s/d \ln k^2$	0.0112	$0.009^{+0.025}_{-0.026}$	$\langle d^2 \rangle^{1/2}$	2.433	$2.432^{+0.051}_{-0.049}$	$D_M(0.61)$	2305.7	$2305^{+20}_{-19}$
$y_{cal}$	1.00062	$1.0007^{+0.0049}_{-0.0048}$	$z_{re}$	8.09	$8.1^{+1.8}_{-1.6}$	$H(2.33)$	236.34	$236.3^{+1.2}_{-1.2}$
$A_{217}^{CIB}$	45.9	$47^{+10}_{-10}$	$10^9 A_s$	2.117	$2.119^{+0.076}_{-0.072}$	$D_M(2.33)$	5759.5	$5759^{+19}_{-18}$
$\xi^{tSZ \times CIB}$	0.58	—	$10^9 A_s e^{-2\tau}$	1.8826	$1.882^{+0.022}_{-0.021}$	$f\sigma_8(0.15)$	0.4599	$0.459^{+0.014}_{-0.014}$
$A_{143}^{tSZ}$	7.19	$5.5^{+3.8}_{-3.8}$	$D_{40}$	1216.6	$1215^{+37}_{-34}$	$\sigma_8(0.15)$	0.7527	$0.752^{+0.016}_{-0.014}$
$A_{100}^{PS}$	248	$259^{+50}_{-60}$	$D_{220}$	5744	$5744^{+75}_{-77}$	$f\sigma_8(0.38)$	0.4781	$0.477^{+0.013}_{-0.012}$
$A_{143}^{PS}$	47.3	$45^{+20}_{-20}$	$D_{810}$	2540.6	$2540^{+27}_{-26}$	$\sigma_8(0.38)$	0.6671	$0.666^{+0.013}_{-0.013}$
$A_{143 \times 217}^{PS}$	49.7	$41^{+20}_{-20}$	$D_{1420}$	819.3	$817.8^{+9.9}_{-9.6}$	$f\sigma_8(0.51)$	0.4766	$0.476^{+0.012}_{-0.011}$
$A_{217}^{PS}$	120.5	$114^{+20}_{-20}$	$D_{2000}$	232.19	$231.4^{+4.1}_{-4.0}$	$\sigma_8(0.51)$	0.6242	$0.624^{+0.013}_{-0.011}$
$A^{kSZ}$	0.01	$< 8.09$	$n_{s,0.002}$	1.013	$1.012^{+0.087}_{-0.090}$	$f\sigma_8(0.61)$	0.4715	$0.471^{+0.011}_{-0.010}$
$A_{100}^{dustTT}$	8.83	$8.9^{+3.5}_{-3.5}$	$Y_P$	0.245414	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5939	$0.593^{+0.012}_{-0.011}$
$A_{143}^{dustTT}$	11.06	$10.9^{+3.5}_{-3.4}$	$Y_P^{BBN}$	0.246741	$0.24674^{+0.00010}_{-0.00012}$	$f\sigma_8(2.33)$	0.2994	$0.2992^{+0.0060}_{-0.0053}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.5^{+6.5}_{-6.6}$	$10^5 D/H$	2.577	$2.575^{+0.054}_{-0.051}$	$\sigma_8(2.33)$	0.3087	$0.3084^{+0.0060}_{-0.0057}$
$A_{217}^{dustTT}$	95.4	$93^{+10}_{-10}$	Age/Gyr	13.7882	$13.787^{+0.042}_{-0.042}$	$f_{2000}^{143}$	27.7	$29^{+7}_{-7}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.072}_{-0.075}$	$z_*$	1089.821	$1089.80^{+0.47}_{-0.45}$	$f_{2000}^{143 \times 217}$	31.2	$32^{+5}_{-5}$
$A_{100 \times 143}^{dustTE}$	0.134	$0.135^{+0.059}_{-0.057}$	$r_*$	144.503	$144.52^{+0.46}_{-0.48}$	$f_{2000}^{217}$	105.88	$106.7^{+4.7}_{-4.5}$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04119	$1.04118^{+0.00055}_{-0.00055}$	$\chi_{simall}^2$	396.62	$397.7 (\nu: 2.7)$
$A_{143}^{dustTE}$	0.222	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/Gpc$	13.8787	$13.880^{+0.046}_{-0.045}$	$\chi_{lowl}^2$	21.44	$22.2 (\nu: 1.2)$
$A_{143 \times 217}^{dustTE}$	0.666	$0.66^{+0.15}_{-0.16}$	$z_{drag}$	1060.01	$1060.03^{+0.62}_{-0.60}$	$\chi_{plik}^2$	2345.1	$2360.9 (\nu: 18.0)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.51}_{-0.55}$	$r_{drag}$	147.150	$147.16^{+0.49}_{-0.50}$	$\chi_{6DF}^2$	0.047	$0.068 (\nu: 0.0)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14084	$0.14084^{+0.00062}_{-0.00059}$	$\chi_{MGS}^2$	1.10	$1.19 (\nu: 0.1)$
$c_{217}$	0.99817	$0.9982^{+0.0013}_{-0.0012}$	$100\theta_D$	0.160720	$0.16071^{+0.00036}_{-0.00035}$	$\chi_{DR12BAO}^2$	4.82	$5.1 (\nu: 1.3)$
$H_0$	67.57	$67.61^{+0.91}_{-0.92}$	$z_{eq}$	3393.3	$3391^{+46}_{-45}$	$\chi_{prior}^2$	1.6	$11.5 (\nu: 9.9)$
$\Omega_\Lambda$	0.6876	$0.688^{+0.012}_{-0.013}$	$k_{eq}$	0.010357	$0.01035^{+0.00014}_{-0.00014}$	$\chi_{BAO}^2$	5.97	$6.4 (\nu: 0.9)$
$\Omega_m$	0.3124	$0.312^{+0.013}_{-0.012}$	$100\theta_{eq}$	0.8151	$0.8155^{+0.0086}_{-0.0085}$	$\chi_{CMB}^2$	2763.2	$2780.9 (\nu: 18.6)$
$\Omega_m h^2$	0.14264	$0.1426^{+0.0019}_{-0.0019}$	$100\theta_{s,eq}$	0.45028	$0.4505^{+0.0044}_{-0.0044}$			

Best-fit  $\chi_{eff}^2 = 2770.78$ ;  $\Delta\chi_{eff}^2 = -1.14$ ;  $\bar{\chi}_{eff}^2 = 2798.78$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.87$ ;  $R - 1 = 0.02726$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.02) MGS: 1.10 ( $\Delta$  -0.12) DR12BAO: 4.83 ( $\Delta$  0.41) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.62 ( $\Delta$  0.42) commander\_dx12\_v3\_2\_29: 21.44 ( $\Delta$  -1.43) plik\_rd12\_HM\_v22b\_TTTEE: 2345.10 ( $\Delta$  -0.40)

### 13.3 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022365	$0.02237^{+0.00031}_{-0.00031}$	$\Omega_m h^2$	0.14319	$0.1432^{+0.0023}_{-0.0023}$	$100\theta_{\text{eq}}$	0.8125	$0.813^{+0.010}_{-0.010}$
$\Omega_c h^2$	0.12018	$0.1202^{+0.0024}_{-0.0024}$	$\Omega_m h^3$	0.09634	$0.09634^{+0.00061}_{-0.00059}$	$100\theta_{\text{s,eq}}$	0.4490	$0.4490^{+0.0052}_{-0.0052}$
$100\theta_{\text{MC}}$	1.04091	$1.04090^{+0.00059}_{-0.00057}$	$\sigma_8$	0.8152	$0.814^{+0.013}_{-0.013}$	$H(0.15)$	72.62	$72.62^{+0.94}_{-0.93}$
$\tau$	0.0564	$0.056^{+0.017}_{-0.015}$	$S_8$	0.8371	$0.836^{+0.027}_{-0.027}$	$D_{\text{M}}(0.15)$	644.0	$644.0^{+9.4}_{-9.3}$
$\ln(10^{10} A_{\text{s}})$	3.0482	$3.049^{+0.031}_{-0.029}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4585	$0.458^{+0.015}_{-0.015}$	$H(0.38)$	82.82	$82.83^{+0.69}_{-0.68}$
$n_{\text{s}}$	0.9639	$0.9625^{+0.0093}_{-0.0095}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6114	$0.611^{+0.014}_{-0.014}$	$D_{\text{M}}(0.38)$	1534.7	$1535^{+19}_{-19}$
$\text{d}n_{\text{s}}/\text{d} \ln k$	0.0057	$0.002^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9939	$0.993^{+0.020}_{-0.019}$	$H(0.51)$	89.59	$89.60^{+0.54}_{-0.54}$
$\text{d}^2 n_{\text{s}}/\text{d} \ln k^2$	0.0129	$0.010^{+0.024}_{-0.024}$	$r_{\text{drag}} h$	98.94	$98.9^{+1.9}_{-1.9}$	$D_{\text{M}}(0.51)$	1987.3	$1987^{+22}_{-22}$
$y_{\text{cal}}$	1.00025	$1.0005^{+0.0048}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.4386	$2.439^{+0.045}_{-0.045}$	$H(0.61)$	95.254	$95.26^{+0.44}_{-0.44}$
$A_{217}^{\text{CIB}}$	45.3	$47^{+10}_{-10}$	$z_{\text{re}}$	7.90	$7.9^{+1.5}_{-1.5}$	$D_{\text{M}}(0.61)$	2311.9	$2312^{+24}_{-24}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.70	—	$10^9 A_{\text{s}}$	2.108	$2.110^{+0.066}_{-0.060}$	$H(2.33)$	236.67	$236.7^{+1.4}_{-1.4}$
$A_{143}^{\text{tSZ}}$	7.09	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8830	$1.884^{+0.021}_{-0.021}$	$D_{\text{M}}(2.33)$	5764.4	$5764^{+21}_{-21}$
$A_{100}^{\text{PS}}$	246	$259^{+50}_{-60}$	$D_{40}$	1220.7	$1219^{+36}_{-35}$	$f\sigma_8(0.15)$	0.4627	$0.462^{+0.014}_{-0.014}$
$A_{143}^{\text{PS}}$	48.6	$45^{+20}_{-20}$	$D_{220}$	5738	$5740^{+76}_{-77}$	$\sigma_8(0.15)$	0.7528	$0.752^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	52.4	$41^{+20}_{-20}$	$D_{810}$	2538.6	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4801	$0.479^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	121.0	$114^{+20}_{-20}$	$D_{1420}$	818.9	$817^{+10}_{-9.6}$	$\sigma_8(0.38)$	0.6668	$0.666^{+0.011}_{-0.010}$
$A^{\text{kSZ}}$	0.00	$< 8.15$	$D_{2000}$	232.23	$231.2^{+4.0}_{-3.9}$	$f\sigma_8(0.51)$	0.4781	$0.4774^{+0.0098}_{-0.0098}$
$A_{100}^{\text{dust}TT}$	8.81	$8.9^{+3.5}_{-3.4}$	$n_{\text{s},0.002}$	1.012	$1.011^{+0.086}_{-0.087}$	$\sigma_8(0.51)$	0.6238	$0.623^{+0.010}_{-0.0093}$
$A_{143}^{\text{dust}TT}$	10.97	$10.9^{+3.5}_{-3.4}$	$Y_{\text{P}}$	0.245394	$0.24539^{+0.00012}_{-0.00013}$	$f\sigma_8(0.61)$	0.4727	$0.4720^{+0.0090}_{-0.0089}$
$A_{143 \times 217}^{\text{dust}TT}$	20.0	$18.5^{+6.4}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	0.246720	$0.24672^{+0.00012}_{-0.00013}$	$\sigma_8(0.61)$	0.5934	$0.5926^{+0.0095}_{-0.0089}$
$A_{217}^{\text{dust}TT}$	95.4	$94^{+10}_{-10}$	$10^5 \text{D}/\text{H}$	2.586	$2.587^{+0.058}_{-0.056}$	$f\sigma_8(2.33)$	0.29902	$0.2986^{+0.0049}_{-0.0046}$
$A_{100}^{\text{dust}TE}$	0.115	$0.114^{+0.073}_{-0.074}$	Age/Gyr	13.7990	$13.799^{+0.047}_{-0.047}$	$\sigma_8(2.33)$	0.3081	$0.3077^{+0.0053}_{-0.0049}$
$A_{100 \times 143}^{\text{dust}TE}$	0.135	$0.135^{+0.058}_{-0.057}$	$z_*$	1089.94	$1089.94^{+0.55}_{-0.52}$	$f_{2000}^{143}$	27.3	$29^{+7}_{-7}$
$A_{100 \times 217}^{\text{dust}TE}$	0.484	$0.48^{+0.17}_{-0.17}$	$r_*$	144.39	$144.39^{+0.54}_{-0.53}$	$f_{2000}^{143 \times 217}$	30.88	$32^{+5}_{-5}$
$A_{143}^{\text{dust}TE}$	0.224	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	1.04109	$1.04108^{+0.00058}_{-0.00056}$	$f_{2000}^{217}$	105.45	$106.6^{+4.5}_{-4.4}$
$A_{143 \times 217}^{\text{dust}TE}$	0.668	$0.67^{+0.15}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.869	$13.869^{+0.051}_{-0.050}$	$\chi_{\text{lensing}}^2$	8.98	$9.47 (\nu: 0.4)$
$A_{217}^{\text{dust}TE}$	2.09	$2.09^{+0.52}_{-0.53}$	$z_{\text{drag}}$	1059.93	$1059.94^{+0.64}_{-0.62}$	$\chi_{\text{small}}^2$	396.28	$397.2 (\nu: 1.4)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.05	$147.05^{+0.55}_{-0.53}$	$\chi_{\text{lowl}}^2$	21.70	$22.5 (\nu: 1.3)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14091	$0.14091^{+0.00062}_{-0.00062}$	$\chi_{\text{plik}}^2$	2344.9	$2360.5 (\nu: 16.3)$
$H_0$	67.28	$67.3^{+1.1}_{-1.1}$	$100\theta_{\text{D}}$	0.160757	$0.16075^{+0.00037}_{-0.00038}$	$\chi_{\text{prior}}^2$	1.5	$11.5 (\nu: 10.1)$
$\Omega_{\Lambda}$	0.6837	$0.684^{+0.015}_{-0.015}$	$z_{\text{eq}}$	3406	$3407^{+55}_{-54}$	$\chi_{\text{CMB}}^2$	2771.8	$2789.6 (\nu: 18.4)$
$\Omega_{\text{m}}$	0.3163	$0.316^{+0.015}_{-0.015}$	$k_{\text{eq}}$	0.010396	$0.01040^{+0.00017}_{-0.00016}$			

Best-fit  $\chi_{\text{eff}}^2 = 2773.34$ ;  $\Delta\chi_{\text{eff}}^2 = -1.29$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.12$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.43$ ;  $R - 1 = 0.02893$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.98 ( $\Delta$  0.11) small.100x143\_offlike5\_EE\_Aplanck\_B: 396.28 ( $\Delta$  0.23) commander\_dx12\_v3.2\_29: 21.70 ( $\Delta$  -1.55) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.88 ( $\Delta$  -0.05)

### 13.4 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00028}_{-0.00028}$	$\Omega_m h^3$	$0.09637^{+0.00060}_{-0.00059}$	$H(0.15)$	$72.93^{+0.73}_{-0.73}$
$\Omega_c h^2$	$0.1194^{+0.0019}_{-0.0019}$	$\sigma_8$	$0.813^{+0.013}_{-0.013}$	$D_M(0.15)$	$640.9^{+7.3}_{-7.2}$
$100\theta_{MC}$	$1.04100^{+0.00055}_{-0.00055}$	$S_8$	$0.828^{+0.022}_{-0.021}$	$H(0.38)$	$83.05^{+0.55}_{-0.54}$
$\tau$	$0.059^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.012}_{-0.012}$	$D_M(0.38)$	$1529^{+15}_{-14}$
$\ln(10^{10} A_s)$	$3.052^{+0.031}_{-0.029}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.012}_{-0.012}$	$H(0.51)$	$89.77^{+0.44}_{-0.44}$
$n_s$	$0.9647^{+0.0081}_{-0.0084}$	$\sigma_8/h^{0.5}$	$0.989^{+0.019}_{-0.018}$	$D_M(0.51)$	$1980^{+17}_{-17}$
$dn_s/d \ln k$	$0.001^{+0.020}_{-0.019}$	$r_{\text{drag}} h$	$99.6^{+1.4}_{-1.4}$	$H(0.61)$	$95.39^{+0.38}_{-0.37}$
$d^2 n_s/d \ln k^2$	$0.009^{+0.025}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.042}_{-0.043}$	$D_M(0.61)$	$2304^{+19}_{-19}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	$8.1^{+1.5}_{-1.5}$	$H(2.33)$	$236.2^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.117^{+0.067}_{-0.060}$	$D_M(2.33)$	$5759^{+18}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.021}_{-0.021}$	$f\sigma_8(0.15)$	$0.458^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$D_{40}$	$1217^{+37}_{-35}$	$\sigma_8(0.15)$	$0.751^{+0.012}_{-0.012}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-60}$	$D_{220}$	$5745^{+74}_{-77}$	$f\sigma_8(0.38)$	$0.4767^{+0.0099}_{-0.0097}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.666^{+0.011}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$818^{+10}_{-9.7}$	$f\sigma_8(0.51)$	$0.4753^{+0.0091}_{-0.0089}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{2000}$	$231.5^{+4.1}_{-4.0}$	$\sigma_8(0.51)$	$0.623^{+0.010}_{-0.0095}$
$A^{\text{kSZ}}$	$< 8.09$	$n_{\text{s},0.002}$	$1.008^{+0.086}_{-0.088}$	$f\sigma_8(0.61)$	$0.4704^{+0.0086}_{-0.0084}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$Y_{\text{P}}$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5931^{+0.0097}_{-0.0090}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24674^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2990^{+0.0050}_{-0.0046}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.5}_{-6.6}$	$10^5 \text{D/H}$	$2.575^{+0.053}_{-0.050}$	$\sigma_8(2.33)$	$0.3083^{+0.0052}_{-0.0049}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	Age/Gyr	$13.786^{+0.041}_{-0.041}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.072}_{-0.075}$	$z_*$	$1089.79^{+0.45}_{-0.44}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.057}$	$r_*$	$144.54^{+0.43}_{-0.44}$	$f_{2000}^{217}$	$106.6^{+4.7}_{-4.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04118^{+0.00054}_{-0.00055}$	$\chi_{\text{lensing}}^2$	$9.21 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.883^{+0.043}_{-0.043}$	$\chi_{\text{small}}^2$	$397.5 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1060.03^{+0.63}_{-0.59}$	$\chi_{\text{lowl}}^2$	$22.3 (\nu: 1.4)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.51}_{-0.55}$	$r_{\text{drag}}$	$147.19^{+0.46}_{-0.47}$	$\chi_{\text{plik}}^2$	$2360.7 (\nu: 16.9)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14081^{+0.00060}_{-0.00057}$	$\chi_{6\text{DF}}^2$	$0.059 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16071^{+0.00036}_{-0.00035}$	$\chi_{\text{MGS}}^2$	$1.22 (\nu: 0.1)$
$H_0$	$67.64^{+0.85}_{-0.85}$	$z_{\text{eq}}$	$3389^{+43}_{-42}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.689^{+0.011}_{-0.011}$	$k_{\text{eq}}$	$0.01034^{+0.00013}_{-0.00013}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 9.8)$
$\Omega_{\text{m}}$	$0.311^{+0.011}_{-0.011}$	$100\theta_{\text{eq}}$	$0.8159^{+0.0079}_{-0.0079}$	$\chi_{\text{CMB}}^2$	$2789.8 (\nu: 18.4)$
$\Omega_{\text{m}} h^2$	$0.1425^{+0.0018}_{-0.0017}$	$100\theta_{\text{s,eq}}$	$0.4507^{+0.0040}_{-0.0041}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.7)$

$$\bar{\chi}_{\text{eff}}^2 = 2807.58; \Delta \bar{\chi}_{\text{eff}}^2 = 0.74; R - 1 = 0.02956$$

### 13.5 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235^{+0.00032}_{-0.00032}$	$\Omega_{\mathrm{m}}h^2$	$0.1436^{+0.0027}_{-0.0026}$	$100\theta_{\mathrm{eq}}$	$0.811^{+0.012}_{-0.012}$
$\Omega_{\mathrm{c}}h^2$	$0.1206^{+0.0029}_{-0.0028}$	$\Omega_{\mathrm{m}}h^3$	$0.09636^{+0.00062}_{-0.00060}$	$100\theta_{\mathrm{s,eq}}$	$0.4480^{+0.0060}_{-0.0062}$
$100\theta_{\mathrm{MC}}$	$1.04086^{+0.00061}_{-0.00062}$	$\sigma_8$	$0.817^{+0.017}_{-0.016}$	$H(0.15)$	$72.5^{+1.1}_{-1.1}$
$\tau$	$0.058^{+0.016}_{-0.014}$	$S_8$	$0.843^{+0.036}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$646^{+11}_{-11}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054^{+0.032}_{-0.030}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.462^{+0.020}_{-0.019}$	$H(0.38)$	$82.72^{+0.79}_{-0.78}$
$n_{\mathrm{s}}$	$0.961^{+0.010}_{-0.011}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1538^{+22}_{-22}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.001^{+0.020}_{-0.020}$	$\sigma_8/h^{0.5}$	$0.998^{+0.026}_{-0.026}$	$H(0.51)$	$89.52^{+0.62}_{-0.61}$
$\mathrm{d}^2n_{\mathrm{s}}/\mathrm{d}\ln k^2$	$0.012^{+0.024}_{-0.025}$	$r_{\mathrm{drag}}h$	$98.6^{+2.2}_{-2.2}$	$D_{\mathrm{M}}(0.51)$	$1991^{+26}_{-25}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0048}_{-0.0047}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.056}_{-0.055}$	$H(0.61)$	$95.20^{+0.50}_{-0.48}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$z_{\mathrm{re}}$	$8.1^{+1.4}_{-1.5}$	$D_{\mathrm{M}}(0.61)$	$2316^{+28}_{-27}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$10^9A_{\mathrm{s}}$	$2.121^{+0.069}_{-0.064}$	$H(2.33)$	$236.9^{+1.7}_{-1.7}$
$A_{143}^{\mathrm{tSZ}}$	$5.4^{+3.7}_{-3.9}$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.887^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(2.33)$	$5767^{+22}_{-23}$
$A_{100}^{\mathrm{PS}}$	$259^{+60}_{-60}$	$D_{40}$	$1218^{+37}_{-35}$	$f\sigma_8(0.15)$	$0.466^{+0.018}_{-0.018}$
$A_{143}^{\mathrm{PS}}$	$45^{+20}_{-20}$	$D_{220}$	$5740^{+76}_{-77}$	$\sigma_8(0.15)$	$0.755^{+0.015}_{-0.014}$
$A_{143\times 217}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.482^{+0.015}_{-0.015}$
$A_{217}^{\mathrm{PS}}$	$114^{+20}_{-20}$	$D_{1420}$	$817.0^{+9.6}_{-9.6}$	$\sigma_8(0.38)$	$0.668^{+0.012}_{-0.012}$
$A^{\mathrm{kSZ}}$	$< 8.09$	$D_{2000}$	$231.2^{+4.0}_{-4.0}$	$f\sigma_8(0.51)$	$0.480^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.6}_{-3.6}$	$n_{\mathrm{s},0.002}$	$1.020^{+0.087}_{-0.088}$	$\sigma_8(0.51)$	$0.625^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.5}_{-3.4}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00012}_{-0.00013}$	$f\sigma_8(0.61)$	$0.475^{+0.012}_{-0.012}$
$A_{143\times 217}^{\mathrm{dust}TT}$	$18.5^{+6.5}_{-6.5}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00012}_{-0.00013}$	$\sigma_8(0.61)$	$0.594^{+0.011}_{-0.010}$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$10^5\mathrm{D}/\mathrm{H}$	$2.591^{+0.060}_{-0.059}$	$f\sigma_8(2.33)$	$0.2994^{+0.0053}_{-0.0050}$
$A_{100}^{\mathrm{dust}TE}$	$0.115^{+0.073}_{-0.074}$	Age/Gyr	$13.804^{+0.050}_{-0.051}$	$\sigma_8(2.33)$	$0.3083^{+0.0055}_{-0.0052}$
$A_{100\times 143}^{\mathrm{dust}TE}$	$0.135^{+0.057}_{-0.058}$	$z_*$	$1090.01^{+0.58}_{-0.58}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{100\times 217}^{\mathrm{dust}TE}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.29^{+0.61}_{-0.64}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$A_{143}^{\mathrm{dust}TE}$	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	$1.04105^{+0.00060}_{-0.00061}$	$f_{2000}^{217}$	$106.7^{+4.6}_{-4.4}$
$A_{143\times 217}^{\mathrm{dust}TE}$	$0.67^{+0.15}_{-0.16}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.860^{+0.057}_{-0.059}$	$\chi_{\mathrm{small}}^2$	$397.5 (\nu: 2.2)$
$A_{217}^{\mathrm{dust}TE}$	$2.10^{+0.52}_{-0.53}$	$z_{\mathrm{drag}}$	$1059.93^{+0.66}_{-0.64}$	$\chi_{\mathrm{lowl}}^2$	$22.4 (\nu: 1.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$146.96^{+0.61}_{-0.62}$	$\chi_{\mathrm{plik}}^2$	$2360.5 (\nu: 17.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.14099^{+0.00067}_{-0.00066}$	$\chi_{\mathrm{prior}}^2$	$11.4 (\nu: 10.3)$
$H_0$	$67.1^{+1.3}_{-1.3}$	$100\theta_{\mathrm{D}}$	$0.16076^{+0.00038}_{-0.00038}$	$\chi_{\mathrm{CMB}}^2$	$2780.4 (\nu: 18.3)$
$\Omega_{\Lambda}$	$0.681^{+0.017}_{-0.018}$	$z_{\mathrm{eq}}$	$3417^{+65}_{-62}$		
$\Omega_{\mathrm{m}}$	$0.319^{+0.018}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01043^{+0.00020}_{-0.00019}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2791.89; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.35; R - 1 = 0.02012$$

### 13.6 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00028}_{-0.00029}$	$\Omega_m h^3$	$0.09638^{+0.00060}_{-0.00059}$	$H(0.15)$	$72.90^{+0.78}_{-0.78}$
$\Omega_c h^2$	$0.1195^{+0.0020}_{-0.0020}$	$\sigma_8$	$0.814^{+0.016}_{-0.015}$	$D_M(0.15)$	$641.2^{+7.8}_{-7.6}$
$100\theta_{MC}$	$1.04100^{+0.00056}_{-0.00056}$	$S_8$	$0.830^{+0.028}_{-0.027}$	$H(0.38)$	$83.03^{+0.58}_{-0.58}$
$\tau$	$0.060^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	$0.455^{+0.015}_{-0.015}$	$D_M(0.38)$	$1529^{+16}_{-15}$
$\ln(10^{10} A_s)$	$3.054^{+0.034}_{-0.031}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.016}_{-0.014}$	$H(0.51)$	$89.76^{+0.47}_{-0.46}$
$n_s$	$0.9644^{+0.0086}_{-0.0087}$	$\sigma_8/h^{0.5}$	$0.990^{+0.024}_{-0.021}$	$D_M(0.51)$	$1981^{+18}_{-18}$
$dn_s/d \ln k$	$0.000^{+0.020}_{-0.019}$	$r_{drag} h$	$99.5^{+1.6}_{-1.6}$	$H(0.61)$	$95.38^{+0.39}_{-0.38}$
$d^2 n_s/d \ln k^2$	$0.0095^{+0.025}_{-0.026}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.051}_{-0.048}$	$D_M(0.61)$	$2305^{+20}_{-19}$
$y_{cal}$	$1.0007^{+0.0049}_{-0.0048}$	$z_{re}$	$8.2^{+1.5}_{-1.6}$	$H(2.33)$	$236.3^{+1.2}_{-1.2}$
$A_{217}^{CIB}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.121^{+0.072}_{-0.066}$	$D_M(2.33)$	$5759^{+18}_{-18}$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.022}_{-0.021}$	$f\sigma_8(0.15)$	$0.459^{+0.014}_{-0.014}$
$A_{143}^{tSZ}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1215^{+37}_{-34}$	$\sigma_8(0.15)$	$0.752^{+0.014}_{-0.014}$
$A_{100}^{PS}$	$258^{+50}_{-60}$	$D_{220}$	$5744^{+75}_{-77}$	$f\sigma_8(0.38)$	$0.478^{+0.013}_{-0.012}$
$A_{143}^{PS}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.667^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	$41^{+20}_{-20}$	$D_{1420}$	$817.7^{+9.8}_{-9.5}$	$f\sigma_8(0.51)$	$0.476^{+0.012}_{-0.011}$
$A_{217}^{PS}$	$114^{+20}_{-20}$	$D_{2000}$	$231.4^{+4.1}_{-4.0}$	$\sigma_8(0.51)$	$0.624^{+0.012}_{-0.011}$
$A^{kSZ}$	$< 8.08$	$n_{s,0.002}$	$1.013^{+0.086}_{-0.089}$	$f\sigma_8(0.61)$	$0.471^{+0.011}_{-0.0099}$
$A_{100}^{dustTT}$	$8.9^{+3.5}_{-3.5}$	$Y_P$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.594^{+0.011}_{-0.010}$
$A_{143}^{dustTT}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{BBN}$	$0.24674^{+0.00010}_{-0.00012}$	$f\sigma_8(2.33)$	$0.2993^{+0.0055}_{-0.0052}$
$A_{143 \times 217}^{dustTT}$	$18.5^{+6.5}_{-6.5}$	$10^5 D/H$	$2.575^{+0.054}_{-0.051}$	$\sigma_8(2.33)$	$0.3086^{+0.0057}_{-0.0053}$
$A_{217}^{dustTT}$	$93^{+10}_{-10}$	Age/Gyr	$13.787^{+0.042}_{-0.042}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{100}^{dustTE}$	$0.114^{+0.071}_{-0.075}$	$z_*$	$1089.80^{+0.47}_{-0.45}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{100 \times 143}^{dustTE}$	$0.135^{+0.059}_{-0.057}$	$r_*$	$144.52^{+0.46}_{-0.48}$	$f_{2000}^{217}$	$106.6^{+4.7}_{-4.5}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04118^{+0.00055}_{-0.00055}$	$\chi_{small}^2$	$397.7 (\nu: 2.7)$
$A_{143}^{dustTE}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.880^{+0.046}_{-0.045}$	$\chi_{lowl}^2$	$22.2 (\nu: 1.2)$
$A_{143 \times 217}^{dustTE}$	$0.67^{+0.15}_{-0.16}$	$z_{drag}$	$1060.03^{+0.62}_{-0.60}$	$\chi_{plik}^2$	$2360.8 (\nu: 17.8)$
$A_{217}^{dustTE}$	$2.09^{+0.51}_{-0.54}$	$r_{drag}$	$147.16^{+0.49}_{-0.50}$	$\chi_{6DF}^2$	$0.067 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14084^{+0.00062}_{-0.00059}$	$\chi_{MGS}^2$	$1.19 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0012}$	$100\theta_D$	$0.16071^{+0.00036}_{-0.00035}$	$\chi_{DR12BAO}^2$	$5.1 (\nu: 1.3)$
$H_0$	$67.61^{+0.90}_{-0.91}$	$z_{eq}$	$3391^{+46}_{-44}$	$\chi_{prior}^2$	$11.5 (\nu: 9.7)$
$\Omega_\Lambda$	$0.688^{+0.012}_{-0.013}$	$k_{eq}$	$0.01035^{+0.00014}_{-0.00014}$	$\chi_{BAO}^2$	$6.4 (\nu: 0.9)$
$\Omega_m$	$0.312^{+0.013}_{-0.012}$	$100\theta_{eq}$	$0.8155^{+0.0086}_{-0.0085}$	$\chi_{CMB}^2$	$2780.8 (\nu: 18.3)$
$\Omega_m h^2$	$0.1426^{+0.0019}_{-0.0019}$	$100\theta_{s,eq}$	$0.4505^{+0.0044}_{-0.0044}$		

$$\bar{\chi}_{eff}^2 = 2798.65; \Delta \bar{\chi}_{eff}^2 = 0.93; R - 1 = 0.02773$$

### 13.7 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02237^{+0.00031}_{-0.00030}$	$\Omega_{\text{m}}h^2$	$0.1432^{+0.0022}_{-0.0022}$	$100\theta_{\text{eq}}$	$0.813^{+0.010}_{-0.0098}$
$\Omega_{\text{c}}h^2$	$0.1201^{+0.0024}_{-0.0024}$	$\Omega_{\text{m}}h^3$	$0.09634^{+0.00061}_{-0.00059}$	$100\theta_{\text{s,eq}}$	$0.4491^{+0.0052}_{-0.0050}$
$100\theta_{\text{MC}}$	$1.04090^{+0.00059}_{-0.00057}$	$\sigma_8$	$0.815^{+0.013}_{-0.012}$	$H(0.15)$	$72.64^{+0.94}_{-0.92}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$S_8$	$0.836^{+0.027}_{-0.027}$	$D_{\text{M}}(0.15)$	$643.9^{+9.3}_{-9.2}$
$\ln(10^{10}A_{\text{s}})$	$3.050^{+0.028}_{-0.027}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.458^{+0.015}_{-0.015}$	$H(0.38)$	$82.84^{+0.69}_{-0.67}$
$n_{\text{s}}$	$0.9626^{+0.0093}_{-0.0096}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.611^{+0.014}_{-0.013}$	$D_{\text{M}}(0.38)$	$1534^{+19}_{-19}$
$\text{d}n_{\text{s}}/\text{d}\ln k$	$0.002^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	$0.993^{+0.020}_{-0.019}$	$H(0.51)$	$89.61^{+0.54}_{-0.54}$
$\text{d}^2n_{\text{s}}/\text{d}\ln k^2$	$0.011^{+0.024}_{-0.024}$	$r_{\text{drag}}h$	$99.0^{+1.9}_{-1.8}$	$D_{\text{M}}(0.51)$	$1987^{+22}_{-22}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.044}_{-0.045}$	$H(0.61)$	$95.26^{+0.44}_{-0.44}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$D_{\text{M}}(0.61)$	$2312^{+23}_{-23}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.112^{+0.060}_{-0.056}$	$H(2.33)$	$236.7^{+1.4}_{-1.4}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.884^{+0.021}_{-0.021}$	$D_{\text{M}}(2.33)$	$5764^{+21}_{-20}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-60}$	$D_{40}$	$1219^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.462^{+0.014}_{-0.014}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{220}$	$5740^{+77}_{-76}$	$\sigma_8(0.15)$	$0.752^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.480^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{1420}$	$817^{+10}_{-9.6}$	$\sigma_8(0.38)$	$0.666^{+0.010}_{-0.0092}$
$A^{\text{kSZ}}$	$< 8.14$	$D_{2000}$	$231.3^{+4.0}_{-4.0}$	$f\sigma_8(0.51)$	$0.4776^{+0.0097}_{-0.0096}$
$A_{100}^{\text{dust}TT}$	$8.9^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$1.012^{+0.085}_{-0.087}$	$\sigma_8(0.51)$	$0.6233^{+0.0097}_{-0.0086}$
$A_{143}^{\text{dust}TT}$	$10.9^{+3.5}_{-3.4}$	$Y_{\text{P}}$	$0.24539^{+0.00011}_{-0.00012}$	$f\sigma_8(0.61)$	$0.4722^{+0.0089}_{-0.0088}$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6^{+6.3}_{-6.5}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00012}_{-0.00012}$	$\sigma_8(0.61)$	$0.5930^{+0.0093}_{-0.0081}$
$A_{217}^{\text{dust}TT}$	$94^{+10}_{-10}$	$10^5 \text{D}/\text{H}$	$2.586^{+0.057}_{-0.055}$	$f\sigma_8(2.33)$	$0.2988^{+0.0048}_{-0.0041}$
$A_{100}^{\text{dust}TE}$	$0.114^{+0.073}_{-0.074}$	Age/Gyr	$13.798^{+0.047}_{-0.046}$	$\sigma_8(2.33)$	$0.3079^{+0.0049}_{-0.0046}$
$A_{100 \times 143}^{\text{dust}TE}$	$0.135^{+0.058}_{-0.057}$	$z_*$	$1089.93^{+0.53}_{-0.51}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{100 \times 217}^{\text{dust}TE}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.39^{+0.54}_{-0.52}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{143}^{\text{dust}TE}$	$0.23^{+0.11}_{-0.11}$	$100\theta_*$	$1.04109^{+0.00058}_{-0.00056}$	$f_{2000}^{217}$	$106.6^{+4.5}_{-4.3}$
$A_{143 \times 217}^{\text{dust}TE}$	$0.67^{+0.15}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.870^{+0.051}_{-0.049}$	$\chi_{\text{lensing}}^2$	$9.47 (\nu: 0.4)$
$A_{217}^{\text{dust}TE}$	$2.09^{+0.51}_{-0.54}$	$z_{\text{drag}}$	$1059.95^{+0.63}_{-0.63}$	$\chi_{\text{small}}^2$	$397.2 (\nu: 1.4)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.05^{+0.54}_{-0.53}$	$\chi_{\text{lowl}}^2$	$22.4 (\nu: 1.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14091^{+0.00061}_{-0.00062}$	$\chi_{\text{plik}}^2$	$2360.4 (\nu: 16.1)$
$H_0$	$67.3^{+1.1}_{-1.1}$	$100\theta_{\text{D}}$	$0.16075^{+0.00037}_{-0.00038}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.0)$
$\Omega_{\Lambda}$	$0.684^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3406^{+53}_{-53}$	$\chi_{\text{CMB}}^2$	$2789.5 (\nu: 17.9)$
$\Omega_{\text{m}}$	$0.316^{+0.015}_{-0.015}$	$k_{\text{eq}}$	$0.01039^{+0.00016}_{-0.00016}$		

$$\bar{\chi}_{\text{eff}}^2 = 2800.94; \Delta\bar{\chi}_{\text{eff}}^2 = 0.43; R - 1 = 0.02757$$



### 13.8 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00028}_{-0.00029}$	$\Omega_m h^3$	$0.09637^{+0.00060}_{-0.00059}$	$H(0.15)$	$72.93^{+0.73}_{-0.73}$
$\Omega_c h^2$	$0.1194^{+0.0019}_{-0.0019}$	$\sigma_8$	$0.813^{+0.013}_{-0.012}$	$D_M(0.15)$	$640.9^{+7.3}_{-7.2}$
$100\theta_{MC}$	$1.04100^{+0.00055}_{-0.00056}$	$S_8$	$0.828^{+0.022}_{-0.021}$	$H(0.38)$	$83.05^{+0.55}_{-0.54}$
$\tau$	$0.059^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.012}_{-0.011}$	$D_M(0.38)$	$1528^{+15}_{-14}$
$\ln(10^{10} A_s)$	$3.053^{+0.029}_{-0.028}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.012}_{-0.012}$	$H(0.51)$	$89.77^{+0.44}_{-0.43}$
$n_s$	$0.9647^{+0.0081}_{-0.0083}$	$\sigma_8/h^{0.5}$	$0.989^{+0.018}_{-0.018}$	$D_M(0.51)$	$1980^{+17}_{-17}$
$dn_s/d \ln k$	$0.001^{+0.020}_{-0.019}$	$r_{\text{drag}} h$	$99.6^{+1.4}_{-1.4}$	$H(0.61)$	$95.39^{+0.37}_{-0.37}$
$d^2 n_s/d \ln k^2$	$0.009^{+0.025}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.042}_{-0.042}$	$D_M(0.61)$	$2304^{+19}_{-18}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$z_{\text{re}}$	$8.1^{+1.4}_{-1.4}$	$H(2.33)$	$236.2^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.118^{+0.062}_{-0.058}$	$D_M(2.33)$	$5759^{+18}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.021}_{-0.020}$	$f\sigma_8(0.15)$	$0.458^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$D_{40}$	$1217^{+36}_{-35}$	$\sigma_8(0.15)$	$0.752^{+0.012}_{-0.011}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-60}$	$D_{220}$	$5745^{+74}_{-77}$	$f\sigma_8(0.38)$	$0.4768^{+0.0099}_{-0.0096}$
$A_{143}^{\text{PS}}$	$44^{+20}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.666^{+0.011}_{-0.0095}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$818^{+10}_{-9.7}$	$f\sigma_8(0.51)$	$0.4754^{+0.0091}_{-0.0088}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{2000}$	$231.5^{+4.1}_{-4.0}$	$\sigma_8(0.51)$	$0.623^{+0.010}_{-0.0089}$
$A^{\text{kSZ}}$	$< 8.08$	$n_{\text{s},0.002}$	$1.009^{+0.086}_{-0.087}$	$f\sigma_8(0.61)$	$0.4705^{+0.0085}_{-0.0082}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.5}$	$Y_{\text{P}}$	$0.24542^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.5933^{+0.0096}_{-0.0085}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.3}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24674^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2991^{+0.0049}_{-0.0044}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.4}_{-6.5}$	$10^5 \text{D/H}$	$2.575^{+0.054}_{-0.050}$	$\sigma_8(2.33)$	$0.3084^{+0.0052}_{-0.0046}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	Age/Gyr	$13.786^{+0.041}_{-0.041}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.072}_{-0.074}$	$z_*$	$1089.79^{+0.45}_{-0.44}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.057}$	$r_*$	$144.55^{+0.43}_{-0.44}$	$f_{2000}^{217}$	$106.5^{+4.6}_{-4.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04118^{+0.00054}_{-0.00055}$	$\chi_{\text{lensing}}^2$	$9.20 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.883^{+0.043}_{-0.042}$	$\chi_{\text{small}}^2$	$397.5 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.15}$	$z_{\text{drag}}$	$1060.03^{+0.63}_{-0.59}$	$\chi_{\text{lowl}}^2$	$22.3 (\nu: 1.3)$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.51}_{-0.54}$	$r_{\text{drag}}$	$147.19^{+0.46}_{-0.46}$	$\chi_{\text{plik}}^2$	$2360.7 (\nu: 16.7)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14081^{+0.00059}_{-0.00057}$	$\chi_{6\text{DF}}^2$	$0.058 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16071^{+0.00036}_{-0.00035}$	$\chi_{\text{MGS}}^2$	$1.23 (\nu: 0.1)$
$H_0$	$67.65^{+0.84}_{-0.84}$	$z_{\text{eq}}$	$3389^{+42}_{-42}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.689^{+0.011}_{-0.011}$	$k_{\text{eq}}$	$0.01034^{+0.00013}_{-0.00013}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 9.6)$
$\Omega_{\text{m}}$	$0.311^{+0.011}_{-0.011}$	$100\theta_{\text{eq}}$	$0.8160^{+0.0079}_{-0.0079}$	$\chi_{\text{CMB}}^2$	$2789.7 (\nu: 18.2)$
$\Omega_{\text{m}} h^2$	$0.1425^{+0.0018}_{-0.0017}$	$100\theta_{\text{s,eq}}$	$0.4507^{+0.0040}_{-0.0041}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.6)$

$$\bar{\chi}_{\text{eff}}^2 = 2807.47; \Delta \bar{\chi}_{\text{eff}}^2 = 0.75; R - 1 = 0.02999$$

## 14 nrun+r

### 14.1 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022169	$0.02221^{+0.00047}_{-0.00046}$	$\sigma_8/h^{0.5}$	0.9939	$0.991^{+0.031}_{-0.032}$	$H(0.51)$	89.33	$89.43^{+0.92}_{-0.86}$
$\Omega_c h^2$	0.12080	$0.1205^{+0.0042}_{-0.0042}$	$r_{\text{drag}} h$	98.35	$98.6^{+3.3}_{-3.2}$	$D_M(0.51)$	1996.5	$1993^{+37}_{-37}$
$100\theta_{\text{MC}}$	1.04076	$1.04082^{+0.00093}_{-0.00095}$	$\langle d^2 \rangle^{1/2}$	2.450	$2.438^{+0.077}_{-0.078}$	$H(0.61)$	95.02	$95.10^{+0.74}_{-0.69}$
$\tau$	0.0529	$0.054^{+0.017}_{-0.017}$	$z_{\text{re}}$	7.60	$7.6^{+1.6}_{-1.8}$	$D_M(0.61)$	2322.0	$2318^{+39}_{-40}$
$\ln(10^{10} A_s)$	3.0434	$3.045^{+0.035}_{-0.035}$	$10^9 A_s$	2.098	$2.101^{+0.075}_{-0.073}$	$H(2.33)$	236.87	$236.7^{+2.5}_{-2.5}$
$n_s$	0.9625	$0.963^{+0.012}_{-0.012}$	$10^9 A_s e^{-2\tau}$	1.8870	$1.887^{+0.028}_{-0.028}$	$D_M(2.33)$	5776.0	$5773^{+32}_{-33}$
$dn_s/d \ln k$	-0.0036	$-0.008^{+0.016}_{-0.017}$	$D_{40}$	1224.8	$1233^{+46}_{-43}$	$f\sigma_8(0.15)$	0.4644	$0.462^{+0.024}_{-0.024}$
$r$	0.000	$< 0.153$	$D_{220}$	5712	$5711^{+81}_{-81}$	$\sigma_8(0.15)$	0.7500	$0.749^{+0.015}_{-0.015}$
$y_{\text{cal}}$	1.00039	$1.0005^{+0.0049}_{-0.0049}$	$D_{810}$	2538.8	$2539^{+28}_{-27}$	$f\sigma_8(0.38)$	0.4806	$0.479^{+0.019}_{-0.019}$
$A_{217}^{\text{CIB}}$	50.9	$49^{+10}_{-10}$	$D_{1420}$	814.7	$814^{+10}_{-9.9}$	$\sigma_8(0.38)$	0.6638	$0.663^{+0.012}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.07	—	$D_{2000}$	229.49	$229.0^{+3.8}_{-3.7}$	$f\sigma_8(0.51)$	0.4781	$0.476^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	7.15	$4.9^{+3.9}_{-3.9}$	$n_{s,0.002}$	0.974	$0.988^{+0.053}_{-0.050}$	$\sigma_8(0.51)$	0.6207	$0.620^{+0.011}_{-0.011}$
$A_{100}^{\text{PS}}$	258	$267^{+60}_{-60}$	$Y_{\text{P}}$	0.245313	$0.24533^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	0.4723	$0.471^{+0.014}_{-0.015}$
$A_{143}^{\text{PS}}$	46.9	$51^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246639	$0.24665^{+0.00018}_{-0.00021}$	$\sigma_8(0.61)$	0.5904	$0.590^{+0.010}_{-0.010}$
$A_{143 \times 217}^{\text{PS}}$	41.0	$44^{+20}_{-20}$	$10^5 D/H$	2.624	$2.616^{+0.088}_{-0.086}$	$f\sigma_8(2.33)$	0.2973	$0.2971^{+0.0051}_{-0.0051}$
$A_{217}^{\text{PS}}$	116.7	$115^{+20}_{-20}$	Age/Gyr	13.826	$13.818^{+0.073}_{-0.075}$	$\sigma_8(2.33)$	0.3061	$0.3060^{+0.0054}_{-0.0053}$
$A^{\text{kSZ}}$	0.0	—	$z_*$	1090.25	$1090.16^{+0.82}_{-0.82}$	$r_{0.002}$	0.000	$< 0.157$
$A_{100}^{\text{dustTT}}$	8.90	$9.0^{+3.6}_{-3.6}$	$r_*$	144.38	$144.43^{+0.97}_{-0.96}$	$r_{0.01}$	0.000	$< 0.152$
$A_{143}^{\text{dustTT}}$	10.82	$10.8^{+3.5}_{-3.5}$	$100\theta_*$	1.04097	$1.04102^{+0.00091}_{-0.00093}$	$\ln(10^{10} A_t)$	-6.50	$-0.4^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\text{dustTT}}$	19.0	$18.4^{+6.5}_{-6.5}$	$D_M(z_*)/\text{Gpc}$	13.870	$13.874^{+0.089}_{-0.089}$	$r_{10}$	0.0000	$< 0.0828$
$A_{217}^{\text{dustTT}}$	93.8	$93^{+10}_{-10}$	$z_{\text{drag}}$	1059.51	$1059.60^{+0.98}_{-0.97}$	$10^9 A_t$	0.000	$< 0.323$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.11	$147.14^{+0.98}_{-0.98}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.289$
$c_{217}$	0.99828	$0.9983^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14070	$0.1407^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	31.2	$32^{+6}_{-6}$
$H_0$	66.86	$67.0^{+1.9}_{-1.8}$	$100\theta_{\text{D}}$	0.16099	$0.16095^{+0.00057}_{-0.00057}$	$f_{2000}^{143 \times 217}$	33.81	$34^{+4}_{-4}$
$\Omega_{\Lambda}$	0.6787	$0.681^{+0.025}_{-0.026}$	$z_{\text{eq}}$	3417	$3410^{+95}_{-95}$	$f_{2000}^{217}$	108.28	$108.9^{+4.1}_{-4.1}$
$\Omega_{\text{m}}$	0.3213	$0.319^{+0.026}_{-0.025}$	$k_{\text{eq}}$	0.010428	$0.01041^{+0.00029}_{-0.00029}$	$\chi_{\text{simall}}^2$	395.91	$397.3 (\nu: 1.6)$
$\Omega_{\text{m}} h^2$	0.14361	$0.1433^{+0.0040}_{-0.0040}$	$100\theta_{\text{eq}}$	0.8101	$0.812^{+0.018}_{-0.017}$	$\chi_{\text{lowl}}^2$	22.73	$23.7 (\nu: 2.5)$
$\Omega_{\text{m}} h^3$	0.09602	$0.09606^{+0.00098}_{-0.00097}$	$100\theta_{s,\text{eq}}$	0.4478	$0.4486^{+0.0093}_{-0.0090}$	$\chi_{\text{plik}}^2$	759.2	$773.6 (\nu: 17.0)$
$\sigma_8$	0.8127	$0.811^{+0.018}_{-0.018}$	$H(0.15)$	72.24	$72.4^{+1.6}_{-1.5}$	$\chi_{\text{prior}}^2$	1.5	$7.3 (\nu: 6.8)$
$S_8$	0.8410	$0.837^{+0.047}_{-0.047}$	$D_M(0.15)$	647.7	$646^{+16}_{-16}$	$\chi_{\text{CMB}}^2$	1177.9	$1194.6 (\nu: 17.4)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4607	$0.458^{+0.026}_{-0.026}$	$H(0.38)$	82.52	$82.6^{+1.2}_{-1.1}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6119	$0.610^{+0.023}_{-0.023}$	$D_M(0.38)$	1542.4	$1540^{+31}_{-32}$			

Best-fit  $\chi_{\text{eff}}^2 = 1179.41$ ;  $\Delta\chi_{\text{eff}}^2 = -0.16$ ;  $\bar{\chi}_{\text{eff}}^2 = 1201.96$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.38$ ;  $R - 1 = 0.00730$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.91 ( $\Delta$  0.03) commander\_dx12\_v3.2.29: 22.73 ( $\Delta$  -0.87) plik\_rd12\_HM\_v22\_TT: 759.25 ( $\Delta$  0.50)

## 14.2 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022267	$0.02230^{+0.00043}_{-0.00042}$	$r_{\text{drag}} h$	99.84	$99.8^{+1.9}_{-1.8}$	$H(0.61)$	95.32	$95.34^{+0.51}_{-0.49}$
$\Omega_c h^2$	0.11893	$0.1189^{+0.0024}_{-0.0024}$	$\langle d^2 \rangle^{1/2}$	2.420	$2.415^{+0.058}_{-0.059}$	$D_M(0.61)$	2304.2	$2304^{+24}_{-24}$
$100\theta_{\text{MC}}$	1.04106	$1.04102^{+0.00081}_{-0.00083}$	$z_{\text{re}}$	7.64	$7.8^{+1.6}_{-1.7}$	$H(2.33)$	235.76	$235.8^{+1.6}_{-1.6}$
$\tau$	0.0539	$0.055^{+0.017}_{-0.016}$	$10^9 A_s$	2.091	$2.100^{+0.076}_{-0.073}$	$D_M(2.33)$	5763.8	$5763^{+25}_{-25}$
$\ln(10^{10} A_s)$	3.0401	$3.045^{+0.036}_{-0.035}$	$10^9 A_s e^{-2\tau}$	1.8772	$1.880^{+0.025}_{-0.024}$	$f\sigma_8(0.15)$	0.4535	$0.454^{+0.015}_{-0.015}$
$n_s$	0.9671	$0.9662^{+0.0088}_{-0.0087}$	$D_{40}$	1217.0	$1228^{+46}_{-42}$	$\sigma_8(0.15)$	0.7455	$0.746^{+0.014}_{-0.013}$
$dn_s/d \ln k$	-0.0024	$-0.008^{+0.016}_{-0.017}$	$D_{220}$	5715	$5717^{+81}_{-79}$	$f\sigma_8(0.38)$	0.4722	$0.472^{+0.013}_{-0.013}$
$r$	0.000	$< 0.164$	$D_{810}$	2535.9	$2538^{+28}_{-27}$	$\sigma_8(0.38)$	0.6611	$0.661^{+0.012}_{-0.012}$
$y_{\text{cal}}$	1.00017	$1.0006^{+0.0050}_{-0.0048}$	$D_{1420}$	815.4	$815^{+10}_{-9.7}$	$f\sigma_8(0.51)$	0.4710	$0.471^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	50.7	$49^{+10}_{-10}$	$D_{2000}$	229.88	$229.3^{+3.7}_{-3.7}$	$\sigma_8(0.51)$	0.6188	$0.619^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$n_{\text{s},0.002}$	0.975	$0.991^{+0.053}_{-0.049}$	$f\sigma_8(0.61)$	0.4662	$0.466^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	7.24	$4.9^{+3.9}_{-3.9}$	$Y_{\text{P}}$	0.245354	$0.24536^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	0.5888	$0.589^{+0.010}_{-0.010}$
$A_{100}^{\text{PS}}$	257	$266^{+60}_{-50}$	$Y_{\text{P}}^{\text{BBN}}$	0.246680	$0.24669^{+0.00016}_{-0.00019}$	$f\sigma_8(2.33)$	0.2970	$0.2971^{+0.0052}_{-0.0050}$
$A_{143}^{\text{PS}}$	45.3	$50^{+20}_{-20}$	$10^5 \text{D/H}$	2.605	$2.600^{+0.081}_{-0.078}$	$\sigma_8(2.33)$	0.3062	$0.3064^{+0.0053}_{-0.0052}$
$A_{143 \times 217}^{\text{PS}}$	39.4	$43^{+20}_{-20}$	Age/Gyr	13.799	$13.797^{+0.057}_{-0.058}$	$r_{0.002}$	0.000	$< 0.169$
$A_{217}^{\text{PS}}$	115.9	$114^{+20}_{-20}$	$z_*$	1089.95	$1089.92^{+0.62}_{-0.62}$	$r_{0.01}$	0.000	$< 0.163$
$A^{\text{kSZ}}$	0.0	—	$r_*$	144.79	$144.76^{+0.64}_{-0.65}$	$\ln(10^{10} A_{\text{t}})$	-7.24	$-0.3^{+1.9}_{-2.4}$
$A_{100}^{\text{dustTT}}$	8.96	$9.0^{+3.6}_{-3.6}$	$100\theta_*$	1.04125	$1.04121^{+0.00080}_{-0.00082}$	$r_{10}$	0.0000	$< 0.0896$
$A_{143}^{\text{dustTT}}$	10.79	$10.8^{+3.5}_{-3.4}$	$D_M(z_*)/\text{Gpc}$	13.905	$13.903^{+0.062}_{-0.064}$	$10^9 A_{\text{t}}$	0.000	$< 0.343$
$A_{143 \times 217}^{\text{dustTT}}$	19.0	$18.4^{+6.5}_{-6.5}$	$z_{\text{drag}}$	1059.63	$1059.69^{+0.96}_{-0.98}$	$10^9 A_{\text{t}} e^{-2\tau}$	0.000	$< 0.307$
$A_{217}^{\text{dustTT}}$	93.8	$93^{+10}_{-10}$	$r_{\text{drag}}$	147.49	$147.45^{+0.72}_{-0.72}$	$f_{2000}^{143}$	30.7	$32^{+6}_{-6}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14037	$0.14043^{+0.00097}_{-0.00095}$	$f_{2000}^{143 \times 217}$	33.34	$34^{+4}_{-4}$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	0.16096	$0.16091^{+0.00057}_{-0.00056}$	$f_{2000}^{217}$	107.84	$108.6^{+4.0}_{-4.1}$
$H_0$	67.69	$67.7^{+1.1}_{-1.1}$	$z_{\text{eq}}$	3374	$3375^{+57}_{-57}$	$\chi_{\text{small}}^2$	395.94	$397.4 (\nu: 1.8)$
$\Omega_{\Lambda}$	0.6905	$0.690^{+0.014}_{-0.014}$	$k_{\text{eq}}$	0.010298	$0.01030^{+0.00017}_{-0.00017}$	$\chi_{\text{lowl}}^2$	22.22	$23.2 (\nu: 2.1)$
$\Omega_{\text{m}}$	0.3095	$0.310^{+0.014}_{-0.014}$	$100\theta_{\text{eq}}$	0.8182	$0.818^{+0.011}_{-0.010}$	$\chi_{\text{plik}}^2$	760.6	$774.0 (\nu: 16.1)$
$\Omega_{\text{m}} h^2$	0.14184	$0.1419^{+0.0024}_{-0.0024}$	$100\theta_{\text{s,eq}}$	0.4520	$0.4519^{+0.0055}_{-0.0053}$	$\chi_{6\text{DF}}^2$	0.017	$0.055 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	0.09601	$0.09606^{+0.00098}_{-0.00096}$	$H(0.15)$	72.95	$72.96^{+0.95}_{-0.92}$	$\chi_{\text{MGS}}^2$	1.34	$1.38 (\nu: 0.1)$
$\sigma_8$	0.8066	$0.807^{+0.015}_{-0.015}$	$D_M(0.15)$	640.6	$640.5^{+9.2}_{-9.2}$	$\chi_{\text{DR12BAO}}^2$	4.08	$4.7 (\nu: 1.2)$
$S_8$	0.8193	$0.820^{+0.029}_{-0.030}$	$H(0.38)$	83.02	$83.04^{+0.72}_{-0.69}$	$\chi_{\text{prior}}^2$	1.5	$7.4 (\nu: 6.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4488	$0.449^{+0.016}_{-0.016}$	$D_M(0.38)$	1528.2	$1528^{+18}_{-19}$	$\chi_{\text{BAO}}^2$	5.44	$6.2 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6016	$0.602^{+0.016}_{-0.016}$	$H(0.51)$	89.72	$89.73^{+0.60}_{-0.57}$	$\chi_{\text{CMB}}^2$	1178.8	$1194.6 (\nu: 16.8)$
$\sigma_8/h^{0.5}$	0.9804	$0.981^{+0.023}_{-0.023}$	$D_M(0.51)$	1980.0	$1980^{+22}_{-22}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.74$ ;  $\Delta\chi_{\text{eff}}^2 = -0.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 1208.12$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.09$ ;  $R - 1 = 0.01047$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.00) MGS: 1.34 ( $\Delta$  0.06) DR12BAO: 4.08 ( $\Delta$  -0.10) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.94 ( $\Delta$  0.06) commander\_dx12\_v3\_2\_29: 22.22 ( $\Delta$  -0.61) plik\_rd12\_HM\_v22\_TT: 760.60 ( $\Delta$  0.50)

### 14.3 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02222^{+0.00047}_{-0.00045}$	$\sigma_8/h^{0.5}$	$0.992^{+0.031}_{-0.032}$	$H(0.51)$	$89.45^{+0.91}_{-0.85}$
$\Omega_{\text{c}}h^2$	$0.1204^{+0.0041}_{-0.0041}$	$r_{\text{drag}}h$	$98.7^{+3.2}_{-3.1}$	$D_{\text{M}}(0.51)$	$1992^{+36}_{-37}$
$100\theta_{\text{MC}}$	$1.04083^{+0.00093}_{-0.00095}$	$\langle d^2 \rangle^{1/2}$	$2.440^{+0.077}_{-0.078}$	$H(0.61)$	$95.12^{+0.74}_{-0.68}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$z_{\text{re}}$	$< 9.05$	$D_{\text{M}}(0.61)$	$2317^{+39}_{-40}$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.031}_{-0.029}$	$10^9 A_{\text{s}}$	$2.107^{+0.066}_{-0.060}$	$H(2.33)$	$236.7^{+2.5}_{-2.5}$
$n_{\text{s}}$	$0.963^{+0.012}_{-0.011}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.887^{+0.028}_{-0.028}$	$D_{\text{M}}(2.33)$	$5772^{+32}_{-33}$
$\text{d}n_{\text{s}}/\text{d} \ln k$	$-0.008^{+0.016}_{-0.017}$	$D_{40}$	$1233^{+46}_{-43}$	$f\sigma_8(0.15)$	$0.462^{+0.024}_{-0.024}$
$r$	$< 0.155$	$D_{220}$	$5711^{+80}_{-81}$	$\sigma_8(0.15)$	$0.750^{+0.014}_{-0.014}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0049}$	$D_{810}$	$2539^{+28}_{-27}$	$f\sigma_8(0.38)$	$0.479^{+0.018}_{-0.019}$
$A_{217}^{\text{CIB}}$	$49^{+10}_{-10}$	$D_{1420}$	$814^{+10}_{-9.9}$	$\sigma_8(0.38)$	$0.664^{+0.012}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$229.0^{+3.8}_{-3.7}$	$f\sigma_8(0.51)$	$0.477^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$n_{\text{s},0.002}$	$0.989^{+0.053}_{-0.050}$	$\sigma_8(0.51)$	$0.621^{+0.010}_{-0.0094}$
$A_{100}^{\text{PS}}$	$267^{+60}_{-60}$	$Y_{\text{P}}$	$0.24533^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.471^{+0.014}_{-0.015}$
$A_{143}^{\text{PS}}$	$51^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00018}_{-0.00021}$	$\sigma_8(0.61)$	$0.5906^{+0.0098}_{-0.0086}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.614^{+0.086}_{-0.085}$	$f\sigma_8(2.33)$	$0.2975^{+0.0045}_{-0.0043}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	Age/Gyr	$13.816^{+0.073}_{-0.074}$	$\sigma_8(2.33)$	$0.3064^{+0.0047}_{-0.0044}$
$A^{\text{kSZ}}$	—	$z_*$	$1090.14^{+0.81}_{-0.81}$	$r_{0.002}$	$< 0.159$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$r_*$	$144.44^{+0.97}_{-0.96}$	$r_{0.01}$	$< 0.154$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$100\theta_*$	$1.04103^{+0.00091}_{-0.00093}$	$\ln(10^{10}A_{\text{t}})$	$-0.4^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.4}_{-6.5}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.875^{+0.089}_{-0.089}$	$r_{10}$	$< 0.0839$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$z_{\text{drag}}$	$1059.62^{+0.99}_{-0.95}$	$10^9 A_{\text{t}}$	$< 0.327$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.15^{+0.98}_{-0.98}$	$10^9 A_{\text{t}}e^{-2\tau}$	$< 0.292$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.1407^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$H_0$	$67.1^{+1.9}_{-1.8}$	$100\theta_{\text{D}}$	$0.16094^{+0.00056}_{-0.00056}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$\Omega_{\Lambda}$	$0.681^{+0.025}_{-0.026}$	$z_{\text{eq}}$	$3409^{+95}_{-95}$	$f_{2000}^{217}$	$108.8^{+4.1}_{-4.1}$
$\Omega_{\text{m}}$	$0.319^{+0.026}_{-0.025}$	$k_{\text{eq}}$	$0.01040^{+0.00029}_{-0.00029}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.6)$
$\Omega_{\text{m}}h^2$	$0.1433^{+0.0040}_{-0.0040}$	$100\theta_{\text{eq}}$	$0.812^{+0.018}_{-0.017}$	$\chi_{\text{lowl}}^2$	$23.6 (\nu: 2.5)$
$\Omega_{\text{m}}h^3$	$0.09608^{+0.00098}_{-0.00097}$	$100\theta_{\text{s,eq}}$	$0.4487^{+0.0092}_{-0.0089}$	$\chi_{\text{plik}}^2$	$773.6 (\nu: 17.0)$
$\sigma_8$	$0.812^{+0.017}_{-0.017}$	$H(0.15)$	$72.4^{+1.6}_{-1.5}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$S_8$	$0.837^{+0.047}_{-0.047}$	$D_{\text{M}}(0.15)$	$646^{+16}_{-16}$	$\chi_{\text{CMB}}^2$	$1194.4 (\nu: 17.2)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.459^{+0.026}_{-0.026}$	$H(0.38)$	$82.7^{+1.2}_{-1.1}$		
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.610^{+0.023}_{-0.023}$	$D_{\text{M}}(0.38)$	$1539^{+31}_{-32}$		

$$\bar{\chi}_{\text{eff}}^2 = 1201.72; \Delta\bar{\chi}_{\text{eff}}^2 = 2.40; R - 1 = 0.00869$$

#### 14.4 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02231^{+0.00043}_{-0.00042}$	$r_{\text{drag}} h$	$99.8^{+1.9}_{-1.8}$	$H(0.61)$	$95.34^{+0.51}_{-0.49}$
$\Omega_c h^2$	$0.1189^{+0.0024}_{-0.0024}$	$\langle d^2 \rangle^{1/2}$	$2.417^{+0.057}_{-0.057}$	$D_M(0.61)$	$2304^{+24}_{-24}$
$100\theta_{\text{MC}}$	$1.04102^{+0.00082}_{-0.00084}$	$z_{\text{re}}$	$< 9.15$	$H(2.33)$	$235.8^{+1.6}_{-1.6}$
$\tau$	$0.056^{+0.014}_{-0.013}$	$10^9 A_s$	$2.105^{+0.067}_{-0.062}$	$D_M(2.33)$	$5763^{+25}_{-25}$
$\ln(10^{10} A_s)$	$3.047^{+0.032}_{-0.030}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.025}_{-0.024}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$n_s$	$0.9663^{+0.0088}_{-0.0087}$	$D_{40}$	$1228^{+46}_{-42}$	$\sigma_8(0.15)$	$0.747^{+0.013}_{-0.012}$
$dn_s/d \ln k$	$-0.008^{+0.016}_{-0.017}$	$D_{220}$	$5717^{+80}_{-80}$	$f\sigma_8(0.38)$	$0.473^{+0.013}_{-0.012}$
$r$	$< 0.165$	$D_{810}$	$2538^{+28}_{-27}$	$\sigma_8(0.38)$	$0.662^{+0.011}_{-0.010}$
$y_{\text{cal}}$	$1.0006^{+0.0050}_{-0.0048}$	$D_{1420}$	$815^{+10}_{-9.7}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{217}^{\text{CIB}}$	$49^{+10}_{-10}$	$D_{2000}$	$229.3^{+3.7}_{-3.7}$	$\sigma_8(0.51)$	$0.6197^{+0.0098}_{-0.0095}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.992^{+0.053}_{-0.049}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$Y_{\text{P}}$	$0.24537^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	$0.5897^{+0.0093}_{-0.0089}$
$A_{100}^{\text{PS}}$	$266^{+60}_{-60}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24669^{+0.00016}_{-0.00019}$	$f\sigma_8(2.33)$	$0.2974^{+0.0046}_{-0.0044}$
$A_{143}^{\text{PS}}$	$50^{+20}_{-20}$	$10^5 \text{D/H}$	$2.598^{+0.080}_{-0.077}$	$\sigma_8(2.33)$	$0.3067^{+0.0048}_{-0.0045}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	Age/Gyr	$13.796^{+0.057}_{-0.058}$	$r_{0.002}$	$< 0.170$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$z_*$	$1089.91^{+0.61}_{-0.61}$	$r_{0.01}$	$< 0.164$
$A^{\text{kSZ}}$	—	$r_*$	$144.76^{+0.64}_{-0.65}$	$\ln(10^{10} A_{\text{t}})$	$-0.3^{+1.9}_{-2.4}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.5}$	$100\theta_*$	$1.04121^{+0.00080}_{-0.00083}$	$r_{10}$	$< 0.0904$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.4}$	$D_M(z_*)/\text{Gpc}$	$13.903^{+0.062}_{-0.063}$	$10^9 A_{\text{t}}$	$< 0.347$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4^{+6.5}_{-6.5}$	$z_{\text{drag}}$	$1059.71^{+0.95}_{-0.96}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.310$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$r_{\text{drag}}$	$147.45^{+0.72}_{-0.72}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14044^{+0.00096}_{-0.00095}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16090^{+0.00057}_{-0.00055}$	$f_{2000}^{217}$	$108.6^{+4.0}_{-4.1}$
$H_0$	$67.7^{+1.1}_{-1.1}$	$z_{\text{eq}}$	$3375^{+57}_{-57}$	$\chi_{\text{simall}}^2$	$397.4 (\nu: 1.9)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.014}$	$k_{\text{eq}}$	$0.01030^{+0.00017}_{-0.00017}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 2.1)$
$\Omega_{\text{m}}$	$0.310^{+0.014}_{-0.014}$	$100\theta_{\text{eq}}$	$0.818^{+0.011}_{-0.010}$	$\chi_{\text{plik}}^2$	$773.9 (\nu: 16.1)$
$\Omega_{\text{m}} h^2$	$0.1419^{+0.0024}_{-0.0024}$	$100\theta_{\text{s,eq}}$	$0.4519^{+0.0055}_{-0.0053}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.09607^{+0.00099}_{-0.00096}$	$H(0.15)$	$72.97^{+0.94}_{-0.92}$	$\chi_{\text{MGS}}^2$	$1.39 (\nu: 0.1)$
$\sigma_8$	$0.808^{+0.015}_{-0.014}$	$D_M(0.15)$	$640.4^{+9.2}_{-9.1}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$S_8$	$0.820^{+0.029}_{-0.029}$	$H(0.38)$	$83.05^{+0.71}_{-0.69}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 6.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.016}_{-0.016}$	$D_M(0.38)$	$1528^{+18}_{-19}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.015}_{-0.015}$	$H(0.51)$	$89.74^{+0.59}_{-0.57}$	$\chi_{\text{CMB}}^2$	$1194.4 (\nu: 16.6)$
$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.022}$	$D_M(0.51)$	$1979^{+22}_{-22}$		

$$\bar{\chi}_{\text{eff}}^2 = 1207.94; \Delta \bar{\chi}_{\text{eff}}^2 = 2.18; R - 1 = 0.01172$$

# 14.5 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022399	$0.02241^{+0.00031}_{-0.00030}$	$\sigma_8$	0.8129	$0.812^{+0.015}_{-0.015}$	$H(0.38)$	82.84	$82.87^{+0.77}_{-0.74}$
$\Omega_c h^2$	0.12022	$0.1202^{+0.0028}_{-0.0027}$	$S_8$	0.8348	$0.833^{+0.033}_{-0.032}$	$D_M(0.38)$	1534.5	$1534^{+21}_{-21}$
$100\theta_{MC}$	1.04090	$1.04091^{+0.00061}_{-0.00063}$	$\sigma_8 \Omega_m^{0.5}$	0.4572	$0.456^{+0.018}_{-0.018}$	$H(0.51)$	89.61	$89.64^{+0.60}_{-0.58}$
$\tau$	0.0561	$0.056^{+0.016}_{-0.016}$	$\sigma_8 \Omega_m^{0.25}$	0.6097	$0.609^{+0.017}_{-0.017}$	$D_M(0.51)$	1987.0	$1986^{+24}_{-24}$
$\ln(10^{10} A_s)$	3.0495	$3.050^{+0.034}_{-0.033}$	$\sigma_8/h^{0.5}$	0.9910	$0.989^{+0.024}_{-0.024}$	$H(0.61)$	95.272	$95.30^{+0.49}_{-0.46}$
$n_s$	0.9647	$0.9643^{+0.0093}_{-0.0093}$	$r_{drag} h$	98.92	$99.0^{+2.1}_{-2.1}$	$D_M(0.61)$	2311.5	$2311^{+26}_{-26}$
$dn_s/d \ln k$	-0.0044	$-0.009^{+0.014}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.444	$2.433^{+0.059}_{-0.061}$	$H(2.33)$	236.73	$236.7^{+1.7}_{-1.6}$
$r$	0.000	$< 0.168$	$z_{re}$	7.86	$7.9^{+1.6}_{-1.6}$	$D_M(2.33)$	5763.3	$5762^{+21}_{-22}$
$y_{cal}$	1.00053	$1.0007^{+0.0050}_{-0.0048}$	$10^9 A_s$	2.110	$2.113^{+0.073}_{-0.070}$	$f\sigma_8(0.15)$	0.4614	$0.461^{+0.017}_{-0.016}$
$A_{217}^{CIB}$	48.9	$48^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	1.8865	$1.888^{+0.024}_{-0.024}$	$\sigma_8(0.15)$	0.7507	$0.750^{+0.013}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.26	—	$D_{40}$	1221.1	$1232^{+43}_{-39}$	$f\sigma_8(0.38)$	0.4787	$0.478^{+0.014}_{-0.014}$
$A_{143}^{tSZ}$	7.29	$5.1^{+3.8}_{-4.0}$	$D_{220}$	5730	$5726^{+77}_{-76}$	$\sigma_8(0.38)$	0.6649	$0.664^{+0.011}_{-0.011}$
$A_{100}^{PS}$	253	$264^{+60}_{-50}$	$D_{810}$	2541.9	$2543^{+27}_{-26}$	$f\sigma_8(0.51)$	0.4768	$0.476^{+0.012}_{-0.012}$
$A_{143}^{PS}$	46.8	$49^{+20}_{-20}$	$D_{1420}$	817.1	$816.0^{+9.8}_{-9.5}$	$\sigma_8(0.51)$	0.6220	$0.621^{+0.010}_{-0.010}$
$A_{143 \times 217}^{PS}$	44.0	$43^{+20}_{-20}$	$D_{2000}$	230.61	$229.9^{+3.6}_{-3.5}$	$f\sigma_8(0.61)$	0.4714	$0.471^{+0.011}_{-0.011}$
$A_{217}^{PS}$	118.0	$115^{+20}_{-20}$	$n_{s,0.002}$	0.9789	$0.995^{+0.048}_{-0.044}$	$\sigma_8(0.61)$	0.5917	$0.5911^{+0.0098}_{-0.0098}$
$A^{kSZ}$	0.0	—	$Y_P$	0.245407	$0.24541^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	0.29816	$0.2979^{+0.0050}_{-0.0049}$
$A_{100}^{dustTT}$	8.90	$8.9^{+3.6}_{-3.6}$	$Y_P^{BBN}$	0.246733	$0.24674^{+0.00012}_{-0.00012}$	$\sigma_8(2.33)$	0.3072	$0.3069^{+0.0052}_{-0.0051}$
$A_{143}^{dustTT}$	11.06	$10.9^{+3.5}_{-3.5}$	$10^5 D/H$	2.580	$2.578^{+0.056}_{-0.055}$	$r_{0.002}$	0.000	$< 0.174$
$A_{143 \times 217}^{dustTT}$	19.7	$18.6^{+6.4}_{-6.4}$	Age/Gyr	13.7963	$13.794^{+0.048}_{-0.049}$	$r_{0.01}$	0.000	$< 0.167$
$A_{217}^{dustTT}$	94.6	$93^{+10}_{-10}$	$z_*$	1089.90	$1089.88^{+0.56}_{-0.56}$	$\ln(10^{10} A_t)$	-6.53	$-0.1^{+1.8}_{-2.4}$
$A_{100}^{dustTE}$	0.114	$0.116^{+0.075}_{-0.075}$	$r_*$	144.35	$144.36^{+0.62}_{-0.61}$	$r_{10}$	0.0000	$< 0.0923$
$A_{100 \times 143}^{dustTE}$	0.135	$0.136^{+0.057}_{-0.058}$	$100\theta_*$	1.04107	$1.04109^{+0.00060}_{-0.00062}$	$10^9 A_t$	0.000	$< 0.355$
$A_{100 \times 217}^{dustTE}$	0.484	$0.48^{+0.16}_{-0.17}$	$D_M(z_*)/\text{Gpc}$	13.866	$13.866^{+0.058}_{-0.057}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.316$
$A_{143}^{dustTE}$	0.226	$0.23^{+0.11}_{-0.11}$	$z_{drag}$	1060.01	$1060.05^{+0.65}_{-0.61}$	$f_{2000}^{143}$	29.9	$31^{+6}_{-6}$
$A_{143 \times 217}^{dustTE}$	0.666	$0.66^{+0.16}_{-0.16}$	$r_{drag}$	147.00	$147.00^{+0.62}_{-0.61}$	$f_{2000}^{143 \times 217}$	32.71	$33^{+4}_{-4}$
$A_{217}^{dustTE}$	2.09	$2.08^{+0.52}_{-0.52}$	$k_D$	0.14098	$0.14099^{+0.00067}_{-0.00067}$	$f_{2000}^{217}$	107.32	$108.1^{+4.0}_{-3.9}$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160708	$0.16069^{+0.00036}_{-0.00036}$	$\chi_{small}^2$	396.34	$397.6 (\nu: 2.0)$
$c_{217}$	0.99821	$0.9982^{+0.0012}_{-0.0012}$	$z_{eq}$	3408	$3407^{+62}_{-62}$	$\chi_{lowl}^2$	22.29	$23.3 (\nu: 1.7)$
$H_0$	67.29	$67.3^{+1.2}_{-1.2}$	$k_{eq}$	0.010402	$0.01040^{+0.00019}_{-0.00019}$	$\chi_{plik}^2$	2344.9	$2361.1 (\nu: 18.7)$
$\Omega_\Lambda$	0.6836	$0.684^{+0.017}_{-0.017}$	$100\theta_{eq}$	0.8123	$0.813^{+0.012}_{-0.012}$	$\chi_{prior}^2$	1.9	$11.6 (\nu: 10.4)$
$\Omega_m$	0.3164	$0.316^{+0.017}_{-0.017}$	$100\theta_{s,eq}$	0.4488	$0.4490^{+0.0060}_{-0.0059}$	$\chi_{CMB}^2$	2763.6	$2782.0 (\nu: 19.3)$
$\Omega_m h^2$	0.14326	$0.1432^{+0.0026}_{-0.0026}$	$H(0.15)$	72.63	$72.7^{+1.1}_{-1.0}$			
$\Omega_m h^3$	0.09640	$0.09643^{+0.00061}_{-0.00061}$	$D_M(0.15)$	643.9	$644^{+10}_{-10}$			

Best-fit  $\chi_{\text{eff}}^2 = 2765.44$ ;  $\Delta\chi_{\text{eff}}^2 = -0.33$ ;  $\bar{\chi}_{\text{eff}}^2 = 2793.62$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.86$ ;  $R - 1 = 0.01370$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.35 ( $\Delta$  0.30) commander\_dx12\_v3.2.29: 22.29 ( $\Delta$  -0.96) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.95 ( $\Delta$  0.30)

## 14.6 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022443	$0.02247^{+0.00028}_{-0.00028}$	$S_8$	0.8261	$0.824^{+0.026}_{-0.025}$	$H(0.51)$	89.770	$89.82^{+0.46}_{-0.46}$
$\Omega_c h^2$	0.11944	$0.1193^{+0.0020}_{-0.0020}$	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.451^{+0.014}_{-0.014}$	$D_M(0.51)$	1980.2	$1978^{+18}_{-18}$
$100\theta_{MC}$	1.04101	$1.04102^{+0.00057}_{-0.00058}$	$\sigma_8 \Omega_m^{0.25}$	0.6057	$0.604^{+0.014}_{-0.014}$	$H(0.61)$	95.395	$95.44^{+0.38}_{-0.38}$
$\tau$	0.0568	$0.057^{+0.016}_{-0.016}$	$\sigma_8/h^{0.5}$	0.9858	$0.984^{+0.020}_{-0.021}$	$D_M(0.61)$	2304.2	$2302^{+19}_{-19}$
$\ln(10^{10} A_s)$	3.0489	$3.051^{+0.034}_{-0.034}$	$r_{\text{drag}} h$	99.54	$99.7^{+1.5}_{-1.5}$	$H(2.33)$	236.27	$236.2^{+1.2}_{-1.2}$
$n_s$	0.9667	$0.9665^{+0.0080}_{-0.0080}$	$\langle d^2 \rangle^{1/2}$	2.432	$2.420^{+0.052}_{-0.054}$	$D_M(2.33)$	5758.2	$5756^{+18}_{-18}$
$dn_s/d \ln k$	-0.0038	$-0.009^{+0.014}_{-0.015}$	$z_{\text{re}}$	7.91	$7.9^{+1.6}_{-1.6}$	$f\sigma_8(0.15)$	0.4571	$0.456^{+0.013}_{-0.013}$
$r$	0.001	$< 0.176$	$10^9 A_s$	2.109	$2.113^{+0.073}_{-0.070}$	$\sigma_8(0.15)$	0.7491	$0.748^{+0.013}_{-0.013}$
$y_{\text{cal}}$	1.00054	$1.0008^{+0.0050}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	1.8827	$1.884^{+0.022}_{-0.022}$	$f\sigma_8(0.38)$	0.4754	$0.474^{+0.011}_{-0.011}$
$A_{217}^{\text{CIB}}$	48.8	$48^{+10}_{-10}$	$D_{40}$	1218.7	$1230^{+42}_{-38}$	$\sigma_8(0.38)$	0.6641	$0.663^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.25	—	$D_{220}$	5733	$5729^{+77}_{-75}$	$f\sigma_8(0.51)$	0.4740	$0.473^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	7.28	$5.2^{+3.8}_{-4.0}$	$D_{810}$	2541.1	$2542^{+27}_{-26}$	$\sigma_8(0.51)$	0.6214	$0.621^{+0.010}_{-0.010}$
$A_{100}^{\text{PS}}$	253	$263^{+60}_{-50}$	$D_{1420}$	817.7	$816.6^{+9.8}_{-9.6}$	$f\sigma_8(0.61)$	0.4690	$0.4682^{+0.0095}_{-0.0097}$
$A_{143}^{\text{PS}}$	45.9	$48^{+20}_{-20}$	$D_{2000}$	230.87	$230.2^{+3.5}_{-3.5}$	$\sigma_8(0.61)$	0.5913	$0.5908^{+0.0097}_{-0.0097}$
$A_{143 \times 217}^{\text{PS}}$	43.2	$42^{+20}_{-20}$	$n_{s,0.002}$	0.9788	$0.996^{+0.048}_{-0.044}$	$f\sigma_8(2.33)$	0.29815	$0.2979^{+0.0049}_{-0.0049}$
$A_{217}^{\text{PS}}$	117.6	$114^{+20}_{-20}$	$Y_{\text{P}}$	0.245424	$0.24543^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	0.3074	$0.3072^{+0.0051}_{-0.0051}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}^{\text{BBN}}$	0.246750	$0.24676^{+0.00010}_{-0.00011}$	$r_{0.002}$	0.001	$< 0.185$
$A_{100}^{\text{dustTT}}$	8.89	$8.9^{+3.6}_{-3.6}$	$10^5 \text{D}/\text{H}$	2.572	$2.567^{+0.051}_{-0.050}$	$r_{0.01}$	0.001	$< 0.176$
$A_{143}^{\text{dustTT}}$	11.01	$11.0^{+3.5}_{-3.5}$	$\text{Age}/\text{Gyr}$	13.7853	$13.781^{+0.041}_{-0.041}$	$\ln(10^{10} A_t)$	-3.97	$0.0^{+1.7}_{-2.4}$
$A_{143 \times 217}^{\text{dustTT}}$	19.6	$18.6^{+6.3}_{-6.3}$	$z_*$	1089.778	$1089.73^{+0.44}_{-0.44}$	$r_{10}$	0.0004	$< 0.0980$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$r_*$	144.521	$144.54^{+0.48}_{-0.48}$	$10^9 A_t$	0.002	$< 0.373$
$A_{100}^{\text{dustTE}}$	0.115	$0.116^{+0.074}_{-0.074}$	$100\theta_*$	1.04118	$1.04119^{+0.00056}_{-0.00058}$	$10^9 A_t e^{-2\tau}$	0.002	$< 0.332$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.057}_{-0.058}$	$D_M(z_*)/\text{Gpc}$	13.8806	$13.882^{+0.046}_{-0.046}$	$f_{2000}^{143}$	29.5	$31^{+6}_{-6}$
$A_{100 \times 217}^{\text{dustTE}}$	0.478	$0.48^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.05	$1060.12^{+0.61}_{-0.61}$	$f_{2000}^{143 \times 217}$	32.42	$33^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.11}_{-0.11}$	$r_{\text{drag}}$	147.16	$147.17^{+0.50}_{-0.50}$	$f_{2000}^{217}$	107.07	$107.9^{+4.0}_{-3.9}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.66^{+0.15}_{-0.15}$	$k_{\text{D}}$	0.14085	$0.14086^{+0.00061}_{-0.00061}$	$\chi_{\text{small}}^2$	396.43	$397.8 (\nu: 2.3)$
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.52}_{-0.53}$	$100\theta_{\text{D}}$	0.160689	$0.16066^{+0.00035}_{-0.00035}$	$\chi_{\text{lowl}}^2$	22.15	$23.1 (\nu: 1.6)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3390.5	$3387^{+46}_{-45}$	$\chi_{\text{plik}}^2$	2345.5	$2361.2 (\nu: 19.1)$
$c_{217}$	0.99821	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	0.010348	$0.01034^{+0.00014}_{-0.00014}$	$\chi_{6\text{DF}}^2$	0.038	$0.053 (\nu: 0.0)$
$H_0$	67.64	$67.73^{+0.89}_{-0.90}$	$100\theta_{\text{eq}}$	0.8157	$0.8164^{+0.0085}_{-0.0086}$	$\chi_{\text{MGS}}^2$	1.16	$1.29 (\nu: 0.1)$
$\Omega_{\Lambda}$	0.6885	$0.690^{+0.012}_{-0.012}$	$100\theta_{s,\text{eq}}$	0.45057	$0.4509^{+0.0044}_{-0.0044}$	$\chi_{\text{DR12BAO}}^2$	4.63	$4.8 (\nu: 1.0)$
$\Omega_{\text{m}}$	0.3115	$0.310^{+0.012}_{-0.012}$	$H(0.15)$	72.93	$73.01^{+0.76}_{-0.77}$	$\chi_{\text{prior}}^2$	1.8	$11.6 (\nu: 10.2)$
$\Omega_{\text{m}} h^2$	0.14252	$0.1424^{+0.0019}_{-0.0019}$	$D_M(0.15)$	640.9	$640.2^{+7.7}_{-7.5}$	$\chi_{\text{BAO}}^2$	5.82	$6.1 (\nu: 0.7)$
$\Omega_{\text{m}} h^3$	0.09640	$0.09643^{+0.00060}_{-0.00061}$	$H(0.38)$	83.05	$83.11^{+0.57}_{-0.56}$	$\chi_{\text{CMB}}^2$	2764.1	$2782.0 (\nu: 19.4)$
$\sigma_8$	0.8107	$0.810^{+0.014}_{-0.014}$	$D_M(0.38)$	1528.6	$1527^{+15}_{-15}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.67$ ;  $\Delta\chi_{\text{eff}}^2 = -0.25$ ;  $\bar{\chi}_{\text{eff}}^2 = 2799.74$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.83$ ;  $R - 1 = 0.01808$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.01) MGS: 1.16 ( $\Delta$  -0.06) DR12BAO: 4.63 ( $\Delta$  0.21) CMB - simall\_100x143.offlike5\_EE\_Aplanck.B: 396.43 ( $\Delta$  0.23) commander\_dx12\_v3.2.29: 22.15 ( $\Delta$  -0.72) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.48 ( $\Delta$  -0.02)

## 14.7 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02242^{+0.00031}_{-0.00030}$	$\sigma_8$	$0.812^{+0.015}_{-0.014}$	$H(0.38)$	$82.88^{+0.76}_{-0.74}$
$\Omega_c h^2$	$0.1201^{+0.0028}_{-0.0027}$	$S_8$	$0.834^{+0.033}_{-0.032}$	$D_M(0.38)$	$1534^{+21}_{-21}$
$100\theta_{MC}$	$1.04091^{+0.00061}_{-0.00063}$	$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.018}_{-0.017}$	$H(0.51)$	$89.64^{+0.60}_{-0.58}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.017}_{-0.016}$	$D_M(0.51)$	$1986^{+24}_{-24}$
$\ln(10^{10} A_s)$	$3.052^{+0.031}_{-0.029}$	$\sigma_8/h^{0.5}$	$0.990^{+0.024}_{-0.023}$	$H(0.61)$	$95.30^{+0.49}_{-0.46}$
$n_s$	$0.9643^{+0.0093}_{-0.0093}$	$r_{\text{drag}} h$	$99.0^{+2.1}_{-2.1}$	$D_M(0.61)$	$2310^{+26}_{-26}$
$dn_s/d \ln k$	$-0.0095^{+0.014}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.059}_{-0.059}$	$H(2.33)$	$236.7^{+1.7}_{-1.6}$
$r$	$< 0.168$	$z_{\text{re}}$	$7.9^{+1.3}_{-1.4}$	$D_M(2.33)$	$5762^{+21}_{-22}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0048}$	$10^9 A_s$	$2.116^{+0.066}_{-0.062}$	$f\sigma_8(0.15)$	$0.461^{+0.017}_{-0.016}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	$1.888^{+0.024}_{-0.024}$	$\sigma_8(0.15)$	$0.750^{+0.013}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1232^{+43}_{-39}$	$f\sigma_8(0.38)$	$0.478^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{220}$	$5726^{+77}_{-76}$	$\sigma_8(0.38)$	$0.665^{+0.011}_{-0.0098}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$D_{810}$	$2543^{+27}_{-26}$	$f\sigma_8(0.51)$	$0.476^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$D_{1420}$	$816.0^{+9.8}_{-9.6}$	$\sigma_8(0.51)$	$0.622^{+0.010}_{-0.0089}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{2000}$	$229.9^{+3.6}_{-3.5}$	$f\sigma_8(0.61)$	$0.471^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$n_{s,0.002}$	$0.995^{+0.048}_{-0.044}$	$\sigma_8(0.61)$	$0.5916^{+0.0091}_{-0.0087}$
$A^{\text{kSZ}}$	—	$Y_P$	$0.24541^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	$0.2981^{+0.0045}_{-0.0043}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P^{\text{BBN}}$	$0.24674^{+0.00011}_{-0.00012}$	$\sigma_8(2.33)$	$0.3072^{+0.0047}_{-0.0045}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$10^5 \text{D}/\text{H}$	$2.577^{+0.056}_{-0.055}$	$r_{0.002}$	$< 0.175$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.4}_{-6.4}$	$\text{Age}/\text{Gyr}$	$13.793^{+0.048}_{-0.049}$	$r_{0.01}$	$< 0.168$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$z_*$	$1089.87^{+0.55}_{-0.55}$	$\ln(10^{10} A_t)$	$-0.1^{+1.8}_{-2.4}$
$A_{100}^{\text{dustTE}}$	$0.116^{+0.075}_{-0.075}$	$r_*$	$144.36^{+0.61}_{-0.61}$	$r_{10}$	$< 0.0926$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136^{+0.058}_{-0.058}$	$100\theta_*$	$1.04109^{+0.00060}_{-0.00062}$	$10^9 A_t$	$< 0.356$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$D_M(z_*)/\text{Gpc}$	$13.866^{+0.057}_{-0.057}$	$10^9 A_t e^{-2\tau}$	$< 0.317$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$z_{\text{drag}}$	$1060.06^{+0.64}_{-0.62}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$r_{\text{drag}}$	$147.00^{+0.62}_{-0.61}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$k_D$	$0.14099^{+0.00067}_{-0.00067}$	$f_{2000}^{217}$	$108.1^{+4.0}_{-3.9}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16069^{+0.00036}_{-0.00036}$	$\chi_{\text{small}}^2$	$397.6 (\nu: 2.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3407^{+62}_{-61}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 1.7)$
$H_0$	$67.3^{+1.2}_{-1.2}$	$k_{\text{eq}}$	$0.01040^{+0.00019}_{-0.00019}$	$\chi_{\text{plik}}^2$	$2360.9 (\nu: 18.5)$
$\Omega_\Lambda$	$0.684^{+0.016}_{-0.017}$	$100\theta_{\text{eq}}$	$0.813^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_m$	$0.316^{+0.017}_{-0.016}$	$100\theta_{s,\text{eq}}$	$0.4490^{+0.0059}_{-0.0059}$	$\chi_{\text{CMB}}^2$	$2781.8 (\nu: 18.9)$
$\Omega_m h^2$	$0.1432^{+0.0026}_{-0.0026}$	$H(0.15)$	$72.7^{+1.0}_{-1.0}$		
$\Omega_m h^3$	$0.09643^{+0.00061}_{-0.00061}$	$D_M(0.15)$	$643^{+10}_{-10}$		

$$\bar{\chi}_{\text{eff}}^2 = 2793.42; \Delta \bar{\chi}_{\text{eff}}^2 = 1.88; R - 1 = 0.01323$$



# 14.8 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02248^{+0.00028}_{-0.00028}$	$S_8$	$0.824^{+0.025}_{-0.025}$	$H(0.51)$	$89.82^{+0.46}_{-0.45}$
$\Omega_c h^2$	$0.1193^{+0.0020}_{-0.0020}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.014}_{-0.014}$	$D_M(0.51)$	$1978^{+18}_{-18}$
$100\theta_{MC}$	$1.04102^{+0.00057}_{-0.00058}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.014}_{-0.013}$	$H(0.61)$	$95.44^{+0.38}_{-0.38}$
$\tau$	$0.058^{+0.014}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.984^{+0.020}_{-0.020}$	$D_M(0.61)$	$2302^{+19}_{-19}$
$\ln(10^{10} A_s)$	$3.052^{+0.031}_{-0.030}$	$r_{\text{drag}} h$	$99.7^{+1.5}_{-1.5}$	$H(2.33)$	$236.2^{+1.2}_{-1.2}$
$n_s$	$0.9665^{+0.0080}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.051}_{-0.052}$	$D_M(2.33)$	$5756^{+18}_{-18}$
$dn_s/d \ln k$	$-0.009^{+0.014}_{-0.015}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$f\sigma_8(0.15)$	$0.456^{+0.013}_{-0.013}$
$r$	$< 0.177$	$10^9 A_s$	$2.116^{+0.067}_{-0.063}$	$\sigma_8(0.15)$	$0.749^{+0.013}_{-0.011}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	$1.884^{+0.022}_{-0.022}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1230^{+42}_{-38}$	$\sigma_8(0.38)$	$0.664^{+0.011}_{-0.0096}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5729^{+76}_{-75}$	$f\sigma_8(0.51)$	$0.473^{+0.010}_{-0.0099}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.8}_{-4.0}$	$D_{810}$	$2542^{+27}_{-26}$	$\sigma_8(0.51)$	$0.621^{+0.010}_{-0.0089}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-50}$	$D_{1420}$	$816.6^{+9.7}_{-9.6}$	$f\sigma_8(0.61)$	$0.4684^{+0.0094}_{-0.0092}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$D_{2000}$	$230.2^{+3.5}_{-3.5}$	$\sigma_8(0.61)$	$0.5912^{+0.0094}_{-0.0084}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$n_{s,0.002}$	$0.997^{+0.048}_{-0.044}$	$f\sigma_8(2.33)$	$0.2981^{+0.0046}_{-0.0044}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$Y_{\text{P}}$	$0.24543^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	$0.3074^{+0.0049}_{-0.0044}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24676^{+0.00011}_{-0.00011}$	$r_{0.002}$	$< 0.186$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$10^5 \text{D/H}$	$2.567^{+0.051}_{-0.050}$	$r_{0.01}$	$< 0.178$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$\text{Age/Gyr}$	$13.781^{+0.041}_{-0.040}$	$\ln(10^{10} A_{\text{t}})$	$0.0^{+1.7}_{-2.4}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.3}$	$z_*$	$1089.72^{+0.44}_{-0.44}$	$r_{10}$	$< 0.0981$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.54^{+0.47}_{-0.47}$	$10^9 A_{\text{t}}$	$< 0.374$
$A_{100}^{\text{dustTE}}$	$0.116^{+0.074}_{-0.073}$	$100\theta_*$	$1.04119^{+0.00056}_{-0.00058}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.334$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$D_M(z_*)/\text{Gpc}$	$13.882^{+0.046}_{-0.046}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.13^{+0.61}_{-0.61}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$r_{\text{drag}}$	$147.17^{+0.50}_{-0.50}$	$f_{2000}^{217}$	$107.9^{+3.9}_{-3.8}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.15}$	$k_{\text{D}}$	$0.14086^{+0.00061}_{-0.00061}$	$\chi_{\text{simall}}^2$	$397.7 (\nu: 2.3)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.51}_{-0.53}$	$100\theta_{\text{D}}$	$0.16065^{+0.00035}_{-0.00035}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 1.6)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3387^{+46}_{-45}$	$\chi_{\text{plik}}^2$	$2361.0 (\nu: 18.8)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	$0.01034^{+0.00014}_{-0.00014}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$H_0$	$67.74^{+0.88}_{-0.89}$	$100\theta_{\text{eq}}$	$0.8164^{+0.0084}_{-0.0086}$	$\chi_{\text{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.012}_{-0.012}$	$100\theta_{\text{s,eq}}$	$0.4509^{+0.0043}_{-0.0044}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.0)$
$\Omega_{\text{m}}$	$0.310^{+0.012}_{-0.012}$	$H(0.15)$	$73.01^{+0.76}_{-0.77}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_{\text{m}} h^2$	$0.1424^{+0.0019}_{-0.0019}$	$D_M(0.15)$	$640.1^{+7.7}_{-7.4}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_{\text{m}} h^3$	$0.09644^{+0.00060}_{-0.00061}$	$H(0.38)$	$83.11^{+0.56}_{-0.56}$	$\chi_{\text{CMB}}^2$	$2781.9 (\nu: 18.9)$
$\sigma_8$	$0.810^{+0.014}_{-0.013}$	$D_M(0.38)$	$1527^{+15}_{-15}$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.55; \Delta \bar{\chi}_{\text{eff}}^2 = 1.83; R - 1 = 0.01821$$

## 14.9 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022185	$0.02223^{+0.00047}_{-0.00045}$	$\sigma_8/h^{0.5}$	0.9883	$0.988^{+0.021}_{-0.021}$	$H(0.51)$	89.46	$89.49^{+0.74}_{-0.71}$
$\Omega_c h^2$	0.11999	$0.1201^{+0.0030}_{-0.0031}$	$r_{\text{drag}} h$	98.95	$98.9^{+2.4}_{-2.3}$	$D_M(0.51)$	1990.3	$1990^{+28}_{-29}$
$100\theta_{\text{MC}}$	1.04084	$1.04084^{+0.00085}_{-0.00087}$	$\langle d^2 \rangle^{1/2}$	2.441	$2.435^{+0.055}_{-0.054}$	$H(0.61)$	95.12	$95.15^{+0.62}_{-0.59}$
$\tau$	0.0528	$0.054^{+0.017}_{-0.015}$	$z_{\text{re}}$	7.56	$7.6^{+1.6}_{-1.6}$	$D_M(0.61)$	2315.4	$2315^{+30}_{-31}$
$\ln(10^{10} A_s)$	3.0406	$3.044^{+0.032}_{-0.030}$	$10^9 A_s$	2.092	$2.099^{+0.067}_{-0.063}$	$H(2.33)$	236.36	$236.5^{+1.9}_{-1.9}$
$n_s$	0.9646	$0.9635^{+0.0098}_{-0.0098}$	$10^9 A_s e^{-2\tau}$	1.8821	$1.885^{+0.023}_{-0.023}$	$D_M(2.33)$	5772.5	$5771^{+29}_{-30}$
$dn_s/d \ln k$	-0.0010	$-0.006^{+0.015}_{-0.016}$	$D_{40}$	1226.7	$1235^{+44}_{-41}$	$f\sigma_8(0.15)$	0.4599	$0.460^{+0.016}_{-0.016}$
$r$	0.000	$< 0.144$	$D_{220}$	5715	$5716^{+78}_{-82}$	$\sigma_8(0.15)$	0.7480	$0.748^{+0.011}_{-0.011}$
$y_{\text{cal}}$	1.00026	$1.0006^{+0.0047}_{-0.0049}$	$D_{810}$	2537.2	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4771	$0.477^{+0.012}_{-0.013}$
$A_{217}^{\text{CIB}}$	49.7	$49^{+10}_{-10}$	$D_{1420}$	815.3	$814^{+10}_{-10}$	$\sigma_8(0.38)$	0.6625	$0.6626^{+0.0095}_{-0.0095}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.22	—	$D_{2000}$	229.84	$229.2^{+3.8}_{-3.8}$	$f\sigma_8(0.51)$	0.4751	$0.475^{+0.010}_{-0.011}$
$A_{143}^{\text{tSZ}}$	6.99	$4.9^{+3.8}_{-3.9}$	$n_{s,0.002}$	0.968	$0.983^{+0.052}_{-0.048}$	$\sigma_8(0.51)$	0.6198	$0.6198^{+0.0091}_{-0.0089}$
$A_{100}^{\text{PS}}$	256	$266^{+60}_{-60}$	$Y_{\text{P}}$	0.245320	$0.24533^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	0.4697	$0.4698^{+0.0092}_{-0.0097}$
$A_{143}^{\text{PS}}$	48.4	$50^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246646	$0.24666^{+0.00018}_{-0.00021}$	$\sigma_8(0.61)$	0.5896	$0.5896^{+0.0088}_{-0.0085}$
$A_{143 \times 217}^{\text{PS}}$	44.4	$43^{+20}_{-20}$	$10^5 D/H$	2.621	$2.613^{+0.087}_{-0.086}$	$f\sigma_8(2.33)$	0.29709	$0.2971^{+0.0046}_{-0.0045}$
$A_{217}^{\text{PS}}$	117.9	$114^{+20}_{-20}$	Age/Gyr	13.818	$13.815^{+0.066}_{-0.068}$	$\sigma_8(2.33)$	0.3061	$0.3061^{+0.0051}_{-0.0050}$
$A^{\text{kSZ}}$	0.0	—	$z_*$	1090.15	$1090.11^{+0.72}_{-0.74}$	$r_{0.002}$	0.000	$< 0.145$
$A_{100}^{\text{dustTT}}$	9.07	$9.0^{+3.6}_{-3.6}$	$r_*$	144.57	$144.52^{+0.74}_{-0.73}$	$r_{0.01}$	0.000	$< 0.142$
$A_{143}^{\text{dustTT}}$	10.88	$10.8^{+3.5}_{-3.5}$	$100\theta_*$	1.04105	$1.04104^{+0.00083}_{-0.00086}$	$\ln(10^{10} A_t)$	-8.76	$-0.4^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.3^{+6.5}_{-6.5}$	$D_M(z_*)/\text{Gpc}$	13.887	$13.882^{+0.070}_{-0.069}$	$r_{10}$	0.0000	$< 0.0762$
$A_{217}^{\text{dustTT}}$	94.3	$93^{+10}_{-10}$	$z_{\text{drag}}$	1059.51	$1059.6^{+1.0}_{-0.97}$	$10^9 A_t$	0.000	$< 0.304$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.30	$147.23^{+0.79}_{-0.77}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.272$
$c_{217}$	0.99830	$0.9983^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14050	$0.14061^{+0.00097}_{-0.00097}$	$f_{2000}^{143}$	30.6	$32^{+6}_{-6}$
$H_0$	67.18	$67.2^{+1.4}_{-1.4}$	$100\theta_{\text{D}}$	0.16101	$0.16095^{+0.00058}_{-0.00058}$	$f_{2000}^{143 \times 217}$	33.38	$34^{+4}_{-4}$
$\Omega_{\Lambda}$	0.6835	$0.683^{+0.019}_{-0.019}$	$z_{\text{eq}}$	3398	$3401^{+70}_{-70}$	$f_{2000}^{217}$	107.82	$108.6^{+4.0}_{-4.1}$
$\Omega_{\text{m}}$	0.3165	$0.317^{+0.019}_{-0.019}$	$k_{\text{eq}}$	0.010370	$0.01038^{+0.00021}_{-0.00021}$	$\chi_{\text{lensing}}^2$	8.89	$9.69 (\nu: 0.5)$
$\Omega_{\text{m}} h^2$	0.14282	$0.1430^{+0.0029}_{-0.0029}$	$100\theta_{\text{eq}}$	0.8136	$0.813^{+0.013}_{-0.013}$	$\chi_{\text{small}}^2$	395.90	$397.2 (\nu: 1.4)$
$\Omega_{\text{m}} h^3$	0.09595	$0.09604^{+0.00099}_{-0.00095}$	$100\theta_{s,\text{eq}}$	0.4497	$0.4494^{+0.0068}_{-0.0066}$	$\chi_{\text{lowl}}^2$	23.09	$23.9 (\nu: 2.6)$
$\sigma_8$	0.8100	$0.810^{+0.012}_{-0.013}$	$H(0.15)$	72.51	$72.5^{+1.2}_{-1.2}$	$\chi_{\text{plik}}^2$	759.3	$772.8 (\nu: 15.2)$
$S_8$	0.8320	$0.833^{+0.032}_{-0.032}$	$D_M(0.15)$	645.0	$645^{+12}_{-12}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4557	$0.456^{+0.018}_{-0.018}$	$H(0.38)$	82.70	$82.72^{+0.92}_{-0.87}$	$\chi_{\text{CMB}}^2$	1187.1	$1203.5 (\nu: 17.2)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6076	$0.608^{+0.015}_{-0.016}$	$D_M(0.38)$	1537.0	$1537^{+24}_{-25}$			

Best-fit  $\chi_{\text{eff}}^2 = 1188.53$ ;  $\Delta\chi_{\text{eff}}^2 = -0.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 1210.83$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.42$ ;  $R - 1 = 0.00920$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.88 ( $\Delta$  -0.02) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 ( $\Delta$  0.04) commander\_dx12\_v3.2.29: 23.09 ( $\Delta$  -0.15) plik\_rd12\_HM\_v22\_TT: 759.26 ( $\Delta$  -0.06)

## 14.10 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022206	$0.02230^{+0.00046}_{-0.00042}$	$r_{\text{drag}} h$	99.62	$99.7^{+1.7}_{-1.7}$	$H(0.61)$	95.235	$95.32^{+0.50}_{-0.48}$
$\Omega_c h^2$	0.11914	$0.1191^{+0.0022}_{-0.0021}$	$\langle d^2 \rangle^{1/2}$	2.4294	$2.424^{+0.047}_{-0.047}$	$D_M(0.61)$	2307.9	$2305^{+22}_{-22}$
$100\theta_{\text{MC}}$	1.04098	$1.04099^{+0.00079}_{-0.00082}$	$z_{\text{re}}$	7.73	$7.9^{+1.5}_{-1.5}$	$H(2.33)$	235.84	$235.9^{+1.4}_{-1.4}$
$\tau$	0.0545	$0.056^{+0.016}_{-0.014}$	$10^9 A_s$	2.095	$2.107^{+0.067}_{-0.062}$	$D_M(2.33)$	5768.0	$5764^{+25}_{-26}$
$\ln(10^{10} A_s)$	3.0420	$3.048^{+0.031}_{-0.030}$	$10^9 A_s e^{-2\tau}$	1.8782	$1.882^{+0.021}_{-0.022}$	$f\sigma_8(0.15)$	0.4557	$0.455^{+0.012}_{-0.012}$
$n_s$	0.9667	$0.9660^{+0.0081}_{-0.0083}$	$D_{40}$	1222.0	$1232^{+45}_{-40}$	$\sigma_8(0.15)$	0.7471	$0.747^{+0.011}_{-0.011}$
$dn_s/d \ln k$	-0.00099	$-0.006^{+0.015}_{-0.017}$	$D_{220}$	5714	$5723^{+78}_{-79}$	$f\sigma_8(0.38)$	0.4740	$0.4738^{+0.0097}_{-0.010}$
$r$	0.000	< 0.153	$D_{810}$	2536.3	$2540^{+25}_{-26}$	$\sigma_8(0.38)$	0.6623	$0.6627^{+0.0097}_{-0.0095}$
$y_{\text{cal}}$	1.00043	$1.0008^{+0.0047}_{-0.0047}$	$D_{1420}$	815.6	$815.4^{+9.7}_{-9.8}$	$f\sigma_8(0.51)$	0.4726	$0.4725^{+0.0087}_{-0.0091}$
$A_{217}^{\text{CIB}}$	50.1	$48^{+10}_{-10}$	$D_{2000}$	229.95	$229.6^{+3.7}_{-3.7}$	$\sigma_8(0.51)$	0.6198	$0.6202^{+0.0091}_{-0.0089}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.14	—	$n_{s,0.002}$	0.970	$0.986^{+0.053}_{-0.048}$	$f\sigma_8(0.61)$	0.4677	$0.4676^{+0.0080}_{-0.0083}$
$A_{143}^{\text{tSZ}}$	7.13	$4.9^{+3.8}_{-3.9}$	$Y_{\text{P}}$	0.245328	$0.24536^{+0.00017}_{-0.00019}$	$\sigma_8(0.61)$	0.5897	$0.5902^{+0.0087}_{-0.0084}$
$A_{100}^{\text{PS}}$	256	$265^{+60}_{-60}$	$Y_{\text{P}}^{\text{BBN}}$	0.246655	$0.24669^{+0.00018}_{-0.00019}$	$f\sigma_8(2.33)$	0.29736	$0.2976^{+0.0045}_{-0.0043}$
$A_{143}^{\text{PS}}$	47.0	$50^{+20}_{-20}$	$10^5 \text{D/H}$	2.617	$2.600^{+0.080}_{-0.083}$	$\sigma_8(2.33)$	0.30657	$0.3069^{+0.0048}_{-0.0045}$
$A_{143 \times 217}^{\text{PS}}$	42.2	$43^{+20}_{-20}$	Age/Gyr	13.809	$13.799^{+0.057}_{-0.060}$	$r_{0.002}$	0.000	< 0.157
$A_{217}^{\text{PS}}$	117.2	$115^{+20}_{-20}$	$z_*$	1090.06	$1089.93^{+0.61}_{-0.64}$	$r_{0.01}$	0.000	< 0.152
$A^{\text{kSZ}}$	0.0	—	$r_*$	144.78	$144.73^{+0.59}_{-0.59}$	$\ln(10^{10} A_t)$	-6.05	$-0.3^{+1.9}_{-2.5}$
$A_{100}^{\text{dustTT}}$	8.96	$8.9^{+3.6}_{-3.6}$	$100\theta_*$	1.04117	$1.04118^{+0.00077}_{-0.00081}$	$r_{10}$	0.0001	< 0.0825
$A_{143}^{\text{dustTT}}$	10.87	$10.7^{+3.4}_{-3.4}$	$D_M(z_*)/\text{Gpc}$	13.905	$13.901^{+0.059}_{-0.058}$	$10^9 A_t$	0.000	< 0.324
$A_{143 \times 217}^{\text{dustTT}}$	19.2	$18.3^{+6.6}_{-6.5}$	$z_{\text{drag}}$	1059.47	$1059.7^{+1.0}_{-0.95}$	$10^9 A_t e^{-2\tau}$	0.000	< 0.288
$A_{217}^{\text{dustTT}}$	94.1	$93^{+10}_{-10}$	$r_{\text{drag}}$	147.50	$147.42^{+0.67}_{-0.68}$	$f_{2000}^{143}$	30.7	$32^{+6}_{-6}$
$c_{100}$	0.99962	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14031	$0.14046^{+0.00094}_{-0.00092}$	$f_{2000}^{143 \times 217}$	33.40	$34^{+4}_{-4}$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0013}$	$100\theta_{\text{D}}$	0.16102	$0.16090^{+0.00056}_{-0.00058}$	$f_{2000}^{217}$	107.88	$108.4^{+3.9}_{-4.0}$
$H_0$	67.54	$67.65^{+0.99}_{-0.99}$	$z_{\text{eq}}$	3378	$3378^{+51}_{-50}$	$\chi_{\text{lensing}}^2$	8.96	$9.49 (\nu: 0.3)$
$\Omega_{\Lambda}$	0.6887	$0.690^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010309	$0.01031^{+0.00016}_{-0.00015}$	$\chi_{\text{simall}}^2$	396.06	$397.5 (\nu: 1.7)$
$\Omega_{\text{m}}$	0.3113	$0.310^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	0.8173	$0.8175^{+0.0092}_{-0.0093}$	$\chi_{\text{lowl}}^2$	22.68	$23.5 (\nu: 2.3)$
$\Omega_{\text{m}} h^2$	0.14200	$0.1420^{+0.0022}_{-0.0021}$	$100\theta_{\text{s,eq}}$	0.45158	$0.4516^{+0.0048}_{-0.0048}$	$\chi_{\text{plik}}^2$	759.8	$773.1 (\nu: 14.9)$
$\Omega_{\text{m}} h^3$	0.09590	$0.09606^{+0.00099}_{-0.00098}$	$H(0.15)$	72.81	$72.91^{+0.87}_{-0.86}$	$\chi_{6\text{DF}}^2$	0.031	$0.054 (\nu: 0.0)$
$\sigma_8$	0.8085	$0.809^{+0.012}_{-0.012}$	$D_M(0.15)$	641.9	$641.0^{+8.5}_{-8.4}$	$\chi_{\text{MGS}}^2$	1.22	$1.32 (\nu: 0.1)$
$S_8$	0.8236	$0.823^{+0.023}_{-0.024}$	$H(0.38)$	82.91	$83.00^{+0.68}_{-0.66}$	$\chi_{\text{DR12BAO}}^2$	4.41	$4.7 (\nu: 1.1)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4511	$0.451^{+0.013}_{-0.013}$	$D_M(0.38)$	1531.0	$1529^{+17}_{-17}$	$\chi_{\text{prior}}^2$	1.6	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6039	$0.604^{+0.012}_{-0.013}$	$H(0.51)$	89.62	$89.71^{+0.57}_{-0.55}$	$\chi_{\text{CMB}}^2$	1187.5	$1203.5 (\nu: 16.4)$
$\sigma_8/h^{0.5}$	0.9838	$0.983^{+0.017}_{-0.018}$	$D_M(0.51)$	1983.3	$1981^{+20}_{-20}$	$\chi_{\text{BAO}}^2$	5.66	$6.1 (\nu: 0.7)$

Best-fit  $\chi_{\text{eff}}^2 = 1194.69$ ;  $\Delta\chi_{\text{eff}}^2 = 0.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 1216.99$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.26$ ;  $R - 1 = 0.01565$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.41 ( $\Delta$  0.04) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.96 ( $\Delta$  0.08) simall\_100x143\_offlike5\_EE\_Aplanck.L 396.06 ( $\Delta$  -0.03) commander\_dx12\_v3.2\_29: 22.68 ( $\Delta$  -0.28) plik\_rd12\_HM\_v22\_TT: 759.76 ( $\Delta$  -0.04)

### 14.11 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02224^{+0.00047}_{-0.00045}$	$\sigma_8/h^{0.5}$	$0.989^{+0.020}_{-0.021}$	$H(0.51)$	$89.51^{+0.73}_{-0.69}$
$\Omega_{\mathrm{c}} h^2$	$0.1200^{+0.0030}_{-0.0031}$	$r_{\mathrm{drag}} h$	$99.0^{+2.4}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1989^{+27}_{-28}$
$100\theta_{\mathrm{MC}}$	$1.04085^{+0.00085}_{-0.00087}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.055}_{-0.054}$	$H(0.61)$	$95.17^{+0.61}_{-0.58}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$z_{\mathrm{re}}$	$< 8.99$	$D_{\mathrm{M}}(0.61)$	$2314^{+29}_{-31}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.028}_{-0.026}$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.059}_{-0.054}$	$H(2.33)$	$236.4^{+1.8}_{-1.9}$
$n_{\mathrm{s}}$	$0.9638^{+0.0096}_{-0.0097}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(2.33)$	$5770^{+29}_{-30}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.006^{+0.015}_{-0.016}$	$D_{40}$	$1234^{+44}_{-41}$	$f\sigma_8(0.15)$	$0.460^{+0.016}_{-0.016}$
$r$	$< 0.146$	$D_{220}$	$5716^{+78}_{-82}$	$\sigma_8(0.15)$	$0.749^{+0.010}_{-0.010}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0047}_{-0.0049}$	$D_{810}$	$2539^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.477^{+0.012}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$49^{+10}_{-10}$	$D_{1420}$	$814^{+10}_{-10}$	$\sigma_8(0.38)$	$0.6632^{+0.0091}_{-0.0083}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.3^{+3.8}_{-3.7}$	$f\sigma_8(0.51)$	$0.475^{+0.010}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$4.9^{+3.8}_{-3.9}$	$n_{\mathrm{s},0.002}$	$0.984^{+0.052}_{-0.048}$	$\sigma_8(0.51)$	$0.6204^{+0.0082}_{-0.0079}$
$A_{100}^{\mathrm{PS}}$	$266^{+60}_{-60}$	$Y_{\mathrm{P}}$	$0.24534^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.4700^{+0.0092}_{-0.0097}$
$A_{143}^{\mathrm{PS}}$	$50^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00018}_{-0.00021}$	$\sigma_8(0.61)$	$0.5902^{+0.0079}_{-0.0075}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.611^{+0.086}_{-0.085}$	$f\sigma_8(2.33)$	$0.2974^{+0.0041}_{-0.0039}$
$A_{217}^{\mathrm{PS}}$	$114^{+20}_{-20}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.813^{+0.065}_{-0.067}$	$\sigma_8(2.33)$	$0.3064^{+0.0045}_{-0.0042}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.09^{+0.71}_{-0.73}$	$r_{0.002}$	$< 0.147$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.6}_{-3.6}$	$r_*$	$144.54^{+0.73}_{-0.71}$	$r_{0.01}$	$< 0.144$
$A_{143}^{\mathrm{dust}TT}$	$10.8^{+3.5}_{-3.5}$	$100\theta_*$	$1.04105^{+0.00083}_{-0.00086}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.4^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.5}_{-6.5}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.884^{+0.069}_{-0.068}$	$r_{10}$	$< 0.0774$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$z_{\mathrm{drag}}$	$1059.62^{+0.99}_{-0.99}$	$10^9 A_{\mathrm{t}}$	$< 0.308$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.25^{+0.78}_{-0.76}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.275$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.14060^{+0.00097}_{-0.00097}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$H_0$	$67.2^{+1.4}_{-1.3}$	$100\theta_{\mathrm{D}}$	$0.16094^{+0.00058}_{-0.00058}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$\Omega_{\Lambda}$	$0.684^{+0.019}_{-0.019}$	$z_{\mathrm{eq}}$	$3399^{+68}_{-69}$	$f_{2000}^{217}$	$108.6^{+4.0}_{-4.1}$
$\Omega_{\mathrm{m}}$	$0.316^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{lensing}}^2$	$9.67 (\nu: 0.4)$
$\Omega_{\mathrm{m}} h^2$	$0.1429^{+0.0028}_{-0.0029}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.013}_{-0.012}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.4)$
$\Omega_{\mathrm{m}} h^3$	$0.09604^{+0.00098}_{-0.00096}$	$100\theta_{\mathrm{s,eq}}$	$0.4496^{+0.0067}_{-0.0064}$	$\chi_{\mathrm{lowl}}^2$	$23.8 (\nu: 2.6)$
$\sigma_8$	$0.811^{+0.012}_{-0.012}$	$H(0.15)$	$72.6^{+1.2}_{-1.2}$	$\chi_{\mathrm{plik}}^2$	$772.7 (\nu: 15.2)$
$S_8$	$0.832^{+0.032}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$645^{+12}_{-12}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.456^{+0.017}_{-0.018}$	$H(0.38)$	$82.75^{+0.90}_{-0.85}$	$\chi_{\mathrm{CMB}}^2$	$1203.3 (\nu: 16.9)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.015}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1536^{+23}_{-24}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1210.63; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 2.47; R - 1 = 0.00844$$

# 14.12 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00045}_{-0.00042}$	$r_{\mathrm{drag}} h$	$99.7^{+1.7}_{-1.6}$	$H(0.61)$	$95.32^{+0.50}_{-0.48}$
$\Omega_{\mathrm{c}} h^2$	$0.1190^{+0.0022}_{-0.0021}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.047}_{-0.047}$	$D_{\mathrm{M}}(0.61)$	$2305^{+22}_{-22}$
$100\theta_{\mathrm{MC}}$	$1.04099^{+0.00079}_{-0.00082}$	$z_{\mathrm{re}}$	$7.9^{+1.3}_{-1.4}$	$H(2.33)$	$235.9^{+1.4}_{-1.4}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$10^9 A_{\mathrm{s}}$	$2.109^{+0.061}_{-0.057}$	$D_{\mathrm{M}}(2.33)$	$5763^{+25}_{-26}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.049^{+0.029}_{-0.027}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882^{+0.021}_{-0.022}$	$f\sigma_8(0.15)$	$0.455^{+0.012}_{-0.012}$
$n_{\mathrm{s}}$	$0.9660^{+0.0081}_{-0.0083}$	$D_{40}$	$1232^{+45}_{-40}$	$\sigma_8(0.15)$	$0.748^{+0.011}_{-0.010}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.006^{+0.015}_{-0.017}$	$D_{220}$	$5723^{+78}_{-79}$	$f\sigma_8(0.38)$	$0.4739^{+0.0097}_{-0.010}$
$r$	$< 0.154$	$D_{810}$	$2540^{+25}_{-26}$	$\sigma_8(0.38)$	$0.6630^{+0.0094}_{-0.0086}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0047}_{-0.0048}$	$D_{1420}$	$815.4^{+9.7}_{-9.8}$	$f\sigma_8(0.51)$	$0.4727^{+0.0086}_{-0.0090}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{2000}$	$229.6^{+3.7}_{-3.7}$	$\sigma_8(0.51)$	$0.6205^{+0.0088}_{-0.0080}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.987^{+0.053}_{-0.048}$	$f\sigma_8(0.61)$	$0.4678^{+0.0079}_{-0.0082}$
$A_{143}^{\mathrm{tSZ}}$	$5.0^{+3.8}_{-3.9}$	$Y_{\mathrm{P}}$	$0.24536^{+0.00017}_{-0.00018}$	$\sigma_8(0.61)$	$0.5905^{+0.0085}_{-0.0076}$
$A_{100}^{\mathrm{PS}}$	$265^{+60}_{-60}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00017}_{-0.00019}$	$f\sigma_8(2.33)$	$0.2978^{+0.0044}_{-0.0039}$
$A_{143}^{\mathrm{PS}}$	$50^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.600^{+0.080}_{-0.082}$	$\sigma_8(2.33)$	$0.3071^{+0.0045}_{-0.0042}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.798^{+0.057}_{-0.060}$	$r_{0.002}$	$< 0.159$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$z_{*}$	$1089.93^{+0.60}_{-0.64}$	$r_{0.01}$	$< 0.153$
$A^{\mathrm{kSZ}}$	—	$r_{*}$	$144.73^{+0.59}_{-0.59}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.3^{+1.9}_{-2.5}$
$A_{100}^{\mathrm{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$100\theta_{*}$	$1.04118^{+0.00077}_{-0.00081}$	$r_{10}$	$< 0.0832$
$A_{143}^{\mathrm{dustTT}}$	$10.7^{+3.4}_{-3.5}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.901^{+0.059}_{-0.058}$	$10^9 A_{\mathrm{t}}$	$< 0.326$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3^{+6.6}_{-6.6}$	$z_{\mathrm{drag}}$	$1059.70^{+0.99}_{-0.95}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.290$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$r_{\mathrm{drag}}$	$147.43^{+0.67}_{-0.68}$	$f_{2000}^{143}$	$32^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.14046^{+0.00094}_{-0.00092}$	$f_{2000}^{143 \times 217}$	$34^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0013}$	$100\theta_{\mathrm{D}}$	$0.16090^{+0.00056}_{-0.00058}$	$f_{2000}^{217}$	$108.4^{+3.9}_{-4.0}$
$H_0$	$67.66^{+0.98}_{-0.98}$	$z_{\mathrm{eq}}$	$3378^{+51}_{-50}$	$\chi_{\mathrm{lensing}}^2$	$9.46 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.690^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00016}_{-0.00015}$	$\chi_{\mathrm{simall}}^2$	$397.4 (\nu: 1.8)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.013}_{-0.013}$	$100\theta_{\mathrm{eq}}$	$0.8176^{+0.0092}_{-0.0092}$	$\chi_{\mathrm{lowl}}^2$	$23.5 (\nu: 2.3)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0021}_{-0.0021}$	$100\theta_{\mathrm{s,eq}}$	$0.4517^{+0.0048}_{-0.0048}$	$\chi_{\mathrm{plik}}^2$	$773.0 (\nu: 14.9)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0010}_{-0.00098}$	$H(0.15)$	$72.93^{+0.87}_{-0.85}$	$\chi_{6\mathrm{DF}}^2$	$0.052 (\nu: 0.0)$
$\sigma_8$	$0.809^{+0.012}_{-0.011}$	$D_{\mathrm{M}}(0.15)$	$640.9^{+8.4}_{-8.4}$	$\chi_{\mathrm{MGS}}^2$	$1.33 (\nu: 0.1)$
$S_8$	$0.823^{+0.023}_{-0.024}$	$H(0.38)$	$83.01^{+0.67}_{-0.65}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.0)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_{\mathrm{M}}(0.38)$	$1529^{+17}_{-17}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.012}_{-0.013}$	$H(0.51)$	$89.71^{+0.57}_{-0.55}$	$\chi_{\mathrm{CMB}}^2$	$1203.4 (\nu: 16.3)$
$\sigma_8/h^{0.5}$	$0.984^{+0.017}_{-0.018}$	$D_{\mathrm{M}}(0.51)$	$1981^{+20}_{-20}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$

$\bar{\chi}_{\mathrm{eff}}^2 = 1216.87$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 2.29$ ;  $R - 1 = 0.01475$

### 14.13 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022398	$0.02243^{+0.00031}_{-0.00030}$	$\sigma_8$	0.8121	$0.811^{+0.012}_{-0.012}$	$H(0.38)$	82.86	$82.93^{+0.68}_{-0.65}$
$\Omega_c h^2$	0.12015	$0.1199^{+0.0023}_{-0.0024}$	$S_8$	0.8333	$0.830^{+0.025}_{-0.025}$	$D_M(0.38)$	1533.9	$1532^{+18}_{-18}$
$100\theta_{MC}$	1.04094	$1.04093^{+0.00060}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	0.4564	$0.455^{+0.014}_{-0.013}$	$H(0.51)$	89.63	$89.69^{+0.54}_{-0.52}$
$\tau$	0.0546	$0.056^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6088	$0.607^{+0.012}_{-0.012}$	$D_M(0.51)$	1986.3	$1984^{+21}_{-21}$
$\ln(10^{10} A_s)$	3.0464	$3.049^{+0.031}_{-0.030}$	$\sigma_8/h^{0.5}$	0.9897	$0.987^{+0.018}_{-0.018}$	$H(0.61)$	95.286	$95.33^{+0.44}_{-0.43}$
$n_s$	0.9654	$0.9647^{+0.0088}_{-0.0086}$	$r_{\text{drag}} h$	98.99	$99.2^{+1.8}_{-1.8}$	$D_M(0.61)$	2310.7	$2308^{+23}_{-23}$
$dn_s/d \ln k$	-0.0025	$-0.008^{+0.014}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4423	$2.431^{+0.047}_{-0.047}$	$H(2.33)$	236.69	$236.6^{+1.4}_{-1.4}$
$r$	0.001	$< 0.159$	$z_{\text{re}}$	7.71	$7.8^{+1.5}_{-1.5}$	$D_M(2.33)$	5762.6	$5761^{+20}_{-21}$
$y_{\text{cal}}$	1.00064	$1.0007^{+0.0049}_{-0.0049}$	$10^9 A_s$	2.104	$2.110^{+0.067}_{-0.062}$	$f\sigma_8(0.15)$	0.4606	$0.459^{+0.013}_{-0.012}$
$A_{217}^{\text{CIB}}$	47.4	$48^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	1.8862	$1.886^{+0.022}_{-0.022}$	$\sigma_8(0.15)$	0.7500	$0.749^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.47	—	$D_{40}$	1224.7	$1233^{+42}_{-38}$	$f\sigma_8(0.38)$	0.4780	$0.477^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	7.12	$5.2^{+3.8}_{-4.0}$	$D_{220}$	5733	$5729^{+78}_{-77}$	$\sigma_8(0.38)$	0.6643	$0.6636^{+0.0096}_{-0.0092}$
$A_{100}^{\text{PS}}$	251	$264^{+60}_{-60}$	$D_{810}$	2542.8	$2542^{+27}_{-26}$	$f\sigma_8(0.51)$	0.4761	$0.4749^{+0.0089}_{-0.0089}$
$A_{143}^{\text{PS}}$	49.3	$48^{+20}_{-20}$	$D_{1420}$	818.1	$816.2^{+9.8}_{-9.6}$	$\sigma_8(0.51)$	0.6215	$0.6209^{+0.0091}_{-0.0087}$
$A_{143 \times 217}^{\text{PS}}$	49.2	$43^{+20}_{-20}$	$D_{2000}$	231.06	$230.0^{+3.6}_{-3.5}$	$f\sigma_8(0.61)$	0.4708	$0.4697^{+0.0081}_{-0.0081}$
$A_{217}^{\text{PS}}$	120.2	$115^{+20}_{-20}$	$n_{s,0.002}$	0.9735	$0.992^{+0.046}_{-0.044}$	$\sigma_8(0.61)$	0.5912	$0.5907^{+0.0088}_{-0.0083}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}$	0.245407	$0.24542^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	0.29793	$0.2977^{+0.0046}_{-0.0043}$
$A_{100}^{\text{dustTT}}$	8.87	$9.0^{+3.6}_{-3.6}$	$Y_{\text{P}}^{\text{BBN}}$	0.246733	$0.24674^{+0.00011}_{-0.00012}$	$\sigma_8(2.33)$	0.30696	$0.3068^{+0.0049}_{-0.0046}$
$A_{143}^{\text{dustTT}}$	11.05	$11.0^{+3.5}_{-3.5}$	$10^5 D/H$	2.580	$2.575^{+0.056}_{-0.055}$	$r_{0.002}$	0.001	$< 0.164$
$A_{143 \times 217}^{\text{dustTT}}$	19.9	$18.7^{+6.4}_{-6.5}$	Age/Gyr	13.7949	$13.791^{+0.046}_{-0.046}$	$r_{0.01}$	0.001	$< 0.158$
$A_{217}^{\text{dustTT}}$	95.0	$94^{+10}_{-10}$	$z_*$	1089.90	$1089.84^{+0.51}_{-0.51}$	$\ln(10^{10} A_t)$	-4.27	$-0.2^{+1.8}_{-2.4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.075}_{-0.075}$	$r_*$	144.37	$144.41^{+0.52}_{-0.52}$	$r_{10}$	0.0003	$< 0.0866$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.136^{+0.057}_{-0.058}$	$100\theta_*$	1.04111	$1.04111^{+0.00059}_{-0.00058}$	$10^9 A_t$	0.001	$< 0.336$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8670	$13.871^{+0.049}_{-0.050}$	$10^9 A_t e^{-2\tau}$	0.001	$< 0.300$
$A_{143}^{\text{dustTE}}$	0.224	$0.23^{+0.11}_{-0.11}$	$z_{\text{drag}}$	1060.01	$1060.06^{+0.63}_{-0.63}$	$f_{2000}^{143}$	29.3	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.66^{+0.16}_{-0.15}$	$r_{\text{drag}}$	147.02	$147.05^{+0.53}_{-0.54}$	$f_{2000}^{143 \times 217}$	32.38	$33^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.09	$2.08^{+0.53}_{-0.52}$	$k_D$	0.14096	$0.14095^{+0.00063}_{-0.00061}$	$f_{2000}^{217}$	106.91	$108.0^{+3.9}_{-4.0}$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160717	$0.16068^{+0.00036}_{-0.00037}$	$\chi_{\text{lensing}}^2$	8.96	$9.56 (\nu: 0.3)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3406	$3401^{+53}_{-53}$	$\chi_{\text{small}}^2$	396.06	$397.4 (\nu: 1.7)$
$H_0$	67.33	$67.4^{+1.1}_{-1.0}$	$k_{\text{eq}}$	0.010397	$0.01038^{+0.00016}_{-0.00016}$	$\chi_{\text{lowl}}^2$	22.66	$23.4 (\nu: 1.8)$
$\Omega_\Lambda$	0.6841	$0.686^{+0.014}_{-0.015}$	$100\theta_{\text{eq}}$	0.8126	$0.814^{+0.010}_{-0.0098}$	$\chi_{\text{plik}}^2$	2345.1	$2360.6 (\nu: 17.6)$
$\Omega_m$	0.3159	$0.314^{+0.015}_{-0.014}$	$100\theta_{s,\text{eq}}$	0.4490	$0.4495^{+0.0051}_{-0.0050}$	$\chi_{\text{prior}}^2$	1.7	$11.6 (\nu: 10.5)$
$\Omega_m h^2$	0.14319	$0.1430^{+0.0022}_{-0.0022}$	$H(0.15)$	72.66	$72.76^{+0.92}_{-0.89}$	$\chi_{\text{CMB}}^2$	2772.8	$2791.0 (\nu: 19.4)$
$\Omega_m h^3$	0.09641	$0.09642^{+0.00062}_{-0.00059}$	$D_M(0.15)$	643.6	$642.6^{+9.0}_{-9.1}$			

Best-fit  $\chi_{\text{eff}}^2 = 2774.45$ ;  $\Delta\chi_{\text{eff}}^2 = -0.18$ ;  $\bar{\chi}_{\text{eff}}^2 = 2802.59$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.90$ ;  $R - 1 = 0.00905$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consect8: 8.96 ( $\Delta$  0.09) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.01) commander\_dx12\_v3.2.29: 22.66 ( $\Delta$  -0.59) plik\_rd12\_HM\_v22b\_TTTEE: 2345.10 ( $\Delta$  0.17)

# 14.14 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022442	$0.02248^{+0.00028}_{-0.00028}$	$S_8$	0.8260	$0.824^{+0.021}_{-0.020}$	$H(0.51)$	89.767	$89.82^{+0.44}_{-0.43}$
$\Omega_c h^2$	0.11941	$0.1193^{+0.0019}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	0.4524	$0.451^{+0.011}_{-0.011}$	$D_M(0.51)$	1980.2	$1978^{+17}_{-17}$
$100\theta_{MC}$	1.04098	$1.04101^{+0.00056}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	0.6056	$0.605^{+0.011}_{-0.011}$	$H(0.61)$	95.390	$95.44^{+0.37}_{-0.36}$
$\tau$	0.0569	$0.058^{+0.015}_{-0.014}$	$\sigma_8/h^{0.5}$	0.9857	$0.984^{+0.016}_{-0.016}$	$D_M(0.61)$	2304.2	$2302^{+18}_{-18}$
$\ln(10^{10} A_s)$	3.0493	$3.052^{+0.031}_{-0.029}$	$r_{\text{drag}} h$	99.54	$99.7^{+1.4}_{-1.4}$	$H(2.33)$	236.25	$236.2^{+1.2}_{-1.1}$
$n_s$	0.9664	$0.9664^{+0.0080}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	2.4332	$2.424^{+0.044}_{-0.045}$	$D_M(2.33)$	5758.5	$5756^{+18}_{-18}$
$dn_s/d \ln k$	-0.0037	$-0.008^{+0.014}_{-0.015}$	$z_{\text{re}}$	7.92	$8.0^{+1.5}_{-1.4}$	$f\sigma_8(0.15)$	0.4570	$0.456^{+0.011}_{-0.011}$
$r$	0.000	< 0.164	$10^9 A_s$	2.110	$2.115^{+0.067}_{-0.061}$	$\sigma_8(0.15)$	0.7491	$0.749^{+0.011}_{-0.011}$
$y_{\text{cal}}$	1.00069	$1.0008^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8831	$1.884^{+0.021}_{-0.021}$	$f\sigma_8(0.38)$	0.4754	$0.4746^{+0.0090}_{-0.0089}$
$A_{217}^{\text{CIB}}$	49.0	$48^{+10}_{-10}$	$D_{40}$	1219.6	$1231^{+41}_{-39}$	$\sigma_8(0.38)$	0.6640	$0.6638^{+0.0098}_{-0.0092}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.19	—	$D_{220}$	5736	$5733^{+78}_{-77}$	$f\sigma_8(0.51)$	0.4740	$0.4733^{+0.0082}_{-0.0081}$
$A_{143}^{\text{tSZ}}$	7.30	$5.2^{+3.7}_{-4.0}$	$D_{810}$	2541.5	$2542^{+27}_{-26}$	$\sigma_8(0.51)$	0.6214	$0.6212^{+0.0092}_{-0.0086}$
$A_{100}^{\text{PS}}$	253	$263^{+60}_{-50}$	$D_{1420}$	817.6	$816.8^{+9.6}_{-9.6}$	$f\sigma_8(0.61)$	0.4690	$0.4684^{+0.0077}_{-0.0076}$
$A_{143}^{\text{PS}}$	45.1	$48^{+20}_{-20}$	$D_{2000}$	230.85	$230.3^{+3.6}_{-3.4}$	$\sigma_8(0.61)$	0.5913	$0.5912^{+0.0088}_{-0.0082}$
$A_{143 \times 217}^{\text{PS}}$	41.9	$42^{+20}_{-20}$	$n_{s,0.002}$	0.9785	$0.993^{+0.047}_{-0.045}$	$f\sigma_8(2.33)$	0.29815	$0.2981^{+0.0045}_{-0.0042}$
$A_{217}^{\text{PS}}$	117.4	$114^{+20}_{-20}$	$Y_{\text{P}}$	0.245423	$0.24543^{+0.00011}_{-0.00011}$	$\sigma_8(2.33)$	0.30738	$0.3074^{+0.0048}_{-0.0044}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}^{\text{BBN}}$	0.246750	$0.24676^{+0.00011}_{-0.00011}$	$r_{0.002}$	0.000	< 0.171
$A_{100}^{\text{dustTT}}$	8.93	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	2.572	$2.567^{+0.052}_{-0.051}$	$r_{0.01}$	0.000	< 0.164
$A_{143}^{\text{dustTT}}$	11.01	$11.0^{+3.5}_{-3.5}$	Age/Gyr	13.7860	$13.781^{+0.040}_{-0.040}$	$\ln(10^{10} A_t)$	-4.68	$-0.1^{+1.7}_{-2.4}$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.6^{+6.4}_{-6.4}$	$z_*$	1089.777	$1089.72^{+0.44}_{-0.43}$	$r_{10}$	0.0002	< 0.0896
$A_{217}^{\text{dustTT}}$	94.4	$93^{+10}_{-10}$	$r_*$	144.529	$144.54^{+0.42}_{-0.45}$	$10^9 A_t$	0.001	< 0.348
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.075}_{-0.077}$	$100\theta_*$	1.04115	$1.04118^{+0.00056}_{-0.00056}$	$10^9 A_t e^{-2\tau}$	0.001	< 0.309
$A_{100 \times 143}^{\text{dustTE}}$	0.136	$0.136^{+0.057}_{-0.058}$	$D_M(z_*)/\text{Gpc}$	13.8817	$13.883^{+0.040}_{-0.043}$	$f_{2000}^{143}$	29.6	$31^{+6}_{-6}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.05	$1060.12^{+0.61}_{-0.61}$	$f_{2000}^{143 \times 217}$	32.52	$33^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	0.225	$0.23^{+0.10}_{-0.11}$	$r_{\text{drag}}$	147.169	$147.17^{+0.45}_{-0.47}$	$f_{2000}^{217}$	107.22	$107.9^{+3.9}_{-3.9}$
$A_{143 \times 217}^{\text{dustTE}}$	0.663	$0.66^{+0.16}_{-0.15}$	$k_{\text{D}}$	0.14084	$0.14086^{+0.00059}_{-0.00057}$	$\chi_{\text{lensing}}^2$	8.84	$9.42 (\nu: 0.2)$
$A_{217}^{\text{dustTE}}$	2.07	$2.07^{+0.53}_{-0.52}$	$100\theta_{\text{D}}$	0.160687	$0.16065^{+0.00036}_{-0.00036}$	$\chi_{\text{small}}^2$	396.45	$397.7 (\nu: 2.1)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3389.8	$3387^{+42}_{-41}$	$\chi_{\text{lowl}}^2$	22.19	$23.2 (\nu: 1.8)$
$c_{217}$	0.99820	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	0.010346	$0.01034^{+0.00013}_{-0.00013}$	$\chi_{\text{plik}}^2$	2345.4	$2360.6 (\nu: 17.5)$
$H_0$	67.64	$67.73^{+0.84}_{-0.84}$	$100\theta_{\text{eq}}$	0.8158	$0.8164^{+0.0078}_{-0.0079}$	$\chi_{6\text{DF}}^2$	0.037	$0.049 (\nu: 0.0)$
$\Omega_{\Lambda}$	0.6885	$0.690^{+0.011}_{-0.011}$	$100\theta_{s,\text{eq}}$	0.45062	$0.4509^{+0.0040}_{-0.0040}$	$\chi_{\text{MGS}}^2$	1.16	$1.29 (\nu: 0.1)$
$\Omega_{\text{m}}$	0.3115	$0.310^{+0.011}_{-0.011}$	$H(0.15)$	72.92	$73.01^{+0.73}_{-0.72}$	$\chi_{\text{DR12BAO}}^2$	4.62	$4.7 (\nu: 0.8)$
$\Omega_{\text{m}} h^2$	0.14250	$0.1424^{+0.0018}_{-0.0017}$	$D_M(0.15)$	640.9	$640.1^{+7.2}_{-7.1}$	$\chi_{\text{prior}}^2$	1.9	$11.7 (\nu: 10.4)$
$\Omega_{\text{m}} h^3$	0.09638	$0.09643^{+0.00061}_{-0.00059}$	$H(0.38)$	83.04	$83.11^{+0.54}_{-0.54}$	$\chi_{\text{CMB}}^2$	2772.8	$2790.9 (\nu: 19.1)$
$\sigma_8$	0.8107	$0.810^{+0.012}_{-0.012}$	$D_M(0.38)$	1528.6	$1527^{+14}_{-14}$	$\chi_{\text{BAO}}^2$	5.81	$6.1 (\nu: 0.5)$

Best-fit  $\chi_{\text{eff}}^2 = 2780.54$ ;  $\Delta\chi_{\text{eff}}^2 = -0.16$ ;  $\bar{\chi}_{\text{eff}}^2 = 2808.64$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.79$ ;  $R - 1 = 0.01143$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.01) MGS: 1.16 ( $\Delta$  -0.06) DR12BAO: 4.62 ( $\Delta$  0.20) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.84 ( $\Delta$  0.11) small\_100x143\_offlike5\_EE\_Aplanck: 396.45 ( $\Delta$  -0.07) commander\_dx12\_v3.2\_29: 22.19 ( $\Delta$  -0.71) plik\_rd12\_HM\_v22b\_TTTEE: 2345.36 ( $\Delta$  0.04)

## 14.15 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00031}_{-0.00030}$	$\sigma_8$	$0.811^{+0.012}_{-0.011}$	$H(0.38)$	$82.95^{+0.67}_{-0.64}$
$\Omega_c h^2$	$0.1199^{+0.0023}_{-0.0023}$	$S_8$	$0.830^{+0.025}_{-0.025}$	$D_M(0.38)$	$1532^{+18}_{-18}$
$100\theta_{MC}$	$1.04094^{+0.00060}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	$0.455^{+0.014}_{-0.014}$	$H(0.51)$	$89.70^{+0.54}_{-0.51}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.012}_{-0.012}$	$D_M(0.51)$	$1984^{+21}_{-21}$
$\ln(10^{10} A_s)$	$3.051^{+0.028}_{-0.027}$	$\sigma_8/h^{0.5}$	$0.988^{+0.018}_{-0.017}$	$H(0.61)$	$95.34^{+0.44}_{-0.42}$
$n_s$	$0.9649^{+0.0087}_{-0.0085}$	$r_{\text{drag}} h$	$99.2^{+1.8}_{-1.8}$	$D_M(0.61)$	$2308^{+22}_{-23}$
$dn_s/d \ln k$	$-0.009^{+0.014}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.046}_{-0.047}$	$H(2.33)$	$236.5^{+1.4}_{-1.4}$
$r$	$< 0.160$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.4}$	$D_M(2.33)$	$5760^{+20}_{-20}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$10^9 A_s$	$2.113^{+0.060}_{-0.056}$	$f\sigma_8(0.15)$	$0.459^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	$1.886^{+0.022}_{-0.022}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0096}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1233^{+42}_{-38}$	$f\sigma_8(0.38)$	$0.477^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.8}_{-4.0}$	$D_{220}$	$5729^{+78}_{-77}$	$\sigma_8(0.38)$	$0.6640^{+0.0089}_{-0.0085}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$D_{810}$	$2542^{+27}_{-26}$	$f\sigma_8(0.51)$	$0.4751^{+0.0088}_{-0.0088}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$D_{1420}$	$816.2^{+9.8}_{-9.6}$	$\sigma_8(0.51)$	$0.6213^{+0.0084}_{-0.0080}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{2000}$	$230.0^{+3.6}_{-3.5}$	$f\sigma_8(0.61)$	$0.4699^{+0.0080}_{-0.0080}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$n_{s,0.002}$	$0.992^{+0.046}_{-0.044}$	$\sigma_8(0.61)$	$0.5911^{+0.0080}_{-0.0076}$
$A^{\text{kSZ}}$	—	$Y_P$	$0.24542^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	$0.2979^{+0.0041}_{-0.0039}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P^{\text{BBN}}$	$0.24674^{+0.00011}_{-0.00012}$	$\sigma_8(2.33)$	$0.3070^{+0.0045}_{-0.0042}$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$10^5 \text{D}/\text{H}$	$2.574^{+0.055}_{-0.055}$	$r_{0.002}$	$< 0.165$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7^{+6.4}_{-6.5}$	$\text{Age}/\text{Gyr}$	$13.790^{+0.045}_{-0.046}$	$r_{0.01}$	$< 0.159$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$z_*$	$1089.83^{+0.50}_{-0.51}$	$\ln(10^{10} A_t)$	$-0.2^{+1.8}_{-2.3}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.075}$	$r_*$	$144.42^{+0.52}_{-0.52}$	$r_{10}$	$< 0.0873$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136^{+0.057}_{-0.058}$	$100\theta_*$	$1.04111^{+0.00059}_{-0.00057}$	$10^9 A_t$	$< 0.338$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.872^{+0.049}_{-0.049}$	$10^9 A_t e^{-2\tau}$	$< 0.302$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$z_{\text{drag}}$	$1060.07^{+0.63}_{-0.63}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.15}$	$r_{\text{drag}}$	$147.06^{+0.52}_{-0.53}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.52}$	$k_D$	$0.14095^{+0.00063}_{-0.00061}$	$f_{2000}^{217}$	$108.0^{+3.9}_{-4.0}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16068^{+0.00036}_{-0.00036}$	$\chi_{\text{lensing}}^2$	$9.55 (\nu: 0.3)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3400^{+52}_{-52}$	$\chi_{\text{simall}}^2$	$397.4 (\nu: 1.8)$
$H_0$	$67.5^{+1.1}_{-1.0}$	$k_{\text{eq}}$	$0.01038^{+0.00016}_{-0.00016}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 1.8)$
$\Omega_\Lambda$	$0.686^{+0.014}_{-0.014}$	$100\theta_{\text{eq}}$	$0.814^{+0.010}_{-0.0096}$	$\chi_{\text{plik}}^2$	$2360.5 (\nu: 17.5)$
$\Omega_m$	$0.314^{+0.014}_{-0.014}$	$100\theta_{s,\text{eq}}$	$0.4496^{+0.0051}_{-0.0050}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.5)$
$\Omega_m h^2$	$0.1429^{+0.0022}_{-0.0022}$	$H(0.15)$	$72.78^{+0.91}_{-0.88}$	$\chi_{\text{CMB}}^2$	$2790.8 (\nu: 19.1)$
$\Omega_m h^3$	$0.09642^{+0.00062}_{-0.00059}$	$D_M(0.15)$	$642.5^{+8.8}_{-9.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 2802.46; \Delta \bar{\chi}_{\text{eff}}^2 = 1.95; R - 1 = 0.01057$$



## 14.16 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02248^{+0.00028}_{-0.00028}$	$S_8$	$0.824^{+0.021}_{-0.021}$	$H(0.51)$	$89.83^{+0.44}_{-0.43}$
$\Omega_c h^2$	$0.1192^{+0.0019}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.011}_{-0.011}$	$D_M(0.51)$	$1978^{+17}_{-17}$
$100\theta_{MC}$	$1.04101^{+0.00056}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.011}_{-0.011}$	$H(0.61)$	$95.44^{+0.37}_{-0.36}$
$\tau$	$0.058^{+0.014}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.985^{+0.016}_{-0.016}$	$D_M(0.61)$	$2302^{+18}_{-18}$
$\ln(10^{10} A_s)$	$3.052^{+0.029}_{-0.027}$	$r_{\text{drag}} h$	$99.7^{+1.4}_{-1.4}$	$H(2.33)$	$236.2^{+1.1}_{-1.1}$
$n_s$	$0.9664^{+0.0080}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.044}_{-0.045}$	$D_M(2.33)$	$5756^{+18}_{-18}$
$dn_s/d \ln k$	$-0.008^{+0.014}_{-0.015}$	$z_{\text{re}}$	$8.0^{+1.3}_{-1.4}$	$f\sigma_8(0.15)$	$0.456^{+0.011}_{-0.011}$
$r$	$< 0.164$	$10^9 A_s$	$2.117^{+0.062}_{-0.058}$	$\sigma_8(0.15)$	$0.749^{+0.011}_{-0.0098}$
$y_{\text{cal}}$	$1.0008^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	$1.884^{+0.021}_{-0.021}$	$f\sigma_8(0.38)$	$0.4746^{+0.0090}_{-0.0089}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1231^{+41}_{-39}$	$\sigma_8(0.38)$	$0.6640^{+0.0096}_{-0.0086}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5733^{+78}_{-77}$	$f\sigma_8(0.51)$	$0.4734^{+0.0081}_{-0.0080}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.7}_{-4.0}$	$D_{810}$	$2542^{+27}_{-26}$	$\sigma_8(0.51)$	$0.6214^{+0.0090}_{-0.0080}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-50}$	$D_{1420}$	$816.8^{+9.6}_{-9.6}$	$f\sigma_8(0.61)$	$0.4685^{+0.0077}_{-0.0074}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$D_{2000}$	$230.3^{+3.6}_{-3.4}$	$\sigma_8(0.61)$	$0.5913^{+0.0086}_{-0.0076}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$n_{s,0.002}$	$0.994^{+0.047}_{-0.045}$	$f\sigma_8(2.33)$	$0.2982^{+0.0042}_{-0.0040}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$Y_{\text{P}}$	$0.24543^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	$0.3075^{+0.0045}_{-0.0043}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24676^{+0.00011}_{-0.00011}$	$r_{0.002}$	$< 0.172$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$10^5 \text{D/H}$	$2.566^{+0.053}_{-0.050}$	$r_{0.01}$	$< 0.164$
$A_{143}^{\text{dustTT}}$	$11.0^{+3.5}_{-3.5}$	$\text{Age/Gyr}$	$13.781^{+0.040}_{-0.040}$	$\ln(10^{10} A_t)$	$-0.1^{+1.7}_{-2.4}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.4}$	$z_*$	$1089.72^{+0.44}_{-0.43}$	$r_{10}$	$< 0.0901$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.55^{+0.42}_{-0.45}$	$10^9 A_t$	$< 0.350$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.077}$	$100\theta_*$	$1.04119^{+0.00056}_{-0.00055}$	$10^9 A_t e^{-2\tau}$	$< 0.310$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136^{+0.057}_{-0.058}$	$D_M(z_*)/\text{Gpc}$	$13.883^{+0.040}_{-0.043}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1060.13^{+0.61}_{-0.62}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$r_{\text{drag}}$	$147.17^{+0.45}_{-0.48}$	$f_{2000}^{217}$	$107.8^{+3.9}_{-3.9}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.15}$	$k_{\text{D}}$	$0.14086^{+0.00060}_{-0.00057}$	$\chi_{\text{lensing}}^2$	$9.40 (\nu: 0.2)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.53}_{-0.52}$	$100\theta_{\text{D}}$	$0.16065^{+0.00036}_{-0.00036}$	$\chi_{\text{simall}}^2$	$397.7 (\nu: 2.1)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3387^{+42}_{-41}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 1.8)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	$0.01034^{+0.00013}_{-0.00013}$	$\chi_{\text{plik}}^2$	$2360.5 (\nu: 17.5)$
$H_0$	$67.74^{+0.84}_{-0.83}$	$100\theta_{\text{eq}}$	$0.8165^{+0.0078}_{-0.0078}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.011}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4510^{+0.0040}_{-0.0040}$	$\chi_{\text{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.310^{+0.011}_{-0.011}$	$H(0.15)$	$73.02^{+0.72}_{-0.72}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$\Omega_{\text{m}} h^2$	$0.1424^{+0.0018}_{-0.0017}$	$D_M(0.15)$	$640.1^{+7.2}_{-7.1}$	$\chi_{\text{prior}}^2$	$11.7 (\nu: 10.3)$
$\Omega_{\text{m}} h^3$	$0.09644^{+0.00061}_{-0.00059}$	$H(0.38)$	$83.12^{+0.54}_{-0.53}$	$\chi_{\text{CMB}}^2$	$2790.8 (\nu: 19.0)$
$\sigma_8$	$0.810^{+0.012}_{-0.011}$	$D_M(0.38)$	$1527^{+14}_{-14}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.5)$

$$\bar{\chi}_{\text{eff}}^2 = 2808.56; \Delta \bar{\chi}_{\text{eff}}^2 = 1.84; R - 1 = 0.01181$$

## 15 omegak

### 15.1 base\_omegak\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02261	$0.02255^{+0.00052}_{-0.00051}$	$\sigma_8 \Omega_m^{0.5}$	0.553	$0.552^{+0.066}_{-0.065}$	$100\theta_{s,eq}$	0.4557	$0.4554^{+0.0099}_{-0.010}$
$\Omega_c h^2$	0.11712	$0.1173^{+0.0046}_{-0.0044}$	$\sigma_8 \Omega_m^{0.25}$	0.6506	$0.649^{+0.029}_{-0.029}$	$H(0.15)$	58.2	$58^{+8}_{-8}$
$100\theta_{MC}$	1.04130	$1.0413^{+0.0010}_{-0.00098}$	$\sigma_8/h^{0.5}$	1.0629	$1.061^{+0.046}_{-0.047}$	$D_M(0.15)$	819	$820^{+100}_{-100}$
$\tau$	0.0493	$0.048^{+0.016}_{-0.019}$	$r_{drag}h$	76.7	$77^{+10}_{-10}$	$H(0.38)$	69.6	$69.9^{+7.5}_{-6.7}$
$\Omega_K$	-0.0549	$-0.056^{+0.044}_{-0.050}$	$\langle d^2 \rangle^{1/2}$	2.678	$2.68^{+0.16}_{-0.16}$	$D_M(0.38)$	1902	$1902^{+300}_{-200}$
$\ln(10^{10} A_s)$	3.0275	$3.026^{+0.034}_{-0.039}$	$z_{re}$	6.91	$6.8^{+1.8}_{-1.9}$	$H(0.51)$	77.1	$77.3^{+7.1}_{-6.3}$
$n_s$	0.9744	$0.972^{+0.013}_{-0.012}$	$10^9 A_s$	2.065	$2.061^{+0.070}_{-0.079}$	$D_M(0.51)$	2432	$2431^{+300}_{-300}$
$y_{cal}$	0.99993	$1.0000^{+0.0049}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8706	$1.871^{+0.028}_{-0.027}$	$H(0.61)$	83.2	$83.5^{+6.8}_{-6.1}$
$A_{217}^{CIB}$	42.4	$45^{+10}_{-10}$	$D_{40}$	1197.5	$1203^{+34}_{-33}$	$D_M(0.61)$	2805	$2803^{+300}_{-300}$
$\xi^{tSZ \times CIB}$	0.999	—	$D_{220}$	5740	$5745^{+80}_{-84}$	$H(2.33)$	227.3	$227.6^{+6.1}_{-5.8}$
$A_{143}^{tSZ}$	6.81	$5.6^{+3.5}_{-3.8}$	$D_{810}$	2531.7	$2529^{+28}_{-27}$	$D_M(2.33)$	6471	$6463^{+440}_{-430}$
$A_{100}^{PS}$	236	$250^{+60}_{-60}$	$D_{1420}$	815.7	$813.7^{+9.9}_{-10}$	$f\sigma_8(0.15)$	0.5388	$0.537^{+0.047}_{-0.047}$
$A_{143}^{PS}$	48.6	$42^{+20}_{-20}$	$D_{2000}$	233.29	$232.3^{+3.9}_{-4.0}$	$\sigma_8(0.15)$	0.6909	$0.690^{+0.042}_{-0.050}$
$A_{143 \times 217}^{PS}$	56.2	$40^{+20}_{-20}$	$n_{s,0.002}$	0.9744	$0.972^{+0.013}_{-0.012}$	$f\sigma_8(0.38)$	0.5139	$0.512^{+0.019}_{-0.020}$
$A_{217}^{PS}$	122.6	$114^{+20}_{-20}$	$Y_P$	0.245485	$0.24546^{+0.00022}_{-0.00020}$	$\sigma_8(0.38)$	0.595	$0.594^{+0.047}_{-0.053}$
$A^{kSZ}$	0.00	$< 7.22$	$Y_P^{BBN}$	0.246811	$0.24679^{+0.00022}_{-0.00020}$	$f\sigma_8(0.51)$	0.4928	$0.491^{+0.013}_{-0.014}$
$A_{100}^{dustTT}$	8.96	$9.0^{+3.6}_{-3.6}$	$10^5 D/H$	2.542	$2.554^{+0.094}_{-0.094}$	$\sigma_8(0.51)$	0.550	$0.550^{+0.048}_{-0.053}$
$A_{143}^{dustTT}$	10.62	$10.5^{+3.5}_{-3.6}$	Age/Gyr	15.64	$15.6^{+1.2}_{-1.1}$	$f\sigma_8(0.61)$	0.4753	$0.473^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	19.8	$18.0^{+6.3}_{-6.5}$	$z_*$	1089.36	$1089.46^{+0.93}_{-0.92}$	$\sigma_8(0.61)$	0.5188	$0.519^{+0.048}_{-0.052}$
$A_{217}^{dustTT}$	96.1	$94^{+10}_{-10}$	$r_*$	145.00	$145.00^{+0.97}_{-0.99}$	$f\sigma_8(2.33)$	0.2572	$0.257^{+0.026}_{-0.028}$
$c_{100}$	0.99971	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04146	$1.04143^{+0.00097}_{-0.00096}$	$\sigma_8(2.33)$	0.2561	$0.257^{+0.031}_{-0.032}$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.922	$13.923^{+0.089}_{-0.091}$	$f_{2000}^{143}$	25.2	$27^{+6}_{-6}$
$H_0$	51.9	$52^{+9}_{-8}$	$z_{drag}$	1060.28	$1060.2^{+1.0}_{-1.0}$	$f_{2000}^{143 \times 217}$	29.14	$30^{+5}_{-5}$
$\Omega_\Lambda$	0.535	$0.53^{+0.12}_{-0.13}$	$r_{drag}$	147.59	$147.61^{+0.94}_{-0.97}$	$f_{2000}^{217}$	103.80	$104.9^{+4.2}_{-4.2}$
$\Omega_m$	0.520	$0.53^{+0.18}_{-0.16}$	$k_D$	0.14052	$0.1404^{+0.0010}_{-0.00098}$	$\chi_{small}^2$	395.52	$396.8 (\nu: 1.5)$
$\Omega_m h^2$	0.14037	$0.1405^{+0.0042}_{-0.0041}$	$100\theta_D$	0.16058	$0.16066^{+0.00057}_{-0.00055}$	$\chi_{lowl}^2$	20.97	$21.39 (\nu: 0.2)$
$\Omega_m h^3$	0.0729	$0.073^{+0.013}_{-0.012}$	$z_{eq}$	3339	$3342^{+100}_{-98}$	$\chi_{plik}^2$	752.3	$766.6 (\nu: 14.8)$
$\sigma_8$	0.7660	$0.765^{+0.036}_{-0.043}$	$k_{eq}$	0.010191	$0.01020^{+0.00031}_{-0.00030}$	$\chi_{prior}^2$	1.0	$7.1 (\nu: 6.3)$
$S_8$	1.009	$1.01^{+0.12}_{-0.12}$	$100\theta_{eq}$	0.8257	$0.825^{+0.020}_{-0.020}$	$\chi_{CMB}^2$	1168.8	$1184.8 (\nu: 16.3)$

Best-fit  $\chi_{eff}^2 = 1169.83$ ;  $\Delta\chi_{eff}^2 = -9.74$ ;  $\bar{\chi}_{eff}^2 = 1191.91$ ;  $\Delta\bar{\chi}_{eff}^2 = -7.67$ ;  $R - 1 = 0.01634$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.52 ( $\Delta$  -0.35) commander\_dx12.v3.2.29: 20.97 ( $\Delta$  -2.63) plik\_rd12\_HM.v22.TT: 752.34 ( $\Delta$  -6.41)

## 15.2 base\_omegak\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02255^{+0.00053}_{-0.00051}$	$\sigma_8 \Omega_m^{0.5}$	$0.549^{+0.064}_{-0.064}$	$100\theta_{s,eq}$	$0.4555^{+0.0099}_{-0.010}$
$\Omega_c h^2$	$0.1173^{+0.0046}_{-0.0043}$	$\sigma_8 \Omega_m^{0.25}$	$0.650^{+0.029}_{-0.029}$	$H(0.15)$	$59^{+8}_{-7}$
$100\theta_{MC}$	$1.0413^{+0.0010}_{-0.00099}$	$\sigma_8/h^{0.5}$	$1.062^{+0.046}_{-0.046}$	$D_M(0.15)$	$811^{+100}_{-100}$
$\tau$	$0.0531^{+0.011}_{-0.0089}$	$r_{drag}h$	$78^{+10}_{-10}$	$H(0.38)$	$70.4^{+7.3}_{-6.4}$
$\Omega_K$	$-0.053^{+0.042}_{-0.046}$	$\langle d^2 \rangle^{1/2}$	$2.68^{+0.16}_{-0.16}$	$D_M(0.38)$	$1885^{+200}_{-200}$
$\ln(10^{10} A_s)$	$3.035^{+0.025}_{-0.022}$	$z_{re}$	$< 8.36$	$H(0.51)$	$77.8^{+7.0}_{-6.1}$
$n_s$	$0.972^{+0.013}_{-0.012}$	$10^9 A_s$	$2.080^{+0.052}_{-0.046}$	$D_M(0.51)$	$2411^{+300}_{-300}$
$y_{cal}$	$1.0001^{+0.0048}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.028}_{-0.027}$	$H(0.61)$	$83.9^{+6.7}_{-5.9}$
$A_{217}^{CIB}$	$45^{+10}_{-10}$	$D_{40}$	$1204^{+33}_{-34}$	$D_M(0.61)$	$2781^{+300}_{-300}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5744^{+80}_{-84}$	$H(2.33)$	$227.8^{+6.0}_{-5.7}$
$A_{143}^{tSZ}$	$5.6^{+3.7}_{-3.7}$	$D_{810}$	$2529^{+27}_{-28}$	$D_M(2.33)$	$6435^{+420}_{-420}$
$A_{100}^{PS}$	$250^{+60}_{-60}$	$D_{1420}$	$813.8^{+9.6}_{-10}$	$f\sigma_8(0.15)$	$0.536^{+0.047}_{-0.047}$
$A_{143}^{PS}$	$42^{+20}_{-20}$	$D_{2000}$	$232.4^{+3.8}_{-4.0}$	$\sigma_8(0.15)$	$0.696^{+0.040}_{-0.043}$
$A_{143 \times 217}^{PS}$	$40^{+20}_{-20}$	$n_{s,0.002}$	$0.972^{+0.013}_{-0.012}$	$f\sigma_8(0.38)$	$0.513^{+0.019}_{-0.020}$
$A_{217}^{PS}$	$114^{+20}_{-20}$	$Y_P$	$0.24546^{+0.00022}_{-0.00020}$	$\sigma_8(0.38)$	$0.600^{+0.045}_{-0.047}$
$A^{kSZ}$	$< 7.13$	$Y_P^{BBN}$	$0.24679^{+0.00023}_{-0.00021}$	$f\sigma_8(0.51)$	$0.493^{+0.012}_{-0.013}$
$A_{100}^{dustTT}$	$9.0^{+3.5}_{-3.6}$	$10^5 D/H$	$2.554^{+0.095}_{-0.094}$	$\sigma_8(0.51)$	$0.555^{+0.046}_{-0.047}$
$A_{143}^{dustTT}$	$10.5^{+3.5}_{-3.6}$	Age/Gyr	$15.5^{+1.2}_{-1.1}$	$f\sigma_8(0.61)$	$0.476^{+0.012}_{-0.012}$
$A_{143 \times 217}^{dustTT}$	$18.0^{+6.2}_{-6.5}$	$z_*$	$1089.46^{+0.94}_{-0.92}$	$\sigma_8(0.61)$	$0.524^{+0.046}_{-0.046}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$r_*$	$145.01^{+0.97}_{-0.99}$	$f\sigma_8(2.33)$	$0.260^{+0.025}_{-0.025}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04143^{+0.00098}_{-0.00097}$	$\sigma_8(2.33)$	$0.260^{+0.030}_{-0.029}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.924^{+0.088}_{-0.092}$	$f_{2000}^{143}$	$27^{+6}_{-6}$
$H_0$	$53^{+9}_{-8}$	$z_{drag}$	$1060.2^{+1.0}_{-1.0}$	$f_{2000}^{143 \times 217}$	$30^{+5}_{-5}$
$\Omega_\Lambda$	$0.54^{+0.11}_{-0.12}$	$r_{drag}$	$147.62^{+0.94}_{-0.98}$	$f_{2000}^{217}$	$104.9^{+4.2}_{-4.2}$
$\Omega_m$	$0.51^{+0.16}_{-0.15}$	$k_D$	$0.1404^{+0.0010}_{-0.00099}$	$\chi_{simall}^2$	$396.4 (\nu: 0.9)$
$\Omega_m h^2$	$0.1405^{+0.0043}_{-0.0041}$	$100\theta_D$	$0.16066^{+0.00058}_{-0.00055}$	$\chi_{lowl}^2$	$21.39 (\nu: 0.3)$
$\Omega_m h^3$	$0.074^{+0.013}_{-0.012}$	$z_{eq}$	$3341^{+100}_{-98}$	$\chi_{plik}^2$	$766.6 (\nu: 15.0)$
$\sigma_8$	$0.770^{+0.033}_{-0.037}$	$k_{eq}$	$0.01020^{+0.00031}_{-0.00030}$	$\chi_{prior}^2$	$7.1 (\nu: 6.3)$
$S_8$	$1.00^{+0.12}_{-0.12}$	$100\theta_{eq}$	$0.825^{+0.020}_{-0.020}$	$\chi_{CMB}^2$	$1184.4 (\nu: 16.1)$

$$\bar{\chi}_{eff}^2 = 1191.43; \Delta\bar{\chi}_{eff}^2 = -7.88; R - 1 = 0.01578$$

### 15.3 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022632	$0.02260^{+0.00034}_{-0.00033}$	$\Omega_m h^2$	0.14120	$0.1413^{+0.0027}_{-0.0027}$	$k_{\text{eq}}$	0.010251	$0.01026^{+0.00020}_{-0.00019}$
$\Omega_c h^2$	0.11792	$0.1181^{+0.0030}_{-0.0029}$	$\Omega_m h^3$	0.0764	$0.077^{+0.011}_{-0.010}$	$100\theta_{\text{eq}}$	0.8221	$0.821^{+0.013}_{-0.013}$
$100\theta_{\text{MC}}$	1.04119	$1.04116^{+0.00064}_{-0.00063}$	$\sigma_8$	0.7750	$0.774^{+0.029}_{-0.031}$	$100\theta_{\text{s,eq}}$	0.4538	$0.4534^{+0.0064}_{-0.0064}$
$\tau$	0.0495	$0.049^{+0.016}_{-0.017}$	$S_8$	0.983	$0.981^{+0.094}_{-0.097}$	$H(0.15)$	60.2	$60^{+7}_{-6}$
$\Omega_K$	-0.0438	$-0.044^{+0.033}_{-0.034}$	$\sigma_8 \Omega_m^{0.5}$	0.538	$0.537^{+0.051}_{-0.053}$	$D_{\text{M}}(0.15)$	789	$788^{+100}_{-90}$
$\ln(10^{10} A_s)$	3.0304	$3.028^{+0.033}_{-0.035}$	$\sigma_8 \Omega_m^{0.25}$	0.6460	$0.645^{+0.022}_{-0.026}$	$H(0.38)$	71.5	$71.8^{+6.5}_{-5.5}$
$n_s$	0.9724	$0.9706^{+0.0096}_{-0.0094}$	$\sigma_8/h^{0.5}$	1.0538	$1.051^{+0.036}_{-0.042}$	$D_{\text{M}}(0.38)$	1841	$1838^{+200}_{-190}$
$y_{\text{cal}}$	1.00012	$0.9999^{+0.0050}_{-0.0050}$	$r_{\text{drag}} h$	79.7	$80^{+10}_{-10}$	$H(0.51)$	78.8	$79.1^{+6.2}_{-5.2}$
$A_{217}^{\text{CIB}}$	42.1	$45^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.646	$2.64^{+0.12}_{-0.13}$	$D_{\text{M}}(0.51)$	2358	$2355^{+230}_{-230}$
$\xi^{\text{tSZ} \times \text{CIB}}$	1.00	—	$z_{\text{re}}$	6.96	$6.9^{+1.6}_{-1.8}$	$H(0.61)$	84.9	$85.2^{+5.9}_{-5.0}$
$A_{143}^{\text{tSZ}}$	6.82	$5.8^{+3.6}_{-3.6}$	$10^9 A_s$	2.071	$2.066^{+0.070}_{-0.071}$	$D_{\text{M}}(0.61)$	2723	$2719^{+260}_{-260}$
$A_{100}^{\text{PS}}$	238	$248^{+50}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8754	$1.875^{+0.024}_{-0.024}$	$H(2.33)$	228.92	$229.2^{+4.7}_{-4.1}$
$A_{143}^{\text{PS}}$	48.5	$41^{+20}_{-20}$	$D_{40}$	1204.9	$1208^{+29}_{-28}$	$D_{\text{M}}(2.33)$	6357	$6346^{+340}_{-360}$
$A_{143 \times 217}^{\text{PS}}$	56.4	$41^{+20}_{-20}$	$D_{220}$	5748	$5748^{+78}_{-75}$	$f\sigma_8(0.15)$	0.5285	$0.527^{+0.037}_{-0.043}$
$A_{217}^{\text{PS}}$	123.6	$115^{+20}_{-20}$	$D_{810}$	2535.4	$2532^{+27}_{-27}$	$\sigma_8(0.15)$	0.7017	$0.701^{+0.035}_{-0.037}$
$A^{\text{kSZ}}$	0.00	< 6.48	$D_{1420}$	817.0	$815.2^{+9.3}_{-9.3}$	$f\sigma_8(0.38)$	0.5110	$0.509^{+0.016}_{-0.018}$
$A_{100}^{\text{dustTT}}$	8.77	$8.9^{+3.6}_{-3.5}$	$D_{2000}$	233.33	$232.5^{+3.3}_{-3.2}$	$\sigma_8(0.38)$	0.6069	$0.607^{+0.039}_{-0.040}$
$A_{143}^{\text{dustTT}}$	10.68	$10.6^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	0.9724	$0.9706^{+0.0096}_{-0.0094}$	$f\sigma_8(0.51)$	0.4928	$0.4912^{+0.0099}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	19.7	$18.1^{+6.4}_{-6.3}$	$Y_{\text{P}}$	0.245491	$0.24548^{+0.00014}_{-0.00013}$	$\sigma_8(0.51)$	0.5619	$0.562^{+0.039}_{-0.040}$
$A_{217}^{\text{dustTT}}$	95.6	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246818	$0.24681^{+0.00014}_{-0.00013}$	$f\sigma_8(0.61)$	0.4771	$0.4757^{+0.0094}_{-0.010}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.074}$	$10^5 D/H$	2.539	$2.545^{+0.061}_{-0.061}$	$\sigma_8(0.61)$	0.5309	$0.531^{+0.040}_{-0.040}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.058}$	Age/Gyr	15.33	$15.31^{+0.92}_{-0.95}$	$f\sigma_8(2.33)$	0.2638	$0.264^{+0.022}_{-0.022}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.17}_{-0.17}$	$z_*$	1089.41	$1089.47^{+0.62}_{-0.62}$	$\sigma_8(2.33)$	0.2639	$0.264^{+0.026}_{-0.025}$
$A_{143}^{\text{dustTE}}$	0.223	$0.22^{+0.10}_{-0.11}$	$r_*$	144.77	$144.75^{+0.61}_{-0.62}$	$f_{2000}^{143}$	25.1	$26^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.66^{+0.15}_{-0.15}$	$100\theta_*$	1.04134	$1.04132^{+0.00062}_{-0.00061}$	$f_{2000}^{143 \times 217}$	29.16	$30^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.05	$2.06^{+0.53}_{-0.52}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.902	$13.901^{+0.056}_{-0.057}$	$f_{2000}^{217}$	103.94	$104.7^{+3.8}_{-3.8}$
$c_{100}$	0.99977	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1060.39	$1060.33^{+0.64}_{-0.66}$	$\chi_{\text{small}}^2$	395.55	$396.7 (\nu: 1.2)$
$c_{217}$	0.99808	$0.9981^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.35	$147.35^{+0.58}_{-0.61}$	$\chi_{\text{lowl}}^2$	21.16	$21.51 (\nu: 0.2)$
$H_0$	54.1	$54^{+8}_{-7}$	$k_{\text{D}}$	0.14079	$0.14077^{+0.00061}_{-0.00061}$	$\chi_{\text{plik}}^2$	2336.5	$2353.2 (\nu: 16.0)$
$\Omega_{\Lambda}$	0.561	$0.560^{+0.090}_{-0.091}$	$100\theta_{\text{D}}$	0.160509	$0.16055^{+0.00037}_{-0.00036}$	$\chi_{\text{prior}}^2$	1.3	$11.2 (\nu: 9.6)$
$\Omega_{\text{m}}$	0.483	$0.48^{+0.12}_{-0.12}$	$z_{\text{eq}}$	3359	$3362^{+65}_{-63}$	$\chi_{\text{CMB}}^2$	2753.2	$2771.4 (\nu: 17.5)$

Best-fit  $\chi_{\text{eff}}^2 = 2754.51$ ;  $\Delta\chi_{\text{eff}}^2 = -11.26$ ;  $\bar{\chi}_{\text{eff}}^2 = 2782.60$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -9.17$ ;  $R - 1 = 0.01257$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.55 ( $\Delta$  -0.50) commander\_dx12\_v3\_2\_29: 21.16 ( $\Delta$  -2.09) plik\_rd12\_HM\_v22b\_TTTEE: 2336.53 ( $\Delta$  -8.12)

## 15.4 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02260^{+0.00034}_{-0.00034}$	$\Omega_m h^2$	$0.1413^{+0.0027}_{-0.0027}$	$k_{\text{eq}}$	$0.01026^{+0.00020}_{-0.00020}$
$\Omega_c h^2$	$0.1181^{+0.0030}_{-0.0029}$	$\Omega_m h^3$	$0.0778^{+0.011}_{-0.0095}$	$100\theta_{\text{eq}}$	$0.822^{+0.013}_{-0.013}$
$100\theta_{\text{MC}}$	$1.04116^{+0.00064}_{-0.00063}$	$\sigma_8$	$0.779^{+0.026}_{-0.026}$	$100\theta_{\text{s,eq}}$	$0.4535^{+0.0065}_{-0.0064}$
$\tau$	$0.0528^{+0.011}_{-0.0085}$	$S_8$	$0.974^{+0.090}_{-0.096}$	$H(0.15)$	$61.1^{+6.7}_{-6.1}$
$\Omega_K$	$-0.041^{+0.030}_{-0.031}$	$\sigma_8 \Omega_m^{0.5}$	$0.534^{+0.049}_{-0.053}$	$D_{\text{M}}(0.15)$	$779^{+90}_{-90}$
$\ln(10^{10} A_s)$	$3.037^{+0.025}_{-0.022}$	$\sigma_8 \Omega_m^{0.25}$	$0.645^{+0.023}_{-0.025}$	$H(0.38)$	$72.3^{+6.0}_{-5.5}$
$n_s$	$0.9708^{+0.0096}_{-0.0094}$	$\sigma_8/h^{0.5}$	$1.051^{+0.038}_{-0.040}$	$D_{\text{M}}(0.38)$	$1819^{+180}_{-190}$
$y_{\text{cal}}$	$0.99996^{+0.0050}_{-0.0050}$	$r_{\text{drag}} h$	$81^{+10}_{-10}$	$H(0.51)$	$79.6^{+5.7}_{-5.2}$
$A_{217}^{\text{CIB}}$	$45^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.64^{+0.12}_{-0.13}$	$D_{\text{M}}(0.51)$	$2332^{+210}_{-230}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.38$	$H(0.61)$	$85.6^{+5.5}_{-5.0}$
$A_{143}^{\text{tSZ}}$	$5.8^{+3.6}_{-3.6}$	$10^9 A_s$	$2.083^{+0.053}_{-0.046}$	$D_{\text{M}}(0.61)$	$2694^{+230}_{-250}$
$A_{100}^{\text{PS}}$	$248^{+50}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.874^{+0.024}_{-0.024}$	$H(2.33)$	$229.5^{+4.7}_{-4.1}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{40}$	$1209^{+29}_{-28}$	$D_{\text{M}}(2.33)$	$6314^{+320}_{-350}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5748^{+78}_{-76}$	$f\sigma_8(0.15)$	$0.525^{+0.038}_{-0.040}$
$A_{217}^{\text{PS}}$	$116^{+20}_{-20}$	$D_{810}$	$2532^{+27}_{-27}$	$\sigma_8(0.15)$	$0.707^{+0.032}_{-0.031}$
$A^{\text{kSZ}}$	$< 6.50$	$D_{1420}$	$815.3^{+9.5}_{-9.4}$	$f\sigma_8(0.38)$	$0.509^{+0.017}_{-0.019}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.5}$	$D_{2000}$	$232.6^{+3.3}_{-3.2}$	$\sigma_8(0.38)$	$0.612^{+0.036}_{-0.034}$
$A_{143}^{\text{dustTT}}$	$10.6^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.9708^{+0.0096}_{-0.0094}$	$f\sigma_8(0.51)$	$0.492^{+0.010}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.1^{+6.4}_{-6.4}$	$Y_{\text{P}}$	$0.24548^{+0.00014}_{-0.00013}$	$\sigma_8(0.51)$	$0.567^{+0.036}_{-0.035}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24681^{+0.00014}_{-0.00013}$	$f\sigma_8(0.61)$	$0.4774^{+0.0082}_{-0.0084}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.075}_{-0.075}$	$10^5 \text{D}/\text{H}$	$2.544^{+0.061}_{-0.061}$	$\sigma_8(0.61)$	$0.536^{+0.037}_{-0.035}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.057}_{-0.058}$	$\text{Age}/\text{Gyr}$	$15.22^{+0.86}_{-0.91}$	$f\sigma_8(2.33)$	$0.267^{+0.021}_{-0.019}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$z_*$	$1089.46^{+0.62}_{-0.62}$	$\sigma_8(2.33)$	$0.268^{+0.025}_{-0.023}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$r_*$	$144.76^{+0.60}_{-0.63}$	$f_{2000}^{143}$	$26^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.15}$	$100\theta_*$	$1.04132^{+0.00062}_{-0.00062}$	$f_{2000}^{143 \times 217}$	$30^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.06^{+0.53}_{-0.52}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901^{+0.055}_{-0.057}$	$f_{2000}^{217}$	$104.7^{+3.8}_{-3.8}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1060.33^{+0.63}_{-0.66}$	$\chi_{\text{simall}}^2$	$396.3 (\nu: 0.9)$
$c_{217}$	$0.9981^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.35^{+0.57}_{-0.61}$	$\chi_{\text{lowl}}^2$	$21.53 (\nu: 0.2)$
$H_0$	$55^{+7}_{-7}$	$k_{\text{D}}$	$0.14077^{+0.00061}_{-0.00060}$	$\chi_{\text{plik}}^2$	$2353.2 (\nu: 16.0)$
$\Omega_{\Lambda}$	$0.569^{+0.081}_{-0.087}$	$100\theta_{\text{D}}$	$0.16055^{+0.00037}_{-0.00036}$	$\chi_{\text{prior}}^2$	$11.2 (\nu: 9.7)$
$\Omega_{\text{m}}$	$0.47^{+0.12}_{-0.11}$	$z_{\text{eq}}$	$3361^{+65}_{-64}$	$\chi_{\text{CMB}}^2$	$2771.0 (\nu: 17.1)$

$$\bar{\chi}_{\text{eff}}^2 = 2782.22; \Delta \bar{\chi}_{\text{eff}}^2 = -9.31; R - 1 = 0.01621$$



## 15.6 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022209	$0.02217^{+0.00045}_{-0.00044}$	$\sigma_8/h^{0.5}$	0.9849	$0.986^{+0.019}_{-0.019}$	$D_M(0.38)$	1525.9	$1526^{+27}_{-27}$
$\Omega_c h^2$	0.11978	$0.1198^{+0.0039}_{-0.0038}$	$r_{\text{drag}} h$	99.84	$99.8^{+1.9}_{-1.8}$	$H(0.51)$	89.92	$89.9^{+1.4}_{-1.4}$
$100\theta_{\text{MC}}$	1.04088	$1.04086^{+0.00094}_{-0.00090}$	$\langle d^2 \rangle^{1/2}$	2.4347	$2.436^{+0.044}_{-0.043}$	$D_M(0.51)$	1976.7	$1977^{+33}_{-33}$
$\tau$	0.0539	$0.054^{+0.015}_{-0.014}$	$z_{\text{re}}$	7.68	$7.7^{+1.4}_{-1.5}$	$H(0.61)$	95.54	$95.5^{+1.4}_{-1.4}$
$\Omega_K$	0.0010	$0.0011^{+0.0050}_{-0.0050}$	$10^9 A_s$	2.095	$2.097^{+0.061}_{-0.057}$	$D_M(0.61)$	2300.3	$2301^{+39}_{-38}$
$\ln(10^{10} A_s)$	3.0422	$3.043^{+0.029}_{-0.027}$	$10^9 A_s e^{-2\tau}$	1.8811	$1.882^{+0.025}_{-0.025}$	$H(2.33)$	236.49	$236.5^{+3.4}_{-3.3}$
$n_s$	0.9649	$0.964^{+0.011}_{-0.011}$	$D_{40}$	1229.1	$1231^{+30}_{-29}$	$D_M(2.33)$	5752	$5752^{+75}_{-75}$
$y_{\text{cal}}$	1.00045	$1.0007^{+0.0049}_{-0.0048}$	$D_{220}$	5718	$5721^{+82}_{-77}$	$f\sigma_8(0.15)$	0.4564	$0.457^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	49.4	$48^{+10}_{-10}$	$D_{810}$	2537.5	$2538^{+27}_{-26}$	$\sigma_8(0.15)$	0.7493	$0.750^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.12	—	$D_{1420}$	815.6	$815^{+10}_{-9.9}$	$f\sigma_8(0.38)$	0.4749	$0.475^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	7.12	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	230.07	$229.8^{+3.7}_{-3.5}$	$\sigma_8(0.38)$	0.6643	$0.665^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	257	$263^{+60}_{-60}$	$n_{s,0.002}$	0.9649	$0.964^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	0.4736	$0.474^{+0.010}_{-0.010}$
$A_{143}^{\text{PS}}$	46.7	$49^{+10}_{-20}$	$Y_{\text{P}}$	0.245329	$0.24531^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	0.6217	$0.622^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	41.4	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246656	$0.24663^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	0.4687	$0.4690^{+0.0097}_{-0.0096}$
$A_{217}^{\text{PS}}$	117.7	$115^{+20}_{-20}$	$10^5 D/H$	2.616	$2.625^{+0.085}_{-0.082}$	$\sigma_8(0.61)$	0.5916	$0.592^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.766	$13.77^{+0.19}_{-0.19}$	$f\sigma_8(2.33)$	0.2983	$0.2985^{+0.0063}_{-0.0060}$
$A_{100}^{\text{dustTT}}$	8.81	$8.9^{+3.7}_{-3.7}$	$z_*$	1090.11	$1090.17^{+0.81}_{-0.79}$	$\sigma_8(2.33)$	0.3077	$0.3079^{+0.0072}_{-0.0070}$
$A_{143}^{\text{dustTT}}$	10.84	$10.7^{+3.5}_{-3.4}$	$r_*$	144.61	$144.63^{+0.85}_{-0.87}$	$f_{2000}^{143}$	30.6	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	1.04107	$1.04107^{+0.00092}_{-0.00088}$	$f_{2000}^{143 \times 217}$	33.17	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.7	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.891	$13.893^{+0.078}_{-0.080}$	$f_{2000}^{217}$	107.81	$108.1^{+3.8}_{-3.7}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.55	$1059.45^{+0.90}_{-0.89}$	$\chi_{\text{lensing}}^2$	8.88	$9.34 (\nu: 0.3)$
$c_{217}$	0.99825	$0.9982^{+0.0013}_{-0.0013}$	$r_{\text{drag}}$	147.33	$147.36^{+0.84}_{-0.86}$	$\chi_{\text{small}}^2$	396	$295 (\nu: 13816.6)$
$H_0$	67.77	$67.7^{+1.3}_{-1.3}$	$k_{\text{D}}$	0.14049	$0.14042^{+0.00093}_{-0.00093}$	$\chi_{\text{lowl}}^2$	23	$125 (\nu: 13829.3)$
$\Omega_\Lambda$	0.6884	$0.688^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	0.16098	$0.16104^{+0.00053}_{-0.00052}$	$\chi_{\text{plik}}^2$	759.4	$771.7 (\nu: 13.5)$
$\Omega_{\text{m}}$	0.3106	$0.311^{+0.013}_{-0.012}$	$z_{\text{eq}}$	3393	$3393^{+88}_{-87}$	$\chi_{6\text{DF}}^2$	0.02	$0.43 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	0.14264	$0.1426^{+0.0037}_{-0.0036}$	$k_{\text{eq}}$	0.010356	$0.01036^{+0.00027}_{-0.00026}$	$\chi_{\text{MGS}}^2$	1.34	$1.04 (\nu: 0.3)$
$\Omega_{\text{m}} h^3$	0.09666	$0.0966^{+0.0036}_{-0.0034}$	$100\theta_{\text{eq}}$	0.8144	$0.814^{+0.017}_{-0.016}$	$\chi_{\text{DR12BAO}}^2$	3.85	$4.7 (\nu: 1.8)$
$\sigma_8$	0.8108	$0.811^{+0.017}_{-0.016}$	$100\theta_{\text{s,eq}}$	0.4501	$0.4501^{+0.0085}_{-0.0084}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 6.8)$
$S_8$	0.8249	$0.826^{+0.025}_{-0.025}$	$H(0.15)$	73.06	$73.0^{+1.3}_{-1.3}$	$\chi_{\text{CMB}}^2$	1187.7	$1201.7 (\nu: 15.2)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4518	$0.452^{+0.014}_{-0.014}$	$D_M(0.15)$	639.7	$640^{+12}_{-12}$	$\chi_{\text{BAO}}^2$	5.21	$6.1 (\nu: 1.3)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6052	$0.606^{+0.014}_{-0.014}$	$H(0.38)$	83.19	$83.2^{+1.3}_{-1.3}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.36$ ;  $\Delta\chi_{\text{eff}}^2 = -0.33$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.14$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.41$ ;  $R - 1 = 0.01348$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.34 ( $\Delta$  0.13) DR12BAO: 3.85 ( $\Delta$  -0.52) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.88 ( $\Delta$  0.00) simall\_100x143\_offlike5\_EE\_Aplanck  
396.03 ( $\Delta$  -0.07) commander\_dx12\_v3.2\_29: 23.43 ( $\Delta$  0.47) plik\_rd12\_HM\_v22.TT: 759.40 ( $\Delta$  -0.40)

## 15.7 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02218^{+0.00045}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.985^{+0.019}_{-0.019}$	$D_M(0.38)$	$1525^{+26}_{-26}$
$\Omega_c h^2$	$0.1197^{+0.0039}_{-0.0038}$	$r_{\text{drag}} h$	$99.96^{+1.8}_{-1.8}$	$H(0.51)$	$89.9^{+1.4}_{-1.3}$
$100\theta_{\text{MC}}$	$1.04088^{+0.00094}_{-0.00090}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.043}_{-0.043}$	$D_M(0.51)$	$1976^{+33}_{-33}$
$\tau$	$0.054^{+0.015}_{-0.014}$	$z_{\text{re}}$	$7.7^{+1.4}_{-1.5}$	$H(0.61)$	$95.6^{+1.4}_{-1.4}$
$\Omega_K$	$0.0011^{+0.0051}_{-0.0050}$	$10^9 A_s$	$2.098^{+0.061}_{-0.057}$	$D_M(0.61)$	$2299^{+38}_{-37}$
$\ln(10^{10} A_s)$	$3.043^{+0.029}_{-0.028}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.025}_{-0.024}$	$H(2.33)$	$236.4^{+3.4}_{-3.2}$
$n_s$	$0.965^{+0.011}_{-0.011}$	$D_{40}$	$1230^{+30}_{-28}$	$D_M(2.33)$	$5751^{+74}_{-75}$
$y_{\text{cal}}$	$1.0008^{+0.0049}_{-0.0048}$	$D_{220}$	$5722^{+81}_{-77}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2538^{+27}_{-26}$	$\sigma_8(0.15)$	$0.750^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$816^{+10}_{-9.9}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	$229.9^{+3.7}_{-3.5}$	$\sigma_8(0.38)$	$0.665^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$n_{s,0.002}$	$0.965^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.473^{+0.010}_{-0.010}$
$A_{143}^{\text{PS}}$	$49^{+10}_{-20}$	$Y_{\text{P}}$	$0.24531^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	$0.622^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.4686^{+0.0096}_{-0.0095}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D/H}$	$2.622^{+0.085}_{-0.083}$	$\sigma_8(0.61)$	$0.592^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.77^{+0.19}_{-0.19}$	$f\sigma_8(2.33)$	$0.2985^{+0.0063}_{-0.0061}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.7}$	$z_*$	$1090.14^{+0.80}_{-0.78}$	$\sigma_8(2.33)$	$0.3080^{+0.0072}_{-0.0070}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.4}$	$r_*$	$144.66^{+0.84}_{-0.86}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	$1.04109^{+0.00092}_{-0.00088}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.895^{+0.077}_{-0.079}$	$f_{2000}^{217}$	$108.1^{+3.8}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.47^{+0.92}_{-0.91}$	$\chi_{\text{lensing}}^2$	$9.34 (\nu: 0.3)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0012}$	$r_{\text{drag}}$	$147.39^{+0.83}_{-0.85}$	$\chi_{\text{simall}}^2$	$294 (\nu: 13920.3)$
$H_0$	$67.8^{+1.3}_{-1.3}$	$k_{\text{D}}$	$0.14040^{+0.00094}_{-0.00093}$	$\chi_{\text{lowl}}^2$	$127 (\nu: 13931.4)$
$\Omega_{\Lambda}$	$0.689^{+0.012}_{-0.013}$	$100\theta_{\text{D}}$	$0.16103^{+0.00053}_{-0.00051}$	$\chi_{\text{plik}}^2$	$771.8 (\nu: 13.6)$
$\Omega_{\text{m}}$	$0.310^{+0.012}_{-0.012}$	$z_{\text{eq}}$	$3390^{+88}_{-86}$	$\chi_{\text{JLA}}^2$	$1035.08 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1425^{+0.0037}_{-0.0036}$	$k_{\text{eq}}$	$0.01035^{+0.00027}_{-0.00026}$	$\chi_{6\text{DF}}^2$	$0.45 (\nu: 0.3)$
$\Omega_{\text{m}} h^3$	$0.0966^{+0.0036}_{-0.0034}$	$100\theta_{\text{eq}}$	$0.815^{+0.017}_{-0.016}$	$\chi_{\text{MGS}}^2$	$1.08 (\nu: 0.3)$
$\sigma_8$	$0.811^{+0.017}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4504^{+0.0085}_{-0.0084}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 1.5)$
$S_8$	$0.824^{+0.024}_{-0.024}$	$H(0.15)$	$73.1^{+1.3}_{-1.3}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_M(0.15)$	$639^{+12}_{-12}$	$\chi_{\text{CMB}}^2$	$1201.7 (\nu: 15.1)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.605^{+0.014}_{-0.014}$	$H(0.38)$	$83.2^{+1.3}_{-1.3}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 1.1)$

$$\bar{\chi}_{\text{eff}}^2 = 2250.15; \Delta \bar{\chi}_{\text{eff}}^2 = 0.37; R - 1 = 0.01337$$



## 15.8 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217^{+0.00045}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.985^{+0.025}_{-0.024}$	$D_{\mathrm{M}}(0.38)$	$1525^{+27}_{-27}$
$\Omega_{\mathrm{c}}h^2$	$0.1197^{+0.0043}_{-0.0042}$	$r_{\mathrm{drag}}h$	$99.9^{+2.0}_{-2.0}$	$H(0.51)$	$89.9^{+1.4}_{-1.4}$
$100\theta_{\mathrm{MC}}$	$1.04088^{+0.00094}_{-0.00093}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.057}_{-0.054}$	$D_{\mathrm{M}}(0.51)$	$1976^{+34}_{-33}$
$\tau$	$0.054^{+0.013}_{-0.012}$	$z_{\mathrm{re}}$	$< 8.90$	$H(0.61)$	$95.6^{+1.5}_{-1.4}$
$\Omega_K$	$0.0011^{+0.0051}_{-0.0050}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.061}_{-0.055}$	$D_{\mathrm{M}}(0.61)$	$2300^{+38}_{-38}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.029}_{-0.026}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881^{+0.027}_{-0.027}$	$H(2.33)$	$236.4^{+3.6}_{-3.5}$
$n_{\mathrm{s}}$	$0.965^{+0.012}_{-0.012}$	$D_{40}$	$1229^{+32}_{-31}$	$D_{\mathrm{M}}(2.33)$	$5751^{+75}_{-75}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0050}_{-0.0049}$	$D_{220}$	$5717^{+82}_{-78}$	$f\sigma_8(0.15)$	$0.456^{+0.017}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+27}_{-27}$	$\sigma_8(0.15)$	$0.750^{+0.018}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815^{+10}_{-9.8}$	$f\sigma_8(0.38)$	$0.475^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	$229.8^{+3.7}_{-3.5}$	$\sigma_8(0.38)$	$0.665^{+0.016}_{-0.015}$
$A_{100}^{\mathrm{PS}}$	$263^{+60}_{-60}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	$0.474^{+0.013}_{-0.013}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	$0.622^{+0.015}_{-0.014}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.469^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.625^{+0.085}_{-0.083}$	$\sigma_8(0.61)$	$0.592^{+0.014}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.77^{+0.19}_{-0.20}$	$f\sigma_8(2.33)$	$0.2985^{+0.0070}_{-0.0065}$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.6}_{-3.7}$	$z_*$	$1090.16^{+0.86}_{-0.83}$	$\sigma_8(2.33)$	$0.3080^{+0.0078}_{-0.0074}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.66^{+0.94}_{-0.95}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	$1.04109^{+0.00092}_{-0.00091}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895^{+0.086}_{-0.088}$	$f_{2000}^{217}$	$108.1^{+3.8}_{-3.8}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.44^{+0.91}_{-0.88}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.40^{+0.93}_{-0.94}$	$\chi_{\mathrm{lowl}}^2$	$23.6 (\nu: 1.1)$
$H_0$	$67.8^{+1.4}_{-1.4}$	$k_{\mathrm{D}}$	$0.1404^{+0.0010}_{-0.00099}$	$\chi_{\mathrm{plik}}^2$	$772.2 (\nu: 14.6)$
$\Omega_{\Lambda}$	$0.689^{+0.015}_{-0.015}$	$100\theta_{\mathrm{D}}$	$0.16105^{+0.00052}_{-0.00052}$	$\chi_{6\mathrm{DF}}^2$	$0.057 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.015}_{-0.014}$	$z_{\mathrm{eq}}$	$3391^{+97}_{-94}$	$\chi_{\mathrm{MGS}}^2$	$1.48 (\nu: 0.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1425^{+0.0041}_{-0.0039}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00030}_{-0.00029}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.7)$
$\Omega_{\mathrm{m}}h^3$	$0.0967^{+0.0036}_{-0.0035}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.018}_{-0.018}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.9)$
$\sigma_8$	$0.811^{+0.020}_{-0.019}$	$100\theta_{\mathrm{s,eq}}$	$0.4504^{+0.0093}_{-0.0093}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 1.3)$
$S_8$	$0.825^{+0.032}_{-0.032}$	$H(0.15)$	$73.1^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$1192.6 (\nu: 14.7)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$639^{+12}_{-12}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.019}_{-0.018}$	$H(0.38)$	$83.2^{+1.3}_{-1.3}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.04$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.28$ ;  $R - 1 = 0.01397$

## 15.9 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02217^{+0.00045}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.986^{+0.019}_{-0.018}$	$D_M(0.38)$	$1526^{+27}_{-26}$
$\Omega_c h^2$	$0.1197^{+0.0039}_{-0.0038}$	$r_{\text{drag}} h$	$99.9^{+1.9}_{-1.8}$	$H(0.51)$	$89.9^{+1.4}_{-1.4}$
$100\theta_{\text{MC}}$	$1.04087^{+0.00094}_{-0.00090}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.043}_{-0.042}$	$D_M(0.51)$	$1977^{+34}_{-33}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 8.92$	$H(0.61)$	$95.5^{+1.4}_{-1.4}$
$\Omega_K$	$0.00099^{+0.0050}_{-0.0049}$	$10^9 A_s$	$2.100^{+0.055}_{-0.051}$	$D_M(0.61)$	$2301^{+39}_{-38}$
$\ln(10^{10} A_s)$	$3.045^{+0.026}_{-0.024}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.025}_{-0.024}$	$H(2.33)$	$236.4^{+3.4}_{-3.2}$
$n_s$	$0.965^{+0.011}_{-0.011}$	$D_{40}$	$1230^{+30}_{-28}$	$D_M(2.33)$	$5753^{+75}_{-74}$
$y_{\text{cal}}$	$1.0007^{+0.0050}_{-0.0048}$	$D_{220}$	$5721^{+82}_{-77}$	$f\sigma_8(0.15)$	$0.457^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+27}_{-26}$	$\sigma_8(0.15)$	$0.750^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+11}_{-9.9}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	$229.9^{+3.7}_{-3.5}$	$\sigma_8(0.38)$	$0.665^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$n_{s,0.002}$	$0.965^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.474^{+0.010}_{-0.010}$
$A_{143}^{\text{PS}}$	$49^{+10}_{-20}$	$Y_{\text{P}}$	$0.24531^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	$0.622^{+0.013}_{-0.012}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.4692^{+0.0097}_{-0.0093}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.623^{+0.085}_{-0.083}$	$\sigma_8(0.61)$	$0.592^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.77^{+0.19}_{-0.19}$	$f\sigma_8(2.33)$	$0.2986^{+0.0062}_{-0.0060}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.7}$	$z_*$	$1090.15^{+0.81}_{-0.78}$	$\sigma_8(2.33)$	$0.3081^{+0.0071}_{-0.0069}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.4}$	$r_*$	$144.65^{+0.83}_{-0.84}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.3}_{-6.6}$	$100\theta_*$	$1.04108^{+0.00092}_{-0.00089}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.894^{+0.077}_{-0.079}$	$f_{2000}^{217}$	$108.1^{+3.8}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.46^{+0.89}_{-0.90}$	$\chi_{\text{lensing}}^2$	$9.29 (\nu: 0.2)$
$c_{217}$	$0.9983^{+0.0013}_{-0.0013}$	$r_{\text{drag}}$	$147.38^{+0.83}_{-0.84}$	$\chi_{\text{simall}}^2$	$296 (\nu: 13777.7)$
$H_0$	$67.8^{+1.3}_{-1.3}$	$k_{\text{D}}$	$0.14041^{+0.00094}_{-0.00093}$	$\chi_{\text{lowl}}^2$	$125 (\nu: 13788.8)$
$\Omega_\Lambda$	$0.688^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16104^{+0.00053}_{-0.00052}$	$\chi_{\text{plik}}^2$	$771.6 (\nu: 13.5)$
$\Omega_{\text{m}}$	$0.311^{+0.013}_{-0.012}$	$z_{\text{eq}}$	$3391^{+87}_{-85}$	$\chi_{6\text{DF}}^2$	$0.43 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	$0.1426^{+0.0036}_{-0.0036}$	$k_{\text{eq}}$	$0.01035^{+0.00027}_{-0.00026}$	$\chi_{\text{MGS}}^2$	$1.04 (\nu: 0.3)$
$\Omega_{\text{m}} h^3$	$0.0966^{+0.0036}_{-0.0034}$	$100\theta_{\text{eq}}$	$0.815^{+0.016}_{-0.016}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.8)$
$\sigma_8$	$0.812^{+0.016}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4503^{+0.0084}_{-0.0083}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$S_8$	$0.826^{+0.025}_{-0.025}$	$H(0.15)$	$73.0^{+1.3}_{-1.3}$	$\chi_{\text{CMB}}^2$	$1201.5 (\nu: 14.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.014}_{-0.014}$	$D_M(0.15)$	$640^{+12}_{-12}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 1.3)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.014}_{-0.014}$	$H(0.38)$	$83.2^{+1.3}_{-1.3}$		

$$\bar{\chi}_{\text{eff}}^2 = 1214.95; \Delta \bar{\chi}_{\text{eff}}^2 = 0.38; R - 1 = 0.01494$$

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

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02219^{+0.00044}_{-0.00044}$	$\sigma_8/h^{0.5}$	$0.985^{+0.019}_{-0.018}$	$D_{\text{M}}(0.38)$	$1525^{+26}_{-26}$
$\Omega_{\text{c}}h^2$	$0.1196^{+0.0038}_{-0.0038}$	$r_{\text{drag}}h$	$99.97^{+1.8}_{-1.8}$	$H(0.51)$	$89.9^{+1.4}_{-1.3}$
$100\theta_{\text{MC}}$	$1.04089^{+0.00095}_{-0.00090}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.043}_{-0.042}$	$D_{\text{M}}(0.51)$	$1976^{+33}_{-33}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\text{re}}$	$7.8^{+1.1}_{-1.3}$	$H(0.61)$	$95.5^{+1.4}_{-1.4}$
$\Omega_K$	$0.00099^{+0.0051}_{-0.0049}$	$10^9 A_{\text{s}}$	$2.101^{+0.055}_{-0.051}$	$D_{\text{M}}(0.61)$	$2300^{+38}_{-37}$
$\ln(10^{10} A_{\text{s}})$	$3.045^{+0.026}_{-0.024}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.881^{+0.025}_{-0.024}$	$H(2.33)$	$236.3^{+3.4}_{-3.2}$
$n_{\text{s}}$	$0.965^{+0.011}_{-0.011}$	$D_{40}$	$1230^{+29}_{-28}$	$D_{\text{M}}(2.33)$	$5752^{+74}_{-74}$
$y_{\text{cal}}$	$1.0008^{+0.0050}_{-0.0048}$	$D_{220}$	$5722^{+81}_{-77}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+27}_{-26}$	$\sigma_8(0.15)$	$0.750^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$816^{+11}_{-9.9}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	$229.9^{+3.7}_{-3.6}$	$\sigma_8(0.38)$	$0.665^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$n_{\text{s},0.002}$	$0.965^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.474^{+0.010}_{-0.0099}$
$A_{143}^{\text{PS}}$	$49^{+10}_{-20}$	$Y_{\text{P}}$	$0.24532^{+0.00018}_{-0.00020}$	$\sigma_8(0.51)$	$0.622^{+0.013}_{-0.012}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00018}_{-0.00020}$	$f\sigma_8(0.61)$	$0.4688^{+0.0096}_{-0.0092}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.621^{+0.086}_{-0.082}$	$\sigma_8(0.61)$	$0.592^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.77^{+0.19}_{-0.19}$	$f\sigma_8(2.33)$	$0.2987^{+0.0062}_{-0.0060}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.7}$	$z_*$	$1090.12^{+0.81}_{-0.77}$	$\sigma_8(2.33)$	$0.3082^{+0.0071}_{-0.0069}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.4}$	$r_*$	$144.68^{+0.83}_{-0.84}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.6}$	$100\theta_*$	$1.04109^{+0.00093}_{-0.00089}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.897^{+0.077}_{-0.078}$	$f_{2000}^{217}$	$108.0^{+3.8}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.48^{+0.91}_{-0.92}$	$\chi_{\text{lensing}}^2$	$9.29 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0012}$	$r_{\text{drag}}$	$147.41^{+0.82}_{-0.84}$	$\chi_{\text{simall}}^2$	$294 (\nu: 13886.3)$
$H_0$	$67.8^{+1.3}_{-1.3}$	$k_{\text{D}}$	$0.14039^{+0.00094}_{-0.00093}$	$\chi_{\text{lowl}}^2$	$126 (\nu: 13895.9)$
$\Omega_{\Lambda}$	$0.689^{+0.012}_{-0.012}$	$100\theta_{\text{D}}$	$0.16103^{+0.00053}_{-0.00051}$	$\chi_{\text{plik}}^2$	$771.7 (\nu: 13.6)$
$\Omega_{\text{m}}$	$0.310^{+0.012}_{-0.012}$	$z_{\text{eq}}$	$3388^{+87}_{-85}$	$\chi_{\text{JLA}}^2$	$1035.07 (\nu: 0.0)$
$\Omega_{\text{m}}h^2$	$0.1424^{+0.0036}_{-0.0036}$	$k_{\text{eq}}$	$0.01034^{+0.00026}_{-0.00026}$	$\chi_{6\text{DF}}^2$	$0.45 (\nu: 0.3)$
$\Omega_{\text{m}}h^3$	$0.0966^{+0.0036}_{-0.0034}$	$100\theta_{\text{eq}}$	$0.815^{+0.017}_{-0.016}$	$\chi_{\text{MGS}}^2$	$1.08 (\nu: 0.3)$
$\sigma_8$	$0.811^{+0.016}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4506^{+0.0084}_{-0.0083}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 1.5)$
$S_8$	$0.824^{+0.024}_{-0.024}$	$H(0.15)$	$73.1^{+1.3}_{-1.3}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.452^{+0.013}_{-0.013}$	$D_{\text{M}}(0.15)$	$639^{+12}_{-12}$	$\chi_{\text{CMB}}^2$	$1201.5 (\nu: 14.8)$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.605^{+0.014}_{-0.014}$	$H(0.38)$	$83.2^{+1.3}_{-1.3}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 1.1)$

$$\bar{\chi}_{\text{eff}}^2 = 2249.97; \Delta\bar{\chi}_{\text{eff}}^2 = 0.34; R - 1 = 0.01495$$













## 15.16 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00030}_{-0.00030}$	$\sigma_8$	$0.812^{+0.014}_{-0.013}$	$D_M(0.15)$	$638^{+11}_{-11}$
$\Omega_c h^2$	$0.1196^{+0.0027}_{-0.0027}$	$S_8$	$0.824^{+0.021}_{-0.020}$	$H(0.38)$	$83.3^{+1.2}_{-1.2}$
$100\theta_{MC}$	$1.04096^{+0.00060}_{-0.00061}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.011}_{-0.011}$	$D_M(0.38)$	$1523^{+24}_{-25}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.012}_{-0.011}$	$H(0.51)$	$90.0^{+1.2}_{-1.1}$
$\Omega_K$	$0.0008^{+0.0037}_{-0.0037}$	$\sigma_8/h^{0.5}$	$0.985^{+0.017}_{-0.016}$	$D_M(0.51)$	$1973^{+30}_{-31}$
$\ln(10^{10} A_s)$	$3.048^{+0.027}_{-0.025}$	$r_{\text{drag}} h$	$99.99^{+1.8}_{-1.8}$	$H(0.61)$	$95.7^{+1.2}_{-1.1}$
$n_s$	$0.9661^{+0.0089}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.040}_{-0.038}$	$D_M(0.61)$	$2296^{+34}_{-35}$
$y_{\text{cal}}$	$1.0007^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.3}$	$H(2.33)$	$236.5^{+2.3}_{-2.3}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.107^{+0.056}_{-0.053}$	$D_M(2.33)$	$5745^{+60}_{-62}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	$0.456^{+0.011}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.6}_{-4.0}$	$D_{40}$	$1229^{+24}_{-25}$	$\sigma_8(0.15)$	$0.750^{+0.013}_{-0.012}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-50}$	$D_{220}$	$5738^{+77}_{-76}$	$f\sigma_8(0.38)$	$0.4749^{+0.0092}_{-0.0089}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2540^{+25}_{-26}$	$\sigma_8(0.38)$	$0.666^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.8^{+9.2}_{-9.2}$	$f\sigma_8(0.51)$	$0.4738^{+0.0086}_{-0.0081}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.1^{+3.1}_{-3.1}$	$\sigma_8(0.51)$	$0.623^{+0.012}_{-0.011}$
$A^{\text{kSZ}}$	$< 7.99$	$n_{s,0.002}$	$0.9661^{+0.0089}_{-0.0082}$	$f\sigma_8(0.61)$	$0.4690^{+0.0081}_{-0.0077}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$Y_P$	$0.24541^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.593^{+0.011}_{-0.010}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	$0.2990^{+0.0058}_{-0.0052}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.5}_{-6.5}$	$10^5 D/H$	$2.580^{+0.056}_{-0.054}$	$\sigma_8(2.33)$	$0.3085^{+0.0067}_{-0.0060}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.75^{+0.15}_{-0.16}$	$f_{2000}^{143}$	$29^{+5}_{-6}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.077}_{-0.075}$	$z_*$	$1089.84^{+0.55}_{-0.55}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.058}$	$r_*$	$144.52^{+0.59}_{-0.58}$	$f_{2000}^{217}$	$106.9^{+3.7}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04114^{+0.00059}_{-0.00060}$	$\chi_{\text{lensing}}^2$	$9.10 (\nu: 0.1)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.881^{+0.054}_{-0.054}$	$\chi_{\text{simall}}^2$	$291 (\nu: 14237.3)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1059.98^{+0.60}_{-0.58}$	$\chi_{\text{lowl}}^2$	$130 (\nu: 14233.8)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.51}_{-0.52}$	$r_{\text{drag}}$	$147.17^{+0.58}_{-0.57}$	$\chi_{\text{plik}}^2$	$2359.8 (\nu: 16.8)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14081^{+0.00061}_{-0.00062}$	$\chi_{\text{JLA}}^2$	$1035.03 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16074^{+0.00035}_{-0.00034}$	$\chi_{6\text{DF}}^2$	$0.46 (\nu: 0.3)$
$H_0$	$67.9^{+1.3}_{-1.2}$	$z_{\text{eq}}$	$3393^{+60}_{-60}$	$\chi_{\text{MGS}}^2$	$1.07 (\nu: 0.3)$
$\Omega_\Lambda$	$0.690^{+0.011}_{-0.011}$	$k_{\text{eq}}$	$0.01036^{+0.00018}_{-0.00018}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 1.4)$
$\Omega_m$	$0.309^{+0.012}_{-0.012}$	$100\theta_{\text{eq}}$	$0.815^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 9.9)$
$\Omega_m h^2$	$0.1426^{+0.0025}_{-0.0025}$	$100\theta_{s,\text{eq}}$	$0.4503^{+0.0060}_{-0.0058}$	$\chi_{\text{CMB}}^2$	$2789.5 (\nu: 17.3)$
$\Omega_m h^3$	$0.0969^{+0.0027}_{-0.0026}$	$H(0.15)$	$73.2^{+1.2}_{-1.2}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 1.0)$

$$\bar{\chi}_{\text{eff}}^2 = 3842.05; \Delta \bar{\chi}_{\text{eff}}^2 = 0.31; R - 1 = 0.02292$$

### 15.17 base\_omegak\_plikHM\_TT\_lowl\_lowE.lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022317	$0.02232^{+0.00048}_{-0.00046}$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.610^{+0.015}_{-0.014}$	$D_M(0.15)$	675.7	$682^{+49}_{-46}$
$\Omega_c h^2$	0.11806	$0.1178^{+0.0044}_{-0.0040}$	$\sigma_8/h^{0.5}$	0.9955	$0.996^{+0.021}_{-0.021}$	$H(0.38)$	79.71	$79.2^{+4.4}_{-4.2}$
$100\theta_{MC}$	1.04107	$1.04111^{+0.00093}_{-0.00095}$	$r_{drag}h$	94.5	$93.6^{+6.9}_{-6.5}$	$D_M(0.38)$	1604	$1618^{+100}_{-100}$
$\tau$	0.0510	$0.049^{+0.016}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	2.469	$2.473^{+0.058}_{-0.057}$	$H(0.51)$	86.54	$86.0^{+4.2}_{-4.0}$
$\Omega_K$	-0.0092	$-0.011^{+0.015}_{-0.015}$	$z_{re}$	7.29	$7.1^{+1.6}_{-1.8}$	$D_M(0.51)$	2073	$2091^{+130}_{-120}$
$\ln(10^{10} A_s)$	3.0316	$3.027^{+0.033}_{-0.034}$	$10^9 A_s$	2.073	$2.065^{+0.069}_{-0.070}$	$H(0.61)$	92.24	$91.8^{+4.1}_{-4.0}$
$n_s$	0.9696	$0.969^{+0.012}_{-0.012}$	$10^9 A_s e^{-2\tau}$	1.8719	$1.870^{+0.027}_{-0.026}$	$D_M(0.61)$	2409	$2428^{+140}_{-140}$
$y_{cal}$	1.00010	$0.99998^{+0.0048}_{-0.0049}$	$D_{40}$	1213.4	$1213^{+34}_{-33}$	$H(2.33)$	233.28	$232.8^{+5.1}_{-4.8}$
$A_{217}^{CIB}$	48.0	$47^{+10}_{-10}$	$D_{220}$	5718	$5723^{+82}_{-80}$	$D_M(2.33)$	5924	$5953^{+230}_{-220}$
$\xi^{tSZ \times CIB}$	0.40	—	$D_{810}$	2533.1	$2531^{+27}_{-27}$	$f\sigma_8(0.15)$	0.4700	$0.471^{+0.020}_{-0.020}$
$A_{143}^{tSZ}$	7.01	$5.2^{+3.8}_{-3.9}$	$D_{1420}$	815.3	$814.3^{+9.8}_{-10}$	$\sigma_8(0.15)$	0.7325	$0.729^{+0.026}_{-0.027}$
$A_{100}^{PS}$	252	$261^{+60}_{-60}$	$D_{2000}$	230.62	$230.3^{+3.6}_{-3.7}$	$f\sigma_8(0.38)$	0.4812	$0.481^{+0.012}_{-0.012}$
$A_{143}^{PS}$	48.5	$47^{+20}_{-20}$	$n_{s,0.002}$	0.9696	$0.969^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	0.6457	$0.642^{+0.027}_{-0.028}$
$A_{143 \times 217}^{PS}$	47.1	$42^{+20}_{-20}$	$Y_P$	0.245374	$0.24537^{+0.00018}_{-0.00020}$	$f\sigma_8(0.51)$	0.4762	$0.476^{+0.010}_{-0.0096}$
$A_{217}^{PS}$	118.8	$114^{+20}_{-20}$	$Y_P^{BBN}$	0.246701	$0.24670^{+0.00018}_{-0.00020}$	$\sigma_8(0.51)$	0.6028	$0.599^{+0.027}_{-0.027}$
$A^{kSZ}$	0.22	< 8.44	$10^5 D/H$	2.595	$2.595^{+0.088}_{-0.086}$	$f\sigma_8(0.61)$	0.4688	$0.4678^{+0.0095}_{-0.0092}$
$A_{100}^{dustTT}$	8.97	$9.0^{+3.6}_{-3.6}$	Age/Gyr	14.20	$14.28^{+0.59}_{-0.56}$	$\sigma_8(0.61)$	0.5726	$0.569^{+0.027}_{-0.027}$
$A_{143}^{dustTT}$	10.93	$10.7^{+3.5}_{-3.5}$	$z_*$	1089.82	$1089.79^{+0.88}_{-0.87}$	$f\sigma_8(2.33)$	0.2878	$0.286^{+0.015}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.4}_{-6.5}$	$r_*$	144.97	$145.03^{+0.89}_{-0.96}$	$\sigma_8(2.33)$	0.2942	$0.292^{+0.018}_{-0.018}$
$A_{217}^{dustTT}$	94.6	$93^{+10}_{-10}$	$100\theta_*$	1.04126	$1.04130^{+0.00092}_{-0.00093}$	$f_{2000}^{143}$	29.6	$30^{+6}_{-6}$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.923	$13.928^{+0.082}_{-0.087}$	$f_{2000}^{143 \times 217}$	32.50	$33^{+4}_{-4}$
$c_{217}$	0.99822	$0.9982^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.67	$1059.67^{+0.95}_{-0.92}$	$f_{2000}^{217}$	106.95	$107.2^{+4.0}_{-3.9}$
$H_0$	63.96	$63.4^{+4.8}_{-4.6}$	$r_{drag}$	147.67	$147.72^{+0.87}_{-0.94}$	$\chi_{lensing}^2$	9.44	$10.4 (\nu: 2.3)$
$\Omega_\Lambda$	0.6645	$0.660^{+0.034}_{-0.037}$	$k_D$	0.14022	$0.14016^{+0.00099}_{-0.00090}$	$\chi_{small}^2$	395.67	$396.7 (\nu: 1.1)$
$\Omega_m$	0.3447	$0.352^{+0.050}_{-0.046}$	$100\theta_D$	0.16092	$0.16093^{+0.00055}_{-0.00053}$	$\chi_{lowl}^2$	21.81	$22.0 (\nu: 0.7)$
$\Omega_m h^2$	0.14103	$0.1408^{+0.0041}_{-0.0038}$	$z_{eq}$	3355	$3349^{+99}_{-90}$	$\chi_{plik}^2$	757.9	$770.7 (\nu: 15.1)$
$\Omega_m h^3$	0.0902	$0.0893^{+0.0084}_{-0.0080}$	$k_{eq}$	0.010239	$0.01022^{+0.00030}_{-0.00027}$	$\chi_{prior}^2$	1.4	$7.3 (\nu: 6.8)$
$\sigma_8$	0.7962	$0.792^{+0.025}_{-0.025}$	$100\theta_{eq}$	0.8219	$0.823^{+0.018}_{-0.019}$	$\chi_{CMB}^2$	1184.8	$1199.8 (\nu: 15.9)$
$S_8$	0.8534	$0.857^{+0.043}_{-0.042}$	$100\theta_{s,eq}$	0.4539	$0.4545^{+0.0092}_{-0.0096}$			
$\sigma_8 \Omega_m^{0.5}$	0.4675	$0.470^{+0.024}_{-0.023}$	$H(0.15)$	69.39	$68.8^{+4.6}_{-4.4}$			

Best-fit  $\chi_{eff}^2 = 1186.22$ ;  $\Delta\chi_{eff}^2 = -2.35$ ;  $\bar{\chi}_{eff}^2 = 1207.14$ ;  $\Delta\bar{\chi}_{eff}^2 = -1.28$ ;  $R - 1 = 0.01227$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.44 ( $\Delta$  0.54) simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.67 ( $\Delta$  -0.19) commander\_dx12\_v3.2.29: 21.81 ( $\Delta$  -1.43) plik\_rd12\_HM\_v22\_TT: 757.86 ( $\Delta$  -1.46)

# 15.18 base\_omegak\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233^{+0.00049}_{-0.00046}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.015}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$679^{+46}_{-45}$
$\Omega_{\mathrm{c}}h^2$	$0.1177^{+0.0044}_{-0.0040}$	$\sigma_8/h^{0.5}$	$0.996^{+0.021}_{-0.021}$	$H(0.38)$	$79.5^{+4.3}_{-4.0}$
$100\theta_{\mathrm{MC}}$	$1.04113^{+0.00093}_{-0.00096}$	$r_{\mathrm{drag}}h$	$94.2^{+6.7}_{-6.3}$	$D_{\mathrm{M}}(0.38)$	$1610^{+100}_{-97}$
$\tau$	$0.0525^{+0.012}_{-0.0095}$	$\langle d^2 \rangle^{1/2}$	$2.473^{+0.057}_{-0.056}$	$H(0.51)$	$86.3^{+4.1}_{-3.9}$
$\Omega_K$	$-0.010^{+0.014}_{-0.014}$	$z_{\mathrm{re}}$	$< 8.52$	$D_{\mathrm{M}}(0.51)$	$2081^{+120}_{-120}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033^{+0.026}_{-0.023}$	$10^9 A_{\mathrm{s}}$	$2.077^{+0.055}_{-0.049}$	$H(0.61)$	$92.0^{+4.1}_{-3.9}$
$n_{\mathrm{s}}$	$0.970^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870^{+0.027}_{-0.026}$	$D_{\mathrm{M}}(0.61)$	$2417^{+140}_{-130}$
$y_{\mathrm{cal}}$	$0.99997^{+0.0048}_{-0.0049}$	$D_{40}$	$1213^{+34}_{-33}$	$H(2.33)$	$232.9^{+5.2}_{-4.7}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$D_{220}$	$5723^{+83}_{-79}$	$D_{\mathrm{M}}(2.33)$	$5938^{+220}_{-220}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2530^{+27}_{-27}$	$f\sigma_8(0.15)$	$0.470^{+0.020}_{-0.020}$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+3.8}_{-3.9}$	$D_{1420}$	$814.3^{+9.8}_{-10}$	$\sigma_8(0.15)$	$0.731^{+0.025}_{-0.024}$
$A_{100}^{\mathrm{PS}}$	$260^{+60}_{-60}$	$D_{2000}$	$230.3^{+3.6}_{-3.7}$	$f\sigma_8(0.38)$	$0.481^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$47^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.970^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	$0.645^{+0.025}_{-0.025}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00019}_{-0.00020}$	$f\sigma_8(0.51)$	$0.4760^{+0.0099}_{-0.0096}$
$A_{217}^{\mathrm{PS}}$	$114^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00019}_{-0.00020}$	$\sigma_8(0.51)$	$0.602^{+0.025}_{-0.025}$
$A^{\mathrm{kSZ}}$	$< 8.44$	$10^5 D/H$	$2.594^{+0.087}_{-0.088}$	$f\sigma_8(0.61)$	$0.4685^{+0.0093}_{-0.0088}$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.6}_{-3.6}$	Age/Gyr	$14.24^{+0.56}_{-0.55}$	$\sigma_8(0.61)$	$0.571^{+0.025}_{-0.024}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.5}_{-3.5}$	$z_*$	$1089.77^{+0.86}_{-0.88}$	$f\sigma_8(2.33)$	$0.287^{+0.014}_{-0.013}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.4}_{-6.5}$	$r_*$	$145.05^{+0.89}_{-0.97}$	$\sigma_8(2.33)$	$0.294^{+0.017}_{-0.016}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04132^{+0.00091}_{-0.00095}$	$f_{2000}^{143}$	$30^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.930^{+0.082}_{-0.087}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.68^{+0.98}_{-0.93}$	$f_{2000}^{217}$	$107.1^{+4.0}_{-3.9}$
$H_0$	$63.8^{+4.7}_{-4.4}$	$r_{\mathrm{drag}}$	$147.74^{+0.87}_{-0.94}$	$\chi_{\mathrm{lensing}}^2$	$10.4 (\nu: 2.3)$
$\Omega_{\Lambda}$	$0.663^{+0.032}_{-0.033}$	$k_{\mathrm{D}}$	$0.14015^{+0.00099}_{-0.00090}$	$\chi_{\mathrm{simall}}^2$	$396.4 (\nu: 0.7)$
$\Omega_{\mathrm{m}}$	$0.347^{+0.046}_{-0.044}$	$100\theta_{\mathrm{D}}$	$0.16092^{+0.00054}_{-0.00053}$	$\chi_{\mathrm{lowl}}^2$	$22.1 (\nu: 0.7)$
$\Omega_{\mathrm{m}}h^2$	$0.1407^{+0.0042}_{-0.0037}$	$z_{\mathrm{eq}}$	$3347^{+99}_{-90}$	$\chi_{\mathrm{plik}}^2$	$770.6 (\nu: 15.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0897^{+0.0083}_{-0.0077}$	$k_{\mathrm{eq}}$	$0.01022^{+0.00030}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.795^{+0.023}_{-0.022}$	$100\theta_{\mathrm{eq}}$	$0.823^{+0.018}_{-0.019}$	$\chi_{\mathrm{CMB}}^2$	$1199.4 (\nu: 15.4)$
$S_8$	$0.855^{+0.042}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.4547^{+0.0091}_{-0.0097}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.468^{+0.023}_{-0.023}$	$H(0.15)$	$69.2^{+4.5}_{-4.2}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.71$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = -1.45$ ;  $R - 1 = 0.01427$

### 15.19 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022509	$0.02249^{+0.00031}_{-0.00030}$	$\Omega_m h^3$	0.0906	$0.0900^{+0.0072}_{-0.0067}$	$100\theta_{s,eq}$	0.4528	$0.4527^{+0.0065}_{-0.0065}$
$\Omega_c h^2$	0.11839	$0.1185^{+0.0030}_{-0.0029}$	$\sigma_8$	0.7974	$0.795^{+0.022}_{-0.022}$	$H(0.15)$	69.47	$69.0^{+4.3}_{-4.0}$
$100\theta_{MC}$	1.04106	$1.04107^{+0.00061}_{-0.00064}$	$S_8$	0.8554	$0.860^{+0.040}_{-0.041}$	$D_M(0.15)$	675.0	$680^{+44}_{-43}$
$\tau$	0.0515	$0.050^{+0.016}_{-0.017}$	$\sigma_8 \Omega_m^{0.5}$	0.4685	$0.471^{+0.022}_{-0.023}$	$H(0.38)$	79.82	$79.4^{+4.0}_{-3.7}$
$\Omega_K$	-0.0092	$-0.011^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	0.6112	$0.612^{+0.013}_{-0.013}$	$D_M(0.38)$	1602	$1614^{+93}_{-92}$
$\ln(10^{10} A_s)$	3.0336	$3.030^{+0.032}_{-0.035}$	$\sigma_8/h^{0.5}$	0.9965	$0.998^{+0.019}_{-0.020}$	$H(0.51)$	86.67	$86.3^{+3.8}_{-3.5}$
$n_s$	0.9699	$0.9688^{+0.0090}_{-0.0094}$	$r_{drag} h$	94.4	$93.7^{+6.5}_{-6.0}$	$D_M(0.51)$	2071	$2084^{+110}_{-110}$
$y_{cal}$	1.00002	$0.99998^{+0.0048}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.472	$2.478^{+0.054}_{-0.055}$	$H(0.61)$	92.38	$92.0^{+3.7}_{-3.4}$
$A_{217}^{CIB}$	46.8	$46^{+10}_{-10}$	$z_{re}$	7.30	$7.1^{+1.6}_{-1.8}$	$D_M(0.61)$	2406	$2420^{+130}_{-130}$
$\xi^{tSZ \times CIB}$	0.52	—	$10^9 A_s$	2.077	$2.070^{+0.067}_{-0.072}$	$H(2.33)$	233.70	$233.6^{+3.8}_{-3.6}$
$A_{143}^{tSZ}$	7.25	$5.5^{+3.7}_{-3.9}$	$10^9 A_s e^{-2\tau}$	1.8741	$1.874^{+0.024}_{-0.023}$	$D_M(2.33)$	5915	$5935^{+190}_{-200}$
$A_{100}^{PS}$	247	$257^{+60}_{-50}$	$D_{40}$	1214.6	$1216^{+29}_{-27}$	$f\sigma_8(0.15)$	0.4710	$0.473^{+0.019}_{-0.020}$
$A_{143}^{PS}$	47.2	$44^{+10}_{-20}$	$D_{220}$	5731	$5735^{+73}_{-74}$	$\sigma_8(0.15)$	0.7335	$0.731^{+0.023}_{-0.024}$
$A_{143 \times 217}^{PS}$	48.3	$41^{+20}_{-20}$	$D_{810}$	2535.3	$2534^{+26}_{-26}$	$f\sigma_8(0.38)$	0.4821	$0.483^{+0.011}_{-0.012}$
$A_{217}^{PS}$	119.1	$114^{+20}_{-20}$	$D_{1420}$	817.2	$816.2^{+9.1}_{-9.1}$	$\sigma_8(0.38)$	0.6466	$0.644^{+0.024}_{-0.025}$
$A^{kSZ}$	0.01	< 8.00	$D_{2000}$	231.60	$231.2^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	0.4770	$0.4771^{+0.0083}_{-0.0086}$
$A_{100}^{dustTT}$	8.94	$9.0^{+3.6}_{-3.5}$	$n_{s,0.002}$	0.9699	$0.9688^{+0.0090}_{-0.0094}$	$\sigma_8(0.51)$	0.6035	$0.601^{+0.024}_{-0.025}$
$A_{143}^{dustTT}$	11.10	$10.9^{+3.5}_{-3.4}$	$Y_P$	0.245448	$0.24544^{+0.00012}_{-0.00012}$	$f\sigma_8(0.61)$	0.4696	$0.4693^{+0.0077}_{-0.0079}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.6^{+6.3}_{-6.4}$	$Y_P^{BBN}$	0.246774	$0.24676^{+0.00012}_{-0.00012}$	$\sigma_8(0.61)$	0.5733	$0.571^{+0.024}_{-0.025}$
$A_{217}^{dustTT}$	95.1	$94^{+10}_{-10}$	$10^5 D/H$	2.560	$2.565^{+0.056}_{-0.056}$	$f\sigma_8(2.33)$	0.2881	$0.287^{+0.013}_{-0.013}$
$A_{100}^{dustTE}$	0.114	$0.113^{+0.075}_{-0.076}$	Age/Gyr	14.182	$14.23^{+0.49}_{-0.50}$	$\sigma_8(2.33)$	0.2946	$0.293^{+0.017}_{-0.016}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.134^{+0.058}_{-0.059}$	$z_*$	1089.61	$1089.64^{+0.59}_{-0.57}$	$f_{2000}^{143}$	28.1	$29^{+6}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.17}_{-0.17}$	$r_*$	144.74	$144.73^{+0.63}_{-0.64}$	$f_{2000}^{143 \times 217}$	31.35	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	0.224	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	1.04123	$1.04124^{+0.00060}_{-0.00062}$	$f_{2000}^{217}$	105.88	$106.3^{+3.6}_{-3.5}$
$A_{143 \times 217}^{dustTE}$	0.660	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.901	$13.900^{+0.059}_{-0.059}$	$\chi^2_{lensing}$	9.78	$10.9 (\nu: 2.8)$
$A_{217}^{dustTE}$	2.07	$2.07^{+0.52}_{-0.52}$	$z_{drag}$	1060.12	$1060.10^{+0.60}_{-0.58}$	$\chi^2_{small}$	395.65	$396.7 (\nu: 1.1)$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.36	$147.36^{+0.61}_{-0.61}$	$\chi^2_{lowl}$	21.84	$22.15 (\nu: 0.5)$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14069	$0.14067^{+0.00063}_{-0.00063}$	$\chi^2_{plik}$	2342.4	$2357.5 (\nu: 17.3)$
$H_0$	64.03	$63.6^{+4.5}_{-4.2}$	$100\theta_D$	0.160641	$0.16067^{+0.00034}_{-0.00034}$	$\chi^2_{prior}$	1.8	$11.5 (\nu: 9.9)$
$\Omega_\Lambda$	0.6639	$0.659^{+0.033}_{-0.035}$	$z_{eq}$	3367	$3369^{+67}_{-65}$	$\chi^2_{CMB}$	2769.7	$2787.2 (\nu: 17.4)$
$\Omega_m$	0.3453	$0.352^{+0.045}_{-0.046}$	$k_{eq}$	0.010277	$0.01028^{+0.00020}_{-0.00020}$			
$\Omega_m h^2$	0.14155	$0.1416^{+0.0028}_{-0.0027}$	$100\theta_{eq}$	0.8201	$0.820^{+0.013}_{-0.013}$			

Best-fit  $\chi^2_{eff} = 2771.41$ ;  $\Delta\chi^2_{eff} = -3.23$ ;  $\bar{\chi}^2_{eff} = 2798.70$ ;  $\Delta\bar{\chi}^2_{eff} = -1.99$ ;  $R - 1 = 0.02587$   
 $\chi^2_{eff}$ : CMB - smicadx12.Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 9.79 ( $\Delta$  0.92) small\_100x143\_offlike5\_EE\_Aplanck.B: 395.65 ( $\Delta$  -0.40) commander\_dx12.v3.2.29: 21.84 ( $\Delta$  -1.41) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.38 ( $\Delta$  -2.55)

## 15.20 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02249^{+0.00031}_{-0.00030}$	$\Omega_{\text{m}}h^3$	$0.0906^{+0.0069}_{-0.0063}$	$100\theta_{\text{s,eq}}$	$0.4527^{+0.0065}_{-0.0067}$
$\Omega_{\text{c}}h^2$	$0.1185^{+0.0031}_{-0.0029}$	$\sigma_8$	$0.798^{+0.020}_{-0.018}$	$H(0.15)$	$69.4^{+4.1}_{-3.7}$
$100\theta_{\text{MC}}$	$1.04107^{+0.00061}_{-0.00064}$	$S_8$	$0.858^{+0.039}_{-0.040}$	$D_{\text{M}}(0.15)$	$676^{+40}_{-41}$
$\tau$	$0.0528^{+0.011}_{-0.0093}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.470^{+0.021}_{-0.022}$	$H(0.38)$	$79.8^{+3.8}_{-3.4}$
$\Omega_K$	$-0.0096^{+0.011}_{-0.012}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.612^{+0.013}_{-0.013}$	$D_{\text{M}}(0.38)$	$1605^{+85}_{-88}$
$\ln(10^{10}A_{\text{s}})$	$3.036^{+0.026}_{-0.023}$	$\sigma_8/h^{0.5}$	$0.998^{+0.019}_{-0.020}$	$H(0.51)$	$86.6^{+3.7}_{-3.3}$
$n_{\text{s}}$	$0.9689^{+0.0090}_{-0.0093}$	$r_{\text{drag}}h$	$94.2^{+6.2}_{-5.5}$	$D_{\text{M}}(0.51)$	$2074^{+100}_{-110}$
$y_{\text{cal}}$	$0.99997^{+0.0048}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.478^{+0.054}_{-0.055}$	$H(0.61)$	$92.3^{+3.6}_{-3.2}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$z_{\text{re}}$	$< 8.51$	$D_{\text{M}}(0.61)$	$2409^{+120}_{-120}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.083^{+0.054}_{-0.048}$	$H(2.33)$	$233.7^{+3.7}_{-3.5}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.6}_{-3.9}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.024}_{-0.023}$	$D_{\text{M}}(2.33)$	$5919^{+180}_{-190}$
$A_{100}^{\text{PS}}$	$257^{+60}_{-50}$	$D_{40}$	$1217^{+29}_{-27}$	$f\sigma_8(0.15)$	$0.472^{+0.018}_{-0.019}$
$A_{143}^{\text{PS}}$	$44^{+10}_{-20}$	$D_{220}$	$5734^{+73}_{-74}$	$\sigma_8(0.15)$	$0.734^{+0.021}_{-0.019}$
$A_{143 \times 217}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2533^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.483^{+0.011}_{-0.012}$
$A_{217}^{\text{PS}}$	$114^{+20}_{-20}$	$D_{1420}$	$816.2^{+9.2}_{-9.1}$	$\sigma_8(0.38)$	$0.647^{+0.022}_{-0.020}$
$A^{\text{kSZ}}$	$< 7.89$	$D_{2000}$	$231.2^{+3.1}_{-3.0}$	$f\sigma_8(0.51)$	$0.4777^{+0.0082}_{-0.0083}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$n_{\text{s},0.002}$	$0.9689^{+0.0090}_{-0.0093}$	$\sigma_8(0.51)$	$0.604^{+0.022}_{-0.021}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_{\text{P}}$	$0.24544^{+0.00012}_{-0.00012}$	$f\sigma_8(0.61)$	$0.4701^{+0.0073}_{-0.0071}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.3}_{-6.3}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24677^{+0.00012}_{-0.00012}$	$\sigma_8(0.61)$	$0.574^{+0.022}_{-0.020}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$10^5 \text{D}/\text{H}$	$2.564^{+0.056}_{-0.055}$	$f\sigma_8(2.33)$	$0.288^{+0.012}_{-0.011}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.074}_{-0.076}$	$\text{Age}/\text{Gyr}$	$14.19^{+0.46}_{-0.47}$	$\sigma_8(2.33)$	$0.295^{+0.015}_{-0.014}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.058}$	$z_*$	$1089.64^{+0.59}_{-0.57}$	$f_{2000}^{143}$	$29^{+6}_{-5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.74^{+0.62}_{-0.65}$	$f_{2000}^{143 \times 217}$	$31^{+4}_{-4}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.11}$	$100\theta_*$	$1.04124^{+0.00060}_{-0.00063}$	$f_{2000}^{217}$	$106.3^{+3.5}_{-3.5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901^{+0.059}_{-0.059}$	$\chi_{\text{lensing}}^2$	$10.8 (\nu: 2.8)$
$A_{217}^{\text{dustTE}}$	$2.07^{+0.52}_{-0.52}$	$z_{\text{drag}}$	$1060.10^{+0.63}_{-0.59}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.7)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.37^{+0.61}_{-0.62}$	$\chi_{\text{lowl}}^2$	$22.2 (\nu: 0.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14067^{+0.00063}_{-0.00062}$	$\chi_{\text{plik}}^2$	$2357.4 (\nu: 17.5)$
$H_0$	$64.0^{+4.3}_{-3.8}$	$100\theta_{\text{D}}$	$0.16067^{+0.00033}_{-0.00035}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 9.9)$
$\Omega_{\Lambda}$	$0.662^{+0.031}_{-0.031}$	$z_{\text{eq}}$	$3368^{+68}_{-65}$	$\chi_{\text{CMB}}^2$	$2786.8 (\nu: 17.0)$
$\Omega_{\text{m}}$	$0.347^{+0.042}_{-0.041}$	$k_{\text{eq}}$	$0.01028^{+0.00021}_{-0.00020}$		
$\Omega_{\text{m}}h^2$	$0.1416^{+0.0029}_{-0.0027}$	$100\theta_{\text{eq}}$	$0.820^{+0.013}_{-0.013}$		

$$\bar{\chi}_{\text{eff}}^2 = 2798.28; \Delta\bar{\chi}_{\text{eff}}^2 = -2.23; R - 1 = 0.02761$$

# 16 r

## 16.1 base\_r\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022127	$0.02213^{+0.00044}_{-0.00041}$	$\sigma_8/h^{0.5}$	0.9947	$0.990^{+0.032}_{-0.032}$	$D_M(0.38)$	1542.1	$1540^{+31}_{-31}$
$\Omega_c h^2$	0.12064	$0.1203^{+0.0041}_{-0.0040}$	$r_{\text{drag}} h$	98.45	$98.7^{+3.2}_{-3.1}$	$H(0.51)$	89.32	$89.38^{+0.89}_{-0.84}$
$100\theta_{\text{MC}}$	1.04078	$1.04082^{+0.00090}_{-0.00092}$	$\langle d^2 \rangle^{1/2}$	2.456	$2.446^{+0.075}_{-0.075}$	$D_M(0.51)$	1996.3	$1994^{+36}_{-36}$
$\tau$	0.0535	$0.052^{+0.016}_{-0.016}$	$z_{\text{re}}$	7.66	$7.5^{+1.6}_{-1.7}$	$H(0.61)$	95.01	$95.05^{+0.72}_{-0.67}$
$\ln(10^{10} A_s)$	3.0436	$3.039^{+0.033}_{-0.032}$	$10^9 A_s$	2.098	$2.089^{+0.070}_{-0.066}$	$D_M(0.61)$	2321.8	$2319^{+38}_{-39}$
$n_s$	0.9637	$0.964^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	1.8853	$1.883^{+0.027}_{-0.026}$	$H(2.33)$	236.73	$236.5^{+2.5}_{-2.5}$
$r$	0.000	$< 0.109$	$D_{40}$	1231.7	$1244^{+37}_{-33}$	$D_M(2.33)$	5777.4	$5776^{+31}_{-32}$
$y_{\text{cal}}$	1.00047	$1.0005^{+0.0049}_{-0.0049}$	$D_{220}$	5711	$5711^{+80}_{-79}$	$f\sigma_8(0.15)$	0.4644	$0.462^{+0.024}_{-0.024}$
$A_{217}^{\text{CIB}}$	49.0	$48^{+10}_{-10}$	$D_{810}$	2538.4	$2537^{+27}_{-27}$	$\sigma_8(0.15)$	0.7508	$0.748^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$D_{1420}$	815.6	$815^{+10}_{-9.9}$	$f\sigma_8(0.38)$	0.4808	$0.478^{+0.019}_{-0.019}$
$A_{143}^{\text{tSZ}}$	7.00	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	230.00	$229.7^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	0.6645	$0.663^{+0.012}_{-0.012}$
$A_{100}^{\text{PS}}$	255	$263^{+50}_{-50}$	$n_{s,0.002}$	0.9637	$0.964^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	0.4783	$0.476^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	49.3	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245295	$0.24529^{+0.00018}_{-0.00020}$	$\sigma_8(0.51)$	0.6215	$0.620^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	46.2	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246621	$0.24662^{+0.00018}_{-0.00020}$	$f\sigma_8(0.61)$	0.4726	$0.470^{+0.014}_{-0.015}$
$A_{217}^{\text{PS}}$	119.2	$115^{+20}_{-20}$	$10^5 D/H$	2.632	$2.632^{+0.080}_{-0.082}$	$\sigma_8(0.61)$	0.5911	$0.589^{+0.010}_{-0.010}$
$A^{\text{kSZ}}$	0.01	$< 8.41$	Age/Gyr	13.829	$13.826^{+0.070}_{-0.072}$	$f\sigma_8(2.33)$	0.2977	$0.2969^{+0.0051}_{-0.0049}$
$A_{100}^{\text{dustTT}}$	8.91	$8.9^{+3.6}_{-3.6}$	$z_*$	1090.29	$1090.26^{+0.79}_{-0.79}$	$\sigma_8(2.33)$	0.3065	$0.3058^{+0.0053}_{-0.0051}$
$A_{143}^{\text{dustTT}}$	10.76	$10.7^{+3.5}_{-3.5}$	$r_*$	144.45	$144.54^{+0.93}_{-0.92}$	$r_{0.002}$	0.000	$< 0.102$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	1.04098	$1.04102^{+0.00088}_{-0.00091}$	$r_{0.01}$	0.000	$< 0.106$
$A_{217}^{\text{dustTT}}$	94.4	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.877	$13.884^{+0.087}_{-0.085}$	$\ln(10^{10} A_t)$	-6.27	$-0.7^{+1.9}_{-2.5}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.40	$1059.39^{+0.89}_{-0.87}$	$r_{10}$	0.0000	$< 0.0528$
$c_{217}$	0.99828	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.20	$147.28^{+0.95}_{-0.92}$	$10^9 A_t$	0.000	$< 0.228$
$H_0$	66.88	$67.0^{+1.8}_{-1.8}$	$k_{\text{D}}$	0.14057	$0.14048^{+0.00099}_{-0.0010}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.206$
$\Omega_{\Lambda}$	0.6794	$0.681^{+0.025}_{-0.026}$	$100\theta_{\text{D}}$	0.16106	$0.16108^{+0.00051}_{-0.00051}$	$f_{2000}^{143}$	30.5	$31^{+6}_{-6}$
$\Omega_{\text{m}}$	0.3206	$0.319^{+0.026}_{-0.025}$	$z_{\text{eq}}$	3412	$3404^{+93}_{-92}$	$f_{2000}^{143 \times 217}$	33.32	$33^{+4}_{-4}$
$\Omega_{\text{m}} h^2$	0.14341	$0.1431^{+0.0039}_{-0.0039}$	$k_{\text{eq}}$	0.010413	$0.01039^{+0.00029}_{-0.00028}$	$f_{2000}^{217}$	107.81	$108.0^{+3.8}_{-3.8}$
$\Omega_{\text{m}} h^3$	0.09592	$0.09588^{+0.00088}_{-0.00087}$	$100\theta_{\text{eq}}$	0.8108	$0.812^{+0.018}_{-0.017}$	$\chi_{\text{small}}^2$	396.03	$397.1 (\nu: 1.4)$
$\sigma_8$	0.8135	$0.811^{+0.018}_{-0.018}$	$100\theta_{\text{s,eq}}$	0.4483	$0.4490^{+0.0090}_{-0.0088}$	$\chi_{\text{lowl}}^2$	23.61	$25.0 (\nu: 1.6)$
$S_8$	0.8409	$0.836^{+0.048}_{-0.046}$	$H(0.15)$	72.26	$72.4^{+1.5}_{-1.5}$	$\chi_{\text{plik}}^2$	758.6	$771.7 (\nu: 14.6)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4606	$0.458^{+0.027}_{-0.025}$	$D_M(0.15)$	647.5	$647^{+16}_{-15}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 6.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6121	$0.609^{+0.023}_{-0.023}$	$H(0.38)$	82.52	$82.6^{+1.1}_{-1.1}$	$\chi_{\text{CMB}}^2$	1178.2	$1193.7 (\nu: 16.0)$

Best-fit  $\chi_{\text{eff}}^2 = 1179.62$ ;  $\Delta\chi_{\text{eff}}^2 = 0.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 1201.03$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.45$ ;  $R - 1 = 0.00654$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.15) commander\_dx12\_v3.2.29: 23.61 ( $\Delta$  0.01) plik\_rd12\_HM\_v22\_TT: 758.60 ( $\Delta$  -0.15)

## 16.2 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022246	$0.02222^{+0.00039}_{-0.00038}$	$\langle d^2 \rangle^{1/2}$	2.424	$2.423^{+0.055}_{-0.053}$	$D_M(0.61)$	2305.8	$2305^{+23}_{-23}$
$\Omega_c h^2$	0.11896	$0.1188^{+0.0025}_{-0.0024}$	$z_{\text{re}}$	7.58	$7.6^{+1.6}_{-1.6}$	$H(2.33)$	235.76	$235.6^{+1.6}_{-1.5}$
$100\theta_{\text{MC}}$	1.04096	$1.04101^{+0.00081}_{-0.00082}$	$10^9 A_s$	2.087	$2.088^{+0.070}_{-0.065}$	$D_M(2.33)$	5766.0	$5766^{+24}_{-24}$
$\tau$	0.0532	$0.053^{+0.016}_{-0.015}$	$10^9 A_s e^{-2\tau}$	1.8761	$1.877^{+0.023}_{-0.023}$	$f\sigma_8(0.15)$	0.4539	$0.453^{+0.015}_{-0.015}$
$\ln(10^{10} A_s)$	3.0383	$3.038^{+0.033}_{-0.032}$	$D_{40}$	1222.0	$1238^{+34}_{-31}$	$\sigma_8(0.15)$	0.7455	$0.745^{+0.014}_{-0.013}$
$n_s$	0.9675	$0.9673^{+0.0084}_{-0.0084}$	$D_{220}$	5714	$5717^{+80}_{-77}$	$f\sigma_8(0.38)$	0.4725	$0.472^{+0.013}_{-0.013}$
$r$	0.000	$< 0.116$	$D_{810}$	2535.0	$2536^{+27}_{-27}$	$\sigma_8(0.38)$	0.6610	$0.661^{+0.012}_{-0.011}$
$y_{\text{cal}}$	1.00014	$1.0006^{+0.0050}_{-0.0048}$	$D_{1420}$	815.9	$815.8^{+9.7}_{-9.8}$	$f\sigma_8(0.51)$	0.4712	$0.471^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	48.9	$48^{+10}_{-10}$	$D_{2000}$	230.18	$230.1^{+3.4}_{-3.4}$	$\sigma_8(0.51)$	0.6186	$0.619^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$n_{s,0.002}$	0.9675	$0.9673^{+0.0084}_{-0.0084}$	$f\sigma_8(0.61)$	0.4664	$0.466^{+0.011}_{-0.010}$
$A_{143}^{\text{tSZ}}$	7.11	$5.2^{+3.7}_{-3.9}$	$Y_{\text{P}}$	0.245345	$0.24533^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	0.5887	$0.589^{+0.010}_{-0.0097}$
$A_{100}^{\text{PS}}$	254	$262^{+60}_{-50}$	$Y_{\text{P}}^{\text{BBN}}$	0.246671	$0.24666^{+0.00015}_{-0.00018}$	$f\sigma_8(2.33)$	0.2969	$0.2969^{+0.0051}_{-0.0048}$
$A_{143}^{\text{PS}}$	48.1	$48^{+20}_{-20}$	$10^5 D/H$	2.609	$2.615^{+0.073}_{-0.071}$	$\sigma_8(2.33)$	0.3061	$0.3062^{+0.0053}_{-0.0051}$
$A_{143 \times 217}^{\text{PS}}$	45.5	$43^{+20}_{-20}$	Age/Gyr	13.804	$13.806^{+0.055}_{-0.055}$	$r_{0.002}$	0.000	$< 0.110$
$A_{217}^{\text{PS}}$	118.4	$115^{+20}_{-20}$	$z_*$	1089.99	$1090.02^{+0.58}_{-0.57}$	$r_{0.01}$	0.000	$< 0.113$
$A^{\text{kSZ}}$	0.01	$< 8.36$	$r_*$	144.79	$144.85^{+0.63}_{-0.62}$	$\ln(10^{10} A_{\text{t}})$	-5.91	$-0.6^{+1.9}_{-2.6}$
$A_{100}^{\text{dustTT}}$	8.92	$8.9^{+3.7}_{-3.7}$	$100\theta_*$	1.04116	$1.04121^{+0.00079}_{-0.00081}$	$r_{10}$	0.0001	$< 0.0565$
$A_{143}^{\text{dustTT}}$	10.83	$10.7^{+3.5}_{-3.6}$	$D_M(z_*)/\text{Gpc}$	13.907	$13.912^{+0.062}_{-0.061}$	$10^9 A_{\text{t}}$	0.000	$< 0.242$
$A_{143 \times 217}^{\text{dustTT}}$	19.4	$18.3^{+6.4}_{-6.5}$	$z_{\text{drag}}$	1059.59	$1059.49^{+0.86}_{-0.86}$	$10^9 A_{\text{t}} e^{-2\tau}$	0.000	$< 0.218$
$A_{217}^{\text{dustTT}}$	94.5	$94^{+10}_{-10}$	$r_{\text{drag}}$	147.50	$147.57^{+0.69}_{-0.67}$	$f_{2000}^{143}$	30.1	$31^{+6}_{-6}$
$c_{100}$	0.99964	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14034	$0.14024^{+0.00087}_{-0.00088}$	$f_{2000}^{143 \times 217}$	33.00	$33^{+4}_{-4}$
$c_{217}$	0.99827	$0.9983^{+0.0013}_{-0.0012}$	$100\theta_{\text{D}}$	0.16097	$0.16103^{+0.00051}_{-0.00051}$	$f_{2000}^{217}$	107.41	$107.8^{+3.7}_{-3.6}$
$H_0$	67.63	$67.7^{+1.1}_{-1.1}$	$z_{\text{eq}}$	3374	$3371^{+57}_{-55}$	$\chi_{\text{small}}^2$	395.88	$397.2 (\nu: 1.6)$
$\Omega_{\Lambda}$	0.6899	$0.690^{+0.014}_{-0.015}$	$k_{\text{eq}}$	0.010299	$0.01029^{+0.00017}_{-0.00017}$	$\chi_{\text{lowl}}^2$	22.78	$24.3 (\nu: 1.2)$
$\Omega_{\text{m}}$	0.3101	$0.310^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	0.8180	$0.819^{+0.010}_{-0.010}$	$\chi_{\text{plik}}^2$	760.2	$772.4 (\nu: 15.0)$
$\Omega_{\text{m}} h^2$	0.14185	$0.1417^{+0.0024}_{-0.0023}$	$100\theta_{\text{s,eq}}$	0.4519	$0.4523^{+0.0054}_{-0.0054}$	$\chi_{6\text{DF}}^2$	0.022	$0.053 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	0.09593	$0.09588^{+0.00089}_{-0.00091}$	$H(0.15)$	72.89	$72.92^{+0.92}_{-0.92}$	$\chi_{\text{MGS}}^2$	1.28	$1.41 (\nu: 0.1)$
$\sigma_8$	0.8066	$0.806^{+0.016}_{-0.015}$	$D_M(0.15)$	641.1	$640.8^{+9.2}_{-9.0}$	$\chi_{\text{DR12BAO}}^2$	4.21	$4.6 (\nu: 1.2)$
$S_8$	0.8202	$0.819^{+0.030}_{-0.029}$	$H(0.38)$	82.97	$82.99^{+0.70}_{-0.68}$	$\chi_{\text{prior}}^2$	1.4	$7.4 (\nu: 7.0)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4492	$0.449^{+0.016}_{-0.016}$	$D_M(0.38)$	1529.4	$1529^{+18}_{-18}$	$\chi_{\text{BAO}}^2$	5.51	$6.1 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6020	$0.601^{+0.016}_{-0.015}$	$H(0.51)$	89.67	$89.68^{+0.57}_{-0.56}$	$\chi_{\text{CMB}}^2$	1178.8	$1193.8 (\nu: 16.2)$
$\sigma_8/h^{0.5}$	0.9809	$0.980^{+0.023}_{-0.022}$	$D_M(0.51)$	1981.4	$1981^{+22}_{-21}$			
$r_{\text{drag}} h$	99.76	$99.9^{+1.8}_{-1.9}$	$H(0.61)$	95.276	$95.28^{+0.48}_{-0.48}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.79$ ;  $\Delta\chi_{\text{eff}}^2 = 0.05$ ;  $\bar{\chi}_{\text{eff}}^2 = 1207.29$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.27$ ;  $R - 1 = 0.01115$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.28 ( $\Delta$  0.00) DR12BAO: 4.21 ( $\Delta$  0.03) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.01) commander\_dx12\_v3\_2\_29: 22.79 ( $\Delta$  -0.04) plik\_rd12\_HM\_v22\_TT: 760.17 ( $\Delta$  0.07)

### 16.3 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02213^{+0.00044}_{-0.00041}$	$\sigma_8/h^{0.5}$	$0.991^{+0.031}_{-0.031}$	$D_M(0.38)$	$1539^{+31}_{-30}$
$\Omega_c h^2$	$0.1202^{+0.0041}_{-0.0040}$	$r_{\text{drag}} h$	$98.8^{+3.2}_{-3.1}$	$H(0.51)$	$89.40^{+0.89}_{-0.83}$
$100\theta_{\text{MC}}$	$1.04083^{+0.00090}_{-0.00091}$	$\langle d^2 \rangle^{1/2}$	$2.449^{+0.075}_{-0.073}$	$D_M(0.51)$	$1993^{+36}_{-36}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$z_{\text{re}}$	$< 8.83$	$H(0.61)$	$95.07^{+0.71}_{-0.66}$
$\ln(10^{10} A_s)$	$3.042^{+0.028}_{-0.026}$	$10^9 A_s$	$2.096^{+0.059}_{-0.054}$	$D_M(0.61)$	$2318^{+38}_{-38}$
$n_s$	$0.964^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.027}_{-0.026}$	$H(2.33)$	$236.5^{+2.5}_{-2.4}$
$r$	$< 0.109$	$D_{40}$	$1244^{+37}_{-33}$	$D_M(2.33)$	$5775^{+31}_{-32}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0049}$	$D_{220}$	$5711^{+81}_{-79}$	$f\sigma_8(0.15)$	$0.462^{+0.024}_{-0.024}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+10}_{-9.8}$	$f\sigma_8(0.38)$	$0.479^{+0.019}_{-0.019}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	$229.8^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.664^{+0.011}_{-0.010}$
$A_{100}^{\text{PS}}$	$262^{+50}_{-50}$	$n_{s,0.002}$	$0.964^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.477^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24529^{+0.00018}_{-0.00020}$	$\sigma_8(0.51)$	$0.621^{+0.010}_{-0.0091}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24662^{+0.00018}_{-0.00020}$	$f\sigma_8(0.61)$	$0.471^{+0.014}_{-0.014}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.631^{+0.080}_{-0.082}$	$\sigma_8(0.61)$	$0.5904^{+0.0092}_{-0.0087}$
$A^{\text{kSZ}}$	$< 8.34$	$\text{Age}/\text{Gyr}$	$13.825^{+0.070}_{-0.072}$	$f\sigma_8(2.33)$	$0.2974^{+0.0044}_{-0.0041}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.24^{+0.78}_{-0.79}$	$\sigma_8(2.33)$	$0.3064^{+0.0046}_{-0.0042}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.55^{+0.93}_{-0.93}$	$r_{0.002}$	$< 0.102$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.04104^{+0.00088}_{-0.00090}$	$r_{0.01}$	$< 0.106$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.885^{+0.087}_{-0.085}$	$\ln(10^{10} A_t)$	$-0.7^{+1.9}_{-2.6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.40^{+0.91}_{-0.88}$	$r_{10}$	$< 0.0528$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.29^{+0.94}_{-0.92}$	$10^9 A_t$	$< 0.229$
$H_0$	$67.1^{+1.8}_{-1.8}$	$k_{\text{D}}$	$0.14047^{+0.00099}_{-0.0010}$	$10^9 A_t e^{-2\tau}$	$< 0.206$
$\Omega_\Lambda$	$0.682^{+0.024}_{-0.026}$	$100\theta_{\text{D}}$	$0.16107^{+0.00051}_{-0.00051}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$\Omega_{\text{m}}$	$0.318^{+0.026}_{-0.024}$	$z_{\text{eq}}$	$3402^{+93}_{-92}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$\Omega_{\text{m}} h^2$	$0.1430^{+0.0039}_{-0.0038}$	$k_{\text{eq}}$	$0.01038^{+0.00028}_{-0.00028}$	$f_{2000}^{217}$	$108.0^{+3.8}_{-3.7}$
$\Omega_{\text{m}} h^3$	$0.09588^{+0.00089}_{-0.00088}$	$100\theta_{\text{eq}}$	$0.813^{+0.017}_{-0.017}$	$\chi_{\text{small}}^2$	$397.0 (\nu: 1.4)$
$\sigma_8$	$0.812^{+0.017}_{-0.017}$	$100\theta_{\text{s,eq}}$	$0.4492^{+0.0090}_{-0.0088}$	$\chi_{\text{lowl}}^2$	$25.0 (\nu: 1.6)$
$S_8$	$0.836^{+0.048}_{-0.046}$	$H(0.15)$	$72.4^{+1.5}_{-1.5}$	$\chi_{\text{plik}}^2$	$771.5 (\nu: 14.4)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.458^{+0.026}_{-0.025}$	$D_M(0.15)$	$646^{+15}_{-15}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.610^{+0.023}_{-0.023}$	$H(0.38)$	$82.6^{+1.1}_{-1.1}$	$\chi_{\text{CMB}}^2$	$1193.4 (\nu: 15.6)$

$$\bar{\chi}_{\text{eff}}^2 = 1200.73; \Delta \bar{\chi}_{\text{eff}}^2 = 1.41; R - 1 = 0.00675$$



## 16.4 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02222^{+0.00039}_{-0.00038}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.054}_{-0.052}$	$D_M(0.61)$	$2305^{+23}_{-23}$
$\Omega_c h^2$	$0.1188^{+0.0025}_{-0.0024}$	$z_{\text{re}}$	$< 8.91$	$H(2.33)$	$235.6^{+1.6}_{-1.5}$
$100\theta_{\text{MC}}$	$1.04101^{+0.00081}_{-0.00082}$	$10^9 A_s$	$2.093^{+0.061}_{-0.054}$	$D_M(2.33)$	$5766^{+24}_{-24}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.023}_{-0.023}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$\ln(10^{10} A_s)$	$3.041^{+0.029}_{-0.026}$	$D_{40}$	$1238^{+34}_{-32}$	$\sigma_8(0.15)$	$0.746^{+0.013}_{-0.012}$
$n_s$	$0.9674^{+0.0086}_{-0.0084}$	$D_{220}$	$5717^{+80}_{-77}$	$f\sigma_8(0.38)$	$0.473^{+0.013}_{-0.013}$
$r$	$< 0.116$	$D_{810}$	$2536^{+27}_{-27}$	$\sigma_8(0.38)$	$0.662^{+0.011}_{-0.0099}$
$y_{\text{cal}}$	$1.0006^{+0.0050}_{-0.0048}$	$D_{1420}$	$815.8^{+9.7}_{-9.9}$	$f\sigma_8(0.51)$	$0.471^{+0.011}_{-0.011}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{2000}$	$230.1^{+3.4}_{-3.4}$	$\sigma_8(0.51)$	$0.6194^{+0.0097}_{-0.0090}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9674^{+0.0086}_{-0.0084}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.7}_{-3.9}$	$Y_{\text{P}}$	$0.24533^{+0.00015}_{-0.00018}$	$\sigma_8(0.61)$	$0.5895^{+0.0091}_{-0.0085}$
$A_{100}^{\text{PS}}$	$261^{+60}_{-50}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00015}_{-0.00018}$	$f\sigma_8(2.33)$	$0.2973^{+0.0045}_{-0.0042}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.615^{+0.074}_{-0.072}$	$\sigma_8(2.33)$	$0.3066^{+0.0046}_{-0.0042}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	Age/Gyr	$13.805^{+0.055}_{-0.055}$	$r_{0.002}$	$< 0.110$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$z_*$	$1090.01^{+0.58}_{-0.58}$	$r_{0.01}$	$< 0.113$
$A^{\text{kSZ}}$	$< 8.29$	$r_*$	$144.86^{+0.63}_{-0.62}$	$\ln(10^{10} A_{\text{t}})$	$-0.6^{+1.9}_{-2.6}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.7}$	$100\theta_*$	$1.04121^{+0.00080}_{-0.00081}$	$r_{10}$	$< 0.0567$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.6}$	$D_M(z_*)/\text{Gpc}$	$13.912^{+0.062}_{-0.061}$	$10^9 A_{\text{t}}$	$< 0.244$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.5}$	$z_{\text{drag}}$	$1059.50^{+0.89}_{-0.86}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.218$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$r_{\text{drag}}$	$147.58^{+0.69}_{-0.67}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14024^{+0.00087}_{-0.00090}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0013}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16102^{+0.00051}_{-0.00051}$	$f_{2000}^{217}$	$107.8^{+3.7}_{-3.6}$
$H_0$	$67.7^{+1.1}_{-1.1}$	$z_{\text{eq}}$	$3370^{+57}_{-55}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.691^{+0.014}_{-0.015}$	$k_{\text{eq}}$	$0.01029^{+0.00017}_{-0.00017}$	$\chi_{\text{lowl}}^2$	$24.3 (\nu: 1.2)$
$\Omega_{\text{m}}$	$0.309^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	$0.819^{+0.010}_{-0.010}$	$\chi_{\text{plik}}^2$	$772.2 (\nu: 14.7)$
$\Omega_{\text{m}} h^2$	$0.1417^{+0.0024}_{-0.0023}$	$100\theta_{\text{s,eq}}$	$0.4523^{+0.0054}_{-0.0054}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.09588^{+0.00089}_{-0.00091}$	$H(0.15)$	$72.93^{+0.92}_{-0.92}$	$\chi_{\text{MGS}}^2$	$1.42 (\nu: 0.1)$
$\sigma_8$	$0.807^{+0.015}_{-0.013}$	$D_M(0.15)$	$640.7^{+9.2}_{-9.0}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$S_8$	$0.820^{+0.029}_{-0.029}$	$H(0.38)$	$83.00^{+0.69}_{-0.68}$	$\chi_{\text{prior}}^2$	$7.4 (\nu: 7.0)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.016}_{-0.016}$	$D_M(0.38)$	$1529^{+18}_{-18}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.016}_{-0.015}$	$H(0.51)$	$89.69^{+0.57}_{-0.56}$	$\chi_{\text{CMB}}^2$	$1193.6 (\nu: 15.8)$
$\sigma_8/h^{0.5}$	$0.982^{+0.023}_{-0.022}$	$D_M(0.51)$	$1981^{+22}_{-21}$		
$r_{\text{drag}} h$	$99.9^{+1.8}_{-1.9}$	$H(0.61)$	$95.28^{+0.49}_{-0.47}$		

$$\bar{\chi}_{\text{eff}}^2 = 1207.00; \Delta \bar{\chi}_{\text{eff}}^2 = 1.24; R - 1 = 0.01158$$

# 16.5 base\_r\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022376	$0.02236^{+0.00028}_{-0.00029}$	$\sigma_8$	0.8119	$0.811^{+0.015}_{-0.014}$	$D_M(0.15)$	643.6	$644^{+10}_{-10}$
$\Omega_c h^2$	0.12007	$0.1200^{+0.0027}_{-0.0027}$	$S_8$	0.8328	$0.832^{+0.032}_{-0.031}$	$H(0.38)$	82.85	$82.85^{+0.74}_{-0.73}$
$100\theta_{MC}$	1.04090	$1.04091^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	0.4562	$0.456^{+0.017}_{-0.017}$	$D_M(0.38)$	1533.9	$1534^{+21}_{-20}$
$\tau$	0.0543	$0.054^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6086	$0.608^{+0.016}_{-0.016}$	$H(0.51)$	89.62	$89.61^{+0.58}_{-0.57}$
$\ln(10^{10} A_s)$	3.0449	$3.043^{+0.032}_{-0.030}$	$\sigma_8/h^{0.5}$	0.9895	$0.989^{+0.023}_{-0.023}$	$D_M(0.51)$	1986.4	$1986^{+24}_{-24}$
$n_s$	0.9661	$0.9657^{+0.0086}_{-0.0087}$	$r_{drag} h$	99.02	$99.0^{+2.1}_{-2.1}$	$H(0.61)$	95.271	$95.27^{+0.47}_{-0.45}$
$r$	0.000	$< 0.113$	$\langle d^2 \rangle^{1/2}$	2.445	$2.443^{+0.055}_{-0.054}$	$D_M(0.61)$	2310.9	$2311^{+26}_{-25}$
$y_{cal}$	1.00059	$1.0007^{+0.0048}_{-0.0047}$	$z_{re}$	7.68	$7.6^{+1.6}_{-1.6}$	$H(2.33)$	236.61	$236.6^{+1.6}_{-1.6}$
$A_{217}^{CIB}$	46.5	$47^{+10}_{-10}$	$10^9 A_s$	2.101	$2.098^{+0.068}_{-0.063}$	$D_M(2.33)$	5763.7	$5764^{+21}_{-21}$
$\xi^{tSZ \times CIB}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8845	$1.883^{+0.023}_{-0.022}$	$f\sigma_8(0.15)$	0.4604	$0.460^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	7.14	$5.5^{+3.8}_{-3.8}$	$D_{40}$	1229.2	$1244^{+33}_{-31}$	$\sigma_8(0.15)$	0.7499	$0.749^{+0.013}_{-0.013}$
$A_{100}^{PS}$	248	$258^{+60}_{-50}$	$D_{220}$	5731	$5730^{+74}_{-73}$	$f\sigma_8(0.38)$	0.4779	$0.477^{+0.013}_{-0.013}$
$A_{143}^{PS}$	49.3	$46^{+10}_{-20}$	$D_{810}$	2541.7	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	0.6643	$0.664^{+0.011}_{-0.011}$
$A_{143 \times 217}^{PS}$	50.7	$42^{+20}_{-20}$	$D_{1420}$	818.5	$817.8^{+9.1}_{-9.0}$	$f\sigma_8(0.51)$	0.4760	$0.475^{+0.012}_{-0.012}$
$A_{217}^{PS}$	121.1	$115^{+20}_{-20}$	$D_{2000}$	231.34	$231.1^{+3.1}_{-3.0}$	$\sigma_8(0.51)$	0.6215	$0.621^{+0.010}_{-0.0098}$
$A^{kSZ}$	0.00	$< 7.93$	$n_{s,0.002}$	0.9661	$0.9657^{+0.0086}_{-0.0087}$	$f\sigma_8(0.61)$	0.4707	$0.470^{+0.011}_{-0.010}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245398	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.5912	$0.5907^{+0.0097}_{-0.0093}$
$A_{143}^{dustTT}$	10.99	$10.9^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246725	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	0.29793	$0.2977^{+0.0049}_{-0.0046}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.6^{+6.5}_{-6.5}$	$10^5 D/H$	2.584	$2.588^{+0.055}_{-0.051}$	$\sigma_8(2.33)$	0.3070	$0.3067^{+0.0052}_{-0.0049}$
$A_{217}^{dustTT}$	95.3	$94^{+10}_{-10}$	Age/Gyr	13.7975	$13.799^{+0.047}_{-0.048}$	$r_{0.002}$	0.000	$< 0.107$
$A_{100}^{dustTE}$	0.115	$0.115^{+0.075}_{-0.074}$	$z_*$	1089.92	$1089.93^{+0.55}_{-0.53}$	$r_{0.01}$	0.000	$< 0.110$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.059}_{-0.058}$	$r_*$	144.41	$144.43^{+0.60}_{-0.60}$	$\ln(10^{10} A_t)$	-6.12	$-0.6^{+1.8}_{-2.4}$
$A_{100 \times 217}^{dustTE}$	0.484	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	1.04109	$1.04109^{+0.00059}_{-0.00058}$	$r_{10}$	0.0000	$< 0.0550$
$A_{143}^{dustTE}$	0.225	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.871	$13.873^{+0.055}_{-0.056}$	$10^9 A_t$	0.000	$< 0.237$
$A_{143 \times 217}^{dustTE}$	0.667	$0.67^{+0.16}_{-0.15}$	$z_{drag}$	1059.97	$1059.92^{+0.59}_{-0.59}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.213$
$A_{217}^{dustTE}$	2.09	$2.08^{+0.52}_{-0.52}$	$r_{drag}$	147.07	$147.10^{+0.59}_{-0.59}$	$f_{2000}^{143}$	28.7	$29^{+5}_{-5}$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14090	$0.14086^{+0.00063}_{-0.00063}$	$f_{2000}^{143 \times 217}$	31.98	$32^{+4}_{-4}$
$c_{217}$	0.99817	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160745	$0.16077^{+0.00034}_{-0.00033}$	$f_{2000}^{217}$	106.60	$106.9^{+3.5}_{-3.5}$
$H_0$	67.33	$67.3^{+1.2}_{-1.2}$	$z_{eq}$	3404	$3403^{+62}_{-60}$	$\chi_{small}^2$	396.05	$397.2 (\nu: 1.7)$
$\Omega_\Lambda$	0.6844	$0.684^{+0.016}_{-0.017}$	$k_{eq}$	0.010389	$0.01039^{+0.00019}_{-0.00018}$	$\chi_{lowl}^2$	23.24	$24.8 (\nu: 1.3)$
$\Omega_m$	0.3156	$0.316^{+0.017}_{-0.016}$	$100\theta_{eq}$	0.8130	$0.813^{+0.011}_{-0.011}$	$\chi_{plik}^2$	2344.9	$2359.6 (\nu: 16.8)$
$\Omega_m h^2$	0.14309	$0.1430^{+0.0026}_{-0.0025}$	$100\theta_{s,eq}$	0.4492	$0.4494^{+0.0059}_{-0.0058}$	$\chi_{prior}^2$	1.6	$11.6 (\nu: 10.2)$
$\Omega_m h^3$	0.09634	$0.09631^{+0.00057}_{-0.00057}$	$H(0.15)$	72.66	$72.7^{+1.0}_{-1.0}$	$\chi_{CMB}^2$	2764.1	$2781.6 (\nu: 18.0)$

Best-fit  $\chi_{eff}^2 = 2765.76$ ;  $\Delta\chi_{eff}^2 = -0.01$ ;  $\bar{\chi}_{eff}^2 = 2793.18$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.41$ ;  $R - 1 = 0.00988$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.00) commander\_dx12\_v3.2.29: 23.24 ( $\Delta$  -0.01) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.85 ( $\Delta$  0.20)

## 16.6 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022440	$0.02241^{+0.00026}_{-0.00026}$	$\sigma_8 \Omega_m^{0.5}$	0.4518	$0.451^{+0.014}_{-0.013}$	$D_M(0.51)$	1979.1	$1979^{+18}_{-17}$
$\Omega_c h^2$	0.11926	$0.1192^{+0.0020}_{-0.0020}$	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.604^{+0.013}_{-0.013}$	$H(0.61)$	95.406	$95.39^{+0.36}_{-0.36}$
$100\theta_{MC}$	1.04099	$1.04100^{+0.00057}_{-0.00055}$	$\sigma_8/h^{0.5}$	0.9852	$0.983^{+0.020}_{-0.020}$	$D_M(0.61)$	2303.0	$2303^{+19}_{-19}$
$\tau$	0.0565	$0.055^{+0.016}_{-0.014}$	$r_{\text{drag}} h$	99.66	$99.7^{+1.5}_{-1.5}$	$H(2.33)$	236.15	$236.1^{+1.2}_{-1.2}$
$\ln(10^{10} A_s)$	3.0472	$3.044^{+0.032}_{-0.030}$	$\langle d^2 \rangle^{1/2}$	2.4350	$2.431^{+0.048}_{-0.046}$	$D_M(2.33)$	5757.9	$5759^{+17}_{-17}$
$n_s$	0.9680	$0.9677^{+0.0073}_{-0.0073}$	$z_{\text{re}}$	7.88	$7.7^{+1.6}_{-1.5}$	$f\sigma_8(0.15)$	0.4564	$0.456^{+0.013}_{-0.012}$
$r$	0.000	$< 0.119$	$10^9 A_s$	2.106	$2.099^{+0.069}_{-0.063}$	$\sigma_8(0.15)$	0.7491	$0.748^{+0.013}_{-0.012}$
$y_{\text{cal}}$	1.00048	$1.0008^{+0.0047}_{-0.0047}$	$10^9 A_s e^{-2\tau}$	1.8806	$1.880^{+0.021}_{-0.021}$	$f\sigma_8(0.38)$	0.4750	$0.474^{+0.011}_{-0.011}$
$A_{217}^{\text{CIB}}$	46.1	$47^{+10}_{-10}$	$D_{40}$	1225.2	$1241^{+32}_{-30}$	$\sigma_8(0.38)$	0.6642	$0.663^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.63	—	$D_{220}$	5734	$5733^{+73}_{-71}$	$f\sigma_8(0.51)$	0.4737	$0.4728^{+0.0099}_{-0.0098}$
$A_{143}^{\text{tSZ}}$	7.12	$5.5^{+3.8}_{-3.8}$	$D_{810}$	2540.4	$2540^{+25}_{-25}$	$\sigma_8(0.51)$	0.6216	$0.620^{+0.010}_{-0.0097}$
$A_{100}^{\text{PS}}$	249	$258^{+60}_{-50}$	$D_{1420}$	818.8	$818.3^{+9.1}_{-8.8}$	$f\sigma_8(0.61)$	0.4688	$0.4679^{+0.0093}_{-0.0091}$
$A_{143}^{\text{PS}}$	49.9	$45^{+10}_{-20}$	$D_{2000}$	231.53	$231.3^{+3.0}_{-2.9}$	$\sigma_8(0.61)$	0.5915	$0.5904^{+0.0099}_{-0.0092}$
$A_{143 \times 217}^{\text{PS}}$	52.3	$42^{+20}_{-20}$	$n_{s,0.002}$	0.9680	$0.9677^{+0.0073}_{-0.0073}$	$f\sigma_8(2.33)$	0.29826	$0.2977^{+0.0049}_{-0.0047}$
$A_{217}^{\text{PS}}$	121.3	$115^{+20}_{-20}$	$Y_{\text{P}}$	0.245422	$0.245411^{+0.000095}_{-0.00011}$	$\sigma_8(2.33)$	0.3075	$0.3070^{+0.0052}_{-0.0048}$
$A^{\text{kSZ}}$	0.01	$< 7.85$	$Y_{\text{P}}^{\text{BBN}}$	0.246749	$0.246738^{+0.000096}_{-0.00011}$	$r_{0.002}$	0.000	$< 0.112$
$A_{100}^{\text{dustTT}}$	8.83	$8.9^{+3.6}_{-3.6}$	$10^5 D/H$	2.5726	$2.578^{+0.050}_{-0.046}$	$r_{0.01}$	0.000	$< 0.115$
$A_{143}^{\text{dustTT}}$	11.02	$10.9^{+3.4}_{-3.5}$	Age/Gyr	13.7850	$13.787^{+0.039}_{-0.039}$	$\ln(10^{10} A_t)$	-6.22	$-0.5^{+1.8}_{-2.4}$
$A_{143 \times 217}^{\text{dustTT}}$	20.1	$18.6^{+6.4}_{-6.8}$	$z_*$	1089.767	$1089.80^{+0.43}_{-0.42}$	$r_{10}$	0.0000	$< 0.0579$
$A_{217}^{\text{dustTT}}$	95.4	$94^{+10}_{-10}$	$r_*$	144.570	$144.60^{+0.46}_{-0.46}$	$10^9 A_t$	0.000	$< 0.249$
$A_{100}^{\text{dustTE}}$	0.115	$0.115^{+0.075}_{-0.074}$	$100\theta_*$	1.04118	$1.04118^{+0.00056}_{-0.00055}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.222$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.136^{+0.058}_{-0.057}$	$D_M(z_*)/\text{Gpc}$	13.8852	$13.888^{+0.045}_{-0.044}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.48^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.05	$1059.98^{+0.56}_{-0.58}$	$f_{2000}^{143 \times 217}$	31.78	$31.9^{+3.5}_{-3.5}$
$A_{143}^{\text{dustTE}}$	0.224	$0.23^{+0.11}_{-0.11}$	$r_{\text{drag}}$	147.209	$147.25^{+0.48}_{-0.47}$	$f_{2000}^{217}$	106.28	$106.8^{+3.5}_{-3.4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.66^{+0.16}_{-0.16}$	$k_D$	0.14079	$0.14073^{+0.00056}_{-0.00058}$	$\chi_{\text{simall}}^2$	396	$1323 (\nu: 479840.6)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.52}_{-0.53}$	$100\theta_D$	0.160698	$0.16074^{+0.00033}_{-0.00032}$	$\chi_{\text{lowl}}^2$	22.92	$24.5 (\nu: 1.2)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3386.2	$3385^{+45}_{-44}$	$\chi_{\text{plik}}^2$	2345	$1435 (\nu: 479779.1)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	0.010335	$0.01033^{+0.00014}_{-0.00013}$	$\chi_{6\text{DF}}^2$	0.029	$0.052 (\nu: 0.0)$
$H_0$	67.70	$67.70^{+0.86}_{-0.87}$	$100\theta_{\text{eq}}$	0.8164	$0.8167^{+0.0085}_{-0.0084}$	$\chi_{\text{MGS}}^2$	1.22	$1.29 (\nu: 0.1)$
$\Omega_\Lambda$	0.6894	$0.689^{+0.012}_{-0.012}$	$100\theta_{s,\text{eq}}$	0.45097	$0.4511^{+0.0043}_{-0.0043}$	$\chi_{\text{DR12BAO}}^2$	4.42	$4.8 (\nu: 0.9)$
$\Omega_m$	0.3106	$0.311^{+0.012}_{-0.012}$	$H(0.15)$	72.97	$72.97^{+0.74}_{-0.75}$	$\chi_{\text{prior}}^2$	1.6	$11.5 (\nu: 10.2)$
$\Omega_m h^2$	0.14234	$0.1423^{+0.0019}_{-0.0018}$	$D_M(0.15)$	640.5	$640.5^{+7.5}_{-7.3}$	$\chi_{\text{BAO}}^2$	5.67	$6.1 (\nu: 0.6)$
$\Omega_m h^3$	0.09636	$0.09631^{+0.00058}_{-0.00057}$	$H(0.38)$	83.08	$83.07^{+0.55}_{-0.55}$	$\chi_{\text{CMB}}^2$	2764.7	$2781.6 (\nu: 17.4)$
$\sigma_8$	0.8106	$0.809^{+0.014}_{-0.014}$	$D_M(0.38)$	1527.7	$1528^{+15}_{-15}$			
$S_8$	0.8248	$0.823^{+0.025}_{-0.024}$	$H(0.51)$	89.790	$89.78^{+0.44}_{-0.44}$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.96$ ;  $\Delta\chi_{\text{eff}}^2 = 0.05$ ;  $\bar{\chi}_{\text{eff}}^2 = 2799.17$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.27$ ;  $R - 1 = 0.01744$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.42 ( $\Delta$  0.00) CMB - simall\_100x143.offlike5\_EE\_Aplanck.B: 396.48 ( $\Delta$  0.28) commander\_dx12.v3.2.29: 22.92 ( $\Delta$  0.05) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.31 ( $\Delta$  -0.19)

## 16.7 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02236^{+0.00028}_{-0.00029}$	$\sigma_8$	$0.812^{+0.014}_{-0.013}$	$D_M(0.15)$	$643^{+10}_{-10}$
$\Omega_c h^2$	$0.1200^{+0.0027}_{-0.0027}$	$S_8$	$0.832^{+0.032}_{-0.031}$	$H(0.38)$	$82.86^{+0.73}_{-0.72}$
$100\theta_{MC}$	$1.04091^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	$0.456^{+0.017}_{-0.017}$	$D_M(0.38)$	$1534^{+20}_{-20}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.016}_{-0.016}$	$H(0.51)$	$89.62^{+0.58}_{-0.57}$
$\ln(10^{10} A_s)$	$3.046^{+0.028}_{-0.026}$	$\sigma_8/h^{0.5}$	$0.989^{+0.023}_{-0.022}$	$D_M(0.51)$	$1986^{+24}_{-23}$
$n_s$	$0.9659^{+0.0085}_{-0.0087}$	$r_{\text{drag}} h$	$99.1^{+2.1}_{-2.0}$	$H(0.61)$	$95.27^{+0.47}_{-0.46}$
$r$	$< 0.114$	$\langle d^2 \rangle^{1/2}$	$2.445^{+0.054}_{-0.053}$	$D_M(0.61)$	$2311^{+25}_{-25}$
$y_{\text{cal}}$	$1.0007^{+0.0048}_{-0.0048}$	$z_{\text{re}}$	$< 8.94$	$H(2.33)$	$236.5^{+1.6}_{-1.6}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.102^{+0.060}_{-0.054}$	$D_M(2.33)$	$5764^{+21}_{-21}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.883^{+0.023}_{-0.022}$	$f\sigma_8(0.15)$	$0.460^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1244^{+33}_{-31}$	$\sigma_8(0.15)$	$0.750^{+0.012}_{-0.011}$
$A_{100}^{\text{PS}}$	$258^{+60}_{-50}$	$D_{220}$	$5730^{+74}_{-73}$	$f\sigma_8(0.38)$	$0.478^{+0.013}_{-0.013}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2540^{+26}_{-26}$	$\sigma_8(0.38)$	$0.664^{+0.010}_{-0.0095}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.8^{+9.1}_{-9.0}$	$f\sigma_8(0.51)$	$0.476^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.1^{+3.1}_{-3.0}$	$\sigma_8(0.51)$	$0.6215^{+0.0092}_{-0.0087}$
$A^{\text{kSZ}}$	$< 7.90$	$n_{s,0.002}$	$0.9659^{+0.0085}_{-0.0087}$	$f\sigma_8(0.61)$	$0.471^{+0.010}_{-0.010}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.5913^{+0.0087}_{-0.0081}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	$0.2980^{+0.0043}_{-0.0040}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$10^5 D/H$	$2.587^{+0.055}_{-0.051}$	$\sigma_8(2.33)$	$0.3070^{+0.0045}_{-0.0041}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.798^{+0.047}_{-0.047}$	$r_{0.002}$	$< 0.107$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.074}$	$z_*$	$1089.93^{+0.55}_{-0.53}$	$r_{0.01}$	$< 0.110$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.059}_{-0.058}$	$r_*$	$144.44^{+0.60}_{-0.60}$	$\ln(10^{10} A_t)$	$-0.6^{+1.8}_{-2.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.16}_{-0.17}$	$100\theta_*$	$1.04110^{+0.00059}_{-0.00058}$	$r_{10}$	$< 0.0550$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.874^{+0.055}_{-0.056}$	$10^9 A_t$	$< 0.238$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1059.92^{+0.58}_{-0.60}$	$10^9 A_t e^{-2\tau}$	$< 0.214$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$r_{\text{drag}}$	$147.10^{+0.59}_{-0.59}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14085^{+0.00063}_{-0.00063}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16077^{+0.00034}_{-0.00033}$	$f_{2000}^{217}$	$106.9^{+3.5}_{-3.5}$
$H_0$	$67.4^{+1.2}_{-1.2}$	$z_{\text{eq}}$	$3402^{+61}_{-60}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.8)$
$\Omega_\Lambda$	$0.685^{+0.016}_{-0.017}$	$k_{\text{eq}}$	$0.01038^{+0.00019}_{-0.00018}$	$\chi_{\text{lowl}}^2$	$24.8 (\nu: 1.3)$
$\Omega_m$	$0.315^{+0.017}_{-0.016}$	$100\theta_{\text{eq}}$	$0.813^{+0.011}_{-0.011}$	$\chi_{\text{plik}}^2$	$2359.4 (\nu: 16.6)$
$\Omega_m h^2$	$0.1430^{+0.0026}_{-0.0025}$	$100\theta_{s,\text{eq}}$	$0.4494^{+0.0058}_{-0.0058}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_m h^3$	$0.09631^{+0.00058}_{-0.00057}$	$H(0.15)$	$72.7^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	$2781.4 (\nu: 17.7)$

$$\bar{\chi}_{\text{eff}}^2 = 2792.94; \Delta\bar{\chi}_{\text{eff}}^2 = 1.40; R - 1 = 0.01114$$

# 16.8 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02242^{+0.00026}_{-0.00026}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_{\mathrm{M}}(0.51)$	$1979^{+18}_{-17}$
$\Omega_{\mathrm{c}} h^2$	$0.1192^{+0.0020}_{-0.0020}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.013}_{-0.013}$	$H(0.61)$	$95.40^{+0.36}_{-0.37}$
$100\theta_{\mathrm{MC}}$	$1.04101^{+0.00057}_{-0.00056}$	$\sigma_8/h^{0.5}$	$0.984^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.61)$	$2303^{+19}_{-18}$
$\tau$	$0.056^{+0.014}_{-0.012}$	$r_{\mathrm{drag}} h$	$99.7^{+1.5}_{-1.5}$	$H(2.33)$	$236.1^{+1.2}_{-1.2}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.029}_{-0.027}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.047}_{-0.044}$	$D_{\mathrm{M}}(2.33)$	$5759^{+17}_{-17}$
$n_{\mathrm{s}}$	$0.9678^{+0.0072}_{-0.0073}$	$z_{\mathrm{re}}$	$< 9.03$	$f\sigma_8(0.15)$	$0.456^{+0.013}_{-0.012}$
$r$	$< 0.119$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.061}_{-0.056}$	$\sigma_8(0.15)$	$0.748^{+0.012}_{-0.011}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0047}_{-0.0047}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880^{+0.021}_{-0.021}$	$f\sigma_8(0.38)$	$0.474^{+0.011}_{-0.010}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$D_{40}$	$1241^{+32}_{-30}$	$\sigma_8(0.38)$	$0.664^{+0.010}_{-0.0095}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5733^{+73}_{-71}$	$f\sigma_8(0.51)$	$0.4731^{+0.0097}_{-0.0093}$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{810}$	$2540^{+25}_{-25}$	$\sigma_8(0.51)$	$0.6210^{+0.0094}_{-0.0087}$
$A_{100}^{\mathrm{PS}}$	$258^{+60}_{-50}$	$D_{1420}$	$818.3^{+9.1}_{-8.8}$	$f\sigma_8(0.61)$	$0.4682^{+0.0091}_{-0.0085}$
$A_{143}^{\mathrm{PS}}$	$45^{+10}_{-20}$	$D_{2000}$	$231.3^{+3.0}_{-2.9}$	$\sigma_8(0.61)$	$0.5909^{+0.0089}_{-0.0083}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.9678^{+0.0072}_{-0.0073}$	$f\sigma_8(2.33)$	$0.2980^{+0.0045}_{-0.0041}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.245412^{+0.000095}_{-0.00011}$	$\sigma_8(2.33)$	$0.3073^{+0.0046}_{-0.0042}$
$A^{\mathrm{kSZ}}$	$< 7.83$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246738^{+0.000095}_{-0.00011}$	$r_{0.002}$	$< 0.113$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.6}_{-3.6}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.577^{+0.049}_{-0.046}$	$r_{0.01}$	$< 0.116$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.4}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.787^{+0.039}_{-0.039}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.5^{+1.8}_{-2.4}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6^{+6.4}_{-6.8}$	$z_*$	$1089.79^{+0.43}_{-0.42}$	$r_{10}$	$< 0.0580$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$r_*$	$144.60^{+0.46}_{-0.46}$	$10^9 A_{\mathrm{t}}$	$< 0.249$
$A_{100}^{\mathrm{dust}TE}$	$0.116^{+0.074}_{-0.074}$	$100\theta_*$	$1.04119^{+0.00056}_{-0.00055}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.223$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.136^{+0.057}_{-0.057}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888^{+0.045}_{-0.045}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.48^{+0.16}_{-0.16}$	$z_{\mathrm{drag}}$	$1059.99^{+0.56}_{-0.55}$	$f_{2000}^{143 \times 217}$	$31.8^{+3.5}_{-3.5}$
$A_{143}^{\mathrm{dust}TE}$	$0.23^{+0.11}_{-0.11}$	$r_{\mathrm{drag}}$	$147.25^{+0.48}_{-0.48}$	$f_{2000}^{217}$	$106.8^{+3.5}_{-3.4}$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$k_{\mathrm{D}}$	$0.14073^{+0.00056}_{-0.00059}$	$\chi_{\mathrm{small}}^2$	$1323 (\nu: 479776.2)$
$A_{217}^{\mathrm{dust}TE}$	$2.08^{+0.53}_{-0.53}$	$100\theta_{\mathrm{D}}$	$0.16073^{+0.00033}_{-0.00032}$	$\chi_{\mathrm{lowl}}^2$	$24.5 (\nu: 1.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\mathrm{eq}}$	$3384^{+45}_{-44}$	$\chi_{\mathrm{plik}}^2$	$1434 (\nu: 479709.9)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00014}_{-0.00013}$	$\chi_{6\mathrm{DF}}^2$	$0.051 (\nu: 0.0)$
$H_0$	$67.70^{+0.85}_{-0.88}$	$100\theta_{\mathrm{eq}}$	$0.8168^{+0.0085}_{-0.0084}$	$\chi_{\mathrm{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.012}_{-0.012}$	$100\theta_{\mathrm{s,eq}}$	$0.4512^{+0.0043}_{-0.0043}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.9)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.012}_{-0.012}$	$H(0.15)$	$72.98^{+0.74}_{-0.75}$	$\chi_{\mathrm{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1423^{+0.0019}_{-0.0018}$	$D_{\mathrm{M}}(0.15)$	$640.4^{+7.5}_{-7.2}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_{\mathrm{m}} h^3$	$0.09631^{+0.00058}_{-0.00057}$	$H(0.38)$	$83.07^{+0.54}_{-0.55}$	$\chi_{\mathrm{CMB}}^2$	$2781.4 (\nu: 17.2)$
$\sigma_8$	$0.810^{+0.014}_{-0.012}$	$D_{\mathrm{M}}(0.38)$	$1528^{+15}_{-15}$		
$S_8$	$0.824^{+0.025}_{-0.024}$	$H(0.51)$	$89.78^{+0.43}_{-0.44}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.95; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 1.23; R - 1 = 0.02065$$

## 16.9 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022177	$0.02214^{+0.00042}_{-0.00040}$	$r_{\text{drag}} h$	98.82	$98.9^{+2.4}_{-2.3}$	$D_M(0.51)$	1991.6	$1992^{+27}_{-28}$
$\Omega_c h^2$	0.12018	$0.1200^{+0.0030}_{-0.0030}$	$\langle d^2 \rangle^{1/2}$	2.4451	$2.444^{+0.048}_{-0.049}$	$H(0.61)$	95.10	$95.08^{+0.60}_{-0.55}$
$100\theta_{\text{MC}}$	1.04085	$1.04082^{+0.00089}_{-0.00086}$	$z_{\text{re}}$	7.55	$7.5^{+1.5}_{-1.6}$	$D_M(0.61)$	2316.8	$2317^{+29}_{-30}$
$\tau$	0.0526	$0.053^{+0.015}_{-0.015}$	$10^9 A_s$	2.092	$2.091^{+0.060}_{-0.060}$	$H(2.33)$	236.48	$236.4^{+1.8}_{-1.8}$
$\ln(10^{10} A_s)$	3.0408	$3.040^{+0.029}_{-0.029}$	$10^9 A_s e^{-2\tau}$	1.8834	$1.882^{+0.022}_{-0.022}$	$D_M(2.33)$	5773.2	$5775^{+27}_{-29}$
$n_s$	0.9647	$0.9643^{+0.0096}_{-0.0092}$	$D_{40}$	1229.4	$1244^{+32}_{-31}$	$f\sigma_8(0.15)$	0.4611	$0.460^{+0.016}_{-0.016}$
$r$	0.000	$< 0.107$	$D_{220}$	5715	$5714^{+83}_{-80}$	$\sigma_8(0.15)$	0.7488	$0.748^{+0.011}_{-0.011}$
$y_{\text{cal}}$	1.00047	$1.0006^{+0.0049}_{-0.0048}$	$D_{810}$	2538.4	$2537^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4781	$0.477^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	48.7	$48^{+10}_{-10}$	$D_{1420}$	816.1	$815^{+10}_{-10}$	$\sigma_8(0.38)$	0.6631	$0.6625^{+0.0095}_{-0.0095}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$D_{2000}$	230.18	$229.8^{+3.6}_{-3.6}$	$f\sigma_8(0.51)$	0.4760	$0.475^{+0.010}_{-0.011}$
$A_{143}^{\text{tSZ}}$	7.01	$5.1^{+3.8}_{-3.9}$	$n_{\text{s},0.002}$	0.9647	$0.9643^{+0.0096}_{-0.0092}$	$\sigma_8(0.51)$	0.6203	$0.6198^{+0.0090}_{-0.0089}$
$A_{100}^{\text{PS}}$	254	$263^{+50}_{-50}$	$Y_{\text{P}}$	0.245316	$0.24530^{+0.00017}_{-0.00019}$	$f\sigma_8(0.61)$	0.4705	$0.4699^{+0.0092}_{-0.0094}$
$A_{143}^{\text{PS}}$	49.5	$49^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246643	$0.24662^{+0.00017}_{-0.00019}$	$\sigma_8(0.61)$	0.5901	$0.5896^{+0.0086}_{-0.0086}$
$A_{143 \times 217}^{\text{PS}}$	47.3	$44^{+20}_{-20}$	$10^5 D/H$	2.622	$2.629^{+0.078}_{-0.078}$	$f\sigma_8(2.33)$	0.29729	$0.2970^{+0.0045}_{-0.0045}$
$A_{217}^{\text{PS}}$	119.3	$115^{+20}_{-20}$	Age/Gyr	13.820	$13.824^{+0.062}_{-0.064}$	$\sigma_8(2.33)$	0.3062	$0.3060^{+0.0050}_{-0.0050}$
$A^{\text{kSZ}}$	0.02	$< 8.45$	$z_*$	1090.18	$1090.22^{+0.67}_{-0.68}$	$r_{0.002}$	0.000	$< 0.100$
$A_{100}^{\text{dustTT}}$	8.88	$8.9^{+3.6}_{-3.6}$	$r_*$	144.53	$144.60^{+0.72}_{-0.71}$	$r_{0.01}$	0.000	$< 0.104$
$A_{143}^{\text{dustTT}}$	10.79	$10.7^{+3.5}_{-3.4}$	$100\theta_*$	1.04106	$1.04103^{+0.00088}_{-0.00085}$	$\ln(10^{10} A_t)$	-5.72	$-0.7^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\text{dustTT}}$	19.5	$18.3^{+6.4}_{-6.5}$	$D_M(z_*)/\text{Gpc}$	13.883	$13.890^{+0.067}_{-0.068}$	$r_{10}$	0.0001	$< 0.0518$
$A_{217}^{\text{dustTT}}$	94.7	$93^{+10}_{-10}$	$z_{\text{drag}}$	1059.51	$1059.41^{+0.91}_{-0.89}$	$10^9 A_t$	0.000	$< 0.224$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.26	$147.34^{+0.74}_{-0.74}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.202$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14054	$0.14043^{+0.00091}_{-0.00089}$	$f_{2000}^{143}$	30.2	$31^{+6}_{-6}$
$H_0$	67.11	$67.1^{+1.4}_{-1.3}$	$100\theta_{\text{D}}$	0.16101	$0.16106^{+0.00052}_{-0.00053}$	$f_{2000}^{143 \times 217}$	33.17	$33^{+4}_{-4}$
$\Omega_\Lambda$	0.6825	$0.683^{+0.018}_{-0.019}$	$z_{\text{eq}}$	3402	$3398^{+69}_{-69}$	$f_{2000}^{217}$	107.60	$108.1^{+3.7}_{-3.8}$
$\Omega_{\text{m}}$	0.3175	$0.317^{+0.019}_{-0.018}$	$k_{\text{eq}}$	0.010383	$0.01037^{+0.00021}_{-0.00021}$	$\chi^2_{\text{lensing}}$	8.90	$9.46 (\nu: 0.4)$
$\Omega_{\text{m}} h^2$	0.14300	$0.1428^{+0.0029}_{-0.0029}$	$100\theta_{\text{eq}}$	0.8128	$0.813^{+0.013}_{-0.013}$	$\chi^2_{\text{small}}$	395.87	$397.1 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	0.09597	$0.09586^{+0.00090}_{-0.00087}$	$100\theta_{\text{s,eq}}$	0.4492	$0.4496^{+0.0067}_{-0.0065}$	$\chi^2_{\text{lowl}}$	23.37	$24.9 (\nu: 1.3)$
$\sigma_8$	0.8110	$0.810^{+0.012}_{-0.012}$	$H(0.15)$	72.45	$72.5^{+1.2}_{-1.1}$	$\chi^2_{\text{plik}}$	759.0	$771.2 (\nu: 13.6)$
$S_8$	0.8344	$0.833^{+0.031}_{-0.031}$	$D_M(0.15)$	645.6	$646^{+12}_{-12}$	$\chi^2_{\text{prior}}$	1.4	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4570	$0.456^{+0.017}_{-0.017}$	$H(0.38)$	82.66	$82.66^{+0.89}_{-0.84}$	$\chi^2_{\text{CMB}}$	1187.2	$1202.6 (\nu: 16.1)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6088	$0.608^{+0.015}_{-0.015}$	$D_M(0.38)$	1538.2	$1538^{+23}_{-24}$			
$\sigma_8/h^{0.5}$	0.9900	$0.989^{+0.020}_{-0.021}$	$H(0.51)$	89.44	$89.43^{+0.72}_{-0.67}$			

Best-fit  $\chi^2_{\text{eff}} = 1188.55$ ;  $\Delta\chi^2_{\text{eff}} = -0.02$ ;  $\bar{\chi}^2_{\text{eff}} = 1209.87$ ;  $\Delta\bar{\chi}^2_{\text{eff}} = 1.46$ ;  $R - 1 = 0.00994$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.90 ( $\Delta$  -0.00) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  0.01) commander\_dx12.v3.2.29: 23.37 ( $\Delta$  0.14) plik\_rd12\_HM.v22.TT: 759.04 ( $\Delta$  -0.28)

# 16.10 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022253	$0.02221^{+0.00040}_{-0.00038}$	$\langle d^2 \rangle^{1/2}$	2.4337	$2.433^{+0.042}_{-0.041}$	$D_M(0.61)$	2306.8	$2307^{+21}_{-21}$
$\Omega_c h^2$	0.11914	$0.1190^{+0.0021}_{-0.0021}$	$z_{\text{re}}$	7.75	$7.8^{+1.4}_{-1.5}$	$H(2.33)$	235.88	$235.8^{+1.4}_{-1.4}$
$100\theta_{\text{MC}}$	1.04096	$1.04098^{+0.00083}_{-0.00084}$	$10^9 A_s$	2.099	$2.097^{+0.060}_{-0.058}$	$D_M(2.33)$	5766.1	$5768^{+24}_{-23}$
$\tau$	0.0549	$0.055^{+0.014}_{-0.014}$	$10^9 A_s e^{-2\tau}$	1.8808	$1.879^{+0.021}_{-0.021}$	$f\sigma_8(0.15)$	0.4560	$0.456^{+0.012}_{-0.012}$
$\ln(10^{10} A_s)$	3.0440	$3.043^{+0.028}_{-0.028}$	$D_{40}$	1226.7	$1241^{+32}_{-30}$	$\sigma_8(0.15)$	0.7479	$0.747^{+0.011}_{-0.011}$
$n_s$	0.9669	$0.9666^{+0.0080}_{-0.0081}$	$D_{220}$	5728	$5722^{+81}_{-80}$	$f\sigma_8(0.38)$	0.4744	$0.4740^{+0.0099}_{-0.0097}$
$r$	0.000	$< 0.113$	$D_{810}$	2540.0	$2537^{+27}_{-26}$	$\sigma_8(0.38)$	0.6630	$0.6626^{+0.0097}_{-0.0095}$
$y_{\text{cal}}$	1.00090	$1.0008^{+0.0048}_{-0.0048}$	$D_{1420}$	817.3	$816^{+10}_{-9.7}$	$f\sigma_8(0.51)$	0.4731	$0.4726^{+0.0088}_{-0.0086}$
$A_{217}^{\text{CIB}}$	48.1	$48^{+10}_{-10}$	$D_{2000}$	230.62	$230.2^{+3.6}_{-3.4}$	$\sigma_8(0.51)$	0.6205	$0.6201^{+0.0091}_{-0.0089}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.42	—	$n_{s,0.002}$	0.9669	$0.9666^{+0.0080}_{-0.0081}$	$f\sigma_8(0.61)$	0.4681	$0.4677^{+0.0082}_{-0.0079}$
$A_{143}^{\text{tSZ}}$	6.96	$5.2^{+3.7}_{-4.0}$	$Y_{\text{P}}$	0.245348	$0.24533^{+0.00016}_{-0.00018}$	$\sigma_8(0.61)$	0.5904	$0.5901^{+0.0086}_{-0.0085}$
$A_{100}^{\text{PS}}$	254	$262^{+60}_{-50}$	$Y_{\text{P}}^{\text{BBN}}$	0.246674	$0.24665^{+0.00016}_{-0.00018}$	$f\sigma_8(2.33)$	0.29770	$0.2976^{+0.0045}_{-0.0044}$
$A_{143}^{\text{PS}}$	50.6	$48^{+20}_{-20}$	$10^5 D/H$	2.608	$2.617^{+0.073}_{-0.073}$	$\sigma_8(2.33)$	0.30694	$0.3068^{+0.0047}_{-0.0047}$
$A_{143 \times 217}^{\text{PS}}$	49.2	$43^{+20}_{-20}$	Age/Gyr	13.805	$13.808^{+0.054}_{-0.053}$	$r_{0.002}$	0.000	$< 0.106$
$A_{217}^{\text{PS}}$	120.3	$115^{+20}_{-20}$	$z_*$	1089.99	$1090.04^{+0.56}_{-0.57}$	$r_{0.01}$	0.000	$< 0.110$
$A^{\text{kSZ}}$	0.01	$< 8.26$	$r_*$	144.74	$144.80^{+0.55}_{-0.56}$	$\ln(10^{10} A_t)$	-6.92	$-0.6^{+1.9}_{-2.4}$
$A_{100}^{\text{dustTT}}$	8.89	$8.9^{+3.6}_{-3.6}$	$100\theta_*$	1.04116	$1.04118^{+0.00082}_{-0.00083}$	$r_{10}$	0.0000	$< 0.0548$
$A_{143}^{\text{dustTT}}$	10.83	$10.7^{+3.5}_{-3.4}$	$D_M(z_*)/\text{Gpc}$	13.902	$13.908^{+0.054}_{-0.055}$	$10^9 A_t$	0.000	$< 0.237$
$A_{143 \times 217}^{\text{dustTT}}$	19.6	$18.3^{+6.4}_{-6.4}$	$z_{\text{drag}}$	1059.59	$1059.49^{+0.90}_{-0.85}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.213$
$A_{217}^{\text{dustTT}}$	94.9	$94^{+10}_{-10}$	$r_{\text{drag}}$	147.45	$147.53^{+0.60}_{-0.62}$	$f_{2000}^{143}$	30.1	$31^{+6}_{-6}$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14040	$0.14028^{+0.00083}_{-0.00083}$	$f_{2000}^{143 \times 217}$	33.02	$33^{+4}_{-4}$
$c_{217}$	0.99823	$0.9983^{+0.0013}_{-0.0012}$	$100\theta_{\text{D}}$	0.16095	$0.16103^{+0.00051}_{-0.00052}$	$f_{2000}^{217}$	107.50	$107.9^{+3.7}_{-3.7}$
$H_0$	67.57	$67.58^{+0.96}_{-0.96}$	$z_{\text{eq}}$	3379	$3376^{+50}_{-50}$	$\chi_{\text{lensing}}^2$	8.81	$9.32 (\nu: 0.3)$
$\Omega_{\Lambda}$	0.6889	$0.689^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010312	$0.01030^{+0.00015}_{-0.00015}$	$\chi_{\text{small}}^2$	396.18	$397.3 (\nu: 1.5)$
$\Omega_{\text{m}}$	0.3111	$0.311^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	0.8172	$0.8177^{+0.0092}_{-0.0091}$	$\chi_{\text{lowl}}^2$	23.01	$24.5 (\nu: 1.1)$
$\Omega_{\text{m}} h^2$	0.14203	$0.1419^{+0.0021}_{-0.0021}$	$100\theta_{\text{s,eq}}$	0.45151	$0.4518^{+0.0047}_{-0.0047}$	$\chi_{\text{plik}}^2$	759.7	$771.5 (\nu: 13.5)$
$\Omega_{\text{m}} h^3$	0.09598	$0.09589^{+0.00090}_{-0.00088}$	$H(0.15)$	72.85	$72.85^{+0.84}_{-0.83}$	$\chi_{6\text{DF}}^2$	0.030	$0.055 (\nu: 0.0)$
$\sigma_8$	0.8093	$0.809^{+0.012}_{-0.012}$	$D_M(0.15)$	641.6	$641.6^{+8.3}_{-8.2}$	$\chi_{\text{MGS}}^2$	1.22	$1.30 (\nu: 0.1)$
$S_8$	0.8241	$0.823^{+0.023}_{-0.023}$	$H(0.38)$	82.95	$82.94^{+0.65}_{-0.63}$	$\chi_{\text{DR12BAO}}^2$	4.40	$4.8 (\nu: 1.1)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4514	$0.451^{+0.013}_{-0.013}$	$D_M(0.38)$	1530.3	$1530^{+17}_{-17}$	$\chi_{\text{prior}}^2$	1.3	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6044	$0.604^{+0.012}_{-0.012}$	$H(0.51)$	89.65	$89.64^{+0.54}_{-0.53}$	$\chi_{\text{CMB}}^2$	1187.7	$1202.6 (\nu: 15.7)$
$\sigma_8/h^{0.5}$	0.9845	$0.984^{+0.017}_{-0.017}$	$D_M(0.51)$	1982.4	$1983^{+20}_{-20}$	$\chi_{\text{BAO}}^2$	5.64	$6.1 (\nu: 0.7)$
$r_{\text{drag}} h$	99.64	$99.7^{+1.6}_{-1.6}$	$H(0.61)$	95.267	$95.25^{+0.47}_{-0.46}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.73$ ;  $\Delta\chi_{\text{eff}}^2 = 0.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.99$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.26$ ;  $R - 1 = 0.01776$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.40 ( $\Delta$  0.02) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.81 ( $\Delta$  -0.07) small\_100x143\_offlike5\_EE\_Aplanck: 396.18 ( $\Delta$  0.08) commander\_dx12\_v3\_2.29: 23.01 ( $\Delta$  0.05) plik\_rd12\_HM\_v22\_TT: 759.74 ( $\Delta$  -0.06)

# 16.11 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215^{+0.00042}_{-0.00040}$	$r_{\mathrm{drag}}h$	$99.0^{+2.3}_{-2.2}$	$D_{\mathrm{M}}(0.51)$	$1991^{+27}_{-28}$
$\Omega_{\mathrm{c}}h^2$	$0.1199^{+0.0029}_{-0.0029}$	$\langle d^2 \rangle^{1/2}$	$2.445^{+0.048}_{-0.049}$	$H(0.61)$	$95.10^{+0.60}_{-0.55}$
$100\theta_{\mathrm{MC}}$	$1.04083^{+0.00089}_{-0.00086}$	$z_{\mathrm{re}}$	$< 8.82$	$D_{\mathrm{M}}(0.61)$	$2316^{+29}_{-30}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.053}_{-0.049}$	$H(2.33)$	$236.3^{+1.8}_{-1.8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.025}_{-0.023}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(2.33)$	$5774^{+27}_{-28}$
$n_{\mathrm{s}}$	$0.9646^{+0.0094}_{-0.0090}$	$D_{40}$	$1243^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.460^{+0.016}_{-0.016}$
$r$	$< 0.108$	$D_{220}$	$5714^{+83}_{-80}$	$\sigma_8(0.15)$	$0.749^{+0.010}_{-0.0098}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$D_{810}$	$2536^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.477^{+0.012}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{1420}$	$815^{+10}_{-10}$	$\sigma_8(0.38)$	$0.6632^{+0.0089}_{-0.0080}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.8^{+3.6}_{-3.5}$	$f\sigma_8(0.51)$	$0.476^{+0.010}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$n_{\mathrm{s},0.002}$	$0.9646^{+0.0094}_{-0.0090}$	$\sigma_8(0.51)$	$0.6205^{+0.0080}_{-0.0077}$
$A_{100}^{\mathrm{PS}}$	$263^{+50}_{-50}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00017}_{-0.00019}$	$f\sigma_8(0.61)$	$0.4701^{+0.0091}_{-0.0094}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00017}_{-0.00019}$	$\sigma_8(0.61)$	$0.5903^{+0.0077}_{-0.0073}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.628^{+0.077}_{-0.078}$	$f\sigma_8(2.33)$	$0.2974^{+0.0040}_{-0.0037}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.822^{+0.061}_{-0.064}$	$\sigma_8(2.33)$	$0.3064^{+0.0044}_{-0.0041}$
$A^{\mathrm{kSZ}}$	$< 8.42$	$z_*$	$1090.19^{+0.66}_{-0.67}$	$r_{0.002}$	$< 0.101$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.6}_{-3.6}$	$r_*$	$144.62^{+0.71}_{-0.69}$	$r_{0.01}$	$< 0.105$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.5}_{-3.4}$	$100\theta_*$	$1.04104^{+0.00087}_{-0.00085}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.7^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.4}_{-6.5}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892^{+0.066}_{-0.065}$	$r_{10}$	$< 0.0522$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$z_{\mathrm{drag}}$	$1059.42^{+0.93}_{-0.90}$	$10^9 A_{\mathrm{t}}$	$< 0.227$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.36^{+0.73}_{-0.72}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.203$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.14041^{+0.00089}_{-0.00088}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$H_0$	$67.2^{+1.4}_{-1.3}$	$100\theta_{\mathrm{D}}$	$0.16106^{+0.00052}_{-0.00053}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$\Omega_{\Lambda}$	$0.684^{+0.018}_{-0.018}$	$z_{\mathrm{eq}}$	$3395^{+65}_{-67}$	$f_{2000}^{217}$	$108.0^{+3.7}_{-3.7}$
$\Omega_{\mathrm{m}}$	$0.316^{+0.018}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01036^{+0.00020}_{-0.00021}$	$\chi_{\mathrm{lensing}}^2$	$9.43 (\nu: 0.4)$
$\Omega_{\mathrm{m}} h^2$	$0.1427^{+0.0027}_{-0.0028}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.013}_{-0.012}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^3$	$0.09586^{+0.00090}_{-0.00087}$	$100\theta_{\mathrm{s,eq}}$	$0.4499^{+0.0065}_{-0.0062}$	$\chi_{\mathrm{lowl}}^2$	$24.9 (\nu: 1.3)$
$\sigma_8$	$0.811^{+0.012}_{-0.011}$	$H(0.15)$	$72.5^{+1.2}_{-1.1}$	$\chi_{\mathrm{plik}}^2$	$771.1 (\nu: 13.6)$
$S_8$	$0.833^{+0.031}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$645^{+11}_{-12}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.456^{+0.017}_{-0.017}$	$H(0.38)$	$82.69^{+0.88}_{-0.82}$	$\chi_{\mathrm{CMB}}^2$	$1202.4 (\nu: 15.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1537^{+23}_{-23}$		
$\sigma_8/h^{0.5}$	$0.989^{+0.020}_{-0.021}$	$H(0.51)$	$89.45^{+0.71}_{-0.66}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1209.64$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 1.48$ ;  $R - 1 = 0.01135$



## 16.12 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02221^{+0.00040}_{-0.00038}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.042}_{-0.041}$	$D_M(0.61)$	$2307^{+21}_{-21}$
$\Omega_c h^2$	$0.1190^{+0.0021}_{-0.0021}$	$z_{\text{re}}$	$7.8^{+1.1}_{-1.3}$	$H(2.33)$	$235.8^{+1.4}_{-1.4}$
$100\theta_{\text{MC}}$	$1.04098^{+0.00083}_{-0.00084}$	$10^9 A_s$	$2.100^{+0.054}_{-0.052}$	$D_M(2.33)$	$5767^{+24}_{-23}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.021}_{-0.021}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$\ln(10^{10} A_s)$	$3.045^{+0.026}_{-0.025}$	$D_{40}$	$1241^{+32}_{-30}$	$\sigma_8(0.15)$	$0.748^{+0.011}_{-0.0098}$
$n_s$	$0.9667^{+0.0080}_{-0.0080}$	$D_{220}$	$5722^{+81}_{-80}$	$f\sigma_8(0.38)$	$0.4741^{+0.0099}_{-0.0097}$
$r$	$< 0.114$	$D_{810}$	$2537^{+27}_{-26}$	$\sigma_8(0.38)$	$0.6630^{+0.0094}_{-0.0083}$
$y_{\text{cal}}$	$1.0008^{+0.0048}_{-0.0048}$	$D_{1420}$	$816^{+10}_{-9.6}$	$f\sigma_8(0.51)$	$0.4728^{+0.0087}_{-0.0085}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{2000}$	$230.2^{+3.6}_{-3.4}$	$\sigma_8(0.51)$	$0.6205^{+0.0084}_{-0.0080}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9667^{+0.0080}_{-0.0080}$	$f\sigma_8(0.61)$	$0.4679^{+0.0080}_{-0.0078}$
$A_{143}^{\text{tSZ}}$	$5.2^{+3.7}_{-4.0}$	$Y_{\text{P}}$	$0.24533^{+0.00016}_{-0.00017}$	$\sigma_8(0.61)$	$0.5905^{+0.0080}_{-0.0076}$
$A_{100}^{\text{PS}}$	$262^{+60}_{-50}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24665^{+0.00016}_{-0.00017}$	$f\sigma_8(2.33)$	$0.2978^{+0.0041}_{-0.0039}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.616^{+0.073}_{-0.073}$	$\sigma_8(2.33)$	$0.3070^{+0.0043}_{-0.0041}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	Age/Gyr	$13.807^{+0.054}_{-0.054}$	$r_{0.002}$	$< 0.107$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$z_*$	$1090.04^{+0.56}_{-0.56}$	$r_{0.01}$	$< 0.110$
$A^{\text{kSZ}}$	$< 8.24$	$r_*$	$144.81^{+0.55}_{-0.56}$	$\ln(10^{10} A_{\text{t}})$	$-0.6^{+1.9}_{-2.4}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$100\theta_*$	$1.04118^{+0.00081}_{-0.00083}$	$r_{10}$	$< 0.0549$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.4}$	$D_M(z_*)/\text{Gpc}$	$13.908^{+0.054}_{-0.055}$	$10^9 A_{\text{t}}$	$< 0.238$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.5}$	$z_{\text{drag}}$	$1059.50^{+0.89}_{-0.86}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.213$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$r_{\text{drag}}$	$147.53^{+0.60}_{-0.62}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14028^{+0.00083}_{-0.00083}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16102^{+0.00051}_{-0.00052}$	$f_{2000}^{217}$	$107.9^{+3.7}_{-3.7}$
$H_0$	$67.59^{+0.95}_{-0.95}$	$z_{\text{eq}}$	$3375^{+50}_{-49}$	$\chi_{\text{lensing}}^2$	$9.28 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.689^{+0.012}_{-0.013}$	$k_{\text{eq}}$	$0.01030^{+0.00015}_{-0.00015}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.5)$
$\Omega_{\text{m}}$	$0.311^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	$0.8179^{+0.0091}_{-0.0090}$	$\chi_{\text{lowl}}^2$	$24.5 (\nu: 1.1)$
$\Omega_{\text{m}} h^2$	$0.1419^{+0.0021}_{-0.0021}$	$100\theta_{\text{s,eq}}$	$0.4519^{+0.0047}_{-0.0047}$	$\chi_{\text{plik}}^2$	$771.4 (\nu: 13.6)$
$\Omega_{\text{m}} h^3$	$0.09589^{+0.00090}_{-0.00088}$	$H(0.15)$	$72.86^{+0.84}_{-0.82}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$\sigma_8$	$0.809^{+0.012}_{-0.011}$	$D_M(0.15)$	$641.5^{+8.2}_{-8.1}$	$\chi_{\text{MGS}}^2$	$1.32 (\nu: 0.1)$
$S_8$	$0.823^{+0.023}_{-0.023}$	$H(0.38)$	$82.95^{+0.64}_{-0.63}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.0)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$D_M(0.38)$	$1530^{+17}_{-17}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.6)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.012}_{-0.012}$	$H(0.51)$	$89.65^{+0.54}_{-0.52}$	$\chi_{\text{CMB}}^2$	$1202.5 (\nu: 15.6)$
$\sigma_8/h^{0.5}$	$0.984^{+0.017}_{-0.017}$	$D_M(0.51)$	$1982^{+20}_{-20}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$r_{\text{drag}} h$	$99.7^{+1.6}_{-1.6}$	$H(0.61)$	$95.25^{+0.47}_{-0.46}$		

$$\bar{\chi}_{\text{eff}}^2 = 1215.85; \Delta \bar{\chi}_{\text{eff}}^2 = 1.27; R - 1 = 0.01875$$

### 16.13 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022391	$0.02237^{+0.00028}_{-0.00028}$	$S_8$	0.8320	$0.830^{+0.025}_{-0.025}$	$D_M(0.38)$	1533.2	$1533^{+18}_{-18}$
$\Omega_c h^2$	0.12002	$0.1199^{+0.0023}_{-0.0024}$	$\sigma_8 \Omega_m^{0.5}$	0.4557	$0.455^{+0.014}_{-0.014}$	$H(0.51)$	89.64	$89.64^{+0.54}_{-0.52}$
$100\theta_{MC}$	1.04093	$1.04092^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	0.6082	$0.607^{+0.013}_{-0.013}$	$D_M(0.51)$	1985.6	$1985^{+21}_{-22}$
$\tau$	0.0543	$0.054^{+0.015}_{-0.014}$	$\sigma_8/h^{0.5}$	0.9889	$0.988^{+0.018}_{-0.018}$	$H(0.61)$	95.291	$95.29^{+0.44}_{-0.42}$
$\ln(10^{10} A_s)$	3.0445	$3.044^{+0.029}_{-0.028}$	$r_{\text{drag}} h$	99.08	$99.2^{+1.9}_{-1.8}$	$D_M(0.61)$	2310.0	$2310^{+23}_{-23}$
$n_s$	0.9663	$0.9659^{+0.0081}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	2.4430	$2.442^{+0.043}_{-0.043}$	$H(2.33)$	236.59	$236.5^{+1.4}_{-1.4}$
$r$	0.000	$< 0.108$	$z_{\text{re}}$	7.68	$7.7^{+1.5}_{-1.5}$	$D_M(2.33)$	5762.7	$5763^{+20}_{-20}$
$y_{\text{cal}}$	1.00038	$1.0006^{+0.0049}_{-0.0047}$	$10^9 A_s$	2.100	$2.099^{+0.061}_{-0.058}$	$f\sigma_8(0.15)$	0.4600	$0.459^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	45.8	$47^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	1.8836	$1.883^{+0.022}_{-0.021}$	$\sigma_8(0.15)$	0.7496	$0.749^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.65	—	$D_{40}$	1228.3	$1243^{+32}_{-29}$	$f\sigma_8(0.38)$	0.4775	$0.477^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	7.08	$5.5^{+3.8}_{-3.7}$	$D_{220}$	5729	$5730^{+76}_{-75}$	$\sigma_8(0.38)$	0.6641	$0.6636^{+0.0094}_{-0.0092}$
$A_{100}^{\text{PS}}$	248	$258^{+50}_{-50}$	$D_{810}$	2540.9	$2539^{+27}_{-25}$	$f\sigma_8(0.51)$	0.4757	$0.4750^{+0.0090}_{-0.0091}$
$A_{143}^{\text{PS}}$	50.6	$46^{+20}_{-20}$	$D_{1420}$	818.4	$817.6^{+9.3}_{-9.2}$	$\sigma_8(0.51)$	0.6213	$0.6209^{+0.0088}_{-0.0086}$
$A_{143 \times 217}^{\text{PS}}$	53.1	$43^{+20}_{-20}$	$D_{2000}$	231.35	$231.0^{+3.0}_{-3.1}$	$f\sigma_8(0.61)$	0.4704	$0.4698^{+0.0081}_{-0.0082}$
$A_{217}^{\text{PS}}$	122.1	$115^{+20}_{-20}$	$n_{s,0.002}$	0.9663	$0.9659^{+0.0081}_{-0.0081}$	$\sigma_8(0.61)$	0.5911	$0.5907^{+0.0084}_{-0.0082}$
$A^{\text{kSZ}}$	0.00	$< 7.87$	$Y_P$	0.245404	$0.24539^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.29789	$0.2977^{+0.0044}_{-0.0043}$
$A_{100}^{\text{dustTT}}$	8.81	$8.9^{+3.6}_{-3.6}$	$Y_P^{\text{BBN}}$	0.246730	$0.24672^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	0.30695	$0.3068^{+0.0047}_{-0.0046}$
$A_{143}^{\text{dustTT}}$	11.02	$10.8^{+3.5}_{-3.5}$	$10^5 D/H$	2.582	$2.586^{+0.053}_{-0.050}$	$r_{0.002}$	0.000	$< 0.101$
$A_{143 \times 217}^{\text{dustTT}}$	20.2	$18.6^{+6.4}_{-6.4}$	Age/Gyr	13.7951	$13.797^{+0.044}_{-0.045}$	$r_{0.01}$	0.000	$< 0.104$
$A_{217}^{\text{dustTT}}$	95.6	$94^{+10}_{-10}$	$z_*$	1089.894	$1089.91^{+0.50}_{-0.49}$	$\ln(10^{10} A_t)$	-4.62	$-0.6^{+1.9}_{-2.5}$
$A_{100}^{\text{dustTE}}$	0.115	$0.115^{+0.075}_{-0.074}$	$r_*$	144.41	$144.46^{+0.53}_{-0.52}$	$r_{10}$	0.0002	$< 0.0521$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.135^{+0.058}_{-0.058}$	$100\theta_*$	1.04111	$1.04110^{+0.00059}_{-0.00059}$	$10^9 A_t$	0.001	$< 0.226$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8709	$13.876^{+0.049}_{-0.049}$	$10^9 A_t e^{-2\tau}$	0.001	$< 0.203$
$A_{143}^{\text{dustTE}}$	0.226	$0.23^{+0.11}_{-0.11}$	$z_{\text{drag}}$	1059.97	$1059.93^{+0.58}_{-0.57}$	$f_{2000}^{143}$	28.6	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	0.667	$0.67^{+0.16}_{-0.16}$	$r_{\text{drag}}$	147.07	$147.12^{+0.53}_{-0.52}$	$f_{2000}^{143 \times 217}$	31.92	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	2.09	$2.09^{+0.52}_{-0.53}$	$k_D$	0.14091	$0.14084^{+0.00058}_{-0.00059}$	$f_{2000}^{217}$	106.44	$106.9^{+3.5}_{-3.4}$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160730	$0.16076^{+0.00034}_{-0.00033}$	$\chi^2_{\text{lensing}}$	8.84	$9.25 (\nu: 0.2)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3403	$3400^{+53}_{-53}$	$\chi^2_{\text{small}}$	396.05	$397.2 (\nu: 1.6)$
$H_0$	67.37	$67.4^{+1.1}_{-1.1}$	$k_{\text{eq}}$	0.010387	$0.01038^{+0.00016}_{-0.00016}$	$\chi^2_{\text{lowl}}$	23.21	$24.7 (\nu: 1.2)$
$\Omega_\Lambda$	0.6848	$0.685^{+0.015}_{-0.015}$	$100\theta_{\text{eq}}$	0.8132	$0.814^{+0.010}_{-0.0099}$	$\chi^2_{\text{plik}}$	2345.0	$2359.2 (\nu: 16.0)$
$\Omega_m$	0.3152	$0.315^{+0.015}_{-0.015}$	$100\theta_{s,\text{eq}}$	0.4493	$0.4496^{+0.0052}_{-0.0051}$	$\chi^2_{\text{prior}}$	1.5	$11.6 (\nu: 10.3)$
$\Omega_m h^2$	0.14305	$0.1429^{+0.0022}_{-0.0022}$	$H(0.15)$	72.69	$72.71^{+0.93}_{-0.90}$	$\chi^2_{\text{CMB}}$	2773.1	$2790.4 (\nu: 18.1)$
$\Omega_m h^3$	0.09637	$0.09631^{+0.00057}_{-0.00056}$	$D_M(0.15)$	643.3	$643.1^{+9.1}_{-9.2}$			
$\sigma_8$	0.8117	$0.811^{+0.012}_{-0.012}$	$H(0.38)$	82.88	$82.89^{+0.68}_{-0.66}$			

Best-fit  $\chi^2_{\text{eff}} = 2774.63$ ;  $\Delta\chi^2_{\text{eff}} = 0.00$ ;  $\bar{\chi}^2_{\text{eff}} = 2801.95$ ;  $\Delta\bar{\chi}^2_{\text{eff}} = 1.26$ ;  $R - 1 = 0.00682$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.84 ( $\Delta$  -0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.00) commander\_dx12\_v3\_2\_29: 23.20 ( $\Delta$  -0.05) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.99 ( $\Delta$  0.06)

# 16.14 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_{\mathrm{b}}h^2$	0.022447	$0.02242^{+0.00026}_{-0.00027}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4521	$0.451^{+0.011}_{-0.011}$	$D_{\mathrm{M}}(0.51)$	1979.0	$1979^{+17}_{-17}$
$\Omega_{\mathrm{c}}h^2$	0.11929	$0.1192^{+0.0018}_{-0.0018}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6056	$0.605^{+0.011}_{-0.011}$	$H(0.61)$	95.413	$95.40^{+0.36}_{-0.36}$
$100\theta_{\mathrm{MC}}$	1.04101	$1.04101^{+0.00057}_{-0.00056}$	$\sigma_8/h^{0.5}$	0.9859	$0.985^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.61)$	2303.0	$2303^{+18}_{-18}$
$\tau$	0.0566	$0.056^{+0.015}_{-0.014}$	$r_{\mathrm{drag}}h$	99.65	$99.7^{+1.4}_{-1.4}$	$H(2.33)$	236.18	$236.1^{+1.1}_{-1.1}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0484	$3.046^{+0.029}_{-0.027}$	$\langle d^2 \rangle^{1/2}$	2.4367	$2.435^{+0.040}_{-0.040}$	$D_{\mathrm{M}}(2.33)$	5757.5	$5759^{+17}_{-17}$
$n_{\mathrm{s}}$	0.9680	$0.9675^{+0.0073}_{-0.0074}$	$z_{\mathrm{re}}$	7.89	$7.8^{+1.5}_{-1.4}$	$f\sigma_8(0.15)$	0.4568	$0.456^{+0.011}_{-0.011}$
$r$	0.000	$< 0.112$	$10^9A_{\mathrm{s}}$	2.108	$2.104^{+0.061}_{-0.056}$	$\sigma_8(0.15)$	0.7496	$0.749^{+0.011}_{-0.011}$
$y_{\mathrm{cal}}$	1.00082	$1.0008^{+0.0048}_{-0.0048}$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8825	$1.880^{+0.021}_{-0.020}$	$f\sigma_8(0.38)$	0.4753	$0.4746^{+0.0090}_{-0.0091}$
$A_{217}^{\mathrm{CIB}}$	45.7	$46^{+10}_{-10}$	$D_{40}$	1226.5	$1241^{+32}_{-29}$	$\sigma_8(0.38)$	0.6646	$0.6637^{+0.0095}_{-0.0092}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	0.67	—	$D_{220}$	5739	$5735^{+75}_{-75}$	$f\sigma_8(0.51)$	0.4740	$0.4733^{+0.0082}_{-0.0081}$
$A_{143}^{\mathrm{tSZ}}$	7.06	$5.5^{+3.7}_{-3.8}$	$D_{810}$	2542.8	$2540^{+26}_{-25}$	$\sigma_8(0.51)$	0.6220	$0.6212^{+0.0088}_{-0.0086}$
$A_{100}^{\mathrm{PS}}$	248	$258^{+60}_{-50}$	$D_{1420}$	819.6	$818.3^{+9.1}_{-9.3}$	$f\sigma_8(0.61)$	0.4691	$0.4684^{+0.0077}_{-0.0076}$
$A_{143}^{\mathrm{PS}}$	50.2	$45^{+20}_{-10}$	$D_{2000}$	231.78	$231.3^{+3.0}_{-3.0}$	$\sigma_8(0.61)$	0.5919	$0.5911^{+0.0085}_{-0.0081}$
$A_{143\times 217}^{\mathrm{PS}}$	52.9	$42^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	0.9680	$0.9675^{+0.0073}_{-0.0074}$	$f\sigma_8(2.33)$	0.29845	$0.2981^{+0.0044}_{-0.0041}$
$A_{217}^{\mathrm{PS}}$	122.0	$115^{+20}_{-20}$	$Y_{\mathrm{P}}$	0.245425	$0.245412^{+0.000096}_{-0.00011}$	$\sigma_8(2.33)$	0.30773	$0.3073^{+0.0047}_{-0.0045}$
$A^{\mathrm{kSZ}}$	0.01	$< 7.70$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246752	$0.246739^{+0.000097}_{-0.00011}$	$r_{0.002}$	0.000	$< 0.106$
$A_{100}^{\mathrm{dustTT}}$	8.82	$8.9^{+3.6}_{-3.5}$	$10^5\mathrm{D}/\mathrm{H}$	2.5713	$2.577^{+0.050}_{-0.047}$	$r_{0.01}$	0.000	$< 0.109$
$A_{143}^{\mathrm{dustTT}}$	11.04	$10.8^{+3.5}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	13.7840	$13.787^{+0.039}_{-0.039}$	$\ln(10^{10}A_{\mathrm{t}})$	-7.83	$-0.6^{+1.9}_{-2.5}$
$A_{143\times 217}^{\mathrm{dustTT}}$	20.2	$18.6^{+6.5}_{-6.4}$	$z_*$	1089.760	$1089.79^{+0.43}_{-0.42}$	$r_{10}$	0.0000	$< 0.0544$
$A_{217}^{\mathrm{dustTT}}$	95.8	$94^{+10}_{-10}$	$r_*$	144.557	$144.59^{+0.44}_{-0.43}$	$10^9A_{\mathrm{t}}$	0.000	$< 0.234$
$A_{100}^{\mathrm{dustTE}}$	0.114	$0.114^{+0.075}_{-0.075}$	$100\theta_*$	1.04119	$1.04119^{+0.00056}_{-0.00056}$	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.000	$< 0.210$
$A_{100\times 143}^{\mathrm{dustTE}}$	0.134	$0.135^{+0.056}_{-0.058}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8838	$13.887^{+0.042}_{-0.041}$	$f_{2000}^{143}$	28.3	$29^{+5}_{-5}$
$A_{100\times 217}^{\mathrm{dustTE}}$	0.478	$0.48^{+0.17}_{-0.16}$	$z_{\mathrm{drag}}$	1060.05	$1059.99^{+0.55}_{-0.59}$	$f_{2000}^{143\times 217}$	31.68	$31.9^{+3.5}_{-3.5}$
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.23^{+0.10}_{-0.11}$	$r_{\mathrm{drag}}$	147.196	$147.24^{+0.45}_{-0.45}$	$f_{2000}^{217}$	106.33	$106.8^{+3.4}_{-3.4}$
$A_{143\times 217}^{\mathrm{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$k_{\mathrm{D}}$	0.14082	$0.14075^{+0.00054}_{-0.00056}$	$\chi_{\mathrm{lensing}}^2$	8.72	$9.14 (\nu: 0.2)$
$A_{217}^{\mathrm{dustTE}}$	2.08	$2.08^{+0.53}_{-0.54}$	$100\theta_{\mathrm{D}}$	0.160689	$0.16073^{+0.00034}_{-0.00032}$	$\chi_{\mathrm{simall}}^2$	396	$1296 (\nu: 477802.7)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$z_{\mathrm{eq}}$	3387.0	$3385^{+42}_{-42}$	$\chi_{\mathrm{lowl}}^2$	22.95	$24.5 (\nu: 1.1)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	0.010337	$0.01033^{+0.00013}_{-0.00013}$	$\chi_{\mathrm{plik}}^2$	2345	$1461 (\nu: 477551.6)$
$H_0$	67.70	$67.69^{+0.83}_{-0.82}$	$100\theta_{\mathrm{eq}}$	0.8163	$0.8166^{+0.0080}_{-0.0078}$	$\chi_{6\mathrm{DF}}^2$	0.029	$0.050 (\nu: 0.0)$
$\Omega_{\Lambda}$	0.6893	$0.689^{+0.011}_{-0.011}$	$100\theta_{\mathrm{s,eq}}$	0.45090	$0.4511^{+0.0041}_{-0.0040}$	$\chi_{\mathrm{MGS}}^2$	1.22	$1.28 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	0.3107	$0.311^{+0.011}_{-0.011}$	$H(0.15)$	72.97	$72.97^{+0.72}_{-0.71}$	$\chi_{\mathrm{DR12BAO}}^2$	4.43	$4.8 (\nu: 0.8)$
$\Omega_{\mathrm{m}}h^2$	0.14238	$0.1423^{+0.0018}_{-0.0018}$	$D_{\mathrm{M}}(0.15)$	640.4	$640.5^{+7.1}_{-7.0}$	$\chi_{\mathrm{prior}}^2$	1.6	$11.6 (\nu: 10.6)$
$\Omega_{\mathrm{m}}h^3$	0.09639	$0.09632^{+0.00058}_{-0.00057}$	$H(0.38)$	83.08	$83.07^{+0.53}_{-0.53}$	$\chi_{\mathrm{CMB}}^2$	2773.4	$2790.4 (\nu: 17.4)$
$\sigma_8$	0.8112	$0.810^{+0.012}_{-0.012}$	$D_{\mathrm{M}}(0.38)$	1527.6	$1528^{+14}_{-14}$	$\chi_{\mathrm{BAO}}^2$	5.68	$6.1 (\nu: 0.5)$
$S_8$	0.8255	$0.824^{+0.021}_{-0.021}$	$H(0.51)$	89.795	$89.78^{+0.44}_{-0.43}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2780.69$ ;  $\Delta\chi_{\mathrm{eff}}^2 = -0.00$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2808.06$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.22$ ;  $R - 1 = 0.01525$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.43 ( $\Delta$  0.01) CMB - smicadx12\_Dec5\_ft1\_mv2\_ndclpp\_p.teb\_consext8: 8.72 ( $\Delta$  -0.01) simall\_100x143\_offlike5\_EE\_Aplanck: 396.49 ( $\Delta$  -0.03) commander\_dx12\_v3.2\_29: 22.95 ( $\Delta$  0.05) plik\_rd12\_HM\_v22b.TTTEEE: 2345.28 ( $\Delta$  -0.03)

16.15 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00028}_{-0.00028}$	$S_8$	$0.831^{+0.025}_{-0.025}$	$D_M(0.38)$	$1532^{+18}_{-18}$
$\Omega_c h^2$	$0.1198^{+0.0023}_{-0.0023}$	$\sigma_8 \Omega_m^{0.5}$	$0.455^{+0.014}_{-0.014}$	$H(0.51)$	$89.65^{+0.54}_{-0.51}$
$100\theta_{MC}$	$1.04093^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.013}_{-0.012}$	$D_M(0.51)$	$1985^{+21}_{-21}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.988^{+0.018}_{-0.017}$	$H(0.61)$	$95.30^{+0.44}_{-0.41}$
$\ln(10^{10} A_s)$	$3.045^{+0.026}_{-0.024}$	$r_{\text{drag}} h$	$99.2^{+1.8}_{-1.8}$	$D_M(0.61)$	$2309^{+22}_{-23}$
$n_s$	$0.9661^{+0.0081}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.042}_{-0.042}$	$H(2.33)$	$236.5^{+1.4}_{-1.4}$
$r$	$< 0.108$	$z_{\text{re}}$	$< 8.91$	$D_M(2.33)$	$5763^{+19}_{-20}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0047}$	$10^9 A_s$	$2.102^{+0.054}_{-0.050}$	$f\sigma_8(0.15)$	$0.459^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.021}_{-0.021}$	$\sigma_8(0.15)$	$0.749^{+0.010}_{-0.0092}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1243^{+32}_{-29}$	$f\sigma_8(0.38)$	$0.477^{+0.010}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.7}$	$D_{220}$	$5730^{+75}_{-75}$	$\sigma_8(0.38)$	$0.6641^{+0.0086}_{-0.0082}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{810}$	$2539^{+27}_{-25}$	$f\sigma_8(0.51)$	$0.4752^{+0.0089}_{-0.0089}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{1420}$	$817.6^{+9.3}_{-9.1}$	$\sigma_8(0.51)$	$0.6213^{+0.0080}_{-0.0076}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.0}_{-3.0}$	$f\sigma_8(0.61)$	$0.4700^{+0.0080}_{-0.0080}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$n_{s,0.002}$	$0.9661^{+0.0081}_{-0.0079}$	$\sigma_8(0.61)$	$0.5911^{+0.0076}_{-0.0072}$
$A^{\text{kSZ}}$	$< 7.87$	$Y_P$	$0.24540^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.2979^{+0.0040}_{-0.0037}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P^{\text{BBN}}$	$0.24672^{+0.00010}_{-0.00011}$	$\sigma_8(2.33)$	$0.3071^{+0.0043}_{-0.0040}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$10^5 \text{D/H}$	$2.585^{+0.053}_{-0.050}$	$r_{0.002}$	$< 0.101$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.5}$	$\text{Age/Gyr}$	$13.796^{+0.044}_{-0.045}$	$r_{0.01}$	$< 0.104$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$z_*$	$1089.90^{+0.48}_{-0.49}$	$\ln(10^{10} A_t)$	$-0.6^{+1.9}_{-2.5}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.074}$	$r_*$	$144.47^{+0.52}_{-0.51}$	$r_{10}$	$< 0.0519$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$100\theta_*$	$1.04111^{+0.00059}_{-0.00058}$	$10^9 A_t$	$< 0.225$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$D_M(z_*)/\text{Gpc}$	$13.877^{+0.048}_{-0.048}$	$10^9 A_t e^{-2\tau}$	$< 0.202$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$z_{\text{drag}}$	$1059.94^{+0.57}_{-0.57}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$r_{\text{drag}}$	$147.13^{+0.52}_{-0.51}$	$f_{2000}^{143 \times 217}$	$32.1^{+3.6}_{-3.6}$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.52}_{-0.53}$	$k_D$	$0.14083^{+0.00058}_{-0.00059}$	$f_{2000}^{217}$	$106.9^{+3.5}_{-3.4}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16076^{+0.00034}_{-0.00033}$	$\chi_{\text{lensing}}^2$	$9.22 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3398^{+52}_{-53}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.6)$
$H_0$	$67.4^{+1.1}_{-1.0}$	$k_{\text{eq}}$	$0.01037^{+0.00016}_{-0.00016}$	$\chi_{\text{lowl}}^2$	$24.7 (\nu: 1.2)$
$\Omega_\Lambda$	$0.686^{+0.014}_{-0.014}$	$100\theta_{\text{eq}}$	$0.814^{+0.010}_{-0.0096}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 15.8)$
$\Omega_m$	$0.314^{+0.014}_{-0.014}$	$100\theta_{s,\text{eq}}$	$0.4498^{+0.0051}_{-0.0049}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_m h^2$	$0.1428^{+0.0022}_{-0.0022}$	$H(0.15)$	$72.74^{+0.92}_{-0.88}$	$\chi_{\text{CMB}}^2$	$2790.2 (\nu: 17.6)$
$\Omega_m h^3$	$0.09631^{+0.00056}_{-0.00056}$	$D_M(0.15)$	$642.8^{+8.9}_{-9.1}$		
$\sigma_8$	$0.811^{+0.011}_{-0.011}$	$H(0.38)$	$82.90^{+0.67}_{-0.64}$		

$$\bar{\chi}_{\text{eff}}^2 = 2801.72; \Delta \bar{\chi}_{\text{eff}}^2 = 1.22; R - 1 = 0.00705$$

## 16.16 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242^{+0.00026}_{-0.00026}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.011}_{-0.011}$	$D_{\mathrm{M}}(0.51)$	$1979^{+17}_{-17}$
$\Omega_{\mathrm{c}}h^2$	$0.1192^{+0.0018}_{-0.0018}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.011}_{-0.011}$	$H(0.61)$	$95.40^{+0.36}_{-0.36}$
$100\theta_{\mathrm{MC}}$	$1.04101^{+0.00057}_{-0.00056}$	$\sigma_8/h^{0.5}$	$0.985^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.61)$	$2303^{+18}_{-18}$
$\tau$	$0.057^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}h$	$99.7^{+1.4}_{-1.4}$	$H(2.33)$	$236.1^{+1.1}_{-1.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.027}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.040}_{-0.038}$	$D_{\mathrm{M}}(2.33)$	$5759^{+17}_{-17}$
$n_{\mathrm{s}}$	$0.9676^{+0.0073}_{-0.0074}$	$z_{\mathrm{re}}$	$7.9^{+1.2}_{-1.3}$	$f\sigma_8(0.15)$	$0.456^{+0.011}_{-0.011}$
$r$	$< 0.112$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.056}_{-0.052}$	$\sigma_8(0.15)$	$0.749^{+0.010}_{-0.0094}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0048}_{-0.0047}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880^{+0.021}_{-0.020}$	$f\sigma_8(0.38)$	$0.4748^{+0.0089}_{-0.0089}$
$A_{217}^{\mathrm{CIB}}$	$46^{+10}_{-10}$	$D_{40}$	$1241^{+32}_{-29}$	$\sigma_8(0.38)$	$0.6640^{+0.0092}_{-0.0082}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5734^{+75}_{-74}$	$f\sigma_8(0.51)$	$0.4735^{+0.0081}_{-0.0080}$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+3.7}_{-3.8}$	$D_{810}$	$2540^{+26}_{-25}$	$\sigma_8(0.51)$	$0.6215^{+0.0087}_{-0.0077}$
$A_{100}^{\mathrm{PS}}$	$258^{+60}_{-50}$	$D_{1420}$	$818.2^{+9.1}_{-9.2}$	$f\sigma_8(0.61)$	$0.4686^{+0.0075}_{-0.0074}$
$A_{143}^{\mathrm{PS}}$	$45^{+20}_{-10}$	$D_{2000}$	$231.3^{+3.0}_{-3.0}$	$\sigma_8(0.61)$	$0.5914^{+0.0082}_{-0.0073}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.9676^{+0.0073}_{-0.0074}$	$f\sigma_8(2.33)$	$0.2982^{+0.0041}_{-0.0039}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.245413^{+0.000096}_{-0.00011}$	$\sigma_8(2.33)$	$0.3075^{+0.0044}_{-0.0041}$
$A^{\mathrm{kSZ}}$	$< 7.70$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246739^{+0.000096}_{-0.00011}$	$r_{0.002}$	$< 0.106$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.6}_{-3.5}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.577^{+0.050}_{-0.047}$	$r_{0.01}$	$< 0.109$
$A_{143}^{\mathrm{dust}TT}$	$10.8^{+3.5}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.787^{+0.039}_{-0.039}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.6^{+1.9}_{-2.5}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6^{+6.5}_{-6.5}$	$z_*$	$1089.79^{+0.43}_{-0.42}$	$r_{10}$	$< 0.0543$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	$r_*$	$144.60^{+0.43}_{-0.42}$	$10^9 A_{\mathrm{t}}$	$< 0.234$
$A_{100}^{\mathrm{dust}TE}$	$0.114^{+0.075}_{-0.075}$	$100\theta_*$	$1.04119^{+0.00056}_{-0.00056}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.209$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135^{+0.056}_{-0.058}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888^{+0.041}_{-0.040}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.48^{+0.17}_{-0.16}$	$z_{\mathrm{drag}}$	$1059.99^{+0.55}_{-0.56}$	$f_{2000}^{143 \times 217}$	$31.9^{+3.5}_{-3.5}$
$A_{143}^{\mathrm{dust}TE}$	$0.23^{+0.10}_{-0.11}$	$r_{\mathrm{drag}}$	$147.25^{+0.45}_{-0.44}$	$f_{2000}^{217}$	$106.8^{+3.4}_{-3.4}$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.67^{+0.16}_{-0.16}$	$k_{\mathrm{D}}$	$0.14074^{+0.00054}_{-0.00056}$	$\chi_{\mathrm{lensing}}^2$	$9.12 (\nu: 0.1)$
$A_{217}^{\mathrm{dust}TE}$	$2.08^{+0.53}_{-0.54}$	$100\theta_{\mathrm{D}}$	$0.16073^{+0.00034}_{-0.00032}$	$\chi_{\mathrm{simall}}^2$	$1291 (\nu: 477329.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\mathrm{eq}}$	$3385^{+41}_{-41}$	$\chi_{\mathrm{lowl}}^2$	$24.5 (\nu: 1.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00013}_{-0.00013}$	$\chi_{\mathrm{plik}}^2$	$1466 (\nu: 477098.3)$
$H_0$	$67.70^{+0.82}_{-0.82}$	$100\theta_{\mathrm{eq}}$	$0.8167^{+0.0080}_{-0.0077}$	$\chi_{6\mathrm{DF}}^2$	$0.049 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.011}_{-0.011}$	$100\theta_{\mathrm{s,eq}}$	$0.4511^{+0.0041}_{-0.0040}$	$\chi_{\mathrm{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.011}_{-0.011}$	$H(0.15)$	$72.97^{+0.71}_{-0.70}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$\Omega_{\mathrm{m}}h^2$	$0.1423^{+0.0017}_{-0.0017}$	$D_{\mathrm{M}}(0.15)$	$640.5^{+7.0}_{-7.0}$	$\chi_{\mathrm{prior}}^2$	$11.6 (\nu: 10.5)$
$\Omega_{\mathrm{m}}h^3$	$0.09632^{+0.00057}_{-0.00057}$	$H(0.38)$	$83.07^{+0.53}_{-0.52}$	$\chi_{\mathrm{CMB}}^2$	$2790.2 (\nu: 17.2)$
$\sigma_8$	$0.810^{+0.011}_{-0.011}$	$D_{\mathrm{M}}(0.38)$	$1528^{+14}_{-14}$	$\chi_{\mathrm{BAO}}^2$	$6.05 (\nu: 0.5)$
$S_8$	$0.824^{+0.021}_{-0.020}$	$H(0.51)$	$89.78^{+0.44}_{-0.42}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.89; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.17; R - 1 = 0.01530$$

# 17 w

## 17.1 base\_w\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022222	$0.02215^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_m^{0.5}$	0.4077	$0.431^{+0.040}_{-0.036}$	$100\theta_{s,eq}$	0.4490	$0.4487^{+0.0089}_{-0.0089}$
$\Omega_c h^2$	0.12025	$0.1205^{+0.0041}_{-0.0040}$	$\sigma_8 \Omega_m^{0.25}$	0.6626	$0.643^{+0.038}_{-0.045}$	$H(0.15)$	88.7	$81.8^{+7.7}_{-10}$
$100\theta_{MC}$	1.04088	$1.04080^{+0.00092}_{-0.00093}$	$\sigma_8/h^{0.5}$	1.077	$1.045^{+0.060}_{-0.067}$	$D_M(0.15)$	481	$547^{+100}_{-70}$
$\tau$	0.0523	$0.052^{+0.015}_{-0.016}$	$r_{drag}h$	147.1	$125^{+20}_{-30}$	$H(0.38)$	84.31	$84.0^{+2.1}_{-2.1}$
$w_0$	-1.97	$-1.56^{+0.60}_{-0.48}$	$\langle d^2 \rangle^{1/2}$	2.528	$2.504^{+0.086}_{-0.096}$	$D_M(0.38)$	1288	$1386^{+200}_{-100}$
$\ln(10^{10} A_s)$	3.0403	$3.039^{+0.032}_{-0.033}$	$z_{re}$	7.44	$7.4^{+1.5}_{-1.7}$	$H(0.51)$	86.62	$88.1^{+1.9}_{-2.2}$
$n_s$	0.9647	$0.963^{+0.011}_{-0.011}$	$10^9 A_s$	2.091	$2.088^{+0.067}_{-0.067}$	$D_M(0.51)$	1745	$1840^{+170}_{-120}$
$y_{cal}$	1.00031	$1.0004^{+0.0048}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	1.8835	$1.884^{+0.026}_{-0.026}$	$H(0.61)$	90.06	$92.4^{+2.9}_{-2.8}$
$A_{217}^{CIB}$	48.3	$48^{+10}_{-10}$	$D_{40}$	1225.0	$1230^{+31}_{-29}$	$D_M(0.61)$	2085	$2172^{+160}_{-110}$
$\xi^{tSZ \times CIB}$	0.38	—	$D_{220}$	5717	$5716^{+81}_{-80}$	$H(2.33)$	230.54	$232.3^{+5.3}_{-4.4}$
$A_{143}^{tSZ}$	6.98	$5.1^{+3.8}_{-3.9}$	$D_{810}$	2537.0	$2535^{+27}_{-26}$	$D_M(2.33)$	5737.5	$5750^{+44}_{-42}$
$A_{100}^{PS}$	253	$263^{+60}_{-60}$	$D_{1420}$	815.4	$814.0^{+9.9}_{-9.6}$	$f\sigma_8(0.15)$	0.5108	$0.491^{+0.043}_{-0.041}$
$A_{143}^{PS}$	49.1	$49^{+20}_{-20}$	$D_{2000}$	230.40	$229.7^{+3.6}_{-3.4}$	$\sigma_8(0.15)$	1.015	$0.90^{+0.13}_{-0.16}$
$A_{143 \times 217}^{PS}$	47.5	$43^{+20}_{-20}$	$n_{s,0.002}$	0.9647	$0.963^{+0.011}_{-0.011}$	$f\sigma_8(0.38)$	0.648	$0.574^{+0.094}_{-0.11}$
$A_{217}^{PS}$	119.3	$115^{+20}_{-20}$	$Y_P$	0.245335	$0.24530^{+0.00018}_{-0.00020}$	$\sigma_8(0.38)$	0.908	$0.80^{+0.12}_{-0.15}$
$A^{kSZ}$	0.00	< 8.41	$Y_P^{BBN}$	0.246661	$0.24663^{+0.00018}_{-0.00020}$	$f\sigma_8(0.51)$	0.680	$0.59^{+0.11}_{-0.13}$
$A_{100}^{dustTT}$	8.88	$8.9^{+3.6}_{-3.5}$	$10^5 D/H$	2.614	$2.627^{+0.084}_{-0.079}$	$\sigma_8(0.51)$	0.849	$0.75^{+0.11}_{-0.14}$
$A_{143}^{dustTT}$	10.76	$10.7^{+3.5}_{-3.5}$	Age/Gyr	13.451	$13.59^{+0.26}_{-0.19}$	$f\sigma_8(0.61)$	0.685	$0.59^{+0.11}_{-0.13}$
$A_{143 \times 217}^{dustTT}$	19.3	$18.2^{+6.4}_{-6.4}$	$z_*$	1090.13	$1090.24^{+0.81}_{-0.77}$	$\sigma_8(0.61)$	0.805	$0.71^{+0.10}_{-0.13}$
$A_{217}^{dustTT}$	94.5	$93^{+10}_{-10}$	$r_*$	144.48	$144.48^{+0.93}_{-0.93}$	$f\sigma_8(2.33)$	0.401	$0.357^{+0.048}_{-0.064}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04108	$1.04101^{+0.00091}_{-0.00092}$	$\sigma_8(2.33)$	0.401	$0.360^{+0.045}_{-0.058}$
$c_{217}$	0.99823	$0.9982^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.878	$13.879^{+0.087}_{-0.086}$	$f_{2000}^{143}$	29.7	$31^{+6}_{-6}$
$H_0$	99.9	> 66.7	$z_{drag}$	1059.63	$1059.46^{+0.89}_{-0.90}$	$f_{2000}^{143 \times 217}$	32.74	$33^{+4}_{-4}$
$\Omega_\Lambda$	0.857	$0.792^{+0.069}_{-0.12}$	$r_{drag}$	147.19	$147.22^{+0.95}_{-0.93}$	$f_{2000}^{217}$	107.21	$107.9^{+3.8}_{-3.7}$
$\Omega_m$	0.143	$0.208^{+0.12}_{-0.069}$	$k_D$	0.14065	$0.1406^{+0.0010}_{-0.0010}$	$\chi_{small}^2$	395.73	396.8 ( $\nu$ : 1.2)
$\Omega_m h^2$	0.14312	$0.1433^{+0.0040}_{-0.0038}$	$100\theta_D$	0.16095	$0.16104^{+0.00053}_{-0.00052}$	$\chi_{lowl}^2$	22.64	23.2 ( $\nu$ : 0.7)
$\Omega_m h^3$	0.1430	$0.122^{+0.023}_{-0.028}$	$z_{eq}$	3405	$3408^{+95}_{-91}$	$\chi_{plik}^2$	756.6	770.0 ( $\nu$ : 14.7)
$\sigma_8$	1.077	$0.96^{+0.13}_{-0.17}$	$k_{eq}$	0.010392	$0.01040^{+0.00029}_{-0.00028}$	$\chi_{prior}^2$	1.3	7.2 ( $\nu$ : 6.6)
$S_8$	0.744	$0.787^{+0.073}_{-0.065}$	$100\theta_{eq}$	0.8124	$0.812^{+0.017}_{-0.017}$	$\chi_{CMB}^2$	1175.0	1190.0 ( $\nu$ : 16.0)

Best-fit  $\chi_{eff}^2 = 1176.30$ ;  $\Delta\chi_{eff}^2 = -3.28$ ;  $\bar{\chi}_{eff}^2 = 1197.21$ ;  $\Delta\bar{\chi}_{eff}^2 = -2.37$ ;  $R - 1 = 0.00888$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.73 ( $\Delta$  -0.14) commander\_dx12\_v3\_2\_29: 22.64 ( $\Delta$  -0.96) plik\_rd12\_HM\_v22\_TT: 756.63 ( $\Delta$  -2.12)

## 17.2 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022274	$0.02221^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	0.6517	$0.635^{+0.028}_{-0.032}$	$D_M(0.15)$	479	$543^{+100}_{-70}$
$\Omega_c h^2$	0.11880	$0.1193^{+0.0032}_{-0.0030}$	$\sigma_8/h^{0.5}$	1.0622	$1.034^{+0.043}_{-0.051}$	$H(0.38)$	84.97	$84.4^{+1.9}_{-2.1}$
$100\theta_{MC}$	1.04098	$1.04092^{+0.00086}_{-0.00091}$	$r_{drag}h$	147.4	$126^{+20}_{-30}$	$D_M(0.38)$	1280	$1378^{+200}_{-100}$
$\tau$	0.0519	$0.051^{+0.015}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.500	$2.482^{+0.055}_{-0.062}$	$H(0.51)$	87.18	$88.5^{+1.5}_{-1.8}$
$w_0$	-1.928	$-1.54^{+0.55}_{-0.43}$	$z_{re}$	7.37	$7.3^{+1.5}_{-1.6}$	$D_M(0.51)$	1734	$1829^{+160}_{-110}$
$\ln(10^{10} A_s)$	3.0353	$3.034^{+0.029}_{-0.030}$	$10^9 A_s$	2.081	$2.079^{+0.061}_{-0.062}$	$H(0.61)$	90.51	$92.7^{+2.6}_{-2.5}$
$n_s$	0.9676	$0.9654^{+0.0095}_{-0.0098}$	$10^9 A_s e^{-2\tau}$	1.8757	$1.878^{+0.022}_{-0.022}$	$D_M(0.61)$	2072	$2161^{+160}_{-110}$
$y_{cal}$	1.00002	$1.0002^{+0.0048}_{-0.0047}$	$D_{40}$	1217.1	$1223^{+27}_{-25}$	$H(2.33)$	229.51	$231.5^{+5.2}_{-3.8}$
$A_{217}^{CIB}$	48.5	$48^{+10}_{-10}$	$D_{220}$	5718	$5718^{+81}_{-78}$	$D_M(2.33)$	5729.4	$5743^{+43}_{-39}$
$\xi^{tSZ \times CIB}$	0.32	—	$D_{810}$	2533.5	$2533^{+25}_{-25}$	$f\sigma_8(0.15)$	0.4978	$0.482^{+0.029}_{-0.029}$
$A_{143}^{tSZ}$	7.03	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	815.1	$814.1^{+9.9}_{-9.5}$	$\sigma_8(0.15)$	1.001	$0.89^{+0.12}_{-0.15}$
$A_{100}^{PS}$	253	$263^{+60}_{-60}$	$D_{2000}$	230.24	$229.7^{+3.6}_{-3.3}$	$f\sigma_8(0.38)$	0.632	$0.564^{+0.078}_{-0.091}$
$A_{143}^{PS}$	48.2	$48^{+20}_{-20}$	$n_{s,0.002}$	0.9676	$0.9654^{+0.0095}_{-0.0098}$	$\sigma_8(0.38)$	0.898	$0.80^{+0.11}_{-0.14}$
$A_{143 \times 217}^{PS}$	46.0	$43^{+20}_{-20}$	$Y_P$	0.245357	$0.24533^{+0.00016}_{-0.00019}$	$f\sigma_8(0.51)$	0.664	$0.581^{+0.092}_{-0.11}$
$A_{217}^{PS}$	118.6	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246683	$0.24665^{+0.00016}_{-0.00019}$	$\sigma_8(0.51)$	0.839	$0.75^{+0.10}_{-0.13}$
$A^{kSZ}$	0.01	$< 8.34$	$10^5 D/H$	2.604	$2.617^{+0.077}_{-0.076}$	$f\sigma_8(0.61)$	0.671	$0.583^{+0.097}_{-0.12}$
$A_{100}^{dustTT}$	8.97	$9.0^{+3.6}_{-3.7}$	Age/Gyr	13.437	$13.58^{+0.26}_{-0.18}$	$\sigma_8(0.61)$	0.797	$0.709^{+0.094}_{-0.12}$
$A_{143}^{dustTT}$	10.84	$10.7^{+3.5}_{-3.5}$	$z_*$	1089.93	$1090.07^{+0.70}_{-0.69}$	$f\sigma_8(2.33)$	0.397	$0.356^{+0.045}_{-0.059}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.3}_{-6.4}$	$r_*$	144.82	$144.73^{+0.71}_{-0.76}$	$\sigma_8(2.33)$	0.3980	$0.359^{+0.042}_{-0.054}$
$A_{217}^{dustTT}$	94.5	$93^{+10}_{-10}$	$100\theta_*$	1.04117	$1.04112^{+0.00085}_{-0.00088}$	$f_{2000}^{143}$	29.8	$31^{+6}_{-6}$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.909	$13.901^{+0.067}_{-0.070}$	$f_{2000}^{143 \times 217}$	32.73	$33^{+4}_{-4}$
$c_{217}$	0.99825	$0.9983^{+0.0013}_{-0.0013}$	$z_{drag}$	1059.63	$1059.51^{+0.88}_{-0.87}$	$f_{2000}^{217}$	107.17	$107.8^{+3.8}_{-3.6}$
$H_0$	99.9	$> 67.7$	$r_{drag}$	147.52	$147.45^{+0.74}_{-0.78}$	$\chi_{lensing}^2$	8.41	$9.0 (\nu: 0.7)$
$\Omega_\Lambda$	0.858	$0.796^{+0.067}_{-0.11}$	$k_D$	0.14034	$0.14036^{+0.00090}_{-0.00090}$	$\chi_{small}^2$	395.65	$396.6 (\nu: 0.9)$
$\Omega_m$	0.142	$0.204^{+0.11}_{-0.067}$	$100\theta_D$	0.16094	$0.16101^{+0.00051}_{-0.00051}$	$\chi_{lowl}^2$	22.16	$22.74 (\nu: 0.4)$
$\Omega_m h^2$	0.14172	$0.1422^{+0.0031}_{-0.0029}$	$z_{eq}$	3371	$3382^{+73}_{-68}$	$\chi_{plik}^2$	757.7	$770.3 (\nu: 13.9)$
$\Omega_m h^3$	0.1416	$0.121^{+0.021}_{-0.026}$	$k_{eq}$	0.010289	$0.01032^{+0.00022}_{-0.00021}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.8)$
$\sigma_8$	1.062	$0.95^{+0.12}_{-0.15}$	$100\theta_{eq}$	0.8187	$0.816^{+0.013}_{-0.014}$	$\chi_{CMB}^2$	1183.9	$1198.7 (\nu: 15.7)$
$S_8$	0.730	$0.774^{+0.069}_{-0.058}$	$100\theta_{s,eq}$	0.4523	$0.4512^{+0.0068}_{-0.0070}$			
$\sigma_8 \Omega_m^{0.5}$	0.4000	$0.424^{+0.038}_{-0.032}$	$H(0.15)$	89.2	$82.3^{+7.6}_{-10}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.20$ ;  $\Delta\chi_{\text{eff}}^2 = -3.37$ ;  $\bar{\chi}_{\text{eff}}^2 = 1205.98$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -2.44$ ;  $R - 1 = 0.01136$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.41 ( $\Delta$  -0.49) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.65 ( $\Delta$  -0.21) commander\_dx12\_v3\_2\_29: 22.16 ( $\Delta$  -1.07) plik\_rd12\_HM\_v22\_TT: 757.66 ( $\Delta$  -1.66)

### 17.3 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02216^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.431^{+0.040}_{-0.035}$	$100\theta_{\mathrm{s,eq}}$	$0.4489^{+0.0088}_{-0.0089}$
$\Omega_{\mathrm{c}} h^2$	$0.1204^{+0.0041}_{-0.0040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.644^{+0.038}_{-0.045}$	$H(0.15)$	$81.8^{+7.7}_{-10}$
$100\theta_{\mathrm{MC}}$	$1.04082^{+0.00091}_{-0.00093}$	$\sigma_8/h^{0.5}$	$1.046^{+0.059}_{-0.067}$	$D_{\mathrm{M}}(0.15)$	$546^{+100}_{-70}$
$\tau$	$0.053^{+0.012}_{-0.011}$	$r_{\mathrm{drag}} h$	$125^{+20}_{-30}$	$H(0.38)$	$84.0^{+2.1}_{-2.1}$
$w_0$	$-1.56^{+0.60}_{-0.48}$	$\langle d^2 \rangle^{1/2}$	$2.507^{+0.085}_{-0.094}$	$D_{\mathrm{M}}(0.38)$	$1385^{+200}_{-100}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.027}_{-0.025}$	$z_{\mathrm{re}}$	$< 8.71$	$H(0.51)$	$88.1^{+1.9}_{-2.2}$
$n_{\mathrm{s}}$	$0.963^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.057}_{-0.052}$	$D_{\mathrm{M}}(0.51)$	$1839^{+170}_{-120}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0048}_{-0.0048}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883^{+0.026}_{-0.026}$	$H(0.61)$	$92.4^{+2.9}_{-2.8}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1230^{+31}_{-29}$	$D_{\mathrm{M}}(0.61)$	$2171^{+160}_{-110}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5716^{+82}_{-80}$	$H(2.33)$	$232.3^{+5.2}_{-4.3}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{810}$	$2535^{+27}_{-26}$	$D_{\mathrm{M}}(2.33)$	$5750^{+44}_{-42}$
$A_{100}^{\mathrm{PS}}$	$262^{+60}_{-50}$	$D_{1420}$	$814^{+10}_{-9.5}$	$f\sigma_8(0.15)$	$0.492^{+0.043}_{-0.041}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$D_{2000}$	$229.8^{+3.5}_{-3.3}$	$\sigma_8(0.15)$	$0.90^{+0.13}_{-0.16}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.963^{+0.011}_{-0.011}$	$f\sigma_8(0.38)$	$0.574^{+0.094}_{-0.11}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00018}_{-0.00019}$	$\sigma_8(0.38)$	$0.80^{+0.12}_{-0.15}$
$A^{\mathrm{kSZ}}$	$< 8.39$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00018}_{-0.00020}$	$f\sigma_8(0.51)$	$0.59^{+0.11}_{-0.13}$
$A_{100}^{\mathrm{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.626^{+0.083}_{-0.079}$	$\sigma_8(0.51)$	$0.75^{+0.11}_{-0.14}$
$A_{143}^{\mathrm{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.59^{+0.26}_{-0.19}$	$f\sigma_8(0.61)$	$0.59^{+0.11}_{-0.13}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.2^{+6.4}_{-6.4}$	$z_*$	$1090.22^{+0.81}_{-0.77}$	$\sigma_8(0.61)$	$0.71^{+0.10}_{-0.13}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$r_*$	$144.50^{+0.92}_{-0.93}$	$f\sigma_8(2.33)$	$0.358^{+0.048}_{-0.064}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$100\theta_*$	$1.04102^{+0.00090}_{-0.00092}$	$\sigma_8(2.33)$	$0.361^{+0.045}_{-0.058}$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.880^{+0.086}_{-0.086}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$H_0$	$> 66.8$	$z_{\mathrm{drag}}$	$1059.47^{+0.88}_{-0.91}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$\Omega_{\Lambda}$	$0.792^{+0.069}_{-0.12}$	$r_{\mathrm{drag}}$	$147.23^{+0.93}_{-0.93}$	$f_{2000}^{217}$	$107.9^{+3.8}_{-3.7}$
$\Omega_{\mathrm{m}}$	$0.208^{+0.12}_{-0.069}$	$k_{\mathrm{D}}$	$0.1406^{+0.0010}_{-0.0010}$	$\chi_{\mathrm{simall}}^2$	$396.6 (\nu: 1.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1432^{+0.0039}_{-0.0038}$	$100\theta_{\mathrm{D}}$	$0.16103^{+0.00052}_{-0.00051}$	$\chi_{\mathrm{lowl}}^2$	$23.2 (\nu: 0.7)$
$\Omega_{\mathrm{m}} h^3$	$0.122^{+0.022}_{-0.027}$	$z_{\mathrm{eq}}$	$3406^{+94}_{-90}$	$\chi_{\mathrm{plik}}^2$	$769.8 (\nu: 14.6)$
$\sigma_8$	$0.96^{+0.13}_{-0.17}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00029}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	$7.2 (\nu: 6.6)$
$S_8$	$0.787^{+0.072}_{-0.064}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.017}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	$1189.7 (\nu: 15.5)$

$\bar{\chi}_{\mathrm{eff}}^2 = 1196.88$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.44$ ;  $R - 1 = 0.00979$



## 17.4 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02222^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	$0.635^{+0.028}_{-0.032}$	$D_M(0.15)$	$544^{+100}_{-70}$
$\Omega_c h^2$	$0.1191^{+0.0031}_{-0.0029}$	$\sigma_8/h^{0.5}$	$1.034^{+0.043}_{-0.052}$	$H(0.38)$	$84.5^{+1.9}_{-2.1}$
$100\theta_{MC}$	$1.04094^{+0.00086}_{-0.00090}$	$r_{\text{drag}} h$	$126^{+20}_{-30}$	$D_M(0.38)$	$1378^{+200}_{-100}$
$\tau$	$0.053^{+0.012}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	$2.483^{+0.055}_{-0.061}$	$H(0.51)$	$88.6^{+1.5}_{-1.8}$
$w_0$	$-1.53^{+0.55}_{-0.43}$	$z_{\text{re}}$	$< 8.57$	$D_M(0.51)$	$1830^{+170}_{-110}$
$\ln(10^{10} A_s)$	$3.038^{+0.024}_{-0.022}$	$10^9 A_s$	$2.087^{+0.050}_{-0.046}$	$H(0.61)$	$92.8^{+2.5}_{-2.5}$
$n_s$	$0.9659^{+0.0093}_{-0.0097}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.022}_{-0.021}$	$D_M(0.61)$	$2161^{+160}_{-110}$
$y_{\text{cal}}$	$1.0002^{+0.0049}_{-0.0047}$	$D_{40}$	$1223^{+27}_{-25}$	$H(2.33)$	$231.4^{+5.3}_{-3.8}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{220}$	$5718^{+82}_{-79}$	$D_M(2.33)$	$5742^{+43}_{-40}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2533^{+26}_{-25}$	$f\sigma_8(0.15)$	$0.481^{+0.029}_{-0.028}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{1420}$	$814^{+10}_{-9.4}$	$\sigma_8(0.15)$	$0.89^{+0.12}_{-0.15}$
$A_{100}^{\text{PS}}$	$262^{+50}_{-60}$	$D_{2000}$	$229.8^{+3.6}_{-3.3}$	$f\sigma_8(0.38)$	$0.563^{+0.079}_{-0.091}$
$A_{143}^{\text{PS}}$	$48^{+20}_{-20}$	$n_{s,0.002}$	$0.9659^{+0.0093}_{-0.0097}$	$\sigma_8(0.38)$	$0.80^{+0.11}_{-0.14}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_P$	$0.24533^{+0.00016}_{-0.00018}$	$f\sigma_8(0.51)$	$0.580^{+0.093}_{-0.11}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24666^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	$0.75^{+0.10}_{-0.13}$
$A^{\text{kSZ}}$	$< 8.29$	$10^5 D/H$	$2.615^{+0.077}_{-0.076}$	$f\sigma_8(0.61)$	$0.582^{+0.097}_{-0.12}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.7}$	Age/Gyr	$13.58^{+0.26}_{-0.18}$	$\sigma_8(0.61)$	$0.709^{+0.095}_{-0.12}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$z_*$	$1090.04^{+0.68}_{-0.67}$	$f\sigma_8(2.33)$	$0.356^{+0.045}_{-0.059}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.3}_{-6.4}$	$r_*$	$144.77^{+0.70}_{-0.73}$	$\sigma_8(2.33)$	$0.359^{+0.042}_{-0.054}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04114^{+0.00084}_{-0.00088}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.065}_{-0.068}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$c_{217}$	$0.9983^{+0.0013}_{-0.0013}$	$z_{\text{drag}}$	$1059.52^{+0.91}_{-0.89}$	$f_{2000}^{217}$	$107.8^{+3.8}_{-3.7}$
$H_0$	$> 67.4$	$r_{\text{drag}}$	$147.49^{+0.72}_{-0.76}$	$\chi_{\text{lensing}}^2$	$9.1 (\nu: 0.7)$
$\Omega_\Lambda$	$0.795^{+0.068}_{-0.11}$	$k_D$	$0.14033^{+0.00090}_{-0.00088}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.7)$
$\Omega_m$	$0.205^{+0.11}_{-0.068}$	$100\theta_D$	$0.16100^{+0.00051}_{-0.00051}$	$\chi_{\text{lowl}}^2$	$22.70 (\nu: 0.4)$
$\Omega_m h^2$	$0.1420^{+0.0029}_{-0.0028}$	$z_{\text{eq}}$	$3378^{+70}_{-67}$	$\chi_{\text{plik}}^2$	$770.2 (\nu: 14.2)$
$\Omega_m h^3$	$0.121^{+0.021}_{-0.026}$	$k_{\text{eq}}$	$0.01031^{+0.00021}_{-0.00020}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.95^{+0.12}_{-0.15}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.013}$	$\chi_{\text{CMB}}^2$	$1198.3 (\nu: 15.3)$
$S_8$	$0.774^{+0.070}_{-0.059}$	$100\theta_{s,\text{eq}}$	$0.4516^{+0.0066}_{-0.0068}$		
$\sigma_8 \Omega_m^{0.5}$	$0.424^{+0.038}_{-0.032}$	$H(0.15)$	$82.2^{+7.7}_{-10}$		

$$\bar{\chi}_{\text{eff}}^2 = 1205.67; \Delta \bar{\chi}_{\text{eff}}^2 = -2.49; R - 1 = 0.01511$$



## 17.6 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022465	$0.02243^{+0.00030}_{-0.00028}$	$\Omega_m h^3$	0.1420	$0.123^{+0.020}_{-0.024}$	$100\theta_{s,eq}$	0.4514	$0.4508^{+0.0050}_{-0.0051}$
$\Omega_c h^2$	0.11907	$0.1193^{+0.0024}_{-0.0023}$	$\sigma_8$	1.062	$0.96^{+0.11}_{-0.14}$	$H(0.15)$	89.2	$83.0^{+6.8}_{-8.9}$
$100\theta_{MC}$	1.04100	$1.04099^{+0.00060}_{-0.00062}$	$S_8$	0.732	$0.771^{+0.059}_{-0.049}$	$D_M(0.15)$	479	$537^{+90}_{-60}$
$\tau$	0.0523	$0.052^{+0.015}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4011	$0.422^{+0.032}_{-0.027}$	$H(0.38)$	85.07	$84.7^{+1.4}_{-1.6}$
$w_0$	-1.925	$-1.57^{+0.50}_{-0.40}$	$\sigma_8 \Omega_m^{0.25}$	0.6528	$0.637^{+0.025}_{-0.029}$	$D_M(0.38)$	1280	$1366^{+140}_{-96}$
$\ln(10^{10} A_s)$	3.0373	$3.038^{+0.030}_{-0.029}$	$\sigma_8/h^{0.5}$	1.0631	$1.037^{+0.039}_{-0.046}$	$H(0.51)$	87.31	$88.6^{+1.4}_{-1.6}$
$n_s$	0.9683	$0.9666^{+0.0078}_{-0.0083}$	$r_{drag} h$	147.0	$127^{+20}_{-20}$	$D_M(0.51)$	1733	$1816^{+140}_{-97}$
$y_{cal}$	1.00007	$1.0003^{+0.0049}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.502	$2.485^{+0.050}_{-0.057}$	$H(0.61)$	90.65	$92.7^{+2.6}_{-2.3}$
$A_{217}^{CIB}$	46.3	$47^{+10}_{-10}$	$z_{re}$	7.37	$7.4^{+1.5}_{-1.6}$	$D_M(0.61)$	2071	$2147^{+130}_{-93}$
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s$	2.085	$2.087^{+0.062}_{-0.059}$	$H(2.33)$	229.89	$231.5^{+4.1}_{-2.9}$
$A_{143}^{tSZ}$	7.18	$5.5^{+3.9}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8779	$1.879^{+0.022}_{-0.021}$	$D_M(2.33)$	5721.7	$5731^{+30}_{-29}$
$A_{100}^{PS}$	248	$257^{+60}_{-50}$	$D_{40}$	1217.3	$1223^{+24}_{-23}$	$f\sigma_8(0.15)$	0.4987	$0.483^{+0.025}_{-0.026}$
$A_{143}^{PS}$	48.5	$45^{+20}_{-20}$	$D_{220}$	5730	$5734^{+76}_{-74}$	$\sigma_8(0.15)$	1.002	$0.90^{+0.11}_{-0.14}$
$A_{143 \times 217}^{PS}$	50.3	$42^{+20}_{-20}$	$D_{810}$	2536.5	$2536^{+26}_{-26}$	$f\sigma_8(0.38)$	0.632	$0.569^{+0.073}_{-0.085}$
$A_{217}^{PS}$	120.5	$115^{+20}_{-20}$	$D_{1420}$	817.3	$816.6^{+9.3}_{-9.4}$	$\sigma_8(0.38)$	0.898	$0.806^{+0.099}_{-0.13}$
$A^{kSZ}$	0.00	$< 7.88$	$D_{2000}$	231.36	$230.9^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	0.664	$0.587^{+0.086}_{-0.10}$
$A_{100}^{dustTT}$	8.81	$9.0^{+3.6}_{-3.6}$	$n_{s,0.002}$	0.9683	$0.9666^{+0.0078}_{-0.0083}$	$\sigma_8(0.51)$	0.840	$0.755^{+0.092}_{-0.12}$
$A_{143}^{dustTT}$	11.06	$10.9^{+3.4}_{-3.6}$	$Y_P$	0.245432	$0.24542^{+0.00011}_{-0.00011}$	$f\sigma_8(0.61)$	0.671	$0.590^{+0.090}_{-0.11}$
$A_{143 \times 217}^{dustTT}$	20.1	$18.6^{+6.3}_{-6.6}$	$Y_P^{BBN}$	0.246758	$0.24674^{+0.00011}_{-0.00011}$	$\sigma_8(0.61)$	0.797	$0.717^{+0.087}_{-0.11}$
$A_{217}^{dustTT}$	95.3	$94^{+10}_{-10}$	$10^5 D/H$	2.568	$2.576^{+0.053}_{-0.054}$	$f\sigma_8(2.33)$	0.3974	$0.360^{+0.041}_{-0.054}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.073}$	Age/Gyr	13.420	$13.54^{+0.21}_{-0.15}$	$\sigma_8(2.33)$	0.3981	$0.362^{+0.038}_{-0.049}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.058}_{-0.057}$	$z_*$	1089.72	$1089.79^{+0.50}_{-0.51}$	$f_{2000}^{143}$	28.3	$29^{+6}_{-5}$
$A_{100 \times 217}^{dustTE}$	0.484	$0.48^{+0.17}_{-0.16}$	$r_*$	144.60	$144.56^{+0.51}_{-0.53}$	$f_{2000}^{143 \times 217}$	31.58	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	0.223	$0.23^{+0.11}_{-0.10}$	$100\theta_*$	1.04118	$1.04117^{+0.00059}_{-0.00061}$	$f_{2000}^{217}$	106.15	$106.8^{+3.5}_{-3.4}$
$A_{143 \times 217}^{dustTE}$	0.665	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	13.8880	$13.885^{+0.047}_{-0.050}$	$\chi^2_{lensing}$	8.68	$9.0 (\nu: 0.6)$
$A_{217}^{dustTE}$	2.08	$2.07^{+0.54}_{-0.53}$	$z_{drag}$	1060.09	$1060.02^{+0.60}_{-0.58}$	$\chi^2_{small}$	396	$1325 (\nu: 479409.9)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.23	$147.21^{+0.51}_{-0.52}$	$\chi^2_{lowl}$	22.13	$22.59 (\nu: 0.3)$
$c_{217}$	0.99818	$0.9982^{+0.0013}_{-0.0012}$	$k_D$	0.14079	$0.14079^{+0.00057}_{-0.00057}$	$\chi^2_{plik}$	2342	$1430 (\nu: 479481.8)$
$H_0$	99.9	$> 70.4$	$100\theta_D$	0.160670	$0.16072^{+0.00034}_{-0.00035}$	$\chi^2_{prior}$	1.6	$11.6 (\nu: 10.3)$
$\Omega_\Lambda$	0.857	$0.803^{+0.058}_{-0.093}$	$z_{eq}$	3382	$3388^{+54}_{-51}$	$\chi^2_{CMB}$	2768.9	$2786.1 (\nu: 18.1)$
$\Omega_m$	0.143	$0.197^{+0.093}_{-0.058}$	$k_{eq}$	0.010323	$0.01034^{+0.00016}_{-0.00016}$			
$\Omega_m h^2$	0.14218	$0.1424^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	0.8172	$0.8162^{+0.0098}_{-0.010}$			

Best-fit  $\chi^2_{eff} = 2770.54$ ;  $\Delta\chi^2_{eff} = -4.10$ ;  $\bar{\chi}^2_{eff} = 2797.72$ ;  $\Delta\bar{\chi}^2_{eff} = -2.97$ ;  $R - 1 = 0.01426$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.68 ( $\Delta$  -0.19) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.65 ( $\Delta$  -0.40) commander\_dx12\_v3\_2\_29: 22.13 ( $\Delta$  -1.12) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.46 ( $\Delta$  -2.47)

## 17.7 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00030}_{-0.00028}$	$\Omega_m h^2$	$0.1429^{+0.0025}_{-0.0024}$	$k_{\text{eq}}$	$0.01038^{+0.00018}_{-0.00018}$
$\Omega_c h^2$	$0.1199^{+0.0026}_{-0.0026}$	$\Omega_m h^3$	$0.124^{+0.020}_{-0.025}$	$100\theta_{\text{eq}}$	$0.814^{+0.011}_{-0.011}$
$100\theta_{\text{MC}}$	$1.04094^{+0.00062}_{-0.00061}$	$\sigma_8$	$0.97^{+0.11}_{-0.15}$	$100\theta_{\text{s,eq}}$	$0.4496^{+0.0057}_{-0.0057}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$S_8$	$0.778^{+0.061}_{-0.051}$	$H(0.15)$	$82.9^{+6.7}_{-9.1}$
$w_0$	$-1.58^{+0.53}_{-0.41}$	$\sigma_8 \Omega_m^{0.5}$	$0.426^{+0.033}_{-0.028}$	$D_{\text{M}}(0.15)$	$537^{+90}_{-60}$
$\ln(10^{10} A_s)$	$3.046^{+0.029}_{-0.026}$	$\sigma_8 \Omega_m^{0.25}$	$0.643^{+0.030}_{-0.034}$	$H(0.38)$	$84.5^{+1.5}_{-1.6}$
$n_s$	$0.9656^{+0.0083}_{-0.0084}$	$\sigma_8/h^{0.5}$	$1.046^{+0.046}_{-0.054}$	$D_{\text{M}}(0.38)$	$1368^{+140}_{-95}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0048}$	$r_{\text{drag}} h$	$127^{+20}_{-30}$	$H(0.51)$	$88.4^{+1.6}_{-1.8}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.504^{+0.066}_{-0.069}$	$D_{\text{M}}(0.51)$	$1819^{+140}_{-96}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.92$	$H(0.61)$	$92.5^{+2.8}_{-2.4}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$10^9 A_s$	$2.103^{+0.060}_{-0.054}$	$D_{\text{M}}(0.61)$	$2151^{+140}_{-93}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.023}_{-0.022}$	$H(2.33)$	$231.8^{+4.1}_{-3.1}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{40}$	$1227^{+25}_{-24}$	$D_{\text{M}}(2.33)$	$5735^{+30}_{-30}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5735^{+75}_{-74}$	$f\sigma_8(0.15)$	$0.489^{+0.030}_{-0.033}$
$A_{217}^{\text{PS}}$	$116^{+20}_{-20}$	$D_{810}$	$2538^{+27}_{-26}$	$\sigma_8(0.15)$	$0.91^{+0.11}_{-0.15}$
$A^{\text{kSZ}}$	$< 7.71$	$D_{1420}$	$816.9^{+9.4}_{-9.2}$	$f\sigma_8(0.38)$	$0.577^{+0.079}_{-0.093}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$D_{2000}$	$231.1^{+3.1}_{-3.0}$	$\sigma_8(0.38)$	$0.81^{+0.10}_{-0.13}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.4}_{-3.5}$	$n_{\text{s},0.002}$	$0.9656^{+0.0083}_{-0.0084}$	$f\sigma_8(0.51)$	$0.595^{+0.092}_{-0.11}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.4}_{-6.5}$	$Y_{\text{P}}$	$0.24540^{+0.00011}_{-0.00011}$	$\sigma_8(0.51)$	$0.761^{+0.095}_{-0.12}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24673^{+0.00011}_{-0.00011}$	$f\sigma_8(0.61)$	$0.597^{+0.095}_{-0.12}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$10^5 \text{D}/\text{H}$	$2.581^{+0.054}_{-0.053}$	$\sigma_8(0.61)$	$0.723^{+0.090}_{-0.12}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.057}$	$\text{Age}/\text{Gyr}$	$13.54^{+0.22}_{-0.15}$	$f\sigma_8(2.33)$	$0.362^{+0.042}_{-0.057}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$z_*$	$1089.88^{+0.53}_{-0.54}$	$\sigma_8(2.33)$	$0.365^{+0.040}_{-0.052}$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$r_*$	$144.44^{+0.58}_{-0.59}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$100\theta_*$	$1.04113^{+0.00061}_{-0.00061}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.874^{+0.054}_{-0.055}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.5}$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.99^{+0.59}_{-0.59}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.7)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.09^{+0.57}_{-0.58}$	$\chi_{\text{lowl}}^2$	$22.87 (\nu: 0.4)$
$H_0$	$> 69.8$	$k_{\text{D}}$	$0.14088^{+0.00062}_{-0.00061}$	$\chi_{\text{plik}}^2$	$2357.1 (\nu: 16.5)$
$\Omega_{\Lambda}$	$0.802^{+0.058}_{-0.098}$	$100\theta_{\text{D}}$	$0.16073^{+0.00034}_{-0.00034}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.1)$
$\Omega_{\text{m}}$	$0.198^{+0.098}_{-0.058}$	$z_{\text{eq}}$	$3400^{+59}_{-59}$	$\chi_{\text{CMB}}^2$	$2776.9 (\nu: 17.2)$

$$\bar{\chi}_{\text{eff}}^2 = 2788.38; \Delta \bar{\chi}_{\text{eff}}^2 = -3.15; R - 1 = 0.01060$$

# 17.8 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02243^{+0.00030}_{-0.00028}$	$\Omega_m h^3$	$0.123^{+0.020}_{-0.024}$	$100\theta_{s,eq}$	$0.4510^{+0.0049}_{-0.0050}$
$\Omega_c h^2$	$0.1192^{+0.0023}_{-0.0022}$	$\sigma_8$	$0.96^{+0.11}_{-0.14}$	$H(0.15)$	$82.9^{+6.9}_{-9.0}$
$100\theta_{MC}$	$1.04100^{+0.00060}_{-0.00061}$	$S_8$	$0.771^{+0.059}_{-0.050}$	$D_M(0.15)$	$537^{+90}_{-60}$
$\tau$	$0.054^{+0.012}_{-0.010}$	$\sigma_8 \Omega_m^{0.5}$	$0.422^{+0.032}_{-0.027}$	$H(0.38)$	$84.8^{+1.4}_{-1.6}$
$w_0$	$-1.56^{+0.50}_{-0.40}$	$\sigma_8 \Omega_m^{0.25}$	$0.637^{+0.025}_{-0.029}$	$D_M(0.38)$	$1367^{+140}_{-97}$
$\ln(10^{10} A_s)$	$3.041^{+0.025}_{-0.022}$	$\sigma_8/h^{0.5}$	$1.037^{+0.039}_{-0.046}$	$H(0.51)$	$88.7^{+1.4}_{-1.6}$
$n_s$	$0.9669^{+0.0076}_{-0.0080}$	$r_{drag} h$	$127^{+20}_{-20}$	$D_M(0.51)$	$1817^{+140}_{-98}$
$y_{cal}$	$1.0002^{+0.0049}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	$2.487^{+0.050}_{-0.056}$	$H(0.61)$	$92.8^{+2.5}_{-2.3}$
$A_{217}^{CIB}$	$46^{+10}_{-10}$	$z_{re}$	$< 8.65$	$D_M(0.61)$	$2148^{+140}_{-94}$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.093^{+0.052}_{-0.047}$	$H(2.33)$	$231.5^{+4.2}_{-2.9}$
$A_{143}^{tSZ}$	$5.5^{+3.9}_{-3.8}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.021}_{-0.021}$	$D_M(2.33)$	$5731^{+31}_{-29}$
$A_{100}^{PS}$	$257^{+60}_{-60}$	$D_{40}$	$1223^{+24}_{-22}$	$f\sigma_8(0.15)$	$0.483^{+0.025}_{-0.026}$
$A_{143}^{PS}$	$45^{+20}_{-20}$	$D_{220}$	$5733^{+75}_{-73}$	$\sigma_8(0.15)$	$0.90^{+0.11}_{-0.14}$
$A_{143 \times 217}^{PS}$	$42^{+20}_{-20}$	$D_{810}$	$2536^{+26}_{-26}$	$f\sigma_8(0.38)$	$0.568^{+0.073}_{-0.085}$
$A_{217}^{PS}$	$115^{+20}_{-20}$	$D_{1420}$	$816.5^{+9.3}_{-9.3}$	$\sigma_8(0.38)$	$0.81^{+0.10}_{-0.13}$
$A^{kSZ}$	$< 7.82$	$D_{2000}$	$231.0^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	$0.586^{+0.087}_{-0.10}$
$A_{100}^{dustTT}$	$9.0^{+3.6}_{-3.6}$	$n_{s,0.002}$	$0.9669^{+0.0076}_{-0.0080}$	$\sigma_8(0.51)$	$0.754^{+0.093}_{-0.12}$
$A_{143}^{dustTT}$	$10.9^{+3.3}_{-3.5}$	$Y_P$	$0.24542^{+0.00011}_{-0.00011}$	$f\sigma_8(0.61)$	$0.589^{+0.091}_{-0.11}$
$A_{143 \times 217}^{dustTT}$	$18.6^{+6.3}_{-6.6}$	$Y_P^{BBN}$	$0.24674^{+0.00011}_{-0.00011}$	$\sigma_8(0.61)$	$0.716^{+0.088}_{-0.11}$
$A_{217}^{dustTT}$	$94^{+10}_{-10}$	$10^5 D/H$	$2.574^{+0.053}_{-0.053}$	$f\sigma_8(2.33)$	$0.359^{+0.041}_{-0.054}$
$A_{100}^{dustTE}$	$0.114^{+0.076}_{-0.073}$	Age/Gyr	$13.54^{+0.22}_{-0.15}$	$\sigma_8(2.33)$	$0.362^{+0.039}_{-0.049}$
$A_{100 \times 143}^{dustTE}$	$0.135^{+0.058}_{-0.058}$	$z_*$	$1089.78^{+0.50}_{-0.50}$	$f_{2000}^{143}$	$29^{+6}_{-5}$
$A_{100 \times 217}^{dustTE}$	$0.48^{+0.17}_{-0.16}$	$r_*$	$144.58^{+0.49}_{-0.51}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143}^{dustTE}$	$0.23^{+0.11}_{-0.10}$	$100\theta_*$	$1.04118^{+0.00059}_{-0.00061}$	$f_{2000}^{217}$	$106.7^{+3.5}_{-3.4}$
$A_{143 \times 217}^{dustTE}$	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/\text{Gpc}$	$13.886^{+0.046}_{-0.048}$	$\chi_{lensing}^2$	$9.0 (\nu: 0.6)$
$A_{217}^{dustTE}$	$2.07^{+0.54}_{-0.54}$	$z_{drag}$	$1060.03^{+0.59}_{-0.59}$	$\chi_{simall}^2$	$1339 (\nu: 480033.5)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	$147.22^{+0.50}_{-0.51}$	$\chi_{lowl}^2$	$22.58 (\nu: 0.3)$
$c_{217}$	$0.9982^{+0.0013}_{-0.0012}$	$k_D$	$0.14077^{+0.00057}_{-0.00056}$	$\chi_{plik}^2$	$1416 (\nu: 480047.8)$
$H_0$	$> 70.1$	$100\theta_D$	$0.16071^{+0.00034}_{-0.00035}$	$\chi_{prior}^2$	$11.6 (\nu: 10.1)$
$\Omega_\Lambda$	$0.802^{+0.059}_{-0.094}$	$z_{eq}$	$3385^{+52}_{-50}$	$\chi_{CMB}^2$	$2785.8 (\nu: 17.6)$
$\Omega_m$	$0.198^{+0.094}_{-0.059}$	$k_{eq}$	$0.01033^{+0.00016}_{-0.00015}$		
$\Omega_m h^2$	$0.1423^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	$0.8166^{+0.0096}_{-0.0098}$		

$$\bar{\chi}_{\text{eff}}^2 = 2797.43; \Delta\bar{\chi}_{\text{eff}}^2 = -3.08; R - 1 = 0.01516$$

## 17.9 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022173	$0.02217^{+0.00040}_{-0.00039}$	$\sigma_8/h^{0.5}$	0.9895	$0.992^{+0.040}_{-0.040}$	$D_M(0.38)$	1524.8	$1522^{+32}_{-33}$
$\Omega_c h^2$	0.11961	$0.1197^{+0.0034}_{-0.0035}$	$r_{\text{drag}} h$	100.45	$100.9^{+4.6}_{-3.9}$	$H(0.51)$	89.54	$89.50^{+0.71}_{-0.79}$
$100\theta_{\text{MC}}$	1.04092	$1.04090^{+0.00086}_{-0.00086}$	$\langle d^2 \rangle^{1/2}$	2.441	$2.445^{+0.077}_{-0.079}$	$D_M(0.51)$	1977.2	$1974^{+33}_{-34}$
$\tau$	0.0528	$0.053^{+0.016}_{-0.015}$	$z_{\text{re}}$	7.56	$7.6^{+1.6}_{-1.6}$	$H(0.61)$	95.09	$95.02^{+0.83}_{-0.97}$
$w_0$	-1.027	$-1.04^{+0.13}_{-0.14}$	$10^9 A_s$	2.090	$2.091^{+0.070}_{-0.066}$	$D_M(0.61)$	2302.2	$2299^{+33}_{-33}$
$\ln(10^{10} A_s)$	3.0400	$3.040^{+0.033}_{-0.032}$	$10^9 A_s e^{-2\tau}$	1.8811	$1.880^{+0.025}_{-0.025}$	$H(2.33)$	235.70	$235.6^{+1.6}_{-1.6}$
$n_s$	0.9655	$0.965^{+0.010}_{-0.0099}$	$D_{40}$	1227.4	$1228^{+27}_{-27}$	$D_M(2.33)$	5768.2	$5768^{+23}_{-24}$
$y_{\text{cal}}$	1.00058	$1.0005^{+0.0049}_{-0.0048}$	$D_{220}$	5717	$5716^{+80}_{-79}$	$f\sigma_8(0.15)$	0.4594	$0.461^{+0.026}_{-0.026}$
$A_{217}^{\text{CIB}}$	49.6	$48^{+10}_{-10}$	$D_{810}$	2537.6	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	0.7551	$0.759^{+0.045}_{-0.043}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.21	—	$D_{1420}$	815.8	$815.0^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	0.4799	$0.483^{+0.036}_{-0.033}$
$A_{143}^{\text{tSZ}}$	6.99	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	230.04	$229.8^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	0.6694	$0.673^{+0.040}_{-0.038}$
$A_{100}^{\text{PS}}$	257	$263^{+60}_{-60}$	$n_{s,0.002}$	0.9655	$0.965^{+0.010}_{-0.0099}$	$f\sigma_8(0.51)$	0.4791	$0.482^{+0.037}_{-0.034}$
$A_{143}^{\text{PS}}$	48.2	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245315	$0.24531^{+0.00016}_{-0.00019}$	$\sigma_8(0.51)$	0.6263	$0.629^{+0.036}_{-0.035}$
$A_{143 \times 217}^{\text{PS}}$	43.9	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246641	$0.24664^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	0.4743	$0.477^{+0.038}_{-0.035}$
$A_{217}^{\text{PS}}$	117.7	$115^{+20}_{-20}$	$10^5 \text{D/H}$	2.623	$2.624^{+0.076}_{-0.074}$	$\sigma_8(0.61)$	0.5959	$0.599^{+0.034}_{-0.032}$
$A^{\text{kSZ}}$	0.1	—	Age/Gyr	13.799	$13.794^{+0.069}_{-0.068}$	$f\sigma_8(2.33)$	0.3004	$0.302^{+0.017}_{-0.016}$
$A_{100}^{\text{dustTT}}$	8.86	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.13	$1090.15^{+0.68}_{-0.70}$	$\sigma_8(2.33)$	0.3090	$0.310^{+0.014}_{-0.014}$
$A_{143}^{\text{dustTT}}$	10.82	$10.7^{+3.5}_{-3.5}$	$r_*$	144.68	$144.66^{+0.84}_{-0.82}$	$f_{2000}^{143}$	30.7	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.3	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	1.04113	$1.04110^{+0.00085}_{-0.00085}$	$f_{2000}^{143 \times 217}$	33.38	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.5	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.897	$13.895^{+0.078}_{-0.076}$	$f_{2000}^{217}$	107.87	$108.0^{+3.8}_{-3.7}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.44	$1059.45^{+0.83}_{-0.85}$	$\chi_{\text{small}}^2$	395.86	$397.0 (\nu: 1.6)$
$c_{217}$	0.99829	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.42	$147.40^{+0.85}_{-0.84}$	$\chi_{\text{lowl}}^2$	23.15	$23.3 (\nu: 0.5)$
$H_0$	68.14	$68.5^{+3.2}_{-2.8}$	$k_{\text{D}}$	0.14037	$0.14039^{+0.00093}_{-0.00096}$	$\chi_{\text{plik}}^2$	759.1	$771.5 (\nu: 15.6)$
$\Omega_{\Lambda}$	0.6933	$0.696^{+0.025}_{-0.024}$	$100\theta_{\text{D}}$	0.161047	$0.16105^{+0.00050}_{-0.00049}$	$\chi_{6\text{DF}}^2$	0.002	$0.13 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3067	$0.304^{+0.024}_{-0.025}$	$z_{\text{eq}}$	3388	$3390^{+79}_{-79}$	$\chi_{\text{MGS}}^2$	1.54	$1.9 (\nu: 0.5)$
$\Omega_{\text{m}} h^2$	0.14243	$0.1425^{+0.0033}_{-0.0033}$	$k_{\text{eq}}$	0.010341	$0.01035^{+0.00024}_{-0.00024}$	$\chi_{\text{DR12BAO}}^2$	4.36	$5.2 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	0.0971	$0.0976^{+0.0060}_{-0.0054}$	$100\theta_{\text{eq}}$	0.8153	$0.815^{+0.015}_{-0.015}$	$\chi_{\text{prior}}^2$	1.5	$7.3 (\nu: 6.9)$
$\sigma_8$	0.8168	$0.821^{+0.047}_{-0.045}$	$100\theta_{\text{s,eq}}$	0.4506	$0.4504^{+0.0078}_{-0.0075}$	$\chi_{\text{BAO}}^2$	5.90	$7.2 (\nu: 1.8)$
$S_8$	0.8260	$0.826^{+0.034}_{-0.033}$	$H(0.15)$	73.14	$73.3^{+1.8}_{-1.7}$	$\chi_{\text{CMB}}^2$	1178.1	$1191.8 (\nu: 15.4)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4524	$0.452^{+0.018}_{-0.018}$	$D_M(0.15)$	637.7	$636^{+20}_{-22}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6079	$0.609^{+0.027}_{-0.028}$	$H(0.38)$	82.94	$82.96^{+0.70}_{-0.67}$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.52$ ;  $\Delta\chi_{\text{eff}}^2 = -0.23$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.32$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.29$ ;  $R - 1 = 0.00799$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.54 ( $\Delta$  0.26) DR12BAO: 4.36 ( $\Delta$  0.18) CMB - simall.100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  -0.03) commander\_dx12\_v3\_2\_29: 23.15 ( $\Delta$  0.32) plik\_rd12\_HM\_v22.TT: 759.14 ( $\Delta$  -0.96)



17.11 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02217^{+0.00040}_{-0.00039}$	$\sigma_8/h^{0.5}$	$0.992^{+0.039}_{-0.039}$	$D_M(0.38)$	$1522^{+33}_{-33}$
$\Omega_c h^2$	$0.1197^{+0.0035}_{-0.0034}$	$r_{\text{drag}} h$	$100.9^{+4.5}_{-3.9}$	$H(0.51)$	$89.51^{+0.70}_{-0.78}$
$100\theta_{\text{MC}}$	$1.04091^{+0.00086}_{-0.00086}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.076}_{-0.078}$	$D_M(0.51)$	$1974^{+34}_{-34}$
$\tau$	$0.054^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 8.92$	$H(0.61)$	$95.03^{+0.86}_{-0.92}$
$w_0$	$-1.04^{+0.13}_{-0.14}$	$10^9 A_s$	$2.097^{+0.060}_{-0.055}$	$D_M(0.61)$	$2299^{+33}_{-33}$
$\ln(10^{10} A_s)$	$3.043^{+0.028}_{-0.027}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.025}_{-0.025}$	$H(2.33)$	$235.6^{+1.6}_{-1.6}$
$n_s$	$0.9651^{+0.0099}_{-0.010}$	$D_{40}$	$1229^{+27}_{-27}$	$D_M(2.33)$	$5768^{+23}_{-24}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0048}$	$D_{220}$	$5716^{+80}_{-79}$	$f\sigma_8(0.15)$	$0.461^{+0.026}_{-0.025}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	$0.759^{+0.045}_{-0.042}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.0^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	$0.483^{+0.035}_{-0.033}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	$229.8^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.673^{+0.040}_{-0.037}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-60}$	$n_{s,0.002}$	$0.9651^{+0.0099}_{-0.010}$	$f\sigma_8(0.51)$	$0.482^{+0.037}_{-0.034}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24531^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	$0.630^{+0.036}_{-0.035}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	$0.478^{+0.038}_{-0.035}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.623^{+0.075}_{-0.074}$	$\sigma_8(0.61)$	$0.599^{+0.034}_{-0.032}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.794^{+0.069}_{-0.067}$	$f\sigma_8(2.33)$	$0.302^{+0.017}_{-0.016}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.14^{+0.68}_{-0.69}$	$\sigma_8(2.33)$	$0.311^{+0.014}_{-0.013}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.67^{+0.83}_{-0.83}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.4}$	$100\theta_*$	$1.04111^{+0.00084}_{-0.00085}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.896^{+0.078}_{-0.077}$	$f_{2000}^{217}$	$107.9^{+3.8}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.46^{+0.82}_{-0.86}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.7)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.40^{+0.85}_{-0.85}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.5)$
$H_0$	$68.5^{+3.2}_{-2.8}$	$k_{\text{D}}$	$0.14039^{+0.00094}_{-0.00097}$	$\chi_{\text{plik}}^2$	$771.3 (\nu: 15.5)$
$\Omega_{\Lambda}$	$0.696^{+0.025}_{-0.024}$	$100\theta_{\text{D}}$	$0.16104^{+0.00050}_{-0.00049}$	$\chi_{6\text{DF}}^2$	$0.13 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.304^{+0.024}_{-0.025}$	$z_{\text{eq}}$	$3389^{+79}_{-79}$	$\chi_{\text{MGS}}^2$	$1.88 (\nu: 0.5)$
$\Omega_{\text{m}} h^2$	$0.1425^{+0.0033}_{-0.0033}$	$k_{\text{eq}}$	$0.01034^{+0.00024}_{-0.00024}$	$\chi_{\text{DR12BAO}}^2$	$5.2 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	$0.0976^{+0.0060}_{-0.0054}$	$100\theta_{\text{eq}}$	$0.815^{+0.015}_{-0.015}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.9)$
$\sigma_8$	$0.821^{+0.047}_{-0.045}$	$100\theta_{\text{s,eq}}$	$0.4505^{+0.0077}_{-0.0076}$	$\chi_{\text{BAO}}^2$	$7.2 (\nu: 1.8)$
$S_8$	$0.827^{+0.033}_{-0.033}$	$H(0.15)$	$73.3^{+1.8}_{-1.7}$	$\chi_{\text{CMB}}^2$	$1191.6 (\nu: 15.1)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.453^{+0.018}_{-0.018}$	$D_M(0.15)$	$636^{+20}_{-22}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.610^{+0.027}_{-0.027}$	$H(0.38)$	$82.96^{+0.70}_{-0.67}$		

$\bar{\chi}_{\text{eff}}^2 = 1206.07$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = 0.31$ ;  $R - 1 = 0.00764$



# 17.12 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218^{+0.00039}_{-0.00038}$	$\sigma_8/h^{0.5}$	$0.992^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.38)$	$1521^{+31}_{-33}$
$\Omega_{\mathrm{c}}h^2$	$0.1196^{+0.0026}_{-0.0026}$	$r_{\mathrm{drag}}h$	$101.0^{+4.1}_{-3.9}$	$H(0.51)$	$89.54^{+0.60}_{-0.62}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00082}_{-0.00083}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.053}_{-0.052}$	$D_{\mathrm{M}}(0.51)$	$1973^{+33}_{-34}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\mathrm{re}}$	$< 8.91$	$H(0.61)$	$95.05^{+0.69}_{-0.77}$
$w_0$	$-1.04^{+0.11}_{-0.11}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.055}_{-0.051}$	$D_{\mathrm{M}}(0.61)$	$2298^{+33}_{-34}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.026}_{-0.024}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880^{+0.021}_{-0.022}$	$H(2.33)$	$235.6^{+1.5}_{-1.5}$
$n_{\mathrm{s}}$	$0.9651^{+0.0087}_{-0.0085}$	$D_{40}$	$1229^{+24}_{-24}$	$D_{\mathrm{M}}(2.33)$	$5767^{+23}_{-23}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0047}_{-0.0048}$	$D_{220}$	$5718^{+80}_{-79}$	$f\sigma_8(0.15)$	$0.460^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+26}_{-26}$	$\sigma_8(0.15)$	$0.759^{+0.034}_{-0.032}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.1^{+9.5}_{-9.8}$	$f\sigma_8(0.38)$	$0.482^{+0.026}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.7}_{-4.0}$	$D_{2000}$	$229.9^{+3.3}_{-3.4}$	$\sigma_8(0.38)$	$0.673^{+0.031}_{-0.028}$
$A_{100}^{\mathrm{PS}}$	$262^{+60}_{-60}$	$n_{\mathrm{s},0.002}$	$0.9651^{+0.0087}_{-0.0085}$	$f\sigma_8(0.51)$	$0.482^{+0.027}_{-0.025}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	$0.630^{+0.028}_{-0.026}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00015}_{-0.00018}$	$f\sigma_8(0.61)$	$0.477^{+0.028}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622^{+0.072}_{-0.072}$	$\sigma_8(0.61)$	$0.599^{+0.027}_{-0.025}$
$A^{\mathrm{kSZ}}$	$< 8.39$	Age/Gyr	$13.793^{+0.066}_{-0.069}$	$f\sigma_8(2.33)$	$0.302^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.7}_{-3.6}$	$z_*$	$1090.12^{+0.60}_{-0.62}$	$\sigma_8(2.33)$	$0.311^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.6}_{-3.4}$	$r_*$	$144.69^{+0.65}_{-0.64}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.3}_{-6.4}$	$100\theta_*$	$1.04111^{+0.00081}_{-0.00082}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898^{+0.063}_{-0.061}$	$f_{2000}^{217}$	$107.9^{+3.8}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.47^{+0.85}_{-0.83}$	$\chi_{\mathrm{lensing}}^2$	$9.33 (\nu: 0.4)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.42^{+0.68}_{-0.68}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.5)$
$H_0$	$68.5^{+3.0}_{-2.6}$	$k_{\mathrm{D}}$	$0.14038^{+0.00085}_{-0.00087}$	$\chi_{\mathrm{lowl}}^2$	$23.31 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.696^{+0.024}_{-0.023}$	$100\theta_{\mathrm{D}}$	$0.16104^{+0.00050}_{-0.00050}$	$\chi_{\mathrm{plik}}^2$	$770.9 (\nu: 14.0)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.023}_{-0.024}$	$z_{\mathrm{eq}}$	$3387^{+61}_{-60}$	$\chi_{6\mathrm{DF}}^2$	$0.13 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1424^{+0.0025}_{-0.0025}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00019}_{-0.00018}$	$\chi_{\mathrm{MGS}}^2$	$1.91 (\nu: 0.5)$
$\Omega_{\mathrm{m}}h^3$	$0.0975^{+0.0048}_{-0.0046}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.011}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 (\nu: 0.9)$
$\sigma_8$	$0.821^{+0.036}_{-0.033}$	$100\theta_{\mathrm{s,eq}}$	$0.4507^{+0.0059}_{-0.0057}$	$\chi_{\mathrm{prior}}^2$	$7.2 (\nu: 6.6)$
$S_8$	$0.826^{+0.024}_{-0.024}$	$H(0.15)$	$73.3^{+1.8}_{-1.6}$	$\chi_{\mathrm{CMB}}^2$	$1200.4 (\nu: 15.5)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.013}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	$635^{+19}_{-20}$	$\chi_{\mathrm{BAO}}^2$	$7.1 (\nu: 1.5)$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.019}_{-0.019}$	$H(0.38)$	$83.00^{+0.68}_{-0.66}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1214.74$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.16$ ;  $R - 1 = 0.01087$

### 17.13 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022384	$0.02238^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8230	$0.822^{+0.038}_{-0.037}$	$D_M(0.15)$	634.2	$634^{+20}_{-20}$
$\Omega_c h^2$	0.11994	$0.1199^{+0.0025}_{-0.0024}$	$S_8$	0.8281	$0.827^{+0.026}_{-0.025}$	$H(0.38)$	83.12	$83.11^{+0.61}_{-0.60}$
$100\theta_{MC}$	1.04092	$1.04095^{+0.00061}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.453^{+0.014}_{-0.014}$	$D_M(0.38)$	1518.4	$1519^{+31}_{-32}$
$\tau$	0.0544	$0.055^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6110	$0.610^{+0.021}_{-0.020}$	$H(0.51)$	89.66	$89.66^{+0.51}_{-0.56}$
$w_0$	-1.041	$-1.04^{+0.11}_{-0.12}$	$\sigma_8/h^{0.5}$	0.9936	$0.993^{+0.031}_{-0.030}$	$D_M(0.51)$	1970.1	$1970^{+33}_{-33}$
$\ln(10^{10} A_s)$	3.0443	$3.044^{+0.032}_{-0.031}$	$r_{drag} h$	100.92	$101.0^{+4.3}_{-3.9}$	$H(0.61)$	95.18	$95.18^{+0.65}_{-0.68}$
$n_s$	0.9663	$0.9654^{+0.0082}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	2.449	$2.449^{+0.062}_{-0.061}$	$D_M(0.61)$	2294.7	$2295^{+33}_{-33}$
$y_{cal}$	1.00033	$1.0006^{+0.0049}_{-0.0049}$	$z_{re}$	7.68	$7.7^{+1.5}_{-1.6}$	$H(2.33)$	235.93	$236.0^{+1.4}_{-1.4}$
$A_{217}^{CIB}$	46.4	$47^{+10}_{-10}$	$10^9 A_s$	2.099	$2.100^{+0.068}_{-0.065}$	$D_M(2.33)$	5758.7	$5759^{+18}_{-18}$
$\xi^{tSZ \times CIB}$	0.56	—	$10^9 A_s e^{-2\tau}$	1.8829	$1.883^{+0.022}_{-0.023}$	$f\sigma_8(0.15)$	0.4618	$0.461^{+0.020}_{-0.019}$
$A_{143}^{tSZ}$	7.10	$5.5^{+3.8}_{-3.9}$	$D_{40}$	1227.5	$1230^{+24}_{-24}$	$\sigma_8(0.15)$	0.7610	$0.760^{+0.037}_{-0.035}$
$A_{100}^{PS}$	249	$259^{+60}_{-50}$	$D_{220}$	5729	$5734^{+78}_{-76}$	$f\sigma_8(0.38)$	0.4838	$0.483^{+0.027}_{-0.025}$
$A_{143}^{PS}$	49.5	$46^{+10}_{-20}$	$D_{810}$	2540.0	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	0.6747	$0.674^{+0.033}_{-0.031}$
$A_{143 \times 217}^{PS}$	50.8	$42^{+20}_{-20}$	$D_{1420}$	818.0	$817.3^{+9.5}_{-9.5}$	$f\sigma_8(0.51)$	0.4833	$0.483^{+0.029}_{-0.027}$
$A_{217}^{PS}$	121.1	$115^{+20}_{-20}$	$D_{2000}$	231.23	$231.0^{+3.1}_{-3.1}$	$\sigma_8(0.51)$	0.6313	$0.631^{+0.030}_{-0.029}$
$A^{kSZ}$	0.00	< 8.10	$n_{s,0.002}$	0.9663	$0.9654^{+0.0082}_{-0.0083}$	$f\sigma_8(0.61)$	0.4786	$0.478^{+0.030}_{-0.027}$
$A_{100}^{dustTT}$	8.81	$8.9^{+3.5}_{-3.6}$	$Y_P$	0.245401	$0.24540^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.6006	$0.600^{+0.029}_{-0.027}$
$A_{143}^{dustTT}$	11.04	$10.9^{+3.4}_{-3.4}$	$Y_P^{BBN}$	0.246728	$0.24673^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	0.3028	$0.303^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.6^{+6.5}_{-6.4}$	$10^5 D/H$	2.583	$2.584^{+0.054}_{-0.051}$	$\sigma_8(2.33)$	0.3112	$0.311^{+0.012}_{-0.012}$
$A_{217}^{dustTT}$	95.4	$94^{+10}_{-10}$	Age/Gyr	13.771	$13.772^{+0.061}_{-0.060}$	$f_{2000}^{143}$	28.7	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.114	$0.115^{+0.075}_{-0.074}$	$z_*$	1089.90	$1089.89^{+0.51}_{-0.49}$	$f_{2000}^{143 \times 217}$	31.98	$32^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.136	$0.135^{+0.057}_{-0.058}$	$r_*$	144.44	$144.46^{+0.55}_{-0.55}$	$f_{2000}^{217}$	106.51	$107.0^{+3.5}_{-3.5}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04110	$1.04113^{+0.00060}_{-0.00060}$	$\chi_{small}^2$	396.06	$397.1 (\nu: 1.8)$
$A_{143}^{dustTE}$	0.227	$0.22^{+0.11}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	13.873	$13.875^{+0.052}_{-0.052}$	$\chi_{lowl}^2$	23.12	$23.35 (\nu: 0.4)$
$A_{143 \times 217}^{dustTE}$	0.666	$0.66^{+0.16}_{-0.16}$	$z_{drag}$	1059.97	$1059.96^{+0.59}_{-0.60}$	$\chi_{plik}^2$	2344.5	$2359.4 (\nu: 17.6)$
$A_{217}^{dustTE}$	2.09	$2.08^{+0.53}_{-0.53}$	$r_{drag}$	147.09	$147.11^{+0.55}_{-0.55}$	$\chi_{6DF}^2$	0.001	$0.13 (\nu: 0.0)$
$c_{100}$	0.99970	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14088	$0.14086^{+0.00061}_{-0.00062}$	$\chi_{MGS}^2$	1.75	$1.89 (\nu: 0.5)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160740	$0.16075^{+0.00035}_{-0.00034}$	$\chi_{DR12BAO}^2$	4.40	$5.2 (\nu: 0.9)$
$H_0$	68.61	$68.6^{+3.0}_{-2.7}$	$z_{eq}$	3401	$3399^{+56}_{-55}$	$\chi_{prior}^2$	1.7	$11.5 (\nu: 10.1)$
$\Omega_\Lambda$	0.6963	$0.696^{+0.024}_{-0.024}$	$k_{eq}$	0.010381	$0.01038^{+0.00017}_{-0.00017}$	$\chi_{BAO}^2$	6.15	$7.2 (\nu: 1.5)$
$\Omega_m$	0.3037	$0.304^{+0.024}_{-0.024}$	$100\theta_{eq}$	0.8135	$0.814^{+0.010}_{-0.010}$	$\chi_{CMB}^2$	2763.7	$2779.9 (\nu: 17.5)$
$\Omega_m h^2$	0.14297	$0.1429^{+0.0023}_{-0.0023}$	$100\theta_{s,eq}$	0.4495	$0.4497^{+0.0053}_{-0.0053}$			
$\Omega_m h^3$	0.09809	$0.0981^{+0.0050}_{-0.0046}$	$H(0.15)$	73.46	$73.5^{+1.7}_{-1.6}$			

Best-fit  $\chi_{eff}^2 = 2771.48$ ;  $\Delta\chi_{eff}^2 = -0.44$ ;  $\bar{\chi}_{eff}^2 = 2798.61$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.70$ ;  $R - 1 = 0.00736$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.75 ( $\Delta$  0.53) DR12BAO: 4.40 ( $\Delta$  -0.01) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  -0.14) commander\_dx12\_v3\_2\_29: 23.12 ( $\Delta$  0.25) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.49 ( $\Delta$  -1.02)

# 17.14 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022391	$0.02239^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8220	$0.821^{+0.033}_{-0.030}$	$D_M(0.15)$	634.3	$634^{+19}_{-20}$
$\Omega_c h^2$	0.11983	$0.1198^{+0.0021}_{-0.0021}$	$S_8$	0.8271	$0.826^{+0.021}_{-0.020}$	$H(0.38)$	83.14	$83.14^{+0.61}_{-0.59}$
$100\theta_{MC}$	1.04094	$1.04095^{+0.00060}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.452^{+0.011}_{-0.011}$	$D_M(0.38)$	1518.5	$1518^{+30}_{-32}$
$\tau$	0.0545	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6102	$0.609^{+0.016}_{-0.016}$	$H(0.51)$	89.688	$89.69^{+0.47}_{-0.50}$
$w_0$	-1.038	$-1.04^{+0.10}_{-0.10}$	$\sigma_8/h^{0.5}$	0.9926	$0.991^{+0.023}_{-0.023}$	$D_M(0.51)$	1970.0	$1970^{+32}_{-33}$
$\ln(10^{10} A_s)$	3.0448	$3.044^{+0.029}_{-0.028}$	$r_{drag} h$	100.89	$101.0^{+4.0}_{-3.9}$	$H(0.61)$	95.21	$95.21^{+0.56}_{-0.63}$
$n_s$	0.9662	$0.9656^{+0.0076}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	2.4477	$2.447^{+0.046}_{-0.046}$	$D_M(0.61)$	2294.5	$2294^{+32}_{-33}$
$y_{cal}$	1.00062	$1.0006^{+0.0049}_{-0.0048}$	$z_{re}$	7.68	$7.7^{+1.5}_{-1.5}$	$H(2.33)$	235.90	$235.9^{+1.4}_{-1.4}$
$A_{217}^{CIB}$	46.4	$47^{+10}_{-10}$	$10^9 A_s$	2.100	$2.099^{+0.063}_{-0.059}$	$D_M(2.33)$	5758.1	$5758^{+18}_{-18}$
$\xi^{tSZ \times CIB}$	0.58	—	$10^9 A_s e^{-2\tau}$	1.8837	$1.882^{+0.021}_{-0.021}$	$f\sigma_8(0.15)$	0.4611	$0.460^{+0.015}_{-0.014}$
$A_{143}^{tSZ}$	7.12	$5.4^{+3.8}_{-3.8}$	$D_{40}$	1228.7	$1230^{+22}_{-22}$	$\sigma_8(0.15)$	0.7601	$0.759^{+0.032}_{-0.029}$
$A_{100}^{PS}$	249	$259^{+60}_{-50}$	$D_{220}$	5735	$5736^{+77}_{-76}$	$f\sigma_8(0.38)$	0.4829	$0.482^{+0.022}_{-0.020}$
$A_{143}^{PS}$	50.1	$46^{+10}_{-20}$	$D_{810}$	2541.3	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	0.6739	$0.673^{+0.029}_{-0.026}$
$A_{143 \times 217}^{PS}$	51.5	$42^{+20}_{-20}$	$D_{1420}$	818.4	$817.4^{+9.4}_{-9.5}$	$f\sigma_8(0.51)$	0.4824	$0.482^{+0.024}_{-0.022}$
$A_{217}^{PS}$	121.4	$115^{+20}_{-20}$	$D_{2000}$	231.32	$231.0^{+3.1}_{-3.2}$	$\sigma_8(0.51)$	0.6306	$0.630^{+0.027}_{-0.024}$
$A^{kSZ}$	0.01	$< 8.09$	$n_{s,0.002}$	0.9662	$0.9656^{+0.0076}_{-0.0078}$	$f\sigma_8(0.61)$	0.4777	$0.477^{+0.025}_{-0.023}$
$A_{100}^{dustTT}$	8.80	$8.9^{+3.5}_{-3.6}$	$Y_P$	0.245404	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5999	$0.599^{+0.025}_{-0.023}$
$A_{143}^{dustTT}$	11.00	$10.9^{+3.4}_{-3.4}$	$Y_P^{BBN}$	0.246730	$0.24673^{+0.00010}_{-0.00012}$	$f\sigma_8(2.33)$	0.3025	$0.302^{+0.013}_{-0.012}$
$A_{143 \times 217}^{dustTT}$	20.1	$18.6^{+6.4}_{-6.3}$	$10^5 D/H$	2.582	$2.582^{+0.054}_{-0.051}$	$\sigma_8(2.33)$	0.3109	$0.311^{+0.011}_{-0.010}$
$A_{217}^{dustTT}$	95.6	$94^{+10}_{-10}$	Age/Gyr	13.771	$13.771^{+0.059}_{-0.059}$	$f_{2000}^{143}$	28.9	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.076}_{-0.074}$	$z_*$	1089.878	$1089.87^{+0.48}_{-0.46}$	$f_{2000}^{143 \times 217}$	32.09	$32^{+4}_{-3}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	144.459	$144.48^{+0.48}_{-0.48}$	$f_{2000}^{217}$	106.64	$107.0^{+3.5}_{-3.4}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.16}$	$100\theta_*$	1.04112	$1.04113^{+0.00058}_{-0.00059}$	$\chi_{lensing}^2$	8.75	$9.16 (\nu: 0.2)$
$A_{143}^{dustTE}$	0.226	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8754	$13.877^{+0.045}_{-0.045}$	$\chi_{small}^2$	396	$226 (\nu: 17328.9)$
$A_{143 \times 217}^{dustTE}$	0.663	$0.66^{+0.16}_{-0.16}$	$z_{drag}$	1059.97	$1059.97^{+0.61}_{-0.58}$	$\chi_{lowl}^2$	23	$194 (\nu: 17321.2)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.54}_{-0.53}$	$r_{drag}$	147.114	$147.13^{+0.49}_{-0.49}$	$\chi_{plik}^2$	2344.6	$2359.2 (\nu: 16.6)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14086	$0.14084^{+0.00058}_{-0.00059}$	$\chi_{6DF}^2$	0.00	$0.9 (\nu: 0.6)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160737	$0.16074^{+0.00036}_{-0.00034}$	$\chi_{MGS}^2$	1.75	$1.1 (\nu: 0.7)$
$H_0$	68.58	$68.6^{+2.7}_{-2.7}$	$z_{eq}$	3398.6	$3397^{+48}_{-47}$	$\chi_{DR12BAO}^2$	4.32	$5.1 (\nu: 0.8)$
$\Omega_\Lambda$	0.6962	$0.696^{+0.024}_{-0.023}$	$k_{eq}$	0.010373	$0.01037^{+0.00015}_{-0.00014}$	$\chi_{prior}^2$	1.6	$11.5 (\nu: 9.9)$
$\Omega_m$	0.3038	$0.304^{+0.023}_{-0.024}$	$100\theta_{eq}$	0.8140	$0.8144^{+0.0089}_{-0.0089}$	$\chi_{CMB}^2$	2772.5	$2788.7 (\nu: 17.5)$
$\Omega_m h^2$	0.14286	$0.1428^{+0.0020}_{-0.0020}$	$100\theta_{s,eq}$	0.44974	$0.4499^{+0.0045}_{-0.0046}$	$\chi_{BAO}^2$	6.07	$7.1 (\nu: 1.3)$
$\Omega_m h^3$	0.09798	$0.0980^{+0.0047}_{-0.0042}$	$H(0.15)$	73.46	$73.5^{+1.7}_{-1.6}$			

Best-fit  $\chi_{eff}^2 = 2780.22$ ;  $\Delta\chi_{eff}^2 = -0.48$ ;  $\bar{\chi}_{eff}^2 = 2807.23$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.39$ ;  $R - 1 = 0.01456$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.75 ( $\Delta$  0.53) DR12BAO: 4.32 ( $\Delta$  -0.10) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.75 ( $\Delta$  0.02) simall\_100x143\_offlike5\_EE\_Aplanck  
396.04 ( $\Delta$  -0.48) commander\_dx12\_v3.2\_29: 23.15 ( $\Delta$  0.25) plik\_rd12\_HM\_v22b.TTTEEE: 2344.57 ( $\Delta$  -0.75)

17.15 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02239^{+0.00029}_{-0.00028}$	$\sigma_8$	$0.823^{+0.038}_{-0.037}$	$D_M(0.15)$	$634^{+20}_{-20}$
$\Omega_c h^2$	$0.1198^{+0.0025}_{-0.0024}$	$S_8$	$0.828^{+0.025}_{-0.025}$	$H(0.38)$	$83.12^{+0.61}_{-0.60}$
$100\theta_{MC}$	$1.04095^{+0.00061}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.014}_{-0.014}$	$D_M(0.38)$	$1519^{+31}_{-32}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.021}_{-0.020}$	$H(0.51)$	$89.67^{+0.50}_{-0.56}$
$w_0$	$-1.04^{+0.11}_{-0.12}$	$\sigma_8/h^{0.5}$	$0.993^{+0.030}_{-0.030}$	$D_M(0.51)$	$1970^{+33}_{-33}$
$\ln(10^{10} A_s)$	$3.046^{+0.029}_{-0.027}$	$r_{\text{drag}} h$	$100.9^{+4.3}_{-3.8}$	$H(0.61)$	$95.19^{+0.65}_{-0.67}$
$n_s$	$0.9656^{+0.0082}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.061}_{-0.060}$	$D_M(0.61)$	$2295^{+33}_{-32}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0049}$	$z_{\text{re}}$	$< 8.99$	$H(2.33)$	$235.9^{+1.4}_{-1.4}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.104^{+0.061}_{-0.057}$	$D_M(2.33)$	$5759^{+18}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.883^{+0.022}_{-0.023}$	$f\sigma_8(0.15)$	$0.462^{+0.020}_{-0.019}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.9}$	$D_{40}$	$1230^{+24}_{-24}$	$\sigma_8(0.15)$	$0.761^{+0.037}_{-0.035}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{220}$	$5734^{+78}_{-76}$	$f\sigma_8(0.38)$	$0.483^{+0.027}_{-0.025}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2539^{+27}_{-27}$	$\sigma_8(0.38)$	$0.675^{+0.033}_{-0.031}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.4^{+9.5}_{-9.5}$	$f\sigma_8(0.51)$	$0.483^{+0.029}_{-0.027}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.1}_{-3.1}$	$\sigma_8(0.51)$	$0.631^{+0.030}_{-0.029}$
$A^{\text{kSZ}}$	$< 8.08$	$n_{s,0.002}$	$0.9656^{+0.0082}_{-0.0083}$	$f\sigma_8(0.61)$	$0.478^{+0.030}_{-0.028}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$Y_P$	$0.24540^{+0.00011}_{-0.00011}$	$\sigma_8(0.61)$	$0.600^{+0.028}_{-0.027}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00011}_{-0.00011}$	$f\sigma_8(2.33)$	$0.303^{+0.014}_{-0.014}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$10^5 \text{D/H}$	$2.583^{+0.053}_{-0.051}$	$\sigma_8(2.33)$	$0.311^{+0.012}_{-0.012}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.772^{+0.061}_{-0.060}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.074}$	$z_*$	$1089.89^{+0.51}_{-0.49}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.057}$	$r_*$	$144.46^{+0.55}_{-0.55}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04114^{+0.00060}_{-0.00060}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.875^{+0.052}_{-0.052}$	$\chi_{\text{lowl}}^2$	$23.36 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.96^{+0.58}_{-0.60}$	$\chi_{\text{plik}}^2$	$2359.2 (\nu: 17.5)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$147.12^{+0.55}_{-0.55}$	$\chi_{6\text{DF}}^2$	$0.13 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14085^{+0.00060}_{-0.00062}$	$\chi_{\text{MGS}}^2$	$1.88 (\nu: 0.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16075^{+0.00035}_{-0.00034}$	$\chi_{\text{DR12BAO}}^2$	$5.1 (\nu: 0.9)$
$H_0$	$68.6^{+2.9}_{-2.8}$	$z_{\text{eq}}$	$3399^{+56}_{-55}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.0)$
$\Omega_\Lambda$	$0.696^{+0.024}_{-0.024}$	$k_{\text{eq}}$	$0.01037^{+0.00017}_{-0.00017}$	$\chi_{\text{BAO}}^2$	$7.2 (\nu: 1.4)$
$\Omega_m$	$0.304^{+0.024}_{-0.024}$	$100\theta_{\text{eq}}$	$0.814^{+0.010}_{-0.010}$	$\chi_{\text{CMB}}^2$	$2779.7 (\nu: 17.1)$
$\Omega_m h^2$	$0.1429^{+0.0023}_{-0.0023}$	$100\theta_{s,\text{eq}}$	$0.4497^{+0.0053}_{-0.0053}$		
$\Omega_m h^3$	$0.0980^{+0.0050}_{-0.0045}$	$H(0.15)$	$73.5^{+1.7}_{-1.6}$		

$$\bar{\chi}_{\text{eff}}^2 = 2798.36; \Delta \bar{\chi}_{\text{eff}}^2 = 0.65; R - 1 = 0.00833$$

17.16 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00028}_{-0.00028}$	$\sigma_8$	$0.821^{+0.033}_{-0.030}$	$D_M(0.15)$	$634^{+19}_{-20}$
$\Omega_c h^2$	$0.1197^{+0.0021}_{-0.0020}$	$S_8$	$0.826^{+0.021}_{-0.020}$	$H(0.38)$	$83.14^{+0.61}_{-0.59}$
$100\theta_{MC}$	$1.04096^{+0.00060}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.011}_{-0.011}$	$D_M(0.38)$	$1519^{+30}_{-32}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.016}_{-0.016}$	$H(0.51)$	$89.70^{+0.46}_{-0.48}$
$w_0$	$-1.036^{+0.096}_{-0.11}$	$\sigma_8/h^{0.5}$	$0.991^{+0.023}_{-0.023}$	$D_M(0.51)$	$1970^{+32}_{-33}$
$\ln(10^{10} A_s)$	$3.046^{+0.026}_{-0.025}$	$r_{\text{drag}} h$	$100.9^{+3.9}_{-3.9}$	$H(0.61)$	$95.22^{+0.55}_{-0.62}$
$n_s$	$0.9657^{+0.0076}_{-0.0076}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.046}_{-0.046}$	$D_M(0.61)$	$2295^{+32}_{-33}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	$< 8.93$	$H(2.33)$	$235.9^{+1.4}_{-1.4}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.103^{+0.056}_{-0.052}$	$D_M(2.33)$	$5758^{+18}_{-18}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.020}_{-0.021}$	$f\sigma_8(0.15)$	$0.460^{+0.015}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.8}_{-3.8}$	$D_{40}$	$1230^{+22}_{-22}$	$\sigma_8(0.15)$	$0.759^{+0.031}_{-0.029}$
$A_{100}^{\text{PS}}$	$259^{+60}_{-50}$	$D_{220}$	$5736^{+77}_{-76}$	$f\sigma_8(0.38)$	$0.482^{+0.022}_{-0.020}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2539^{+26}_{-26}$	$\sigma_8(0.38)$	$0.673^{+0.028}_{-0.026}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.4^{+9.4}_{-9.5}$	$f\sigma_8(0.51)$	$0.482^{+0.024}_{-0.022}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.1}_{-3.2}$	$\sigma_8(0.51)$	$0.630^{+0.026}_{-0.024}$
$A^{\text{kSZ}}$	$< 8.08$	$n_{s,0.002}$	$0.9657^{+0.0076}_{-0.0076}$	$f\sigma_8(0.61)$	$0.477^{+0.025}_{-0.023}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$Y_P$	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.599^{+0.025}_{-0.023}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.302^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.3}$	$10^5 \text{D/H}$	$2.581^{+0.052}_{-0.050}$	$\sigma_8(2.33)$	$0.311^{+0.011}_{-0.0099}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.771^{+0.059}_{-0.059}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.074}$	$z_*$	$1089.86^{+0.47}_{-0.46}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-3}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.057}$	$r_*$	$144.49^{+0.48}_{-0.47}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$100\theta_*$	$1.04114^{+0.00059}_{-0.00059}$	$\chi_{\text{lensing}}^2$	$9.15 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.878^{+0.045}_{-0.045}$	$\chi_{\text{simall}}^2$	$227 (\nu: 17317.2)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1059.98^{+0.60}_{-0.58}$	$\chi_{\text{lowl}}^2$	$193 (\nu: 17309.2)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.53}$	$r_{\text{drag}}$	$147.14^{+0.49}_{-0.49}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 16.6)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14084^{+0.00057}_{-0.00059}$	$\chi_{6\text{DF}}^2$	$0.9 (\nu: 0.6)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16074^{+0.00035}_{-0.00034}$	$\chi_{\text{MGS}}^2$	$1.1 (\nu: 0.7)$
$H_0$	$68.6^{+2.7}_{-2.7}$	$z_{\text{eq}}$	$3396^{+47}_{-46}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 0.8)$
$\Omega_\Lambda$	$0.696^{+0.024}_{-0.023}$	$k_{\text{eq}}$	$0.01036^{+0.00014}_{-0.00014}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 9.8)$
$\Omega_m$	$0.304^{+0.023}_{-0.024}$	$100\theta_{\text{eq}}$	$0.8146^{+0.0088}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$2788.5 (\nu: 17.2)$
$\Omega_m h^2$	$0.1427^{+0.0020}_{-0.0019}$	$100\theta_{s,\text{eq}}$	$0.4500^{+0.0045}_{-0.0045}$	$\chi_{\text{BAO}}^2$	$7.0 (\nu: 1.3)$
$\Omega_m h^3$	$0.0979^{+0.0046}_{-0.0042}$	$H(0.15)$	$73.5^{+1.7}_{-1.6}$		

$$\bar{\chi}_{\text{eff}}^2 = 2807.01; \Delta \bar{\chi}_{\text{eff}}^2 = 0.29; R - 1 = 0.01536$$

17.17 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022184	$0.02218^{+0.00040}_{-0.00040}$	$\sigma_8/h^{0.5}$	0.9902	$0.989^{+0.031}_{-0.032}$	$D_M(0.38)$	1524.9	$1525^{+21}_{-21}$
$\Omega_c h^2$	0.11970	$0.1195^{+0.0030}_{-0.0031}$	$r_{\text{drag}} h$	100.43	$100.5^{+2.4}_{-2.3}$	$H(0.51)$	89.53	$89.55^{+0.66}_{-0.66}$
$100\theta_{\text{MC}}$	1.04089	$1.04092^{+0.00085}_{-0.00085}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.441^{+0.067}_{-0.067}$	$D_M(0.51)$	1977.4	$1977^{+23}_{-23}$
$\tau$	0.0527	$0.053^{+0.016}_{-0.016}$	$z_{\text{re}}$	7.54	$7.6^{+1.6}_{-1.7}$	$H(0.61)$	95.08	$95.10^{+0.68}_{-0.68}$
$w_0$	-1.029	$-1.027^{+0.071}_{-0.073}$	$10^9 A_s$	2.090	$2.091^{+0.070}_{-0.067}$	$D_M(0.61)$	2302.4	$2302^{+24}_{-24}$
$\ln(10^{10} A_s)$	3.0399	$3.040^{+0.033}_{-0.033}$	$10^9 A_s e^{-2\tau}$	1.8813	$1.880^{+0.024}_{-0.024}$	$H(2.33)$	235.75	$235.7^{+1.5}_{-1.5}$
$n_s$	0.9654	$0.9651^{+0.0092}_{-0.0093}$	$D_{40}$	1227.5	$1228^{+26}_{-26}$	$D_M(2.33)$	5768.3	$5768^{+24}_{-24}$
$y_{\text{cal}}$	1.00054	$1.0005^{+0.0048}_{-0.0049}$	$D_{220}$	5717	$5719^{+80}_{-80}$	$f\sigma_8(0.15)$	0.4599	$0.459^{+0.021}_{-0.021}$
$A_{217}^{\text{CIB}}$	49.7	$48^{+10}_{-10}$	$D_{810}$	2537.7	$2536^{+26}_{-27}$	$\sigma_8(0.15)$	0.7556	$0.754^{+0.027}_{-0.028}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.17	—	$D_{1420}$	815.9	$815.0^{+9.9}_{-9.8}$	$f\sigma_8(0.38)$	0.4805	$0.479^{+0.023}_{-0.023}$
$A_{143}^{\text{tSZ}}$	7.09	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	230.10	$229.8^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	0.6698	$0.669^{+0.023}_{-0.024}$
$A_{100}^{\text{PS}}$	257	$263^{+60}_{-50}$	$n_{s,0.002}$	0.9654	$0.9651^{+0.0092}_{-0.0093}$	$f\sigma_8(0.51)$	0.4796	$0.479^{+0.023}_{-0.023}$
$A_{143}^{\text{PS}}$	47.0	$49^{+20}_{-20}$	$Y_{\text{P}}$	0.245319	$0.24531^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	0.6267	$0.626^{+0.021}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	42.9	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246646	$0.24664^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	0.4748	$0.474^{+0.023}_{-0.023}$
$A_{217}^{\text{PS}}$	117.5	$115^{+20}_{-20}$	$10^5 D/H$	2.621	$2.623^{+0.076}_{-0.074}$	$\sigma_8(0.61)$	0.5962	$0.595^{+0.020}_{-0.021}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.798	$13.799^{+0.056}_{-0.057}$	$f\sigma_8(2.33)$	0.3006	$0.3002^{+0.0098}_{-0.010}$
$A_{100}^{\text{dustTT}}$	8.84	$8.9^{+3.6}_{-3.6}$	$z_*$	1090.13	$1090.12^{+0.65}_{-0.64}$	$\sigma_8(2.33)$	0.3091	$0.3089^{+0.0086}_{-0.0088}$
$A_{143}^{\text{dustTT}}$	10.75	$10.7^{+3.5}_{-3.5}$	$r_*$	144.65	$144.71^{+0.75}_{-0.73}$	$f_{2000}^{143}$	30.4	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.0	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	1.04109	$1.04112^{+0.00084}_{-0.00084}$	$f_{2000}^{143 \times 217}$	33.24	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	94.1	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.894	$13.899^{+0.071}_{-0.070}$	$f_{2000}^{217}$	107.71	$108.0^{+3.7}_{-3.7}$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	1059.47	$1059.45^{+0.87}_{-0.89}$	$\chi_{\text{small}}^2$	395.85	$397.0 (\nu: 1.6)$
$c_{217}$	0.99827	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.38	$147.44^{+0.78}_{-0.77}$	$\chi_{\text{lowl}}^2$	23.15	$23.3 (\nu: 0.5)$
$H_0$	68.15	$68.2^{+1.6}_{-1.6}$	$k_{\text{D}}$	0.14042	$0.14035^{+0.00094}_{-0.00094}$	$\chi_{\text{plik}}^2$	759.1	$771.6 (\nu: 14.8)$
$\Omega_{\Lambda}$	0.6931	$0.694^{+0.015}_{-0.015}$	$100\theta_{\text{D}}$	0.16102	$0.16105^{+0.00052}_{-0.00050}$	$\chi_{\text{JLA}}^2$	1034.71	$1035.4 (\nu: 0.5)$
$\Omega_{\text{m}}$	0.3069	$0.306^{+0.015}_{-0.015}$	$z_{\text{eq}}$	3391	$3386^{+69}_{-71}$	$\chi_{\text{6DF}}^2$	0.002	$0.049 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.14253	$0.1423^{+0.0029}_{-0.0030}$	$k_{\text{eq}}$	0.010348	$0.01033^{+0.00021}_{-0.00022}$	$\chi_{\text{MGS}}^2$	1.54	$1.64 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	0.09713	$0.0970^{+0.0032}_{-0.0032}$	$100\theta_{\text{eq}}$	0.8148	$0.816^{+0.013}_{-0.013}$	$\chi_{\text{DR12BAO}}^2$	4.45	$4.9 (\nu: 1.1)$
$\sigma_8$	0.8174	$0.816^{+0.029}_{-0.030}$	$100\theta_{\text{s,eq}}$	0.4503	$0.4508^{+0.0069}_{-0.0065}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 6.7)$
$S_8$	0.8267	$0.825^{+0.033}_{-0.032}$	$H(0.15)$	73.13	$73.2^{+1.1}_{-1.0}$	$\chi_{\text{BAO}}^2$	6.00	$6.6 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4528	$0.452^{+0.018}_{-0.018}$	$D_M(0.15)$	637.7	$638^{+12}_{-12}$	$\chi_{\text{CMB}}^2$	1178.1	$1191.9 (\nu: 14.9)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6084	$0.607^{+0.021}_{-0.022}$	$H(0.38)$	82.93	$82.95^{+0.69}_{-0.66}$			

Best-fit  $\chi_{\text{eff}}^2 = 2220.25$ ;  $\bar{\chi}_{\text{eff}}^2 = 2241.16$ ;  $R - 1 = 0.00635$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 4.45 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2.29: 23.15 plik\_rd12\_HM\_v22\_TT: 759.09  
SN - JLA Pantheon18: 1034.71

17.18 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022206	$0.02218^{+0.00039}_{-0.00039}$	$\sigma_8 \Omega_m^{0.25}$	0.6081	$0.608^{+0.016}_{-0.016}$	$D_M(0.15)$	637.6	$637^{+12}_{-12}$
$\Omega_c h^2$	0.11964	$0.1195^{+0.0024}_{-0.0025}$	$\sigma_8/h^{0.5}$	0.9897	$0.990^{+0.022}_{-0.023}$	$H(0.38)$	82.97	$82.96^{+0.65}_{-0.61}$
$100\theta_{MC}$	1.04097	$1.04090^{+0.00083}_{-0.00085}$	$r_{drag}h$	100.44	$100.6^{+2.4}_{-2.3}$	$D_M(0.38)$	1524.4	$1524^{+21}_{-21}$
$\tau$	0.0529	$0.054^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4416	$2.443^{+0.047}_{-0.048}$	$H(0.51)$	89.57	$89.55^{+0.60}_{-0.59}$
$w_0$	-1.027	$-1.029^{+0.065}_{-0.068}$	$z_{re}$	7.57	$7.6^{+1.5}_{-1.6}$	$D_M(0.51)$	1976.6	$1977^{+23}_{-23}$
$\ln(10^{10} A_s)$	3.0408	$3.041^{+0.030}_{-0.028}$	$10^9 A_s$	2.092	$2.093^{+0.064}_{-0.059}$	$H(0.61)$	95.12	$95.09^{+0.60}_{-0.62}$
$n_s$	0.9656	$0.9649^{+0.0085}_{-0.0085}$	$10^9 A_s e^{-2\tau}$	1.8819	$1.880^{+0.021}_{-0.021}$	$D_M(0.61)$	2301.5	$2301^{+24}_{-23}$
$y_{cal}$	1.00071	$1.0006^{+0.0047}_{-0.0049}$	$D_{40}$	1227.9	$1229^{+23}_{-23}$	$H(2.33)$	235.77	$235.7^{+1.3}_{-1.4}$
$A_{217}^{CIB}$	49.4	$48^{+10}_{-10}$	$D_{220}$	5721	$5721^{+80}_{-80}$	$D_M(2.33)$	5766.4	$5768^{+23}_{-24}$
$\xi^{tSZ \times CIB}$	0.23	—	$D_{810}$	2538.9	$2536^{+26}_{-26}$	$f\sigma_8(0.15)$	0.4595	$0.459^{+0.015}_{-0.015}$
$A_{143}^{tSZ}$	7.00	$5.1^{+3.8}_{-3.8}$	$D_{1420}$	816.4	$815^{+10}_{-9.8}$	$\sigma_8(0.15)$	0.7553	$0.756^{+0.021}_{-0.022}$
$A_{100}^{PS}$	258	$263^{+50}_{-60}$	$D_{2000}$	230.30	$229.8^{+3.5}_{-3.4}$	$f\sigma_8(0.38)$	0.4800	$0.480^{+0.018}_{-0.018}$
$A_{143}^{PS}$	48.0	$49^{+20}_{-20}$	$n_{s,0.002}$	0.9656	$0.9649^{+0.0085}_{-0.0085}$	$\sigma_8(0.38)$	0.6696	$0.670^{+0.019}_{-0.019}$
$A_{143 \times 217}^{PS}$	44.2	$43^{+20}_{-20}$	$Y_P$	0.245328	$0.24531^{+0.00016}_{-0.00018}$	$f\sigma_8(0.51)$	0.4792	$0.479^{+0.018}_{-0.018}$
$A_{217}^{PS}$	118.1	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.246654	$0.24664^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	0.6265	$0.627^{+0.017}_{-0.018}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.617	$2.622^{+0.075}_{-0.073}$	$f\sigma_8(0.61)$	0.4744	$0.475^{+0.018}_{-0.018}$
$A_{100}^{dustTT}$	8.81	$8.9^{+3.6}_{-3.6}$	Age/Gyr	13.795	$13.798^{+0.056}_{-0.057}$	$\sigma_8(0.61)$	0.5961	$0.596^{+0.016}_{-0.017}$
$A_{143}^{dustTT}$	10.80	$10.7^{+3.5}_{-3.5}$	$z_*$	1090.10	$1090.12^{+0.60}_{-0.61}$	$f\sigma_8(2.33)$	0.3005	$0.3006^{+0.0080}_{-0.0083}$
$A_{143 \times 217}^{dustTT}$	19.2	$18.3^{+6.6}_{-6.5}$	$r_*$	144.65	$144.69^{+0.62}_{-0.61}$	$\sigma_8(2.33)$	0.3091	$0.3092^{+0.0070}_{-0.0072}$
$A_{217}^{dustTT}$	94.3	$93^{+10}_{-10}$	$100\theta_*$	1.04116	$1.04110^{+0.00081}_{-0.00084}$	$\chi^2_{lensing}$	8.77	$9.26 (\nu: 0.3)$
$c_{100}$	0.99967	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/Gpc$	13.893	$13.898^{+0.059}_{-0.059}$	$\chi^2_{small}$	395.89	$397.0 (\nu: 1.4)$
$c_{217}$	0.99823	$0.9982^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.51	$1059.46^{+0.89}_{-0.86}$	$\chi^2_{lowl}$	23.14	$23.35 (\nu: 0.4)$
$H_0$	68.16	$68.2^{+1.6}_{-1.6}$	$r_{drag}$	147.37	$147.42^{+0.66}_{-0.66}$	$\chi^2_{plik}$	759.3	$771.2 (\nu: 13.6)$
$\Omega_\Lambda$	0.6933	$0.694^{+0.015}_{-0.015}$	$k_D$	0.14045	$0.14037^{+0.00085}_{-0.00085}$	$\chi^2_{JLA}$	1034.71	$1035.40 (\nu: 0.5)$
$\Omega_m$	0.3067	$0.306^{+0.015}_{-0.015}$	$100\theta_D$	0.16100	$0.16104^{+0.00051}_{-0.00050}$	$\chi^2_{6DF}$	0.002	$0.048 (\nu: 0.0)$
$\Omega_m h^2$	0.14249	$0.1424^{+0.0023}_{-0.0024}$	$z_{eq}$	3390	$3387^{+56}_{-56}$	$\chi^2_{MGS}$	1.54	$1.66 (\nu: 0.2)$
$\Omega_m h^3$	0.09712	$0.0971^{+0.0029}_{-0.0029}$	$k_{eq}$	0.010346	$0.01034^{+0.00017}_{-0.00017}$	$\chi^2_{DR12BAO}$	4.36	$4.8 (\nu: 0.8)$
$\sigma_8$	0.8171	$0.817^{+0.023}_{-0.023}$	$100\theta_{eq}$	0.8151	$0.816^{+0.011}_{-0.010}$	$\chi^2_{prior}$	1.4	$7.3 (\nu: 6.8)$
$S_8$	0.8262	$0.825^{+0.024}_{-0.024}$	$100\theta_{s,eq}$	0.4505	$0.4507^{+0.0055}_{-0.0053}$	$\chi^2_{CMB}$	1187.1	$1200.8 (\nu: 14.8)$
$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.452^{+0.013}_{-0.013}$	$H(0.15)$	73.16	$73.2^{+1.1}_{-1.1}$	$\chi^2_{BAO}$	5.90	$6.5 (\nu: 0.6)$

Best-fit  $\chi^2_{eff} = 2229.02$ ;  $\Delta\chi^2_{eff} = -0.69$ ;  $\bar{\chi}^2_{eff} = 2249.95$ ;  $\Delta\bar{\chi}^2_{eff} = 0.18$ ;  $R - 1 = 0.00823$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.54 ( $\Delta$  0.20) DR12BAO: 4.36 ( $\Delta$  0.33) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 ( $\Delta$  -0.11) small\_100x143\_offlike5\_EE\_Aplanck 395.89 ( $\Delta$  -0.48) commander\_dx12\_v3.2.29: 23.14 ( $\Delta$  0.33) plik\_rd12\_HM\_v22.TT: 759.25 ( $\Delta$  -0.53) SN - JLA Pantheon18: 1034.71 ( $\Delta$  -0.24)

17.19 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218^{+0.00040}_{-0.00039}$	$\sigma_8/h^{0.5}$	$0.990^{+0.030}_{-0.031}$	$D_{\mathrm{M}}(0.38)$	$1524^{+21}_{-21}$
$\Omega_{\mathrm{c}}h^2$	$0.1195^{+0.0030}_{-0.0030}$	$r_{\mathrm{drag}}h$	$100.5^{+2.4}_{-2.3}$	$H(0.51)$	$89.56^{+0.65}_{-0.65}$
$100\theta_{\mathrm{MC}}$	$1.04092^{+0.00085}_{-0.00085}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.066}_{-0.065}$	$D_{\mathrm{M}}(0.51)$	$1977^{+23}_{-23}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\mathrm{re}}$	$< 8.92$	$H(0.61)$	$95.11^{+0.68}_{-0.68}$
$w_0$	$-1.026^{+0.071}_{-0.072}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.060}_{-0.055}$	$D_{\mathrm{M}}(0.61)$	$2302^{+24}_{-24}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.029}_{-0.026}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880^{+0.024}_{-0.024}$	$H(2.33)$	$235.7^{+1.5}_{-1.5}$
$n_{\mathrm{s}}$	$0.9653^{+0.0091}_{-0.0093}$	$D_{40}$	$1228^{+27}_{-26}$	$D_{\mathrm{M}}(2.33)$	$5768^{+24}_{-24}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0048}_{-0.0049}$	$D_{220}$	$5719^{+81}_{-80}$	$f\sigma_8(0.15)$	$0.459^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+26}_{-26}$	$\sigma_8(0.15)$	$0.755^{+0.027}_{-0.027}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.0^{+9.9}_{-9.8}$	$f\sigma_8(0.38)$	$0.480^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	$229.8^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.670^{+0.023}_{-0.024}$
$A_{100}^{\mathrm{PS}}$	$263^{+50}_{-50}$	$n_{\mathrm{s},0.002}$	$0.9653^{+0.0091}_{-0.0093}$	$f\sigma_8(0.51)$	$0.479^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	$0.627^{+0.021}_{-0.022}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	$0.474^{+0.023}_{-0.023}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622^{+0.075}_{-0.073}$	$\sigma_8(0.61)$	$0.596^{+0.020}_{-0.020}$
$A^{\mathrm{kSZ}}$	$< 8.49$	Age/Gyr	$13.799^{+0.056}_{-0.057}$	$f\sigma_8(2.33)$	$0.3006^{+0.0097}_{-0.010}$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.6}_{-3.7}$	$z_*$	$1090.11^{+0.64}_{-0.64}$	$\sigma_8(2.33)$	$0.3092^{+0.0083}_{-0.0084}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.72^{+0.75}_{-0.73}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	$1.04113^{+0.00083}_{-0.00084}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900^{+0.071}_{-0.069}$	$f_{2000}^{217}$	$108.0^{+3.7}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.46^{+0.86}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.6)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.45^{+0.78}_{-0.77}$	$\chi_{\mathrm{lowl}}^2$	$23.3 (\nu: 0.5)$
$H_0$	$68.2^{+1.6}_{-1.6}$	$k_{\mathrm{D}}$	$0.14035^{+0.00094}_{-0.00093}$	$\chi_{\mathrm{plik}}^2$	$771.4 (\nu: 14.5)$
$\Omega_{\Lambda}$	$0.694^{+0.015}_{-0.015}$	$100\theta_{\mathrm{D}}$	$0.16104^{+0.00051}_{-0.00050}$	$\chi_{\mathrm{JLA}}^2$	$1035.42 (\nu: 0.5)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.015}_{-0.015}$	$z_{\mathrm{eq}}$	$3385^{+69}_{-70}$	$\chi_{6\mathrm{DF}}^2$	$0.049 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1423^{+0.0029}_{-0.0029}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{MGS}}^2$	$1.65 (\nu: 0.2)$
$\Omega_{\mathrm{m}}h^3$	$0.0970^{+0.0032}_{-0.0032}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.013}_{-0.013}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.0)$
$\sigma_8$	$0.817^{+0.029}_{-0.030}$	$100\theta_{\mathrm{s,eq}}$	$0.4509^{+0.0068}_{-0.0066}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.7)$
$S_8$	$0.825^{+0.032}_{-0.032}$	$H(0.15)$	$73.2^{+1.1}_{-1.0}$	$\chi_{\mathrm{BAO}}^2$	$6.5 (\nu: 0.8)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$638^{+12}_{-12}$	$\chi_{\mathrm{CMB}}^2$	$1191.6 (\nu: 14.4)$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.021}_{-0.022}$	$H(0.38)$	$82.96^{+0.68}_{-0.66}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2240.85; R - 1 = 0.00444$



17.20 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02219^{+0.00039}_{-0.00039}$	$\sigma_8/h^{0.5}$	$0.990^{+0.022}_{-0.023}$	$D_M(0.38)$	$1524^{+21}_{-20}$
$\Omega_c h^2$	$0.1195^{+0.0024}_{-0.0024}$	$r_{\text{drag}} h$	$100.6^{+2.4}_{-2.3}$	$H(0.51)$	$89.56^{+0.59}_{-0.58}$
$100\theta_{\text{MC}}$	$1.04091^{+0.00082}_{-0.00085}$	$\langle d^2 \rangle^{1/2}$	$2.444^{+0.047}_{-0.047}$	$D_M(0.51)$	$1976^{+23}_{-23}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 8.90$	$H(0.61)$	$95.11^{+0.59}_{-0.61}$
$w_0$	$-1.028^{+0.064}_{-0.066}$	$10^9 A_s$	$2.098^{+0.055}_{-0.051}$	$D_M(0.61)$	$2301^{+23}_{-23}$
$\ln(10^{10} A_s)$	$3.043^{+0.026}_{-0.024}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.021}_{-0.021}$	$H(2.33)$	$235.6^{+1.3}_{-1.3}$
$n_s$	$0.9651^{+0.0085}_{-0.0084}$	$D_{40}$	$1229^{+23}_{-23}$	$D_M(2.33)$	$5768^{+23}_{-23}$
$y_{\text{cal}}$	$1.0006^{+0.0047}_{-0.0049}$	$D_{220}$	$5721^{+80}_{-79}$	$f\sigma_8(0.15)$	$0.459^{+0.015}_{-0.016}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+26}_{-26}$	$\sigma_8(0.15)$	$0.756^{+0.021}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.1^{+9.9}_{-9.8}$	$f\sigma_8(0.38)$	$0.480^{+0.018}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.7}_{-3.9}$	$D_{2000}$	$229.8^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.670^{+0.019}_{-0.019}$
$A_{100}^{\text{PS}}$	$263^{+50}_{-60}$	$n_{s,0.002}$	$0.9651^{+0.0085}_{-0.0084}$	$f\sigma_8(0.51)$	$0.479^{+0.018}_{-0.018}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24532^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	$0.627^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	$0.475^{+0.018}_{-0.018}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D/H}$	$2.621^{+0.074}_{-0.073}$	$\sigma_8(0.61)$	$0.597^{+0.016}_{-0.016}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.798^{+0.056}_{-0.057}$	$f\sigma_8(2.33)$	$0.3008^{+0.0080}_{-0.0082}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.11^{+0.59}_{-0.61}$	$\sigma_8(2.33)$	$0.3094^{+0.0070}_{-0.0071}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.71^{+0.61}_{-0.60}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.6}_{-6.5}$	$100\theta_*$	$1.04111^{+0.00081}_{-0.00084}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.900^{+0.058}_{-0.058}$	$f_{2000}^{217}$	$108.0^{+3.5}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.47^{+0.88}_{-0.87}$	$\chi_{\text{lensing}}^2$	$9.24 (\nu: 0.3)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.44^{+0.66}_{-0.65}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$H_0$	$68.2^{+1.6}_{-1.6}$	$k_{\text{D}}$	$0.14036^{+0.00084}_{-0.00085}$	$\chi_{\text{lowl}}^2$	$23.34 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.694^{+0.015}_{-0.015}$	$100\theta_{\text{D}}$	$0.16103^{+0.00050}_{-0.00050}$	$\chi_{\text{plik}}^2$	$771.1 (\nu: 13.5)$
$\Omega_{\text{m}}$	$0.306^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3385^{+55}_{-55}$	$\chi_{\text{JLA}}^2$	$1035.38 (\nu: 0.4)$
$\Omega_{\text{m}} h^2$	$0.1423^{+0.0023}_{-0.0023}$	$k_{\text{eq}}$	$0.01033^{+0.00017}_{-0.00017}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.0970^{+0.0029}_{-0.0029}$	$100\theta_{\text{eq}}$	$0.816^{+0.011}_{-0.010}$	$\chi_{\text{MGS}}^2$	$1.67 (\nu: 0.2)$
$\sigma_8$	$0.818^{+0.023}_{-0.023}$	$100\theta_{\text{s,eq}}$	$0.4509^{+0.0054}_{-0.0052}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 0.7)$
$S_8$	$0.826^{+0.024}_{-0.024}$	$H(0.15)$	$73.2^{+1.1}_{-1.1}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.013}_{-0.013}$	$D_M(0.15)$	$637^{+12}_{-12}$	$\chi_{\text{CMB}}^2$	$1200.6 (\nu: 14.6)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.608^{+0.016}_{-0.016}$	$H(0.38)$	$82.97^{+0.64}_{-0.59}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 0.6)$

$$\bar{\chi}_{\text{eff}}^2 = 2249.69; \Delta \bar{\chi}_{\text{eff}}^2 = 0.06; R - 1 = 0.00980$$

17.21 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022402	$0.02239^{+0.00028}_{-0.00028}$	$\sigma_8$	0.8195	$0.819^{+0.025}_{-0.026}$	$D_M(0.15)$	635.7	$636^{+12}_{-12}$
$\Omega_c h^2$	0.11974	$0.1197^{+0.0023}_{-0.0023}$	$S_8$	0.8269	$0.827^{+0.026}_{-0.026}$	$H(0.38)$	83.12	$83.09^{+0.54}_{-0.55}$
$100\theta_{MC}$	1.04094	$1.04096^{+0.00060}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	0.4529	$0.453^{+0.014}_{-0.014}$	$D_M(0.38)$	1520.7	$1522^{+20}_{-20}$
$\tau$	0.0545	$0.055^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.609^{+0.018}_{-0.018}$	$H(0.51)$	89.71	$89.69^{+0.50}_{-0.51}$
$w_0$	-1.030	$-1.028^{+0.065}_{-0.066}$	$\sigma_8/h^{0.5}$	0.9911	$0.991^{+0.025}_{-0.026}$	$D_M(0.51)$	1972.2	$1973^{+21}_{-21}$
$\ln(10^{10} A_s)$	3.0451	$3.045^{+0.032}_{-0.031}$	$r_{drag} h$	100.60	$100.5^{+2.4}_{-2.3}$	$H(0.61)$	95.25	$95.25^{+0.52}_{-0.53}$
$n_s$	0.9664	$0.9660^{+0.0078}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	2.445	$2.446^{+0.055}_{-0.057}$	$D_M(0.61)$	2296.6	$2298^{+22}_{-22}$
$y_{cal}$	1.00092	$1.0006^{+0.0049}_{-0.0048}$	$z_{re}$	7.68	$7.7^{+1.5}_{-1.6}$	$H(2.33)$	235.98	$236.0^{+1.2}_{-1.2}$
$A_{217}^{CIB}$	47.2	$47^{+10}_{-10}$	$10^9 A_s$	2.101	$2.101^{+0.069}_{-0.064}$	$D_M(2.33)$	5758.2	$5759^{+17}_{-17}$
$\xi^{tSZ \times CIB}$	0.42	—	$10^9 A_s e^{-2\tau}$	1.8844	$1.882^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	0.4602	$0.460^{+0.017}_{-0.017}$
$A_{143}^{tSZ}$	7.25	$5.5^{+3.8}_{-3.8}$	$D_{40}$	1229.0	$1229^{+24}_{-23}$	$\sigma_8(0.15)$	0.7577	$0.757^{+0.024}_{-0.024}$
$A_{100}^{PS}$	250	$258^{+50}_{-50}$	$D_{220}$	5739	$5734^{+74}_{-75}$	$f\sigma_8(0.38)$	0.4812	$0.481^{+0.019}_{-0.019}$
$A_{143}^{PS}$	47.2	$46^{+10}_{-20}$	$D_{810}$	2542.6	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	0.6718	$0.671^{+0.021}_{-0.022}$
$A_{143 \times 217}^{PS}$	47.4	$42^{+20}_{-20}$	$D_{1420}$	818.9	$817.5^{+9.4}_{-9.3}$	$f\sigma_8(0.51)$	0.4805	$0.480^{+0.019}_{-0.020}$
$A_{217}^{PS}$	119.8	$115^{+20}_{-20}$	$D_{2000}$	231.47	$231.0^{+3.1}_{-3.1}$	$\sigma_8(0.51)$	0.6286	$0.628^{+0.019}_{-0.020}$
$A^{kSZ}$	0.00	$< 7.99$	$n_{s,0.002}$	0.9664	$0.9660^{+0.0078}_{-0.0078}$	$f\sigma_8(0.61)$	0.4758	$0.475^{+0.019}_{-0.020}$
$A_{100}^{dustTT}$	8.82	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245408	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5981	$0.597^{+0.018}_{-0.019}$
$A_{143}^{dustTT}$	10.97	$10.9^{+3.5}_{-3.4}$	$Y_P^{BBN}$	0.246735	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.3016	$0.3012^{+0.0091}_{-0.0093}$
$A_{143 \times 217}^{dustTT}$	19.7	$18.6^{+6.5}_{-6.4}$	$10^5 D/H$	2.580	$2.582^{+0.052}_{-0.049}$	$\sigma_8(2.33)$	0.3102	$0.3098^{+0.0080}_{-0.0081}$
$A_{217}^{dustTT}$	95.0	$94^{+10}_{-10}$	Age/Gyr	13.7741	$13.777^{+0.044}_{-0.043}$	$f_{2000}^{143}$	28.8	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.075}_{-0.074}$	$z_*$	1089.856	$1089.87^{+0.48}_{-0.47}$	$f_{2000}^{143 \times 217}$	31.96	$32^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.058}_{-0.058}$	$r_*$	144.47	$144.49^{+0.52}_{-0.52}$	$f_{2000}^{217}$	106.67	$106.9^{+3.5}_{-3.5}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04112	$1.04114^{+0.00059}_{-0.00056}$	$\chi_{small}^2$	396.06	$397.2 (\nu: 2.0)$
$A_{143}^{dustTE}$	0.225	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8768	$13.878^{+0.049}_{-0.049}$	$\chi_{lowl}^2$	23.11	$23.27 (\nu: 0.4)$
$A_{143 \times 217}^{dustTE}$	0.665	$0.67^{+0.16}_{-0.16}$	$z_{drag}$	1060.01	$1059.96^{+0.58}_{-0.56}$	$\chi_{plik}^2$	2344.5	$2359.3 (\nu: 16.8)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.52}$	$r_{drag}$	147.12	$147.14^{+0.53}_{-0.53}$	$\chi_{JLA}^2$	1034.74	$1035.39 (\nu: 0.5)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14086	$0.14083^{+0.00059}_{-0.00060}$	$\chi_{6DF}^2$	0.000	$0.048 (\nu: 0.0)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160727	$0.16075^{+0.00034}_{-0.00033}$	$\chi_{MGS}^2$	1.61	$1.64 (\nu: 0.2)$
$H_0$	68.38	$68.3^{+1.6}_{-1.6}$	$z_{eq}$	3397	$3396^{+52}_{-52}$	$\chi_{DR12BAO}^2$	4.35	$4.8 (\nu: 0.7)$
$\Omega_\Lambda$	0.6946	$0.694^{+0.015}_{-0.015}$	$k_{eq}$	0.010367	$0.01037^{+0.00016}_{-0.00016}$	$\chi_{prior}^2$	1.9	$11.5 (\nu: 10.1)$
$\Omega_m$	0.3054	$0.306^{+0.015}_{-0.015}$	$100\theta_{eq}$	0.8144	$0.8145^{+0.0098}_{-0.0097}$	$\chi_{BAO}^2$	5.96	$6.5 (\nu: 0.5)$
$\Omega_m h^2$	0.14279	$0.1428^{+0.0022}_{-0.0022}$	$100\theta_{s,eq}$	0.4499	$0.4500^{+0.0050}_{-0.0050}$	$\chi_{CMB}^2$	2763.7	$2779.8 (\nu: 16.7)$
$\Omega_m h^3$	0.09763	$0.0975^{+0.0028}_{-0.0029}$	$H(0.15)$	73.34	$73.3^{+1.0}_{-1.0}$			

Best-fit  $\chi_{eff}^2 = 3806.25$ ;  $\bar{\chi}_{eff}^2 = 3833.20$ ;  $R - 1 = 0.00703$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 4.35 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3\_2\_29: 23.11 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.51 SN - JLA Pantheon18: 1034.74

17.22 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022416	$0.02240^{+0.00027}_{-0.00027}$	$\Omega_m h^3$	0.09767	$0.0975^{+0.0027}_{-0.0027}$	$100\theta_{s,eq}$	0.45013	$0.4501^{+0.0044}_{-0.0043}$
$\Omega_c h^2$	0.11965	$0.1197^{+0.0020}_{-0.0020}$	$\sigma_8$	0.8197	$0.818^{+0.022}_{-0.022}$	$H(0.15)$	73.40	$73.3^{+1.0}_{-1.0}$
$100\theta_{MC}$	1.04098	$1.04096^{+0.00059}_{-0.00056}$	$S_8$	0.8260	$0.826^{+0.021}_{-0.021}$	$D_M(0.15)$	635.2	$636^{+12}_{-12}$
$\tau$	0.0551	$0.055^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4524	$0.452^{+0.011}_{-0.011}$	$H(0.38)$	83.16	$83.11^{+0.53}_{-0.52}$
$w_0$	-1.030	$-1.028^{+0.062}_{-0.062}$	$\sigma_8 \Omega_m^{0.25}$	0.6090	$0.608^{+0.013}_{-0.014}$	$D_M(0.38)$	1519.6	$1521^{+20}_{-20}$
$\ln(10^{10} A_s)$	3.0459	$3.045^{+0.030}_{-0.027}$	$\sigma_8/h^{0.5}$	0.9908	$0.990^{+0.020}_{-0.020}$	$H(0.51)$	89.739	$89.71^{+0.45}_{-0.47}$
$n_s$	0.9668	$0.9659^{+0.0074}_{-0.0075}$	$r_{drag} h$	100.70	$100.6^{+2.4}_{-2.3}$	$D_M(0.51)$	1970.9	$1973^{+21}_{-21}$
$y_{cal}$	1.00070	$1.0006^{+0.0050}_{-0.0048}$	$\langle d^2 \rangle^{1/2}$	2.4445	$2.445^{+0.042}_{-0.044}$	$H(0.61)$	95.277	$95.26^{+0.47}_{-0.49}$
$A_{217}^{CIB}$	46.6	$47^{+10}_{-10}$	$z_{re}$	7.75	$7.7^{+1.4}_{-1.5}$	$D_M(0.61)$	2295.2	$2297^{+21}_{-22}$
$\xi^{tSZ \times CIB}$	0.56	—	$10^9 A_s$	2.103	$2.101^{+0.063}_{-0.057}$	$H(2.33)$	235.93	$236.0^{+1.1}_{-1.1}$
$A_{143}^{tSZ}$	7.14	$5.5^{+3.8}_{-3.8}$	$10^9 A_s e^{-2\tau}$	1.8833	$1.882^{+0.020}_{-0.020}$	$D_M(2.33)$	5756.9	$5758^{+17}_{-17}$
$A_{100}^{PS}$	249	$258^{+50}_{-50}$	$D_{40}$	1227.8	$1229^{+22}_{-22}$	$f\sigma_8(0.15)$	0.4598	$0.460^{+0.013}_{-0.013}$
$A_{143}^{PS}$	49.4	$46^{+10}_{-20}$	$D_{220}$	5737	$5735^{+74}_{-75}$	$\sigma_8(0.15)$	0.7579	$0.757^{+0.020}_{-0.021}$
$A_{143 \times 217}^{PS}$	50.9	$42^{+20}_{-20}$	$D_{810}$	2541.8	$2539^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4810	$0.480^{+0.016}_{-0.016}$
$A_{217}^{PS}$	120.9	$115^{+20}_{-20}$	$D_{1420}$	818.8	$817.5^{+9.5}_{-9.3}$	$\sigma_8(0.38)$	0.6721	$0.671^{+0.018}_{-0.018}$
$A^{kSZ}$	0.01	< 8.00	$D_{2000}$	231.49	$231.0^{+3.1}_{-3.1}$	$f\sigma_8(0.51)$	0.4804	$0.480^{+0.016}_{-0.016}$
$A_{100}^{dustTT}$	8.82	$8.9^{+3.6}_{-3.6}$	$n_{s,0.002}$	0.9668	$0.9659^{+0.0074}_{-0.0075}$	$\sigma_8(0.51)$	0.6289	$0.628^{+0.017}_{-0.017}$
$A_{143}^{dustTT}$	11.04	$10.9^{+3.4}_{-3.4}$	$Y_P$	0.245413	$0.24540^{+0.00010}_{-0.00011}$	$f\sigma_8(0.61)$	0.4758	$0.475^{+0.016}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	20.0	$18.6^{+6.5}_{-6.4}$	$Y_P^{BBN}$	0.246740	$0.24673^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5984	$0.597^{+0.016}_{-0.016}$
$A_{217}^{dustTT}$	95.2	$94^{+10}_{-10}$	$10^5 D/H$	2.577	$2.581^{+0.051}_{-0.049}$	$f\sigma_8(2.33)$	0.3018	$0.3012^{+0.0079}_{-0.0080}$
$A_{100}^{dustTE}$	0.114	$0.114^{+0.076}_{-0.073}$	Age/Gyr	13.7710	$13.776^{+0.043}_{-0.043}$	$\sigma_8(2.33)$	0.3104	$0.3098^{+0.0069}_{-0.0069}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.057}_{-0.059}$	$z_*$	1089.831	$1089.86^{+0.46}_{-0.45}$	$\chi^2_{lensing}$	8.72	$9.13 (\nu: 0.2)$
$A_{100 \times 217}^{dustTE}$	0.481	$0.48^{+0.17}_{-0.16}$	$r_*$	144.488	$144.50^{+0.46}_{-0.46}$	$\chi^2_{small}$	396.20	$397.1 (\nu: 1.6)$
$A_{143}^{dustTE}$	0.225	$0.22^{+0.11}_{-0.11}$	$100\theta_*$	1.04116	$1.04114^{+0.00058}_{-0.00055}$	$\chi^2_{lowl}$	23.06	$23.27 (\nu: 0.3)$
$A_{143 \times 217}^{dustTE}$	0.663	$0.66^{+0.16}_{-0.16}$	$D_M(z_*)/Gpc$	13.8776	$13.879^{+0.044}_{-0.043}$	$\chi^2_{plik}$	2344.7	$2359.1 (\nu: 15.8)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.53}_{-0.52}$	$z_{drag}$	1060.01	$1059.97^{+0.57}_{-0.57}$	$\chi^2_{JLA}$	1034.76	$1035.36 (\nu: 0.4)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$r_{drag}$	147.135	$147.15^{+0.47}_{-0.47}$	$\chi^2_{6DF}$	0.000	$0.046 (\nu: 0.0)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$k_D$	0.14086	$0.14082^{+0.00056}_{-0.00056}$	$\chi^2_{MGS}$	1.68	$1.67 (\nu: 0.2)$
$H_0$	68.44	$68.3^{+1.7}_{-1.6}$	$100\theta_D$	0.160717	$0.16074^{+0.00034}_{-0.00033}$	$\chi^2_{DR12BAO}$	4.23	$4.7 (\nu: 0.5)$
$\Omega_\Lambda$	0.6953	$0.694^{+0.015}_{-0.015}$	$z_{eq}$	3394.8	$3395^{+45}_{-45}$	$\chi^2_{prior}$	1.7	$11.6 (\nu: 10.2)$
$\Omega_m$	0.3047	$0.306^{+0.015}_{-0.015}$	$k_{eq}$	0.010361	$0.01036^{+0.00014}_{-0.00014}$	$\chi^2_{CMB}$	2772.6	$2788.6 (\nu: 16.5)$
$\Omega_m h^2$	0.14271	$0.1427^{+0.0019}_{-0.0019}$	$100\theta_{eq}$	0.8148	$0.8147^{+0.0086}_{-0.0084}$	$\chi^2_{BAO}$	5.91	$6.45 (\nu: 0.4)$

Best-fit  $\chi^2_{eff} = 3814.98$ ;  $\Delta\chi^2_{eff} = -0.69$ ;  $\bar{\chi}^2_{eff} = 3841.96$ ;  $\Delta\bar{\chi}^2_{eff} = 0.11$ ;  $R - 1 = 0.01118$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.68 ( $\Delta$  0.40) DR12BAO: 4.23 ( $\Delta$  -0.01) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.72 ( $\Delta$  -0.00) small\_100x143\_offlike5\_EE\_Aplanc  
396.20 ( $\Delta$  -0.32) commander\_dx12\_v3.2\_29: 23.06 ( $\Delta$  0.18) plik\_rd12\_HM\_v22b.TTTEEE: 2344.67 ( $\Delta$  -0.60) SN - JLA Pantheon18: 1034.76 ( $\Delta$  -0.22)

17.23 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02239^{+0.00028}_{-0.00028}$	$\sigma_8$	$0.819^{+0.025}_{-0.026}$	$D_M(0.15)$	$636^{+12}_{-12}$
$\Omega_c h^2$	$0.1197^{+0.0023}_{-0.0023}$	$S_8$	$0.827^{+0.026}_{-0.025}$	$H(0.38)$	$83.10^{+0.54}_{-0.54}$
$100\theta_{MC}$	$1.04096^{+0.00060}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.014}_{-0.014}$	$D_M(0.38)$	$1522^{+20}_{-20}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.017}_{-0.018}$	$H(0.51)$	$89.70^{+0.50}_{-0.51}$
$w_0$	$-1.028^{+0.065}_{-0.066}$	$\sigma_8/h^{0.5}$	$0.991^{+0.025}_{-0.025}$	$D_M(0.51)$	$1973^{+21}_{-21}$
$\ln(10^{10} A_s)$	$3.047^{+0.029}_{-0.027}$	$r_{\text{drag}} h$	$100.5^{+2.4}_{-2.3}$	$H(0.61)$	$95.25^{+0.52}_{-0.53}$
$n_s$	$0.9660^{+0.0078}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.054}_{-0.055}$	$D_M(0.61)$	$2298^{+22}_{-22}$
$y_{\text{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$z_{\text{re}}$	$< 9.02$	$H(2.33)$	$236.0^{+1.2}_{-1.2}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.105^{+0.061}_{-0.056}$	$D_M(2.33)$	$5759^{+17}_{-17}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	$0.460^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1229^{+23}_{-23}$	$\sigma_8(0.15)$	$0.757^{+0.023}_{-0.024}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{220}$	$5734^{+74}_{-75}$	$f\sigma_8(0.38)$	$0.481^{+0.019}_{-0.019}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.672^{+0.021}_{-0.021}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.5^{+9.4}_{-9.2}$	$f\sigma_8(0.51)$	$0.480^{+0.019}_{-0.019}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.1}_{-3.0}$	$\sigma_8(0.51)$	$0.628^{+0.019}_{-0.019}$
$A^{\text{kSZ}}$	$< 7.96$	$n_{s,0.002}$	$0.9660^{+0.0078}_{-0.0078}$	$f\sigma_8(0.61)$	$0.476^{+0.019}_{-0.019}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.5}_{-3.6}$	$Y_P$	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.598^{+0.018}_{-0.018}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.3014^{+0.0089}_{-0.0091}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.4}_{-6.4}$	$10^5 D/H$	$2.582^{+0.052}_{-0.049}$	$\sigma_8(2.33)$	$0.3101^{+0.0078}_{-0.0078}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.776^{+0.044}_{-0.043}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.074}$	$z_*$	$1089.87^{+0.48}_{-0.47}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$r_*$	$144.49^{+0.52}_{-0.52}$	$f_{2000}^{217}$	$106.9^{+3.5}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04114^{+0.00059}_{-0.00056}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 2.0)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.878^{+0.049}_{-0.049}$	$\chi_{\text{lowl}}^2$	$23.28 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.96^{+0.58}_{-0.57}$	$\chi_{\text{plik}}^2$	$2359.1 (\nu: 16.6)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$r_{\text{drag}}$	$147.14^{+0.53}_{-0.53}$	$\chi_{\text{JLA}}^2$	$1035.39 (\nu: 0.5)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14083^{+0.00059}_{-0.00060}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16075^{+0.00034}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.64 (\nu: 0.2)$
$H_0$	$68.3^{+1.6}_{-1.6}$	$z_{\text{eq}}$	$3396^{+52}_{-51}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 0.7)$
$\Omega_\Lambda$	$0.694^{+0.015}_{-0.015}$	$k_{\text{eq}}$	$0.01036^{+0.00016}_{-0.00016}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.1)$
$\Omega_m$	$0.306^{+0.015}_{-0.015}$	$100\theta_{\text{eq}}$	$0.8146^{+0.0097}_{-0.0097}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 0.5)$
$\Omega_m h^2$	$0.1428^{+0.0022}_{-0.0021}$	$100\theta_{s,\text{eq}}$	$0.4500^{+0.0050}_{-0.0050}$	$\chi_{\text{CMB}}^2$	$2779.6 (\nu: 16.3)$
$\Omega_m h^3$	$0.0975^{+0.0028}_{-0.0029}$	$H(0.15)$	$73.3^{+1.0}_{-1.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 3832.98; R - 1 = 0.00746$$

17.24 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02240^{+0.00027}_{-0.00027}$	$\sigma_8$	$0.819^{+0.022}_{-0.022}$	$D_M(0.15)$	$636^{+12}_{-12}$
$\Omega_c h^2$	$0.1196^{+0.0020}_{-0.0020}$	$S_8$	$0.826^{+0.021}_{-0.021}$	$H(0.38)$	$83.12^{+0.52}_{-0.51}$
$100\theta_{MC}$	$1.04097^{+0.00059}_{-0.00056}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.011}_{-0.011}$	$D_M(0.38)$	$1521^{+20}_{-20}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.013}_{-0.014}$	$H(0.51)$	$89.72^{+0.45}_{-0.46}$
$w_0$	$-1.027^{+0.061}_{-0.062}$	$\sigma_8/h^{0.5}$	$0.990^{+0.019}_{-0.020}$	$D_M(0.51)$	$1973^{+21}_{-21}$
$\ln(10^{10} A_s)$	$3.046^{+0.026}_{-0.025}$	$r_{\text{drag}} h$	$100.6^{+2.4}_{-2.3}$	$H(0.61)$	$95.27^{+0.47}_{-0.47}$
$n_s$	$0.9661^{+0.0074}_{-0.0075}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.042}_{-0.043}$	$D_M(0.61)$	$2297^{+22}_{-22}$
$y_{\text{cal}}$	$1.0006^{+0.0050}_{-0.0047}$	$z_{\text{re}}$	$7.8^{+1.2}_{-1.3}$	$H(2.33)$	$236.0^{+1.1}_{-1.1}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.104^{+0.055}_{-0.052}$	$D_M(2.33)$	$5758^{+17}_{-17}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882^{+0.020}_{-0.020}$	$f\sigma_8(0.15)$	$0.460^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1229^{+22}_{-22}$	$\sigma_8(0.15)$	$0.757^{+0.020}_{-0.020}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{220}$	$5735^{+74}_{-76}$	$f\sigma_8(0.38)$	$0.481^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	$45^{+10}_{-20}$	$D_{810}$	$2539^{+27}_{-26}$	$\sigma_8(0.38)$	$0.671^{+0.018}_{-0.018}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$817.5^{+9.5}_{-9.3}$	$f\sigma_8(0.51)$	$0.480^{+0.016}_{-0.016}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.0^{+3.1}_{-3.1}$	$\sigma_8(0.51)$	$0.628^{+0.017}_{-0.017}$
$A^{\text{kSZ}}$	$< 8.02$	$n_{s,0.002}$	$0.9661^{+0.0074}_{-0.0075}$	$f\sigma_8(0.61)$	$0.475^{+0.016}_{-0.016}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_P$	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.598^{+0.016}_{-0.016}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.4}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.3013^{+0.0078}_{-0.0080}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$10^5 D/H$	$2.581^{+0.051}_{-0.049}$	$\sigma_8(2.33)$	$0.3100^{+0.0068}_{-0.0068}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.775^{+0.044}_{-0.043}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.076}_{-0.073}$	$z_*$	$1089.85^{+0.45}_{-0.45}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.057}_{-0.059}$	$r_*$	$144.51^{+0.46}_{-0.46}$	$f_{2000}^{217}$	$106.9^{+3.5}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04115^{+0.00058}_{-0.00055}$	$\chi_{\text{lensing}}^2$	$9.11 (\nu: 0.2)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	$13.879^{+0.044}_{-0.043}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.66^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.98^{+0.57}_{-0.58}$	$\chi_{\text{lowl}}^2$	$23.27 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.53}_{-0.52}$	$r_{\text{drag}}$	$147.16^{+0.47}_{-0.47}$	$\chi_{\text{plik}}^2$	$2359.0 (\nu: 15.7)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14082^{+0.00056}_{-0.00056}$	$\chi_{\text{JLA}}^2$	$1035.36 (\nu: 0.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16074^{+0.00034}_{-0.00033}$	$\chi_{6\text{DF}}^2$	$0.046 (\nu: 0.0)$
$H_0$	$68.3^{+1.7}_{-1.6}$	$z_{\text{eq}}$	$3394^{+45}_{-44}$	$\chi_{\text{MGS}}^2$	$1.67 (\nu: 0.2)$
$\Omega_\Lambda$	$0.694^{+0.015}_{-0.015}$	$k_{\text{eq}}$	$0.01036^{+0.00014}_{-0.00014}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 0.5)$
$\Omega_m$	$0.306^{+0.015}_{-0.015}$	$100\theta_{\text{eq}}$	$0.8149^{+0.0085}_{-0.0083}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.2)$
$\Omega_m h^2$	$0.1427^{+0.0019}_{-0.0019}$	$100\theta_{s,\text{eq}}$	$0.4502^{+0.0043}_{-0.0043}$	$\chi_{\text{CMB}}^2$	$2788.4 (\nu: 16.3)$
$\Omega_m h^3$	$0.0975^{+0.0027}_{-0.0027}$	$H(0.15)$	$73.3^{+1.0}_{-1.0}$	$\chi_{\text{BAO}}^2$	$6.42 (\nu: 0.4)$

$$\bar{\chi}_{\text{eff}}^2 = 3841.79; \Delta \bar{\chi}_{\text{eff}}^2 = 0.05; R - 1 = 0.01215$$

## 18 w+wa

### 18.1 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022172	$0.02213^{+0.00041}_{-0.00041}$	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.609^{+0.028}_{-0.027}$	$H(0.38)$	84.71	$84.8^{+2.0}_{-2.2}$
$\Omega_c h^2$	0.12035	$0.1206^{+0.0036}_{-0.0036}$	$\sigma_8/h^{0.5}$	0.9899	$0.990^{+0.040}_{-0.039}$	$D_M(0.38)$	1527.0	$1527^{+34}_{-35}$
$100\theta_{MC}$	1.04079	$1.04078^{+0.00090}_{-0.00090}$	$r_{drag}h$	95.6	$95.5^{+7.2}_{-6.7}$	$H(0.51)$	91.42	$91.4^{+2.3}_{-2.4}$
$\tau$	0.0530	$0.052^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.466	$2.469^{+0.082}_{-0.084}$	$D_M(0.51)$	1969.8	$1969^{+35}_{-35}$
$w_0$	-0.62	$-0.59^{+0.50}_{-0.51}$	$z_{re}$	7.57	$7.4^{+1.6}_{-1.8}$	$H(0.61)$	96.82	$96.8^{+2.3}_{-2.3}$
$w_a$	-1.20	$-1.3^{+1.4}_{-1.6}$	$10^9 A_s$	2.093	$2.089^{+0.069}_{-0.068}$	$D_M(0.61)$	2288.5	$2288^{+36}_{-36}$
$\ln(10^{10} A_s)$	3.0413	$3.039^{+0.033}_{-0.033}$	$10^9 A_s e^{-2\tau}$	1.8827	$1.884^{+0.025}_{-0.026}$	$H(2.33)$	233.96	$234.0^{+2.5}_{-2.3}$
$n_s$	0.9644	$0.963^{+0.011}_{-0.010}$	$D_{40}$	1228.6	$1232^{+28}_{-29}$	$D_M(2.33)$	5754.1	$5757^{+28}_{-29}$
$y_{cal}$	1.00010	$1.0004^{+0.0049}_{-0.0048}$	$D_{220}$	5710	$5714^{+81}_{-78}$	$f\sigma_8(0.15)$	0.4487	$0.449^{+0.028}_{-0.027}$
$A_{217}^{CIB}$	48.3	$48^{+10}_{-10}$	$D_{810}$	2536.0	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	0.7361	$0.736^{+0.051}_{-0.047}$
$\xi^{tSZ \times CIB}$	0.37	—	$D_{1420}$	815.1	$814.4^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	0.4595	$0.460^{+0.043}_{-0.039}$
$A_{143}^{tSZ}$	6.99	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	230.03	$229.7^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	0.6535	$0.653^{+0.044}_{-0.041}$
$A_{100}^{PS}$	253	$262^{+60}_{-50}$	$n_{s,0.002}$	0.9644	$0.963^{+0.011}_{-0.010}$	$f\sigma_8(0.51)$	0.4597	$0.460^{+0.044}_{-0.041}$
$A_{143}^{PS}$	49.9	$49^{+20}_{-20}$	$Y_P$	0.245314	$0.24529^{+0.00017}_{-0.00019}$	$\sigma_8(0.51)$	0.6122	$0.612^{+0.040}_{-0.037}$
$A_{143 \times 217}^{PS}$	48.0	$44^{+20}_{-20}$	$Y_P^{BBN}$	0.246641	$0.24662^{+0.00017}_{-0.00020}$	$f\sigma_8(0.61)$	0.4569	$0.458^{+0.043}_{-0.040}$
$A_{217}^{PS}$	119.8	$115^{+20}_{-20}$	$10^5 D/H$	2.623	$2.631^{+0.079}_{-0.076}$	$\sigma_8(0.61)$	0.5830	$0.583^{+0.038}_{-0.035}$
$A^{kSZ}$	0.01	< 8.38	Age/Gyr	13.775	$13.777^{+0.069}_{-0.067}$	$f\sigma_8(2.33)$	0.2963	$0.296^{+0.017}_{-0.016}$
$A_{100}^{dustTT}$	8.90	$8.9^{+3.6}_{-3.6}$	$z_*$	1090.20	$1090.28^{+0.71}_{-0.72}$	$\sigma_8(2.33)$	0.3014	$0.301^{+0.017}_{-0.016}$
$A_{143}^{dustTT}$	10.75	$10.7^{+3.5}_{-3.5}$	$r_*$	144.49	$144.47^{+0.86}_{-0.85}$	$f_{2000}^{143}$	30.1	$31^{+6}_{-6}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	1.04100	$1.04099^{+0.00089}_{-0.00088}$	$f_{2000}^{143 \times 217}$	33.07	$33^{+4}_{-4}$
$A_{217}^{dustTT}$	94.6	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.880	$13.878^{+0.081}_{-0.079}$	$f_{2000}^{217}$	107.46	$108.0^{+3.7}_{-3.7}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.51	$1059.42^{+0.86}_{-0.86}$	$\chi_{simall}^2$	395.89	$396.9 (\nu: 1.4)$
$c_{217}$	0.99825	$0.9982^{+0.0012}_{-0.0012}$	$r_{drag}$	147.22	$147.21^{+0.88}_{-0.87}$	$\chi_{lowl}^2$	23.46	$23.8 (\nu: 0.7)$
$H_0$	64.94	$64.9^{+4.9}_{-4.5}$	$k_D$	0.14058	$0.14055^{+0.00098}_{-0.00098}$	$\chi_{plik}^2$	758.0	$770.5 (\nu: 14.3)$
$\Omega_\Lambda$	0.6605	$0.658^{+0.050}_{-0.049}$	$100\theta_D$	0.16101	$0.16106^{+0.00052}_{-0.00050}$	$\chi_{6DF}^2$	0.32	$0.56 (\nu: 0.2)$
$\Omega_m$	0.3395	$0.342^{+0.049}_{-0.050}$	$z_{eq}$	3406	$3410^{+83}_{-84}$	$\chi_{MGS}^2$	0.63	$0.89 (\nu: 0.4)$
$\Omega_m h^2$	0.14316	$0.1433^{+0.0035}_{-0.0035}$	$k_{eq}$	0.010395	$0.01041^{+0.00025}_{-0.00026}$	$\chi_{DR12BAO}^2$	3.49	$5.0 (\nu: 1.1)$
$\Omega_m h^3$	0.0930	$0.0930^{+0.0077}_{-0.0067}$	$100\theta_{eq}$	0.8120	$0.811^{+0.016}_{-0.015}$	$\chi_{prior}^2$	1.3	$7.2 (\nu: 6.4)$
$\sigma_8$	0.798	$0.798^{+0.053}_{-0.049}$	$100\theta_{s,eq}$	0.4489	$0.4485^{+0.0081}_{-0.0079}$	$\chi_{BAO}^2$	4.43	$6.4 (\nu: 1.7)$
$S_8$	0.8486	$0.850^{+0.043}_{-0.044}$	$H(0.15)$	73.09	$73.1^{+1.9}_{-1.7}$	$\chi_{CMB}^2$	1177.3	$1191.2 (\nu: 14.9)$
$\sigma_8 \Omega_m^{0.5}$	0.4648	$0.466^{+0.024}_{-0.024}$	$D_M(0.15)$	651.6	$652^{+27}_{-29}$			

Best-fit  $\chi_{eff}^2 = 1183.08$ ;  $\Delta\chi_{eff}^2 = -2.67$ ;  $\bar{\chi}_{eff}^2 = 1204.85$ ;  $\Delta\bar{\chi}_{eff}^2 = -1.18$ ;  $R - 1 = 0.00724$

$\chi_{eff}^2$ : BAO - 6DF: 0.32 ( $\Delta$  0.29) MGS: 0.62 ( $\Delta$  -0.65) DR12BAO: 3.49 ( $\Delta$  -0.70) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 ( $\Delta$  0.00) commander\_dx12\_v3\_2\_29: 23.46 ( $\Delta$  0.64) plik\_rd12\_HM\_v22\_TT: 757.98 ( $\Delta$  -2.12)

## 18.2 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022196	$0.02216^{+0.00039}_{-0.00039}$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.605^{+0.019}_{-0.019}$	$H(0.38)$	84.55	$84.7^{+2.2}_{-2.2}$
$\Omega_c h^2$	0.11973	$0.1199^{+0.0027}_{-0.0028}$	$\sigma_8/h^{0.5}$	0.9841	$0.984^{+0.028}_{-0.028}$	$D_M(0.38)$	1527.2	$1528^{+33}_{-34}$
$100\theta_{MC}$	1.04093	$1.04083^{+0.00086}_{-0.00086}$	$r_{drag}h$	96.1	$95.7^{+7.2}_{-6.8}$	$H(0.51)$	91.30	$91.5^{+2.4}_{-2.4}$
$\tau$	0.0525	$0.051^{+0.015}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.451	$2.455^{+0.052}_{-0.053}$	$D_M(0.51)$	1970.8	$1970^{+34}_{-35}$
$w_0$	-0.66	$-0.61^{+0.50}_{-0.53}$	$z_{re}$	7.51	$7.4^{+1.6}_{-1.6}$	$H(0.61)$	96.75	$96.9^{+2.3}_{-2.3}$
$w_a$	-1.01	$-1.2^{+1.4}_{-1.5}$	$10^9 A_s$	2.088	$2.084^{+0.062}_{-0.063}$	$D_M(0.61)$	2289.8	$2289^{+35}_{-36}$
$\ln(10^{10} A_s)$	3.0389	$3.037^{+0.030}_{-0.030}$	$10^9 A_s e^{-2\tau}$	1.8801	$1.881^{+0.022}_{-0.022}$	$H(2.33)$	234.01	$233.9^{+2.6}_{-2.3}$
$n_s$	0.9657	$0.9641^{+0.0092}_{-0.0088}$	$D_{40}$	1225.7	$1229^{+24}_{-24}$	$D_M(2.33)$	5752.4	$5755^{+29}_{-28}$
$y_{cal}$	1.00014	$1.0003^{+0.0047}_{-0.0048}$	$D_{220}$	5712	$5715^{+81}_{-78}$	$f\sigma_8(0.15)$	0.4463	$0.445^{+0.025}_{-0.024}$
$A_{217}^{CIB}$	48.8	$48^{+10}_{-10}$	$D_{810}$	2535.8	$2535^{+26}_{-26}$	$\sigma_8(0.15)$	0.7336	$0.732^{+0.046}_{-0.042}$
$\xi^{tSZ \times CIB}$	0.30	—	$D_{1420}$	815.4	$814.4^{+9.8}_{-9.9}$	$f\sigma_8(0.38)$	0.4577	$0.456^{+0.039}_{-0.038}$
$A_{143}^{tSZ}$	7.06	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	230.09	$229.6^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	0.6513	$0.650^{+0.040}_{-0.037}$
$A_{100}^{PS}$	254	$263^{+50}_{-50}$	$n_{s,0.002}$	0.9657	$0.9641^{+0.0092}_{-0.0088}$	$f\sigma_8(0.51)$	0.4577	$0.456^{+0.041}_{-0.037}$
$A_{143}^{PS}$	48.8	$49^{+20}_{-20}$	$Y_P$	0.245324	$0.24531^{+0.00016}_{-0.00019}$	$\sigma_8(0.51)$	0.6103	$0.609^{+0.037}_{-0.034}$
$A_{143 \times 217}^{PS}$	46.1	$43^{+20}_{-20}$	$Y_P^{BBN}$	0.246650	$0.24663^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	0.4547	$0.453^{+0.040}_{-0.037}$
$A_{217}^{PS}$	118.8	$115^{+20}_{-20}$	$10^5 D/H$	2.619	$2.626^{+0.076}_{-0.073}$	$\sigma_8(0.61)$	0.5811	$0.580^{+0.035}_{-0.032}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.776	$13.779^{+0.068}_{-0.068}$	$f\sigma_8(2.33)$	0.2953	$0.294^{+0.015}_{-0.014}$
$A_{100}^{dustTT}$	8.88	$8.9^{+3.6}_{-3.6}$	$z_*$	1090.12	$1090.18^{+0.63}_{-0.63}$	$\sigma_8(2.33)$	0.3011	$0.300^{+0.016}_{-0.015}$
$A_{143}^{dustTT}$	10.84	$10.7^{+3.4}_{-3.5}$	$r_*$	144.63	$144.61^{+0.68}_{-0.65}$	$f_{2000}^{143}$	30.2	$31^{+6}_{-6}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	1.04112	$1.04104^{+0.00085}_{-0.00084}$	$f_{2000}^{143 \times 217}$	33.06	$33^{+4}_{-4}$
$A_{217}^{dustTT}$	94.6	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.892	$13.891^{+0.064}_{-0.062}$	$f_{2000}^{217}$	107.48	$108.0^{+3.7}_{-3.7}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.51	$1059.44^{+0.87}_{-0.88}$	$\chi_{lensing}^2$	8.80	$9.4 (\nu: 0.5)$
$c_{217}$	0.99825	$0.9982^{+0.0012}_{-0.0012}$	$r_{drag}$	147.36	$147.35^{+0.71}_{-0.69}$	$\chi_{small}^2$	395.81	$396.8 (\nu: 1.1)$
$H_0$	65.23	$64.9^{+4.9}_{-4.6}$	$k_D$	0.14045	$0.14043^{+0.00086}_{-0.00085}$	$\chi_{lowl}^2$	23.18	$23.52 (\nu: 0.4)$
$\Omega_\Lambda$	0.6649	$0.660^{+0.050}_{-0.049}$	$100\theta_D$	0.16101	$0.16104^{+0.00051}_{-0.00050}$	$\chi_{plik}^2$	758.6	$770.6 (\nu: 13.3)$
$\Omega_m$	0.3351	$0.340^{+0.049}_{-0.050}$	$z_{eq}$	3392	$3395^{+62}_{-63}$	$\chi_{6DF}^2$	0.25	$0.55 (\nu: 0.2)$
$\Omega_m h^2$	0.14257	$0.1427^{+0.0026}_{-0.0026}$	$k_{eq}$	0.010352	$0.01036^{+0.00019}_{-0.00019}$	$\chi_{MGS}^2$	0.72	$0.91 (\nu: 0.4)$
$\Omega_m h^3$	0.0930	$0.0927^{+0.0076}_{-0.0067}$	$100\theta_{eq}$	0.8147	$0.814^{+0.012}_{-0.012}$	$\chi_{DR12BAO}^2$	3.34	$4.9 (\nu: 1.2)$
$\sigma_8$	0.7948	$0.793^{+0.048}_{-0.044}$	$100\theta_{s,eq}$	0.4502	$0.4499^{+0.0061}_{-0.0059}$	$\chi_{prior}^2$	1.4	$7.2 (\nu: 6.5)$
$S_8$	0.8400	$0.842^{+0.031}_{-0.031}$	$H(0.15)$	73.05	$73.1^{+1.8}_{-1.7}$	$\chi_{CMB}^2$	1186.4	$1200.3 (\nu: 14.7)$
$\sigma_8 \Omega_m^{0.5}$	0.4601	$0.461^{+0.017}_{-0.017}$	$D_M(0.15)$	650.6	$652^{+28}_{-29}$	$\chi_{BAO}^2$	4.31	$6.3 (\nu: 1.9)$

Best-fit  $\chi_{eff}^2 = 1192.04$ ;  $\Delta\chi_{eff}^2 = -2.65$ ;  $\bar{\chi}_{eff}^2 = 1213.89$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.84$ ;  $R - 1 = 0.01045$

$\chi_{eff}^2$ : BAO - 6DF: 0.25 ( $\Delta$  0.23) MGS: 0.72 ( $\Delta$  -0.50) DR12BAO: 3.34 ( $\Delta$  -1.03) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.80 ( $\Delta$  -0.08) small\_100x143\_offlike5\_EE\_Aplanc 395.81 ( $\Delta$  -0.28) commander\_dx12\_v3.2\_29: 23.18 ( $\Delta$  0.22) plik\_rd12\_HM\_v22.TT: 758.58 ( $\Delta$  -1.23)

### 18.3 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02214^{+0.00041}_{-0.00040}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.028}_{-0.027}$	$H(0.38)$	$84.8^{+2.1}_{-2.2}$
$\Omega_{\mathrm{c}}h^2$	$0.1205^{+0.0036}_{-0.0036}$	$\sigma_8/h^{0.5}$	$0.992^{+0.040}_{-0.039}$	$D_{\mathrm{M}}(0.38)$	$1527^{+34}_{-35}$
$100\theta_{\mathrm{MC}}$	$1.04079^{+0.00090}_{-0.00090}$	$r_{\mathrm{drag}}h$	$95.6^{+7.2}_{-6.7}$	$H(0.51)$	$91.4^{+2.3}_{-2.4}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.472^{+0.081}_{-0.083}$	$D_{\mathrm{M}}(0.51)$	$1969^{+35}_{-35}$
$w_0$	$-0.59^{+0.50}_{-0.51}$	$z_{\mathrm{re}}$	$< 8.79$	$H(0.61)$	$96.8^{+2.3}_{-2.3}$
$w_a$	$-1.3^{+1.4}_{-1.6}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.058}_{-0.054}$	$D_{\mathrm{M}}(0.61)$	$2288^{+37}_{-36}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.028}_{-0.026}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884^{+0.026}_{-0.026}$	$H(2.33)$	$234.0^{+2.5}_{-2.3}$
$n_{\mathrm{s}}$	$0.963^{+0.011}_{-0.010}$	$D_{40}$	$1232^{+28}_{-29}$	$D_{\mathrm{M}}(2.33)$	$5757^{+28}_{-29}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0049}_{-0.0048}$	$D_{220}$	$5714^{+82}_{-79}$	$f\sigma_8(0.15)$	$0.449^{+0.028}_{-0.027}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	$0.737^{+0.050}_{-0.047}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.4^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	$0.460^{+0.043}_{-0.039}$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	$229.7^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.654^{+0.044}_{-0.041}$
$A_{100}^{\mathrm{PS}}$	$262^{+60}_{-50}$	$n_{\mathrm{s},0.002}$	$0.963^{+0.011}_{-0.010}$	$f\sigma_8(0.51)$	$0.461^{+0.044}_{-0.041}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	$0.613^{+0.040}_{-0.037}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24662^{+0.00017}_{-0.00019}$	$f\sigma_8(0.61)$	$0.458^{+0.043}_{-0.040}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.630^{+0.078}_{-0.076}$	$\sigma_8(0.61)$	$0.584^{+0.037}_{-0.034}$
$A^{\mathrm{kSZ}}$	$< 8.35$	$\mathrm{Age}/\mathrm{Gyr}$	$13.777^{+0.070}_{-0.067}$	$f\sigma_8(2.33)$	$0.296^{+0.017}_{-0.016}$
$A_{100}^{\mathrm{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.26^{+0.71}_{-0.72}$	$\sigma_8(2.33)$	$0.301^{+0.017}_{-0.015}$
$A_{143}^{\mathrm{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.48^{+0.87}_{-0.85}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	$1.04100^{+0.00089}_{-0.00088}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\mathrm{dustTT}}$	$93^{+10}_{-10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.879^{+0.081}_{-0.080}$	$f_{2000}^{217}$	$108.0^{+3.7}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.43^{+0.85}_{-0.87}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.3)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.22^{+0.88}_{-0.87}$	$\chi_{\mathrm{lowl}}^2$	$23.8 (\nu: 0.7)$
$H_0$	$64.9^{+4.9}_{-4.5}$	$k_{\mathrm{D}}$	$0.14055^{+0.00098}_{-0.00098}$	$\chi_{\mathrm{plik}}^2$	$770.3 (\nu: 14.3)$
$\Omega_{\Lambda}$	$0.659^{+0.050}_{-0.049}$	$100\theta_{\mathrm{D}}$	$0.16105^{+0.00051}_{-0.00050}$	$\chi_{6\mathrm{DF}}^2$	$0.56 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.341^{+0.049}_{-0.050}$	$z_{\mathrm{eq}}$	$3408^{+83}_{-84}$	$\chi_{\mathrm{MGS}}^2$	$0.89 (\nu: 0.4)$
$\Omega_{\mathrm{m}}h^2$	$0.1433^{+0.0035}_{-0.0035}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00025}_{-0.00026}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 (\nu: 1.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0930^{+0.0077}_{-0.0067}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.016}_{-0.015}$	$\chi_{\mathrm{prior}}^2$	$7.2 (\nu: 6.4)$
$\sigma_8$	$0.799^{+0.053}_{-0.049}$	$100\theta_{\mathrm{s,eq}}$	$0.4486^{+0.0081}_{-0.0079}$	$\chi_{\mathrm{BAO}}^2$	$6.4 (\nu: 1.8)$
$S_8$	$0.851^{+0.043}_{-0.044}$	$H(0.15)$	$73.1^{+1.9}_{-1.7}$	$\chi_{\mathrm{CMB}}^2$	$1190.9 (\nu: 14.5)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.466^{+0.024}_{-0.024}$	$D_{\mathrm{M}}(0.15)$	$652^{+28}_{-29}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1204.53; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -1.22; R - 1 = 0.00721$$



## 18.4 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}} h^2$	$0.02217^{+0.00039}_{-0.00039}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.605^{+0.019}_{-0.019}$	$H(0.38)$	$84.7^{+2.2}_{-2.2}$
$\Omega_{\text{c}} h^2$	$0.1198^{+0.0026}_{-0.0027}$	$\sigma_8/h^{0.5}$	$0.984^{+0.028}_{-0.028}$	$D_{\text{M}}(0.38)$	$1528^{+33}_{-34}$
$100\theta_{\text{MC}}$	$1.04085^{+0.00085}_{-0.00086}$	$r_{\text{drag}} h$	$95.7^{+7.2}_{-6.8}$	$H(0.51)$	$91.5^{+2.4}_{-2.5}$
$\tau$	$0.053^{+0.012}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.456^{+0.052}_{-0.053}$	$D_{\text{M}}(0.51)$	$1971^{+35}_{-35}$
$w_0$	$-0.61^{+0.52}_{-0.51}$	$z_{\text{re}}$	$< 8.71$	$H(0.61)$	$96.9^{+2.3}_{-2.3}$
$w_a$	$-1.2^{+1.4}_{-1.5}$	$10^9 A_{\text{s}}$	$2.091^{+0.053}_{-0.048}$	$D_{\text{M}}(0.61)$	$2289^{+36}_{-36}$
$\ln(10^{10} A_{\text{s}})$	$3.040^{+0.025}_{-0.023}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.880^{+0.022}_{-0.021}$	$H(2.33)$	$233.9^{+2.6}_{-2.3}$
$n_{\text{s}}$	$0.9645^{+0.0090}_{-0.0088}$	$D_{40}$	$1229^{+24}_{-25}$	$D_{\text{M}}(2.33)$	$5755^{+29}_{-28}$
$y_{\text{cal}}$	$1.0003^{+0.0048}_{-0.0048}$	$D_{220}$	$5715^{+81}_{-78}$	$f\sigma_8(0.15)$	$0.445^{+0.026}_{-0.024}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2535^{+26}_{-26}$	$\sigma_8(0.15)$	$0.732^{+0.046}_{-0.043}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.4^{+9.8}_{-9.9}$	$f\sigma_8(0.38)$	$0.456^{+0.039}_{-0.038}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.7}_{-3.9}$	$D_{2000}$	$229.7^{+3.5}_{-3.4}$	$\sigma_8(0.38)$	$0.650^{+0.041}_{-0.037}$
$A_{100}^{\text{PS}}$	$263^{+50}_{-60}$	$n_{\text{s},0.002}$	$0.9645^{+0.0090}_{-0.0088}$	$f\sigma_8(0.51)$	$0.456^{+0.041}_{-0.037}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24531^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	$0.609^{+0.037}_{-0.034}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	$0.454^{+0.040}_{-0.037}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.624^{+0.074}_{-0.073}$	$\sigma_8(0.61)$	$0.580^{+0.034}_{-0.032}$
$A^{\text{kSZ}}$	$< 8.36$	$\text{Age}/\text{Gyr}$	$13.780^{+0.069}_{-0.068}$	$f\sigma_8(2.33)$	$0.295^{+0.015}_{-0.014}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.15^{+0.62}_{-0.62}$	$\sigma_8(2.33)$	$0.300^{+0.016}_{-0.015}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$r_*$	$144.64^{+0.66}_{-0.63}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.4}$	$100\theta_*$	$1.04105^{+0.00084}_{-0.00084}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.894^{+0.063}_{-0.060}$	$f_{2000}^{217}$	$108.0^{+3.7}_{-3.6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.46^{+0.86}_{-0.86}$	$\chi_{\text{lensing}}^2$	$9.4 (\nu: 0.5)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.38^{+0.69}_{-0.67}$	$\chi_{\text{simall}}^2$	$396.6 (\nu: 1.0)$
$H_0$	$65.0^{+4.9}_{-4.6}$	$k_{\text{D}}$	$0.14041^{+0.00085}_{-0.00083}$	$\chi_{\text{lowl}}^2$	$23.50 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.661^{+0.049}_{-0.049}$	$100\theta_{\text{D}}$	$0.16104^{+0.00051}_{-0.00050}$	$\chi_{\text{plik}}^2$	$770.5 (\nu: 13.4)$
$\Omega_{\text{m}}$	$0.339^{+0.049}_{-0.049}$	$z_{\text{eq}}$	$3392^{+59}_{-61}$	$\chi_{6\text{DF}}^2$	$0.54 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	$0.1426^{+0.0025}_{-0.0026}$	$k_{\text{eq}}$	$0.01035^{+0.00018}_{-0.00019}$	$\chi_{\text{MGS}}^2$	$0.91 (\nu: 0.4)$
$\Omega_{\text{m}} h^3$	$0.0926^{+0.0076}_{-0.0067}$	$100\theta_{\text{eq}}$	$0.815^{+0.012}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\sigma_8$	$0.793^{+0.048}_{-0.044}$	$100\theta_{\text{s,eq}}$	$0.4502^{+0.0059}_{-0.0056}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.5)$
$S_8$	$0.842^{+0.031}_{-0.031}$	$H(0.15)$	$73.0^{+1.8}_{-1.8}$	$\chi_{\text{CMB}}^2$	$1200.0 (\nu: 14.2)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.461^{+0.017}_{-0.017}$	$D_{\text{M}}(0.15)$	$652^{+28}_{-29}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 1.9)$

$$\bar{\chi}_{\text{eff}}^2 = 1213.56; \Delta \bar{\chi}_{\text{eff}}^2 = -1.01; R - 1 = 0.01398$$

# 18.5 base\_w\_wa\_plikHM\_TTTEE\_lowl\_lowE\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022395	$0.02236^{+0.00029}_{-0.00028}$	$\Omega_m h^3$	0.0929	$0.0930^{+0.0071}_{-0.0068}$	$H(0.15)$	73.19	$73.2^{+1.7}_{-1.7}$
$\Omega_c h^2$	0.12001	$0.1203^{+0.0025}_{-0.0025}$	$\sigma_8$	0.7948	$0.795^{+0.048}_{-0.044}$	$D_M(0.15)$	651.2	$652^{+28}_{-29}$
$100\theta_{MC}$	1.04093	$1.04089^{+0.00061}_{-0.00061}$	$S_8$	0.8454	$0.848^{+0.033}_{-0.034}$	$H(0.38)$	84.95	$85.0^{+2.1}_{-2.2}$
$\tau$	0.0546	$0.054^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4631	$0.464^{+0.018}_{-0.019}$	$D_M(0.38)$	1524.6	$1524^{+33}_{-32}$
$w_0$	-0.60	$-0.58^{+0.50}_{-0.51}$	$\sigma_8 \Omega_m^{0.25}$	0.6067	$0.608^{+0.021}_{-0.020}$	$H(0.51)$	91.71	$91.7^{+2.2}_{-2.4}$
$w_a$	-1.20	$-1.3^{+1.4}_{-1.5}$	$\sigma_8/h^{0.5}$	0.9865	$0.988^{+0.031}_{-0.030}$	$D_M(0.51)$	1966.1	$1965^{+34}_{-33}$
$\ln(10^{10} A_s)$	3.0454	$3.044^{+0.032}_{-0.031}$	$r_{drag} h$	95.5	$95.4^{+7.1}_{-6.7}$	$H(0.61)$	97.14	$97.1^{+2.2}_{-2.3}$
$n_s$	0.9664	$0.9645^{+0.0082}_{-0.0085}$	$\langle d^2 \rangle^{1/2}$	2.461	$2.466^{+0.062}_{-0.062}$	$D_M(0.61)$	2283.8	$2283^{+36}_{-34}$
$y_{cal}$	1.00057	$1.0005^{+0.0048}_{-0.0049}$	$z_{re}$	7.68	$7.6^{+1.6}_{-1.6}$	$H(2.33)$	234.06	$234.1^{+2.3}_{-2.2}$
$A_{217}^{CIB}$	45.5	$47^{+10}_{-10}$	$10^9 A_s$	2.102	$2.099^{+0.068}_{-0.064}$	$D_M(2.33)$	5742.5	$5746^{+23}_{-21}$
$\xi^{tSZ \times CIB}$	0.69	—	$10^9 A_s e^{-2\tau}$	1.8846	$1.884^{+0.022}_{-0.023}$	$f\sigma_8(0.15)$	0.4460	$0.446^{+0.025}_{-0.022}$
$A_{143}^{tSZ}$	7.02	$5.5^{+3.8}_{-3.8}$	$D_{40}$	1228.1	$1232^{+24}_{-24}$	$\sigma_8(0.15)$	0.7335	$0.734^{+0.046}_{-0.043}$
$A_{100}^{PS}$	248	$258^{+50}_{-50}$	$D_{220}$	5732	$5731^{+75}_{-75}$	$f\sigma_8(0.38)$	0.4563	$0.457^{+0.038}_{-0.036}$
$A_{143}^{PS}$	51.1	$46^{+10}_{-20}$	$D_{810}$	2541.5	$2539^{+25}_{-27}$	$\sigma_8(0.38)$	0.6514	$0.652^{+0.040}_{-0.037}$
$A_{143 \times 217}^{PS}$	54.0	$42^{+20}_{-20}$	$D_{1420}$	818.5	$816.8^{+9.1}_{-9.4}$	$f\sigma_8(0.51)$	0.4565	$0.457^{+0.040}_{-0.036}$
$A_{217}^{PS}$	122.4	$115^{+20}_{-20}$	$D_{2000}$	231.50	$230.9^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6105	$0.611^{+0.037}_{-0.034}$
$A^{kSZ}$	0.01	$< 7.92$	$n_{s,0.002}$	0.9664	$0.9645^{+0.0082}_{-0.0085}$	$f\sigma_8(0.61)$	0.4538	$0.455^{+0.039}_{-0.035}$
$A_{100}^{dustTT}$	8.79	$8.9^{+3.6}_{-3.6}$	$Y_P$	0.245405	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	0.5814	$0.582^{+0.034}_{-0.032}$
$A_{143}^{dustTT}$	11.00	$10.9^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246732	$0.24671^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	0.2958	$0.296^{+0.016}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	20.2	$18.6^{+6.4}_{-6.4}$	$10^5 D/H$	2.581	$2.589^{+0.054}_{-0.052}$	$\sigma_8(2.33)$	0.3011	$0.301^{+0.016}_{-0.015}$
$A_{217}^{dustTT}$	95.7	$94^{+10}_{-10}$	Age/Gyr	13.753	$13.755^{+0.061}_{-0.056}$	$f_{2000}^{143}$	28.5	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.115	$0.115^{+0.075}_{-0.074}$	$z_*$	1089.89	$1089.96^{+0.51}_{-0.50}$	$f_{2000}^{143 \times 217}$	31.83	$32^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.134^{+0.058}_{-0.057}$	$r_*$	144.41	$144.37^{+0.56}_{-0.57}$	$f_{2000}^{217}$	106.35	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{dustTE}$	0.483	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04111	$1.04108^{+0.00061}_{-0.00060}$	$\chi_{small}^2$	396.05	$397.0 (\nu: 1.6)$
$A_{143}^{dustTE}$	0.226	$0.22^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.871	$13.867^{+0.053}_{-0.053}$	$\chi_{lowl}^2$	23.24	$23.63 (\nu: 0.4)$
$A_{143 \times 217}^{dustTE}$	0.665	$0.67^{+0.15}_{-0.16}$	$z_{drag}$	1060.01	$1059.92^{+0.58}_{-0.56}$	$\chi_{plik}^2$	2343.6	$2358.5 (\nu: 16.6)$
$A_{217}^{dustTE}$	2.09	$2.09^{+0.52}_{-0.52}$	$r_{drag}$	147.06	$147.03^{+0.57}_{-0.57}$	$\chi_{6DF}^2$	0.33	$0.57 (\nu: 0.2)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14092	$0.14092^{+0.00063}_{-0.00063}$	$\chi_{MGS}^2$	0.63	$0.87 (\nu: 0.4)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160724	$0.16077^{+0.00035}_{-0.00034}$	$\chi_{DR12BAO}^2$	3.45	$4.9 (\nu: 1.1)$
$H_0$	64.92	$64.9^{+4.8}_{-4.6}$	$z_{eq}$	3403	$3409^{+57}_{-56}$	$\chi_{prior}^2$	1.6	$11.5 (\nu: 10.0)$
$\Omega_\Lambda$	0.6606	$0.658^{+0.050}_{-0.049}$	$k_{eq}$	0.010387	$0.01040^{+0.00017}_{-0.00017}$	$\chi_{BAO}^2$	4.40	$6.3 (\nu: 1.7)$
$\Omega_m$	0.3394	$0.342^{+0.049}_{-0.050}$	$100\theta_{eq}$	0.8132	$0.812^{+0.011}_{-0.011}$	$\chi_{CMB}^2$	2762.9	$2779.1 (\nu: 17.0)$
$\Omega_m h^2$	0.14305	$0.1433^{+0.0024}_{-0.0023}$	$100\theta_{s,eq}$	0.4493	$0.4488^{+0.0054}_{-0.0054}$			

Best-fit  $\chi_{eff}^2 = 2768.85$ ;  $\Delta\chi_{eff}^2 = -3.07$ ;  $\bar{\chi}_{eff}^2 = 2796.92$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.99$ ;  $R - 1 = 0.01402$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.33 ( $\Delta$  0.30) MGS: 0.62 ( $\Delta$  -0.59) DR12BAO: 3.45 ( $\Delta$  -0.96) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  -0.15) commander\_dx12\_v3\_2\_29: 23.24 ( $\Delta$  0.37) plik\_rd12\_HM\_v22b\_TTTEE: 2343.59 ( $\Delta$  -1.91)

## 18.6 base\_w\_wa\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022408	$0.02238^{+0.00028}_{-0.00028}$	$\Omega_m h^3$	0.0929	$0.0928^{+0.0071}_{-0.0068}$	$H(0.15)$	73.10	$73.2^{+1.7}_{-1.7}$
$\Omega_c h^2$	0.11969	$0.1199^{+0.0022}_{-0.0021}$	$\sigma_8$	0.7917	$0.792^{+0.046}_{-0.042}$	$D_M(0.15)$	651.2	$651^{+28}_{-29}$
$100\theta_{MC}$	1.04095	$1.04092^{+0.00060}_{-0.00061}$	$S_8$	0.8396	$0.842^{+0.027}_{-0.028}$	$H(0.38)$	84.79	$85.0^{+2.1}_{-2.2}$
$\tau$	0.0530	$0.053^{+0.015}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4599	$0.461^{+0.015}_{-0.015}$	$D_M(0.38)$	1526.2	$1525^{+32}_{-33}$
$w_0$	-0.63	$-0.59^{+0.50}_{-0.52}$	$\sigma_8 \Omega_m^{0.25}$	0.6034	$0.604^{+0.017}_{-0.016}$	$H(0.51)$	91.58	$91.7^{+2.3}_{-2.4}$
$w_a$	-1.07	$-1.2^{+1.4}_{-1.5}$	$\sigma_8/h^{0.5}$	0.9817	$0.983^{+0.025}_{-0.025}$	$D_M(0.51)$	1968.5	$1966^{+34}_{-33}$
$\ln(10^{10} A_s)$	3.0408	$3.041^{+0.030}_{-0.028}$	$r_{\text{drag}} h$	95.7	$95.6^{+7.1}_{-6.8}$	$H(0.61)$	97.05	$97.1^{+2.2}_{-2.3}$
$n_s$	0.9671	$0.9652^{+0.0076}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	2.4480	$2.455^{+0.046}_{-0.047}$	$D_M(0.61)$	2286.5	$2284^{+35}_{-34}$
$y_{\text{cal}}$	1.00045	$1.0004^{+0.0047}_{-0.0049}$	$z_{\text{re}}$	7.51	$7.5^{+1.5}_{-1.5}$	$H(2.33)$	234.19	$234.1^{+2.4}_{-2.2}$
$A_{217}^{\text{CIB}}$	46.6	$47^{+10}_{-10}$	$10^9 A_s$	2.092	$2.092^{+0.063}_{-0.059}$	$D_M(2.33)$	5742.7	$5744^{+23}_{-22}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.52	—	$10^9 A_s e^{-2\tau}$	1.8818	$1.882^{+0.020}_{-0.021}$	$f\sigma_8(0.15)$	0.4444	$0.444^{+0.024}_{-0.021}$
$A_{143}^{\text{tSZ}}$	7.16	$5.5^{+3.7}_{-4.0}$	$D_{40}$	1225.3	$1229^{+22}_{-22}$	$\sigma_8(0.15)$	0.7307	$0.731^{+0.045}_{-0.041}$
$A_{100}^{\text{PS}}$	249	$258^{+50}_{-50}$	$D_{220}$	5729	$5732^{+75}_{-75}$	$f\sigma_8(0.38)$	0.4549	$0.455^{+0.039}_{-0.034}$
$A_{143}^{\text{PS}}$	48.6	$46^{+10}_{-20}$	$D_{810}$	2539.7	$2538^{+25}_{-26}$	$\sigma_8(0.38)$	0.6489	$0.649^{+0.039}_{-0.036}$
$A_{143 \times 217}^{\text{PS}}$	49.7	$42^{+20}_{-20}$	$D_{1420}$	818.2	$816.7^{+9.1}_{-9.5}$	$f\sigma_8(0.51)$	0.4548	$0.455^{+0.039}_{-0.035}$
$A_{217}^{\text{PS}}$	120.6	$115^{+20}_{-20}$	$D_{2000}$	231.36	$230.8^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6081	$0.608^{+0.036}_{-0.033}$
$A^{\text{kSZ}}$	0.00	< 8.09	$n_{s,0.002}$	0.9671	$0.9652^{+0.0076}_{-0.0077}$	$f\sigma_8(0.61)$	0.4519	$0.452^{+0.038}_{-0.034}$
$A_{100}^{\text{dustTT}}$	8.85	$8.9^{+3.6}_{-3.5}$	$Y_P$	0.245411	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.5791	$0.579^{+0.034}_{-0.031}$
$A_{143}^{\text{dustTT}}$	11.02	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	0.246737	$0.24672^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.2945	$0.295^{+0.015}_{-0.014}$
$A_{143 \times 217}^{\text{dustTT}}$	19.9	$18.6^{+6.2}_{-6.4}$	$10^5 D/H$	2.578	$2.584^{+0.052}_{-0.050}$	$\sigma_8(2.33)$	0.3004	$0.300^{+0.016}_{-0.015}$
$A_{217}^{\text{dustTT}}$	95.2	$94^{+10}_{-10}$	Age/Gyr	13.757	$13.756^{+0.060}_{-0.056}$	$f_{2000}^{143}$	28.6	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	0.114	$0.115^{+0.077}_{-0.074}$	$z_*$	1089.844	$1089.90^{+0.47}_{-0.47}$	$f_{2000}^{143 \times 217}$	31.89	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.058}$	$r_*$	144.481	$144.45^{+0.48}_{-0.48}$	$f_{2000}^{217}$	106.47	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.48^{+0.16}_{-0.16}$	$100\theta_*$	1.04113	$1.04111^{+0.00059}_{-0.00060}$	$\chi_{\text{lensing}}^2$	8.77	$9.28 (\nu: 0.4)$
$A_{143}^{\text{dustTE}}$	0.225	$0.22^{+0.10}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	13.8774	$13.875^{+0.046}_{-0.045}$	$\chi_{\text{small}}^2$	395.82	$396.8 (\nu: 1.2)$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	1060.01	$1059.95^{+0.60}_{-0.59}$	$\chi_{\text{lowl}}^2$	23.02	$23.44 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.52}_{-0.52}$	$r_{\text{drag}}$	147.129	$147.11^{+0.50}_{-0.48}$	$\chi_{\text{plik}}^2$	2344.2	$2358.6 (\nu: 16.1)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14085	$0.14085^{+0.00057}_{-0.00058}$	$\chi_{6\text{DF}}^2$	0.31	$0.56 (\nu: 0.2)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160720	$0.16075^{+0.00035}_{-0.00034}$	$\chi_{\text{MGS}}^2$	0.63	$0.89 (\nu: 0.4)$
$H_0$	65.05	$65.0^{+4.9}_{-4.6}$	$z_{\text{eq}}$	3395.8	$3400^{+49}_{-47}$	$\chi_{\text{DR12BAO}}^2$	3.35	$4.8 (\nu: 1.1)$
$\Omega_\Lambda$	0.6627	$0.660^{+0.050}_{-0.050}$	$k_{\text{eq}}$	0.010364	$0.01038^{+0.00015}_{-0.00014}$	$\chi_{\text{prior}}^2$	1.7	$11.5 (\nu: 10.2)$
$\Omega_m$	0.3373	$0.340^{+0.050}_{-0.050}$	$100\theta_{\text{eq}}$	0.8146	$0.8137^{+0.0089}_{-0.0091}$	$\chi_{\text{CMB}}^2$	2771.8	$2788.1 (\nu: 17.1)$
$\Omega_m h^2$	0.14275	$0.1429^{+0.0020}_{-0.0020}$	$100\theta_{s,\text{eq}}$	0.45002	$0.4496^{+0.0046}_{-0.0046}$	$\chi_{\text{BAO}}^2$	4.28	$6.3 (\nu: 1.7)$

Best-fit  $\chi_{\text{eff}}^2 = 2777.81$ ;  $\Delta\chi_{\text{eff}}^2 = -2.88$ ;  $\bar{\chi}_{\text{eff}}^2 = 2805.90$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -0.95$ ;  $R - 1 = 0.01750$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.31 ( $\Delta$  0.28) MGS: 0.62 ( $\Delta$  -0.59) DR12BAO: 3.35 ( $\Delta$  -1.07) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.77 ( $\Delta$  0.04) simall\_100x143\_offlike5\_EE\_Aplanck 395.82 ( $\Delta$  -0.70) commander\_dx12\_v3.2\_29: 23.02 ( $\Delta$  0.12) plik\_rd12\_HM\_v22b.TTTEE: 2344.24 ( $\Delta$  -1.08)

## 18.7 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02236^{+0.00029}_{-0.00028}$	$\Omega_{\text{m}}h^3$	$0.0929^{+0.0071}_{-0.0068}$	$H(0.15)$	$73.2^{+1.7}_{-1.7}$
$\Omega_{\text{c}}h^2$	$0.1202^{+0.0025}_{-0.0025}$	$\sigma_8$	$0.796^{+0.048}_{-0.044}$	$D_{\text{M}}(0.15)$	$652^{+28}_{-29}$
$100\theta_{\text{MC}}$	$1.04090^{+0.00061}_{-0.00061}$	$S_8$	$0.848^{+0.033}_{-0.034}$	$H(0.38)$	$85.0^{+2.1}_{-2.2}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.465^{+0.018}_{-0.019}$	$D_{\text{M}}(0.38)$	$1524^{+33}_{-32}$
$w_0$	$-0.58^{+0.50}_{-0.51}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.608^{+0.021}_{-0.020}$	$H(0.51)$	$91.7^{+2.2}_{-2.4}$
$w_a$	$-1.3^{+1.4}_{-1.5}$	$\sigma_8/h^{0.5}$	$0.988^{+0.031}_{-0.029}$	$D_{\text{M}}(0.51)$	$1966^{+34}_{-33}$
$\ln(10^{10}A_{\text{s}})$	$3.046^{+0.028}_{-0.026}$	$r_{\text{drag}}h$	$95.4^{+7.1}_{-6.7}$	$H(0.61)$	$97.1^{+2.2}_{-2.3}$
$n_{\text{s}}$	$0.9647^{+0.0082}_{-0.0085}$	$\langle d^2 \rangle^{1/2}$	$2.468^{+0.061}_{-0.061}$	$D_{\text{M}}(0.61)$	$2283^{+36}_{-34}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0049}$	$z_{\text{re}}$	$< 8.93$	$H(2.33)$	$234.1^{+2.3}_{-2.2}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_{\text{s}}$	$2.104^{+0.059}_{-0.054}$	$D_{\text{M}}(2.33)$	$5745^{+23}_{-21}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}} e^{-2\tau}$	$1.884^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	$0.447^{+0.025}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1232^{+24}_{-24}$	$\sigma_8(0.15)$	$0.735^{+0.046}_{-0.042}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{220}$	$5731^{+74}_{-76}$	$f\sigma_8(0.38)$	$0.457^{+0.038}_{-0.037}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2539^{+25}_{-27}$	$\sigma_8(0.38)$	$0.652^{+0.040}_{-0.037}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$816.8^{+9.2}_{-9.4}$	$f\sigma_8(0.51)$	$0.458^{+0.039}_{-0.038}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.9^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.611^{+0.037}_{-0.034}$
$A^{\text{kSZ}}$	$< 7.90$	$n_{\text{s},0.002}$	$0.9647^{+0.0082}_{-0.0085}$	$f\sigma_8(0.61)$	$0.455^{+0.039}_{-0.035}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$Y_{\text{P}}$	$0.24539^{+0.00011}_{-0.00012}$	$\sigma_8(0.61)$	$0.582^{+0.034}_{-0.032}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24672^{+0.00011}_{-0.00012}$	$f\sigma_8(2.33)$	$0.296^{+0.015}_{-0.014}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5^{+6.4}_{-6.4}$	$10^5 \text{D/H}$	$2.588^{+0.054}_{-0.052}$	$\sigma_8(2.33)$	$0.301^{+0.016}_{-0.015}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.755^{+0.061}_{-0.056}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.075}_{-0.074}$	$z_*$	$1089.96^{+0.51}_{-0.50}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.057}$	$r_*$	$144.38^{+0.56}_{-0.57}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04108^{+0.00061}_{-0.00061}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.868^{+0.053}_{-0.053}$	$\chi_{\text{lowl}}^2$	$23.64 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.15}_{-0.16}$	$z_{\text{drag}}$	$1059.93^{+0.58}_{-0.57}$	$\chi_{\text{plik}}^2$	$2358.3 (\nu: 16.5)$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.52}_{-0.52}$	$r_{\text{drag}}$	$147.04^{+0.57}_{-0.57}$	$\chi_{6\text{DF}}^2$	$0.57 (\nu: 0.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14091^{+0.00063}_{-0.00062}$	$\chi_{\text{MGS}}^2$	$0.87 (\nu: 0.4)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\text{D}}$	$0.16076^{+0.00035}_{-0.00034}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.1)$
$H_0$	$64.9^{+4.8}_{-4.6}$	$z_{\text{eq}}$	$3408^{+57}_{-55}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.0)$
$\Omega_{\Lambda}$	$0.658^{+0.050}_{-0.049}$	$k_{\text{eq}}$	$0.01040^{+0.00017}_{-0.00017}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 1.7)$
$\Omega_{\text{m}}$	$0.342^{+0.049}_{-0.050}$	$100\theta_{\text{eq}}$	$0.812^{+0.011}_{-0.010}$	$\chi_{\text{CMB}}^2$	$2778.9 (\nu: 16.7)$
$\Omega_{\text{m}}h^2$	$0.1432^{+0.0024}_{-0.0023}$	$100\theta_{\text{s,eq}}$	$0.4489^{+0.0054}_{-0.0054}$		

$$\bar{\chi}_{\text{eff}}^2 = 2796.70; \Delta\bar{\chi}_{\text{eff}}^2 = -1.01; R - 1 = 0.01451$$

18.8 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00028}_{-0.00028}$	$\Omega_m h^3$	$0.0928^{+0.0071}_{-0.0068}$	$H(0.15)$	$73.2^{+1.7}_{-1.7}$
$\Omega_c h^2$	$0.1198^{+0.0021}_{-0.0021}$	$\sigma_8$	$0.792^{+0.046}_{-0.042}$	$D_M(0.15)$	$652^{+28}_{-29}$
$100\theta_{MC}$	$1.04093^{+0.00060}_{-0.00061}$	$S_8$	$0.842^{+0.027}_{-0.028}$	$H(0.38)$	$85.0^{+2.2}_{-2.2}$
$\tau$	$0.054^{+0.012}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.461^{+0.015}_{-0.015}$	$D_M(0.38)$	$1525^{+32}_{-33}$
$w_0$	$-0.60^{+0.50}_{-0.52}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.017}_{-0.016}$	$H(0.51)$	$91.7^{+2.3}_{-2.4}$
$w_a$	$-1.2^{+1.4}_{-1.5}$	$\sigma_8/h^{0.5}$	$0.983^{+0.025}_{-0.024}$	$D_M(0.51)$	$1967^{+34}_{-33}$
$\ln(10^{10} A_s)$	$3.043^{+0.026}_{-0.023}$	$r_{\text{drag}} h$	$95.6^{+7.1}_{-6.8}$	$H(0.61)$	$97.1^{+2.3}_{-2.3}$
$n_s$	$0.9655^{+0.0075}_{-0.0076}$	$\langle d^2 \rangle^{1/2}$	$2.457^{+0.046}_{-0.046}$	$D_M(0.61)$	$2284^{+35}_{-34}$
$y_{\text{cal}}$	$1.0003^{+0.0048}_{-0.0049}$	$z_{\text{re}}$	$< 8.78$	$H(2.33)$	$234.1^{+2.4}_{-2.3}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.097^{+0.054}_{-0.048}$	$D_M(2.33)$	$5744^{+24}_{-22}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.881^{+0.020}_{-0.021}$	$f\sigma_8(0.15)$	$0.444^{+0.023}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.7}_{-4.0}$	$D_{40}$	$1229^{+22}_{-22}$	$\sigma_8(0.15)$	$0.731^{+0.045}_{-0.041}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{220}$	$5731^{+75}_{-75}$	$f\sigma_8(0.38)$	$0.455^{+0.037}_{-0.036}$
$A_{143}^{\text{PS}}$	$46^{+10}_{-20}$	$D_{810}$	$2537^{+25}_{-26}$	$\sigma_8(0.38)$	$0.650^{+0.039}_{-0.036}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$816.7^{+9.2}_{-9.4}$	$f\sigma_8(0.51)$	$0.455^{+0.039}_{-0.035}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.8^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.609^{+0.036}_{-0.033}$
$A^{\text{kSZ}}$	$< 8.08$	$n_{s,0.002}$	$0.9655^{+0.0075}_{-0.0076}$	$f\sigma_8(0.61)$	$0.452^{+0.038}_{-0.035}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$Y_P$	$0.24540^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.580^{+0.033}_{-0.031}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$Y_P^{\text{BBN}}$	$0.24673^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.295^{+0.015}_{-0.014}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.2}_{-6.4}$	$10^5 \text{D/H}$	$2.583^{+0.052}_{-0.050}$	$\sigma_8(2.33)$	$0.300^{+0.016}_{-0.015}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.757^{+0.061}_{-0.056}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.115^{+0.076}_{-0.074}$	$z_*$	$1089.89^{+0.46}_{-0.46}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.058}$	$r_*$	$144.47^{+0.48}_{-0.47}$	$f_{2000}^{217}$	$106.9^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.16}$	$100\theta_*$	$1.04112^{+0.00059}_{-0.00060}$	$\chi_{\text{lensing}}^2$	$9.29 (\nu: 0.4)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.10}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	$13.876^{+0.045}_{-0.045}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.2)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1059.95^{+0.59}_{-0.59}$	$\chi_{\text{lowl}}^2$	$23.43 (\nu: 0.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.52}$	$r_{\text{drag}}$	$147.12^{+0.49}_{-0.48}$	$\chi_{\text{plik}}^2$	$2358.5 (\nu: 16.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14084^{+0.00057}_{-0.00058}$	$\chi_{6\text{DF}}^2$	$0.56 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16075^{+0.00035}_{-0.00034}$	$\chi_{\text{MGS}}^2$	$0.89 (\nu: 0.4)$
$H_0$	$65.0^{+4.9}_{-4.6}$	$z_{\text{eq}}$	$3398^{+48}_{-47}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.1)$
$\Omega_\Lambda$	$0.660^{+0.050}_{-0.050}$	$k_{\text{eq}}$	$0.01037^{+0.00015}_{-0.00014}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_m$	$0.340^{+0.050}_{-0.050}$	$100\theta_{\text{eq}}$	$0.8141^{+0.0088}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$2787.9 (\nu: 16.8)$
$\Omega_m h^2$	$0.1429^{+0.0020}_{-0.0019}$	$100\theta_{s,\text{eq}}$	$0.4498^{+0.0045}_{-0.0045}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 1.7)$

$$\bar{\chi}_{\text{eff}}^2 = 2805.65; \Delta \bar{\chi}_{\text{eff}}^2 = -1.07; R - 1 = 0.01782$$

## 18.9 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022152	$0.02212^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	0.6137	$0.615^{+0.025}_{-0.027}$	$H(0.38)$	83.41	$83.4^{+1.2}_{-1.2}$
$\Omega_c h^2$	0.12027	$0.1206^{+0.0036}_{-0.0035}$	$\sigma_8/h^{0.5}$	0.9978	$0.999^{+0.036}_{-0.038}$	$D_M(0.38)$	1516.3	$1516^{+27}_{-27}$
$100\theta_{MC}$	1.04082	$1.04079^{+0.00089}_{-0.00088}$	$r_{drag}h$	100.49	$100.3^{+2.5}_{-2.3}$	$H(0.51)$	89.88	$89.9^{+1.0}_{-0.98}$
$\tau$	0.0526	$0.052^{+0.016}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.460	$2.466^{+0.079}_{-0.084}$	$D_M(0.51)$	1966.6	$1966^{+31}_{-31}$
$w_0$	-0.971	$-0.95^{+0.17}_{-0.16}$	$z_{re}$	7.55	$7.5^{+1.6}_{-1.7}$	$H(0.61)$	95.31	$95.27^{+0.88}_{-0.85}$
$w_a$	-0.27	$-0.36^{+0.69}_{-0.74}$	$10^9 A_s$	2.092	$2.091^{+0.067}_{-0.067}$	$D_M(0.61)$	2290.6	$2290^{+34}_{-33}$
$\ln(10^{10} A_s)$	3.0406	$3.040^{+0.032}_{-0.032}$	$10^9 A_s e^{-2\tau}$	1.8828	$1.884^{+0.026}_{-0.025}$	$H(2.33)$	235.10	$235.1^{+1.9}_{-1.9}$
$n_s$	0.9646	$0.963^{+0.010}_{-0.010}$	$D_{40}$	1228.3	$1232^{+28}_{-27}$	$D_M(2.33)$	5763.8	$5766^{+25}_{-25}$
$y_{cal}$	1.00031	$1.0005^{+0.0049}_{-0.0049}$	$D_{220}$	5710	$5713^{+80}_{-82}$	$f\sigma_8(0.15)$	0.4618	$0.462^{+0.021}_{-0.022}$
$A_{217}^{CIB}$	48.9	$48^{+10}_{-10}$	$D_{810}$	2536.9	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	0.7621	$0.763^{+0.031}_{-0.032}$
$\xi^{tSZ \times CIB}$	0.31	—	$D_{1420}$	815.3	$814.4^{+9.8}_{-10}$	$f\sigma_8(0.38)$	0.4832	$0.484^{+0.025}_{-0.025}$
$A_{143}^{tSZ}$	7.11	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	230.01	$229.6^{+3.4}_{-3.5}$	$\sigma_8(0.38)$	0.6759	$0.676^{+0.027}_{-0.028}$
$A_{100}^{PS}$	254	$263^{+60}_{-50}$	$n_{s,0.002}$	0.9646	$0.963^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	0.4834	$0.484^{+0.026}_{-0.026}$
$A_{143}^{PS}$	49.0	$49^{+20}_{-20}$	$Y_P$	0.245306	$0.24529^{+0.00017}_{-0.00019}$	$\sigma_8(0.51)$	0.6325	$0.633^{+0.025}_{-0.026}$
$A_{143 \times 217}^{PS}$	46.5	$43^{+20}_{-20}$	$Y_P^{BBN}$	0.246632	$0.24661^{+0.00017}_{-0.00019}$	$f\sigma_8(0.61)$	0.4793	$0.480^{+0.026}_{-0.026}$
$A_{217}^{PS}$	119.0	$115^{+20}_{-20}$	$10^5 D/H$	2.627	$2.633^{+0.077}_{-0.077}$	$\sigma_8(0.61)$	0.6018	$0.602^{+0.023}_{-0.024}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.778	$13.779^{+0.070}_{-0.066}$	$f\sigma_8(2.33)$	0.3040	$0.304^{+0.012}_{-0.013}$
$A_{100}^{dustTT}$	8.86	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.22	$1090.29^{+0.72}_{-0.70}$	$\sigma_8(2.33)$	0.3110	$0.3108^{+0.0090}_{-0.0094}$
$A_{143}^{dustTT}$	10.85	$10.7^{+3.5}_{-3.5}$	$r_*$	144.53	$144.48^{+0.85}_{-0.84}$	$f_{2000}^{143}$	30.3	$31^{+6}_{-6}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.5}_{-6.5}$	$100\theta_*$	1.04103	$1.04100^{+0.00087}_{-0.00086}$	$f_{2000}^{143 \times 217}$	33.19	$34^{+4}_{-4}$
$A_{217}^{dustTT}$	94.5	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.883	$13.879^{+0.079}_{-0.078}$	$f_{2000}^{217}$	107.61	$108.1^{+3.7}_{-3.7}$
$c_{100}$	0.99966	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.44	$1059.40^{+0.88}_{-0.84}$	$\chi_{simall}^2$	395.87	$396.9 (\nu: 1.3)$
$c_{217}$	0.99825	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	147.26	$147.22^{+0.87}_{-0.86}$	$\chi_{lowl}^2$	23.28	$23.7 (\nu: 0.6)$
$H_0$	68.24	$68.1^{+1.7}_{-1.6}$	$k_D$	0.14052	$0.1405^{+0.0010}_{-0.0010}$	$\chi_{plik}^2$	758.4	$770.8 (\nu: 14.6)$
$\Omega_\Lambda$	0.6928	$0.691^{+0.016}_{-0.016}$	$100\theta_D$	0.16104	$0.16107^{+0.00051}_{-0.00052}$	$\chi_{JLA}^2$	1034.78	$1035.9 (\nu: 1.1)$
$\Omega_m$	0.3072	$0.309^{+0.016}_{-0.016}$	$z_{eq}$	3404	$3410^{+82}_{-81}$	$\chi_{6DF}^2$	0.001	$0.052 (\nu: 0.0)$
$\Omega_m h^2$	0.14307	$0.1433^{+0.0034}_{-0.0034}$	$k_{eq}$	0.010388	$0.01041^{+0.00025}_{-0.00025}$	$\chi_{MGS}^2$	1.82	$1.87 (\nu: 0.2)$
$\Omega_m h^3$	0.09763	$0.0977^{+0.0034}_{-0.0034}$	$100\theta_{eq}$	0.8124	$0.811^{+0.015}_{-0.015}$	$\chi_{DR12BAO}^2$	4.04	$5.0 (\nu: 0.9)$
$\sigma_8$	0.8243	$0.825^{+0.033}_{-0.034}$	$100\theta_{s,eq}$	0.4491	$0.4485^{+0.0079}_{-0.0077}$	$\chi_{prior}^2$	1.4	$7.3 (\nu: 6.8)$
$S_8$	0.8342	$0.837^{+0.039}_{-0.040}$	$H(0.15)$	73.60	$73.6^{+1.5}_{-1.4}$	$\chi_{BAO}^2$	5.86	$6.9 (\nu: 1.1)$
$\sigma_8 \Omega_m^{0.5}$	0.4569	$0.458^{+0.021}_{-0.022}$	$D_M(0.15)$	634.9	$635^{+13}_{-13}$	$\chi_{CMB}^2$	1177.5	$1191.3 (\nu: 15.0)$

Best-fit  $\chi_{eff}^2 = 2219.53$ ;  $\bar{\chi}_{eff}^2 = 2241.47$ ;  $R - 1 = 0.00718$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 4.04 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.29 plik\_rd12\_HM\_v22.TT: 758.36  
SN - JLA Pantheon18: 1034.78

18.10 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022187	$0.02215^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_m^{0.25}$	0.6096	$0.611^{+0.017}_{-0.017}$	$H(0.38)$	83.40	$83.4^{+1.3}_{-1.2}$
$\Omega_c h^2$	0.11971	$0.1200^{+0.0027}_{-0.0026}$	$\sigma_8/h^{0.5}$	0.9921	$0.994^{+0.024}_{-0.024}$	$D_M(0.38)$	1517.3	$1517^{+26}_{-27}$
$100\theta_{MC}$	1.04081	$1.04083^{+0.00086}_{-0.00085}$	$r_{drag}h$	100.49	$100.4^{+2.4}_{-2.3}$	$H(0.51)$	89.90	$89.9^{+1.0}_{-0.99}$
$\tau$	0.0528	$0.052^{+0.015}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.449	$2.455^{+0.052}_{-0.054}$	$D_M(0.51)$	1967.5	$1967^{+31}_{-32}$
$w_0$	-0.974	$-0.96^{+0.17}_{-0.15}$	$z_{re}$	7.55	$7.4^{+1.5}_{-1.7}$	$H(0.61)$	95.36	$95.33^{+0.88}_{-0.85}$
$w_a$	-0.22	$-0.29^{+0.59}_{-0.64}$	$10^9 A_s$	2.090	$2.087^{+0.061}_{-0.061}$	$D_M(0.61)$	2291.4	$2291^{+33}_{-34}$
$\ln(10^{10} A_s)$	3.0397	$3.038^{+0.029}_{-0.030}$	$10^9 A_s e^{-2\tau}$	1.8804	$1.882^{+0.022}_{-0.022}$	$H(2.33)$	235.02	$235.0^{+1.9}_{-2.0}$
$n_s$	0.9653	$0.9638^{+0.0084}_{-0.0089}$	$D_{40}$	1226.7	$1230^{+24}_{-24}$	$D_M(2.33)$	5762.9	$5765^{+25}_{-25}$
$y_{cal}$	1.00032	$1.0004^{+0.0049}_{-0.0049}$	$D_{220}$	5715	$5716^{+79}_{-81}$	$f\sigma_8(0.15)$	0.4584	$0.459^{+0.015}_{-0.015}$
$A_{217}^{CIB}$	49.0	$48^{+10}_{-10}$	$D_{810}$	2536.1	$2535^{+26}_{-27}$	$\sigma_8(0.15)$	0.7576	$0.759^{+0.022}_{-0.023}$
$\xi^{tSZ \times CIB}$	0.26	—	$D_{1420}$	815.3	$814.4^{+9.9}_{-9.9}$	$f\sigma_8(0.38)$	0.4794	$0.481^{+0.018}_{-0.018}$
$A_{143}^{tSZ}$	7.10	$5.1^{+3.8}_{-3.9}$	$D_{2000}$	229.98	$229.6^{+3.5}_{-3.5}$	$\sigma_8(0.38)$	0.6720	$0.673^{+0.020}_{-0.020}$
$A_{100}^{PS}$	255	$264^{+60}_{-60}$	$n_{s,0.002}$	0.9653	$0.9638^{+0.0084}_{-0.0089}$	$f\sigma_8(0.51)$	0.4795	$0.481^{+0.019}_{-0.018}$
$A_{143}^{PS}$	48.4	$49^{+20}_{-20}$	$Y_P$	0.245320	$0.24530^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	0.6290	$0.630^{+0.018}_{-0.018}$
$A_{143 \times 217}^{PS}$	45.2	$43^{+20}_{-20}$	$Y_P^{BBN}$	0.246647	$0.24663^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	0.4754	$0.477^{+0.019}_{-0.018}$
$A_{217}^{PS}$	118.5	$115^{+20}_{-20}$	$10^5 D/H$	2.620	$2.628^{+0.074}_{-0.073}$	$\sigma_8(0.61)$	0.5985	$0.599^{+0.017}_{-0.017}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.781	$13.781^{+0.068}_{-0.066}$	$f\sigma_8(2.33)$	0.3023	$0.3027^{+0.0089}_{-0.0093}$
$A_{100}^{dustTT}$	8.91	$9.0^{+3.6}_{-3.6}$	$z_*$	1090.13	$1090.21^{+0.62}_{-0.61}$	$\sigma_8(2.33)$	0.3098	$0.3098^{+0.0070}_{-0.0072}$
$A_{143}^{dustTT}$	10.82	$10.8^{+3.5}_{-3.6}$	$r_*$	144.65	$144.59^{+0.65}_{-0.65}$	$\chi^2_{lensing}$	8.72	$9.40 (\nu: 0.5)$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.4}_{-6.5}$	$100\theta_*$	1.04102	$1.04103^{+0.00086}_{-0.00084}$	$\chi^2_{small}$	395.86	$396.8 (\nu: 1.1)$
$A_{217}^{dustTT}$	94.8	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.895	$13.889^{+0.063}_{-0.062}$	$\chi^2_{lowl}$	23.14	$23.48 (\nu: 0.4)$
$c_{100}$	0.99963	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.47	$1059.42^{+0.89}_{-0.87}$	$\chi^2_{plik}$	758.7	$770.7 (\nu: 13.9)$
$c_{217}$	0.99826	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	147.37	$147.33^{+0.69}_{-0.69}$	$\chi^2_{JLA}$	1034.79	$1035.9 (\nu: 1.1)$
$H_0$	68.19	$68.1^{+1.6}_{-1.6}$	$k_D$	0.14043	$0.14045^{+0.00087}_{-0.00088}$	$\chi^2_{6DF}$	0.001	$0.053 (\nu: 0.0)$
$\Omega_\Lambda$	0.6934	$0.692^{+0.015}_{-0.016}$	$100\theta_D$	0.16101	$0.16105^{+0.00051}_{-0.00051}$	$\chi^2_{MGS}$	1.82	$1.89 (\nu: 0.2)$
$\Omega_m$	0.3066	$0.308^{+0.016}_{-0.015}$	$z_{eq}$	3391	$3398^{+62}_{-60}$	$\chi^2_{DR12BAO}$	3.86	$4.8 (\nu: 0.8)$
$\Omega_m h^2$	0.14254	$0.1428^{+0.0026}_{-0.0025}$	$k_{eq}$	0.010350	$0.01037^{+0.00019}_{-0.00018}$	$\chi^2_{prior}$	1.5	$7.3 (\nu: 6.8)$
$\Omega_m h^3$	0.09720	$0.0973^{+0.0030}_{-0.0029}$	$100\theta_{eq}$	0.8147	$0.813^{+0.011}_{-0.011}$	$\chi^2_{CMB}$	1186.4	$1200.4 (\nu: 15.5)$
$\sigma_8$	0.8193	$0.821^{+0.024}_{-0.024}$	$100\theta_{s,eq}$	0.4503	$0.4496^{+0.0058}_{-0.0058}$	$\chi^2_{BAO}$	5.68	$6.7 (\nu: 1.1)$
$S_8$	0.8282	$0.831^{+0.026}_{-0.026}$	$H(0.15)$	73.54	$73.6^{+1.5}_{-1.4}$			
$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.455^{+0.014}_{-0.014}$	$D_M(0.15)$	635.4	$635^{+13}_{-13}$			

Best-fit  $\chi^2_{eff} = 2228.36$ ;  $\Delta\chi^2_{eff} = -1.35$ ;  $\bar{\chi}^2_{eff} = 2250.30$ ;  $\Delta\bar{\chi}^2_{eff} = 0.53$ ;  $R - 1 = 0.00973$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.82 ( $\Delta$  0.48) DR12BAO: 3.86 ( $\Delta$  -0.17) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.72 ( $\Delta$  -0.16) small\_100x143\_offlike5\_EE\_Aplanc. 395.86 ( $\Delta$  -0.51) commander\_dx12\_v3.2\_29: 23.14 ( $\Delta$  0.33) plik\_rd12\_HM\_v22.TT: 758.71 ( $\Delta$  -1.08) SN - JLA Pantheon18: 1034.79 ( $\Delta$  -0.16)

## 18.11 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\text{b}}h^2$	$0.02213^{+0.00041}_{-0.00040}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.615^{+0.025}_{-0.026}$	$H(0.38)$	$83.4^{+1.2}_{-1.2}$
$\Omega_{\text{c}}h^2$	$0.1205^{+0.0035}_{-0.0035}$	$\sigma_8/h^{0.5}$	$1.000^{+0.035}_{-0.037}$	$D_{\text{M}}(0.38)$	$1516^{+27}_{-27}$
$100\theta_{\text{MC}}$	$1.04080^{+0.00088}_{-0.00088}$	$r_{\text{drag}}h$	$100.3^{+2.5}_{-2.4}$	$H(0.51)$	$89.9^{+1.0}_{-0.98}$
$\tau$	$0.054^{+0.012}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.468^{+0.078}_{-0.082}$	$D_{\text{M}}(0.51)$	$1967^{+31}_{-31}$
$w_0$	$-0.95^{+0.17}_{-0.16}$	$z_{\text{re}}$	$< 8.79$	$H(0.61)$	$95.29^{+0.89}_{-0.84}$
$w_a$	$-0.35^{+0.68}_{-0.73}$	$10^9 A_{\text{s}}$	$2.097^{+0.057}_{-0.053}$	$D_{\text{M}}(0.61)$	$2291^{+34}_{-33}$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.027}_{-0.026}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.884^{+0.025}_{-0.025}$	$H(2.33)$	$235.1^{+1.9}_{-1.9}$
$n_{\text{s}}$	$0.9632^{+0.0099}_{-0.010}$	$D_{40}$	$1232^{+28}_{-27}$	$D_{\text{M}}(2.33)$	$5766^{+25}_{-25}$
$y_{\text{cal}}$	$1.0005^{+0.0050}_{-0.0050}$	$D_{220}$	$5713^{+80}_{-82}$	$f\sigma_8(0.15)$	$0.463^{+0.021}_{-0.021}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2536^{+27}_{-27}$	$\sigma_8(0.15)$	$0.763^{+0.030}_{-0.031}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.5^{+9.9}_{-10}$	$f\sigma_8(0.38)$	$0.484^{+0.024}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-4.0}$	$D_{2000}$	$229.7^{+3.4}_{-3.5}$	$\sigma_8(0.38)$	$0.677^{+0.027}_{-0.027}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-50}$	$n_{\text{s},0.002}$	$0.9632^{+0.0099}_{-0.010}$	$f\sigma_8(0.51)$	$0.485^{+0.026}_{-0.025}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}$	$0.24529^{+0.00017}_{-0.00019}$	$\sigma_8(0.51)$	$0.633^{+0.025}_{-0.025}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24662^{+0.00017}_{-0.00019}$	$f\sigma_8(0.61)$	$0.481^{+0.026}_{-0.026}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.632^{+0.076}_{-0.077}$	$\sigma_8(0.61)$	$0.603^{+0.023}_{-0.024}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.779^{+0.070}_{-0.066}$	$f\sigma_8(2.33)$	$0.304^{+0.011}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.6}$	$z_*$	$1090.27^{+0.71}_{-0.70}$	$\sigma_8(2.33)$	$0.3111^{+0.0089}_{-0.0092}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.5}_{-3.5}$	$r_*$	$144.49^{+0.84}_{-0.83}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.5}_{-6.6}$	$100\theta_*$	$1.04101^{+0.00087}_{-0.00087}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.880^{+0.078}_{-0.078}$	$f_{2000}^{217}$	$108.0^{+3.7}_{-3.7}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.41^{+0.87}_{-0.85}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.3)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.24^{+0.86}_{-0.85}$	$\chi_{\text{lowl}}^2$	$23.7 (\nu: 0.6)$
$H_0$	$68.1^{+1.7}_{-1.6}$	$k_{\text{D}}$	$0.14053^{+0.00099}_{-0.0010}$	$\chi_{\text{plik}}^2$	$770.6 (\nu: 14.5)$
$\Omega_{\Lambda}$	$0.691^{+0.016}_{-0.016}$	$100\theta_{\text{D}}$	$0.16107^{+0.00051}_{-0.00052}$	$\chi_{\text{JLA}}^2$	$1035.9 (\nu: 1.2)$
$\Omega_{\text{m}}$	$0.309^{+0.016}_{-0.016}$	$z_{\text{eq}}$	$3408^{+80}_{-80}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$\Omega_{\text{m}}h^2$	$0.1433^{+0.0034}_{-0.0033}$	$k_{\text{eq}}$	$0.01040^{+0.00025}_{-0.00024}$	$\chi_{\text{MGS}}^2$	$1.86 (\nu: 0.2)$
$\Omega_{\text{m}}h^3$	$0.0976^{+0.0034}_{-0.0034}$	$100\theta_{\text{eq}}$	$0.812^{+0.015}_{-0.015}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 0.9)$
$\sigma_8$	$0.826^{+0.033}_{-0.034}$	$100\theta_{\text{s,eq}}$	$0.4487^{+0.0078}_{-0.0075}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$S_8$	$0.838^{+0.039}_{-0.039}$	$H(0.15)$	$73.6^{+1.5}_{-1.4}$	$\chi_{\text{BAO}}^2$	$6.9 (\nu: 1.1)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.459^{+0.021}_{-0.022}$	$D_{\text{M}}(0.15)$	$635^{+13}_{-13}$	$\chi_{\text{CMB}}^2$	$1191.0 (\nu: 14.5)$

$$\bar{\chi}_{\text{eff}}^2 = 2241.17; R - 1 = 0.00784$$



## 18.12 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02216^{+0.00039}_{-0.00038}$	$\sigma_8/h^{0.5}$	$0.994^{+0.024}_{-0.024}$	$H(0.51)$	$89.9^{+1.0}_{-0.99}$
$\Omega_c h^2$	$0.1199^{+0.0026}_{-0.0025}$	$r_{\text{drag}} h$	$100.4^{+2.4}_{-2.4}$	$D_M(0.51)$	$1967^{+31}_{-31}$
$100\theta_{\text{MC}}$	$1.04084^{+0.00086}_{-0.00086}$	$\langle d^2 \rangle^{1/2}$	$2.456^{+0.052}_{-0.054}$	$H(0.61)$	$95.35^{+0.88}_{-0.84}$
$\tau$	$0.053^{+0.012}_{-0.011}$	$z_{\text{re}}$	$< 8.72$	$D_M(0.61)$	$2291^{+33}_{-34}$
$w_0$	$-0.96^{+0.17}_{-0.15}$	$10^9 A_s$	$2.093^{+0.052}_{-0.048}$	$H(2.33)$	$235.0^{+1.9}_{-2.0}$
$w_a$	$-0.28^{+0.59}_{-0.63}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.022}_{-0.021}$	$D_M(2.33)$	$5764^{+25}_{-25}$
$\ln(10^{10} A_s)$	$3.041^{+0.025}_{-0.023}$	$D_{40}$	$1230^{+24}_{-24}$	$f\sigma_8(0.15)$	$0.459^{+0.015}_{-0.015}$
$n_s$	$0.9642^{+0.0082}_{-0.0084}$	$D_{220}$	$5716^{+80}_{-81}$	$\sigma_8(0.15)$	$0.759^{+0.022}_{-0.023}$
$y_{\text{cal}}$	$1.0004^{+0.0049}_{-0.0050}$	$D_{810}$	$2535^{+26}_{-27}$	$f\sigma_8(0.38)$	$0.480^{+0.018}_{-0.018}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{1420}$	$814.5^{+9.9}_{-9.9}$	$\sigma_8(0.38)$	$0.673^{+0.020}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$229.7^{+3.4}_{-3.5}$	$f\sigma_8(0.51)$	$0.481^{+0.019}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$5.1^{+3.8}_{-3.9}$	$n_{s,0.002}$	$0.9642^{+0.0082}_{-0.0084}$	$\sigma_8(0.51)$	$0.630^{+0.018}_{-0.018}$
$A_{100}^{\text{PS}}$	$263^{+60}_{-50}$	$Y_{\text{P}}$	$0.24530^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	$0.477^{+0.019}_{-0.018}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24663^{+0.00016}_{-0.00018}$	$\sigma_8(0.61)$	$0.599^{+0.017}_{-0.017}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$10^5 \text{D}/\text{H}$	$2.626^{+0.074}_{-0.073}$	$f\sigma_8(2.33)$	$0.3027^{+0.0089}_{-0.0094}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$\text{Age}/\text{Gyr}$	$13.781^{+0.069}_{-0.066}$	$\sigma_8(2.33)$	$0.3100^{+0.0070}_{-0.0071}$
$A^{\text{kSZ}}$	—	$z_*$	$1090.18^{+0.61}_{-0.61}$	$f_{2000}^{143}$	$31^{+6}_{-6}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.6}_{-3.6}$	$r_*$	$144.62^{+0.64}_{-0.63}$	$f_{2000}^{143 \times 217}$	$33^{+4}_{-4}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.6}$	$100\theta_*$	$1.04104^{+0.00086}_{-0.00085}$	$f_{2000}^{217}$	$108.1^{+3.7}_{-3.7}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.5}$	$D_M(z_*)/\text{Gpc}$	$13.892^{+0.061}_{-0.060}$	$\chi_{\text{lensing}}^2$	$9.39 (\nu: 0.5)$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$z_{\text{drag}}$	$1059.44^{+0.88}_{-0.84}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.0)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.35^{+0.69}_{-0.67}$	$\chi_{\text{lowl}}^2$	$23.44 (\nu: 0.4)$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14043^{+0.00086}_{-0.00088}$	$\chi_{\text{plik}}^2$	$770.6 (\nu: 14.1)$
$H_0$	$68.1^{+1.6}_{-1.6}$	$100\theta_{\text{D}}$	$0.16105^{+0.00051}_{-0.00051}$	$\chi_{\text{JLA}}^2$	$1035.9 (\nu: 1.2)$
$\Omega_{\Lambda}$	$0.692^{+0.015}_{-0.016}$	$z_{\text{eq}}$	$3395^{+59}_{-59}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.308^{+0.016}_{-0.015}$	$k_{\text{eq}}$	$0.01036^{+0.00018}_{-0.00018}$	$\chi_{\text{MGS}}^2$	$1.88 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	$0.1427^{+0.0025}_{-0.0024}$	$100\theta_{\text{eq}}$	$0.814^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 0.8)$
$\Omega_{\text{m}} h^3$	$0.0972^{+0.0029}_{-0.0029}$	$100\theta_{\text{s,eq}}$	$0.4499^{+0.0056}_{-0.0056}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.9)$
$\sigma_8$	$0.821^{+0.024}_{-0.024}$	$H(0.15)$	$73.6^{+1.5}_{-1.4}$	$\chi_{\text{CMB}}^2$	$1200.1 (\nu: 15.3)$
$S_8$	$0.831^{+0.026}_{-0.026}$	$D_M(0.15)$	$636^{+13}_{-13}$	$\chi_{\text{BAO}}^2$	$6.7 (\nu: 1.1)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.455^{+0.014}_{-0.014}$	$H(0.38)$	$83.4^{+1.3}_{-1.2}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.611^{+0.017}_{-0.017}$	$D_M(0.38)$	$1517^{+26}_{-27}$		

$$\bar{\chi}_{\text{eff}}^2 = 2250.01; \Delta\bar{\chi}_{\text{eff}}^2 = 0.39; R - 1 = 0.01194$$

### 18.13 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022366	$0.02236^{+0.00028}_{-0.00028}$	$\Omega_m h^3$	0.09770	$0.0978^{+0.0028}_{-0.0029}$	$H(0.15)$	73.70	$73.8^{+1.4}_{-1.4}$
$\Omega_c h^2$	0.12004	$0.1202^{+0.0025}_{-0.0025}$	$\sigma_8$	0.8226	$0.823^{+0.027}_{-0.027}$	$D_M(0.15)$	634.2	$634^{+13}_{-12}$
$100\theta_{MC}$	1.04088	$1.04090^{+0.00059}_{-0.00059}$	$S_8$	0.8318	$0.833^{+0.029}_{-0.029}$	$H(0.38)$	83.57	$83.7^{+1.2}_{-1.2}$
$\tau$	0.0544	$0.054^{+0.016}_{-0.015}$	$\sigma_8 \Omega_m^{0.5}$	0.4556	$0.456^{+0.016}_{-0.016}$	$D_M(0.38)$	1514.1	$1512^{+26}_{-26}$
$w_0$	-0.967	$-0.95^{+0.17}_{-0.16}$	$\sigma_8 \Omega_m^{0.25}$	0.6122	$0.613^{+0.019}_{-0.019}$	$H(0.51)$	90.07	$90.12^{+0.95}_{-0.96}$
$w_a$	-0.25	$-0.33^{+0.62}_{-0.66}$	$\sigma_8/h^{0.5}$	0.9954	$0.996^{+0.028}_{-0.028}$	$D_M(0.51)$	1963.5	$1961^{+31}_{-30}$
$\ln(10^{10} A_s)$	3.0448	$3.044^{+0.032}_{-0.031}$	$r_{drag} h$	100.45	$100.4^{+2.4}_{-2.3}$	$H(0.61)$	95.52	$95.53^{+0.79}_{-0.78}$
$n_s$	0.9661	$0.9646^{+0.0082}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	2.456	$2.461^{+0.062}_{-0.066}$	$D_M(0.61)$	2286.8	$2285^{+33}_{-32}$
$y_{cal}$	1.00059	$1.0005^{+0.0047}_{-0.0049}$	$z_{re}$	7.68	$7.6^{+1.5}_{-1.6}$	$H(2.33)$	235.30	$235.3^{+1.9}_{-1.8}$
$A_{217}^{CIB}$	46.9	$47^{+10}_{-10}$	$10^9 A_s$	2.101	$2.099^{+0.067}_{-0.064}$	$D_M(2.33)$	5754.1	$5754^{+20}_{-19}$
$\xi^{tSZ \times CIB}$	0.46	—	$10^9 A_s e^{-2\tau}$	1.8840	$1.884^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	0.4601	$0.460^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	7.23	$5.5^{+3.8}_{-3.8}$	$D_{40}$	1228.1	$1231^{+24}_{-24}$	$\sigma_8(0.15)$	0.7607	$0.761^{+0.025}_{-0.025}$
$A_{100}^{PS}$	249	$259^{+50}_{-50}$	$D_{220}$	5729	$5733^{+73}_{-75}$	$f\sigma_8(0.38)$	0.4813	$0.482^{+0.019}_{-0.019}$
$A_{143}^{PS}$	47.8	$46^{+20}_{-20}$	$D_{810}$	2540.6	$2539^{+25}_{-26}$	$\sigma_8(0.38)$	0.6748	$0.675^{+0.023}_{-0.023}$
$A_{143 \times 217}^{PS}$	48.3	$42^{+20}_{-20}$	$D_{1420}$	818.1	$817.0^{+9.2}_{-9.3}$	$f\sigma_8(0.51)$	0.4815	$0.482^{+0.020}_{-0.020}$
$A_{217}^{PS}$	120.2	$115^{+20}_{-20}$	$D_{2000}$	231.25	$230.9^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6316	$0.632^{+0.021}_{-0.021}$
$A^{kSZ}$	0.00	$< 7.95$	$n_{s,0.002}$	0.9661	$0.9646^{+0.0082}_{-0.0084}$	$f\sigma_8(0.61)$	0.4774	$0.478^{+0.021}_{-0.020}$
$A_{100}^{dustTT}$	8.87	$8.9^{+3.6}_{-3.5}$	$Y_P$	0.245394	$0.24539^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	0.6010	$0.601^{+0.020}_{-0.020}$
$A_{143}^{dustTT}$	11.00	$10.9^{+3.5}_{-3.5}$	$Y_P^{BBN}$	0.246721	$0.24672^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	0.3037	$0.304^{+0.010}_{-0.011}$
$A_{143 \times 217}^{dustTT}$	19.9	$18.6^{+6.5}_{-6.5}$	$10^5 D/H$	2.586	$2.587^{+0.053}_{-0.050}$	$\sigma_8(2.33)$	0.3110	$0.3109^{+0.0081}_{-0.0082}$
$A_{217}^{dustTT}$	95.3	$94^{+10}_{-10}$	Age/Gyr	13.759	$13.755^{+0.061}_{-0.056}$	$f_{2000}^{143}$	28.7	$29^{+5}_{-5}$
$A_{100}^{dustTE}$	0.113	$0.115^{+0.075}_{-0.075}$	$z_*$	1089.93	$1089.95^{+0.51}_{-0.50}$	$f_{2000}^{143 \times 217}$	31.95	$32^{+4}_{-4}$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.058}_{-0.059}$	$r_*$	144.42	$144.38^{+0.56}_{-0.55}$	$f_{2000}^{217}$	106.63	$107.0^{+3.4}_{-3.5}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04107	$1.04108^{+0.00058}_{-0.00058}$	$\chi_{simall}^2$	396.04	$397.0 (\nu: 1.6)$
$A_{143}^{dustTE}$	0.226	$0.23^{+0.11}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	13.873	$13.869^{+0.052}_{-0.052}$	$\chi_{lowl}^2$	23.14	$23.49 (\nu: 0.4)$
$A_{143 \times 217}^{dustTE}$	0.664	$0.67^{+0.16}_{-0.16}$	$z_{drag}$	1059.93	$1059.93^{+0.57}_{-0.57}$	$\chi_{plik}^2$	2344.0	$2358.7 (\nu: 16.5)$
$A_{217}^{dustTE}$	2.08	$2.09^{+0.51}_{-0.52}$	$r_{drag}$	147.08	$147.04^{+0.55}_{-0.55}$	$\chi_{JLA}^2$	1034.82	$1035.9 (\nu: 1.2)$
$c_{100}$	0.99972	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14087	$0.14091^{+0.00061}_{-0.00061}$	$\chi_{6DF}^2$	0.001	$0.054 (\nu: 0.0)$
$c_{217}$	0.99819	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160757	$0.16076^{+0.00034}_{-0.00033}$	$\chi_{MGS}^2$	1.82	$1.95 (\nu: 0.2)$
$H_0$	68.29	$68.3^{+1.6}_{-1.6}$	$z_{eq}$	3403	$3407^{+56}_{-56}$	$\chi_{DR12BAO}^2$	3.91	$4.8 (\nu: 0.7)$
$\Omega_\Lambda$	0.6933	$0.693^{+0.015}_{-0.016}$	$k_{eq}$	0.010387	$0.01040^{+0.00017}_{-0.00017}$	$\chi_{prior}^2$	1.8	$11.6 (\nu: 10.4)$
$\Omega_m$	0.3067	$0.307^{+0.016}_{-0.015}$	$100\theta_{eq}$	0.8131	$0.812^{+0.011}_{-0.010}$	$\chi_{BAO}^2$	5.73	$6.8 (\nu: 1.1)$
$\Omega_m h^2$	0.14305	$0.1432^{+0.0023}_{-0.0023}$	$100\theta_{s,eq}$	0.4493	$0.4489^{+0.0054}_{-0.0053}$	$\chi_{CMB}^2$	2763.1	$2779.2 (\nu: 16.6)$

Best-fit  $\chi_{eff}^2 = 3805.46$ ;  $\bar{\chi}_{eff}^2 = 3833.50$ ;  $R - 1 = 0.00745$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.91 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.04 commander\_dx12\_v3\_2\_29: 23.14 plik\_rd12\_HM\_v22b\_TTTEEE: 2343.97 SN - JLA Pantheon18: 1034.82

## 18.14 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022398	$0.02238^{+0.00026}_{-0.00027}$	$\Omega_m h^3$	0.09764	$0.0977^{+0.0027}_{-0.0027}$	$H(0.15)$	73.71	$73.8^{+1.4}_{-1.3}$
$\Omega_c h^2$	0.11992	$0.1199^{+0.0021}_{-0.0021}$	$\sigma_8$	0.8210	$0.820^{+0.022}_{-0.021}$	$D_M(0.15)$	634.2	$634^{+12}_{-12}$
$100\theta_{MC}$	1.04094	$1.04092^{+0.00058}_{-0.00057}$	$S_8$	0.8298	$0.829^{+0.022}_{-0.021}$	$H(0.38)$	83.60	$83.7^{+1.2}_{-1.2}$
$\tau$	0.0540	$0.053^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.454^{+0.012}_{-0.012}$	$D_M(0.38)$	1513.9	$1513^{+25}_{-25}$
$w_0$	-0.967	$-0.96^{+0.16}_{-0.15}$	$\sigma_8 \Omega_m^{0.25}$	0.6108	$0.610^{+0.014}_{-0.014}$	$H(0.51)$	90.10	$90.13^{+0.95}_{-0.97}$
$w_a$	-0.24	$-0.29^{+0.58}_{-0.60}$	$\sigma_8/h^{0.5}$	0.9934	$0.993^{+0.021}_{-0.020}$	$D_M(0.51)$	1963.2	$1962^{+30}_{-30}$
$\ln(10^{10} A_s)$	3.0437	$3.042^{+0.029}_{-0.028}$	$r_{drag} h$	100.45	$100.5^{+2.4}_{-2.3}$	$H(0.61)$	95.56	$95.56^{+0.78}_{-0.79}$
$n_s$	0.9666	$0.9650^{+0.0078}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	2.4517	$2.454^{+0.046}_{-0.047}$	$D_M(0.61)$	2286.3	$2285^{+32}_{-32}$
$y_{cal}$	1.00050	$1.0004^{+0.0047}_{-0.0049}$	$z_{re}$	7.63	$7.6^{+1.5}_{-1.5}$	$H(2.33)$	235.33	$235.2^{+1.9}_{-1.8}$
$A_{217}^{CIB}$	46.3	$47^{+10}_{-10}$	$10^9 A_s$	2.098	$2.095^{+0.061}_{-0.058}$	$D_M(2.33)$	5752.4	$5753^{+20}_{-19}$
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s e^{-2\tau}$	1.8834	$1.883^{+0.020}_{-0.021}$	$f\sigma_8(0.15)$	0.4589	$0.458^{+0.013}_{-0.013}$
$A_{143}^{tSZ}$	7.19	$5.4^{+3.8}_{-3.8}$	$D_{40}$	1227.0	$1230^{+22}_{-22}$	$\sigma_8(0.15)$	0.7592	$0.759^{+0.021}_{-0.020}$
$A_{100}^{PS}$	249	$259^{+50}_{-50}$	$D_{220}$	5730	$5734^{+73}_{-76}$	$f\sigma_8(0.38)$	0.4800	$0.479^{+0.016}_{-0.015}$
$A_{143}^{PS}$	49.0	$46^{+20}_{-20}$	$D_{810}$	2540.7	$2538^{+25}_{-26}$	$\sigma_8(0.38)$	0.6735	$0.673^{+0.019}_{-0.018}$
$A_{143 \times 217}^{PS}$	50.9	$42^{+20}_{-20}$	$D_{1420}$	818.4	$816.9^{+9.4}_{-9.4}$	$f\sigma_8(0.51)$	0.4802	$0.480^{+0.016}_{-0.016}$
$A_{217}^{PS}$	121.1	$115^{+20}_{-20}$	$D_{2000}$	231.40	$230.8^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	0.6304	$0.630^{+0.017}_{-0.017}$
$A^{kSZ}$	0.00	< 8.12	$n_{s,0.002}$	0.9666	$0.9650^{+0.0078}_{-0.0079}$	$f\sigma_8(0.61)$	0.4762	$0.476^{+0.017}_{-0.016}$
$A_{100}^{dustTT}$	8.85	$9.0^{+3.5}_{-3.5}$	$Y_P$	0.245406	$0.245398^{+0.000098}_{-0.00011}$	$\sigma_8(0.61)$	0.5999	$0.600^{+0.016}_{-0.016}$
$A_{143}^{dustTT}$	11.05	$10.9^{+3.4}_{-3.4}$	$Y_P^{BBN}$	0.246733	$0.246724^{+0.000098}_{-0.00011}$	$f\sigma_8(2.33)$	0.3031	$0.3030^{+0.0086}_{-0.0086}$
$A_{143 \times 217}^{dustTT}$	20.1	$18.6^{+6.5}_{-6.4}$	$10^5 D/H$	2.5803	$2.584^{+0.052}_{-0.047}$	$\sigma_8(2.33)$	0.3106	$0.3102^{+0.0071}_{-0.0069}$
$A_{217}^{dustTT}$	95.4	$94^{+10}_{-10}$	Age/Gyr	13.756	$13.756^{+0.059}_{-0.056}$	$\chi^2_{lensing}$	8.81	$9.20 (\nu: 0.3)$
$A_{100}^{dustTE}$	0.115	$0.114^{+0.074}_{-0.075}$	$z_*$	1089.877	$1089.90^{+0.46}_{-0.45}$	$\chi^2_{simall}$	396.01	$396.9 (\nu: 1.2)$
$A_{100 \times 143}^{dustTE}$	0.135	$0.135^{+0.056}_{-0.059}$	$r_*$	144.431	$144.44^{+0.47}_{-0.48}$	$\chi^2_{lowl}$	23.05	$23.38 (\nu: 0.3)$
$A_{100 \times 217}^{dustTE}$	0.480	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04112	$1.04110^{+0.00058}_{-0.00056}$	$\chi^2_{plik}$	2344.2	$2358.6 (\nu: 15.6)$
$A_{143}^{dustTE}$	0.226	$0.23^{+0.11}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	13.8727	$13.874^{+0.045}_{-0.046}$	$\chi^2_{JLA}$	1034.83	$1035.9 (\nu: 1.3)$
$A_{143 \times 217}^{dustTE}$	0.663	$0.67^{+0.16}_{-0.16}$	$z_{drag}$	1060.01	$1059.95^{+0.55}_{-0.56}$	$\chi^2_{6DF}$	0.001	$0.053 (\nu: 0.0)$
$A_{217}^{dustTE}$	2.08	$2.08^{+0.52}_{-0.51}$	$r_{drag}$	147.081	$147.10^{+0.48}_{-0.49}$	$\chi^2_{MGS}$	1.82	$1.96 (\nu: 0.2)$
$c_{100}$	0.99971	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	0.14090	$0.14087^{+0.00056}_{-0.00057}$	$\chi^2_{DR12BAO}$	3.86	$4.7 (\nu: 0.6)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	0.160725	$0.16075^{+0.00033}_{-0.00033}$	$\chi^2_{prior}$	1.7	$11.6 (\nu: 10.3)$
$H_0$	68.30	$68.3^{+1.6}_{-1.6}$	$z_{eq}$	3400.9	$3401^{+48}_{-47}$	$\chi^2_{CMB}$	2772.1	$2788.0 (\nu: 16.6)$
$\Omega_\Lambda$	0.6935	$0.693^{+0.014}_{-0.015}$	$k_{eq}$	0.010380	$0.01038^{+0.00015}_{-0.00014}$	$\chi^2_{BAO}$	5.68	$6.7 (\nu: 1.0)$
$\Omega_m$	0.3065	$0.307^{+0.015}_{-0.014}$	$100\theta_{eq}$	0.8136	$0.8136^{+0.0089}_{-0.0088}$			
$\Omega_m h^2$	0.14296	$0.1430^{+0.0020}_{-0.0020}$	$100\theta_{s,eq}$	0.44953	$0.4495^{+0.0046}_{-0.0045}$			

Best-fit  $\chi^2_{eff} = 3814.30$ ;  $\Delta\chi^2_{eff} = -1.37$ ;  $\bar{\chi}^2_{eff} = 3842.17$ ;  $\Delta\bar{\chi}^2_{eff} = 0.31$ ;  $R - 1 = 0.01143$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.82 ( $\Delta$  0.54) DR12BAO: 3.86 ( $\Delta$  -0.38) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb.consext8: 8.80 ( $\Delta$  0.09) simall\_100x143\_offlike5\_EE\_Aplanck 396.01 ( $\Delta$  -0.51) commander\_dx12\_v3.2\_29: 23.05 ( $\Delta$  0.17) plik\_rd12\_HM\_v22b.TTTEEE: 2344.24 ( $\Delta$  -1.03) SN - JLA Pantheon18: 1034.83 ( $\Delta$  -0.14)

## 18.15 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02237^{+0.00028}_{-0.00028}$	$\Omega_m h^3$	$0.0978^{+0.0028}_{-0.0029}$	$H(0.15)$	$73.8^{+1.4}_{-1.4}$
$\Omega_c h^2$	$0.1202^{+0.0025}_{-0.0025}$	$\sigma_8$	$0.824^{+0.026}_{-0.027}$	$D_M(0.15)$	$634^{+13}_{-12}$
$100\theta_{MC}$	$1.04090^{+0.00059}_{-0.00058}$	$S_8$	$0.833^{+0.028}_{-0.028}$	$H(0.38)$	$83.7^{+1.2}_{-1.2}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.456^{+0.015}_{-0.016}$	$D_M(0.38)$	$1513^{+26}_{-26}$
$w_0$	$-0.95^{+0.17}_{-0.16}$	$\sigma_8 \Omega_m^{0.25}$	$0.613^{+0.019}_{-0.019}$	$H(0.51)$	$90.12^{+0.95}_{-0.95}$
$w_a$	$-0.32^{+0.61}_{-0.65}$	$\sigma_8/h^{0.5}$	$0.997^{+0.027}_{-0.028}$	$D_M(0.51)$	$1962^{+31}_{-30}$
$\ln(10^{10} A_s)$	$3.046^{+0.028}_{-0.026}$	$r_{\text{drag}} h$	$100.4^{+2.4}_{-2.3}$	$H(0.61)$	$95.53^{+0.79}_{-0.78}$
$n_s$	$0.9647^{+0.0082}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.463^{+0.061}_{-0.063}$	$D_M(0.61)$	$2285^{+33}_{-32}$
$y_{\text{cal}}$	$1.0005^{+0.0048}_{-0.0049}$	$z_{\text{re}}$	$< 8.92$	$H(2.33)$	$235.3^{+1.9}_{-1.8}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s$	$2.104^{+0.059}_{-0.054}$	$D_M(2.33)$	$5754^{+20}_{-19}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.884^{+0.022}_{-0.022}$	$f\sigma_8(0.15)$	$0.460^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$D_{40}$	$1231^{+24}_{-24}$	$\sigma_8(0.15)$	$0.762^{+0.025}_{-0.025}$
$A_{100}^{\text{PS}}$	$258^{+50}_{-50}$	$D_{220}$	$5732^{+74}_{-76}$	$f\sigma_8(0.38)$	$0.482^{+0.019}_{-0.019}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{810}$	$2539^{+25}_{-26}$	$\sigma_8(0.38)$	$0.676^{+0.022}_{-0.022}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$816.9^{+9.2}_{-9.4}$	$f\sigma_8(0.51)$	$0.482^{+0.020}_{-0.019}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$230.9^{+3.0}_{-3.1}$	$\sigma_8(0.51)$	$0.633^{+0.021}_{-0.021}$
$A^{\text{kSZ}}$	$< 7.92$	$n_{s,0.002}$	$0.9647^{+0.0082}_{-0.0082}$	$f\sigma_8(0.61)$	$0.479^{+0.020}_{-0.020}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$Y_P$	$0.24539^{+0.00010}_{-0.00011}$	$\sigma_8(0.61)$	$0.602^{+0.019}_{-0.020}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.24672^{+0.00010}_{-0.00011}$	$f\sigma_8(2.33)$	$0.304^{+0.010}_{-0.010}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.5}$	$10^5 D/H$	$2.587^{+0.053}_{-0.050}$	$\sigma_8(2.33)$	$0.3112^{+0.0079}_{-0.0080}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	Age/Gyr	$13.755^{+0.061}_{-0.056}$	$f_{2000}^{143}$	$29^{+5}_{-5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.075}_{-0.075}$	$z_*$	$1089.94^{+0.51}_{-0.50}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.058}_{-0.059}$	$r_*$	$144.39^{+0.56}_{-0.55}$	$f_{2000}^{217}$	$107.0^{+3.4}_{-3.5}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04108^{+0.00058}_{-0.00057}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.6)$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.10}$	$D_M(z_*)/\text{Gpc}$	$13.869^{+0.052}_{-0.052}$	$\chi_{\text{lowl}}^2$	$23.50 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$z_{\text{drag}}$	$1059.94^{+0.57}_{-0.58}$	$\chi_{\text{plik}}^2$	$2358.5 (\nu: 16.3)$
$A_{217}^{\text{dustTE}}$	$2.09^{+0.51}_{-0.52}$	$r_{\text{drag}}$	$147.05^{+0.55}_{-0.55}$	$\chi_{\text{JLA}}^2$	$1035.9 (\nu: 1.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_D$	$0.14091^{+0.00061}_{-0.00061}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16076^{+0.00034}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.95 (\nu: 0.2)$
$H_0$	$68.3^{+1.6}_{-1.6}$	$z_{\text{eq}}$	$3406^{+56}_{-56}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 0.7)$
$\Omega_\Lambda$	$0.693^{+0.015}_{-0.016}$	$k_{\text{eq}}$	$0.01040^{+0.00017}_{-0.00017}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.5)$
$\Omega_m$	$0.307^{+0.016}_{-0.015}$	$100\theta_{\text{eq}}$	$0.813^{+0.011}_{-0.010}$	$\chi_{\text{BAO}}^2$	$6.7 (\nu: 1.1)$
$\Omega_m h^2$	$0.1432^{+0.0023}_{-0.0023}$	$100\theta_{s,\text{eq}}$	$0.4490^{+0.0054}_{-0.0053}$	$\chi_{\text{CMB}}^2$	$2779.0 (\nu: 16.2)$

$$\bar{\chi}_{\text{eff}}^2 = 3833.27; R - 1 = 0.00878$$

## 18.16 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02238^{+0.00026}_{-0.00027}$	$\sigma_8$	$0.821^{+0.022}_{-0.021}$	$H(0.38)$	$83.6^{+1.2}_{-1.2}$
$\Omega_c h^2$	$0.1199^{+0.0021}_{-0.0021}$	$S_8$	$0.829^{+0.022}_{-0.021}$	$D_M(0.38)$	$1513^{+25}_{-25}$
$100\theta_{MC}$	$1.04092^{+0.00058}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.012}_{-0.011}$	$H(0.51)$	$90.13^{+0.95}_{-0.97}$
$\tau$	$0.055^{+0.013}_{-0.011}$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.014}_{-0.014}$	$D_M(0.51)$	$1962^{+29}_{-30}$
$w_0$	$-0.96^{+0.16}_{-0.15}$	$\sigma_8/h^{0.5}$	$0.993^{+0.020}_{-0.020}$	$H(0.61)$	$95.56^{+0.78}_{-0.79}$
$w_a$	$-0.28^{+0.57}_{-0.59}$	$r_{\text{drag}} h$	$100.5^{+2.4}_{-2.3}$	$D_M(0.61)$	$2285^{+32}_{-32}$
$\ln(10^{10} A_s)$	$3.044^{+0.026}_{-0.024}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.045}_{-0.046}$	$H(2.33)$	$235.2^{+1.9}_{-1.8}$
$n_s$	$0.9653^{+0.0076}_{-0.0076}$	$z_{\text{re}}$	$< 8.83$	$D_M(2.33)$	$5753^{+20}_{-19}$
$y_{\text{cal}}$	$1.0004^{+0.0048}_{-0.0049}$	$10^9 A_s$	$2.099^{+0.054}_{-0.050}$	$f\sigma_8(0.15)$	$0.458^{+0.013}_{-0.012}$
$A_{217}^{\text{CIB}}$	$47^{+10}_{-10}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.020}_{-0.020}$	$\sigma_8(0.15)$	$0.759^{+0.021}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1230^{+22}_{-22}$	$f\sigma_8(0.38)$	$0.480^{+0.016}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$5.4^{+3.8}_{-3.8}$	$D_{220}$	$5733^{+73}_{-76}$	$\sigma_8(0.38)$	$0.673^{+0.019}_{-0.018}$
$A_{100}^{\text{PS}}$	$259^{+50}_{-50}$	$D_{810}$	$2538^{+25}_{-26}$	$f\sigma_8(0.51)$	$0.480^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	$46^{+20}_{-20}$	$D_{1420}$	$816.8^{+9.4}_{-9.3}$	$\sigma_8(0.51)$	$0.630^{+0.017}_{-0.016}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{2000}$	$230.8^{+3.0}_{-3.1}$	$f\sigma_8(0.61)$	$0.476^{+0.017}_{-0.016}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$n_{s,0.002}$	$0.9653^{+0.0076}_{-0.0076}$	$\sigma_8(0.61)$	$0.600^{+0.016}_{-0.016}$
$A^{\text{kSZ}}$	$< 8.10$	$Y_P$	$0.245399^{+0.000096}_{-0.00011}$	$f\sigma_8(2.33)$	$0.3031^{+0.0086}_{-0.0084}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.246726^{+0.000097}_{-0.00011}$	$\sigma_8(2.33)$	$0.3104^{+0.0070}_{-0.0067}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.5}_{-3.4}$	$10^5 \text{D}/\text{H}$	$2.583^{+0.052}_{-0.047}$	$f_{2000}^{143}$	$30^{+5}_{-5}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.5}_{-6.4}$	$\text{Age}/\text{Gyr}$	$13.756^{+0.059}_{-0.056}$	$f_{2000}^{143 \times 217}$	$32.2^{+3.5}_{-3.6}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$z_*$	$1089.89^{+0.46}_{-0.45}$	$f_{2000}^{217}$	$107.0^{+3.4}_{-3.5}$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.074}_{-0.075}$	$r_*$	$144.45^{+0.47}_{-0.47}$	$\chi_{\text{lensing}}^2$	$9.19 (\nu: 0.3)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135^{+0.056}_{-0.059}$	$100\theta_*$	$1.04110^{+0.00057}_{-0.00056}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.2)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$D_M(z_*)/\text{Gpc}$	$13.875^{+0.044}_{-0.045}$	$\chi_{\text{lowl}}^2$	$23.37 (\nu: 0.3)$
$A_{143}^{\text{dustTE}}$	$0.23^{+0.11}_{-0.11}$	$z_{\text{drag}}$	$1059.96^{+0.55}_{-0.56}$	$\chi_{\text{plik}}^2$	$2358.4 (\nu: 15.5)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$r_{\text{drag}}$	$147.11^{+0.48}_{-0.48}$	$\chi_{\text{JLA}}^2$	$1035.9 (\nu: 1.2)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.52}_{-0.51}$	$k_D$	$0.14086^{+0.00057}_{-0.00056}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16074^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.95 (\nu: 0.2)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3400^{+46}_{-46}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.6)$
$H_0$	$68.3^{+1.6}_{-1.6}$	$k_{\text{eq}}$	$0.01038^{+0.00014}_{-0.00014}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_\Lambda$	$0.694^{+0.015}_{-0.015}$	$100\theta_{\text{eq}}$	$0.8138^{+0.0088}_{-0.0087}$	$\chi_{\text{CMB}}^2$	$2787.8 (\nu: 16.2)$
$\Omega_m$	$0.306^{+0.015}_{-0.015}$	$100\theta_{s,\text{eq}}$	$0.4497^{+0.0045}_{-0.0045}$	$\chi_{\text{BAO}}^2$	$6.6 (\nu: 1.0)$
$\Omega_m h^2$	$0.1429^{+0.0019}_{-0.0019}$	$H(0.15)$	$73.8^{+1.4}_{-1.3}$		
$\Omega_m h^3$	$0.0976^{+0.0027}_{-0.0027}$	$D_M(0.15)$	$634^{+12}_{-12}$		

$$\bar{\chi}_{\text{eff}}^2 = 3841.93; \Delta \bar{\chi}_{\text{eff}}^2 = 0.19; R - 1 = 0.01414$$

## 19 yhe

### 19.1 base\_yhe\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02210	$0.02212^{+0.00059}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	0.4596	$0.460^{+0.027}_{-0.026}$	$H(0.15)$	72.21	$72.3^{+1.9}_{-1.8}$
$\Omega_c h^2$	0.12062	$0.1206^{+0.0042}_{-0.0042}$	$\sigma_8 \Omega_m^{0.25}$	0.6106	$0.611^{+0.023}_{-0.023}$	$D_M(0.15)$	648.0	$648^{+19}_{-19}$
$100\theta_{MC}$	1.04067	$1.0408^{+0.0017}_{-0.0017}$	$\sigma_8/h^{0.5}$	0.9924	$0.992^{+0.031}_{-0.031}$	$H(0.38)$	82.48	$82.5^{+1.5}_{-1.4}$
$\tau$	0.0518	$0.052^{+0.016}_{-0.016}$	$r_{drag} h$	98.40	$98.5^{+3.6}_{-3.5}$	$D_M(0.38)$	1543.1	$1542^{+38}_{-38}$
$Y_P$	0.2421	$0.246^{+0.039}_{-0.041}$	$\langle d^2 \rangle^{1/2}$	2.452	$2.453^{+0.084}_{-0.082}$	$H(0.51)$	89.28	$89.3^{+1.2}_{-1.1}$
$\ln(10^{10} A_s)$	3.0391	$3.040^{+0.035}_{-0.034}$	$z_{re}$	7.48	$7.5^{+1.6}_{-1.7}$	$D_M(0.51)$	1997.5	$1996^{+45}_{-45}$
$n_s$	0.9627	$0.963^{+0.021}_{-0.021}$	$10^9 A_s$	2.089	$2.091^{+0.074}_{-0.070}$	$H(0.61)$	94.97	$95.0^{+1.0}_{-0.97}$
$y_{cal}$	1.00043	$1.0004^{+0.0050}_{-0.0049}$	$10^9 A_s e^{-2\tau}$	1.8831	$1.885^{+0.031}_{-0.029}$	$D_M(0.61)$	2323.1	$2322^{+48}_{-49}$
$A_{217}^{CIB}$	48.2	$48^{+10}_{-10}$	$D_{40}$	1232.3	$1233^{+43}_{-42}$	$H(2.33)$	236.68	$236.7^{+2.5}_{-2.5}$
$\xi^{tSZ \times CIB}$	0.38	—	$D_{220}$	5709	$5713^{+80}_{-82}$	$D_M(2.33)$	5780	$5777^{+49}_{-51}$
$A_{143}^{tSZ}$	6.95	$5.0^{+3.9}_{-4.0}$	$D_{810}$	2537.4	$2536^{+28}_{-27}$	$f\sigma_8(0.15)$	0.4634	$0.463^{+0.024}_{-0.024}$
$A_{100}^{PS}$	254	$264^{+60}_{-60}$	$D_{1420}$	815.9	$814^{+11}_{-10}$	$\sigma_8(0.15)$	0.7487	$0.749^{+0.017}_{-0.016}$
$A_{143}^{PS}$	49.8	$49^{+20}_{-20}$	$D_{2000}$	230.27	$229.4^{+4.9}_{-4.8}$	$f\sigma_8(0.38)$	0.4797	$0.480^{+0.019}_{-0.019}$
$A_{143 \times 217}^{PS}$	48.3	$43^{+20}_{-20}$	$n_{s,0.002}$	0.9627	$0.963^{+0.021}_{-0.021}$	$\sigma_8(0.38)$	0.6627	$0.663^{+0.015}_{-0.014}$
$A_{217}^{PS}$	119.9	$115^{+20}_{-20}$	$Y_P$	0.2421	$0.246^{+0.039}_{-0.041}$	$f\sigma_8(0.51)$	0.4771	$0.477^{+0.016}_{-0.016}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.2434	$0.247^{+0.039}_{-0.041}$	$\sigma_8(0.51)$	0.6197	$0.620^{+0.014}_{-0.013}$
$A_{100}^{dustTT}$	8.89	$9.0^{+3.6}_{-3.6}$	Age/Gyr	13.835	$13.83^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	0.4714	$0.471^{+0.014}_{-0.014}$
$A_{143}^{dustTT}$	10.88	$10.7^{+3.6}_{-3.5}$	$z_*$	1090.18	$1090.3^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	0.5894	$0.590^{+0.013}_{-0.013}$
$A_{143 \times 217}^{dustTT}$	19.4	$18.3^{+6.4}_{-6.5}$	$r_*$	144.49	$144.46^{+0.94}_{-0.93}$	$f\sigma_8(2.33)$	0.2968	$0.2970^{+0.0069}_{-0.0066}$
$A_{217}^{dustTT}$	94.7	$93^{+10}_{-10}$	$100\theta_*$	1.04096	$1.04099^{+0.00099}_{-0.00098}$	$\sigma_8(2.33)$	0.3056	$0.3059^{+0.0076}_{-0.0073}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.880	$13.877^{+0.088}_{-0.087}$	$f_{2000}^{143}$	30.0	$31^{+8}_{-8}$
$c_{217}$	0.99823	$0.9983^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.25	$1059.4^{+2.3}_{-2.3}$	$f_{2000}^{143 \times 217}$	33.0	$34^{+6}_{-6}$
$H_0$	66.83	$66.9^{+2.2}_{-2.1}$	$r_{drag}$	147.24	$147.21^{+0.98}_{-0.97}$	$f_{2000}^{217}$	107.5	$108.3^{+5.2}_{-5.1}$
$\Omega_\Lambda$	0.6790	$0.679^{+0.028}_{-0.029}$	$k_D$	0.14064	$0.1405^{+0.0015}_{-0.0014}$	$\chi_{simall}^2$	395.83	$396.9 (\nu: 1.4)$
$\Omega_m$	0.3210	$0.321^{+0.029}_{-0.028}$	$100\theta_D$	0.16093	$0.1611^{+0.0015}_{-0.0015}$	$\chi_{lowl}^2$	23.69	$24.0 (\nu: 2.1)$
$\Omega_m h^2$	0.14337	$0.1434^{+0.0040}_{-0.0039}$	$z_{eq}$	3411	$3411^{+95}_{-94}$	$\chi_{plik}^2$	758.7	$772.2 (\nu: 16.6)$
$\Omega_m h^3$	0.09582	$0.0959^{+0.0015}_{-0.0015}$	$k_{eq}$	0.010410	$0.01041^{+0.00029}_{-0.00029}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.8)$
$\sigma_8$	0.8113	$0.812^{+0.019}_{-0.018}$	$100\theta_{eq}$	0.8109	$0.811^{+0.018}_{-0.018}$	$\chi_{CMB}^2$	1178.2	$1193.1 (\nu: 16.1)$
$S_8$	0.8392	$0.839^{+0.049}_{-0.047}$	$100\theta_{s,eq}$	0.4483	$0.4484^{+0.0094}_{-0.0091}$			

Best-fit  $\chi_{eff}^2 = 1179.56$ ;  $\Delta\chi_{eff}^2 = -0.01$ ;  $\bar{\chi}_{eff}^2 = 1200.43$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.85$ ;  $R - 1 = 0.00562$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.83 ( $\Delta$  -0.04) commander\_dx12\_v3\_2\_29: 23.69 ( $\Delta$  0.09) plik\_rd12\_HM\_v22\_TT: 758.72 ( $\Delta$  -0.02)

## 19.2 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022249	$0.02227^{+0.00049}_{-0.00048}$	$\sigma_8 \Omega_m^{0.25}$	0.6030	$0.603^{+0.017}_{-0.016}$	$H(0.38)$	83.02	$83.07^{+0.87}_{-0.85}$
$\Omega_c h^2$	0.11890	$0.1190^{+0.0024}_{-0.0024}$	$\sigma_8/h^{0.5}$	0.9827	$0.983^{+0.024}_{-0.023}$	$D_M(0.38)$	1528.1	$1527^{+21}_{-21}$
$100\theta_{MC}$	1.04108	$1.0413^{+0.0015}_{-0.0014}$	$r_{drag}h$	99.86	$99.9^{+1.9}_{-1.9}$	$H(0.51)$	89.72	$89.76^{+0.77}_{-0.74}$
$\tau$	0.0545	$0.054^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.425	$2.424^{+0.058}_{-0.055}$	$D_M(0.51)$	1979.9	$1979^{+26}_{-26}$
$Y_P$	0.2484	$0.253^{+0.036}_{-0.037}$	$z_{re}$	7.73	$7.6^{+1.6}_{-1.6}$	$H(0.61)$	95.31	$95.37^{+0.70}_{-0.67}$
$\ln(10^{10} A_s)$	3.0423	$3.042^{+0.035}_{-0.032}$	$10^9 A_s$	2.095	$2.095^{+0.075}_{-0.067}$	$D_M(0.61)$	2304.2	$2303^{+28}_{-28}$
$n_s$	0.9688	$0.969^{+0.016}_{-0.016}$	$10^9 A_s e^{-2\tau}$	1.8788	$1.881^{+0.029}_{-0.028}$	$H(2.33)$	235.73	$235.8^{+1.6}_{-1.6}$
$y_{cal}$	1.00048	$1.0005^{+0.0050}_{-0.0048}$	$D_{40}$	1221.0	$1221^{+34}_{-32}$	$D_M(2.33)$	5764.1	$5761^{+36}_{-37}$
$A_{217}^{CIB}$	49.2	$49^{+10}_{-10}$	$D_{220}$	5716	$5720^{+79}_{-79}$	$f\sigma_8(0.15)$	0.4545	$0.455^{+0.016}_{-0.015}$
$\xi^{tSZ \times CIB}$	0.24	—	$D_{810}$	2537.3	$2537^{+28}_{-27}$	$\sigma_8(0.15)$	0.7473	$0.748^{+0.017}_{-0.016}$
$A_{143}^{tSZ}$	7.03	$4.9^{+4.0}_{-3.9}$	$D_{1420}$	816.0	$815^{+11}_{-10}$	$f\sigma_8(0.38)$	0.4732	$0.473^{+0.013}_{-0.013}$
$A_{100}^{PS}$	256	$267^{+60}_{-50}$	$D_{2000}$	230.00	$229.1^{+4.7}_{-4.7}$	$\sigma_8(0.38)$	0.6627	$0.663^{+0.015}_{-0.014}$
$A_{143}^{PS}$	49.1	$50^{+20}_{-20}$	$n_{s,0.002}$	0.9688	$0.969^{+0.016}_{-0.016}$	$f\sigma_8(0.51)$	0.4721	$0.472^{+0.012}_{-0.012}$
$A_{143 \times 217}^{PS}$	45.0	$44^{+20}_{-20}$	$Y_P$	0.2484	$0.253^{+0.036}_{-0.037}$	$\sigma_8(0.51)$	0.6202	$0.621^{+0.014}_{-0.013}$
$A_{217}^{PS}$	118.6	$115^{+20}_{-20}$	$Y_P^{BBN}$	0.2498	$0.255^{+0.036}_{-0.037}$	$f\sigma_8(0.61)$	0.4673	$0.468^{+0.012}_{-0.011}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.800	$13.793^{+0.084}_{-0.085}$	$\sigma_8(0.61)$	0.5902	$0.591^{+0.013}_{-0.012}$
$A_{100}^{dustTT}$	8.93	$9.0^{+3.7}_{-3.6}$	$z_*$	1090.10	$1090.3^{+1.3}_{-1.2}$	$f\sigma_8(2.33)$	0.2977	$0.2978^{+0.0066}_{-0.0062}$
$A_{143}^{dustTT}$	10.77	$10.8^{+3.5}_{-3.6}$	$r_*$	144.80	$144.73^{+0.74}_{-0.76}$	$\sigma_8(2.33)$	0.3070	$0.3072^{+0.0069}_{-0.0065}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.5}_{-6.4}$	$100\theta_*$	1.04121	$1.04123^{+0.00084}_{-0.00085}$	$f_{2000}^{143}$	30.7	$32^{+7}_{-7}$
$A_{217}^{dustTT}$	94.8	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	13.907	$13.900^{+0.073}_{-0.075}$	$f_{2000}^{143 \times 217}$	33.4	$34^{+6}_{-6}$
$c_{100}$	0.99961	$0.9996^{+0.0012}_{-0.0012}$	$z_{drag}$	1059.67	$1059.9^{+2.1}_{-2.1}$	$f_{2000}^{217}$	107.9	$108.7^{+5.1}_{-5.0}$
$c_{217}$	0.99828	$0.9983^{+0.0012}_{-0.0012}$	$r_{drag}$	147.51	$147.44^{+0.84}_{-0.85}$	$\chi_{small}^2$	396.06	$397.0 (\nu: 1.5)$
$H_0$	67.70	$67.7^{+1.2}_{-1.2}$	$k_D$	0.14021	$0.1401^{+0.0011}_{-0.0011}$	$\chi_{lowl}^2$	22.64	$22.8 (\nu: 0.9)$
$\Omega_\Lambda$	0.6906	$0.691^{+0.015}_{-0.015}$	$100\theta_D$	0.16112	$0.1613^{+0.0014}_{-0.0014}$	$\chi_{plik}^2$	760.1	$773.3 (\nu: 16.3)$
$\Omega_m$	0.3094	$0.309^{+0.015}_{-0.015}$	$z_{eq}$	3373	$3376^{+58}_{-57}$	$\chi_{6DF}^2$	0.016	$0.056 (\nu: 0.0)$
$\Omega_m h^2$	0.14179	$0.1419^{+0.0024}_{-0.0024}$	$k_{eq}$	0.010295	$0.01030^{+0.00018}_{-0.00017}$	$\chi_{MGS}^2$	1.34	$1.41 (\nu: 0.2)$
$\Omega_m h^3$	0.09599	$0.0961^{+0.0015}_{-0.0014}$	$100\theta_{eq}$	0.8183	$0.818^{+0.011}_{-0.010}$	$\chi_{DR12BAO}^2$	4.05	$4.7 (\nu: 1.3)$
$\sigma_8$	0.8085	$0.809^{+0.019}_{-0.017}$	$100\theta_{s,eq}$	0.4521	$0.4519^{+0.0055}_{-0.0054}$	$\chi_{prior}^2$	1.5	$7.3 (\nu: 6.9)$
$S_8$	0.8211	$0.822^{+0.030}_{-0.029}$	$H(0.15)$	72.95	$73.0^{+1.1}_{-1.1}$	$\chi_{BAO}^2$	5.41	$6.2 (\nu: 0.9)$
$\sigma_8 \Omega_m^{0.5}$	0.4497	$0.450^{+0.016}_{-0.016}$	$D_M(0.15)$	640.5	$640^{+10}_{-10}$	$\chi_{CMB}^2$	1178.8	$1193.1 (\nu: 15.7)$

Best-fit  $\chi_{eff}^2 = 1185.74$ ;  $\Delta\chi_{eff}^2 = -0.00$ ;  $\bar{\chi}_{eff}^2 = 1206.53$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.51$ ;  $R - 1 = 0.01126$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.34 ( $\Delta$  0.06) DR12BAO: 4.05 ( $\Delta$  -0.13) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.17) commander\_dx12\_v3\_2\_29: 22.64 ( $\Delta$  -0.18) plik\_rd12\_HM\_v22\_TT: 760.12 ( $\Delta$  0.02)

### 19.3 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.02213	$0.02213^{+0.00055}_{-0.00055}$	$\sigma_8 \Omega_m^{0.5}$	0.4568	$0.457^{+0.017}_{-0.018}$	$H(0.15)$	72.36	$72.4^{+1.5}_{-1.5}$
$\Omega_c h^2$	0.12014	$0.1203^{+0.0031}_{-0.0032}$	$\sigma_8 \Omega_m^{0.25}$	0.6081	$0.609^{+0.015}_{-0.015}$	$D_M(0.15)$	646.5	$646^{+15}_{-15}$
$100\theta_{MC}$	1.04064	$1.0408^{+0.0017}_{-0.0017}$	$\sigma_8/h^{0.5}$	0.9890	$0.990^{+0.021}_{-0.021}$	$H(0.38)$	82.57	$82.6^{+1.2}_{-1.2}$
$\tau$	0.0525	$0.052^{+0.016}_{-0.016}$	$r_{drag} h$	98.74	$98.7^{+2.7}_{-2.7}$	$D_M(0.38)$	1540.2	$1540^{+31}_{-31}$
$Y_P$	0.2394	$0.244^{+0.039}_{-0.040}$	$\langle d^2 \rangle^{1/2}$	2.448	$2.448^{+0.056}_{-0.057}$	$H(0.51)$	89.35	$89.4^{+1.0}_{-0.99}$
$\ln(10^{10} A_s)$	3.0392	$3.039^{+0.033}_{-0.032}$	$z_{re}$	7.53	$7.5^{+1.6}_{-1.7}$	$D_M(0.51)$	1994.1	$1994^{+37}_{-37}$
$n_s$	0.9626	$0.963^{+0.019}_{-0.019}$	$10^9 A_s$	2.089	$2.089^{+0.070}_{-0.066}$	$H(0.61)$	95.01	$95.05^{+0.90}_{-0.87}$
$y_{cal}$	1.00055	$1.0004^{+0.0049}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	1.8806	$1.882^{+0.027}_{-0.027}$	$D_M(0.61)$	2319.5	$2319^{+40}_{-40}$
$A_{217}^{CIB}$	47.8	$48^{+10}_{-10}$	$D_{40}$	1232.7	$1233^{+37}_{-37}$	$H(2.33)$	236.39	$236.5^{+1.8}_{-1.9}$
$\xi^{tSZ \times CIB}$	0.46	—	$D_{220}$	5715	$5716^{+80}_{-80}$	$D_M(2.33)$	5778.0	$5776^{+45}_{-45}$
$A_{143}^{tSZ}$	6.93	$5.0^{+3.9}_{-4.0}$	$D_{810}$	2537.6	$2536^{+27}_{-26}$	$f\sigma_8(0.15)$	0.4608	$0.461^{+0.016}_{-0.016}$
$A_{100}^{PS}$	252	$264^{+60}_{-60}$	$D_{1420}$	816.7	$814^{+11}_{-10}$	$\sigma_8(0.15)$	0.7475	$0.748^{+0.014}_{-0.014}$
$A_{143}^{PS}$	50.2	$49^{+20}_{-20}$	$D_{2000}$	230.72	$229.6^{+4.7}_{-4.7}$	$f\sigma_8(0.38)$	0.4776	$0.478^{+0.012}_{-0.013}$
$A_{143 \times 217}^{PS}$	49.5	$43^{+20}_{-20}$	$n_{s,0.002}$	0.9626	$0.963^{+0.019}_{-0.019}$	$\sigma_8(0.38)$	0.6618	$0.662^{+0.013}_{-0.013}$
$A_{217}^{PS}$	119.9	$115^{+20}_{-20}$	$Y_P$	0.2394	$0.244^{+0.039}_{-0.040}$	$f\sigma_8(0.51)$	0.4754	$0.476^{+0.011}_{-0.011}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.2407	$0.246^{+0.039}_{-0.041}$	$\sigma_8(0.51)$	0.6191	$0.619^{+0.013}_{-0.012}$
$A_{100}^{dustTT}$	8.86	$8.9^{+3.7}_{-3.6}$	Age/Gyr	13.831	$13.83^{+0.10}_{-0.10}$	$f\sigma_8(0.61)$	0.4699	$0.4701^{+0.0096}_{-0.0098}$
$A_{143}^{dustTT}$	10.77	$10.7^{+3.6}_{-3.6}$	$z_*$	1090.00	$1090.2^{+1.3}_{-1.2}$	$\sigma_8(0.61)$	0.5889	$0.589^{+0.012}_{-0.012}$
$A_{143 \times 217}^{dustTT}$	19.5	$18.3^{+6.4}_{-6.4}$	$r_*$	144.60	$144.55^{+0.76}_{-0.74}$	$f\sigma_8(2.33)$	0.2967	$0.2968^{+0.0067}_{-0.0064}$
$A_{217}^{dustTT}$	94.8	$93^{+10}_{-10}$	$100\theta_*$	1.04100	$1.04101^{+0.00095}_{-0.00094}$	$\sigma_8(2.33)$	0.3055	$0.3057^{+0.0075}_{-0.0072}$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	13.891	$13.886^{+0.074}_{-0.072}$	$f_{2000}^{143}$	29.6	$31^{+8}_{-8}$
$c_{217}$	0.99824	$0.9983^{+0.0013}_{-0.0012}$	$z_{drag}$	1059.17	$1059.4^{+2.3}_{-2.3}$	$f_{2000}^{143 \times 217}$	32.6	$34^{+6}_{-6}$
$H_0$	67.01	$67.0^{+1.7}_{-1.7}$	$r_{drag}$	147.34	$147.30^{+0.82}_{-0.81}$	$f_{2000}^{217}$	107.0	$108.1^{+5.2}_{-5.0}$
$\Omega_\Lambda$	0.6817	$0.681^{+0.021}_{-0.022}$	$k_D$	0.14065	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{lensing}^2$	8.83	$9.48 (\nu: 0.4)$
$\Omega_m$	0.3183	$0.319^{+0.022}_{-0.021}$	$100\theta_D$	0.16080	$0.1610^{+0.0015}_{-0.0015}$	$\chi_{small}^2$	395.86	$396.8 (\nu: 1.2)$
$\Omega_m h^2$	0.14291	$0.1430^{+0.0029}_{-0.0030}$	$z_{eq}$	3400	$3403^{+69}_{-71}$	$\chi_{lowl}^2$	23.69	$23.9 (\nu: 1.6)$
$\Omega_m h^3$	0.09577	$0.0959^{+0.0015}_{-0.0015}$	$k_{eq}$	0.010376	$0.01038^{+0.00021}_{-0.00022}$	$\chi_{plik}^2$	758.8	$771.8 (\nu: 15.4)$
$\sigma_8$	0.8096	$0.810^{+0.015}_{-0.015}$	$100\theta_{eq}$	0.8128	$0.813^{+0.014}_{-0.013}$	$\chi_{prior}^2$	1.3	$7.3 (\nu: 6.9)$
$S_8$	0.8339	$0.835^{+0.032}_{-0.032}$	$100\theta_{s,eq}$	0.4493	$0.4492^{+0.0070}_{-0.0067}$	$\chi_{CMB}^2$	1187.2	$1202.1 (\nu: 16.4)$

Best-fit  $\chi_{eff}^2 = 1188.45$ ;  $\Delta\chi_{eff}^2 = -0.12$ ;  $\bar{\chi}_{eff}^2 = 1209.39$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.98$ ;  $R - 1 = 0.00784$

$\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.83 ( $\Delta$  -0.07) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  -0.00) commander\_dx12\_v3\_2\_29: 23.69 ( $\Delta$  0.46) plik\_rd12\_HM\_v22\_TT: 758.77 ( $\Delta$  -0.55)



## 19.4 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022238	$0.02226^{+0.00049}_{-0.00049}$	$\sigma_8/h^{0.5}$	0.9849	$0.985^{+0.019}_{-0.019}$	$H(0.51)$	89.66	$89.72^{+0.74}_{-0.72}$
$\Omega_c h^2$	0.11918	$0.1191^{+0.0022}_{-0.0021}$	$r_{\text{drag}} h$	99.65	$99.7^{+1.8}_{-1.7}$	$D_M(0.51)$	1982.2	$1981^{+24}_{-25}$
$100\theta_{\text{MC}}$	1.04106	$1.0412^{+0.0015}_{-0.0014}$	$\langle d^2 \rangle^{1/2}$	2.4323	$2.431^{+0.047}_{-0.046}$	$H(0.61)$	95.28	$95.33^{+0.68}_{-0.66}$
$\tau$	0.0549	$0.055^{+0.015}_{-0.014}$	$z_{\text{re}}$	7.77	$7.8^{+1.5}_{-1.5}$	$D_M(0.61)$	2306.6	$2305^{+27}_{-27}$
$Y_{\text{P}}$	0.2480	$0.251^{+0.036}_{-0.037}$	$10^9 A_{\text{s}}$	2.098	$2.100^{+0.067}_{-0.062}$	$H(2.33)$	235.90	$235.9^{+1.5}_{-1.5}$
$\ln(10^{10} A_{\text{s}})$	3.0437	$3.045^{+0.031}_{-0.030}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8802	$1.882^{+0.027}_{-0.026}$	$D_M(2.33)$	5765.6	$5763^{+35}_{-37}$
$n_{\text{s}}$	0.9674	$0.968^{+0.016}_{-0.016}$	$D_{40}$	1224.6	$1224^{+33}_{-32}$	$f\sigma_8(0.15)$	0.4562	$0.456^{+0.012}_{-0.012}$
$y_{\text{cal}}$	1.00054	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	5720	$5724^{+78}_{-79}$	$\sigma_8(0.15)$	0.7482	$0.749^{+0.014}_{-0.014}$
$A_{217}^{\text{CIB}}$	50.2	$48^{+10}_{-10}$	$D_{810}$	2537.4	$2538^{+27}_{-26}$	$f\sigma_8(0.38)$	0.4746	$0.475^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.12	—	$D_{1420}$	815.7	$815^{+11}_{-10}$	$\sigma_8(0.38)$	0.6633	$0.664^{+0.013}_{-0.012}$
$A_{143}^{\text{tSZ}}$	7.21	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	229.90	$229.4^{+4.6}_{-4.6}$	$f\sigma_8(0.51)$	0.4732	$0.4733^{+0.0099}_{-0.0098}$
$A_{100}^{\text{PS}}$	256	$266^{+60}_{-50}$	$n_{\text{s},0.002}$	0.9674	$0.968^{+0.016}_{-0.016}$	$\sigma_8(0.51)$	0.6207	$0.621^{+0.012}_{-0.012}$
$A_{143}^{\text{PS}}$	46.8	$50^{+20}_{-20}$	$Y_{\text{P}}$	0.2480	$0.251^{+0.036}_{-0.037}$	$f\sigma_8(0.61)$	0.4683	$0.4684^{+0.0093}_{-0.0093}$
$A_{143 \times 217}^{\text{PS}}$	41.9	$44^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.2494	$0.253^{+0.036}_{-0.037}$	$\sigma_8(0.61)$	0.5906	$0.591^{+0.012}_{-0.011}$
$A_{217}^{\text{PS}}$	117.1	$115^{+20}_{-20}$	Age/Gyr	13.803	$13.797^{+0.082}_{-0.085}$	$f\sigma_8(2.33)$	0.2978	$0.2981^{+0.0061}_{-0.0057}$
$A^{\text{kSZ}}$	0.0	—	$z_*$	1090.13	$1090.2^{+1.3}_{-1.2}$	$\sigma_8(2.33)$	0.3071	$0.3074^{+0.0065}_{-0.0062}$
$A_{100}^{\text{dustTT}}$	8.95	$9.0^{+3.7}_{-3.6}$	$r_*$	144.74	$144.72^{+0.69}_{-0.70}$	$f_{2000}^{143}$	30.8	$32^{+7}_{-7}$
$A_{143}^{\text{dustTT}}$	10.80	$10.7^{+3.5}_{-3.6}$	$100\theta_*$	1.04119	$1.04121^{+0.00085}_{-0.00085}$	$f_{2000}^{143 \times 217}$	33.5	$34^{+5}_{-6}$
$A_{143 \times 217}^{\text{dustTT}}$	19.2	$18.3^{+6.5}_{-6.4}$	$D_M(z_*)/\text{Gpc}$	13.901	$13.899^{+0.069}_{-0.070}$	$f_{2000}^{217}$	108.0	$108.6^{+5.0}_{-5.0}$
$A_{217}^{\text{dustTT}}$	94.2	$93^{+10}_{-10}$	$z_{\text{drag}}$	1059.67	$1059.8^{+2.1}_{-2.1}$	$\chi_{\text{lensing}}^2$	8.88	$9.36 (\nu: 0.3)$
$c_{100}$	0.99965	$0.9996^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.45	$147.42^{+0.79}_{-0.80}$	$\chi_{\text{small}}^2$	396.18	$397.0 (\nu: 1.5)$
$c_{217}$	0.99826	$0.9983^{+0.0013}_{-0.0012}$	$k_{\text{D}}$	0.14028	$0.1402^{+0.0011}_{-0.0011}$	$\chi_{\text{lowl}}^2$	22.92	$23.0 (\nu: 0.9)$
$H_0$	67.58	$67.7^{+1.2}_{-1.1}$	$100\theta_{\text{D}}$	0.16110	$0.1613^{+0.0014}_{-0.0014}$	$\chi_{\text{plik}}^2$	759.5	$772.7 (\nu: 15.5)$
$\Omega_{\Lambda}$	0.6890	$0.690^{+0.013}_{-0.014}$	$z_{\text{eq}}$	3379	$3379^{+51}_{-51}$	$\chi_{6\text{DF}}^2$	0.029	$0.057 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3110	$0.310^{+0.014}_{-0.013}$	$k_{\text{eq}}$	0.010314	$0.01031^{+0.00016}_{-0.00016}$	$\chi_{\text{MGS}}^2$	1.22	$1.33 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	0.14206	$0.1421^{+0.0022}_{-0.0021}$	$100\theta_{\text{eq}}$	0.8171	$0.8174^{+0.0093}_{-0.0092}$	$\chi_{\text{DR12BAO}}^2$	4.37	$4.8 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	0.09601	$0.0961^{+0.0015}_{-0.0014}$	$100\theta_{\text{s,eq}}$	0.45149	$0.4516^{+0.0048}_{-0.0048}$	$\chi_{\text{prior}}^2$	1.5	$7.3 (\nu: 7.0)$
$\sigma_8$	0.8096	$0.810^{+0.015}_{-0.015}$	$H(0.15)$	72.85	$72.9^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	1187.5	$1202.1 (\nu: 15.9)$
$S_8$	0.8244	$0.824^{+0.024}_{-0.024}$	$D_M(0.15)$	641.5	$640.9^{+9.9}_{-10}$	$\chi_{\text{BAO}}^2$	5.62	$6.2 (\nu: 0.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4515	$0.451^{+0.013}_{-0.013}$	$H(0.38)$	82.95	$83.01^{+0.85}_{-0.82}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6046	$0.605^{+0.013}_{-0.013}$	$D_M(0.38)$	1530.1	$1529^{+20}_{-21}$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.68$ ;  $\Delta\chi_{\text{eff}}^2 = -0.00$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.53$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.80$ ;  $R - 1 = 0.01408$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.37 ( $\Delta$  0.00) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.88 ( $\Delta$  0.00) simall\_100x143\_offlike5\_EE\_Aplanck.L 396.18 ( $\Delta$  0.09) commander\_dx12.v3.2.29: 22.92 ( $\Delta$  -0.04) plik\_rd12\_HM.v22.TT: 759.54 ( $\Delta$  -0.26)

# 19.5 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}} h^2$	$0.02213^{+0.00059}_{-0.00057}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.460^{+0.027}_{-0.026}$	$H(0.15)$	$72.3^{+1.9}_{-1.8}$
$\Omega_{\mathrm{c}} h^2$	$0.1205^{+0.0042}_{-0.0042}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.611^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.15)$	$647^{+19}_{-18}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0017}_{-0.0017}$	$\sigma_8/h^{0.5}$	$0.993^{+0.031}_{-0.031}$	$H(0.38)$	$82.6^{+1.4}_{-1.4}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$r_{\mathrm{drag}} h$	$98.6^{+3.5}_{-3.4}$	$D_{\mathrm{M}}(0.38)$	$1541^{+38}_{-38}$
$Y_{\mathrm{P}}$	$0.247^{+0.038}_{-0.041}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.084}_{-0.082}$	$H(0.51)$	$89.4^{+1.2}_{-1.1}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.030}_{-0.028}$	$z_{\mathrm{re}}$	$< 8.86$	$D_{\mathrm{M}}(0.51)$	$1995^{+44}_{-45}$
$n_{\mathrm{s}}$	$0.964^{+0.021}_{-0.021}$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.064}_{-0.058}$	$H(0.61)$	$95.1^{+1.0}_{-0.97}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0050}_{-0.0049}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885^{+0.031}_{-0.029}$	$D_{\mathrm{M}}(0.61)$	$2320^{+48}_{-49}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1233^{+43}_{-42}$	$H(2.33)$	$236.7^{+2.5}_{-2.5}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5713^{+80}_{-82}$	$D_{\mathrm{M}}(2.33)$	$5776^{+49}_{-50}$
$A_{143}^{\mathrm{tSZ}}$	$5.0^{+3.9}_{-4.0}$	$D_{810}$	$2536^{+28}_{-27}$	$f\sigma_8(0.15)$	$0.464^{+0.024}_{-0.024}$
$A_{100}^{\mathrm{PS}}$	$264^{+60}_{-60}$	$D_{1420}$	$814^{+11}_{-10}$	$\sigma_8(0.15)$	$0.750^{+0.016}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	$49^{+20}_{-20}$	$D_{2000}$	$229.4^{+4.8}_{-4.7}$	$f\sigma_8(0.38)$	$0.480^{+0.018}_{-0.019}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.964^{+0.021}_{-0.021}$	$\sigma_8(0.38)$	$0.664^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.247^{+0.038}_{-0.041}$	$f\sigma_8(0.51)$	$0.478^{+0.016}_{-0.016}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.248^{+0.039}_{-0.041}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.6}_{-3.6}$	Age/Gyr	$13.83^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	$0.472^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.6}_{-3.5}$	$z_*$	$1090.3^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.4}_{-6.5}$	$r_*$	$144.47^{+0.94}_{-0.94}$	$f\sigma_8(2.33)$	$0.2976^{+0.0062}_{-0.0059}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04101^{+0.00098}_{-0.00098}$	$\sigma_8(2.33)$	$0.3065^{+0.0068}_{-0.0066}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.878^{+0.089}_{-0.088}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\mathrm{drag}}$	$1059.5^{+2.4}_{-2.3}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$H_0$	$67.0^{+2.2}_{-2.1}$	$r_{\mathrm{drag}}$	$147.22^{+0.98}_{-0.97}$	$f_{2000}^{217}$	$108.3^{+5.2}_{-5.0}$
$\Omega_{\Lambda}$	$0.680^{+0.028}_{-0.029}$	$k_{\mathrm{D}}$	$0.1405^{+0.0015}_{-0.0014}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.320^{+0.029}_{-0.028}$	$100\theta_{\mathrm{D}}$	$0.1611^{+0.0015}_{-0.0015}$	$\chi_{\mathrm{lowl}}^2$	$23.9 (\nu: 2.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1433^{+0.0039}_{-0.0039}$	$z_{\mathrm{eq}}$	$3409^{+94}_{-94}$	$\chi_{\mathrm{plik}}^2$	$772.1 (\nu: 16.7)$
$\Omega_{\mathrm{m}} h^3$	$0.0959^{+0.0015}_{-0.0015}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00029}_{-0.00029}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 6.8)$
$\sigma_8$	$0.813^{+0.018}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.018}_{-0.018}$	$\chi_{\mathrm{CMB}}^2$	$1192.9 (\nu: 15.6)$
$S_8$	$0.839^{+0.049}_{-0.047}$	$100\theta_{\mathrm{s,eq}}$	$0.4486^{+0.0093}_{-0.0090}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1200.15$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.83$ ;  $R - 1 = 0.00514$

## 19.6 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02228^{+0.00049}_{-0.00049}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.016}_{-0.015}$	$H(0.38)$	$83.08^{+0.86}_{-0.84}$
$\Omega_c h^2$	$0.1190^{+0.0025}_{-0.0024}$	$\sigma_8/h^{0.5}$	$0.984^{+0.024}_{-0.022}$	$D_M(0.38)$	$1527^{+21}_{-21}$
$100\theta_{MC}$	$1.0413^{+0.0015}_{-0.0014}$	$r_{\text{drag}} h$	$99.9^{+1.9}_{-1.9}$	$H(0.51)$	$89.77^{+0.77}_{-0.74}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.056}_{-0.053}$	$D_M(0.51)$	$1979^{+26}_{-26}$
$Y_P$	$0.253^{+0.036}_{-0.036}$	$z_{\text{re}}$	$< 8.97$	$H(0.61)$	$95.37^{+0.70}_{-0.67}$
$\ln(10^{10} A_s)$	$3.044^{+0.031}_{-0.028}$	$10^9 A_s$	$2.100^{+0.065}_{-0.060}$	$D_M(0.61)$	$2303^{+28}_{-28}$
$n_s$	$0.969^{+0.016}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.029}_{-0.028}$	$H(2.33)$	$235.8^{+1.6}_{-1.6}$
$y_{\text{cal}}$	$1.0005^{+0.0049}_{-0.0048}$	$D_{40}$	$1221^{+33}_{-32}$	$D_M(2.33)$	$5761^{+36}_{-37}$
$A_{217}^{\text{CIB}}$	$49^{+10}_{-10}$	$D_{220}$	$5719^{+79}_{-79}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2537^{+28}_{-27}$	$\sigma_8(0.15)$	$0.749^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{1420}$	$815^{+11}_{-10}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{100}^{\text{PS}}$	$267^{+60}_{-50}$	$D_{2000}$	$229.1^{+4.7}_{-4.7}$	$\sigma_8(0.38)$	$0.664^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	$50^{+20}_{-20}$	$n_{s,0.002}$	$0.969^{+0.016}_{-0.016}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+20}_{-20}$	$Y_P$	$0.253^{+0.036}_{-0.036}$	$\sigma_8(0.51)$	$0.621^{+0.013}_{-0.012}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.255^{+0.036}_{-0.037}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.792^{+0.084}_{-0.085}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$9.0^{+3.7}_{-3.7}$	$z_*$	$1090.3^{+1.3}_{-1.2}$	$f\sigma_8(2.33)$	$0.2982^{+0.0061}_{-0.0059}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.6}$	$r_*$	$144.74^{+0.75}_{-0.76}$	$\sigma_8(2.33)$	$0.3076^{+0.0064}_{-0.0062}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.4}$	$100\theta_*$	$1.04124^{+0.00084}_{-0.00086}$	$f_{2000}^{143}$	$32^{+7}_{-7}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$D_M(z_*)/\text{Gpc}$	$13.900^{+0.073}_{-0.075}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0013}$	$z_{\text{drag}}$	$1059.9^{+2.1}_{-2.1}$	$f_{2000}^{217}$	$108.7^{+5.1}_{-5.0}$
$c_{217}$	$0.9983^{+0.0013}_{-0.0012}$	$r_{\text{drag}}$	$147.44^{+0.84}_{-0.85}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$H_0$	$67.8^{+1.2}_{-1.2}$	$k_D$	$0.1401^{+0.0011}_{-0.0011}$	$\chi_{\text{lowl}}^2$	$22.8 (\nu: 0.9)$
$\Omega_\Lambda$	$0.691^{+0.015}_{-0.015}$	$100\theta_D$	$0.1613^{+0.0014}_{-0.0014}$	$\chi_{\text{plik}}^2$	$773.2 (\nu: 16.3)$
$\Omega_m$	$0.309^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3376^{+58}_{-58}$	$\chi_{6\text{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_m h^2$	$0.1419^{+0.0024}_{-0.0024}$	$k_{\text{eq}}$	$0.01030^{+0.00018}_{-0.00018}$	$\chi_{\text{MGS}}^2$	$1.43 (\nu: 0.2)$
$\Omega_m h^3$	$0.0961^{+0.0015}_{-0.0015}$	$100\theta_{\text{eq}}$	$0.818^{+0.011}_{-0.010}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$\sigma_8$	$0.810^{+0.018}_{-0.016}$	$100\theta_{s,\text{eq}}$	$0.4520^{+0.0055}_{-0.0054}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.9)$
$S_8$	$0.822^{+0.030}_{-0.029}$	$H(0.15)$	$73.0^{+1.1}_{-1.1}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.016}_{-0.016}$	$D_M(0.15)$	$640^{+10}_{-10}$	$\chi_{\text{CMB}}^2$	$1192.9 (\nu: 15.4)$

$$\bar{\chi}_{\text{eff}}^2 = 1206.38; \Delta \bar{\chi}_{\text{eff}}^2 = 0.62; R - 1 = 0.01225$$

## 19.7 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02215^{+0.00054}_{-0.00055}$	$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.017}_{-0.018}$	$H(0.15)$	$72.4^{+1.5}_{-1.4}$
$\Omega_c h^2$	$0.1201^{+0.0030}_{-0.0031}$	$\sigma_8 \Omega_m^{0.25}$	$0.609^{+0.015}_{-0.015}$	$D_M(0.15)$	$646^{+15}_{-15}$
$100\theta_{MC}$	$1.0408^{+0.0016}_{-0.0016}$	$\sigma_8/h^{0.5}$	$0.990^{+0.020}_{-0.021}$	$H(0.38)$	$82.7^{+1.2}_{-1.1}$
$\tau$	$0.054^{+0.013}_{-0.011}$	$r_{\text{drag}} h$	$98.9^{+2.7}_{-2.6}$	$D_M(0.38)$	$1538^{+30}_{-30}$
$Y_P$	$0.245^{+0.038}_{-0.040}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.056}_{-0.056}$	$H(0.51)$	$89.4^{+1.0}_{-0.96}$
$\ln(10^{10} A_s)$	$3.042^{+0.028}_{-0.026}$	$z_{\text{re}}$	$< 8.81$	$D_M(0.51)$	$1992^{+35}_{-36}$
$n_s$	$0.964^{+0.019}_{-0.019}$	$10^9 A_s$	$2.095^{+0.060}_{-0.055}$	$H(0.61)$	$95.08^{+0.88}_{-0.85}$
$y_{\text{cal}}$	$1.0004^{+0.0049}_{-0.0048}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.027}_{-0.027}$	$D_M(0.61)$	$2317^{+38}_{-39}$
$A_{217}^{\text{CIB}}$	$48^{+10}_{-10}$	$D_{40}$	$1232^{+37}_{-36}$	$H(2.33)$	$236.4^{+1.8}_{-1.9}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5716^{+80}_{-80}$	$D_M(2.33)$	$5775^{+44}_{-44}$
$A_{143}^{\text{tSZ}}$	$5.0^{+3.9}_{-4.0}$	$D_{810}$	$2536^{+27}_{-26}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{100}^{\text{PS}}$	$264^{+60}_{-60}$	$D_{1420}$	$814^{+11}_{-10}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	$49^{+20}_{-20}$	$D_{2000}$	$229.5^{+4.7}_{-4.6}$	$f\sigma_8(0.38)$	$0.478^{+0.012}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+20}_{-20}$	$n_{s,0.002}$	$0.964^{+0.019}_{-0.019}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$Y_P$	$0.245^{+0.038}_{-0.040}$	$f\sigma_8(0.51)$	$0.476^{+0.010}_{-0.011}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.246^{+0.038}_{-0.040}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.011}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.6}$	Age/Gyr	$13.82^{+0.10}_{-0.10}$	$f\sigma_8(0.61)$	$0.4704^{+0.0095}_{-0.0096}$
$A_{143}^{\text{dustTT}}$	$10.7^{+3.6}_{-3.6}$	$z_*$	$1090.2^{+1.3}_{-1.2}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3^{+6.4}_{-6.4}$	$r_*$	$144.58^{+0.76}_{-0.73}$	$f\sigma_8(2.33)$	$0.2973^{+0.0060}_{-0.0059}$
$A_{217}^{\text{dustTT}}$	$93^{+10}_{-10}$	$100\theta_*$	$1.04103^{+0.00094}_{-0.00094}$	$\sigma_8(2.33)$	$0.3063^{+0.0067}_{-0.0065}$
$c_{100}$	$0.9996^{+0.0012}_{-0.0012}$	$D_M(z_*)/\text{Gpc}$	$13.888^{+0.073}_{-0.072}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{217}$	$0.9983^{+0.0012}_{-0.0012}$	$z_{\text{drag}}$	$1059.4^{+2.3}_{-2.3}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$H_0$	$67.1^{+1.7}_{-1.6}$	$r_{\text{drag}}$	$147.32^{+0.82}_{-0.81}$	$f_{2000}^{217}$	$108.1^{+5.2}_{-5.1}$
$\Omega_\Lambda$	$0.682^{+0.021}_{-0.021}$	$k_D$	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{\text{lensing}}^2$	$9.46 (\nu: 0.4)$
$\Omega_m$	$0.318^{+0.021}_{-0.021}$	$100\theta_D$	$0.1611^{+0.0015}_{-0.0015}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.2)$
$\Omega_m h^2$	$0.1429^{+0.0028}_{-0.0029}$	$z_{\text{eq}}$	$3399^{+67}_{-69}$	$\chi_{\text{lowl}}^2$	$23.8 (\nu: 1.5)$
$\Omega_m h^3$	$0.0959^{+0.0015}_{-0.0015}$	$k_{\text{eq}}$	$0.01038^{+0.00020}_{-0.00021}$	$\chi_{\text{plik}}^2$	$771.8 (\nu: 15.4)$
$\sigma_8$	$0.811^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	$0.813^{+0.013}_{-0.013}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 6.8)$
$S_8$	$0.834^{+0.032}_{-0.032}$	$100\theta_{s,\text{eq}}$	$0.4495^{+0.0069}_{-0.0065}$	$\chi_{\text{CMB}}^2$	$1201.8 (\nu: 15.9)$

$$\bar{\chi}_{\text{eff}}^2 = 1209.13; \Delta \bar{\chi}_{\text{eff}}^2 = 0.97; R - 1 = 0.00826$$

19.8 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226^{+0.00049}_{-0.00049}$	$\sigma_8/h^{0.5}$	$0.985^{+0.019}_{-0.018}$	$H(0.51)$	$89.73^{+0.75}_{-0.72}$
$\Omega_{\mathrm{c}}h^2$	$0.1191^{+0.0022}_{-0.0021}$	$r_{\mathrm{drag}}h$	$99.8^{+1.8}_{-1.7}$	$D_{\mathrm{M}}(0.51)$	$1980^{+24}_{-25}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0015}_{-0.0014}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.046}_{-0.044}$	$H(0.61)$	$95.33^{+0.69}_{-0.66}$
$\tau$	$0.056^{+0.013}_{-0.012}$	$z_{\mathrm{re}}$	$7.8^{+1.2}_{-1.3}$	$D_{\mathrm{M}}(0.61)$	$2304^{+27}_{-27}$
$Y_{\mathrm{P}}$	$0.251^{+0.036}_{-0.037}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.060}_{-0.056}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.028}_{-0.027}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882^{+0.027}_{-0.026}$	$D_{\mathrm{M}}(2.33)$	$5763^{+36}_{-36}$
$n_{\mathrm{s}}$	$0.968^{+0.016}_{-0.016}$	$D_{40}$	$1224^{+33}_{-32}$	$f\sigma_8(0.15)$	$0.456^{+0.012}_{-0.012}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0049}_{-0.0048}$	$D_{220}$	$5723^{+77}_{-79}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$48^{+10}_{-10}$	$D_{810}$	$2537^{+27}_{-26}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815^{+11}_{-10}$	$\sigma_8(0.38)$	$0.664^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$4.9^{+3.9}_{-3.9}$	$D_{2000}$	$229.4^{+4.6}_{-4.6}$	$f\sigma_8(0.51)$	$0.4735^{+0.0098}_{-0.0096}$
$A_{100}^{\mathrm{PS}}$	$266^{+60}_{-50}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.016}_{-0.016}$	$\sigma_8(0.51)$	$0.622^{+0.012}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	$50^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.251^{+0.036}_{-0.037}$	$f\sigma_8(0.61)$	$0.4687^{+0.0092}_{-0.0089}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.253^{+0.036}_{-0.037}$	$\sigma_8(0.61)$	$0.592^{+0.011}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	Age/Gyr	$13.797^{+0.083}_{-0.084}$	$f\sigma_8(2.33)$	$0.2983^{+0.0057}_{-0.0056}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.2^{+1.3}_{-1.2}$	$\sigma_8(2.33)$	$0.3076^{+0.0062}_{-0.0061}$
$A_{100}^{\mathrm{dust}TT}$	$9.0^{+3.7}_{-3.6}$	$r_*$	$144.72^{+0.69}_{-0.70}$	$f_{2000}^{143}$	$32^{+7}_{-7}$
$A_{143}^{\mathrm{dust}TT}$	$10.7^{+3.5}_{-3.6}$	$100\theta_*$	$1.04121^{+0.00085}_{-0.00085}$	$f_{2000}^{143 \times 217}$	$34^{+5}_{-6}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+6.4}_{-6.4}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.899^{+0.069}_{-0.070}$	$f_{2000}^{217}$	$108.6^{+5.0}_{-5.0}$
$A_{217}^{\mathrm{dust}TT}$	$93^{+10}_{-10}$	$z_{\mathrm{drag}}$	$1059.8^{+2.1}_{-2.1}$	$\chi_{\mathrm{lensing}}^2$	$9.32 (\nu: 0.3)$
$c_{100}$	$0.9996^{+0.0012}_{-0.0013}$	$r_{\mathrm{drag}}$	$147.43^{+0.79}_{-0.80}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.6)$
$c_{217}$	$0.9983^{+0.0013}_{-0.0012}$	$k_{\mathrm{D}}$	$0.1402^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 0.9)$
$H_0$	$67.7^{+1.2}_{-1.1}$	$100\theta_{\mathrm{D}}$	$0.1613^{+0.0014}_{-0.0014}$	$\chi_{\mathrm{plik}}^2$	$772.6 (\nu: 15.5)$
$\Omega_{\Lambda}$	$0.690^{+0.013}_{-0.014}$	$z_{\mathrm{eq}}$	$3378^{+51}_{-51}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.014}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00016}_{-0.00016}$	$\chi_{\mathrm{MGS}}^2$	$1.35 (\nu: 0.1)$
$\Omega_{\mathrm{m}}h^2$	$0.1420^{+0.0021}_{-0.0021}$	$100\theta_{\mathrm{eq}}$	$0.8175^{+0.0092}_{-0.0091}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0015}_{-0.0014}$	$100\theta_{\mathrm{s,eq}}$	$0.4517^{+0.0048}_{-0.0047}$	$\chi_{\mathrm{prior}}^2$	$7.3 (\nu: 7.0)$
$\sigma_8$	$0.811^{+0.015}_{-0.014}$	$H(0.15)$	$72.9^{+1.0}_{-1.0}$	$\chi_{\mathrm{CMB}}^2$	$1202.0 (\nu: 15.7)$
$S_8$	$0.824^{+0.024}_{-0.024}$	$D_{\mathrm{M}}(0.15)$	$640.8^{+9.9}_{-10}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.013}_{-0.013}$	$H(0.38)$	$83.02^{+0.85}_{-0.81}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.013}_{-0.013}$	$D_{\mathrm{M}}(0.38)$	$1529^{+20}_{-21}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1215.38; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.80; R - 1 = 0.01428$$

## 19.9 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022281	$0.02229^{+0.00039}_{-0.00040}$	$\Omega_m h^2$	0.14325	$0.1432^{+0.0025}_{-0.0026}$	$100\theta_{\text{eq}}$	0.8118	$0.812^{+0.012}_{-0.011}$
$\Omega_c h^2$	0.12033	$0.1202^{+0.0027}_{-0.0027}$	$\Omega_m h^3$	0.09606	$0.0961^{+0.0010}_{-0.0010}$	$100\theta_{\text{s,eq}}$	0.4486	$0.4489^{+0.0060}_{-0.0057}$
$100\theta_{\text{MC}}$	1.04058	$1.0407^{+0.0011}_{-0.0011}$	$\sigma_8$	0.8109	$0.810^{+0.016}_{-0.016}$	$H(0.15)$	72.41	$72.5^{+1.2}_{-1.2}$
$\tau$	0.0540	$0.054^{+0.017}_{-0.016}$	$S_8$	0.8357	$0.834^{+0.031}_{-0.032}$	$D_{\text{M}}(0.15)$	646.0	$645^{+12}_{-12}$
$Y_{\text{P}}$	0.2365	$0.240^{+0.024}_{-0.025}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4577	$0.457^{+0.017}_{-0.017}$	$H(0.38)$	82.64	$82.70^{+0.90}_{-0.88}$
$\ln(10^{10} A_{\text{s}})$	3.0431	$3.042^{+0.035}_{-0.034}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6093	$0.609^{+0.016}_{-0.017}$	$D_{\text{M}}(0.38)$	1539.0	$1538^{+24}_{-23}$
$n_{\text{s}}$	0.9621	$0.962^{+0.014}_{-0.014}$	$\sigma_8/h^{0.5}$	0.9903	$0.989^{+0.023}_{-0.024}$	$H(0.51)$	89.43	$89.48^{+0.75}_{-0.74}$
$y_{\text{cal}}$	1.00057	$1.0006^{+0.0046}_{-0.0048}$	$r_{\text{drag}} h$	98.65	$98.8^{+2.2}_{-2.2}$	$D_{\text{M}}(0.51)$	1992.5	$1991^{+28}_{-28}$
$A_{217}^{\text{CIB}}$	44.3	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.454	$2.452^{+0.057}_{-0.058}$	$H(0.61)$	95.10	$95.15^{+0.64}_{-0.63}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.85	—	$z_{\text{re}}$	7.63	$7.6^{+1.6}_{-1.6}$	$D_{\text{M}}(0.61)$	2317.7	$2316^{+30}_{-30}$
$A_{143}^{\text{tSZ}}$	6.95	$5.5^{+3.7}_{-3.9}$	$10^9 A_{\text{s}}$	2.097	$2.096^{+0.074}_{-0.070}$	$H(2.33)$	236.66	$236.6^{+1.6}_{-1.6}$
$A_{100}^{\text{PS}}$	245	$257^{+60}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8823	$1.882^{+0.024}_{-0.024}$	$D_{\text{M}}(2.33)$	5772.5	$5770^{+32}_{-32}$
$A_{143}^{\text{PS}}$	51.3	$45^{+20}_{-20}$	$D_{40}$	1236.4	$1236^{+31}_{-31}$	$f\sigma_8(0.15)$	0.4617	$0.461^{+0.016}_{-0.016}$
$A_{143 \times 217}^{\text{PS}}$	56.6	$42^{+20}_{-20}$	$D_{220}$	5733	$5733^{+75}_{-75}$	$\sigma_8(0.15)$	0.7487	$0.748^{+0.015}_{-0.014}$
$A_{217}^{\text{PS}}$	123.5	$115^{+20}_{-20}$	$D_{810}$	2541.3	$2538^{+25}_{-26}$	$f\sigma_8(0.38)$	0.4785	$0.478^{+0.013}_{-0.013}$
$A^{\text{kSZ}}$	0.01	$< 7.89$	$D_{1420}$	819.4	$817.5^{+9.1}_{-9.2}$	$\sigma_8(0.38)$	0.6629	$0.663^{+0.013}_{-0.013}$
$A_{100}^{\text{dustTT}}$	8.71	$8.9^{+3.6}_{-3.5}$	$D_{2000}$	232.13	$231.2^{+3.5}_{-3.5}$	$f\sigma_8(0.51)$	0.4763	$0.476^{+0.012}_{-0.012}$
$A_{143}^{\text{dustTT}}$	10.88	$10.8^{+3.5}_{-3.6}$	$n_{\text{s},0.002}$	0.9621	$0.962^{+0.014}_{-0.014}$	$\sigma_8(0.51)$	0.6200	$0.620^{+0.013}_{-0.012}$
$A_{143 \times 217}^{\text{dustTT}}$	20.1	$18.5^{+6.6}_{-6.4}$	$Y_{\text{P}}$	0.2365	$0.240^{+0.024}_{-0.025}$	$f\sigma_8(0.61)$	0.4707	$0.470^{+0.011}_{-0.011}$
$A_{217}^{\text{dustTT}}$	95.7	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.2378	$0.241^{+0.025}_{-0.025}$	$\sigma_8(0.61)$	0.5898	$0.590^{+0.012}_{-0.011}$
$A_{100}^{\text{dustTE}}$	0.114	$0.114^{+0.075}_{-0.075}$	Age/Gyr	13.818	$13.813^{+0.074}_{-0.073}$	$f\sigma_8(2.33)$	0.2971	$0.2970^{+0.0061}_{-0.0058}$
$A_{100 \times 143}^{\text{dustTE}}$	0.135	$0.134^{+0.058}_{-0.057}$	$z_*$	1089.71	$1089.81^{+0.84}_{-0.80}$	$\sigma_8(2.33)$	0.3060	$0.3060^{+0.0066}_{-0.0062}$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.48^{+0.17}_{-0.16}$	$r_*$	144.45	$144.45^{+0.64}_{-0.61}$	$f_{2000}^{143}$	27.4	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.10}_{-0.10}$	$100\theta_*$	1.04100	$1.04103^{+0.00066}_{-0.00064}$	$f_{2000}^{143 \times 217}$	31.09	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.67^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.876	$13.876^{+0.061}_{-0.058}$	$f_{2000}^{217}$	105.68	$106.6^{+4.1}_{-4.0}$
$A_{217}^{\text{dustTE}}$	2.09	$2.09^{+0.52}_{-0.52}$	$z_{\text{drag}}$	1059.47	$1059.6^{+1.5}_{-1.6}$	$\chi_{\text{small}}^2$	396.06	$397.1 (\nu: 1.9)$
$c_{100}$	0.99975	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.13	$147.13^{+0.65}_{-0.64}$	$\chi_{\text{lowl}}^2$	23.94	$24.1 (\nu: 1.1)$
$c_{217}$	0.99815	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14111	$0.14099^{+0.00082}_{-0.00081}$	$\chi_{\text{plik}}^2$	2343.8	$2359.9 (\nu: 18.0)$
$H_0$	67.05	$67.1^{+1.4}_{-1.3}$	$100\theta_{\text{D}}$	0.16045	$0.16059^{+0.00091}_{-0.00088}$	$\chi_{\text{prior}}^2$	1.4	$11.5 (\nu: 10.1)$
$\Omega_{\Lambda}$	0.6814	$0.682^{+0.017}_{-0.018}$	$z_{\text{eq}}$	3408	$3406^{+59}_{-61}$	$\chi_{\text{CMB}}^2$	2763.8	$2781.1 (\nu: 17.9)$
$\Omega_{\text{m}}$	0.3186	$0.318^{+0.018}_{-0.017}$	$k_{\text{eq}}$	0.010401	$0.01040^{+0.00018}_{-0.00019}$			

Best-fit  $\chi_{\text{eff}}^2 = 2765.27$ ;  $\Delta\chi_{\text{eff}}^2 = -0.51$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.56$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.80$ ;  $R - 1 = 0.00867$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.01) commander\_dx12\_v3.2.29: 23.95 ( $\Delta$  0.69) plik\_rd12\_HM\_v22b\_TTTEE: 2343.82 ( $\Delta$  -0.83)

# 19.10 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_{\mathrm{b}}h^2$	0.022389	$0.02239^{+0.00035}_{-0.00035}$	$\Omega_{\mathrm{m}}h^3$	0.09619	$0.0962^{+0.0010}_{-0.0010}$	$H(0.15)$	72.87	$72.90^{+0.84}_{-0.86}$
$\Omega_{\mathrm{c}}h^2$	0.11930	$0.1193^{+0.0020}_{-0.0020}$	$\sigma_8$	0.8090	$0.809^{+0.017}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	641.4	$641.1^{+8.6}_{-8.1}$
$100\theta_{\mathrm{MC}}$	1.04082	$1.0409^{+0.0010}_{-0.0010}$	$S_8$	0.8244	$0.824^{+0.026}_{-0.025}$	$H(0.38)$	82.98	$83.01^{+0.67}_{-0.67}$
$\tau$	0.0553	$0.056^{+0.017}_{-0.015}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4516	$0.451^{+0.014}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	1529.8	$1529^{+17}_{-17}$
$Y_{\mathrm{P}}$	0.2402	$0.243^{+0.023}_{-0.024}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6044	$0.604^{+0.015}_{-0.014}$	$H(0.51)$	89.70	$89.73^{+0.59}_{-0.57}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0444	$3.044^{+0.036}_{-0.034}$	$\sigma_8/h^{0.5}$	0.9840	$0.984^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.51)$	1981.7	$1981^{+21}_{-20}$
$n_{\mathrm{s}}$	0.9658	$0.966^{+0.012}_{-0.012}$	$r_{\mathrm{drag}}h$	99.54	$99.6^{+1.5}_{-1.6}$	$H(0.61)$	95.32	$95.35^{+0.52}_{-0.51}$
$y_{\mathrm{cal}}$	1.00071	$1.0006^{+0.0047}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.437^{+0.052}_{-0.052}$	$D_{\mathrm{M}}(0.61)$	2305.9	$2305^{+22}_{-22}$
$A_{217}^{\mathrm{CIB}}$	44.9	$47^{+10}_{-10}$	$z_{\mathrm{re}}$	7.75	$7.8^{+1.7}_{-1.6}$	$H(2.33)$	236.11	$236.1^{+1.3}_{-1.3}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.78	—	$10^9 A_{\mathrm{s}}$	2.100	$2.100^{+0.077}_{-0.072}$	$D_{\mathrm{M}}(2.33)$	5762.4	$5761^{+26}_{-27}$
$A_{143}^{\mathrm{tSZ}}$	6.99	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8798	$1.879^{+0.024}_{-0.024}$	$f\sigma_8(0.15)$	0.4561	$0.456^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{PS}}$	246	$257^{+50}_{-50}$	$D_{40}$	1229.6	$1229^{+29}_{-28}$	$\sigma_8(0.15)$	0.7475	$0.748^{+0.016}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	50.9	$45^{+20}_{-20}$	$D_{220}$	5739	$5737^{+75}_{-76}$	$f\sigma_8(0.38)$	0.4744	$0.474^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\mathrm{PS}}$	55.1	$42^{+20}_{-20}$	$D_{810}$	2541.4	$2539^{+25}_{-26}$	$\sigma_8(0.38)$	0.6626	$0.663^{+0.014}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	122.6	$115^{+20}_{-20}$	$D_{1420}$	819.8	$817.9^{+9.2}_{-9.2}$	$f\sigma_8(0.51)$	0.4730	$0.473^{+0.011}_{-0.011}$
$A^{\mathrm{kSZ}}$	0.00	$< 7.92$	$D_{2000}$	232.10	$231.3^{+3.5}_{-3.4}$	$\sigma_8(0.51)$	0.6201	$0.620^{+0.013}_{-0.012}$
$A_{100}^{\mathrm{dustTT}}$	8.79	$8.9^{+3.6}_{-3.4}$	$n_{\mathrm{s},0.002}$	0.9658	$0.966^{+0.012}_{-0.012}$	$f\sigma_8(0.61)$	0.4680	$0.468^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{dustTT}}$	10.95	$10.9^{+3.5}_{-3.6}$	$Y_{\mathrm{P}}$	0.2402	$0.243^{+0.023}_{-0.024}$	$\sigma_8(0.61)$	0.5900	$0.590^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.2	$18.6^{+6.6}_{-6.5}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2415	$0.244^{+0.023}_{-0.024}$	$f\sigma_8(2.33)$	0.2975	$0.2976^{+0.0063}_{-0.0059}$
$A_{217}^{\mathrm{dustTT}}$	95.7	$94^{+10}_{-10}$	Age/Gyr	13.795	$13.793^{+0.061}_{-0.062}$	$\sigma_8(2.33)$	0.3067	$0.3068^{+0.0066}_{-0.0062}$
$A_{100}^{\mathrm{dustTE}}$	0.113	$0.113^{+0.076}_{-0.074}$	$z_*$	1089.62	$1089.73^{+0.82}_{-0.78}$	$f_{2000}^{143}$	27.8	$29^{+6}_{-6}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.136	$0.134^{+0.057}_{-0.058}$	$r_*$	144.62	$144.61^{+0.55}_{-0.54}$	$f_{2000}^{143 \times 217}$	31.26	$32^{+4}_{-4}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	1.04114	$1.04116^{+0.00061}_{-0.00059}$	$f_{2000}^{217}$	105.85	$106.6^{+4.2}_{-3.9}$
$A_{143}^{\mathrm{dustTE}}$	0.227	$0.22^{+0.11}_{-0.10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.890	$13.890^{+0.055}_{-0.053}$	$\chi_{\mathrm{small}}^2$	396.22	$397.4 (\nu: 2.5)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.66^{+0.16}_{-0.16}$	$z_{\mathrm{drag}}$	1059.74	$1059.8^{+1.4}_{-1.4}$	$\chi_{\mathrm{lowl}}^2$	23.25	$23.4 (\nu: 0.7)$
$A_{217}^{\mathrm{dustTE}}$	2.07	$2.08^{+0.54}_{-0.53}$	$r_{\mathrm{drag}}$	147.27	$147.27^{+0.61}_{-0.60}$	$\chi_{\mathrm{plik}}^2$	2344.9	$2360.4 (\nu: 18.2)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	0.14090	$0.14080^{+0.00073}_{-0.00072}$	$\chi_{6\mathrm{DF}}^2$	0.038	$0.061 (\nu: 0.0)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\mathrm{D}}$	0.16052	$0.16064^{+0.00089}_{-0.00087}$	$\chi_{\mathrm{MGS}}^2$	1.16	$1.24 (\nu: 0.1)$
$H_0$	67.59	$67.62^{+0.94}_{-0.98}$	$z_{\mathrm{eq}}$	3385.8	$3385^{+46}_{-45}$	$\chi_{\mathrm{DR12BAO}}^2$	4.62	$5.0 (\nu: 1.2)$
$\Omega_{\Lambda}$	0.6884	$0.689^{+0.012}_{-0.013}$	$k_{\mathrm{eq}}$	0.010334	$0.01033^{+0.00014}_{-0.00014}$	$\chi_{\mathrm{prior}}^2$	1.5	$11.6 (\nu: 10.3)$
$\Omega_{\mathrm{m}}$	0.3116	$0.311^{+0.013}_{-0.012}$	$100\theta_{\mathrm{eq}}$	0.8162	$0.8164^{+0.0085}_{-0.0085}$	$\chi_{\mathrm{BAO}}^2$	5.82	$6.3 (\nu: 0.8)$
$\Omega_{\mathrm{m}}h^2$	0.14233	$0.1423^{+0.0019}_{-0.0019}$	$100\theta_{\mathrm{s,eq}}$	0.45089	$0.4510^{+0.0043}_{-0.0044}$	$\chi_{\mathrm{CMB}}^2$	2764.3	$2781.1 (\nu: 17.7)$

Best-fit  $\chi_{\mathrm{eff}}^2 = 2771.70$ ;  $\Delta\chi_{\mathrm{eff}}^2 = -0.21$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2798.91$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.00$ ;  $R - 1 = 0.02958$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.01) MGS: 1.16 ( $\Delta$  -0.06) DR12BAO: 4.62 ( $\Delta$  0.21) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.22 ( $\Delta$  0.02) commander\_dx12\_v3\_2\_29: 23.25 ( $\Delta$  0.38) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.87 ( $\Delta$  -0.64)

# 19.11 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022304	$0.02230^{+0.00039}_{-0.00040}$	$\Omega_m h^2$	0.14297	$0.1430^{+0.0022}_{-0.0022}$	$100\theta_{\text{eq}}$	0.8131	$0.813^{+0.010}_{-0.0098}$
$\Omega_c h^2$	0.12002	$0.1201^{+0.0023}_{-0.0024}$	$\Omega_m h^3$	0.09606	$0.0961^{+0.0010}_{-0.0010}$	$100\theta_{\text{s,eq}}$	0.4493	$0.4492^{+0.0053}_{-0.0050}$
$100\theta_{\text{MC}}$	1.04061	$1.0407^{+0.0011}_{-0.0011}$	$\sigma_8$	0.8097	$0.810^{+0.014}_{-0.014}$	$H(0.15)$	72.52	$72.5^{+1.1}_{-1.1}$
$\tau$	0.0541	$0.054^{+0.015}_{-0.015}$	$S_8$	0.8319	$0.832^{+0.025}_{-0.025}$	$D_{\text{M}}(0.15)$	644.9	$645^{+11}_{-10}$
$Y_{\text{P}}$	0.2366	$0.239^{+0.024}_{-0.025}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4557	$0.456^{+0.014}_{-0.014}$	$H(0.38)$	82.72	$82.73^{+0.83}_{-0.82}$
$\ln(10^{10} A_{\text{s}})$	3.0422	$3.042^{+0.032}_{-0.030}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6074	$0.607^{+0.013}_{-0.013}$	$D_{\text{M}}(0.38)$	1536.7	$1537^{+22}_{-21}$
$n_{\text{s}}$	0.9629	$0.962^{+0.014}_{-0.014}$	$\sigma_8/h^{0.5}$	0.9878	$0.988^{+0.018}_{-0.018}$	$H(0.51)$	89.49	$89.50^{+0.70}_{-0.70}$
$y_{\text{cal}}$	1.00046	$1.0005^{+0.0047}_{-0.0048}$	$r_{\text{drag}} h$	98.89	$98.9^{+2.0}_{-1.9}$	$D_{\text{M}}(0.51)$	1989.8	$1990^{+26}_{-25}$
$A_{217}^{\text{CIB}}$	44.7	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	2.4484	$2.450^{+0.045}_{-0.046}$	$H(0.61)$	95.15	$95.16^{+0.62}_{-0.61}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.78	—	$z_{\text{re}}$	7.64	$7.6^{+1.5}_{-1.5}$	$D_{\text{M}}(0.61)$	2314.8	$2315^{+28}_{-28}$
$A_{143}^{\text{tSZ}}$	7.00	$5.5^{+3.7}_{-3.9}$	$10^9 A_{\text{s}}$	2.095	$2.094^{+0.067}_{-0.061}$	$H(2.33)$	236.48	$236.5^{+1.4}_{-1.5}$
$A_{100}^{\text{PS}}$	245	$257^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8801	$1.881^{+0.023}_{-0.023}$	$D_{\text{M}}(2.33)$	5770.5	$5770^{+31}_{-31}$
$A_{143}^{\text{PS}}$	50.0	$45^{+20}_{-20}$	$D_{40}$	1234.0	$1236^{+30}_{-29}$	$f\sigma_8(0.15)$	0.4598	$0.460^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{PS}}$	54.6	$42^{+20}_{-20}$	$D_{220}$	5731	$5735^{+75}_{-76}$	$\sigma_8(0.15)$	0.7477	$0.747^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	122.5	$115^{+20}_{-20}$	$D_{810}$	2540.0	$2538^{+25}_{-26}$	$f\sigma_8(0.38)$	0.4770	$0.477^{+0.010}_{-0.010}$
$A^{\text{kSZ}}$	0.01	$< 7.90$	$D_{1420}$	819.3	$817.5^{+9.2}_{-9.2}$	$\sigma_8(0.38)$	0.6622	$0.662^{+0.012}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.70	$8.9^{+3.6}_{-3.5}$	$D_{2000}$	232.10	$231.3^{+3.6}_{-3.4}$	$f\sigma_8(0.51)$	0.4750	$0.4749^{+0.0091}_{-0.0091}$
$A_{143}^{\text{dustTT}}$	10.94	$10.8^{+3.6}_{-3.5}$	$n_{\text{s},0.002}$	0.9629	$0.962^{+0.014}_{-0.014}$	$\sigma_8(0.51)$	0.6195	$0.619^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dustTT}}$	20.0	$18.6^{+6.7}_{-6.4}$	$Y_{\text{P}}$	0.2366	$0.239^{+0.024}_{-0.025}$	$f\sigma_8(0.61)$	0.4696	$0.4695^{+0.0085}_{-0.0084}$
$A_{217}^{\text{dustTT}}$	95.7	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.2379	$0.240^{+0.024}_{-0.025}$	$\sigma_8(0.61)$	0.5893	$0.589^{+0.011}_{-0.010}$
$A_{100}^{\text{dustTE}}$	0.115	$0.113^{+0.076}_{-0.074}$	Age/Gyr	13.814	$13.812^{+0.072}_{-0.070}$	$f\sigma_8(2.33)$	0.2969	$0.2968^{+0.0057}_{-0.0055}$
$A_{100 \times 143}^{\text{dustTE}}$	0.136	$0.134^{+0.058}_{-0.057}$	$z_*$	1089.66	$1089.76^{+0.82}_{-0.79}$	$\sigma_8(2.33)$	0.3059	$0.3058^{+0.0063}_{-0.0060}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.48^{+0.17}_{-0.17}$	$r_*$	144.51	$144.49^{+0.57}_{-0.56}$	$f_{2000}^{143}$	27.4	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	0.226	$0.22^{+0.11}_{-0.10}$	$100\theta_*$	1.04102	$1.04103^{+0.00065}_{-0.00063}$	$f_{2000}^{143 \times 217}$	31.01	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.67^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.881	$13.880^{+0.055}_{-0.054}$	$f_{2000}^{217}$	105.61	$106.5^{+4.2}_{-3.9}$
$A_{217}^{\text{dustTE}}$	2.09	$2.08^{+0.54}_{-0.53}$	$z_{\text{drag}}$	1059.51	$1059.6^{+1.5}_{-1.5}$	$\chi_{\text{lensing}}^2$	8.76	$9.18 (\nu: 0.2)$
$c_{100}$	0.99973	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	147.19	$147.17^{+0.61}_{-0.58}$	$\chi_{\text{small}}^2$	396.05	$397.0 (\nu: 1.5)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	0.14107	$0.14098^{+0.00078}_{-0.00077}$	$\chi_{\text{lowl}}^2$	23.75	$24.0 (\nu: 0.9)$
$H_0$	67.19	$67.2^{+1.2}_{-1.2}$	$100\theta_{\text{D}}$	0.16043	$0.16055^{+0.00089}_{-0.00088}$	$\chi_{\text{plik}}^2$	2344.0	$2359.6 (\nu: 17.1)$
$\Omega_{\Lambda}$	0.6833	$0.683^{+0.016}_{-0.016}$	$z_{\text{eq}}$	3401	$3402^{+52}_{-54}$	$\chi_{\text{prior}}^2$	1.5	$11.5 (\nu: 10.3)$
$\Omega_{\text{m}}$	0.3167	$0.317^{+0.016}_{-0.016}$	$k_{\text{eq}}$	0.010380	$0.01038^{+0.00016}_{-0.00016}$	$\chi_{\text{CMB}}^2$	2772.6	$2789.9 (\nu: 18.1)$

Best-fit  $\chi_{\text{eff}}^2 = 2774.06$ ;  $\Delta\chi_{\text{eff}}^2 = -0.57$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.34$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.65$ ;  $R - 1 = 0.01603$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.76 ( $\Delta$  -0.11) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  -0.00) commander\_dx12\_v3\_2\_29: 23.75 ( $\Delta$  0.50) plik\_rd12\_HM\_v22b\_TTTEE: 2344.00 ( $\Delta$  -0.93)



# 19.12 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	95% limits	Parameter	Best fit	95% limits	Parameter	Best fit	95% limits
$\Omega_b h^2$	0.022390	$0.02239^{+0.00035}_{-0.00035}$	$\sigma_8$	0.8089	$0.809^{+0.014}_{-0.014}$	$H(0.38)$	82.98	$83.00^{+0.65}_{-0.65}$
$\Omega_c h^2$	0.11926	$0.1193^{+0.0019}_{-0.0019}$	$S_8$	0.8243	$0.825^{+0.021}_{-0.021}$	$D_M(0.38)$	1529.8	$1530^{+17}_{-16}$
$100\theta_{MC}$	1.04080	$1.0409^{+0.0010}_{-0.0010}$	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.452^{+0.011}_{-0.012}$	$H(0.51)$	89.70	$89.72^{+0.57}_{-0.56}$
$\tau$	0.0559	$0.056^{+0.015}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	0.6043	$0.605^{+0.012}_{-0.012}$	$D_M(0.51)$	1981.7	$1981^{+20}_{-19}$
$Y_P$	0.2395	$0.242^{+0.023}_{-0.024}$	$\sigma_8/h^{0.5}$	0.9840	$0.985^{+0.017}_{-0.017}$	$H(0.61)$	95.32	$95.34^{+0.51}_{-0.50}$
$\ln(10^{10} A_s)$	3.0450	$3.046^{+0.031}_{-0.030}$	$r_{\text{drag}} h$	99.55	$99.6^{+1.4}_{-1.5}$	$D_M(0.61)$	2305.9	$2306^{+22}_{-21}$
$n_s$	0.9653	$0.965^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	2.4386	$2.440^{+0.042}_{-0.042}$	$H(2.33)$	236.08	$236.1^{+1.2}_{-1.2}$
$y_{\text{cal}}$	1.00070	$1.0007^{+0.0047}_{-0.0048}$	$z_{\text{re}}$	7.80	$7.8^{+1.5}_{-1.5}$	$D_M(2.33)$	5762.6	$5762^{+26}_{-27}$
$A_{217}^{\text{CIB}}$	46.0	$46^{+10}_{-10}$	$10^9 A_s$	2.101	$2.103^{+0.066}_{-0.062}$	$f\sigma_8(0.15)$	0.4561	$0.456^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.57	—	$10^9 A_s e^{-2\tau}$	1.8788	$1.879^{+0.023}_{-0.023}$	$\sigma_8(0.15)$	0.7475	$0.748^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	7.15	$5.5^{+3.9}_{-3.8}$	$D_{40}$	1230.4	$1231^{+28}_{-27}$	$f\sigma_8(0.38)$	0.4744	$0.4747^{+0.0094}_{-0.0096}$
$A_{100}^{\text{PS}}$	248	$257^{+50}_{-50}$	$D_{220}$	5739	$5740^{+77}_{-74}$	$\sigma_8(0.38)$	0.6626	$0.663^{+0.012}_{-0.011}$
$A_{143}^{\text{PS}}$	47.5	$45^{+20}_{-20}$	$D_{810}$	2540.4	$2539^{+25}_{-25}$	$f\sigma_8(0.51)$	0.4730	$0.4733^{+0.0087}_{-0.0089}$
$A_{143 \times 217}^{\text{PS}}$	49.7	$42^{+20}_{-20}$	$D_{1420}$	819.4	$818.2^{+9.0}_{-9.2}$	$\sigma_8(0.51)$	0.6201	$0.621^{+0.011}_{-0.011}$
$A_{217}^{\text{PS}}$	120.5	$115^{+20}_{-20}$	$D_{2000}$	232.04	$231.4^{+3.5}_{-3.4}$	$f\sigma_8(0.61)$	0.4680	$0.4683^{+0.0084}_{-0.0084}$
$A^{\text{kSZ}}$	0.00	$< 7.84$	$n_{s,0.002}$	0.9653	$0.965^{+0.012}_{-0.012}$	$\sigma_8(0.61)$	0.5900	$0.590^{+0.011}_{-0.010}$
$A_{100}^{\text{dustTT}}$	8.80	$8.9^{+3.7}_{-3.4}$	$Y_P$	0.2395	$0.242^{+0.023}_{-0.024}$	$f\sigma_8(2.33)$	0.2975	$0.2977^{+0.0056}_{-0.0053}$
$A_{143}^{\text{dustTT}}$	10.92	$10.9^{+3.6}_{-3.5}$	$Y_P^{\text{BBN}}$	0.2408	$0.243^{+0.023}_{-0.024}$	$\sigma_8(2.33)$	0.3067	$0.3069^{+0.0060}_{-0.0056}$
$A_{143 \times 217}^{\text{dustTT}}$	19.8	$18.6^{+6.6}_{-6.4}$	Age/Gyr	13.796	$13.794^{+0.060}_{-0.061}$	$f_{2000}^{143}$	27.8	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	95.3	$94^{+10}_{-10}$	$z_*$	1089.59	$1089.70^{+0.80}_{-0.77}$	$f_{2000}^{143 \times 217}$	31.23	$32^{+5}_{-4}$
$A_{100}^{\text{dustTE}}$	0.114	$0.112^{+0.077}_{-0.074}$	$r_*$	144.63	$144.61^{+0.53}_{-0.50}$	$f_{2000}^{217}$	105.95	$106.5^{+4.2}_{-4.0}$
$A_{100 \times 143}^{\text{dustTE}}$	0.134	$0.134^{+0.057}_{-0.058}$	$100\theta_*$	1.04113	$1.04115^{+0.00061}_{-0.00059}$	$\chi_{\text{lensing}}^2$	8.66	$9.08 (\nu: 0.2)$
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.48^{+0.17}_{-0.17}$	$D_M(z_*)/\text{Gpc}$	13.891	$13.890^{+0.052}_{-0.050}$	$\chi_{\text{small}}^2$	396.33	$397.3 (\nu: 2.1)$
$A_{143}^{\text{dustTE}}$	0.224	$0.22^{+0.11}_{-0.10}$	$z_{\text{drag}}$	1059.74	$1059.8^{+1.4}_{-1.4}$	$\chi_{\text{lowl}}^2$	23.34	$23.5 (\nu: 0.7)$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.67^{+0.16}_{-0.16}$	$r_{\text{drag}}$	147.28	$147.27^{+0.59}_{-0.56}$	$\chi_{\text{plik}}^2$	2344.6	$2360.0 (\nu: 17.4)$
$A_{217}^{\text{dustTE}}$	2.08	$2.08^{+0.54}_{-0.53}$	$k_D$	0.14092	$0.14083^{+0.00073}_{-0.00071}$	$\chi_{6\text{DF}}^2$	0.037	$0.060 (\nu: 0.0)$
$c_{100}$	0.99974	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	0.16049	$0.16061^{+0.00089}_{-0.00086}$	$\chi_{\text{MGS}}^2$	1.16	$1.22 (\nu: 0.1)$
$c_{217}$	0.99818	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	3385.1	$3386^{+42}_{-44}$	$\chi_{\text{DR12BAO}}^2$	4.61	$5.0 (\nu: 1.1)$
$H_0$	67.59	$67.60^{+0.93}_{-0.94}$	$k_{\text{eq}}$	0.010332	$0.01033^{+0.00013}_{-0.00013}$	$\chi_{\text{prior}}^2$	1.6	$11.6 (\nu: 10.2)$
$\Omega_\Lambda$	0.6885	$0.688^{+0.011}_{-0.012}$	$100\theta_{\text{eq}}$	0.8163	$0.8163^{+0.0080}_{-0.0079}$	$\chi_{\text{CMB}}^2$	2773.0	$2789.8 (\nu: 17.9)$
$\Omega_m$	0.3115	$0.312^{+0.012}_{-0.011}$	$100\theta_{s,\text{eq}}$	0.45095	$0.4509^{+0.0041}_{-0.0040}$	$\chi_{\text{BAO}}^2$	5.80	$6.2 (\nu: 0.7)$
$\Omega_m h^2$	0.14230	$0.1423^{+0.0018}_{-0.0018}$	$H(0.15)$	72.87	$72.88^{+0.81}_{-0.83}$			
$\Omega_m h^3$	0.09618	$0.09621^{+0.00097}_{-0.00099}$	$D_M(0.15)$	641.4	$641.3^{+8.2}_{-7.9}$			

Best-fit  $\chi_{\text{eff}}^2 = 2780.41$ ;  $\Delta\chi_{\text{eff}}^2 = -0.29$ ;  $\bar{\chi}_{\text{eff}}^2 = 2807.64$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.79$ ;  $R - 1 = 0.02881$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.01) MGS: 1.16 ( $\Delta$  -0.06) DR12BAO: 4.61 ( $\Delta$  0.19) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.66 ( $\Delta$  -0.07) simall\_100x143\_offlike5\_EE\_Aplanck  
396.33 ( $\Delta$  -0.19) commander\_dx12\_v3.2\_29: 23.34 ( $\Delta$  0.45) plik\_rd12\_HM\_v22b.TTTEE: 2344.62 ( $\Delta$  -0.70)

### 19.13 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230^{+0.00039}_{-0.00039}$	$\Omega_{\mathrm{m}}h^2$	$0.1432^{+0.0025}_{-0.0026}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.012}_{-0.011}$
$\Omega_{\mathrm{c}}h^2$	$0.1202^{+0.0027}_{-0.0027}$	$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0010}_{-0.0010}$	$100\theta_{\mathrm{s,eq}}$	$0.4490^{+0.0060}_{-0.0057}$
$100\theta_{\mathrm{MC}}$	$1.0407^{+0.0011}_{-0.0011}$	$\sigma_8$	$0.811^{+0.016}_{-0.014}$	$H(0.15)$	$72.5^{+1.2}_{-1.2}$
$\tau$	$0.055^{+0.014}_{-0.012}$	$S_8$	$0.835^{+0.031}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$645^{+12}_{-12}$
$Y_{\mathrm{P}}$	$0.240^{+0.024}_{-0.025}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.457^{+0.017}_{-0.017}$	$H(0.38)$	$82.72^{+0.90}_{-0.89}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.030}_{-0.028}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1537^{+24}_{-23}$
$n_{\mathrm{s}}$	$0.962^{+0.014}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.990^{+0.022}_{-0.022}$	$H(0.51)$	$89.49^{+0.75}_{-0.74}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0046}_{-0.0048}$	$r_{\mathrm{drag}}h$	$98.8^{+2.2}_{-2.2}$	$D_{\mathrm{M}}(0.51)$	$1990^{+28}_{-28}$
$A_{217}^{\mathrm{CIB}}$	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.056}_{-0.057}$	$H(0.61)$	$95.16^{+0.64}_{-0.63}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$< 8.97$	$D_{\mathrm{M}}(0.61)$	$2315^{+30}_{-30}$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.064}_{-0.058}$	$H(2.33)$	$236.6^{+1.6}_{-1.6}$
$A_{100}^{\mathrm{PS}}$	$257^{+60}_{-50}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882^{+0.024}_{-0.024}$	$D_{\mathrm{M}}(2.33)$	$5770^{+32}_{-32}$
$A_{143}^{\mathrm{PS}}$	$45^{+20}_{-20}$	$D_{40}$	$1236^{+31}_{-31}$	$f\sigma_8(0.15)$	$0.461^{+0.016}_{-0.016}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5733^{+75}_{-75}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2538^{+25}_{-26}$	$f\sigma_8(0.38)$	$0.478^{+0.013}_{-0.013}$
$A^{\mathrm{kSZ}}$	$< 7.85$	$D_{1420}$	$817.5^{+9.1}_{-9.2}$	$\sigma_8(0.38)$	$0.664^{+0.012}_{-0.011}$
$A_{100}^{\mathrm{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$D_{2000}$	$231.3^{+3.5}_{-3.5}$	$f\sigma_8(0.51)$	$0.476^{+0.011}_{-0.012}$
$A_{143}^{\mathrm{dustTT}}$	$10.8^{+3.5}_{-3.6}$	$n_{\mathrm{s},0.002}$	$0.962^{+0.014}_{-0.014}$	$\sigma_8(0.51)$	$0.621^{+0.011}_{-0.010}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.5^{+6.6}_{-6.4}$	$Y_{\mathrm{P}}$	$0.240^{+0.024}_{-0.025}$	$f\sigma_8(0.61)$	$0.471^{+0.010}_{-0.010}$
$A_{217}^{\mathrm{dustTT}}$	$94^{+10}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.241^{+0.025}_{-0.025}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.010}$
$A_{100}^{\mathrm{dustTE}}$	$0.114^{+0.075}_{-0.075}$	Age/Gyr	$13.812^{+0.073}_{-0.072}$	$f\sigma_8(2.33)$	$0.2975^{+0.0055}_{-0.0051}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134^{+0.058}_{-0.058}$	$z_*$	$1089.81^{+0.85}_{-0.80}$	$\sigma_8(2.33)$	$0.3064^{+0.0059}_{-0.0055}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.45^{+0.64}_{-0.61}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{143}^{\mathrm{dustTE}}$	$0.22^{+0.10}_{-0.10}$	$100\theta_*$	$1.04103^{+0.00066}_{-0.00065}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876^{+0.061}_{-0.058}$	$f_{2000}^{217}$	$106.6^{+4.1}_{-4.0}$
$A_{217}^{\mathrm{dustTE}}$	$2.09^{+0.52}_{-0.52}$	$z_{\mathrm{drag}}$	$1059.6^{+1.5}_{-1.5}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 2.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}}$	$147.13^{+0.65}_{-0.64}$	$\chi_{\mathrm{lowl}}^2$	$24.1 (\nu: 1.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.14099^{+0.00081}_{-0.00081}$	$\chi_{\mathrm{plik}}^2$	$2359.7 (\nu: 17.9)$
$H_0$	$67.2^{+1.3}_{-1.3}$	$100\theta_{\mathrm{D}}$	$0.16059^{+0.00091}_{-0.00088}$	$\chi_{\mathrm{prior}}^2$	$11.5 (\nu: 10.1)$
$\Omega_{\Lambda}$	$0.682^{+0.017}_{-0.018}$	$z_{\mathrm{eq}}$	$3406^{+60}_{-62}$	$\chi_{\mathrm{CMB}}^2$	$2780.8 (\nu: 17.5)$
$\Omega_{\mathrm{m}}$	$0.318^{+0.018}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01039^{+0.00018}_{-0.00019}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2792.32; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.79; R - 1 = 0.01241$$

## 19.14 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239^{+0.00035}_{-0.00035}$	$\Omega_{\mathrm{m}}h^3$	$0.09624^{+0.00099}_{-0.00099}$	$H(0.15)$	$72.91^{+0.83}_{-0.86}$
$\Omega_{\mathrm{c}}h^2$	$0.1193^{+0.0020}_{-0.0020}$	$\sigma_8$	$0.810^{+0.017}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	$641.0^{+8.5}_{-8.2}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0010}_{-0.0010}$	$S_8$	$0.825^{+0.025}_{-0.025}$	$H(0.38)$	$83.02^{+0.66}_{-0.67}$
$\tau$	$0.057^{+0.014}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.014}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1529^{+17}_{-17}$
$Y_{\mathrm{P}}$	$0.243^{+0.023}_{-0.024}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.014}_{-0.014}$	$H(0.51)$	$89.74^{+0.58}_{-0.57}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.032}_{-0.030}$	$\sigma_8/h^{0.5}$	$0.985^{+0.021}_{-0.020}$	$D_{\mathrm{M}}(0.51)$	$1981^{+20}_{-20}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.012}$	$r_{\mathrm{drag}}h$	$99.6^{+1.5}_{-1.6}$	$H(0.61)$	$95.36^{+0.52}_{-0.50}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0047}_{-0.0049}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.051}_{-0.048}$	$D_{\mathrm{M}}(0.61)$	$2305^{+22}_{-21}$
$A_{217}^{\mathrm{CIB}}$	$47^{+10}_{-10}$	$z_{\mathrm{re}}$	$< 9.13$	$H(2.33)$	$236.1^{+1.3}_{-1.3}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.104^{+0.068}_{-0.063}$	$D_{\mathrm{M}}(2.33)$	$5761^{+26}_{-27}$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.024}_{-0.024}$	$f\sigma_8(0.15)$	$0.456^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{PS}}$	$257^{+50}_{-50}$	$D_{40}$	$1229^{+29}_{-28}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$45^{+20}_{-20}$	$D_{220}$	$5736^{+75}_{-75}$	$f\sigma_8(0.38)$	$0.475^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{810}$	$2539^{+25}_{-26}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115^{+20}_{-20}$	$D_{1420}$	$817.9^{+9.1}_{-9.2}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.010}$
$A^{\mathrm{kSZ}}$	$< 7.92$	$D_{2000}$	$231.3^{+3.5}_{-3.3}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.011}$
$A_{100}^{\mathrm{dust}TT}$	$8.9^{+3.7}_{-3.4}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.012}_{-0.012}$	$f\sigma_8(0.61)$	$0.468^{+0.010}_{-0.0096}$
$A_{143}^{\mathrm{dust}TT}$	$10.9^{+3.5}_{-3.5}$	$Y_{\mathrm{P}}$	$0.243^{+0.023}_{-0.024}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6^{+6.6}_{-6.4}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.244^{+0.023}_{-0.024}$	$f\sigma_8(2.33)$	$0.2979^{+0.0057}_{-0.0054}$
$A_{217}^{\mathrm{dust}TT}$	$94^{+10}_{-10}$	Age/Gyr	$13.792^{+0.061}_{-0.062}$	$\sigma_8(2.33)$	$0.3071^{+0.0060}_{-0.0056}$
$A_{100}^{\mathrm{dust}TE}$	$0.113^{+0.077}_{-0.074}$	$z_*$	$1089.73^{+0.82}_{-0.78}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134^{+0.058}_{-0.058}$	$r_*$	$144.61^{+0.55}_{-0.54}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.48^{+0.17}_{-0.17}$	$100\theta_*$	$1.04117^{+0.00060}_{-0.00060}$	$f_{2000}^{217}$	$106.6^{+4.2}_{-3.9}$
$A_{143}^{\mathrm{dust}TE}$	$0.22^{+0.11}_{-0.10}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.055}_{-0.053}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 2.6)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.66^{+0.16}_{-0.16}$	$z_{\mathrm{drag}}$	$1059.9^{+1.4}_{-1.4}$	$\chi_{\mathrm{lowl}}^2$	$23.4 (\nu: 0.7)$
$A_{217}^{\mathrm{dust}TE}$	$2.08^{+0.54}_{-0.53}$	$r_{\mathrm{drag}}$	$147.27^{+0.62}_{-0.60}$	$\chi_{\mathrm{plik}}^2$	$2360.2 (\nu: 17.9)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$k_{\mathrm{D}}$	$0.14080^{+0.00073}_{-0.00072}$	$\chi_{6\mathrm{DF}}^2$	$0.060 (\nu: 0.0)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$100\theta_{\mathrm{D}}$	$0.16065^{+0.00090}_{-0.00087}$	$\chi_{\mathrm{MGS}}^2$	$1.25 (\nu: 0.1)$
$H_0$	$67.63^{+0.96}_{-0.98}$	$z_{\mathrm{eq}}$	$3385^{+46}_{-46}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\Lambda}$	$0.689^{+0.012}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00014}_{-0.00014}$	$\chi_{\mathrm{prior}}^2$	$11.6 (\nu: 10.3)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.013}_{-0.012}$	$100\theta_{\mathrm{eq}}$	$0.8164^{+0.0085}_{-0.0085}$	$\chi_{\mathrm{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_{\mathrm{m}}h^2$	$0.1423^{+0.0019}_{-0.0019}$	$100\theta_{\mathrm{s,eq}}$	$0.4510^{+0.0044}_{-0.0044}$	$\chi_{\mathrm{CMB}}^2$	$2780.9 (\nu: 17.3)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.67; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.96; R - 1 = 0.03223$$

19.15 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02231^{+0.00039}_{-0.00038}$	$\Omega_m h^2$	$0.1430^{+0.0021}_{-0.0022}$	$100\theta_{\text{eq}}$	$0.813^{+0.010}_{-0.0096}$
$\Omega_c h^2$	$0.1200^{+0.0023}_{-0.0024}$	$\Omega_m h^3$	$0.0961^{+0.0010}_{-0.0010}$	$100\theta_{\text{s,eq}}$	$0.4494^{+0.0053}_{-0.0049}$
$100\theta_{\text{MC}}$	$1.0407^{+0.0011}_{-0.0011}$	$\sigma_8$	$0.810^{+0.013}_{-0.012}$	$H(0.15)$	$72.6^{+1.0}_{-1.0}$
$\tau$	$0.055^{+0.013}_{-0.012}$	$S_8$	$0.832^{+0.025}_{-0.025}$	$D_{\text{M}}(0.15)$	$645^{+10}_{-10}$
$Y_{\text{P}}$	$0.239^{+0.024}_{-0.025}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.456^{+0.014}_{-0.014}$	$H(0.38)$	$82.76^{+0.82}_{-0.82}$
$\ln(10^{10} A_{\text{s}})$	$3.044^{+0.028}_{-0.026}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.608^{+0.012}_{-0.012}$	$D_{\text{M}}(0.38)$	$1536^{+21}_{-21}$
$n_{\text{s}}$	$0.963^{+0.013}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.988^{+0.018}_{-0.018}$	$H(0.51)$	$89.52^{+0.69}_{-0.68}$
$y_{\text{cal}}$	$1.0005^{+0.0047}_{-0.0048}$	$r_{\text{drag}} h$	$99.0^{+1.9}_{-1.9}$	$D_{\text{M}}(0.51)$	$1989^{+25}_{-25}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.045}_{-0.045}$	$H(0.61)$	$95.18^{+0.61}_{-0.60}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$< 8.87$	$D_{\text{M}}(0.61)$	$2314^{+28}_{-27}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.8}_{-3.8}$	$10^9 A_{\text{s}}$	$2.099^{+0.059}_{-0.054}$	$H(2.33)$	$236.5^{+1.4}_{-1.4}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.880^{+0.023}_{-0.023}$	$D_{\text{M}}(2.33)$	$5769^{+31}_{-30}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{40}$	$1236^{+29}_{-29}$	$f\sigma_8(0.15)$	$0.460^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5735^{+75}_{-75}$	$\sigma_8(0.15)$	$0.748^{+0.012}_{-0.011}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{810}$	$2538^{+25}_{-26}$	$f\sigma_8(0.38)$	$0.477^{+0.010}_{-0.010}$
$A^{\text{kSZ}}$	$< 7.88$	$D_{1420}$	$817.5^{+9.2}_{-9.3}$	$\sigma_8(0.38)$	$0.663^{+0.011}_{-0.0098}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.6}_{-3.5}$	$D_{2000}$	$231.3^{+3.6}_{-3.4}$	$f\sigma_8(0.51)$	$0.4752^{+0.0090}_{-0.0090}$
$A_{143}^{\text{dustTT}}$	$10.8^{+3.5}_{-3.5}$	$n_{\text{s},0.002}$	$0.963^{+0.013}_{-0.013}$	$\sigma_8(0.51)$	$0.620^{+0.011}_{-0.0093}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.7}_{-6.4}$	$Y_{\text{P}}$	$0.239^{+0.024}_{-0.025}$	$f\sigma_8(0.61)$	$0.4698^{+0.0083}_{-0.0083}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.240^{+0.024}_{-0.025}$	$\sigma_8(0.61)$	$0.5898^{+0.0099}_{-0.0093}$
$A_{100}^{\text{dustTE}}$	$0.113^{+0.077}_{-0.074}$	Age/Gyr	$13.810^{+0.070}_{-0.069}$	$f\sigma_8(2.33)$	$0.2972^{+0.0052}_{-0.0049}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.058}_{-0.057}$	$z_*$	$1089.76^{+0.82}_{-0.79}$	$\sigma_8(2.33)$	$0.3062^{+0.0056}_{-0.0054}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$r_*$	$144.50^{+0.57}_{-0.55}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.10}$	$100\theta_*$	$1.04104^{+0.00065}_{-0.00063}$	$f_{2000}^{143 \times 217}$	$32^{+4}_{-4}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.880^{+0.055}_{-0.054}$	$f_{2000}^{217}$	$106.5^{+4.2}_{-4.0}$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.54}_{-0.52}$	$z_{\text{drag}}$	$1059.6^{+1.4}_{-1.5}$	$\chi_{\text{lensing}}^2$	$9.17 (\nu: 0.2)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$r_{\text{drag}}$	$147.18^{+0.61}_{-0.58}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$k_{\text{D}}$	$0.14097^{+0.00077}_{-0.00077}$	$\chi_{\text{lowl}}^2$	$24.0 (\nu: 0.9)$
$H_0$	$67.2^{+1.2}_{-1.2}$	$100\theta_{\text{D}}$	$0.16056^{+0.00089}_{-0.00088}$	$\chi_{\text{plik}}^2$	$2359.5 (\nu: 17.0)$
$\Omega_{\Lambda}$	$0.684^{+0.015}_{-0.016}$	$z_{\text{eq}}$	$3401^{+51}_{-53}$	$\chi_{\text{prior}}^2$	$11.5 (\nu: 10.2)$
$\Omega_{\text{m}}$	$0.316^{+0.016}_{-0.015}$	$k_{\text{eq}}$	$0.01038^{+0.00016}_{-0.00016}$	$\chi_{\text{CMB}}^2$	$2789.6 (\nu: 17.6)$

$$\bar{\chi}_{\text{eff}}^2 = 2801.11; \Delta \bar{\chi}_{\text{eff}}^2 = 0.60; R - 1 = 0.01737$$

19.16 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	95% limits	Parameter	95% limits	Parameter	95% limits
$\Omega_b h^2$	$0.02239^{+0.00035}_{-0.00035}$	$\sigma_8$	$0.810^{+0.014}_{-0.012}$	$H(0.38)$	$83.01^{+0.65}_{-0.64}$
$\Omega_c h^2$	$0.1193^{+0.0018}_{-0.0019}$	$S_8$	$0.825^{+0.021}_{-0.021}$	$D_M(0.38)$	$1529^{+16}_{-16}$
$100\theta_{MC}$	$1.0409^{+0.0010}_{-0.0010}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.011}_{-0.012}$	$H(0.51)$	$89.72^{+0.57}_{-0.55}$
$\tau$	$0.057^{+0.013}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.012}_{-0.012}$	$D_M(0.51)$	$1981^{+20}_{-19}$
$Y_P$	$0.242^{+0.023}_{-0.024}$	$\sigma_8/h^{0.5}$	$0.985^{+0.017}_{-0.017}$	$H(0.61)$	$95.34^{+0.51}_{-0.49}$
$\ln(10^{10} A_s)$	$3.047^{+0.030}_{-0.026}$	$r_{\text{drag}} h$	$99.6^{+1.4}_{-1.5}$	$D_M(0.61)$	$2305^{+21}_{-21}$
$n_s$	$0.965^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.041}_{-0.041}$	$H(2.33)$	$236.1^{+1.2}_{-1.2}$
$y_{\text{cal}}$	$1.0007^{+0.0047}_{-0.0047}$	$z_{\text{re}}$	$7.9^{+1.2}_{-1.4}$	$D_M(2.33)$	$5762^{+26}_{-26}$
$A_{217}^{\text{CIB}}$	$46^{+10}_{-10}$	$10^9 A_s$	$2.106^{+0.061}_{-0.058}$	$f\sigma_8(0.15)$	$0.456^{+0.010}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.879^{+0.023}_{-0.023}$	$\sigma_8(0.15)$	$0.748^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$5.5^{+3.9}_{-3.8}$	$D_{40}$	$1231^{+28}_{-28}$	$f\sigma_8(0.38)$	$0.4749^{+0.0093}_{-0.0094}$
$A_{100}^{\text{PS}}$	$257^{+50}_{-50}$	$D_{220}$	$5740^{+77}_{-74}$	$\sigma_8(0.38)$	$0.663^{+0.011}_{-0.010}$
$A_{143}^{\text{PS}}$	$45^{+20}_{-20}$	$D_{810}$	$2539^{+25}_{-25}$	$f\sigma_8(0.51)$	$0.4735^{+0.0086}_{-0.0085}$
$A_{143 \times 217}^{\text{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$818.2^{+9.0}_{-9.2}$	$\sigma_8(0.51)$	$0.621^{+0.011}_{-0.010}$
$A_{217}^{\text{PS}}$	$115^{+20}_{-20}$	$D_{2000}$	$231.4^{+3.5}_{-3.4}$	$f\sigma_8(0.61)$	$0.4685^{+0.0083}_{-0.0080}$
$A^{\text{kSZ}}$	$< 7.83$	$n_{s,0.002}$	$0.965^{+0.012}_{-0.012}$	$\sigma_8(0.61)$	$0.591^{+0.010}_{-0.0096}$
$A_{100}^{\text{dustTT}}$	$8.9^{+3.7}_{-3.4}$	$Y_P$	$0.242^{+0.023}_{-0.024}$	$f\sigma_8(2.33)$	$0.2979^{+0.0052}_{-0.0050}$
$A_{143}^{\text{dustTT}}$	$10.9^{+3.6}_{-3.5}$	$Y_P^{\text{BBN}}$	$0.243^{+0.023}_{-0.024}$	$\sigma_8(2.33)$	$0.3071^{+0.0058}_{-0.0051}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6^{+6.6}_{-6.4}$	Age/Gyr	$13.793^{+0.060}_{-0.061}$	$f_{2000}^{143}$	$29^{+6}_{-6}$
$A_{217}^{\text{dustTT}}$	$94^{+10}_{-10}$	$z_*$	$1089.70^{+0.81}_{-0.77}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-4}$
$A_{100}^{\text{dustTE}}$	$0.112^{+0.077}_{-0.074}$	$r_*$	$144.62^{+0.53}_{-0.51}$	$f_{2000}^{217}$	$106.5^{+4.2}_{-4.0}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134^{+0.057}_{-0.058}$	$100\theta_*$	$1.04115^{+0.00061}_{-0.00059}$	$\chi_{\text{lensing}}^2$	$9.05 (\nu: 0.2)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.48^{+0.17}_{-0.17}$	$D_M(z_*)/\text{Gpc}$	$13.890^{+0.052}_{-0.051}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.1)$
$A_{143}^{\text{dustTE}}$	$0.22^{+0.11}_{-0.11}$	$z_{\text{drag}}$	$1059.8^{+1.4}_{-1.4}$	$\chi_{\text{lowl}}^2$	$23.5 (\nu: 0.7)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.67^{+0.16}_{-0.16}$	$r_{\text{drag}}$	$147.27^{+0.59}_{-0.56}$	$\chi_{\text{plik}}^2$	$2359.9 (\nu: 17.3)$
$A_{217}^{\text{dustTE}}$	$2.08^{+0.54}_{-0.53}$	$k_D$	$0.14082^{+0.00073}_{-0.00072}$	$\chi_{6\text{DF}}^2$	$0.058 (\nu: 0.0)$
$c_{100}$	$0.9997^{+0.0012}_{-0.0012}$	$100\theta_D$	$0.16061^{+0.00089}_{-0.00086}$	$\chi_{\text{MGS}}^2$	$1.23 (\nu: 0.1)$
$c_{217}$	$0.9982^{+0.0012}_{-0.0012}$	$z_{\text{eq}}$	$3385^{+42}_{-44}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.0)$
$H_0$	$67.62^{+0.91}_{-0.92}$	$k_{\text{eq}}$	$0.01033^{+0.00013}_{-0.00013}$	$\chi_{\text{prior}}^2$	$11.6 (\nu: 10.2)$
$\Omega_\Lambda$	$0.689^{+0.011}_{-0.012}$	$100\theta_{\text{eq}}$	$0.8164^{+0.0080}_{-0.0078}$	$\chi_{\text{CMB}}^2$	$2789.7 (\nu: 17.6)$
$\Omega_m$	$0.311^{+0.012}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4510^{+0.0041}_{-0.0040}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.7)$
$\Omega_m h^2$	$0.1423^{+0.0018}_{-0.0018}$	$H(0.15)$	$72.90^{+0.81}_{-0.81}$		
$\Omega_m h^3$	$0.09622^{+0.00098}_{-0.00099}$	$D_M(0.15)$	$641.2^{+8.1}_{-7.8}$		

$$\bar{\chi}_{\text{eff}}^2 = 2807.47; \Delta\bar{\chi}_{\text{eff}}^2 = 0.75; R - 1 = 0.03003$$