

# *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\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02213	$0.02214^{+0.00057}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	0.4585	$0.458^{+0.035}_{-0.033}$	$100\theta_{s,eq}$	0.4486	$0.449^{+0.012}_{-0.012}$
$\Omega_c h^2$	0.1205	$0.1205^{+0.0055}_{-0.0053}$	$\sigma_8 \Omega_m^{0.25}$	0.6098	$0.610^{+0.031}_{-0.030}$	$H(0.15)$	72.32	$72.3^{+2.1}_{-2.0}$
$100\theta_{MC}$	1.04085	$1.0408^{+0.0013}_{-0.0012}$	$\sigma_8/h^{0.5}$	0.9911	$0.991^{+0.041}_{-0.041}$	$D_M(0.15)$	646.9	$647^{+21}_{-20}$
$\tau$	0.0519	$0.052^{+0.021}_{-0.022}$	$r_{drag}h$	98.58	$98.6^{+4.2}_{-4.1}$	$H(0.38)$	82.57	$82.6^{+1.5}_{-1.4}$
$\ln(10^{10}A_s)$	3.0384	$3.039^{+0.043}_{-0.046}$	$\langle d^2 \rangle^{1/2}$	2.447	$2.448^{+0.099}_{-0.096}$	$D_M(0.38)$	1540.8	$1541^{+41}_{-40}$
$n_s$	0.9639	$0.964^{+0.015}_{-0.015}$	$z_{re}$	7.50	$7.5^{+2.0}_{-2.4}$	$H(0.51)$	89.36	$89.4^{+1.2}_{-1.1}$
$y_{cal}$	1.0004	$1.0005^{+0.0067}_{-0.0068}$	$10^9 A_s$	2.087	$2.089^{+0.091}_{-0.095}$	$D_M(0.51)$	1994.7	$1994^{+48}_{-47}$
$A_{100}^{PS}$	239	$242^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8813	$1.882^{+0.036}_{-0.036}$	$H(0.61)$	95.04	$95.05^{+0.95}_{-0.88}$
$A_{143}^{PS}$	41.3	$41^{+20}_{-20}$	$D_{40}$	1228.7	$1230^{+40}_{-39}$	$D_M(0.61)$	2320	$2320^{+52}_{-51}$
$A_{217}^{PS}$	100.6	$101^{+30}_{-40}$	$D_{220}$	5702	$5704^{+110}_{-110}$	$H(2.33)$	236.64	$236.6^{+3.4}_{-3.2}$
$A_{217}^{CIB}$	45.0	$41^{+20}_{-20}$	$D_{810}$	2534.0	$2534^{+36}_{-37}$	$D_M(2.33)$	5775.9	$5775^{+42}_{-43}$
$A_{143}^{tSZ}$	5.89	$< 8.65$	$D_{1420}$	814.3	$814^{+13}_{-14}$	$f\sigma_8(0.15)$	0.4624	$0.462^{+0.032}_{-0.031}$
$r_{143 \times 217}^{PS}$	0.582	$0.65^{+0.31}_{-0.33}$	$D_{2000}$	229.56	$229.6^{+4.6}_{-4.8}$	$\sigma_8(0.15)$	0.7486	$0.749^{+0.019}_{-0.020}$
$r_{143 \times 217}^{CIB}$	0.79	—	$n_{s,0.002}$	0.9639	$0.964^{+0.015}_{-0.015}$	$f\sigma_8(0.38)$	0.4789	$0.479^{+0.025}_{-0.025}$
$\xi^{tSZ \times CIB}$	0.12	—	$Y_P$	0.245298	$0.24529^{+0.00023}_{-0.00027}$	$\sigma_8(0.38)$	0.6627	$0.663^{+0.015}_{-0.017}$
$A^{kSZ}$	1.2	—	$Y_P^{BBN}$	0.246624	$0.24662^{+0.00023}_{-0.00027}$	$f\sigma_8(0.51)$	0.4766	$0.476^{+0.021}_{-0.021}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.51}$	$10^5 D/H$	2.631	$2.63^{+0.11}_{-0.11}$	$\sigma_8(0.51)$	0.6199	$0.620^{+0.014}_{-0.015}$
$A_{143}^{dust}$	0.991	$0.98^{+0.45}_{-0.47}$	Age/Gyr	13.826	$13.825^{+0.094}_{-0.097}$	$f\sigma_8(0.61)$	0.4710	$0.471^{+0.018}_{-0.019}$
$A_{217}^{dust}$	0.966	$0.97^{+0.27}_{-0.27}$	$z_*$	1090.27	$1090.3^{+1.1}_{-1.0}$	$\sigma_8(0.61)$	0.5896	$0.590^{+0.013}_{-0.014}$
$A_{143 \times 217}^{dust}$	0.995	$1.03^{+0.42}_{-0.42}$	$r_*$	144.49	$144.5^{+1.2}_{-1.3}$	$f\sigma_8(2.33)$	0.2970	$0.2970^{+0.0065}_{-0.0070}$
$c_{100}$	0.99755	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04105	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8(2.33)$	0.3058	$0.3058^{+0.0069}_{-0.0073}$
$c_{217}$	1.00139	$1.0012^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.879	$13.88^{+0.11}_{-0.12}$	$f_{2000}^{143}$	31.1	$31^{+8}_{-8}$
$H_0$	66.96	$67.0^{+2.4}_{-2.4}$	$z_{drag}$	1059.44	$1059.4^{+1.2}_{-1.2}$	$f_{2000}^{217}$	107.6	$107.6^{+5.1}_{-5.3}$
$\Omega_\Lambda$	0.6805	$0.680^{+0.032}_{-0.036}$	$r_{drag}$	147.22	$147.2^{+1.2}_{-1.2}$	$f_{2000}^{143 \times 217}$	33.0	$33^{+6}_{-5}$
$\Omega_m$	0.3195	$0.320^{+0.036}_{-0.032}$	$k_D$	0.14054	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{simall}^2$	395.83	$396.9 (\nu: 1.3)$
$\Omega_m h^2$	0.1433	$0.1432^{+0.0053}_{-0.0050}$	$100\theta_D$	0.16106	$0.16106^{+0.00072}_{-0.00067}$	$\chi_{lowl}^2$	23.40	$23.5 (\nu: 0.8)$
$\Omega_m h^3$	0.09594	$0.0959^{+0.0012}_{-0.0012}$	$z_{eq}$	3408	$3408^{+130}_{-120}$	$\chi_{CamSpec}^2$	7050.3	$7063.4 (\nu: 14.8)$
$\sigma_8$	0.8110	$0.811^{+0.023}_{-0.024}$	$k_{eq}$	0.010403	$0.01040^{+0.00038}_{-0.00036}$	$\chi_{prior}^2$	2.2	$7.7 (\nu: 6.3)$
$S_8$	0.837	$0.837^{+0.064}_{-0.060}$	$100\theta_{eq}$	0.8115	$0.812^{+0.023}_{-0.023}$	$\chi_{CMB}^2$	7469.6	$7483.8 (\nu: 15.1)$

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02223^{+0.00050}_{-0.00050}$	$\sigma_8/h^{0.5}$	$0.981^{+0.030}_{-0.031}$	$D_M(0.38)$	$1529^{+24}_{-23}$
$\Omega_c h^2$	$0.1189^{+0.0032}_{-0.0030}$	$r_{\text{drag}} h$	$99.8^{+2.4}_{-2.4}$	$H(0.51)$	$89.69^{+0.78}_{-0.72}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0012}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.071}_{-0.071}$	$D_M(0.51)$	$1981^{+28}_{-28}$
$\tau$	$0.054^{+0.021}_{-0.021}$	$z_{\text{re}}$	$7.6^{+2.0}_{-2.3}$	$H(0.61)$	$95.29^{+0.68}_{-0.61}$
$\ln(10^{10} A_s)$	$3.039^{+0.044}_{-0.047}$	$10^9 A_s$	$2.088^{+0.094}_{-0.097}$	$D_M(0.61)$	$2305^{+31}_{-30}$
$n_s$	$0.967^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.031}_{-0.030}$	$H(2.33)$	$235.7^{+2.0}_{-2.0}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0067}$	$D_{40}$	$1222^{+33}_{-32}$	$D_M(2.33)$	$5765^{+31}_{-33}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-60}$	$D_{220}$	$5711^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.020}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-36}$	$\sigma_8(0.15)$	$0.746^{+0.018}_{-0.019}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+13}_{-14}$	$f\sigma_8(0.38)$	$0.472^{+0.017}_{-0.017}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.4}_{-4.7}$	$\sigma_8(0.38)$	$0.661^{+0.015}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$n_{\text{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.34}$	$Y_{\text{P}}$	$0.24533^{+0.00019}_{-0.00023}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00019}_{-0.00024}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.613^{+0.096}_{-0.091}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.015}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.803^{+0.071}_{-0.076}$	$f\sigma_8(2.33)$	$0.2970^{+0.0068}_{-0.0073}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.51}$	$z_*$	$1090.01^{+0.75}_{-0.75}$	$\sigma_8(2.33)$	$0.3062^{+0.0072}_{-0.0076}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.46}$	$r_*$	$144.82^{+0.83}_{-0.81}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.28}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.4^{+5.0}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.080}_{-0.080}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$z_{\text{drag}}$	$1059.5^{+1.1}_{-1.2}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$r_{\text{drag}}$	$147.54^{+0.91}_{-0.89}$	$\chi_{\text{lowl}}^2$	$22.81 (\nu: 0.4)$
$H_0$	$67.7^{+1.4}_{-1.4}$	$k_{\text{D}}$	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{\text{CamSpec}}^2$	$7063.9 (\nu: 14.3)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.019}$	$100\theta_{\text{D}}$	$0.16102^{+0.00069}_{-0.00064}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.310^{+0.019}_{-0.018}$	$z_{\text{eq}}$	$3373^{+74}_{-73}$	$\chi_{\text{MGS}}^2$	$1.39 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1418^{+0.0031}_{-0.0030}$	$k_{\text{eq}}$	$0.01029^{+0.00022}_{-0.00022}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	$0.0959^{+0.0012}_{-0.0012}$	$100\theta_{\text{eq}}$	$0.818^{+0.013}_{-0.013}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 6.2)$
$\sigma_8$	$0.807^{+0.021}_{-0.021}$	$100\theta_{\text{s,eq}}$	$0.4521^{+0.0071}_{-0.0070}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.820^{+0.039}_{-0.038}$	$H(0.15)$	$72.9^{+1.2}_{-1.2}$	$\chi_{\text{CMB}}^2$	$7483.8 (\nu: 14.5)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.021}_{-0.021}$	$D_M(0.15)$	$641^{+12}_{-12}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.021}_{-0.021}$	$H(0.38)$	$83.00^{+0.91}_{-0.88}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02239^{+0.00058}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.027}_{-0.026}$	$D_M(0.15)$	$634^{+18}_{-20}$
$\Omega_c h^2$	$0.1171^{+0.0048}_{-0.0053}$	$\sigma_8/h^{0.5}$	$0.968^{+0.039}_{-0.034}$	$H(0.38)$	$83.6^{+1.5}_{-1.3}$
$100\theta_{MC}$	$1.0413^{+0.0012}_{-0.0012}$	$r_{drag}h$	$101.3^{+4.4}_{-3.7}$	$D_M(0.38)$	$1514^{+36}_{-40}$
$\tau$	$0.056^{+0.021}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	$2.396^{+0.089}_{-0.10}$	$H(0.51)$	$90.1^{+1.2}_{-1.0}$
$\ln(10^{10} A_s)$	$3.039^{+0.042}_{-0.045}$	$z_{re}$	$7.8^{+1.9}_{-2.3}$	$D_M(0.51)$	$1963^{+42}_{-47}$
$n_s$	$0.972^{+0.015}_{-0.014}$	$10^9 A_s$	$2.089^{+0.090}_{-0.092}$	$H(0.61)$	$95.64^{+0.94}_{-0.84}$
$y_{cal}$	$1.0008^{+0.0069}_{-0.0070}$	$10^9 A_s e^{-2\tau}$	$1.868^{+0.033}_{-0.033}$	$D_M(0.61)$	$2286^{+45}_{-51}$
$A_{100}^{PS}$	$240^{+70}_{-70}$	$D_{40}$	$1214^{+39}_{-48}$	$H(2.33)$	$234.7^{+2.9}_{-3.1}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+150}_{-110}$	$D_M(2.33)$	$5750^{+39}_{-39}$
$A_{217}^{PS}$	$101^{+30}_{-30}$	$D_{810}$	$2534^{+34}_{-38}$	$f\sigma_8(0.15)$	$0.443^{+0.028}_{-0.028}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-14}$	$\sigma_8(0.15)$	$0.742^{+0.019}_{-0.019}$
$A_{143}^{tSZ}$	$< 8.45$	$D_{2000}$	$230.6^{+4.5}_{-4.9}$	$f\sigma_8(0.38)$	$0.464^{+0.022}_{-0.022}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.32}_{-0.33}$	$n_{s,0.002}$	$0.972^{+0.015}_{-0.014}$	$\sigma_8(0.38)$	$0.659^{+0.016}_{-0.015}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24540^{+0.00023}_{-0.00025}$	$f\sigma_8(0.51)$	$0.465^{+0.020}_{-0.018}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24673^{+0.00023}_{-0.00025}$	$\sigma_8(0.51)$	$0.617^{+0.015}_{-0.014}$
$A^{kSZ}$	—	$10^5 D/H$	$2.58^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.461^{+0.018}_{-0.016}$
$A_{100}^{dust}$	$1.02^{+0.48}_{-0.48}$	$Age/Gyr$	$13.771^{+0.086}_{-0.087}$	$\sigma_8(0.61)$	$0.588^{+0.014}_{-0.013}$
$A_{143}^{dust}$	$0.97^{+0.47}_{-0.41}$	$z_*$	$1089.65^{+0.95}_{-0.93}$	$f\sigma_8(2.33)$	$0.2969^{+0.0068}_{-0.0068}$
$A_{217}^{dust}$	$0.97^{+0.25}_{-0.26}$	$r_*$	$145.2^{+1.2}_{-1.1}$	$\sigma_8(2.33)$	$0.3067^{+0.0070}_{-0.0073}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.40}_{-0.39}$	$100\theta_*$	$1.0415^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0024}_{-0.0027}$	$D_M(z_*)/Gpc$	$13.94^{+0.10}_{-0.10}$	$f_{2000}^{217}$	$106.9^{+5.0}_{-5.0}$
$c_{217}$	$1.0012^{+0.0038}_{-0.0038}$	$z_{drag}$	$1059.8^{+1.2}_{-1.2}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-5}$
$H_0$	$68.5^{+2.4}_{-2.1}$	$r_{drag}$	$147.8^{+1.1}_{-1.1}$	$\chi_{simall}^2$	$397.2 (\nu: 1.9)$
$\Omega_\Lambda$	$0.701^{+0.030}_{-0.029}$	$k_D$	$0.1401^{+0.0013}_{-0.0011}$	$\chi_{lowl}^2$	$22.13 (\nu: 0.4)$
$\Omega_m$	$0.299^{+0.029}_{-0.030}$	$100\theta_D$	$0.16089^{+0.00070}_{-0.00070}$	$\chi_{CamSpec}^2$	$7067.0 (\nu: 18.2)$
$\Omega_m h^2$	$0.1401^{+0.0045}_{-0.0050}$	$z_{eq}$	$3334^{+110}_{-120}$	$\chi_{H073p45}^2$	$9.0 (\nu: 4.4)$
$\Omega_m h^3$	$0.0960^{+0.0013}_{-0.0012}$	$k_{eq}$	$0.01017^{+0.00033}_{-0.00036}$	$\chi_{prior}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.802^{+0.022}_{-0.021}$	$100\theta_{eq}$	$0.826^{+0.024}_{-0.020}$	$\chi_{CMB}^2$	$7486.3 (\nu: 17.5)$
$S_8$	$0.800^{+0.055}_{-0.055}$	$100\theta_{s,eq}$	$0.456^{+0.012}_{-0.011}$		
$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.030}_{-0.030}$	$H(0.15)$	$73.7^{+2.1}_{-1.8}$		

$\bar{\chi}_{eff}^2 = 7502.88; R - 1 = 0.07941$



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02214^{+0.00057}_{-0.00057}$	$\sigma_8 \Omega_m^{0.5}$	$0.459^{+0.035}_{-0.033}$	$100\theta_{s,eq}$	$0.449^{+0.012}_{-0.012}$
$\Omega_c h^2$	$0.1204^{+0.0055}_{-0.0053}$	$\sigma_8 \Omega_m^{0.25}$	$0.610^{+0.031}_{-0.029}$	$H(0.15)$	$72.4^{+2.0}_{-2.0}$
$100\theta_{MC}$	$1.0409^{+0.0013}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.992^{+0.041}_{-0.040}$	$D_M(0.15)$	$646^{+21}_{-20}$
$\tau$	$0.054^{+0.018}_{-0.013}$	$r_{drag}h$	$98.7^{+4.2}_{-4.2}$	$H(0.38)$	$82.6^{+1.5}_{-1.4}$
$\ln(10^{10} A_s)$	$3.042^{+0.041}_{-0.030}$	$\langle d^2 \rangle^{1/2}$	$2.450^{+0.098}_{-0.093}$	$D_M(0.38)$	$1540^{+42}_{-40}$
$n_s$	$0.964^{+0.015}_{-0.015}$	$z_{re}$	$< 9.38$	$H(0.51)$	$89.4^{+1.2}_{-1.1}$
$y_{cal}$	$1.0005^{+0.0066}_{-0.0068}$	$10^9 A_s$	$2.095^{+0.086}_{-0.062}$	$D_M(0.51)$	$1994^{+48}_{-47}$
$A_{100}^{PS}$	$242^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.036}_{-0.035}$	$H(0.61)$	$95.07^{+0.95}_{-0.87}$
$A_{143}^{PS}$	$41^{+20}_{-20}$	$D_{40}$	$1229^{+40}_{-38}$	$D_M(0.61)$	$2319^{+52}_{-51}$
$A_{217}^{PS}$	$101^{+30}_{-40}$	$D_{220}$	$5704^{+110}_{-110}$	$H(2.33)$	$236.6^{+3.4}_{-3.1}$
$A_{217}^{CIB}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-36}$	$D_M(2.33)$	$5775^{+41}_{-43}$
$A_{143}^{tSZ}$	$< 8.65$	$D_{1420}$	$814^{+13}_{-14}$	$f\sigma_8(0.15)$	$0.463^{+0.032}_{-0.030}$
$r_{143 \times 217}^{PS}$	$0.65^{+0.32}_{-0.33}$	$D_{2000}$	$229.6^{+4.6}_{-4.8}$	$\sigma_8(0.15)$	$0.750^{+0.018}_{-0.017}$
$r_{143 \times 217}^{CIB}$	—	$n_{s,0.002}$	$0.964^{+0.015}_{-0.015}$	$f\sigma_8(0.38)$	$0.479^{+0.025}_{-0.024}$
$\xi^{tSZ \times CIB}$	—	$Y_P$	$0.24530^{+0.00022}_{-0.00027}$	$\sigma_8(0.38)$	$0.664^{+0.014}_{-0.013}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.24662^{+0.00022}_{-0.00027}$	$f\sigma_8(0.51)$	$0.477^{+0.021}_{-0.021}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.51}$	$10^5 D/H$	$2.63^{+0.11}_{-0.10}$	$\sigma_8(0.51)$	$0.621^{+0.013}_{-0.011}$
$A_{143}^{dust}$	$0.98^{+0.45}_{-0.47}$	Age/Gyr	$13.824^{+0.093}_{-0.096}$	$f\sigma_8(0.61)$	$0.471^{+0.018}_{-0.018}$
$A_{217}^{dust}$	$0.97^{+0.27}_{-0.27}$	$z_*$	$1090.2^{+1.1}_{-1.0}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.010}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.43}_{-0.42}$	$r_*$	$144.5^{+1.2}_{-1.3}$	$f\sigma_8(2.33)$	$0.2974^{+0.0062}_{-0.0048}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8(2.33)$	$0.3063^{+0.0065}_{-0.0050}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.88^{+0.11}_{-0.12}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$H_0$	$67.0^{+2.4}_{-2.4}$	$z_{drag}$	$1059.4^{+1.2}_{-1.2}$	$f_{2000}^{217}$	$107.5^{+5.1}_{-5.3}$
$\Omega_\Lambda$	$0.681^{+0.032}_{-0.036}$	$r_{drag}$	$147.2^{+1.2}_{-1.2}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$\Omega_m$	$0.319^{+0.036}_{-0.032}$	$k_D$	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{simall}^2$	$396.8 (\nu: 1.3)$
$\Omega_m h^2$	$0.1432^{+0.0053}_{-0.0050}$	$100\theta_D$	$0.16106^{+0.00071}_{-0.00067}$	$\chi_{lowl}^2$	$23.5 (\nu: 0.8)$
$\Omega_m h^3$	$0.0959^{+0.0012}_{-0.0012}$	$z_{eq}$	$3406^{+130}_{-120}$	$\chi_{CamSpec}^2$	$7063.2 (\nu: 14.7)$
$\sigma_8$	$0.812^{+0.022}_{-0.021}$	$k_{eq}$	$0.01040^{+0.00039}_{-0.00036}$	$\chi_{prior}^2$	$7.7 (\nu: 6.3)$
$S_8$	$0.837^{+0.064}_{-0.060}$	$100\theta_{eq}$	$0.812^{+0.023}_{-0.023}$	$\chi_{CMB}^2$	$7483.6 (\nu: 14.6)$

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02223^{+0.00049}_{-0.00050}$	$\sigma_8/h^{0.5}$	$0.982^{+0.029}_{-0.027}$	$D_M(0.38)$	$1529^{+24}_{-24}$
$\Omega_c h^2$	$0.1189^{+0.0032}_{-0.0030}$	$r_{\text{drag}} h$	$99.8^{+2.4}_{-2.4}$	$H(0.51)$	$89.70^{+0.78}_{-0.71}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0012}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.069}_{-0.064}$	$D_M(0.51)$	$1981^{+28}_{-28}$
$\tau$	$0.055^{+0.019}_{-0.014}$	$z_{\text{re}}$	$< 9.49$	$H(0.61)$	$95.30^{+0.68}_{-0.61}$
$\ln(10^{10} A_s)$	$3.041^{+0.042}_{-0.031}$	$10^9 A_s$	$2.093^{+0.089}_{-0.064}$	$D_M(0.61)$	$2305^{+30}_{-30}$
$n_s$	$0.968^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.031}_{-0.030}$	$H(2.33)$	$235.7^{+2.0}_{-2.0}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0066}$	$D_{40}$	$1222^{+33}_{-32}$	$D_M(2.33)$	$5765^{+31}_{-33}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-60}$	$D_{220}$	$5711^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.019}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-36}$	$\sigma_8(0.15)$	$0.747^{+0.017}_{-0.014}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.473^{+0.017}_{-0.016}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.4}_{-4.5}$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$n_{\text{s},0.002}$	$0.968^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.472^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.34}$	$Y_{\text{P}}$	$0.24534^{+0.00019}_{-0.00024}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.010}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00019}_{-0.00024}$	$f\sigma_8(0.61)$	$0.467^{+0.013}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.613^{+0.097}_{-0.090}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0097}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.803^{+0.071}_{-0.076}$	$f\sigma_8(2.33)$	$0.2974^{+0.0065}_{-0.0048}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$z_*$	$1090.00^{+0.75}_{-0.74}$	$\sigma_8(2.33)$	$0.3067^{+0.0070}_{-0.0050}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.47}$	$r_*$	$144.83^{+0.83}_{-0.80}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.28}$	$100\theta_*$	$1.0413^{+0.0012}_{-0.0010}$	$f_{2000}^{217}$	$107.3^{+5.0}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.080}_{-0.080}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$z_{\text{drag}}$	$1059.5^{+1.1}_{-1.2}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0038}$	$r_{\text{drag}}$	$147.54^{+0.91}_{-0.89}$	$\chi_{\text{lowl}}^2$	$22.83 (\nu: 0.4)$
$H_0$	$67.7^{+1.4}_{-1.4}$	$k_{\text{D}}$	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{\text{CamSpec}}^2$	$7063.8 (\nu: 14.1)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.019}$	$100\theta_{\text{D}}$	$0.16101^{+0.00068}_{-0.00064}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.310^{+0.019}_{-0.018}$	$z_{\text{eq}}$	$3372^{+73}_{-73}$	$\chi_{\text{MGS}}^2$	$1.40 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1418^{+0.0031}_{-0.0030}$	$k_{\text{eq}}$	$0.01029^{+0.00022}_{-0.00022}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	$0.0959^{+0.0012}_{-0.0012}$	$100\theta_{\text{eq}}$	$0.818^{+0.013}_{-0.013}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 6.2)$
$\sigma_8$	$0.808^{+0.020}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4522^{+0.0071}_{-0.0069}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.821^{+0.039}_{-0.037}$	$H(0.15)$	$72.9^{+1.2}_{-1.2}$	$\chi_{\text{CMB}}^2$	$7483.5 (\nu: 14.1)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_M(0.15)$	$641^{+12}_{-12}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.020}_{-0.019}$	$H(0.38)$	$83.00^{+0.91}_{-0.88}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02240^{+0.00057}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	$0.593^{+0.027}_{-0.026}$	$D_M(0.15)$	$633^{+18}_{-20}$
$\Omega_c h^2$	$0.1171^{+0.0048}_{-0.0052}$	$\sigma_8/h^{0.5}$	$0.969^{+0.038}_{-0.035}$	$H(0.38)$	$83.6^{+1.5}_{-1.3}$
$100\theta_{MC}$	$1.0413^{+0.0013}_{-0.0012}$	$r_{drag}h$	$101.4^{+4.4}_{-3.7}$	$D_M(0.38)$	$1514^{+36}_{-39}$
$\tau$	$0.057^{+0.020}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.398^{+0.088}_{-0.10}$	$H(0.51)$	$90.1^{+1.2}_{-1.0}$
$\ln(10^{10} A_s)$	$3.041^{+0.041}_{-0.034}$	$z_{re}$	$< 9.57$	$D_M(0.51)$	$1963^{+42}_{-46}$
$n_s$	$0.972^{+0.015}_{-0.014}$	$10^9 A_s$	$2.093^{+0.086}_{-0.070}$	$H(0.61)$	$95.65^{+0.93}_{-0.84}$
$y_{cal}$	$1.0008^{+0.0062}_{-0.0076}$	$10^9 A_s e^{-2\tau}$	$1.868^{+0.034}_{-0.033}$	$D_M(0.61)$	$2286^{+45}_{-50}$
$A_{100}^{PS}$	$240^{+60}_{-70}$	$D_{40}$	$1214^{+39}_{-48}$	$H(2.33)$	$234.7^{+2.9}_{-3.1}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5725^{+150}_{-110}$	$D_M(2.33)$	$5750^{+39}_{-38}$
$A_{217}^{PS}$	$101^{+30}_{-30}$	$D_{810}$	$2534^{+33}_{-37}$	$f\sigma_8(0.15)$	$0.444^{+0.028}_{-0.028}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.15)$	$0.743^{+0.019}_{-0.017}$
$A_{143}^{tSZ}$	$< 8.45$	$D_{2000}$	$230.7^{+4.5}_{-4.6}$	$f\sigma_8(0.38)$	$0.465^{+0.022}_{-0.022}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.32}_{-0.33}$	$n_{s,0.002}$	$0.972^{+0.015}_{-0.014}$	$\sigma_8(0.38)$	$0.660^{+0.016}_{-0.013}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24540^{+0.00023}_{-0.00025}$	$f\sigma_8(0.51)$	$0.465^{+0.020}_{-0.019}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24673^{+0.00023}_{-0.00025}$	$\sigma_8(0.51)$	$0.618^{+0.014}_{-0.012}$
$A^{kSZ}$	—	$10^5 D/H$	$2.58^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.461^{+0.018}_{-0.017}$
$A_{100}^{dust}$	$1.02^{+0.49}_{-0.48}$	$Age/Gyr$	$13.770^{+0.086}_{-0.086}$	$\sigma_8(0.61)$	$0.588^{+0.013}_{-0.011}$
$A_{143}^{dust}$	$0.97^{+0.50}_{-0.41}$	$z_*$	$1089.63^{+0.95}_{-0.92}$	$f\sigma_8(2.33)$	$0.2972^{+0.0066}_{-0.0049}$
$A_{217}^{dust}$	$0.97^{+0.25}_{-0.26}$	$r_*$	$145.2^{+1.2}_{-1.1}$	$\sigma_8(2.33)$	$0.3070^{+0.0067}_{-0.0049}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.41}_{-0.39}$	$100\theta_*$	$1.0415^{+0.0013}_{-0.0012}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0024}_{-0.0028}$	$D_M(z_*)/Gpc$	$13.94^{+0.10}_{-0.10}$	$f_{2000}^{217}$	$106.9^{+5.0}_{-5.0}$
$c_{217}$	$1.0012^{+0.0038}_{-0.0039}$	$z_{drag}$	$1059.8^{+1.1}_{-1.2}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-5}$
$H_0$	$68.6^{+2.4}_{-2.1}$	$r_{drag}$	$147.8^{+1.1}_{-1.1}$	$\chi_{simall}^2$	$397.2 (\nu: 1.9)$
$\Omega_\Lambda$	$0.702^{+0.030}_{-0.029}$	$k_D$	$0.1401^{+0.0013}_{-0.0011}$	$\chi_{lowl}^2$	$22.13 (\nu: 0.4)$
$\Omega_m$	$0.298^{+0.029}_{-0.030}$	$100\theta_D$	$0.16089^{+0.00070}_{-0.00069}$	$\chi_{CamSpec}^2$	$7066.9 (\nu: 17.7)$
$\Omega_m h^2$	$0.1401^{+0.0045}_{-0.0049}$	$z_{eq}$	$3333^{+110}_{-120}$	$\chi_{H073p45}^2$	$8.9 (\nu: 4.4)$
$\Omega_m h^3$	$0.0960^{+0.0013}_{-0.0012}$	$k_{eq}$	$0.01017^{+0.00033}_{-0.00036}$	$\chi_{prior}^2$	$7.5 (\nu: 5.8)$
$\sigma_8$	$0.802^{+0.022}_{-0.020}$	$100\theta_{eq}$	$0.826^{+0.024}_{-0.020}$	$\chi_{CMB}^2$	$7486.2 (\nu: 16.9)$
$S_8$	$0.800^{+0.055}_{-0.055}$	$100\theta_{s,eq}$	$0.456^{+0.012}_{-0.011}$		
$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.030}_{-0.030}$	$H(0.15)$	$73.7^{+2.1}_{-1.8}$		

$\bar{\chi}_{eff}^2 = 7502.64$ ;  $R - 1 = 0.09766$



## 2.7 base\_CamSpecHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022297	$0.02229^{+0.00040}_{-0.00040}$	$S_8$	0.8261	$0.827^{+0.042}_{-0.042}$	$100\theta_{s,eq}$	0.4505	$0.4503^{+0.0080}_{-0.0076}$
$\Omega_c h^2$	0.11956	$0.1196^{+0.0035}_{-0.0036}$	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.453^{+0.023}_{-0.023}$	$H(0.15)$	72.73	$72.7^{+1.4}_{-1.4}$
$100\theta_{MC}$	1.04087	$1.04088^{+0.00081}_{-0.00080}$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.605^{+0.021}_{-0.022}$	$D_M(0.15)$	642.8	$643^{+14}_{-13}$
$\tau$	0.0531	$0.053^{+0.021}_{-0.022}$	$\sigma_8/h^{0.5}$	0.9843	$0.985^{+0.030}_{-0.031}$	$H(0.38)$	82.87	$82.9^{+1.0}_{-0.99}$
$\ln(10^{10} A_s)$	3.0390	$3.039^{+0.044}_{-0.044}$	$r_{drag} h$	99.32	$99.3^{+2.8}_{-2.7}$	$D_M(0.38)$	1532.6	$1533^{+28}_{-27}$
$n_s$	0.9662	$0.966^{+0.011}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	2.433	$2.434^{+0.071}_{-0.072}$	$H(0.51)$	89.61	$89.60^{+0.79}_{-0.78}$
$y_{cal}$	1.0003	$1.0005^{+0.0064}_{-0.0063}$	$z_{re}$	7.56	$7.5^{+2.1}_{-2.4}$	$D_M(0.51)$	1985.0	$1985^{+33}_{-31}$
$A_{100}^{PS}$	235	$240^{+70}_{-60}$	$10^9 A_s$	2.088	$2.088^{+0.094}_{-0.089}$	$H(0.61)$	95.24	$95.24^{+0.64}_{-0.62}$
$A_{143}^{PS}$	41.1	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8780	$1.879^{+0.030}_{-0.029}$	$D_M(0.61)$	2309.6	$2310^{+35}_{-34}$
$A_{217}^{PS}$	101.9	$102^{+30}_{-40}$	$D_{40}$	1225.0	$1226^{+32}_{-32}$	$H(2.33)$	236.19	$236.2^{+2.1}_{-2.2}$
$A_{217}^{CIB}$	44.3	$40^{+20}_{-20}$	$D_{220}$	5716	$5718^{+100}_{-100}$	$D_M(2.33)$	5766.4	$5767^{+29}_{-29}$
$A_{143}^{tSZ}$	6.43	$< 8.84$	$D_{810}$	2534.7	$2535^{+35}_{-34}$	$f\sigma_8(0.15)$	0.4569	$0.457^{+0.021}_{-0.022}$
$r_{143 \times 217}^{PS}$	0.629	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	815.8	$816^{+13}_{-12}$	$\sigma_8(0.15)$	0.7467	$0.747^{+0.018}_{-0.017}$
$r_{143 \times 217}^{CIB}$	0.76	—	$D_{2000}$	230.27	$230.2^{+4.2}_{-4.2}$	$f\sigma_8(0.38)$	0.4748	$0.475^{+0.017}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.20	—	$n_{s,0.002}$	0.9662	$0.966^{+0.011}_{-0.012}$	$\sigma_8(0.38)$	0.6616	$0.662^{+0.015}_{-0.015}$
$A^{kSZ}$	0.3	—	$Y_P$	0.245366	$0.24536^{+0.00015}_{-0.00018}$	$f\sigma_8(0.51)$	0.4731	$0.473^{+0.015}_{-0.016}$
$A_{100}^{dust}$	1.00	$1.01^{+0.51}_{-0.50}$	$Y_P^{BBN}$	0.246692	$0.24669^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	0.6191	$0.619^{+0.014}_{-0.014}$
$A_{143}^{dust}$	0.980	$0.96^{+0.46}_{-0.45}$	$10^5 D/H$	2.599	$2.601^{+0.076}_{-0.072}$	$f\sigma_8(0.61)$	0.4680	$0.468^{+0.014}_{-0.014}$
$A_{217}^{dust}$	0.966	$0.97^{+0.26}_{-0.27}$	$Age/Gyr$	13.805	$13.805^{+0.064}_{-0.063}$	$\sigma_8(0.61)$	0.5890	$0.589^{+0.013}_{-0.013}$
$A_{143 \times 217}^{dust}$	1.012	$1.03^{+0.42}_{-0.42}$	$z_*$	1089.98	$1089.99^{+0.75}_{-0.72}$	$f\sigma_8(2.33)$	0.2969	$0.2969^{+0.0068}_{-0.0066}$
$c_{100}$	0.99760	$0.9975^{+0.0026}_{-0.0027}$	$r_*$	144.60	$144.58^{+0.81}_{-0.78}$	$\sigma_8(2.33)$	0.3060	$0.3060^{+0.0071}_{-0.0070}$
$c_{217}$	1.00127	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	1.04106	$1.04107^{+0.00080}_{-0.00079}$	$f_{2000}^{143}$	30.0	$30^{+7}_{-7}$
$c_{TE}$	0.9965	$0.997^{+0.013}_{-0.012}$	$D_M(z_*)/Gpc$	13.890	$13.888^{+0.076}_{-0.072}$	$f_{2000}^{217}$	106.72	$106.9^{+4.9}_{-5.0}$
$c_{EE}$	0.9920	$0.992^{+0.012}_{-0.012}$	$z_{drag}$	1059.74	$1059.73^{+0.81}_{-0.83}$	$f_{2000}^{143 \times 217}$	32.2	$32^{+5}_{-5}$
$H_0$	67.43	$67.4^{+1.6}_{-1.6}$	$r_{drag}$	147.29	$147.27^{+0.82}_{-0.77}$	$\chi_{small}^2$	395.90	$396.9 (\nu: 1.4)$
$\Omega_\Lambda$	0.6866	$0.686^{+0.021}_{-0.023}$	$k_D$	0.14060	$0.14061^{+0.00086}_{-0.00091}$	$\chi_{lowl}^2$	23.00	$23.16 (\nu: 0.4)$
$\Omega_m$	0.3134	$0.314^{+0.023}_{-0.021}$	$100\theta_D$	0.160865	$0.16087^{+0.00049}_{-0.00049}$	$\chi_{CamSpec}^2$	11499.6	$11514.5 (\nu: 15.8)$
$\Omega_m h^2$	0.14250	$0.1426^{+0.0033}_{-0.0034}$	$z_{eq}$	3390	$3392^{+80}_{-82}$	$\chi_{prior}^2$	2.2	$7.8 (\nu: 6.0)$
$\Omega_m h^3$	0.09609	$0.09610^{+0.00079}_{-0.00082}$	$k_{eq}$	0.010347	$0.01035^{+0.00024}_{-0.00025}$	$\chi_{CMB}^2$	11918.5	$11934.6 (\nu: 16.4)$
$\sigma_8$	0.8082	$0.808^{+0.020}_{-0.020}$	$100\theta_{eq}$	0.8152	$0.815^{+0.016}_{-0.015}$			

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

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 commander\_dx12\_v3.2\_29: 23.00 CamSpec like\_10.7HM\_1400\_unified: 11499.65



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00036}_{-0.00037}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.018}_{-0.018}$	$D_M(0.15)$	$640^{+10}_{-9.8}$
$\Omega_c h^2$	$0.1190^{+0.0026}_{-0.0026}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.018}_{-0.018}$	$H(0.38)$	$83.05^{+0.74}_{-0.74}$
$100\theta_{MC}$	$1.04097^{+0.00075}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.980^{+0.027}_{-0.027}$	$D_M(0.38)$	$1528^{+20}_{-20}$
$\tau$	$0.054^{+0.020}_{-0.021}$	$r_{\text{drag}} h$	$99.8^{+2.0}_{-2.0}$	$H(0.51)$	$89.75^{+0.61}_{-0.59}$
$\ln(10^{10} A_s)$	$3.039^{+0.042}_{-0.044}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.065}_{-0.066}$	$D_M(0.51)$	$1979^{+24}_{-23}$
$n_s$	$0.967^{+0.010}_{-0.010}$	$z_{\text{re}}$	$7.6^{+2.0}_{-2.3}$	$H(0.61)$	$95.35^{+0.51}_{-0.49}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0061}$	$10^9 A_s$	$2.089^{+0.090}_{-0.089}$	$D_M(0.61)$	$2304^{+26}_{-25}$
$A_{100}^{\text{PS}}$	$240^{+70}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.028}_{-0.028}$	$H(2.33)$	$235.8^{+1.6}_{-1.6}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1223^{+30}_{-30}$	$D_M(2.33)$	$5762^{+24}_{-24}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5722^{+98}_{-99}$	$f\sigma_8(0.15)$	$0.454^{+0.017}_{-0.017}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-32}$	$\sigma_8(0.15)$	$0.746^{+0.017}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.4^{+4.1}_{-3.9}$	$\sigma_8(0.38)$	$0.661^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.967^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24538^{+0.00013}_{-0.00016}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.014}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.466^{+0.013}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.50}$	$10^5 \text{D/H}$	$2.592^{+0.070}_{-0.064}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.013}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.45}$	$\text{Age/Gyr}$	$13.795^{+0.054}_{-0.053}$	$f\sigma_8(2.33)$	$0.2969^{+0.0065}_{-0.0066}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$z_*$	$1089.87^{+0.60}_{-0.59}$	$\sigma_8(2.33)$	$0.3062^{+0.0068}_{-0.0067}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$r_*$	$144.73^{+0.63}_{-0.63}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.04116^{+0.00074}_{-0.00076}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-4.9}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.901^{+0.062}_{-0.060}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.79^{+0.79}_{-0.81}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.40^{+0.67}_{-0.65}$	$\chi_{\text{lowl}}^2$	$22.87 (\nu: 0.3)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$k_D$	$0.14051^{+0.00080}_{-0.00085}$	$\chi_{\text{CamSpec}}^2$	$11514.6 (\nu: 16.1)$
$\Omega_\Lambda$	$0.690^{+0.015}_{-0.016}$	$100\theta_D$	$0.16084^{+0.00047}_{-0.00047}$	$\chi_{6\text{DF}}^2$	$0.045 (\nu: 0.0)$
$\Omega_m$	$0.310^{+0.016}_{-0.015}$	$z_{\text{eq}}$	$3377^{+60}_{-60}$	$\chi_{\text{MGS}}^2$	$1.36 (\nu: 0.1)$
$\Omega_m h^2$	$0.1419^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	$0.01031^{+0.00018}_{-0.00018}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.8)$
$\Omega_m h^3$	$0.09611^{+0.00079}_{-0.00084}$	$100\theta_{\text{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\sigma_8$	$0.807^{+0.019}_{-0.018}$	$100\theta_{s,\text{eq}}$	$0.4518^{+0.0059}_{-0.0058}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.5)$
$S_8$	$0.819^{+0.034}_{-0.033}$	$H(0.15)$	$73.0^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	$11934.5 (\nu: 16.4)$

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



## 2.9 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02242^{+0.00036}_{-0.00040}$	$S_8$	$0.810^{+0.040}_{-0.035}$	$100\theta_{s,eq}$	$0.4538^{+0.0068}_{-0.0074}$
$\Omega_c h^2$	$0.1181^{+0.0034}_{-0.0031}$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.022}_{-0.019}$	$H(0.15)$	$73.3^{+1.2}_{-1.3}$
$100\theta_{MC}$	$1.04108^{+0.00076}_{-0.00078}$	$\sigma_8 \Omega_m^{0.25}$	$0.597^{+0.021}_{-0.019}$	$D_M(0.15)$	$637^{+13}_{-12}$
$\tau$	$0.055^{+0.020}_{-0.021}$	$\sigma_8/h^{0.5}$	$0.974^{+0.030}_{-0.028}$	$H(0.38)$	$83.32^{+0.90}_{-0.93}$
$\ln(10^{10} A_s)$	$3.041^{+0.041}_{-0.045}$	$r_{drag} h$	$100.5^{+2.5}_{-2.6}$	$D_M(0.38)$	$1520^{+26}_{-24}$
$n_s$	$0.970^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.412^{+0.071}_{-0.067}$	$H(0.51)$	$89.96^{+0.71}_{-0.74}$
$y_{cal}$	$1.0006^{+0.0065}_{-0.0063}$	$z_{re}$	$7.7^{+1.9}_{-2.2}$	$D_M(0.51)$	$1971^{+30}_{-28}$
$A_{100}^{PS}$	$240^{+70}_{-70}$	$10^9 A_s$	$2.092^{+0.087}_{-0.092}$	$H(0.61)$	$95.52^{+0.57}_{-0.60}$
$A_{143}^{PS}$	$38^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.873^{+0.029}_{-0.032}$	$D_M(0.61)$	$2294^{+32}_{-30}$
$A_{217}^{PS}$	$102^{+30}_{-30}$	$D_{40}$	$1219^{+31}_{-29}$	$H(2.33)$	$235.3^{+2.0}_{-1.9}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{220}$	$5729^{+94}_{-99}$	$D_M(2.33)$	$5755^{+28}_{-25}$
$A_{143}^{tSZ}$	—	$D_{810}$	$2535^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.449^{+0.021}_{-0.018}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	$817^{+12}_{-12}$	$\sigma_8(0.15)$	$0.744^{+0.017}_{-0.016}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.8^{+3.8}_{-4.1}$	$f\sigma_8(0.38)$	$0.469^{+0.017}_{-0.015}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.970^{+0.013}_{-0.011}$	$\sigma_8(0.38)$	$0.660^{+0.015}_{-0.015}$
$A^{kSZ}$	—	$Y_P$	$0.24541^{+0.00014}_{-0.00016}$	$f\sigma_8(0.51)$	$0.468^{+0.015}_{-0.014}$
$A_{100}^{dust}$	$1.02^{+0.53}_{-0.52}$	$Y_P^{BBN}$	$0.24674^{+0.00014}_{-0.00016}$	$\sigma_8(0.51)$	$0.618^{+0.014}_{-0.013}$
$A_{143}^{dust}$	$0.96^{+0.43}_{-0.44}$	$10^5 D/H$	$2.577^{+0.075}_{-0.065}$	$f\sigma_8(0.61)$	$0.464^{+0.014}_{-0.014}$
$A_{217}^{dust}$	$0.98^{+0.27}_{-0.26}$	$Age/Gyr$	$13.779^{+0.062}_{-0.054}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.013}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.41}_{-0.43}$	$z_*$	$1089.69^{+0.70}_{-0.58}$	$f\sigma_8(2.33)$	$0.2971^{+0.0064}_{-0.0066}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	$144.90^{+0.73}_{-0.77}$	$\sigma_8(2.33)$	$0.3066^{+0.0066}_{-0.0070}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$100\theta_*$	$1.04126^{+0.00075}_{-0.00077}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$D_M(z_*)/Gpc$	$13.916^{+0.069}_{-0.072}$	$f_{2000}^{217}$	$106.5^{+5.1}_{-5.2}$
$c_{EE}$	$0.993^{+0.013}_{-0.012}$	$z_{drag}$	$1059.91^{+0.75}_{-0.82}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$H_0$	$68.1^{+1.4}_{-1.5}$	$r_{drag}$	$147.55^{+0.73}_{-0.77}$	$\chi_{simall}^2$	$397.1 (\nu: 1.6)$
$\Omega_\Lambda$	$0.696^{+0.018}_{-0.021}$	$k_D$	$0.14042^{+0.00086}_{-0.00083}$	$\chi_{lowl}^2$	$22.52 (\nu: 0.3)$
$\Omega_m$	$0.304^{+0.021}_{-0.018}$	$100\theta_D$	$0.16078^{+0.00049}_{-0.00043}$	$\chi_{CamSpec}^2$	$11516.4 (\nu: 20.7)$
$\Omega_m h^2$	$0.1411^{+0.0032}_{-0.0029}$	$z_{eq}$	$3357^{+76}_{-70}$	$\chi_{H073p45}^2$	$10.3 (\nu: 2.5)$
$\Omega_m h^3$	$0.09615^{+0.00079}_{-0.00087}$	$k_{eq}$	$0.01025^{+0.00023}_{-0.00021}$	$\chi_{prior}^2$	$7.8 (\nu: 6.0)$
$\sigma_8$	$0.804^{+0.019}_{-0.019}$	$100\theta_{eq}$	$0.822^{+0.013}_{-0.014}$	$\chi_{CMB}^2$	$11936.1 (\nu: 20.0)$

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02230^{+0.00040}_{-0.00040}$	$S_8$	$0.828^{+0.042}_{-0.041}$	$100\theta_{s,eq}$	$0.4504^{+0.0080}_{-0.0076}$
$\Omega_c h^2$	$0.1196^{+0.0036}_{-0.0036}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.023}_{-0.022}$	$H(0.15)$	$72.7^{+1.4}_{-1.4}$
$100\theta_{MC}$	$1.04089^{+0.00080}_{-0.00079}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.021}_{-0.021}$	$D_M(0.15)$	$643^{+14}_{-13}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.986^{+0.029}_{-0.029}$	$H(0.38)$	$82.88^{+0.99}_{-1.0}$
$\ln(10^{10} A_s)$	$3.042^{+0.041}_{-0.029}$	$r_{drag} h$	$99.3^{+2.8}_{-2.7}$	$D_M(0.38)$	$1533^{+28}_{-27}$
$n_s$	$0.966^{+0.011}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.069}_{-0.068}$	$H(0.51)$	$89.62^{+0.79}_{-0.79}$
$y_{cal}$	$1.0005^{+0.0064}_{-0.0064}$	$z_{re}$	$< 9.42$	$D_M(0.51)$	$1985^{+33}_{-31}$
$A_{100}^{PS}$	$240^{+60}_{-60}$	$10^9 A_s$	$2.095^{+0.088}_{-0.060}$	$H(0.61)$	$95.25^{+0.64}_{-0.63}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.029}_{-0.029}$	$D_M(0.61)$	$2310^{+35}_{-34}$
$A_{217}^{PS}$	$102^{+30}_{-40}$	$D_{40}$	$1226^{+32}_{-32}$	$H(2.33)$	$236.2^{+2.1}_{-2.2}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{220}$	$5718^{+100}_{-100}$	$D_M(2.33)$	$5766^{+29}_{-29}$
$A_{143}^{tSZ}$	$< 8.84$	$D_{810}$	$2535^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.458^{+0.021}_{-0.021}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.15)$	$0.748^{+0.017}_{-0.014}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.3^{+4.1}_{-4.2}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.017}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.966^{+0.011}_{-0.012}$	$\sigma_8(0.38)$	$0.663^{+0.014}_{-0.011}$
$A^{kSZ}$	—	$Y_P$	$0.24536^{+0.00015}_{-0.00018}$	$f\sigma_8(0.51)$	$0.474^{+0.015}_{-0.015}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.50}$	$Y_P^{BBN}$	$0.24669^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.010}$
$A_{143}^{dust}$	$0.96^{+0.46}_{-0.45}$	$10^5 D/H$	$2.600^{+0.077}_{-0.072}$	$f\sigma_8(0.61)$	$0.469^{+0.013}_{-0.013}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.27}$	$Age/Gyr$	$13.804^{+0.065}_{-0.063}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.0094}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.42}$	$z_*$	$1089.98^{+0.76}_{-0.72}$	$f\sigma_8(2.33)$	$0.2973^{+0.0064}_{-0.0046}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$r_*$	$144.59^{+0.81}_{-0.77}$	$\sigma_8(2.33)$	$0.3065^{+0.0067}_{-0.0047}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	$1.04108^{+0.00079}_{-0.00077}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/Gpc$	$13.889^{+0.076}_{-0.071}$	$f_{2000}^{217}$	$106.9^{+4.9}_{-5.0}$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$z_{drag}$	$1059.74^{+0.84}_{-0.84}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$H_0$	$67.4^{+1.6}_{-1.6}$	$r_{drag}$	$147.28^{+0.81}_{-0.77}$	$\chi_{simall}^2$	$396.8 (\nu: 1.4)$
$\Omega_\Lambda$	$0.686^{+0.021}_{-0.022}$	$k_D$	$0.14061^{+0.00087}_{-0.00092}$	$\chi_{lowl}^2$	$23.17 (\nu: 0.4)$
$\Omega_m$	$0.314^{+0.022}_{-0.021}$	$100\theta_D$	$0.16087^{+0.00049}_{-0.00049}$	$\chi_{CamSpec}^2$	$11514.3 (\nu: 15.7)$
$\Omega_m h^2$	$0.1425^{+0.0033}_{-0.0034}$	$z_{eq}$	$3391^{+79}_{-82}$	$\chi_{prior}^2$	$7.8 (\nu: 6.0)$
$\Omega_m h^3$	$0.09610^{+0.00079}_{-0.00083}$	$k_{eq}$	$0.01035^{+0.00024}_{-0.00025}$	$\chi_{CMB}^2$	$11934.4 (\nu: 16.0)$
$\sigma_8$	$0.809^{+0.019}_{-0.017}$	$100\theta_{eq}$	$0.815^{+0.016}_{-0.015}$		
$\bar{\chi}_{eff}^2 = 11942.19; R - 1 = 0.01099$					



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00036}_{-0.00037}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.018}_{-0.017}$	$D_M(0.15)$	$640^{+10}_{-9.7}$
$\Omega_c h^2$	$0.1189^{+0.0027}_{-0.0026}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.018}_{-0.017}$	$H(0.38)$	$83.06^{+0.74}_{-0.74}$
$100\theta_{MC}$	$1.04097^{+0.00074}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.981^{+0.026}_{-0.024}$	$D_M(0.38)$	$1528^{+20}_{-20}$
$\tau$	$0.055^{+0.018}_{-0.014}$	$r_{\text{drag}} h$	$99.8^{+2.0}_{-2.0}$	$H(0.51)$	$89.75^{+0.60}_{-0.59}$
$\ln(10^{10} A_s)$	$3.042^{+0.040}_{-0.030}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.064}_{-0.058}$	$D_M(0.51)$	$1979^{+24}_{-23}$
$n_s$	$0.9675^{+0.0099}_{-0.010}$	$z_{\text{re}}$	$< 9.44$	$H(0.61)$	$95.36^{+0.50}_{-0.49}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0062}$	$10^9 A_s$	$2.095^{+0.086}_{-0.063}$	$D_M(0.61)$	$2303^{+25}_{-25}$
$A_{100}^{\text{PS}}$	$240^{+70}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.028}_{-0.028}$	$H(2.33)$	$235.8^{+1.6}_{-1.6}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1223^{+30}_{-30}$	$D_M(2.33)$	$5762^{+24}_{-24}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5722^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.454^{+0.017}_{-0.016}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+35}_{-32}$	$\sigma_8(0.15)$	$0.747^{+0.016}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.473^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.4^{+4.1}_{-4.0}$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.9675^{+0.0099}_{-0.010}$	$f\sigma_8(0.51)$	$0.472^{+0.013}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24538^{+0.00013}_{-0.00016}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.010}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.012}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.50}$	$10^5 \text{D}/\text{H}$	$2.591^{+0.070}_{-0.064}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0098}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.45}$	$\text{Age}/\text{Gyr}$	$13.794^{+0.054}_{-0.053}$	$f\sigma_8(2.33)$	$0.2974^{+0.0062}_{-0.0048}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.86^{+0.60}_{-0.58}$	$\sigma_8(2.33)$	$0.3067^{+0.0065}_{-0.0049}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$r_*$	$144.73^{+0.64}_{-0.63}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.04116^{+0.00074}_{-0.00074}$	$f_{2000}^{217}$	$106.7^{+5.1}_{-5.1}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.901^{+0.061}_{-0.060}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.79^{+0.79}_{-0.85}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.41^{+0.68}_{-0.66}$	$\chi_{\text{lowl}}^2$	$22.88 (\nu: 0.3)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$k_D$	$0.14051^{+0.00080}_{-0.00085}$	$\chi_{\text{CamSpec}}^2$	$11514.4 (\nu: 15.8)$
$\Omega_\Lambda$	$0.691^{+0.015}_{-0.016}$	$100\theta_D$	$0.16084^{+0.00048}_{-0.00047}$	$\chi_{6\text{DF}}^2$	$0.044 (\nu: 0.0)$
$\Omega_m$	$0.309^{+0.016}_{-0.015}$	$z_{\text{eq}}$	$3376^{+61}_{-60}$	$\chi_{\text{MGS}}^2$	$1.37 (\nu: 0.1)$
$\Omega_m h^2$	$0.1419^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	$0.01030^{+0.00019}_{-0.00018}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.8)$
$\Omega_m h^3$	$0.09611^{+0.00079}_{-0.00085}$	$100\theta_{\text{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\sigma_8$	$0.808^{+0.018}_{-0.016}$	$100\theta_{s,\text{eq}}$	$0.4519^{+0.0059}_{-0.0058}$	$\chi_{\text{BAO}}^2$	$5.96 (\nu: 0.5)$
$S_8$	$0.820^{+0.033}_{-0.032}$	$H(0.15)$	$73.0^{+1.0}_{-1.0}$	$\chi_{\text{CMB}}^2$	$11934.2 (\nu: 16.1)$

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02242^{+0.00036}_{-0.00040}$	$S_8$	$0.810^{+0.040}_{-0.035}$	$100\theta_{s,eq}$	$0.4539^{+0.0070}_{-0.0074}$
$\Omega_c h^2$	$0.1180^{+0.0034}_{-0.0031}$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.022}_{-0.019}$	$H(0.15)$	$73.4^{+1.2}_{-1.3}$
$100\theta_{MC}$	$1.04108^{+0.00074}_{-0.00078}$	$\sigma_8 \Omega_m^{0.25}$	$0.598^{+0.020}_{-0.018}$	$D_M(0.15)$	$637^{+13}_{-12}$
$\tau$	$0.056^{+0.018}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.975^{+0.029}_{-0.026}$	$H(0.38)$	$83.33^{+0.89}_{-0.92}$
$\ln(10^{10} A_s)$	$3.043^{+0.039}_{-0.031}$	$r_{drag} h$	$100.6^{+2.5}_{-2.6}$	$D_M(0.38)$	$1520^{+25}_{-24}$
$n_s$	$0.970^{+0.013}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.414^{+0.069}_{-0.059}$	$H(0.51)$	$89.97^{+0.70}_{-0.74}$
$y_{cal}$	$1.0006^{+0.0065}_{-0.0064}$	$z_{re}$	$< 9.47$	$D_M(0.51)$	$1971^{+30}_{-28}$
$A_{100}^{PS}$	$239^{+60}_{-70}$	$10^9 A_s$	$2.096^{+0.083}_{-0.065}$	$H(0.61)$	$95.53^{+0.56}_{-0.60}$
$A_{143}^{PS}$	$38^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.873^{+0.029}_{-0.031}$	$D_M(0.61)$	$2294^{+32}_{-30}$
$A_{217}^{PS}$	$102^{+30}_{-30}$	$D_{40}$	$1219^{+31}_{-29}$	$H(2.33)$	$235.3^{+2.0}_{-1.9}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{220}$	$5729^{+95}_{-99}$	$D_M(2.33)$	$5754^{+28}_{-25}$
$A_{143}^{tSZ}$	—	$D_{810}$	$2535^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.449^{+0.020}_{-0.018}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.30}_{-0.35}$	$D_{1420}$	$817^{+12}_{-12}$	$\sigma_8(0.15)$	$0.745^{+0.016}_{-0.015}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.8^{+3.8}_{-4.1}$	$f\sigma_8(0.38)$	$0.469^{+0.017}_{-0.015}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.970^{+0.013}_{-0.011}$	$\sigma_8(0.38)$	$0.661^{+0.014}_{-0.012}$
$A^{kSZ}$	—	$Y_P$	$0.24541^{+0.00013}_{-0.00016}$	$f\sigma_8(0.51)$	$0.468^{+0.015}_{-0.013}$
$A_{100}^{dust}$	$1.02^{+0.53}_{-0.52}$	$Y_P^{BBN}$	$0.24674^{+0.00014}_{-0.00016}$	$\sigma_8(0.51)$	$0.619^{+0.013}_{-0.011}$
$A_{143}^{dust}$	$0.96^{+0.43}_{-0.44}$	$10^5 D/H$	$2.576^{+0.076}_{-0.064}$	$f\sigma_8(0.61)$	$0.464^{+0.014}_{-0.012}$
$A_{217}^{dust}$	$0.98^{+0.27}_{-0.26}$	$Age/Gyr$	$13.778^{+0.061}_{-0.054}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.010}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.41}_{-0.44}$	$z_*$	$1089.68^{+0.69}_{-0.57}$	$f\sigma_8(2.33)$	$0.2974^{+0.0062}_{-0.0050}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	$144.91^{+0.72}_{-0.77}$	$\sigma_8(2.33)$	$0.3069^{+0.0063}_{-0.0050}$
$c_{217}$	$1.0011^{+0.0039}_{-0.0040}$	$100\theta_*$	$1.04126^{+0.00073}_{-0.00077}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$D_M(z_*)/Gpc$	$13.916^{+0.068}_{-0.072}$	$f_{2000}^{217}$	$106.5^{+5.0}_{-5.1}$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$z_{drag}$	$1059.92^{+0.74}_{-0.82}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$H_0$	$68.2^{+1.4}_{-1.5}$	$r_{drag}$	$147.56^{+0.73}_{-0.78}$	$\chi_{simall}^2$	$397.1 (\nu: 1.6)$
$\Omega_\Lambda$	$0.696^{+0.018}_{-0.021}$	$k_D$	$0.14041^{+0.00087}_{-0.00085}$	$\chi_{lowl}^2$	$22.52 (\nu: 0.3)$
$\Omega_m$	$0.304^{+0.021}_{-0.018}$	$100\theta_D$	$0.16077^{+0.00050}_{-0.00043}$	$\chi_{CamSpec}^2$	$11516.3 (\nu: 20.8)$
$\Omega_m h^2$	$0.1411^{+0.0032}_{-0.0030}$	$z_{eq}$	$3356^{+76}_{-71}$	$\chi_{H073p45}^2$	$10.3 (\nu: 2.5)$
$\Omega_m h^3$	$0.09615^{+0.00079}_{-0.00088}$	$k_{eq}$	$0.01024^{+0.00023}_{-0.00022}$	$\chi_{prior}^2$	$7.8 (\nu: 6.0)$
$\sigma_8$	$0.805^{+0.018}_{-0.017}$	$100\theta_{eq}$	$0.822^{+0.014}_{-0.014}$	$\chi_{CMB}^2$	$11935.9 (\nu: 20.0)$

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



### 2.13 base\_CamSpecHM\_TE\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02247	$0.02248^{+0.00065}_{-0.00066}$	$D_{220}$	5719	$5716^{+160}_{-160}$	$H(0.38)$	83.66	$83.7^{+1.6}_{-1.5}$
$\Omega_c h^2$	0.1170	$0.1169^{+0.0054}_{-0.0052}$	$D_{810}$	2548	$2546^{+67}_{-66}$	$D_M(0.38)$	1511.4	$1511^{+41}_{-40}$
$100\theta_{MC}$	1.04140	$1.0414^{+0.0013}_{-0.0013}$	$D_{1420}$	824.6	$824^{+31}_{-31}$	$H(0.51)$	90.23	$90.3^{+1.3}_{-1.2}$
$\tau$	0.0518	$0.050^{+0.023}_{-0.027}$	$D_{2000}$	233.4	$233^{+11}_{-11}$	$D_M(0.51)$	1960.2	$1959^{+48}_{-47}$
$\ln(10^{10} A_s)$	3.034	$3.031^{+0.052}_{-0.062}$	$n_{s,0.002}$	0.9781	$0.978^{+0.030}_{-0.028}$	$H(0.61)$	95.73	$95.8^{+1.0}_{-0.97}$
$n_s$	0.9781	$0.978^{+0.030}_{-0.028}$	$Y_P$	0.245433	$0.24544^{+0.00028}_{-0.00029}$	$D_M(0.61)$	2283	$2282^{+51}_{-51}$
$y_{cal}$	1.0001	$0.99999^{+0.0065}_{-0.0065}$	$Y_P^{BBN}$	0.246760	$0.24676^{+0.00028}_{-0.00029}$	$H(2.33)$	234.70	$234.7^{+3.3}_{-3.2}$
$H_0$	68.68	$68.7^{+2.4}_{-2.4}$	$10^5 D/H$	2.567	$2.57^{+0.12}_{-0.12}$	$D_M(2.33)$	5745.7	$5745^{+45}_{-44}$
$\Omega_\Lambda$	0.7030	$0.703^{+0.029}_{-0.033}$	Age/Gyr	13.760	$13.76^{+0.10}_{-0.097}$	$f\sigma_8(0.15)$	0.4421	$0.441^{+0.033}_{-0.032}$
$\Omega_m$	0.2970	$0.297^{+0.033}_{-0.029}$	$z_*$	1089.53	$1089.5^{+1.1}_{-1.1}$	$\sigma_8(0.15)$	0.7415	$0.740^{+0.025}_{-0.027}$
$\Omega_m h^2$	0.1401	$0.1400^{+0.0052}_{-0.0050}$	$r_*$	145.15	$145.2^{+1.3}_{-1.3}$	$f\sigma_8(0.38)$	0.4634	$0.462^{+0.027}_{-0.028}$
$\Omega_m h^3$	0.09620	$0.0962^{+0.0014}_{-0.0014}$	$100\theta_*$	1.04158	$1.0416^{+0.0013}_{-0.0013}$	$\sigma_8(0.38)$	0.6589	$0.658^{+0.021}_{-0.023}$
$\sigma_8$	0.8009	$0.799^{+0.029}_{-0.031}$	$D_M(z_*)/\text{Gpc}$	13.935	$13.94^{+0.12}_{-0.12}$	$f\sigma_8(0.51)$	0.4638	$0.463^{+0.024}_{-0.025}$
$S_8$	0.797	$0.795^{+0.064}_{-0.062}$	$z_{drag}$	1059.93	$1060.0^{+1.4}_{-1.4}$	$\sigma_8(0.51)$	0.6173	$0.616^{+0.020}_{-0.021}$
$\sigma_8 \Omega_m^{0.5}$	0.4364	$0.435^{+0.035}_{-0.034}$	$r_{drag}$	147.79	$147.8^{+1.3}_{-1.3}$	$f\sigma_8(0.61)$	0.4600	$0.459^{+0.022}_{-0.023}$
$\sigma_8 \Omega_m^{0.25}$	0.5912	$0.590^{+0.033}_{-0.033}$	$k_D$	0.14021	$0.1402^{+0.0016}_{-0.0015}$	$\sigma_8(0.61)$	0.5878	$0.587^{+0.018}_{-0.020}$
$\sigma_8/h^{0.5}$	0.9664	$0.964^{+0.047}_{-0.047}$	$100\theta_D$	0.16079	$0.16078^{+0.00086}_{-0.00079}$	$f\sigma_8(2.33)$	0.2970	$0.2964^{+0.0092}_{-0.0098}$
$r_{drag} h$	101.50	$101.6^{+4.2}_{-4.2}$	$z_{eq}$	3332	$3331^{+120}_{-120}$	$\sigma_8(2.33)$	0.3068	$0.3063^{+0.0097}_{-0.010}$
$\langle d^2 \rangle^{1/2}$	2.376	$2.37^{+0.11}_{-0.11}$	$k_{eq}$	0.010169	$0.01017^{+0.00038}_{-0.00037}$	$\chi_{small}^2$	395.67	$396.9 (\nu: 1.3)$
$z_{re}$	7.36	$7.2^{+2.2}_{-3.1}$	$100\theta_{eq}$	0.8267	$0.827^{+0.024}_{-0.023}$	$\chi_{CamSpec}^2$	2575.9	$2581.0 (\nu: 5.1)$
$10^9 A_s$	2.079	$2.07^{+0.11}_{-0.12}$	$100\theta_{s,eq}$	0.4563	$0.457^{+0.012}_{-0.012}$	$\chi_{prior}^2$	10.03	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	1.874	$1.873^{+0.050}_{-0.050}$	$H(0.15)$	73.80	$73.8^{+2.1}_{-2.0}$	$\chi_{CMB}^2$	2971.6	$2977.9 (\nu: 6.5)$
$D_{40}$	1201	$1200^{+67}_{-68}$	$D_M(0.15)$	632.3	$632^{+20}_{-20}$			

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02249^{+0.00066}_{-0.00064}$	$D_{220}$	$5716^{+150}_{-160}$	$H(0.38)$	$83.7^{+1.6}_{-1.5}$
$\Omega_c h^2$	$0.1168^{+0.0053}_{-0.0052}$	$D_{810}$	$2547^{+66}_{-65}$	$D_M(0.38)$	$1510^{+41}_{-40}$
$100\theta_{MC}$	$1.0414^{+0.0013}_{-0.0013}$	$D_{1420}$	$825^{+31}_{-31}$	$H(0.51)$	$90.3^{+1.3}_{-1.2}$
$\tau$	$0.054^{+0.018}_{-0.011}$	$D_{2000}$	$234^{+11}_{-11}$	$D_M(0.51)$	$1959^{+48}_{-47}$
$\ln(10^{10} A_s)$	$3.037^{+0.048}_{-0.037}$	$n_{s,0.002}$	$0.979^{+0.029}_{-0.028}$	$H(0.61)$	$95.8^{+1.0}_{-0.98}$
$n_s$	$0.979^{+0.029}_{-0.028}$	$Y_P$	$0.24544^{+0.00028}_{-0.00028}$	$D_M(0.61)$	$2281^{+51}_{-51}$
$y_{cal}$	$0.99997^{+0.0065}_{-0.0064}$	$Y_P^{BBN}$	$0.24677^{+0.00028}_{-0.00028}$	$H(2.33)$	$234.6^{+3.3}_{-3.2}$
$H_0$	$68.8^{+2.4}_{-2.4}$	$10^5 D/H$	$2.56^{+0.12}_{-0.12}$	$D_M(2.33)$	$5744^{+45}_{-45}$
$\Omega_\Lambda$	$0.704^{+0.029}_{-0.033}$	Age/Gyr	$13.76^{+0.10}_{-0.097}$	$f\sigma_8(0.15)$	$0.442^{+0.033}_{-0.032}$
$\Omega_m$	$0.296^{+0.033}_{-0.029}$	$z_*$	$1089.5^{+1.1}_{-1.1}$	$\sigma_8(0.15)$	$0.742^{+0.024}_{-0.023}$
$\Omega_m h^2$	$0.1400^{+0.0052}_{-0.0050}$	$r_*$	$145.2^{+1.3}_{-1.3}$	$f\sigma_8(0.38)$	$0.464^{+0.027}_{-0.027}$
$\Omega_m h^3$	$0.0962^{+0.0014}_{-0.0014}$	$100\theta_*$	$1.0416^{+0.0013}_{-0.0013}$	$\sigma_8(0.38)$	$0.660^{+0.020}_{-0.018}$
$\sigma_8$	$0.802^{+0.027}_{-0.027}$	$D_M(z_*)/\text{Gpc}$	$13.94^{+0.12}_{-0.12}$	$f\sigma_8(0.51)$	$0.464^{+0.023}_{-0.024}$
$S_8$	$0.797^{+0.064}_{-0.061}$	$z_{drag}$	$1060.0^{+1.4}_{-1.4}$	$\sigma_8(0.51)$	$0.618^{+0.018}_{-0.016}$
$\sigma_8 \Omega_m^{0.5}$	$0.436^{+0.035}_{-0.033}$	$r_{drag}$	$147.8^{+1.3}_{-1.3}$	$f\sigma_8(0.61)$	$0.460^{+0.021}_{-0.021}$
$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.033}_{-0.032}$	$k_D$	$0.1402^{+0.0015}_{-0.0015}$	$\sigma_8(0.61)$	$0.589^{+0.017}_{-0.015}$
$\sigma_8/h^{0.5}$	$0.967^{+0.045}_{-0.044}$	$100\theta_D$	$0.16077^{+0.00086}_{-0.00079}$	$f\sigma_8(2.33)$	$0.2974^{+0.0085}_{-0.0073}$
$r_{drag} h$	$101.6^{+4.2}_{-4.2}$	$z_{eq}$	$3329^{+120}_{-120}$	$\sigma_8(2.33)$	$0.3073^{+0.0088}_{-0.0073}$
$\langle d^2 \rangle^{1/2}$	$2.38^{+0.10}_{-0.11}$	$k_{eq}$	$0.01016^{+0.00038}_{-0.00037}$	$\chi_{simall}^2$	$396.4 (\nu: 0.7)$
$z_{re}$	$< 9.22$	$100\theta_{eq}$	$0.827^{+0.024}_{-0.023}$	$\chi_{CamSpec}^2$	$2581.0 (\nu: 5.1)$
$10^9 A_s$	$2.09^{+0.10}_{-0.077}$	$100\theta_{s,eq}$	$0.457^{+0.012}_{-0.012}$	$\chi_{prior}^2$	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	$1.873^{+0.050}_{-0.049}$	$H(0.15)$	$73.9^{+2.1}_{-2.1}$	$\chi_{CMB}^2$	$2977.5 (\nu: 5.8)$
$D_{40}$	$1199^{+66}_{-68}$	$D_M(0.15)$	$632^{+20}_{-19}$		

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



## 2.15 base\_CamSpecHM\_EE\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02320	$0.0233^{+0.0033}_{-0.0028}$	$D_{220}$	5947	$5950^{+520}_{-490}$	$H(0.38)$	83.13	$83.3^{+5.2}_{-4.3}$
$\Omega_c h^2$	0.1197	$0.119^{+0.012}_{-0.012}$	$D_{810}$	2598	$2597^{+100}_{-100}$	$D_M(0.38)$	1528	$1525^{+120}_{-120}$
$100\theta_{MC}$	1.03933	$1.0393^{+0.0023}_{-0.0022}$	$D_{1420}$	839.2	$840^{+48}_{-48}$	$H(0.51)$	89.90	$90.1^{+4.5}_{-3.5}$
$\tau$	0.0500	$0.050^{+0.023}_{-0.025}$	$D_{2000}$	238.6	$239^{+18}_{-18}$	$D_M(0.51)$	1979	$1975^{+140}_{-150}$
$\ln(10^{10} A_s)$	3.058	$3.058^{+0.057}_{-0.059}$	$n_{s,0.002}$	0.9650	$0.967^{+0.036}_{-0.033}$	$H(0.61)$	95.55	$95.7^{+3.9}_{-3.0}$
$n_s$	0.9650	$0.967^{+0.036}_{-0.033}$	$Y_P$	0.24574	$0.2458^{+0.0012}_{-0.0012}$	$D_M(0.61)$	2302	$2298^{+150}_{-160}$
$y_{cal}$	0.99999	$1.0000^{+0.0064}_{-0.0064}$	$Y_P^{BBN}$	0.24707	$0.2471^{+0.0012}_{-0.0012}$	$H(2.33)$	237.0	$236.8^{+5.9}_{-5.3}$
$H_0$	67.6	$67.9^{+7.3}_{-6.4}$	$10^5 D/H$	2.44	$2.44^{+0.55}_{-0.48}$	$D_M(2.33)$	5748	$5743^{+150}_{-180}$
$\Omega_\Lambda$	0.686	$0.687^{+0.076}_{-0.092}$	Age/Gyr	13.760	$13.75^{+0.35}_{-0.41}$	$f\sigma_8(0.15)$	0.459	$0.456^{+0.077}_{-0.076}$
$\Omega_m$	0.314	$0.313^{+0.092}_{-0.076}$	$z_*$	1088.88	$1088.8^{+4.7}_{-4.3}$	$\sigma_8(0.15)$	0.7490	$0.747^{+0.035}_{-0.040}$
$\Omega_m h^2$	0.1435	$0.143^{+0.010}_{-0.0095}$	$r_*$	143.89	$143.9^{+1.7}_{-1.7}$	$f\sigma_8(0.38)$	0.476	$0.474^{+0.057}_{-0.061}$
$\Omega_m h^3$	0.09705	$0.0971^{+0.0047}_{-0.0040}$	$100\theta_*$	1.03943	$1.0394^{+0.0022}_{-0.0021}$	$\sigma_8(0.38)$	0.6637	$0.662^{+0.025}_{-0.029}$
$\sigma_8$	0.8108	$0.809^{+0.044}_{-0.050}$	$D_M(z_*)/\text{Gpc}$	13.843	$13.85^{+0.16}_{-0.16}$	$f\sigma_8(0.51)$	0.475	$0.473^{+0.047}_{-0.053}$
$S_8$	0.829	$0.83^{+0.16}_{-0.15}$	$z_{drag}$	1061.8	$1061.9^{+6.3}_{-5.9}$	$\sigma_8(0.51)$	0.6210	$0.620^{+0.021}_{-0.024}$
$\sigma_8 \Omega_m^{0.5}$	0.454	$0.452^{+0.086}_{-0.080}$	$r_{drag}$	146.27	$146.3^{+1.8}_{-1.7}$	$f\sigma_8(0.61)$	0.4696	$0.468^{+0.040}_{-0.046}$
$\sigma_8 \Omega_m^{0.25}$	0.607	$0.604^{+0.072}_{-0.072}$	$k_D$	0.14235	$0.1423^{+0.0032}_{-0.0032}$	$\sigma_8(0.61)$	0.5908	$0.590^{+0.020}_{-0.022}$
$\sigma_8/h^{0.5}$	0.986	$0.982^{+0.098}_{-0.10}$	$100\theta_D$	0.15943	$0.1594^{+0.0037}_{-0.0031}$	$f\sigma_8(2.33)$	0.2978	$0.2974^{+0.0094}_{-0.0095}$
$r_{drag} h$	98.9	$99.3^{+11}_{-9.6}$	$z_{eq}$	3414	$3405^{+240}_{-230}$	$\sigma_8(2.33)$	0.3069	$0.3067^{+0.0098}_{-0.0097}$
$\langle d^2 \rangle^{1/2}$	2.457	$2.45^{+0.19}_{-0.20}$	$k_{eq}$	0.01042	$0.01039^{+0.00073}_{-0.00070}$	$\chi_{simall}^2$	395.62	$396.8 (\nu: 1.2)$
$z_{re}$	7.06	$7.1^{+2.1}_{-2.7}$	$100\theta_{eq}$	0.8123	$0.814^{+0.052}_{-0.047}$	$\chi_{CamSpec}^2$	1886.5	$1891.5 (\nu: 4.9)$
$10^9 A_s$	2.129	$2.13^{+0.12}_{-0.12}$	$100\theta_{s,eq}$	0.4482	$0.449^{+0.025}_{-0.023}$	$\chi_{prior}^2$	10.03	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	1.926	$1.925^{+0.062}_{-0.061}$	$H(0.15)$	73.0	$73.2^{+6.5}_{-5.6}$	$\chi_{CMB}^2$	2282.1	$2288.3 (\nu: 6.1)$
$D_{40}$	1265	$1260^{+80}_{-77}$	$D_M(0.15)$	641	$639^{+59}_{-58}$			

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.0233^{+0.0033}_{-0.0028}$	$D_{220}$	$5943^{+510}_{-490}$	$H(0.38)$	$83.3^{+5.3}_{-4.2}$
$\Omega_{\text{c}}h^2$	$0.119^{+0.012}_{-0.012}$	$D_{810}$	$2596^{+100}_{-100}$	$D_{\text{M}}(0.38)$	$1525^{+120}_{-120}$
$100\theta_{\text{MC}}$	$1.0393^{+0.0023}_{-0.0022}$	$D_{1420}$	$839^{+47}_{-47}$	$H(0.51)$	$90.0^{+4.6}_{-3.5}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$D_{2000}$	$239^{+18}_{-18}$	$D_{\text{M}}(0.51)$	$1976^{+140}_{-150}$
$\ln(10^{10}A_{\text{s}})$	$3.065^{+0.052}_{-0.046}$	$n_{\text{s},0.002}$	$0.968^{+0.037}_{-0.033}$	$H(0.61)$	$95.7^{+4.0}_{-2.9}$
$n_{\text{s}}$	$0.968^{+0.037}_{-0.033}$	$Y_{\text{P}}$	$0.2457^{+0.0013}_{-0.0012}$	$D_{\text{M}}(0.61)$	$2299^{+150}_{-160}$
$y_{\text{cal}}$	$1.0000^{+0.0064}_{-0.0063}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2471^{+0.0013}_{-0.0012}$	$H(2.33)$	$236.8^{+5.9}_{-5.4}$
$H_0$	$67.9^{+7.4}_{-6.4}$	$10^5 D/H$	$2.44^{+0.55}_{-0.49}$	$D_{\text{M}}(2.33)$	$5744^{+150}_{-180}$
$\Omega_{\Lambda}$	$0.687^{+0.076}_{-0.091}$	Age/Gyr	$13.75^{+0.35}_{-0.41}$	$f\sigma_8(0.15)$	$0.458^{+0.077}_{-0.076}$
$\Omega_{\text{m}}$	$0.313^{+0.091}_{-0.076}$	$z_*$	$1088.9^{+4.7}_{-4.3}$	$\sigma_8(0.15)$	$0.750^{+0.033}_{-0.037}$
$\Omega_{\text{m}}h^2$	$0.143^{+0.010}_{-0.0096}$	$r_*$	$144.0^{+1.7}_{-1.7}$	$f\sigma_8(0.38)$	$0.476^{+0.057}_{-0.061}$
$\Omega_{\text{m}}h^3$	$0.0970^{+0.0047}_{-0.0040}$	$100\theta_*$	$1.0394^{+0.0022}_{-0.0021}$	$\sigma_8(0.38)$	$0.665^{+0.023}_{-0.025}$
$\sigma_8$	$0.812^{+0.043}_{-0.047}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.85^{+0.16}_{-0.16}$	$f\sigma_8(0.51)$	$0.474^{+0.047}_{-0.053}$
$S_8$	$0.83^{+0.16}_{-0.15}$	$z_{\text{drag}}$	$1061.8^{+6.4}_{-5.8}$	$\sigma_8(0.51)$	$0.622^{+0.020}_{-0.020}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.454^{+0.086}_{-0.081}$	$r_{\text{drag}}$	$146.3^{+1.8}_{-1.7}$	$f\sigma_8(0.61)$	$0.469^{+0.040}_{-0.047}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.607^{+0.072}_{-0.072}$	$k_{\text{D}}$	$0.1423^{+0.0032}_{-0.0032}$	$\sigma_8(0.61)$	$0.592^{+0.018}_{-0.018}$
$\sigma_8/h^{0.5}$	$0.986^{+0.099}_{-0.10}$	$100\theta_{\text{D}}$	$0.1595^{+0.0037}_{-0.0031}$	$f\sigma_8(2.33)$	$0.2984^{+0.0086}_{-0.0074}$
$r_{\text{drag}}h$	$99.3^{+11}_{-9.6}$	$z_{\text{eq}}$	$3405^{+240}_{-230}$	$\sigma_8(2.33)$	$0.3078^{+0.0092}_{-0.0080}$
$\langle d^2 \rangle^{1/2}$	$2.46^{+0.19}_{-0.20}$	$k_{\text{eq}}$	$0.01039^{+0.00073}_{-0.00070}$	$\chi_{\text{simall}}^2$	$396.5 (\nu: 1.0)$
$z_{\text{re}}$	$< 9.07$	$100\theta_{\text{eq}}$	$0.814^{+0.052}_{-0.047}$	$\chi_{\text{CamSpec}}^2$	$1891.4 (\nu: 4.8)$
$10^9 A_{\text{s}}$	$2.14^{+0.11}_{-0.096}$	$100\theta_{\text{s,eq}}$	$0.449^{+0.025}_{-0.023}$	$\chi_{\text{prior}}^2$	$11.0 (\nu: 1.0)$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.924^{+0.062}_{-0.061}$	$H(0.15)$	$73.2^{+6.6}_{-5.6}$	$\chi_{\text{CMB}}^2$	$2287.9 (\nu: 5.7)$
$D_{40}$	$1260^{+79}_{-77}$	$D_{\text{M}}(0.15)$	$640^{+59}_{-59}$		

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



## 2.17 base\_CamSpecHM\_TE\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02242	$0.02242^{+0.00059}_{-0.00058}$	$D_{810}$	2547	$2547^{+66}_{-64}$	$H(0.51)$	90.03	$90.04^{+0.77}_{-0.76}$
$\Omega_c h^2$	0.11784	$0.1179^{+0.0032}_{-0.0031}$	$D_{1420}$	824.1	$824^{+30}_{-30}$	$D_M(0.51)$	1968.0	$1968^{+28}_{-27}$
$100\theta_{MC}$	1.04128	$1.0413^{+0.0012}_{-0.0012}$	$D_{2000}$	233.2	$233^{+11}_{-11}$	$H(0.61)$	95.58	$95.59^{+0.67}_{-0.67}$
$\tau$	0.0511	$0.050^{+0.020}_{-0.027}$	$n_{s,0.002}$	0.9766	$0.976^{+0.026}_{-0.026}$	$D_M(0.61)$	2291.2	$2291^{+31}_{-29}$
$\ln(10^{10} A_s)$	3.035	$3.032^{+0.048}_{-0.061}$	$Y_P$	0.245416	$0.24541^{+0.00024}_{-0.00025}$	$H(2.33)$	235.22	$235.2^{+2.1}_{-2.0}$
$n_s$	0.9766	$0.976^{+0.026}_{-0.026}$	$Y_P^{BBN}$	0.246743	$0.24674^{+0.00024}_{-0.00025}$	$D_M(2.33)$	5751.7	$5751^{+34}_{-34}$
$y_{cal}$	0.9998	$0.99996^{+0.0064}_{-0.0064}$	$10^5 D/H$	2.576	$2.58^{+0.11}_{-0.11}$	$f\sigma_8(0.15)$	0.4471	$0.446^{+0.021}_{-0.021}$
$H_0$	68.28	$68.3^{+1.3}_{-1.4}$	Age/Gyr	13.772	$13.771^{+0.079}_{-0.076}$	$\sigma_8(0.15)$	0.7435	$0.742^{+0.023}_{-0.025}$
$\Omega_\Lambda$	0.6977	$0.698^{+0.016}_{-0.018}$	$z_*$	1089.66	$1089.67^{+0.82}_{-0.82}$	$f\sigma_8(0.38)$	0.4673	$0.467^{+0.019}_{-0.019}$
$\Omega_m$	0.3023	$0.302^{+0.018}_{-0.016}$	$r_*$	144.95	$144.95^{+0.89}_{-0.88}$	$\sigma_8(0.38)$	0.6601	$0.659^{+0.020}_{-0.022}$
$\Omega_m h^2$	0.14091	$0.1409^{+0.0031}_{-0.0030}$	$100\theta_*$	1.04145	$1.0415^{+0.0012}_{-0.0012}$	$f\sigma_8(0.51)$	0.4670	$0.466^{+0.017}_{-0.018}$
$\Omega_m h^3$	0.09621	$0.0962^{+0.0013}_{-0.0014}$	$D_M(z_*)/\text{Gpc}$	13.918	$13.918^{+0.088}_{-0.087}$	$\sigma_8(0.51)$	0.6181	$0.617^{+0.018}_{-0.021}$
$\sigma_8$	0.8036	$0.802^{+0.025}_{-0.028}$	$z_{drag}$	1059.89	$1059.9^{+1.3}_{-1.4}$	$f\sigma_8(0.61)$	0.4628	$0.462^{+0.016}_{-0.017}$
$S_8$	0.8066	$0.805^{+0.041}_{-0.039}$	$r_{drag}$	147.61	$147.6^{+1.0}_{-0.99}$	$\sigma_8(0.61)$	0.5884	$0.587^{+0.017}_{-0.020}$
$\sigma_8 \Omega_m^{0.5}$	0.4418	$0.441^{+0.022}_{-0.022}$	$k_D$	0.14036	$0.1404^{+0.0013}_{-0.0014}$	$f\sigma_8(2.33)$	0.2971	$0.2966^{+0.0085}_{-0.010}$
$\sigma_8 \Omega_m^{0.25}$	0.5958	$0.595^{+0.023}_{-0.024}$	$100\theta_D$	0.16081	$0.16082^{+0.00079}_{-0.00078}$	$\sigma_8(2.33)$	0.3067	$0.3062^{+0.0090}_{-0.010}$
$\sigma_8/h^{0.5}$	0.9725	$0.971^{+0.034}_{-0.036}$	$z_{eq}$	3352	$3352^{+75}_{-73}$	$\chi^2_{small}$	395.71	396.8 ( $\nu$ : 1.2)
$r_{drag} h$	100.78	$100.8^{+2.3}_{-2.4}$	$k_{eq}$	0.010230	$0.01023^{+0.00023}_{-0.00022}$	$\chi^2_{CamSpec}$	2576.1	2580.4 ( $\nu$ : 4.2)
$\langle d^2 \rangle^{1/2}$	2.388	$2.387^{+0.084}_{-0.087}$	$100\theta_{eq}$	0.8228	$0.823^{+0.013}_{-0.014}$	$\chi^2_{6DF}$	0.004	0.040 ( $\nu$ : 0.0)
$z_{re}$	7.31	$7.1^{+2.0}_{-3.0}$	$100\theta_{s,eq}$	0.4543	$0.4543^{+0.0070}_{-0.0070}$	$\chi^2_{MGS}$	1.89	1.96 ( $\nu$ : 0.2)
$10^9 A_s$	2.079	$2.07^{+0.10}_{-0.12}$	$H(0.15)$	73.46	$73.5^{+1.2}_{-1.2}$	$\chi^2_{DR12BAO}$	3.37	3.93 ( $\nu$ : 0.3)
$10^9 A_s e^{-2\tau}$	1.8770	$1.877^{+0.046}_{-0.043}$	$D_M(0.15)$	635.6	$636^{+12}_{-11}$	$\chi^2_{prior}$	10.03	11.0 ( $\nu$ : 1.0)
$D_{40}$	1203	$1206^{+65}_{-62}$	$H(0.38)$	83.41	$83.42^{+0.90}_{-0.91}$	$\chi^2_{BAO}$	5.27	5.93 ( $\nu$ : 0.5)
$D_{220}$	5710	$5715^{+160}_{-160}$	$D_M(0.38)$	1518.1	$1518^{+24}_{-23}$	$\chi^2_{CMB}$	2971.9	2977.2 ( $\nu$ : 5.3)

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

$\chi^2_{eff}$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.37 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.71 CamSpec like\_10.7HM\_1400\_unified: 2576.15



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02245^{+0.00056}_{-0.00056}$	$D_{1420}$	$827^{+27}_{-26}$	$H(0.61)$	$95.58^{+0.62}_{-0.66}$
$\Omega_c h^2$	$0.1181^{+0.0029}_{-0.0028}$	$D_{2000}$	$234.1^{+9.8}_{-9.4}$	$D_M(0.61)$	$2292^{+31}_{-29}$
$100\theta_{MC}$	$1.0413^{+0.0011}_{-0.0012}$	$n_{s,0.002}$	$0.976^{+0.025}_{-0.025}$	$H(2.33)$	$235.4^{+1.9}_{-1.8}$
$\tau$	$0.052^{+0.019}_{-0.021}$	$Y_P$	$0.24542^{+0.00023}_{-0.00024}$	$D_M(2.33)$	$5751^{+32}_{-31}$
$\ln(10^{10} A_s)$	$3.041^{+0.037}_{-0.040}$	$Y_P^{BBN}$	$0.24675^{+0.00023}_{-0.00024}$	$f\sigma_8(0.15)$	$0.450^{+0.016}_{-0.016}$
$n_s$	$0.976^{+0.025}_{-0.025}$	$10^5 D/H$	$2.57^{+0.11}_{-0.10}$	$\sigma_8(0.15)$	$0.746^{+0.016}_{-0.016}$
$y_{cal}$	$1.0002^{+0.0064}_{-0.0065}$	Age/Gyr	$13.771^{+0.076}_{-0.073}$	$f\sigma_8(0.38)$	$0.470^{+0.013}_{-0.014}$
$H_0$	$68.2^{+1.3}_{-1.3}$	$z_*$	$1089.66^{+0.84}_{-0.81}$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.014}$
$\Omega_\Lambda$	$0.696^{+0.016}_{-0.018}$	$r_*$	$144.87^{+0.74}_{-0.77}$	$f\sigma_8(0.51)$	$0.469^{+0.012}_{-0.013}$
$\Omega_m$	$0.304^{+0.018}_{-0.016}$	$100\theta_*$	$1.0415^{+0.0011}_{-0.0012}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.013}$
$\Omega_m h^2$	$0.1412^{+0.0029}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.910^{+0.075}_{-0.079}$	$f\sigma_8(0.61)$	$0.465^{+0.011}_{-0.012}$
$\Omega_m h^3$	$0.0963^{+0.0012}_{-0.0013}$	$z_{drag}$	$1060.0^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.013}$
$\sigma_8$	$0.807^{+0.018}_{-0.018}$	$r_{drag}$	$147.51^{+0.85}_{-0.89}$	$f\sigma_8(2.33)$	$0.2980^{+0.0068}_{-0.0067}$
$S_8$	$0.811^{+0.031}_{-0.030}$	$k_D$	$0.1405^{+0.0012}_{-0.0011}$	$\sigma_8(2.33)$	$0.3076^{+0.0071}_{-0.0073}$
$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.017}_{-0.016}$	$100\theta_D$	$0.16077^{+0.00077}_{-0.00074}$	$\chi^2_{lensing}$	$9.6 (\nu: 0.6)$
$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.016}_{-0.017}$	$z_{eq}$	$3359^{+70}_{-64}$	$\chi^2_{simall}$	$396.6 (\nu: 0.7)$
$\sigma_8/h^{0.5}$	$0.977^{+0.024}_{-0.025}$	$k_{eq}$	$0.01025^{+0.00021}_{-0.00020}$	$\chi^2_{CamSpec}$	$2580.2 (\nu: 3.8)$
$r_{drag} h$	$100.6^{+2.1}_{-2.3}$	$100\theta_{eq}$	$0.822^{+0.012}_{-0.013}$	$\chi^2_{6DF}$	$0.032 (\nu: 0.0)$
$\langle d^2 \rangle^{1/2}$	$2.399^{+0.076}_{-0.075}$	$100\theta_{s,eq}$	$0.4537^{+0.0060}_{-0.0066}$	$\chi^2_{MGS}$	$1.85 (\nu: 0.1)$
$z_{re}$	$7.4^{+1.8}_{-2.3}$	$H(0.15)$	$73.4^{+1.1}_{-1.2}$	$\chi^2_{DR12BAO}$	$3.91 (\nu: 0.3)$
$10^9 A_s$	$2.092^{+0.079}_{-0.082}$	$D_M(0.15)$	$636^{+12}_{-11}$	$\chi^2_{prior}$	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	$1.884^{+0.035}_{-0.035}$	$H(0.38)$	$83.39^{+0.88}_{-0.92}$	$\chi^2_{CMB}$	$2986.4 (\nu: 5.3)$
$D_{40}$	$1210^{+62}_{-62}$	$D_M(0.38)$	$1519^{+24}_{-22}$	$\chi^2_{BAO}$	$5.79 (\nu: 0.3)$
$D_{220}$	$5731^{+150}_{-150}$	$H(0.51)$	$90.02^{+0.74}_{-0.76}$		
$D_{810}$	$2556^{+56}_{-52}$	$D_M(0.51)$	$1969^{+28}_{-26}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02243^{+0.00058}_{-0.00059}$	$D_{810}$	$2549^{+65}_{-63}$	$H(0.51)$	$90.06^{+0.77}_{-0.74}$
$\Omega_{\mathrm{c}}h^2$	$0.1178^{+0.0032}_{-0.0031}$	$D_{1420}$	$824^{+30}_{-30}$	$D_{\mathrm{M}}(0.51)$	$1967^{+27}_{-27}$
$100\theta_{\mathrm{MC}}$	$1.0413^{+0.0012}_{-0.0012}$	$D_{2000}$	$233^{+11}_{-11}$	$H(0.61)$	$95.60^{+0.67}_{-0.65}$
$\tau$	$0.053^{+0.016}_{-0.011}$	$n_{\mathrm{s},0.002}$	$0.976^{+0.026}_{-0.026}$	$D_{\mathrm{M}}(0.61)$	$2291^{+30}_{-29}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.043}_{-0.035}$	$Y_{\mathrm{P}}$	$0.24542^{+0.00024}_{-0.00026}$	$H(2.33)$	$235.2^{+2.1}_{-2.0}$
$n_{\mathrm{s}}$	$0.976^{+0.026}_{-0.026}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24674^{+0.00024}_{-0.00026}$	$D_{\mathrm{M}}(2.33)$	$5751^{+33}_{-34}$
$y_{\mathrm{cal}}$	$0.99998^{+0.0063}_{-0.0064}$	$10^5\mathrm{D}/\mathrm{H}$	$2.58^{+0.11}_{-0.10}$	$f\sigma_8(0.15)$	$0.448^{+0.020}_{-0.019}$
$H_0$	$68.3^{+1.3}_{-1.4}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.770^{+0.078}_{-0.077}$	$\sigma_8(0.15)$	$0.745^{+0.020}_{-0.018}$
$\Omega_{\Lambda}$	$0.698^{+0.016}_{-0.018}$	$z_*$	$1089.66^{+0.83}_{-0.81}$	$f\sigma_8(0.38)$	$0.468^{+0.018}_{-0.017}$
$\Omega_{\mathrm{m}}$	$0.302^{+0.018}_{-0.016}$	$r_*$	$144.95^{+0.91}_{-0.86}$	$\sigma_8(0.38)$	$0.661^{+0.018}_{-0.015}$
$\Omega_{\mathrm{m}}h^2$	$0.1409^{+0.0031}_{-0.0031}$	$100\theta_*$	$1.0415^{+0.0012}_{-0.0012}$	$f\sigma_8(0.51)$	$0.468^{+0.016}_{-0.015}$
$\Omega_{\mathrm{m}}h^3$	$0.0962^{+0.0013}_{-0.0014}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.918^{+0.091}_{-0.086}$	$\sigma_8(0.51)$	$0.619^{+0.017}_{-0.014}$
$\sigma_8$	$0.805^{+0.023}_{-0.020}$	$z_{\mathrm{drag}}$	$1059.9^{+1.3}_{-1.4}$	$f\sigma_8(0.61)$	$0.464^{+0.015}_{-0.014}$
$S_8$	$0.808^{+0.039}_{-0.037}$	$r_{\mathrm{drag}}$	$147.6^{+1.0}_{-0.98}$	$\sigma_8(0.61)$	$0.590^{+0.016}_{-0.013}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.021}_{-0.020}$	$k_{\mathrm{D}}$	$0.1404^{+0.0013}_{-0.0014}$	$f\sigma_8(2.33)$	$0.2976^{+0.0078}_{-0.0067}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.597^{+0.022}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.16081^{+0.00081}_{-0.00078}$	$\sigma_8(2.33)$	$0.3073^{+0.0080}_{-0.0068}$
$\sigma_8/h^{0.5}$	$0.974^{+0.032}_{-0.029}$	$z_{\mathrm{eq}}$	$3352^{+75}_{-73}$	$\chi_{\mathrm{simall}}^2$	$396.4\ (\nu: 0.5)$
$r_{\mathrm{drag}}h$	$100.8^{+2.3}_{-2.3}$	$k_{\mathrm{eq}}$	$0.01023^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{CamSpec}}^2$	$2580.4\ (\nu: 4.2)$
$\langle d^2 \rangle^{1/2}$	$2.393^{+0.082}_{-0.076}$	$100\theta_{\mathrm{eq}}$	$0.823^{+0.013}_{-0.014}$	$\chi_{6\mathrm{DF}}^2$	$0.040\ (\nu: 0.0)$
$z_{\mathrm{re}}$	$< 9.01$	$100\theta_{\mathrm{s,eq}}$	$0.4544^{+0.0070}_{-0.0071}$	$\chi_{\mathrm{MGS}}^2$	$1.98\ (\nu: 0.2)$
$10^9A_{\mathrm{s}}$	$2.087^{+0.091}_{-0.072}$	$H(0.15)$	$73.5^{+1.2}_{-1.2}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.92\ (\nu: 0.3)$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.046}_{-0.044}$	$D_{\mathrm{M}}(0.15)$	$635^{+12}_{-11}$	$\chi_{\mathrm{prior}}^2$	$11.0\ (\nu: 1.0)$
$D_{40}$	$1206^{+66}_{-63}$	$H(0.38)$	$83.43^{+0.89}_{-0.88}$	$\chi_{\mathrm{BAO}}^2$	$5.94\ (\nu: 0.5)$
$D_{220}$	$5716^{+160}_{-160}$	$D_{\mathrm{M}}(0.38)$	$1518^{+23}_{-23}$	$\chi_{\mathrm{CMB}}^2$	$2976.8\ (\nu: 4.8)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2993.70; R - 1 = 0.01568$$



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02245^{+0.00056}_{-0.00056}$	$D_{1420}$	$827^{+26}_{-26}$	$H(0.61)$	$95.59^{+0.63}_{-0.65}$
$\Omega_{\text{c}}h^2$	$0.1180^{+0.0030}_{-0.0028}$	$D_{2000}$	$234.1^{+9.6}_{-9.4}$	$D_{\text{M}}(0.61)$	$2292^{+30}_{-29}$
$100\theta_{\text{MC}}$	$1.0413^{+0.0012}_{-0.0012}$	$n_{\text{s},0.002}$	$0.976^{+0.025}_{-0.025}$	$H(2.33)$	$235.4^{+1.9}_{-1.8}$
$\tau$	$0.054^{+0.016}_{-0.012}$	$Y_{\text{P}}$	$0.24542^{+0.00023}_{-0.00024}$	$D_{\text{M}}(2.33)$	$5751^{+32}_{-31}$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.035}_{-0.028}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24675^{+0.00023}_{-0.00024}$	$f\sigma_8(0.15)$	$0.450^{+0.015}_{-0.016}$
$n_{\text{s}}$	$0.976^{+0.025}_{-0.025}$	$10^5\text{D}/\text{H}$	$2.57^{+0.11}_{-0.10}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$y_{\text{cal}}$	$1.0002^{+0.0063}_{-0.0065}$	Age/Gyr	$13.770^{+0.075}_{-0.073}$	$f\sigma_8(0.38)$	$0.470^{+0.013}_{-0.013}$
$H_0$	$68.2^{+1.3}_{-1.3}$	$z_*$	$1089.65^{+0.83}_{-0.81}$	$\sigma_8(0.38)$	$0.663^{+0.014}_{-0.012}$
$\Omega_{\Lambda}$	$0.697^{+0.016}_{-0.017}$	$r_*$	$144.88^{+0.73}_{-0.75}$	$f\sigma_8(0.51)$	$0.470^{+0.012}_{-0.012}$
$\Omega_{\text{m}}$	$0.303^{+0.017}_{-0.016}$	$100\theta_*$	$1.0415^{+0.0011}_{-0.0012}$	$\sigma_8(0.51)$	$0.621^{+0.013}_{-0.012}$
$\Omega_{\text{m}}h^2$	$0.1411^{+0.0029}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911^{+0.074}_{-0.076}$	$f\sigma_8(0.61)$	$0.465^{+0.011}_{-0.011}$
$\Omega_{\text{m}}h^3$	$0.0963^{+0.0012}_{-0.0013}$	$z_{\text{drag}}$	$1060.0^{+1.2}_{-1.3}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.011}$
$\sigma_8$	$0.808^{+0.017}_{-0.016}$	$r_{\text{drag}}$	$147.53^{+0.84}_{-0.85}$	$f\sigma_8(2.33)$	$0.2984^{+0.0064}_{-0.0056}$
$S_8$	$0.812^{+0.031}_{-0.030}$	$k_{\text{D}}$	$0.1405^{+0.0011}_{-0.0011}$	$\sigma_8(2.33)$	$0.3080^{+0.0067}_{-0.0061}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.445^{+0.017}_{-0.016}$	$100\theta_{\text{D}}$	$0.16077^{+0.00077}_{-0.00075}$	$\chi_{\text{lensing}}^2$	$9.5 (\nu: 0.5)$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.599^{+0.016}_{-0.016}$	$z_{\text{eq}}$	$3357^{+69}_{-63}$	$\chi_{\text{simall}}^2$	$396.5 (\nu: 0.6)$
$\sigma_8/h^{0.5}$	$0.978^{+0.023}_{-0.023}$	$k_{\text{eq}}$	$0.01025^{+0.00021}_{-0.00019}$	$\chi_{\text{CamSpec}}^2$	$2580.1 (\nu: 3.6)$
$r_{\text{drag}}h$	$100.7^{+2.1}_{-2.2}$	$100\theta_{\text{eq}}$	$0.822^{+0.012}_{-0.013}$	$\chi_{6\text{DF}}^2$	$0.032 (\nu: 0.0)$
$\langle d^2 \rangle^{1/2}$	$2.401^{+0.074}_{-0.071}$	$100\theta_{\text{s,eq}}$	$0.4539^{+0.0059}_{-0.0066}$	$\chi_{\text{MGS}}^2$	$1.88 (\nu: 0.1)$
$z_{\text{re}}$	$< 9.07$	$H(0.15)$	$73.4^{+1.1}_{-1.1}$	$\chi_{\text{DR12BAO}}^2$	$3.88 (\nu: 0.3)$
$10^9A_{\text{s}}$	$2.098^{+0.074}_{-0.059}$	$D_{\text{M}}(0.15)$	$636^{+11}_{-11}$	$\chi_{\text{prior}}^2$	$11.0 (\nu: 1.0)$
$10^9A_{\text{s}}e^{-2\tau}$	$1.884^{+0.035}_{-0.035}$	$H(0.38)$	$83.40^{+0.87}_{-0.88}$	$\chi_{\text{CMB}}^2$	$2986.1 (\nu: 4.7)$
$D_{40}$	$1209^{+63}_{-63}$	$D_{\text{M}}(0.38)$	$1519^{+22}_{-22}$	$\chi_{\text{BAO}}^2$	$5.79 (\nu: 0.3)$
$D_{220}$	$5730^{+150}_{-150}$	$H(0.51)$	$90.03^{+0.73}_{-0.74}$		
$D_{810}$	$2555^{+54}_{-52}$	$D_{\text{M}}(0.51)$	$1969^{+27}_{-26}$		

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



## 2.21 base\_CamSpecHM\_EE\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02359	$0.0235^{+0.0017}_{-0.0016}$	$D_{810}$	2607	$2605^{+83}_{-85}$	$H(0.51)$	90.47	$90.5^{+1.5}_{-1.4}$
$\Omega_c h^2$	0.11770	$0.1178^{+0.0038}_{-0.0036}$	$D_{1420}$	845.0	$844^{+37}_{-36}$	$D_M(0.51)$	1957.7	$1958^{+45}_{-45}$
$100\theta_{MC}$	1.03937	$1.0395^{+0.0021}_{-0.0020}$	$D_{2000}$	240.8	$240^{+14}_{-13}$	$H(0.61)$	96.03	$96.0^{+1.5}_{-1.3}$
$\tau$	0.0511	$0.051^{+0.021}_{-0.024}$	$n_{s,0.002}$	0.9701	$0.970^{+0.024}_{-0.024}$	$D_M(0.61)$	2279	$2280^{+49}_{-51}$
$\ln(10^{10} A_s)$	3.060	$3.059^{+0.053}_{-0.058}$	$Y_P$	0.24590	$0.24587^{+0.00067}_{-0.00065}$	$H(2.33)$	236.12	$236.1^{+2.5}_{-2.6}$
$n_s$	0.9701	$0.970^{+0.024}_{-0.024}$	$Y_P^{BBN}$	0.24723	$0.24720^{+0.00067}_{-0.00065}$	$D_M(2.33)$	5726	$5727^{+74}_{-78}$
$y_{cal}$	1.0001	$1.0001^{+0.0062}_{-0.0062}$	$10^5 D/H$	2.373	$2.38^{+0.28}_{-0.26}$	$f\sigma_8(0.15)$	0.4469	$0.447^{+0.025}_{-0.024}$
$H_0$	68.66	$68.6^{+2.1}_{-2.1}$	Age/Gyr	13.710	$13.71^{+0.17}_{-0.18}$	$\sigma_8(0.15)$	0.7447	$0.745^{+0.022}_{-0.023}$
$\Omega_\Lambda$	0.6989	$0.699^{+0.022}_{-0.024}$	$z_*$	1088.26	$1088.3^{+2.0}_{-1.9}$	$f\sigma_8(0.38)$	0.4675	$0.468^{+0.021}_{-0.021}$
$\Omega_m$	0.3011	$0.301^{+0.024}_{-0.022}$	$r_*$	144.09	$144.1^{+1.4}_{-1.3}$	$\sigma_8(0.38)$	0.6613	$0.661^{+0.019}_{-0.020}$
$\Omega_m h^2$	0.14194	$0.1419^{+0.0035}_{-0.0036}$	$100\theta_*$	1.03943	$1.0395^{+0.0021}_{-0.0020}$	$f\sigma_8(0.51)$	0.4673	$0.467^{+0.019}_{-0.020}$
$\Omega_m h^3$	0.09746	$0.0974^{+0.0031}_{-0.0031}$	$D_M(z_*)/\text{Gpc}$	13.862	$13.86^{+0.14}_{-0.13}$	$\sigma_8(0.51)$	0.6193	$0.619^{+0.018}_{-0.019}$
$\sigma_8$	0.8048	$0.805^{+0.025}_{-0.026}$	$z_{drag}$	1062.57	$1062.4^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	0.4632	$0.463^{+0.017}_{-0.018}$
$S_8$	0.8062	$0.807^{+0.049}_{-0.047}$	$r_{drag}$	146.35	$146.4^{+1.9}_{-1.8}$	$\sigma_8(0.61)$	0.5896	$0.590^{+0.017}_{-0.018}$
$\sigma_8 \Omega_m^{0.5}$	0.4416	$0.442^{+0.027}_{-0.026}$	$k_D$	0.14253	$0.1424^{+0.0029}_{-0.0030}$	$f\sigma_8(2.33)$	0.2977	$0.2977^{+0.0086}_{-0.0089}$
$\sigma_8 \Omega_m^{0.25}$	0.5961	$0.596^{+0.026}_{-0.026}$	$100\theta_D$	0.15901	$0.1591^{+0.0021}_{-0.0020}$	$\sigma_8(2.33)$	0.3074	$0.3073^{+0.0089}_{-0.0093}$
$\sigma_8/h^{0.5}$	0.9712	$0.972^{+0.038}_{-0.039}$	$z_{eq}$	3377	$3377^{+85}_{-85}$	$\chi^2_{small}$	395.59	$396.7 (\nu: 1.0)$
$r_{drag} h$	100.49	$100.5^{+2.9}_{-2.9}$	$k_{eq}$	0.010306	$0.01031^{+0.00026}_{-0.00026}$	$\chi^2_{CamSpec}$	1886.7	$1890.8 (\nu: 4.1)$
$\langle d^2 \rangle^{1/2}$	2.427	$2.427^{+0.088}_{-0.090}$	$100\theta_{eq}$	0.8201	$0.820^{+0.015}_{-0.015}$	$\chi^2_{6DF}$	0.000	$0.053 (\nu: 0.0)$
$z_{re}$	7.07	$7.1^{+2.0}_{-2.6}$	$100\theta_{s,eq}$	0.4520	$0.4520^{+0.0079}_{-0.0077}$	$\chi^2_{MGS}$	1.68	$1.75 (\nu: 0.2)$
$10^9 A_s$	2.133	$2.13^{+0.12}_{-0.12}$	$H(0.15)$	73.86	$73.8^{+1.9}_{-1.8}$	$\chi^2_{DR12BAO}$	3.85	$4.6 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	1.926	$1.924^{+0.063}_{-0.063}$	$D_M(0.15)$	632.1	$632^{+18}_{-17}$	$\chi^2_{prior}$	10.03	$11.0 (\nu: 0.9)$
$D_{40}$	1260	$1259^{+76}_{-77}$	$H(0.38)$	83.83	$83.8^{+1.7}_{-1.6}$	$\chi^2_{BAO}$	5.52	$6.4 (\nu: 0.8)$
$D_{220}$	6001	$5991^{+330}_{-340}$	$D_M(0.38)$	1510.0	$1511^{+37}_{-37}$	$\chi^2_{CMB}$	2282.3	$2287.4 (\nu: 5.1)$

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.0233^{+0.0014}_{-0.0014}$	$D_{1420}$	$835^{+30}_{-29}$	$H(0.61)$	$95.9^{+1.4}_{-1.3}$
$\Omega_c h^2$	$0.1172^{+0.0034}_{-0.0034}$	$D_{2000}$	$237^{+11}_{-11}$	$D_M(0.61)$	$2282^{+51}_{-49}$
$100\theta_{MC}$	$1.0395^{+0.0020}_{-0.0020}$	$n_{s,0.002}$	$0.969^{+0.024}_{-0.025}$	$H(2.33)$	$235.5^{+2.0}_{-2.0}$
$\tau$	$0.049^{+0.018}_{-0.021}$	$Y_P$	$0.24576^{+0.00054}_{-0.00058}$	$D_M(2.33)$	$5737^{+69}_{-69}$
$\ln(10^{10} A_s)$	$3.045^{+0.039}_{-0.042}$	$Y_P^{BBN}$	$0.24708^{+0.00054}_{-0.00058}$	$f\sigma_8(0.15)$	$0.442^{+0.022}_{-0.021}$
$n_s$	$0.969^{+0.024}_{-0.025}$	$10^5 D/H$	$2.43^{+0.25}_{-0.23}$	$\sigma_8(0.15)$	$0.739^{+0.017}_{-0.017}$
$y_{cal}$	$0.9998^{+0.0064}_{-0.0062}$	Age/Gyr	$13.74^{+0.16}_{-0.16}$	$f\sigma_8(0.38)$	$0.463^{+0.018}_{-0.018}$
$H_0$	$68.6^{+2.0}_{-2.1}$	$z_*$	$1088.6^{+2.0}_{-1.7}$	$\sigma_8(0.38)$	$0.656^{+0.015}_{-0.014}$
$\Omega_\Lambda$	$0.700^{+0.021}_{-0.024}$	$r_*$	$144.5^{+1.1}_{-0.98}$	$f\sigma_8(0.51)$	$0.463^{+0.016}_{-0.016}$
$\Omega_m$	$0.300^{+0.024}_{-0.021}$	$100\theta_*$	$1.0396^{+0.0021}_{-0.0020}$	$\sigma_8(0.51)$	$0.614^{+0.014}_{-0.013}$
$\Omega_m h^2$	$0.1411^{+0.0030}_{-0.0029}$	$D_M(z_*)/\text{Gpc}$	$13.90^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.459^{+0.014}_{-0.014}$
$\Omega_m h^3$	$0.0968^{+0.0026}_{-0.0027}$	$z_{drag}$	$1061.7^{+3.1}_{-3.2}$	$\sigma_8(0.61)$	$0.585^{+0.013}_{-0.013}$
$\sigma_8$	$0.798^{+0.019}_{-0.019}$	$r_{drag}$	$146.9^{+1.4}_{-1.3}$	$f\sigma_8(2.33)$	$0.2954^{+0.0067}_{-0.0068}$
$S_8$	$0.798^{+0.042}_{-0.041}$	$k_D$	$0.1417^{+0.0023}_{-0.0025}$	$\sigma_8(2.33)$	$0.3051^{+0.0070}_{-0.0075}$
$\sigma_8 \Omega_m^{0.5}$	$0.437^{+0.023}_{-0.022}$	$100\theta_D$	$0.1595^{+0.0018}_{-0.0017}$	$\chi^2_{lensing}$	$9.3 (\nu: 1.0)$
$\sigma_8 \Omega_m^{0.25}$	$0.590^{+0.022}_{-0.022}$	$z_{eq}$	$3356^{+71}_{-70}$	$\chi^2_{simall}$	$396.7 (\nu: 0.9)$
$\sigma_8/h^{0.5}$	$0.963^{+0.032}_{-0.033}$	$k_{eq}$	$0.01024^{+0.00022}_{-0.00021}$	$\chi^2_{CamSpec}$	$1890.9 (\nu: 3.7)$
$r_{drag} h$	$100.8^{+2.8}_{-2.8}$	$100\theta_{eq}$	$0.823^{+0.014}_{-0.013}$	$\chi^2_{6DF}$	$0.052 (\nu: 0.0)$
$\langle d^2 \rangle^{1/2}$	$2.408^{+0.075}_{-0.080}$	$100\theta_{s,eq}$	$0.4538^{+0.0066}_{-0.0066}$	$\chi^2_{MGS}$	$1.93 (\nu: 0.2)$
$z_{re}$	$6.8^{+1.8}_{-2.5}$	$H(0.15)$	$73.8^{+1.9}_{-1.9}$	$\chi^2_{DR12BAO}$	$4.3 (\nu: 0.6)$
$10^9 A_s$	$2.101^{+0.083}_{-0.086}$	$D_M(0.15)$	$633^{+18}_{-17}$	$\chi^2_{prior}$	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	$1.906^{+0.045}_{-0.043}$	$H(0.38)$	$83.7^{+1.6}_{-1.5}$	$\chi^2_{CMB}$	$2296.9 (\nu: 5.2)$
$D_{40}$	$1249^{+70}_{-68}$	$D_M(0.38)$	$1512^{+38}_{-36}$	$\chi^2_{BAO}$	$6.3 (\nu: 0.7)$
$D_{220}$	$5930^{+290}_{-280}$	$H(0.51)$	$90.3^{+1.4}_{-1.4}$		
$D_{810}$	$2582^{+65}_{-63}$	$D_M(0.51)$	$1960^{+47}_{-44}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.0235^{+0.0017}_{-0.0016}$	$D_{810}$	$2603^{+84}_{-85}$	$H(0.51)$	$90.4^{+1.5}_{-1.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1177^{+0.0037}_{-0.0035}$	$D_{1420}$	$843^{+37}_{-36}$	$D_{\mathrm{M}}(0.51)$	$1959^{+44}_{-45}$
$100\theta_{\mathrm{MC}}$	$1.0395^{+0.0021}_{-0.0020}$	$D_{2000}$	$240^{+14}_{-13}$	$H(0.61)$	$96.0^{+1.5}_{-1.3}$
$\tau$	$0.054^{+0.017}_{-0.011}$	$n_{\mathrm{s},0.002}$	$0.970^{+0.024}_{-0.023}$	$D_{\mathrm{M}}(0.61)$	$2281^{+49}_{-50}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.065^{+0.051}_{-0.043}$	$Y_{\mathrm{P}}$	$0.24586^{+0.00068}_{-0.00065}$	$H(2.33)$	$236.1^{+2.4}_{-2.6}$
$n_{\mathrm{s}}$	$0.970^{+0.024}_{-0.023}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24719^{+0.00068}_{-0.00066}$	$D_{\mathrm{M}}(2.33)$	$5727^{+74}_{-78}$
$y_{\mathrm{cal}}$	$1.0001^{+0.0062}_{-0.0062}$	$10^5\mathrm{D}/\mathrm{H}$	$2.39^{+0.28}_{-0.26}$	$f\sigma_8(0.15)$	$0.449^{+0.025}_{-0.024}$
$H_0$	$68.6^{+2.1}_{-2.0}$	Age/Gyr	$13.71^{+0.17}_{-0.18}$	$\sigma_8(0.15)$	$0.747^{+0.021}_{-0.020}$
$\Omega_{\Lambda}$	$0.699^{+0.021}_{-0.024}$	$z_*$	$1088.4^{+2.0}_{-2.0}$	$f\sigma_8(0.38)$	$0.469^{+0.020}_{-0.020}$
$\Omega_{\mathrm{m}}$	$0.301^{+0.024}_{-0.021}$	$r_*$	$144.1^{+1.4}_{-1.3}$	$\sigma_8(0.38)$	$0.663^{+0.018}_{-0.016}$
$\Omega_{\mathrm{m}}h^2$	$0.1419^{+0.0035}_{-0.0035}$	$100\theta_*$	$1.0395^{+0.0021}_{-0.0020}$	$f\sigma_8(0.51)$	$0.469^{+0.018}_{-0.018}$
$\Omega_{\mathrm{m}}h^3$	$0.0974^{+0.0032}_{-0.0031}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.87^{+0.14}_{-0.13}$	$\sigma_8(0.51)$	$0.621^{+0.017}_{-0.015}$
$\sigma_8$	$0.807^{+0.023}_{-0.022}$	$z_{\mathrm{drag}}$	$1062.4^{+3.6}_{-3.6}$	$f\sigma_8(0.61)$	$0.465^{+0.017}_{-0.016}$
$S_8$	$0.809^{+0.048}_{-0.046}$	$r_{\mathrm{drag}}$	$146.4^{+1.9}_{-1.8}$	$\sigma_8(0.61)$	$0.591^{+0.016}_{-0.014}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.026}_{-0.025}$	$k_{\mathrm{D}}$	$0.1424^{+0.0030}_{-0.0030}$	$f\sigma_8(2.33)$	$0.2986^{+0.0080}_{-0.0070}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.598^{+0.025}_{-0.024}$	$100\theta_{\mathrm{D}}$	$0.1591^{+0.0022}_{-0.0020}$	$\sigma_8(2.33)$	$0.3083^{+0.0083}_{-0.0071}$
$\sigma_8/h^{0.5}$	$0.975^{+0.036}_{-0.035}$	$z_{\mathrm{eq}}$	$3376^{+83}_{-84}$	$\chi_{\mathrm{small}}^2$	$396.4 (\nu: 0.8)$
$r_{\mathrm{drag}}h$	$100.5^{+2.8}_{-2.8}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00025}_{-0.00026}$	$\chi_{\mathrm{CamSpec}}^2$	$1890.7 (\nu: 4.0)$
$\langle d^2 \rangle^{1/2}$	$2.434^{+0.083}_{-0.083}$	$100\theta_{\mathrm{eq}}$	$0.820^{+0.015}_{-0.015}$	$\chi_{6\mathrm{DF}}^2$	$0.052 (\nu: 0.0)$
$z_{\mathrm{re}}$	$< 8.92$	$100\theta_{\mathrm{s,eq}}$	$0.4521^{+0.0078}_{-0.0076}$	$\chi_{\mathrm{MGS}}^2$	$1.75 (\nu: 0.2)$
$10^9A_{\mathrm{s}}$	$2.14^{+0.11}_{-0.090}$	$H(0.15)$	$73.8^{+1.9}_{-1.8}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.0)$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.923^{+0.063}_{-0.063}$	$D_{\mathrm{M}}(0.15)$	$632^{+18}_{-17}$	$\chi_{\mathrm{prior}}^2$	$11.0 (\nu: 0.9)$
$D_{40}$	$1259^{+76}_{-76}$	$H(0.38)$	$83.8^{+1.7}_{-1.6}$	$\chi_{\mathrm{BAO}}^2$	$6.4 (\nu: 0.8)$
$D_{220}$	$5986^{+340}_{-340}$	$D_{\mathrm{M}}(0.38)$	$1511^{+37}_{-37}$	$\chi_{\mathrm{CMB}}^2$	$2287.1 (\nu: 4.7)$
$\bar{\chi}_{\mathrm{eff}}^2 = 2304.51; R - 1 = 0.01190$					



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.0232^{+0.0015}_{-0.0014}$	$D_{1420}$	$833^{+28}_{-29}$	$H(0.61)$	$95.8^{+1.3}_{-1.3}$
$\Omega_c h^2$	$0.1171^{+0.0037}_{-0.0033}$	$D_{2000}$	$237^{+10}_{-10}$	$D_M(0.61)$	$2283^{+50}_{-47}$
$100\theta_{MC}$	$1.0395^{+0.0022}_{-0.0019}$	$n_{s,0.002}$	$0.969^{+0.024}_{-0.025}$	$H(2.33)$	$235.3^{+2.1}_{-2.1}$
$\tau$	$0.0526^{+0.014}_{-0.0091}$	$Y_P$	$0.24573^{+0.00055}_{-0.00060}$	$D_M(2.33)$	$5739^{+68}_{-67}$
$\ln(10^{10} A_s)$	$3.051^{+0.035}_{-0.029}$	$Y_P^{BBN}$	$0.24706^{+0.00055}_{-0.00061}$	$f\sigma_8(0.15)$	$0.444^{+0.022}_{-0.020}$
$n_s$	$0.969^{+0.024}_{-0.025}$	$10^5 D/H$	$2.44^{+0.26}_{-0.23}$	$\sigma_8(0.15)$	$0.741^{+0.016}_{-0.015}$
$y_{cal}$	$0.9997^{+0.0062}_{-0.0057}$	Age/Gyr	$13.74^{+0.16}_{-0.15}$	$f\sigma_8(0.38)$	$0.464^{+0.018}_{-0.017}$
$H_0$	$68.6^{+2.0}_{-2.1}$	$z_*$	$1088.7^{+2.0}_{-1.8}$	$\sigma_8(0.38)$	$0.658^{+0.014}_{-0.012}$
$\Omega_\Lambda$	$0.700^{+0.021}_{-0.024}$	$r_*$	$144.6^{+1.0}_{-0.93}$	$f\sigma_8(0.51)$	$0.464^{+0.015}_{-0.015}$
$\Omega_m$	$0.300^{+0.024}_{-0.021}$	$100\theta_*$	$1.0396^{+0.0022}_{-0.0019}$	$\sigma_8(0.51)$	$0.616^{+0.012}_{-0.011}$
$\Omega_m h^2$	$0.1409^{+0.0031}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.90^{+0.11}_{-0.097}$	$f\sigma_8(0.61)$	$0.460^{+0.013}_{-0.013}$
$\Omega_m h^3$	$0.0967^{+0.0025}_{-0.0027}$	$z_{drag}$	$1061.6^{+3.1}_{-3.0}$	$\sigma_8(0.61)$	$0.587^{+0.012}_{-0.011}$
$\sigma_8$	$0.800^{+0.018}_{-0.018}$	$r_{drag}$	$147.0^{+1.4}_{-1.2}$	$f\sigma_8(2.33)$	$0.2964^{+0.0061}_{-0.0050}$
$S_8$	$0.800^{+0.043}_{-0.039}$	$k_D$	$0.1416^{+0.0021}_{-0.0024}$	$\sigma_8(2.33)$	$0.3061^{+0.0064}_{-0.0056}$
$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.024}_{-0.022}$	$100\theta_D$	$0.1596^{+0.0019}_{-0.0017}$	$\chi^2_{lensing}$	$9.4 (\nu: 1.1)$
$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.021}_{-0.020}$	$z_{eq}$	$3352^{+75}_{-67}$	$\chi^2_{simall}$	$396.15 (\nu: 0.3)$
$\sigma_8/h^{0.5}$	$0.966^{+0.030}_{-0.031}$	$k_{eq}$	$0.01023^{+0.00023}_{-0.00021}$	$\chi^2_{CamSpec}$	$1890.9 (\nu: 3.8)$
$r_{drag} h$	$100.8^{+2.6}_{-2.8}$	$100\theta_{eq}$	$0.824^{+0.013}_{-0.014}$	$\chi^2_{6DF}$	$0.052 (\nu: 0.0)$
$\langle d^2 \rangle^{1/2}$	$2.414^{+0.073}_{-0.065}$	$100\theta_{s,eq}$	$0.4541^{+0.0063}_{-0.0068}$	$\chi^2_{MGS}$	$1.96 (\nu: 0.2)$
$z_{re}$	$< 8.65$	$H(0.15)$	$73.8^{+1.8}_{-1.9}$	$\chi^2_{DR12BAO}$	$4.3 (\nu: 0.5)$
$10^9 A_s$	$2.114^{+0.074}_{-0.060}$	$D_M(0.15)$	$633^{+18}_{-17}$	$\chi^2_{prior}$	$11.0 (\nu: 0.8)$
$10^9 A_s e^{-2\tau}$	$1.903^{+0.042}_{-0.042}$	$H(0.38)$	$83.7^{+1.5}_{-1.5}$	$\chi^2_{CMB}$	$2296.5 (\nu: 5.0)$
$D_{40}$	$1246^{+69}_{-70}$	$D_M(0.38)$	$1512^{+38}_{-36}$	$\chi^2_{BAO}$	$6.3 (\nu: 0.7)$
$D_{220}$	$5914^{+280}_{-280}$	$H(0.51)$	$90.3^{+1.4}_{-1.4}$		
$D_{810}$	$2577^{+60}_{-60}$	$D_M(0.51)$	$1961^{+46}_{-43}$		

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



## 2.25 base\_CamSpecHM\_TE\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02247	$0.02248^{+0.00065}_{-0.00065}$	$D_{220}$	5733	$5734^{+150}_{-150}$	$H(0.38)$	83.45	$83.5^{+1.4}_{-1.3}$
$\Omega_c h^2$	0.11787	$0.1179^{+0.0042}_{-0.0042}$	$D_{810}$	2557	$2557^{+54}_{-57}$	$D_M(0.38)$	1517.4	$1517^{+34}_{-35}$
$100\theta_{MC}$	1.04129	$1.0413^{+0.0012}_{-0.0013}$	$D_{1420}$	827.6	$827^{+28}_{-29}$	$H(0.51)$	90.07	$90.1^{+1.1}_{-1.0}$
$\tau$	0.0528	$0.053^{+0.020}_{-0.021}$	$D_{2000}$	234.4	$234^{+10}_{-10}$	$D_M(0.51)$	1967.1	$1967^{+40}_{-41}$
$\ln(10^{10} A_s)$	3.0418	$3.041^{+0.039}_{-0.041}$	$n_{s,0.002}$	0.9770	$0.977^{+0.029}_{-0.029}$	$H(0.61)$	95.62	$95.63^{+0.93}_{-0.85}$
$n_s$	0.9770	$0.977^{+0.029}_{-0.029}$	$Y_P$	0.245433	$0.24543^{+0.00028}_{-0.00028}$	$D_M(0.61)$	2290.2	$2290^{+43}_{-44}$
$y_{cal}$	1.0002	$1.0001^{+0.0068}_{-0.0065}$	$Y_P^{BBN}$	0.246759	$0.24676^{+0.00028}_{-0.00028}$	$H(2.33)$	235.28	$235.3^{+2.6}_{-2.5}$
$H_0$	68.31	$68.3^{+2.1}_{-2.0}$	$10^5 D/H$	2.568	$2.57^{+0.12}_{-0.12}$	$D_M(2.33)$	5749.6	$5749^{+41}_{-43}$
$\Omega_\Lambda$	0.6979	$0.698^{+0.025}_{-0.026}$	Age/Gyr	13.767	$13.766^{+0.094}_{-0.096}$	$f\sigma_8(0.15)$	0.4486	$0.448^{+0.022}_{-0.022}$
$\Omega_m$	0.3021	$0.302^{+0.026}_{-0.025}$	$z_*$	1089.61	$1089.6^{+1.0}_{-1.0}$	$\sigma_8(0.15)$	0.7463	$0.746^{+0.016}_{-0.017}$
$\Omega_m h^2$	0.14098	$0.1410^{+0.0039}_{-0.0039}$	$r_*$	144.91	$144.91^{+0.97}_{-0.98}$	$f\sigma_8(0.38)$	0.4690	$0.469^{+0.017}_{-0.017}$
$\Omega_m h^3$	0.09631	$0.0963^{+0.0013}_{-0.0013}$	$100\theta_*$	1.04147	$1.0415^{+0.0012}_{-0.0013}$	$\sigma_8(0.38)$	0.6625	$0.662^{+0.014}_{-0.015}$
$\sigma_8$	0.8066	$0.806^{+0.018}_{-0.018}$	$D_M(z_*)/\text{Gpc}$	13.914	$13.914^{+0.092}_{-0.095}$	$f\sigma_8(0.51)$	0.4687	$0.468^{+0.015}_{-0.015}$
$S_8$	0.8094	$0.809^{+0.043}_{-0.043}$	$z_{drag}$	1060.01	$1060.0^{+1.4}_{-1.4}$	$\sigma_8(0.51)$	0.6205	$0.620^{+0.013}_{-0.014}$
$\sigma_8 \Omega_m^{0.5}$	0.4433	$0.443^{+0.024}_{-0.023}$	$r_{drag}$	147.55	$147.5^{+1.0}_{-1.0}$	$f\sigma_8(0.61)$	0.4645	$0.464^{+0.013}_{-0.013}$
$\sigma_8 \Omega_m^{0.25}$	0.5980	$0.598^{+0.021}_{-0.021}$	$k_D$	0.14046	$0.1405^{+0.0013}_{-0.0013}$	$\sigma_8(0.61)$	0.5906	$0.590^{+0.013}_{-0.014}$
$\sigma_8/h^{0.5}$	0.9759	$0.975^{+0.029}_{-0.029}$	$100\theta_D$	0.16075	$0.16075^{+0.00084}_{-0.00080}$	$f\sigma_8(2.33)$	0.2982	$0.2981^{+0.0069}_{-0.0073}$
$r_{drag} h$	100.80	$100.8^{+3.5}_{-3.3}$	$z_{eq}$	3354	$3354^{+94}_{-93}$	$\sigma_8(2.33)$	0.3078	$0.3077^{+0.0078}_{-0.0080}$
$\langle d^2 \rangle^{1/2}$	2.396	$2.396^{+0.086}_{-0.085}$	$k_{eq}$	0.010235	$0.01024^{+0.00029}_{-0.00028}$	$\chi^2_{lensing}$	8.95	9.7 ( $\nu: 0.8$ )
$z_{re}$	7.48	$7.4^{+1.9}_{-2.2}$	$100\theta_{eq}$	0.8227	$0.823^{+0.019}_{-0.018}$	$\chi^2_{small}$	395.77	396.7 ( $\nu: 0.9$ )
$10^9 A_s$	2.094	$2.093^{+0.084}_{-0.085}$	$100\theta_{s,eq}$	0.4542	$0.4542^{+0.0095}_{-0.0090}$	$\chi^2_{CamSpec}$	2576.3	2580.7 ( $\nu: 4.3$ )
$10^9 A_s e^{-2\tau}$	1.8842	$1.884^{+0.036}_{-0.035}$	$H(0.15)$	73.50	$73.5^{+1.8}_{-1.7}$	$\chi^2_{prior}$	10.04	11.0 ( $\nu: 1.1$ )
$D_{40}$	1208	$1208^{+67}_{-65}$	$D_M(0.15)$	635.3	$635^{+17}_{-17}$	$\chi^2_{CMB}$	2981.0	2987.1 ( $\nu: 5.9$ )

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02248^{+0.00065}_{-0.00065}$	$D_{220}$	$5732^{+150}_{-150}$	$H(0.38)$	$83.5^{+1.4}_{-1.3}$
$\Omega_{\text{c}}h^2$	$0.1177^{+0.0042}_{-0.0041}$	$D_{810}$	$2556^{+53}_{-57}$	$D_{\text{M}}(0.38)$	$1516^{+34}_{-34}$
$100\theta_{\text{MC}}$	$1.0413^{+0.0013}_{-0.0013}$	$D_{1420}$	$827^{+27}_{-28}$	$H(0.51)$	$90.1^{+1.1}_{-1.0}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$D_{2000}$	$234^{+10}_{-10}$	$D_{\text{M}}(0.51)$	$1966^{+40}_{-41}$
$\ln(10^{10}A_{\text{s}})$	$3.044^{+0.037}_{-0.029}$	$n_{\text{s},0.002}$	$0.977^{+0.028}_{-0.029}$	$H(0.61)$	$95.65^{+0.93}_{-0.85}$
$n_{\text{s}}$	$0.977^{+0.028}_{-0.029}$	$Y_{\text{P}}$	$0.24544^{+0.00028}_{-0.00028}$	$D_{\text{M}}(0.61)$	$2289^{+43}_{-44}$
$y_{\text{cal}}$	$1.0001^{+0.0068}_{-0.0065}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24676^{+0.00028}_{-0.00028}$	$H(2.33)$	$235.2^{+2.5}_{-2.4}$
$H_0$	$68.4^{+2.0}_{-1.9}$	$10^5D/\text{H}$	$2.57^{+0.12}_{-0.12}$	$D_{\text{M}}(2.33)$	$5748^{+41}_{-43}$
$\Omega_{\Lambda}$	$0.699^{+0.025}_{-0.026}$	Age/Gyr	$13.765^{+0.093}_{-0.096}$	$f\sigma_8(0.15)$	$0.448^{+0.022}_{-0.022}$
$\Omega_{\text{m}}$	$0.301^{+0.026}_{-0.025}$	$z_*$	$1089.6^{+1.0}_{-1.0}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$\Omega_{\text{m}}h^2$	$0.1409^{+0.0039}_{-0.0038}$	$r_*$	$144.93^{+0.96}_{-0.97}$	$f\sigma_8(0.38)$	$0.469^{+0.017}_{-0.017}$
$\Omega_{\text{m}}h^3$	$0.0963^{+0.0013}_{-0.0013}$	$100\theta_*$	$1.0415^{+0.0012}_{-0.0013}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.012}$
$\sigma_8$	$0.807^{+0.017}_{-0.017}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.916^{+0.091}_{-0.092}$	$f\sigma_8(0.51)$	$0.469^{+0.015}_{-0.015}$
$S_8$	$0.809^{+0.043}_{-0.043}$	$z_{\text{drag}}$	$1060.0^{+1.4}_{-1.4}$	$\sigma_8(0.51)$	$0.621^{+0.013}_{-0.011}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.443^{+0.024}_{-0.023}$	$r_{\text{drag}}$	$147.6^{+1.0}_{-1.0}$	$f\sigma_8(0.61)$	$0.465^{+0.013}_{-0.014}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.598^{+0.021}_{-0.021}$	$k_{\text{D}}$	$0.1404^{+0.0013}_{-0.0013}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.011}$
$\sigma_8/h^{0.5}$	$0.976^{+0.029}_{-0.029}$	$100\theta_{\text{D}}$	$0.16074^{+0.00084}_{-0.00080}$	$f\sigma_8(2.33)$	$0.2985^{+0.0065}_{-0.0055}$
$r_{\text{drag}}h$	$100.9^{+3.5}_{-3.3}$	$z_{\text{eq}}$	$3351^{+94}_{-91}$	$\sigma_8(2.33)$	$0.3082^{+0.0075}_{-0.0061}$
$\langle d^2 \rangle^{1/2}$	$2.397^{+0.087}_{-0.085}$	$k_{\text{eq}}$	$0.01023^{+0.00029}_{-0.00028}$	$\chi_{\text{lensing}}^2$	$9.7 (\nu: 0.8)$
$z_{\text{re}}$	$< 9.22$	$100\theta_{\text{eq}}$	$0.823^{+0.018}_{-0.018}$	$\chi_{\text{simall}}^2$	$396.6 (\nu: 0.8)$
$10^9A_{\text{s}}$	$2.100^{+0.080}_{-0.060}$	$100\theta_{\text{s,eq}}$	$0.4545^{+0.0093}_{-0.0091}$	$\chi_{\text{CamSpec}}^2$	$2580.6 (\nu: 4.2)$
$10^9A_{\text{s}}e^{-2\tau}$	$1.883^{+0.035}_{-0.034}$	$H(0.15)$	$73.6^{+1.8}_{-1.7}$	$\chi_{\text{prior}}^2$	$11.0 (\nu: 1.1)$
$D_{40}$	$1207^{+67}_{-65}$	$D_{\text{M}}(0.15)$	$635^{+17}_{-17}$	$\chi_{\text{CMB}}^2$	$2986.8 (\nu: 5.5)$

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



## 2.27 base\_CamSpecHM\_EE\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02359	$0.0236^{+0.0025}_{-0.0023}$	$D_{220}$	5980	$5980^{+420}_{-400}$	$H(0.38)$	84.21	$84.2^{+3.6}_{-3.3}$
$\Omega_c h^2$	0.1160	$0.1162^{+0.0085}_{-0.0075}$	$D_{810}$	2590	$2591^{+87}_{-87}$	$D_M(0.38)$	1499	$1501^{+86}_{-81}$
$100\theta_{MC}$	1.03953	$1.0395^{+0.0022}_{-0.0021}$	$D_{1420}$	839.4	$839^{+43}_{-44}$	$H(0.51)$	90.74	$90.7^{+3.2}_{-2.8}$
$\tau$	0.0500	$0.049^{+0.022}_{-0.030}$	$D_{2000}$	238.9	$239^{+16}_{-17}$	$D_M(0.51)$	1945	$1947^{+100}_{-98}$
$\ln(10^{10} A_s)$	3.049	$3.047^{+0.048}_{-0.055}$	$n_{s,0.002}$	0.9718	$0.972^{+0.032}_{-0.033}$	$H(0.61)$	96.22	$96.2^{+2.9}_{-2.5}$
$n_s$	0.9718	$0.972^{+0.032}_{-0.033}$	$Y_P$	0.24590	$0.24588^{+0.00097}_{-0.00097}$	$D_M(0.61)$	2266	$2268^{+110}_{-110}$
$y_{cal}$	0.9998	$0.9999^{+0.0063}_{-0.0062}$	$Y_P^{BBN}$	0.24723	$0.24721^{+0.00097}_{-0.00097}$	$H(2.33)$	235.02	$235.1^{+3.6}_{-3.0}$
$H_0$	69.33	$69.3^{+4.8}_{-4.9}$	$10^5 D/H$	2.373	$2.38^{+4.2}_{-0.37}$	$D_M(2.33)$	5719	$5719^{+120}_{-140}$
$\Omega_\Lambda$	0.708	$0.707^{+0.047}_{-0.060}$	Age/Gyr	13.698	$13.70^{+0.28}_{-0.31}$	$f\sigma_8(0.15)$	0.4353	$0.436^{+0.048}_{-0.045}$
$\Omega_m$	0.292	$0.293^{+0.060}_{-0.047}$	$z_*$	1088.12	$1088.2^{+3.5}_{-3.1}$	$\sigma_8(0.15)$	0.7364	$0.736^{+0.020}_{-0.023}$
$\Omega_m h^2$	0.1402	$0.1404^{+0.0065}_{-0.0055}$	$r_*$	144.53	$144.5^{+1.0}_{-1.1}$	$f\sigma_8(0.38)$	0.4576	$0.458^{+0.036}_{-0.036}$
$\Omega_m h^3$	0.09723	$0.0973^{+0.0040}_{-0.0035}$	$100\theta_*$	1.03959	$1.0396^{+0.0021}_{-0.0021}$	$\sigma_8(0.38)$	0.6549	$0.654^{+0.015}_{-0.018}$
$\sigma_8$	0.7948	$0.794^{+0.025}_{-0.028}$	$D_M(z_*)/\text{Gpc}$	13.903	$13.90^{+0.11}_{-0.11}$	$f\sigma_8(0.51)$	0.4585	$0.458^{+0.029}_{-0.030}$
$S_8$	0.784	$0.785^{+0.097}_{-0.086}$	$z_{drag}$	1062.45	$1062.4^{+5.1}_{-4.8}$	$\sigma_8(0.51)$	0.6138	$0.613^{+0.014}_{-0.016}$
$\sigma_8 \Omega_m^{0.5}$	0.429	$0.430^{+0.053}_{-0.047}$	$r_{drag}$	146.80	$146.8^{+1.3}_{-1.4}$	$f\sigma_8(0.61)$	0.4552	$0.455^{+0.024}_{-0.027}$
$\sigma_8 \Omega_m^{0.25}$	0.5841	$0.584^{+0.043}_{-0.042}$	$k_D$	0.14204	$0.1420^{+0.0028}_{-0.0027}$	$\sigma_8(0.61)$	0.5846	$0.584^{+0.013}_{-0.015}$
$\sigma_8/h^{0.5}$	0.955	$0.954^{+0.060}_{-0.061}$	$100\theta_D$	0.15909	$0.1591^{+0.0028}_{-0.0025}$	$f\sigma_8(2.33)$	0.2956	$0.2952^{+0.0072}_{-0.0080}$
$r_{drag} h$	101.8	$101.7^{+6.8}_{-7.0}$	$z_{eq}$	3336	$3340^{+150}_{-130}$	$\sigma_8(2.33)$	0.3056	$0.3052^{+0.0085}_{-0.0092}$
$\langle d^2 \rangle^{1/2}$	2.393	$2.39^{+0.12}_{-0.12}$	$k_{eq}$	0.010182	$0.01019^{+0.00047}_{-0.00040}$	$\chi^2_{lensing}$	8.34	$9.4 (\nu: 1.0)$
$z_{re}$	6.93	$6.8^{+2.0}_{-3.3}$	$100\theta_{eq}$	0.8277	$0.827^{+0.031}_{-0.033}$	$\chi^2_{small}$	395.6	$396.8 (\nu: 1.4)$
$10^9 A_s$	2.109	$2.11^{+0.10}_{-0.11}$	$100\theta_{s,eq}$	0.4559	$0.456^{+0.014}_{-0.016}$	$\chi^2_{CamSpec}$	1887.5	$1891.5 (\nu: 4.2)$
$10^9 A_s e^{-2\tau}$	1.9083	$1.910^{+0.049}_{-0.045}$	$H(0.15)$	74.41	$74.4^{+4.4}_{-4.3}$	$\chi^2_{prior}$	10.04	$11.0 (\nu: 0.9)$
$D_{40}$	1249	$1249^{+74}_{-69}$	$D_M(0.15)$	626.7	$627^{+42}_{-38}$	$\chi^2_{CMB}$	2291.5	$2297.7 (\nu: 6.4)$

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.0236^{+0.0025}_{-0.0022}$	$D_{220}$	$5975^{+420}_{-390}$	$H(0.38)$	$84.3^{+3.7}_{-3.3}$
$\Omega_{\text{c}}h^2$	$0.1158^{+0.0079}_{-0.0075}$	$D_{810}$	$2589^{+87}_{-87}$	$D_{\text{M}}(0.38)$	$1498^{+84}_{-83}$
$100\theta_{\text{MC}}$	$1.0396^{+0.0022}_{-0.0021}$	$D_{1420}$	$839^{+43}_{-42}$	$H(0.51)$	$90.8^{+3.2}_{-2.8}$
$\tau$	$0.053^{+0.017}_{-0.011}$	$D_{2000}$	$239^{+16}_{-16}$	$D_{\text{M}}(0.51)$	$1944^{+100}_{-100}$
$\ln(10^{10}A_{\text{s}})$	$3.055^{+0.042}_{-0.036}$	$n_{\text{s},0.002}$	$0.973^{+0.032}_{-0.031}$	$H(0.61)$	$96.3^{+2.9}_{-2.4}$
$n_{\text{s}}$	$0.973^{+0.032}_{-0.031}$	$Y_{\text{P}}$	$0.24588^{+0.00097}_{-0.00094}$	$D_{\text{M}}(0.61)$	$2265^{+110}_{-110}$
$y_{\text{cal}}$	$0.9998^{+0.0063}_{-0.0063}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24721^{+0.00097}_{-0.00095}$	$H(2.33)$	$234.9^{+3.3}_{-2.9}$
$H_0$	$69.4^{+5.0}_{-4.7}$	$10^5 D/\text{H}$	$2.38^{+0.41}_{-0.38}$	$D_{\text{M}}(2.33)$	$5718^{+120}_{-140}$
$\Omega_{\Lambda}$	$0.709^{+0.048}_{-0.057}$	Age/Gyr	$13.70^{+0.27}_{-0.31}$	$f\sigma_8(0.15)$	$0.436^{+0.047}_{-0.045}$
$\Omega_{\text{m}}$	$0.291^{+0.057}_{-0.048}$	$z_*$	$1088.1^{+3.4}_{-3.1}$	$\sigma_8(0.15)$	$0.738^{+0.019}_{-0.021}$
$\Omega_{\text{m}}h^2$	$0.1400^{+0.0059}_{-0.0054}$	$r_*$	$144.58^{+0.99}_{-0.98}$	$f\sigma_8(0.38)$	$0.458^{+0.035}_{-0.037}$
$\Omega_{\text{m}}h^3$	$0.0972^{+0.0041}_{-0.0034}$	$100\theta_*$	$1.0396^{+0.0021}_{-0.0021}$	$\sigma_8(0.38)$	$0.656^{+0.014}_{-0.015}$
$\sigma_8$	$0.796^{+0.024}_{-0.027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.91^{+0.10}_{-0.10}$	$f\sigma_8(0.51)$	$0.459^{+0.028}_{-0.031}$
$S_8$	$0.785^{+0.093}_{-0.087}$	$z_{\text{drag}}$	$1062.4^{+5.1}_{-4.7}$	$\sigma_8(0.51)$	$0.615^{+0.012}_{-0.012}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.430^{+0.051}_{-0.048}$	$r_{\text{drag}}$	$146.9^{+1.3}_{-1.4}$	$f\sigma_8(0.61)$	$0.456^{+0.024}_{-0.027}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.585^{+0.042}_{-0.042}$	$k_{\text{D}}$	$0.1419^{+0.0028}_{-0.0027}$	$\sigma_8(0.61)$	$0.586^{+0.012}_{-0.011}$
$\sigma_8/h^{0.5}$	$0.956^{+0.059}_{-0.061}$	$100\theta_{\text{D}}$	$0.1592^{+0.0028}_{-0.0026}$	$f\sigma_8(2.33)$	$0.2964^{+0.0062}_{-0.0056}$
$r_{\text{drag}}h$	$102.0^{+6.8}_{-6.8}$	$z_{\text{eq}}$	$3331^{+140}_{-130}$	$\sigma_8(2.33)$	$0.3065^{+0.0075}_{-0.0068}$
$\langle d^2 \rangle^{1/2}$	$2.40^{+0.11}_{-0.12}$	$k_{\text{eq}}$	$0.01017^{+0.00043}_{-0.00039}$	$\chi^2_{\text{lensing}}$	$9.4 (\nu: 1.1)$
$z_{\text{re}}$	$< 8.76$	$100\theta_{\text{eq}}$	$0.829^{+0.031}_{-0.031}$	$\chi^2_{\text{simall}}$	$396.18 (\nu: 0.4)$
$10^9 A_{\text{s}}$	$2.122^{+0.092}_{-0.075}$	$100\theta_{\text{s,eq}}$	$0.456^{+0.014}_{-0.015}$	$\chi^2_{\text{CamSpec}}$	$1891.6 (\nu: 4.2)$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.907^{+0.046}_{-0.044}$	$H(0.15)$	$74.5^{+4.5}_{-4.2}$	$\chi^2_{\text{prior}}$	$11.0 (\nu: 0.9)$
$D_{40}$	$1247^{+70}_{-68}$	$D_{\text{M}}(0.15)$	$626^{+41}_{-39}$	$\chi^2_{\text{CMB}}$	$2297.2 (\nu: 5.5)$

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



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02242	$0.02240^{+0.00055}_{-0.00054}$	$D_{1420}$	825.5	$825^{+26}_{-26}$	$H(0.61)$	95.55	$95.54^{+0.62}_{-0.63}$
$\Omega_c h^2$	0.11819	$0.1182^{+0.0029}_{-0.0027}$	$D_{2000}$	233.6	$233.5^{+9.5}_{-9.2}$	$D_M(0.61)$	2293.6	$2294^{+29}_{-28}$
$100\theta_{MC}$	1.04130	$1.0413^{+0.0012}_{-0.0012}$	$n_{s,0.002}$	0.9746	$0.975^{+0.025}_{-0.025}$	$H(2.33)$	235.45	$235.4^{+1.8}_{-1.8}$
$\tau$	0.0520	$0.052^{+0.019}_{-0.020}$	$Y_P$	0.245414	$0.24541^{+0.00022}_{-0.00023}$	$D_M(2.33)$	5752.6	$5753^{+32}_{-31}$
$\ln(10^{10} A_s)$	3.0401	$3.041^{+0.038}_{-0.039}$	$Y_P^{BBN}$	0.246740	$0.24673^{+0.00022}_{-0.00024}$	$f\sigma_8(0.15)$	0.4499	$0.450^{+0.016}_{-0.016}$
$n_s$	0.9746	$0.975^{+0.025}_{-0.025}$	$10^5 D/H$	2.577	$2.58^{+0.10}_{-0.098}$	$\sigma_8(0.15)$	0.7460	$0.746^{+0.016}_{-0.016}$
$y_{cal}$	1.0002	$1.0001^{+0.0060}_{-0.0066}$	Age/Gyr	13.774	$13.776^{+0.074}_{-0.073}$	$f\sigma_8(0.38)$	0.4698	$0.470^{+0.013}_{-0.013}$
$H_0$	68.16	$68.1^{+1.3}_{-1.3}$	$z_*$	1089.70	$1089.72^{+0.79}_{-0.76}$	$\sigma_8(0.38)$	0.6621	$0.662^{+0.014}_{-0.014}$
$\Omega_\Lambda$	0.6959	$0.696^{+0.016}_{-0.017}$	$r_*$	144.86	$144.88^{+0.75}_{-0.74}$	$f\sigma_8(0.51)$	0.4693	$0.469^{+0.012}_{-0.012}$
$\Omega_m$	0.3041	$0.304^{+0.017}_{-0.016}$	$100\theta_*$	1.04148	$1.0415^{+0.0012}_{-0.0012}$	$\sigma_8(0.51)$	0.6199	$0.620^{+0.013}_{-0.013}$
$\Omega_m h^2$	0.14125	$0.1412^{+0.0028}_{-0.0026}$	$D_M(z_*)/\text{Gpc}$	13.910	$13.911^{+0.073}_{-0.075}$	$f\sigma_8(0.61)$	0.4649	$0.465^{+0.012}_{-0.011}$
$\Omega_m h^3$	0.09627	$0.0962^{+0.0013}_{-0.0012}$	$z_{drag}$	1059.89	$1059.9^{+1.2}_{-1.2}$	$\sigma_8(0.61)$	0.5901	$0.590^{+0.013}_{-0.013}$
$\sigma_8$	0.8065	$0.807^{+0.018}_{-0.017}$	$r_{drag}$	147.52	$147.54^{+0.84}_{-0.83}$	$f\sigma_8(2.33)$	0.2978	$0.2979^{+0.0065}_{-0.0066}$
$S_8$	0.8119	$0.812^{+0.031}_{-0.030}$	$k_D$	0.14045	$0.1404^{+0.0011}_{-0.0011}$	$\sigma_8(2.33)$	0.3074	$0.3075^{+0.0070}_{-0.0071}$
$\sigma_8 \Omega_m^{0.5}$	0.4447	$0.445^{+0.017}_{-0.017}$	$100\theta_D$	0.16081	$0.16083^{+0.00074}_{-0.00072}$	$\chi^2_{lensing}$	8.95	9.6 ( $\nu$ : 0.6)
$\sigma_8 \Omega_m^{0.25}$	0.5989	$0.599^{+0.017}_{-0.016}$	$z_{eq}$	3360	$3359^{+66}_{-63}$	$\chi^2_{small}$	395.71	396.7 ( $\nu$ : 0.8)
$\sigma_8/h^{0.5}$	0.9769	$0.977^{+0.025}_{-0.024}$	$k_{eq}$	0.010255	$0.01025^{+0.00020}_{-0.00019}$	$\chi^2_{CamSpec}$	2576.4	2580.2 ( $\nu$ : 3.6)
$r_{drag} h$	100.55	$100.5^{+2.2}_{-2.2}$	$100\theta_{eq}$	0.8213	$0.821^{+0.012}_{-0.012}$	$\chi^2_{6DF}$	0.000	0.030 ( $\nu$ : 0.0)
$\langle d^2 \rangle^{1/2}$	2.402	$2.403^{+0.074}_{-0.071}$	$100\theta_{s,eq}$	0.4535	$0.4536^{+0.0062}_{-0.0062}$	$\chi^2_{MGS}$	1.75	1.80 ( $\nu$ : 0.1)
$z_{re}$	7.41	$7.4^{+1.8}_{-2.2}$	$H(0.15)$	73.36	$73.3^{+1.1}_{-1.1}$	$\chi^2_{DR12BAO}$	3.44	3.91 ( $\nu$ : 0.3)
$10^9 A_s$	2.091	$2.092^{+0.081}_{-0.080}$	$D_M(0.15)$	636.6	$637^{+11}_{-11}$	$\chi^2_{prior}$	10.22	11.3 ( $\nu$ : 1.0)
$10^9 A_s e^{-2\tau}$	1.8842	$1.884^{+0.034}_{-0.034}$	$H(0.38)$	83.34	$83.33^{+0.85}_{-0.88}$	$\chi^2_{CMB}$	2981.1	2986.5 ( $\nu$ : 5.2)
$D_{40}$	1212	$1212^{+61}_{-60}$	$D_M(0.38)$	1520.0	$1520^{+23}_{-22}$	$\chi^2_{BAO}$	5.19	5.74 ( $\nu$ : 0.3)
$D_{220}$	5733	$5729^{+150}_{-150}$	$H(0.51)$	89.99	$89.98^{+0.71}_{-0.74}$			
$D_{810}$	2554	$2553^{+52}_{-53}$	$D_M(0.51)$	1970.3	$1971^{+27}_{-26}$			

Best-fit  $\chi^2_{eff} = 2996.49$ ;  $\bar{\chi}^2_{eff} = 3003.53$ ;  $R - 1 = 0.00799$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.44 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.95 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 CamSpec like\_10.7HM\_1400\_unified: 2576.42



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02269	$0.02268^{+0.00097}_{-0.00093}$	$D_{1420}$	825.9	$827^{+26}_{-25}$	$H(0.61)$	95.37	$95.36^{+0.95}_{-0.86}$
$\Omega_c h^2$	0.11790	$0.1179^{+0.0034}_{-0.0033}$	$D_{2000}$	233.6	$233.8^{+9.5}_{-9.2}$	$D_M(0.61)$	2300.1	$2301^{+36}_{-38}$
$100\theta_{MC}$	1.03957	$1.0395^{+0.0020}_{-0.0020}$	$n_{s,0.002}$	0.9678	$0.968^{+0.025}_{-0.025}$	$H(2.33)$	235.36	$235.4^{+2.1}_{-2.0}$
$\tau$	0.0499	$0.049^{+0.020}_{-0.024}$	$Y_P$	0.245511	$0.24552^{+0.00041}_{-0.00040}$	$D_M(2.33)$	5762.5	$5763^{+46}_{-50}$
$\ln(10^{10} A_s)$	3.0408	$3.040^{+0.039}_{-0.045}$	$Y_P^{BBN}$	0.246838	$0.24684^{+0.00041}_{-0.00041}$	$f\sigma_8(0.15)$	0.4482	$0.448^{+0.020}_{-0.019}$
$n_s$	0.9678	$0.968^{+0.025}_{-0.025}$	$10^5 D/H$	2.529	$2.53^{+0.17}_{-0.17}$	$\sigma_8(0.15)$	0.7407	$0.740^{+0.017}_{-0.019}$
$y_{cal}$	0.9997	$0.9999^{+0.0067}_{-0.0064}$	Age/Gyr	13.797	$13.80^{+0.11}_{-0.11}$	$f\sigma_8(0.38)$	0.4675	$0.468^{+0.016}_{-0.016}$
$H_0$	67.90	$67.9^{+1.6}_{-1.6}$	$z_*$	1089.35	$1089.4^{+1.3}_{-1.3}$	$\sigma_8(0.38)$	0.6571	$0.657^{+0.015}_{-0.016}$
$\Omega_\Lambda$	0.6937	$0.693^{+0.019}_{-0.020}$	$r_*$	144.73	$144.73^{+0.90}_{-0.92}$	$f\sigma_8(0.51)$	0.4668	$0.467^{+0.014}_{-0.015}$
$\Omega_m$	0.3063	$0.307^{+0.020}_{-0.019}$	$100\theta_*$	1.03972	$1.0397^{+0.0020}_{-0.0020}$	$\sigma_8(0.51)$	0.6152	$0.615^{+0.014}_{-0.015}$
$\Omega_m h^2$	0.14123	$0.1413^{+0.0032}_{-0.0030}$	$D_M(z_*)/\text{Gpc}$	13.920	$13.921^{+0.093}_{-0.096}$	$f\sigma_8(0.61)$	0.4622	$0.462^{+0.013}_{-0.014}$
$\Omega_m h^3$	0.09590	$0.0959^{+0.0020}_{-0.0018}$	$z_{drag}$	1060.51	$1060.5^{+2.1}_{-2.1}$	$\sigma_8(0.61)$	0.5855	$0.585^{+0.013}_{-0.014}$
$\sigma_8$	0.8010	$0.801^{+0.019}_{-0.021}$	$r_{drag}$	147.30	$147.3^{+1.1}_{-1.1}$	$f\sigma_8(2.33)$	0.2954	$0.2953^{+0.0067}_{-0.0073}$
$S_8$	0.8093	$0.810^{+0.038}_{-0.036}$	$k_D$	0.14089	$0.1409^{+0.0017}_{-0.0017}$	$\sigma_8(2.33)$	0.3048	$0.3047^{+0.0071}_{-0.0077}$
$\sigma_8 \Omega_m^{0.5}$	0.4433	$0.443^{+0.021}_{-0.020}$	$100\theta_D$	0.16019	$0.1602^{+0.0013}_{-0.0013}$	$\chi^2_{lensing}$	8.37	9.1 ( $\nu$ : 0.6)
$\sigma_8 \Omega_m^{0.25}$	0.5959	$0.596^{+0.020}_{-0.020}$	$z_{eq}$	3360	$3360^{+76}_{-72}$	$\chi^2_{small}$	395.66	396.7 ( $\nu$ : 1.0)
$\sigma_8/h^{0.5}$	0.9720	$0.972^{+0.029}_{-0.030}$	$k_{eq}$	0.010254	$0.01026^{+0.00023}_{-0.00022}$	$\chi^2_{CamSpec}$	1888.5	1891.7 ( $\nu$ : 4.0)
$r_{drag} h$	100.02	$99.98^{+2.5}_{-2.4}$	$100\theta_{eq}$	0.8208	$0.821^{+0.014}_{-0.014}$	$\chi^2_{6DF}$	0.0098	0.049 ( $\nu$ : 0.0)
$\langle d^2 \rangle^{1/2}$	2.416	$2.415^{+0.079}_{-0.077}$	$100\theta_{s,eq}$	0.4530	$0.4530^{+0.0069}_{-0.0070}$	$\chi^2_{MGS}$	1.41	1.46 ( $\nu$ : 0.1)
$z_{re}$	7.12	$7.0^{+2.0}_{-2.8}$	$H(0.15)$	73.12	$73.1^{+1.5}_{-1.4}$	$\chi^2_{DR12BAO}$	4.12	4.8 ( $\nu$ : 1.1)
$10^9 A_s$	2.092	$2.090^{+0.083}_{-0.091}$	$D_M(0.15)$	638.8	$639^{+14}_{-14}$	$\chi^2_{prior}$	11.0	12.5 ( $\nu$ : 2.4)
$10^9 A_s e^{-2\tau}$	1.8935	$1.895^{+0.040}_{-0.038}$	$H(0.38)$	83.14	$83.1^{+1.2}_{-1.1}$	$\chi^2_{CMB}$	2292.6	2297.5 ( $\nu$ : 5.7)
$D_{40}$	1237	$1237^{+69}_{-67}$	$D_M(0.38)$	1524.8	$1525^{+28}_{-29}$	$\chi^2_{BAO}$	5.53	6.3 ( $\nu$ : 0.7)
$D_{220}$	5829	$5829^{+220}_{-220}$	$H(0.51)$	89.79	$89.8^{+1.0}_{-0.94}$			
$D_{810}$	2561	$2563^{+58}_{-56}$	$D_M(0.51)$	1976.0	$1977^{+33}_{-34}$			

Best-fit  $\chi^2_{eff} = 2309.08$ ;  $\bar{\chi}^2_{eff} = 2316.30$ ;  $R - 1 = 0.00893$

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



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02241	$0.02242^{+0.00056}_{-0.00059}$	$D_{220}$	5730	$5729^{+160}_{-170}$	$H(0.38)$	83.35	$83.4^{+1.2}_{-1.2}$
$\Omega_c h^2$	0.11806	$0.1180^{+0.0041}_{-0.0040}$	$D_{810}$	2554	$2554^{+54}_{-56}$	$D_M(0.38)$	1519.6	$1519^{+32}_{-31}$
$100\theta_{MC}$	1.04126	$1.0413^{+0.0012}_{-0.0013}$	$D_{1420}$	825.6	$826^{+26}_{-28}$	$H(0.51)$	89.99	$90.03^{+0.98}_{-0.95}$
$\tau$	0.0521	$0.053^{+0.023}_{-0.021}$	$D_{2000}$	233.6	$233.7^{+9.5}_{-10}$	$D_M(0.51)$	1969.8	$1969^{+38}_{-37}$
$\ln(10^{10} A_s)$	3.0398	$3.041^{+0.044}_{-0.042}$	$n_{s,0.002}$	0.9752	$0.976^{+0.028}_{-0.029}$	$H(0.61)$	95.55	$95.58^{+0.81}_{-0.79}$
$n_s$	0.9752	$0.976^{+0.028}_{-0.029}$	$Y_P$	0.245410	$0.24541^{+0.00023}_{-0.00026}$	$D_M(0.61)$	2293.2	$2292^{+40}_{-40}$
$y_{cal}$	1.0002	$1.0002^{+0.0063}_{-0.0064}$	$Y_P^{BBN}$	0.246736	$0.24674^{+0.00023}_{-0.00026}$	$H(2.33)$	235.35	$235.3^{+2.5}_{-2.5}$
$H_0$	68.19	$68.2^{+1.9}_{-1.9}$	$10^5 D/H$	2.579	$2.58^{+0.11}_{-0.10}$	$D_M(2.33)$	5753.0	$5752^{+38}_{-37}$
$\Omega_\Lambda$	0.6965	$0.697^{+0.024}_{-0.025}$	Age/Gyr	13.775	$13.773^{+0.085}_{-0.083}$	$f\sigma_8(0.15)$	0.4493	$0.449^{+0.021}_{-0.020}$
$\Omega_m$	0.3035	$0.303^{+0.025}_{-0.024}$	$z_*$	1089.70	$1089.68^{+0.96}_{-0.88}$	$\sigma_8(0.15)$	0.7457	$0.746^{+0.017}_{-0.017}$
$\Omega_m h^2$	0.14111	$0.1410^{+0.0039}_{-0.0038}$	$r_*$	144.91	$144.93^{+0.98}_{-0.96}$	$f\sigma_8(0.38)$	0.4693	$0.469^{+0.016}_{-0.016}$
$\Omega_m h^3$	0.09622	$0.0962^{+0.0012}_{-0.0012}$	$100\theta_*$	1.04144	$1.0415^{+0.0012}_{-0.0013}$	$\sigma_8(0.38)$	0.6619	$0.662^{+0.015}_{-0.015}$
$\sigma_8$	0.8061	$0.806^{+0.018}_{-0.018}$	$D_M(z_*)/\text{Gpc}$	13.914	$13.916^{+0.092}_{-0.093}$	$f\sigma_8(0.51)$	0.4689	$0.469^{+0.014}_{-0.014}$
$S_8$	0.8108	$0.810^{+0.042}_{-0.040}$	$z_{drag}$	1059.89	$1059.9^{+1.2}_{-1.3}$	$\sigma_8(0.51)$	0.6198	$0.620^{+0.015}_{-0.014}$
$\sigma_8 \Omega_m^{0.5}$	0.4441	$0.444^{+0.023}_{-0.022}$	$r_{drag}$	147.57	$147.6^{+1.0}_{-1.0}$	$f\sigma_8(0.61)$	0.4646	$0.464^{+0.013}_{-0.013}$
$\sigma_8 \Omega_m^{0.25}$	0.5983	$0.598^{+0.020}_{-0.020}$	$k_D$	0.14039	$0.1404^{+0.0012}_{-0.0012}$	$\sigma_8(0.61)$	0.5899	$0.590^{+0.014}_{-0.014}$
$\sigma_8/h^{0.5}$	0.9762	$0.976^{+0.027}_{-0.027}$	$100\theta_D$	0.16082	$0.16082^{+0.00078}_{-0.00071}$	$f\sigma_8(2.33)$	0.2978	$0.2979^{+0.0075}_{-0.0072}$
$r_{drag} h$	100.62	$100.7^{+3.2}_{-3.2}$	$z_{eq}$	3357	$3354^{+93}_{-92}$	$\sigma_8(2.33)$	0.3074	$0.3076^{+0.0082}_{-0.0078}$
$\langle d^2 \rangle^{1/2}$	2.400	$2.399^{+0.086}_{-0.080}$	$k_{eq}$	0.010245	$0.01024^{+0.00028}_{-0.00028}$	$\chi^2_{lensing}$	9.01	$9.7 (\nu: 0.8)$
$z_{re}$	7.41	$7.5^{+2.2}_{-2.3}$	$100\theta_{eq}$	0.8219	$0.822^{+0.018}_{-0.017}$	$\chi^2_{small}$	395.72	$396.8 (\nu: 1.1)$
$10^9 A_s$	2.090	$2.092^{+0.094}_{-0.087}$	$100\theta_{s,eq}$	0.4539	$0.4541^{+0.0092}_{-0.0090}$	$\chi^2_{CamSpec}$	2576.4	$2580.6 (\nu: 4.3)$
$10^9 A_s e^{-2\tau}$	1.8833	$1.883^{+0.035}_{-0.035}$	$H(0.15)$	73.38	$73.4^{+1.6}_{-1.6}$	$\chi^2_{prior}$	10.20	$11.4 (\nu: 1.1)$
$D_{40}$	1211	$1210^{+70}_{-68}$	$D_M(0.15)$	636.4	$636^{+16}_{-15}$	$\chi^2_{CMB}$	2981.1	$2987.1 (\nu: 6.3)$

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

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



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02249	$0.0225^{+0.0011}_{-0.0011}$	$D_{220}$	5810	$5809^{+250}_{-230}$	$H(0.38)$	82.69	$82.7^{+1.8}_{-1.7}$
$\Omega_c h^2$	0.1191	$0.1191^{+0.0052}_{-0.0052}$	$D_{810}$	2557	$2558^{+58}_{-60}$	$D_M(0.38)$	1536.6	$1536^{+47}_{-46}$
$100\theta_{MC}$	1.03932	$1.0394^{+0.0021}_{-0.0019}$	$D_{1420}$	822.4	$823^{+28}_{-28}$	$H(0.51)$	89.43	$89.5^{+1.5}_{-1.4}$
$\tau$	0.0479	$0.047^{+0.021}_{-0.024}$	$D_{2000}$	232.2	$233^{+10}_{-10}$	$D_M(0.51)$	1990	$1989^{+56}_{-55}$
$\ln(10^{10} A_s)$	3.0378	$3.036^{+0.041}_{-0.043}$	$n_{s,0.002}$	0.9637	$0.965^{+0.029}_{-0.027}$	$H(0.61)$	95.06	$95.1^{+1.3}_{-1.2}$
$n_s$	0.9637	$0.965^{+0.029}_{-0.027}$	$Y_P$	0.245443	$0.24545^{+0.00047}_{-0.00048}$	$D_M(0.61)$	2315	$2314^{+60}_{-60}$
$y_{cal}$	0.9998	$0.9998^{+0.0066}_{-0.0064}$	$Y_P^{BBN}$	0.246769	$0.24677^{+0.00047}_{-0.00049}$	$H(2.33)$	235.96	$236.0^{+2.9}_{-2.9}$
$H_0$	67.23	$67.3^{+2.7}_{-2.6}$	$10^5 D/H$	2.563	$2.56^{+0.21}_{-0.19}$	$D_M(2.33)$	5777	$5776^{+62}_{-63}$
$\Omega_\Lambda$	0.6852	$0.685^{+0.032}_{-0.035}$	Age/Gyr	13.829	$13.83^{+0.14}_{-0.14}$	$f\sigma_8(0.15)$	0.4550	$0.454^{+0.029}_{-0.028}$
$\Omega_m$	0.3148	$0.315^{+0.035}_{-0.032}$	$z_*$	1089.69	$1089.7^{+1.8}_{-1.7}$	$\sigma_8(0.15)$	0.7420	$0.741^{+0.018}_{-0.017}$
$\Omega_m h^2$	0.14227	$0.1422^{+0.0046}_{-0.0046}$	$r_*$	144.56	$144.6^{+1.1}_{-1.0}$	$f\sigma_8(0.38)$	0.4724	$0.472^{+0.022}_{-0.022}$
$\Omega_m h^3$	0.09565	$0.0957^{+0.0020}_{-0.0019}$	$100\theta_*$	1.03950	$1.0395^{+0.0021}_{-0.0019}$	$\sigma_8(0.38)$	0.6573	$0.657^{+0.015}_{-0.014}$
$\sigma_8$	0.8033	$0.802^{+0.021}_{-0.019}$	$D_M(z_*)/\text{Gpc}$	13.907	$13.91^{+0.11}_{-0.10}$	$f\sigma_8(0.51)$	0.4706	$0.470^{+0.019}_{-0.019}$
$S_8$	0.823	$0.822^{+0.058}_{-0.056}$	$z_{drag}$	1060.16	$1060.2^{+2.3}_{-2.3}$	$\sigma_8(0.51)$	0.6150	$0.614^{+0.014}_{-0.014}$
$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.450^{+0.032}_{-0.031}$	$r_{drag}$	147.18	$147.2^{+1.2}_{-1.1}$	$f\sigma_8(0.61)$	0.4655	$0.465^{+0.016}_{-0.016}$
$\sigma_8 \Omega_m^{0.25}$	0.6017	$0.601^{+0.027}_{-0.027}$	$k_D$	0.14086	$0.1409^{+0.0017}_{-0.0017}$	$\sigma_8(0.61)$	0.5851	$0.585^{+0.014}_{-0.013}$
$\sigma_8/h^{0.5}$	0.9797	$0.979^{+0.038}_{-0.037}$	$100\theta_D$	0.16037	$0.1604^{+0.0015}_{-0.0013}$	$f\sigma_8(2.33)$	0.2949	$0.2947^{+0.0072}_{-0.0071}$
$r_{drag} h$	98.95	$99.0^{+4.2}_{-4.0}$	$z_{eq}$	3384	$3384^{+110}_{-110}$	$\sigma_8(2.33)$	0.3039	$0.3037^{+0.0080}_{-0.0080}$
$\langle d^2 \rangle^{1/2}$	2.435	$2.430^{+0.091}_{-0.096}$	$k_{eq}$	0.010329	$0.01033^{+0.00034}_{-0.00034}$	$\chi^2_{lensing}$	8.77	$9.6 (\nu: 1.2)$
$z_{re}$	6.98	$6.8^{+2.0}_{-2.8}$	$100\theta_{eq}$	0.8156	$0.816^{+0.022}_{-0.021}$	$\chi^2_{small}$	395.72	$396.8 (\nu: 1.2)$
$10^9 A_s$	2.086	$2.082^{+0.087}_{-0.088}$	$100\theta_{s,eq}$	0.4505	$0.451^{+0.011}_{-0.010}$	$\chi^2_{CamSpec}$	1888.2	$1891.6 (\nu: 3.8)$
$10^9 A_s e^{-2\tau}$	1.8953	$1.896^{+0.039}_{-0.038}$	$H(0.15)$	72.54	$72.6^{+2.3}_{-2.3}$	$\chi^2_{prior}$	10.38	$12.2 (\nu: 2.1)$
$D_{40}$	1243	$1241^{+70}_{-69}$	$D_M(0.15)$	644.6	$644^{+23}_{-23}$	$\chi^2_{CMB}$	2292.7	$2298.0 (\nu: 5.4)$

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

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



### 2.33 base\_CamSpecHM\_TT\_lowl

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02253	$0.02242^{+0.00073}_{-0.00069}$	$\sigma_8 \Omega_m^{0.5}$	0.4693	$0.468^{+0.037}_{-0.036}$	$100\theta_{s,eq}$	0.4563	$0.455^{+0.015}_{-0.014}$
$\Omega_c h^2$	0.1169	$0.1177^{+0.0068}_{-0.0065}$	$\sigma_8 \Omega_m^{0.25}$	0.6359	$0.631^{+0.040}_{-0.042}$	$H(0.15)$	73.84	$73.5^{+2.7}_{-2.6}$
$100\theta_{MC}$	1.04132	$1.0412^{+0.0014}_{-0.0014}$	$\sigma_8/h^{0.5}$	1.039	$1.030^{+0.065}_{-0.068}$	$D_M(0.15)$	631.9	$635^{+26}_{-26}$
$\tau$	0.128	$0.113^{+0.081}_{-0.088}$	$r_{drag}h$	101.5	$100.9^{+5.5}_{-5.2}$	$H(0.38)$	83.69	$83.4^{+2.1}_{-1.9}$
$\ln(10^{10}A_s)$	3.183	$3.15^{+0.15}_{-0.17}$	$\langle d^2 \rangle^{1/2}$	2.560	$2.54^{+0.15}_{-0.16}$	$D_M(0.38)$	1511	$1518^{+52}_{-52}$
$n_s$	0.9775	$0.973^{+0.021}_{-0.020}$	$z_{re}$	14.0	$12.7^{+5.6}_{-8.3}$	$H(0.51)$	90.26	$90.1^{+1.7}_{-1.5}$
$y_{cal}$	1.0002	$1.0003^{+0.0063}_{-0.0064}$	$10^9 A_s$	2.411	$2.35^{+0.37}_{-0.37}$	$D_M(0.51)$	1959	$1967^{+61}_{-62}$
$A_{100}^{PS}$	219	$233^{+70}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8656	$1.868^{+0.040}_{-0.040}$	$H(0.61)$	95.76	$95.6^{+1.4}_{-1.2}$
$A_{143}^{PS}$	45.0	$36^{+20}_{-20}$	$D_{40}$	1234.6	$1237^{+42}_{-41}$	$D_M(0.61)$	2282	$2291^{+65}_{-67}$
$A_{217}^{PS}$	109.7	$104^{+30}_{-40}$	$D_{220}$	5706	$5708^{+100}_{-110}$	$H(2.33)$	234.71	$235.1^{+4.0}_{-3.8}$
$A_{217}^{CIB}$	37.6	$38^{+20}_{-20}$	$D_{810}$	2529.3	$2528^{+36}_{-35}$	$D_M(2.33)$	5744	$5752^{+54}_{-58}$
$A_{143}^{tSZ}$	6.20	$< 8.89$	$D_{1420}$	817.0	$815^{+13}_{-14}$	$f\sigma_8(0.15)$	0.4754	$0.473^{+0.035}_{-0.035}$
$r_{143 \times 217}^{PS}$	0.807	$> 0.359$	$D_{2000}$	232.7	$231.6^{+5.7}_{-5.8}$	$\sigma_8(0.15)$	0.798	$0.788^{+0.054}_{-0.058}$
$r_{143 \times 217}^{CIB}$	0.70	—	$n_{s,0.002}$	0.9775	$0.973^{+0.021}_{-0.020}$	$f\sigma_8(0.38)$	0.4984	$0.495^{+0.032}_{-0.033}$
$\xi^{tSZ \times CIB}$	0.96	—	$Y_P$	0.245453	$0.24541^{+0.00031}_{-0.00031}$	$\sigma_8(0.38)$	0.709	$0.700^{+0.050}_{-0.054}$
$A^{kSZ}$	0.1	—	$Y_P^{BBN}$	0.246780	$0.24674^{+0.00031}_{-0.00031}$	$f\sigma_8(0.51)$	0.4988	$0.495^{+0.032}_{-0.033}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.51}$	$10^5 D/H$	2.557	$2.58^{+0.13}_{-0.13}$	$\sigma_8(0.51)$	0.6642	$0.655^{+0.048}_{-0.051}$
$A_{143}^{dust}$	0.962	$0.96^{+0.46}_{-0.46}$	Age/Gyr	13.756	$13.77^{+0.12}_{-0.13}$	$f\sigma_8(0.61)$	0.4948	$0.490^{+0.031}_{-0.033}$
$A_{217}^{dust}$	0.978	$0.98^{+0.27}_{-0.27}$	$z_*$	1089.46	$1089.7^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	0.6324	$0.624^{+0.046}_{-0.049}$
$A_{143 \times 217}^{dust}$	1.030	$1.02^{+0.42}_{-0.42}$	$r_*$	145.12	$145.0^{+1.4}_{-1.5}$	$f\sigma_8(2.33)$	0.3195	$0.315^{+0.024}_{-0.026}$
$c_{100}$	0.99783	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04150	$1.0414^{+0.0013}_{-0.0013}$	$\sigma_8(2.33)$	0.3302	$0.325^{+0.027}_{-0.028}$
$c_{217}$	1.00070	$1.0009^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.934	$13.92^{+0.13}_{-0.13}$	$f_{2000}^{143}$	25.9	$27^{+10}_{-9}$
$H_0$	68.72	$68.3^{+3.2}_{-3.0}$	$z_{drag}$	1060.09	$1059.9^{+1.4}_{-1.3}$	$f_{2000}^{217}$	103.9	$105.3^{+6.2}_{-6.1}$
$\Omega_\Lambda$	0.7034	$0.698^{+0.038}_{-0.043}$	$r_{drag}$	147.74	$147.6^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	29.3	$30^{+7}_{-7}$
$\Omega_m$	0.2966	$0.302^{+0.043}_{-0.038}$	$k_D$	0.14030	$0.1403^{+0.0014}_{-0.0013}$	$\chi_{lowl}^2$	24.50	$24.8 (\nu: 1.4)$
$\Omega_m h^2$	0.1401	$0.1408^{+0.0063}_{-0.0061}$	$100\theta_D$	0.16071	$0.16081^{+0.00076}_{-0.00075}$	$\chi_{CamSpec}^2$	7046.4	$7060.1 (\nu: 15.0)$
$\Omega_m h^3$	0.09626	$0.0962^{+0.0013}_{-0.0012}$	$z_{eq}$	3332	$3349^{+150}_{-150}$	$\chi_{prior}^2$	1.4	$7.4 (\nu: 5.6)$
$\sigma_8$	0.862	$0.851^{+0.056}_{-0.061}$	$k_{eq}$	0.010170	$0.01022^{+0.00046}_{-0.00045}$	$\chi_{CMB}^2$	7070.9	$7084.8 (\nu: 14.5)$
$S_8$	0.857	$0.854^{+0.067}_{-0.066}$	$100\theta_{eq}$	0.8268	$0.824^{+0.030}_{-0.028}$			

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

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



### 2.34 base\_CamSpecHM\_TTTEE\_lowl

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022467	$0.02243^{+0.00048}_{-0.00046}$	$S_8$	0.850	$0.846^{+0.053}_{-0.053}$	$100\theta_{s,eq}$	0.4533	$0.4530^{+0.0090}_{-0.0089}$
$\Omega_c h^2$	0.11820	$0.1184^{+0.0042}_{-0.0040}$	$\sigma_8 \Omega_m^{0.5}$	0.4655	$0.463^{+0.029}_{-0.029}$	$H(0.15)$	73.32	$73.2^{+1.6}_{-1.6}$
$100\theta_{MC}$	1.04104	$1.04102^{+0.00085}_{-0.00085}$	$\sigma_8 \Omega_m^{0.25}$	0.6265	$0.623^{+0.037}_{-0.039}$	$D_M(0.15)$	637.0	$638^{+16}_{-15}$
$\tau$	0.101	$0.094^{+0.074}_{-0.073}$	$\sigma_8/h^{0.5}$	1.022	$1.015^{+0.062}_{-0.063}$	$H(0.38)$	83.31	$83.2^{+1.2}_{-1.2}$
$\ln(10^{10} A_s)$	3.132	$3.12^{+0.14}_{-0.14}$	$r_{drag} h$	100.44	$100.3^{+3.2}_{-3.3}$	$D_M(0.38)$	1520.8	$1523^{+32}_{-32}$
$n_s$	0.9723	$0.971^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.521	$2.51^{+0.14}_{-0.15}$	$H(0.51)$	89.96	$89.91^{+0.96}_{-0.93}$
$y_{cal}$	1.0002	$1.0002^{+0.0067}_{-0.0062}$	$z_{re}$	11.9	$11.2^{+5.6}_{-7.4}$	$D_M(0.51)$	1971.2	$1973^{+38}_{-37}$
$A_{100}^{PS}$	222	$234^{+70}_{-60}$	$10^9 A_s$	2.293	$2.26^{+0.34}_{-0.30}$	$H(0.61)$	95.53	$95.48^{+0.78}_{-0.75}$
$A_{143}^{PS}$	48.3	$37^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8726	$1.872^{+0.032}_{-0.030}$	$D_M(0.61)$	2294.6	$2297^{+41}_{-40}$
$A_{217}^{PS}$	108.5	$104^{+30}_{-30}$	$D_{40}$	1231.7	$1233^{+37}_{-33}$	$H(2.33)$	235.48	$235.6^{+2.4}_{-2.3}$
$A_{217}^{CIB}$	38.8	$38^{+20}_{-20}$	$D_{220}$	5716	$5716^{+98}_{-99}$	$D_M(2.33)$	5753.6	$5756^{+34}_{-35}$
$A_{143}^{tSZ}$	6.38	$< 8.87$	$D_{810}$	2532.6	$2531^{+37}_{-34}$	$f\sigma_8(0.15)$	0.4708	$0.468^{+0.029}_{-0.029}$
$r_{143 \times 217}^{PS}$	0.768	$> 0.364$	$D_{1420}$	816.9	$816^{+12}_{-12}$	$\sigma_8(0.15)$	0.780	$0.774^{+0.052}_{-0.051}$
$r_{143 \times 217}^{CIB}$	0.84	—	$D_{2000}$	231.94	$231.3^{+4.6}_{-4.4}$	$f\sigma_8(0.38)$	0.4915	$0.489^{+0.029}_{-0.030}$
$\xi^{tSZ \times CIB}$	0.96	—	$n_{s,0.002}$	0.9723	$0.971^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	0.6922	$0.687^{+0.048}_{-0.047}$
$A^{kSZ}$	0.0	—	$Y_P$	0.245433	$0.24542^{+0.00019}_{-0.00019}$	$f\sigma_8(0.51)$	0.4909	$0.488^{+0.030}_{-0.030}$
$A_{100}^{dust}$	1.00	$1.00^{+0.51}_{-0.49}$	$Y_P^{BBN}$	0.246759	$0.24674^{+0.00019}_{-0.00019}$	$\sigma_8(0.51)$	0.6481	$0.643^{+0.045}_{-0.044}$
$A_{143}^{dust}$	0.960	$0.95^{+0.45}_{-0.46}$	$10^5 D/H$	2.568	$2.575^{+0.087}_{-0.087}$	$f\sigma_8(0.61)$	0.4863	$0.483^{+0.030}_{-0.030}$
$A_{217}^{dust}$	0.993	$0.98^{+0.27}_{-0.27}$	Age/Gyr	13.776	$13.781^{+0.075}_{-0.076}$	$\sigma_8(0.61)$	0.6169	$0.612^{+0.043}_{-0.042}$
$A_{143 \times 217}^{dust}$	1.008	$1.01^{+0.41}_{-0.41}$	$z_*$	1089.64	$1089.70^{+0.88}_{-0.85}$	$f\sigma_8(2.33)$	0.3114	$0.309^{+0.023}_{-0.022}$
$c_{100}$	0.99782	$0.9975^{+0.0028}_{-0.0026}$	$r_*$	144.82	$144.81^{+0.88}_{-0.85}$	$\sigma_8(2.33)$	0.3213	$0.319^{+0.024}_{-0.023}$
$c_{217}$	1.00104	$1.0009^{+0.0041}_{-0.0040}$	$100\theta_*$	1.04122	$1.04120^{+0.00083}_{-0.00083}$	$f_{2000}^{143}$	27.4	$28^{+8}_{-8}$
$c_{TE}$	0.9932	$0.994^{+0.014}_{-0.014}$	$D_M(z_*)/\text{Gpc}$	13.909	$13.908^{+0.081}_{-0.080}$	$f_{2000}^{217}$	104.8	$105.5^{+5.4}_{-5.5}$
$c_{EE}$	0.9906	$0.991^{+0.013}_{-0.013}$	$z_{drag}$	1060.05	$1059.96^{+0.97}_{-0.90}$	$f_{2000}^{143 \times 217}$	30.1	$31^{+6}_{-6}$
$H_0$	68.11	$68.0^{+1.9}_{-1.9}$	$r_{drag}$	147.46	$147.46^{+0.85}_{-0.83}$	$\chi_{lowl}^2$	23.92	24.1 ( $\nu$ : 0.9)
$\Omega_\Lambda$	0.6954	$0.694^{+0.024}_{-0.026}$	$k_D$	0.14055	$0.14053^{+0.00089}_{-0.00090}$	$\chi_{CamSpec}^2$	11496.2	11512.2 ( $\nu$ : 16.0)
$\Omega_m$	0.3046	$0.306^{+0.026}_{-0.024}$	$100\theta_D$	0.16070	$0.16075^{+0.00054}_{-0.00055}$	$\chi_{prior}^2$	1.9	7.8 ( $\nu$ : 5.7)
$\Omega_m h^2$	0.14131	$0.1415^{+0.0038}_{-0.0037}$	$z_{eq}$	3361	$3365^{+92}_{-89}$	$\chi_{CMB}^2$	11520.1	11536.3 ( $\nu$ : 15.7)
$\Omega_m h^3$	0.09625	$0.09620^{+0.00084}_{-0.00082}$	$k_{eq}$	0.010259	$0.01027^{+0.00028}_{-0.00027}$			
$\sigma_8$	0.843	$0.837^{+0.055}_{-0.055}$	$100\theta_{eq}$	0.8210	$0.820^{+0.018}_{-0.018}$			

Best-fit  $\chi_{eff}^2 = 11522.05$ ;  $\bar{\chi}_{eff}^2 = 11544.10$ ;  $R - 1 = 0.00836$

$\chi_{eff}^2$ : CMB - commander\_dx12\_v3\_2\_29: 23.92 CamSpec like\_10.7HM\_1400\_unified: 11496.23



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}} h^2$	0.02213	$0.02215^{+0.00052}_{-0.00052}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6087	$0.609^{+0.020}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	646.2	$646^{+16}_{-15}$
$\Omega_{\mathrm{c}} h^2$	0.12025	$0.1203^{+0.0041}_{-0.0039}$	$\sigma_8/h^{0.5}$	0.9897	$0.990^{+0.027}_{-0.028}$	$H(0.38)$	82.61	$82.6^{+1.2}_{-1.1}$
$100\theta_{\mathrm{MC}}$	1.04085	$1.0408^{+0.0012}_{-0.0011}$	$r_{\mathrm{drag}} h$	98.75	$98.8^{+3.1}_{-3.1}$	$D_{\mathrm{M}}(0.38)$	1539.4	$1539^{+31}_{-31}$
$\tau$	0.0525	$0.053^{+0.021}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	2.446	$2.446^{+0.065}_{-0.065}$	$H(0.51)$	89.39	$89.41^{+0.94}_{-0.89}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0388	$3.039^{+0.040}_{-0.039}$	$z_{\mathrm{re}}$	7.55	$7.5^{+2.0}_{-2.2}$	$D_{\mathrm{M}}(0.51)$	1993.1	$1993^{+37}_{-36}$
$n_{\mathrm{s}}$	0.9638	$0.964^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}$	2.088	$2.090^{+0.086}_{-0.081}$	$H(0.61)$	95.06	$95.08^{+0.78}_{-0.73}$
$y_{\mathrm{cal}}$	1.0004	$1.0004^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8799	$1.880^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(0.61)$	2318.4	$2318^{+39}_{-39}$
$A_{100}^{\mathrm{PS}}$	242	$243^{+60}_{-60}$	$D_{40}$	1228.9	$1229^{+34}_{-32}$	$H(2.33)$	236.48	$236.5^{+2.5}_{-2.4}$
$A_{143}^{\mathrm{PS}}$	39.7	$41^{+20}_{-20}$	$D_{220}$	5704	$5706^{+110}_{-100}$	$D_{\mathrm{M}}(2.33)$	5775.5	$5775^{+36}_{-36}$
$A_{217}^{\mathrm{PS}}$	99.6	$101^{+30}_{-30}$	$D_{810}$	2532.9	$2533^{+35}_{-34}$	$f\sigma_8(0.15)$	0.4612	$0.461^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	44.4	$41^{+20}_{-20}$	$D_{1420}$	813.7	$814^{+13}_{-13}$	$\sigma_8(0.15)$	0.7482	$0.748^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	5.12	$< 8.82$	$D_{2000}$	229.35	$229.5^{+4.6}_{-4.6}$	$f\sigma_8(0.38)$	0.4780	$0.478^{+0.016}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.571	$0.65^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	0.9638	$0.964^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	0.6625	$0.663^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.71	—	$Y_{\mathrm{P}}$	0.245296	$0.24530^{+0.00020}_{-0.00025}$	$f\sigma_8(0.51)$	0.4758	$0.476^{+0.014}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.06	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246622	$0.24663^{+0.00020}_{-0.00025}$	$\sigma_8(0.51)$	0.6197	$0.620^{+0.012}_{-0.012}$
$A^{\mathrm{kSZ}}$	2.5	—	$10^5 \mathrm{D}/\mathrm{H}$	2.632	$2.63^{+0.10}_{-0.095}$	$f\sigma_8(0.61)$	0.4703	$0.470^{+0.012}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	1.01	$1.01^{+0.52}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	13.825	$13.823^{+0.081}_{-0.082}$	$\sigma_8(0.61)$	0.5895	$0.590^{+0.012}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	0.989	$0.98^{+0.46}_{-0.45}$	$z_*$	1090.25	$1090.23^{+0.89}_{-0.87}$	$f\sigma_8(2.33)$	0.2969	$0.2970^{+0.0063}_{-0.0060}$
$A_{217}^{\mathrm{dust}}$	0.962	$0.97^{+0.26}_{-0.26}$	$r_*$	144.55	$144.54^{+0.93}_{-0.93}$	$\sigma_8(2.33)$	0.3058	$0.3059^{+0.0069}_{-0.0066}$
$A_{143 \times 217}^{\mathrm{dust}}$	1.008	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	1.04106	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	31.4	$31^{+8}_{-8}$
$c_{100}$	0.99746	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.885	$13.884^{+0.087}_{-0.087}$	$f_{2000}^{217}$	107.8	$107.6^{+5.3}_{-5.2}$
$c_{217}$	1.00134	$1.0012^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	1059.40	$1059.4^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	33.2	$33^{+5}_{-6}$
$H_0$	67.04	$67.1^{+1.8}_{-1.8}$	$r_{\mathrm{drag}}$	147.29	$147.27^{+0.96}_{-0.95}$	$\chi_{\mathrm{lensing}}^2$	8.91	$9.52 (\nu: 0.4)$
$\Omega_{\Lambda}$	0.6818	$0.682^{+0.024}_{-0.026}$	$k_{\mathrm{D}}$	0.14047	$0.1405^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{small}}^2$	395.87	$396.9 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	0.3182	$0.318^{+0.026}_{-0.024}$	$100\theta_{\mathrm{D}}$	0.16108	$0.16105^{+0.00067}_{-0.00063}$	$\chi_{\mathrm{lowl}}^2$	23.42	$23.5 (\nu: 0.5)$
$\Omega_{\mathrm{m}} h^2$	0.14303	$0.1431^{+0.0039}_{-0.0037}$	$z_{\mathrm{eq}}$	3403	$3403^{+92}_{-89}$	$\chi_{\mathrm{CamSpec}}^2$	7050.2	$7062.7 (\nu: 13.0)$
$\Omega_{\mathrm{m}} h^3$	0.09589	$0.0959^{+0.0011}_{-0.0011}$	$k_{\mathrm{eq}}$	0.010385	$0.01039^{+0.00028}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	2.3	$7.6 (\nu: 6.0)$
$\sigma_8$	0.8104	$0.811^{+0.017}_{-0.016}$	$100\theta_{\mathrm{eq}}$	0.8125	$0.813^{+0.017}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	7478.4	$7492.6 (\nu: 14.3)$
$S_8$	0.8346	$0.835^{+0.042}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	0.4492	$0.4491^{+0.0087}_{-0.0087}$			
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4571	$0.457^{+0.023}_{-0.023}$	$H(0.15)$	72.39	$72.4^{+1.6}_{-1.5}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7480.67$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7500.24$ ;  $R - 1 = 0.00500$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consect8: 8.91 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.42 CamSpec like\_10.7HM: 7050.18



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222^{+0.00047}_{-0.00048}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1530^{+22}_{-22}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0029}_{-0.0027}$	$r_{\mathrm{drag}} h$	$99.7^{+2.1}_{-2.2}$	$H(0.51)$	$89.65^{+0.69}_{-0.69}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.056}_{-0.055}$	$D_{\mathrm{M}}(0.51)$	$1983^{+26}_{-25}$
$\tau$	$0.055^{+0.020}_{-0.019}$	$z_{\mathrm{re}}$	$7.8^{+1.9}_{-2.0}$	$H(0.61)$	$95.26^{+0.60}_{-0.59}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.038}_{-0.038}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.082}_{-0.079}$	$D_{\mathrm{M}}(0.61)$	$2307^{+28}_{-28}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.028}_{-0.027}$	$H(2.33)$	$235.9^{+1.8}_{-1.7}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0061}$	$D_{40}$	$1225^{+31}_{-31}$	$D_{\mathrm{M}}(2.33)$	$5767^{+30}_{-30}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5714^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-33}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.4}_{-4.5}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.81$	$n_{\mathrm{s},0.002}$	$0.967^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24533^{+0.00018}_{-0.00023}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00018}_{-0.00023}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.614^{+0.093}_{-0.087}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.806^{+0.069}_{-0.069}$	$f\sigma_8(2.33)$	$0.2976^{+0.0061}_{-0.0059}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.53}_{-0.51}$	$z_*$	$1090.03^{+0.72}_{-0.71}$	$\sigma_8(2.33)$	$0.3068^{+0.0065}_{-0.0063}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.44}$	$r_*$	$144.77^{+0.71}_{-0.73}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.4^{+5.2}_{-5.2}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.903^{+0.071}_{-0.072}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.5^{+1.0}_{-1.1}$	$\chi_{\mathrm{lensing}}^2$	$9.39 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.48^{+0.80}_{-0.80}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 1.8)$
$H_0$	$67.6^{+1.3}_{-1.3}$	$k_{\mathrm{D}}$	$0.1403^{+0.0010}_{-0.0011}$	$\chi_{\mathrm{lowl}}^2$	$23.04 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.689^{+0.016}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00066}_{-0.00060}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.1 (\nu: 13.4)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.017}_{-0.016}$	$z_{\mathrm{eq}}$	$3378^{+66}_{-62}$	$\chi_{6\mathrm{DF}}^2$	$0.059 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0028}_{-0.0026}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00020}_{-0.00019}$	$\chi_{\mathrm{MGS}}^2$	$1.28 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0011}_{-0.0011}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.2)$
$\sigma_8$	$0.809^{+0.016}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0060}_{-0.0062}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.0)$
$S_8$	$0.824^{+0.032}_{-0.030}$	$H(0.15)$	$72.8^{+1.1}_{-1.1}$	$\chi_{\mathrm{CMB}}^2$	$7492.7 (\nu: 14.3)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$642^{+11}_{-11}$	$\chi_{\mathrm{BAO}}^2$	$6.2 (\nu: 0.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	$82.94^{+0.83}_{-0.83}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233^{+0.00047}_{-0.00051}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.019}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$637^{+15}_{-17}$
$\Omega_{\mathrm{c}}h^2$	$0.1182^{+0.0038}_{-0.0046}$	$\sigma_8/h^{0.5}$	$0.979^{+0.027}_{-0.030}$	$H(0.38)$	$83.3^{+1.3}_{-1.1}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}}h$	$100.5^{+3.9}_{-3.0}$	$D_{\mathrm{M}}(0.38)$	$1522^{+30}_{-35}$
$\tau$	$0.058^{+0.024}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.063}_{-0.071}$	$H(0.51)$	$89.9^{+1.0}_{-0.88}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.038}_{-0.039}$	$z_{\mathrm{re}}$	$8.0^{+2.2}_{-2.0}$	$D_{\mathrm{M}}(0.51)$	$1972^{+35}_{-41}$
$n_{\mathrm{s}}$	$0.969^{+0.016}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.081}_{-0.080}$	$H(0.61)$	$95.48^{+0.77}_{-0.73}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0063}_{-0.0059}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873^{+0.030}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2296^{+37}_{-44}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$D_{40}$	$1221^{+32}_{-38}$	$H(2.33)$	$235.3^{+2.3}_{-2.8}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5724^{+99}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5757^{+35}_{-31}$
$A_{217}^{\mathrm{PS}}$	$102^{+40}_{-30}$	$D_{810}$	$2535^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.451^{+0.020}_{-0.023}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+11}_{-13}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$230.5^{+3.9}_{-4.6}$	$f\sigma_8(0.38)$	$0.471^{+0.016}_{-0.017}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.969^{+0.016}_{-0.012}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00018}_{-0.00023}$	$f\sigma_8(0.51)$	$0.470^{+0.014}_{-0.015}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00018}_{-0.00023}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.593^{+0.098}_{-0.086}$	$f\sigma_8(0.61)$	$0.466^{+0.012}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.52}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.785^{+0.079}_{-0.070}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.43}_{-0.44}$	$z_*$	$1089.81^{+0.84}_{-0.70}$	$f\sigma_8(2.33)$	$0.2982^{+0.0059}_{-0.0059}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.9^{+1.1}_{-0.91}$	$\sigma_8(2.33)$	$0.3077^{+0.0072}_{-0.0064}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.43}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{100}$	$0.9976^{+0.0030}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.918^{+0.096}_{-0.085}$	$f_{2000}^{217}$	$107.0^{+5.2}_{-4.9}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0037}$	$z_{\mathrm{drag}}$	$1059.7^{+1.0}_{-1.1}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$H_0$	$68.1^{+2.1}_{-1.7}$	$r_{\mathrm{drag}}$	$147.6^{+1.1}_{-0.94}$	$\chi_{\mathrm{lensing}}^2$	$9.8 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.695^{+0.027}_{-0.023}$	$k_{\mathrm{D}}$	$0.1403^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{simall}}^2$	$397.8 (\nu: 3.4)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.023}_{-0.027}$	$100\theta_{\mathrm{D}}$	$0.16092^{+0.00065}_{-0.00056}$	$\chi_{\mathrm{lowl}}^2$	$22.68 (\nu: 0.4)$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0036}_{-0.0045}$	$z_{\mathrm{eq}}$	$3357^{+87}_{-110}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.4 (\nu: 15.2)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0010}_{-0.0011}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00027}_{-0.00033}$	$\chi_{\mathrm{H073p45}}^2$	$10.7 (\nu: 3.6)$
$\sigma_8$	$0.808^{+0.017}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.021}_{-0.016}$	$\chi_{\mathrm{prior}}^2$	$7.4 (\nu: 5.9)$
$S_8$	$0.814^{+0.040}_{-0.045}$	$100\theta_{\mathrm{s,eq}}$	$0.454^{+0.011}_{-0.0084}$	$\chi_{\mathrm{CMB}}^2$	$7494.8 (\nu: 19.7)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.446^{+0.022}_{-0.025}$	$H(0.15)$	$73.3^{+1.8}_{-1.5}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7512.86$ ;  $R - 1 = 0.03322$



### 2.38 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00048}_{-0.00048}$	$\sigma_8/h^{0.5}$	$0.979^{+0.024}_{-0.024}$	$D_{\mathrm{M}}(0.38)$	$1522^{+21}_{-20}$
$\Omega_{\mathrm{c}} h^2$	$0.1182^{+0.0027}_{-0.0025}$	$r_{\mathrm{drag}} h$	$100.4^{+1.9}_{-2.1}$	$H(0.51)$	$89.90^{+0.63}_{-0.67}$
$100\theta_{\mathrm{MC}}$	$1.04119^{+0.00093}_{-0.0010}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.054}_{-0.054}$	$D_{\mathrm{M}}(0.51)$	$1973^{+25}_{-23}$
$\tau$	$0.058^{+0.020}_{-0.019}$	$z_{\mathrm{re}}$	$8.0^{+1.9}_{-1.9}$	$H(0.61)$	$95.46^{+0.54}_{-0.58}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.040}_{-0.038}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.086}_{-0.078}$	$D_{\mathrm{M}}(0.61)$	$2297^{+27}_{-25}$
$n_{\mathrm{s}}$	$0.969^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874^{+0.028}_{-0.027}$	$H(2.33)$	$235.4^{+1.8}_{-1.7}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0063}_{-0.0060}$	$D_{40}$	$1222^{+30}_{-30}$	$D_{\mathrm{M}}(2.33)$	$5758^{+29}_{-26}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$D_{220}$	$5725^{+98}_{-100}$	$f\sigma_8(0.15)$	$0.451^{+0.015}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-33}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$817^{+11}_{-13}$	$f\sigma_8(0.38)$	$0.471^{+0.013}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.5^{+3.9}_{-4.4}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.84$	$n_{\mathrm{s},0.002}$	$0.969^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.470^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.466^{+0.011}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.593^{+0.092}_{-0.086}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.786^{+0.067}_{-0.060}$	$f\sigma_8(2.33)$	$0.2982^{+0.0060}_{-0.0057}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.52}_{-0.50}$	$z_*$	$1089.81^{+0.71}_{-0.64}$	$\sigma_8(2.33)$	$0.3077^{+0.0065}_{-0.0063}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.44}_{-0.45}$	$r_*$	$144.92^{+0.68}_{-0.73}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.04138^{+0.00093}_{-0.0010}$	$f_{2000}^{217}$	$107.0^{+5.2}_{-5.0}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.43}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.917^{+0.067}_{-0.073}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-6}$
$c_{100}$	$0.9976^{+0.0029}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.7^{+1.0}_{-1.1}$	$\chi_{\mathrm{lensing}}^2$	$9.6 (\nu: 0.6)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.61^{+0.78}_{-0.78}$	$\chi_{\mathrm{simall}}^2$	$397.7 (\nu: 2.6)$
$H_0$	$68.0^{+1.2}_{-1.2}$	$k_{\mathrm{D}}$	$0.1403^{+0.0010}_{-0.0010}$	$\chi_{\mathrm{lowl}}^2$	$22.69 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.695^{+0.014}_{-0.016}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00065}_{-0.00059}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.2 (\nu: 14.4)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.016}_{-0.014}$	$z_{\mathrm{eq}}$	$3359^{+65}_{-60}$	$\chi_{\mathrm{H073p45}}^2$	$10.7 (\nu: 1.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1412^{+0.0027}_{-0.0025}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00020}_{-0.00018}$	$\chi_{6\mathrm{DF}}^2$	$0.027 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0011}_{-0.0011}$	$100\theta_{\mathrm{eq}}$	$0.821^{+0.011}_{-0.012}$	$\chi_{\mathrm{MGS}}^2$	$1.73 (\nu: 0.1)$
$\sigma_8$	$0.808^{+0.017}_{-0.017}$	$100\theta_{\mathrm{s,eq}}$	$0.4536^{+0.0058}_{-0.0061}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.91 (\nu: 0.3)$
$S_8$	$0.815^{+0.030}_{-0.031}$	$H(0.15)$	$73.3^{+1.0}_{-1.1}$	$\chi_{\mathrm{prior}}^2$	$7.5 (\nu: 6.0)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.446^{+0.016}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$638^{+10}_{-9.7}$	$\chi_{\mathrm{CMB}}^2$	$7494.2 (\nu: 15.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.016}_{-0.017}$	$H(0.38)$	$83.25^{+0.76}_{-0.80}$	$\chi_{\mathrm{BAO}}^2$	$5.67 (\nu: 0.2)$

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



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02217	$0.02218^{+0.00050}_{-0.00052}$	$\sigma_8 \Omega_m^{0.25}$	0.6073	$0.607^{+0.019}_{-0.019}$	$D_M(0.15)$	644.4	$644^{+14}_{-14}$
$\Omega_c h^2$	0.11983	$0.1198^{+0.0036}_{-0.0035}$	$\sigma_8/h^{0.5}$	0.9882	$0.987^{+0.025}_{-0.026}$	$H(0.38)$	82.74	$82.8^{+1.1}_{-1.0}$
$100\theta_{MC}$	1.04091	$1.0409^{+0.0011}_{-0.0011}$	$r_{drag}h$	99.09	$99.1^{+2.9}_{-2.8}$	$D_M(0.38)$	1535.9	$1535^{+29}_{-28}$
$\tau$	0.0541	$0.054^{+0.021}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.441^{+0.062}_{-0.062}$	$H(0.51)$	89.49	$89.51^{+0.88}_{-0.84}$
$\ln(10^{10} A_s)$	3.0416	$3.041^{+0.040}_{-0.038}$	$z_{re}$	7.70	$7.7^{+2.0}_{-2.1}$	$D_M(0.51)$	1989.0	$1988^{+34}_{-34}$
$n_s$	0.9650	$0.965^{+0.012}_{-0.012}$	$10^9 A_s$	2.094	$2.093^{+0.084}_{-0.079}$	$H(0.61)$	95.14	$95.16^{+0.73}_{-0.70}$
$y_{cal}$	1.0006	$1.0005^{+0.0065}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	1.8792	$1.879^{+0.030}_{-0.028}$	$D_M(0.61)$	2314.0	$2313^{+37}_{-36}$
$A_{100}^{PS}$	240	$243^{+60}_{-60}$	$D_{40}$	1227.5	$1228^{+32}_{-32}$	$H(2.33)$	236.25	$236.2^{+2.2}_{-2.2}$
$A_{143}^{PS}$	40.1	$41^{+20}_{-20}$	$D_{220}$	5709	$5710^{+100}_{-100}$	$D_M(2.33)$	5771.9	$5771^{+34}_{-35}$
$A_{217}^{PS}$	100.0	$101^{+30}_{-30}$	$D_{810}$	2534.1	$2534^{+35}_{-34}$	$f\sigma_8(0.15)$	0.4594	$0.459^{+0.020}_{-0.020}$
$A_{217}^{CIB}$	45.1	$41^{+20}_{-20}$	$D_{1420}$	814.6	$815^{+13}_{-13}$	$\sigma_8(0.15)$	0.7484	$0.748^{+0.015}_{-0.015}$
$A_{143}^{tSZ}$	5.90	$< 8.81$	$D_{2000}$	229.69	$229.7^{+4.6}_{-4.6}$	$f\sigma_8(0.38)$	0.4769	$0.476^{+0.015}_{-0.016}$
$r_{143 \times 217}^{PS}$	0.569	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	0.9650	$0.965^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	0.6630	$0.663^{+0.013}_{-0.013}$
$r_{143 \times 217}^{CIB}$	0.78	—	$Y_P$	0.245314	$0.24532^{+0.00019}_{-0.00025}$	$f\sigma_8(0.51)$	0.4750	$0.475^{+0.013}_{-0.014}$
$\xi^{tSZ \times CIB}$	0.07	—	$Y_P^{BBN}$	0.246640	$0.24664^{+0.00019}_{-0.00025}$	$\sigma_8(0.51)$	0.6203	$0.620^{+0.012}_{-0.012}$
$A^{kSZ}$	1.3	—	$10^5 D/H$	2.624	$2.62^{+0.10}_{-0.091}$	$f\sigma_8(0.61)$	0.4697	$0.469^{+0.012}_{-0.012}$
$A_{100}^{dust}$	1.01	$1.01^{+0.53}_{-0.51}$	Age/Gyr	13.817	$13.815^{+0.078}_{-0.079}$	$\sigma_8(0.61)$	0.5901	$0.590^{+0.012}_{-0.011}$
$A_{143}^{dust}$	0.991	$0.98^{+0.45}_{-0.45}$	$z_*$	1090.16	$1090.14^{+0.84}_{-0.82}$	$f\sigma_8(2.33)$	0.2974	$0.2973^{+0.0063}_{-0.0059}$
$A_{217}^{dust}$	0.967	$0.97^{+0.26}_{-0.26}$	$r_*$	144.63	$144.63^{+0.87}_{-0.87}$	$\sigma_8(2.33)$	0.3064	$0.3063^{+0.0068}_{-0.0064}$
$A_{143 \times 217}^{dust}$	1.000	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	1.04112	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	31.1	$31^{+8}_{-7}$
$c_{100}$	0.99756	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	13.892	$13.892^{+0.082}_{-0.082}$	$f_{2000}^{217}$	107.6	$107.5^{+5.2}_{-5.2}$
$c_{217}$	1.00139	$1.0012^{+0.0040}_{-0.0038}$	$z_{drag}$	1059.47	$1059.5^{+1.1}_{-1.2}$	$f_{2000}^{143 \times 217}$	33.0	$33^{+5}_{-6}$
$H_0$	67.24	$67.3^{+1.7}_{-1.6}$	$r_{drag}$	147.36	$147.36^{+0.93}_{-0.91}$	$\chi^2_{lensing}$	8.88	$9.45 (\nu: 0.3)$
$\Omega_\Lambda$	0.6845	$0.685^{+0.022}_{-0.023}$	$k_D$	0.14043	$0.1404^{+0.0011}_{-0.0011}$	$\chi^2_{small}$	396.05	$397.0 (\nu: 1.5)$
$\Omega_m$	0.3155	$0.315^{+0.023}_{-0.022}$	$100\theta_D$	0.16104	$0.16103^{+0.00067}_{-0.00062}$	$\chi^2_{lowl}$	23.24	$23.30 (\nu: 0.5)$
$\Omega_m h^2$	0.14265	$0.1426^{+0.0035}_{-0.0034}$	$z_{eq}$	3393	$3392^{+83}_{-80}$	$\chi^2_{CamSpec}$	7050.4	$7062.8 (\nu: 13.3)$
$\Omega_m h^3$	0.09592	$0.0959^{+0.0011}_{-0.0011}$	$k_{eq}$	0.010357	$0.01035^{+0.00025}_{-0.00024}$	$\chi^2_{JLA}$	1035.29	$1035.43 (\nu: 0.2)$
$\sigma_8$	0.8104	$0.810^{+0.016}_{-0.016}$	$100\theta_{eq}$	0.8143	$0.815^{+0.015}_{-0.015}$	$\chi^2_{prior}$	2.2	$7.6 (\nu: 6.0)$
$S_8$	0.8310	$0.830^{+0.039}_{-0.038}$	$100\theta_{s,eq}$	0.4501	$0.4502^{+0.0080}_{-0.0079}$	$\chi^2_{CMB}$	7478.5	$7492.6 (\nu: 14.3)$
$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.455^{+0.021}_{-0.021}$	$H(0.15)$	72.56	$72.6^{+1.4}_{-1.4}$			

Best-fit  $\chi^2_{eff} = 8516.03$ ;  $\bar{\chi}^2_{eff} = 8535.63$ ;  $R - 1 = 0.00582$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consect8: 8.88 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3.2\_29: 23.24 CamSpec like\_10.7HM: 7050.35 SN - JLA Pantheon18: 1035.29



## 2.40 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234^{+0.00047}_{-0.00046}$	$r_{\mathrm{drag}}h$	$100.5^{+1.9}_{-2.1}$	$D_{\mathrm{M}}(0.51)$	$1972^{+25}_{-22}$
$\Omega_{\mathrm{c}}h^2$	$0.1181^{+0.0027}_{-0.0024}$	$\langle d^2 \rangle^{1/2}$	$2.421^{+0.056}_{-0.056}$	$H(0.61)$	$95.48^{+0.53}_{-0.58}$
$100\theta_{\mathrm{MC}}$	$1.04120^{+0.00092}_{-0.0010}$	$z_{\mathrm{re}}$	$8.0^{+1.9}_{-2.0}$	$D_{\mathrm{M}}(0.61)$	$2296^{+27}_{-24}$
$\tau$	$0.058^{+0.020}_{-0.019}$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.087}_{-0.080}$	$H(2.33)$	$235.3^{+1.8}_{-1.6}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.040}_{-0.039}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5757^{+29}_{-29}$
$n_{\mathrm{s}}$	$0.969^{+0.010}_{-0.010}$	$D_{40}$	$1221^{+30}_{-30}$	$f\sigma_8(0.15)$	$0.451^{+0.015}_{-0.018}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0067}_{-0.0060}$	$D_{220}$	$5726^{+100}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.015}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2535^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.470^{+0.013}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$102^{+40}_{-30}$	$D_{2000}$	$230.6^{+4.0}_{-4.6}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.969^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.68$	$Y_{\mathrm{P}}$	$0.24538^{+0.00018}_{-0.00020}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.31}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00018}_{-0.00020}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.088}_{-0.086}$	$f\sigma_8(2.33)$	$0.2982^{+0.0060}_{-0.0058}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.784^{+0.069}_{-0.059}$	$\sigma_8(2.33)$	$0.3077^{+0.0065}_{-0.0063}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1089.79^{+0.70}_{-0.68}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.50}$	$r_*$	$144.95^{+0.66}_{-0.76}$	$f_{2000}^{217}$	$107.0^{+5.4}_{-5.0}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.40}_{-0.46}$	$100\theta_*$	$1.04139^{+0.00092}_{-0.0010}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.24}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.919^{+0.065}_{-0.076}$	$\chi_{\mathrm{lensing}}^2$	$9.7 (\nu: 0.7)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.39}$	$z_{\mathrm{drag}}$	$1059.7^{+1.1}_{-1.1}$	$\chi_{\mathrm{simall}}^2$	$397.7 (\nu: 2.5)$
$c_{100}$	$0.9976^{+0.0030}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.63^{+0.70}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	$22.66 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1403^{+0.0011}_{-0.0010}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.4 (\nu: 14.7)$
$H_0$	$68.1^{+1.1}_{-1.2}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00064}_{-0.00063}$	$\chi_{\mathrm{H073p45}}^2$	$10.5 (\nu: 1.7)$
$\Omega_{\Lambda}$	$0.696^{+0.014}_{-0.016}$	$z_{\mathrm{eq}}$	$3356^{+64}_{-58}$	$\chi_{\mathrm{JLA}}^2$	$706.61 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.016}_{-0.014}$	$k_{\mathrm{eq}}$	$0.01024^{+0.00020}_{-0.00018}$	$\chi_{6\mathrm{DF}}^2$	$0.026 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0027}_{-0.0024}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.010}_{-0.012}$	$\chi_{\mathrm{MGS}}^2$	$1.79 (\nu: 0.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0011}_{-0.0010}$	$100\theta_{\mathrm{s,eq}}$	$0.4538^{+0.0055}_{-0.0061}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.85 (\nu: 0.3)$
$\sigma_8$	$0.807^{+0.016}_{-0.017}$	$H(0.15)$	$73.30^{+0.97}_{-1.0}$	$\chi_{\mathrm{prior}}^2$	$7.5 (\nu: 6.3)$
$S_8$	$0.813^{+0.030}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$637^{+10}_{-9.3}$	$\chi_{\mathrm{CMB}}^2$	$7494.5 (\nu: 16.4)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.445^{+0.016}_{-0.019}$	$H(0.38)$	$83.28^{+0.75}_{-0.79}$	$\chi_{\mathrm{BAO}}^2$	$5.67 (\nu: 0.2)$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.015}_{-0.019}$	$D_{\mathrm{M}}(0.38)$	$1521^{+21}_{-19}$		
$\sigma_8/h^{0.5}$	$0.979^{+0.022}_{-0.027}$	$H(0.51)$	$89.92^{+0.62}_{-0.66}$		

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



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022236	$0.02224^{+0.00047}_{-0.00048}$	$\sigma_8/h^{0.5}$	0.9832	$0.983^{+0.023}_{-0.022}$	$D_M(0.38)$	1529.2	$1529^{+21}_{-21}$
$\Omega_c h^2$	0.11903	$0.1190^{+0.0027}_{-0.0026}$	$r_{\text{drag}} h$	99.76	$99.8^{+2.0}_{-2.1}$	$H(0.51)$	89.68	$89.68^{+0.67}_{-0.67}$
$100\theta_{\text{MC}}$	1.04107	$1.0410^{+0.0010}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	2.430	$2.432^{+0.055}_{-0.053}$	$D_M(0.51)$	1981.2	$1981^{+25}_{-25}$
$\tau$	0.0552	$0.056^{+0.020}_{-0.019}$	$z_{\text{re}}$	7.79	$7.8^{+1.9}_{-2.0}$	$H(0.61)$	95.29	$95.29^{+0.58}_{-0.58}$
$\ln(10^{10} A_s)$	3.0426	$3.044^{+0.038}_{-0.039}$	$10^9 A_s$	2.096	$2.098^{+0.081}_{-0.080}$	$D_M(0.61)$	2305.5	$2306^{+27}_{-27}$
$n_s$	0.9671	$0.967^{+0.010}_{-0.010}$	$10^9 A_s e^{-2\tau}$	1.8768	$1.876^{+0.028}_{-0.027}$	$H(2.33)$	235.80	$235.8^{+1.8}_{-1.7}$
$y_{\text{cal}}$	1.0007	$1.0007^{+0.0064}_{-0.0060}$	$D_{40}$	1223.7	$1224^{+31}_{-31}$	$D_M(2.33)$	5765.2	$5765^{+30}_{-29}$
$A_{100}^{\text{PS}}$	237	$242^{+60}_{-60}$	$D_{220}$	5715	$5716^{+100}_{-100}$	$f\sigma_8(0.15)$	0.4551	$0.455^{+0.016}_{-0.015}$
$A_{143}^{\text{PS}}$	40.1	$41^{+20}_{-20}$	$D_{810}$	2535.2	$2534^{+36}_{-33}$	$\sigma_8(0.15)$	0.7473	$0.747^{+0.015}_{-0.015}$
$A_{217}^{\text{PS}}$	100.8	$101^{+30}_{-30}$	$D_{1420}$	815.7	$815^{+12}_{-13}$	$f\sigma_8(0.38)$	0.4736	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	45.8	$41^{+20}_{-20}$	$D_{2000}$	230.13	$230.0^{+4.4}_{-4.4}$	$\sigma_8(0.38)$	0.6626	$0.663^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	6.62	$< 8.81$	$n_{s,0.002}$	0.9671	$0.967^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	0.4724	$0.472^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	0.572	$0.65^{+0.31}_{-0.32}$	$Y_{\text{P}}$	0.245341	$0.24534^{+0.00018}_{-0.00022}$	$\sigma_8(0.51)$	0.6201	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\text{CIB}}$	0.80	—	$Y_{\text{P}}^{\text{BBN}}$	0.246667	$0.24666^{+0.00018}_{-0.00023}$	$f\sigma_8(0.61)$	0.4675	$0.468^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$10^5 D/H$	2.611	$2.612^{+0.092}_{-0.086}$	$\sigma_8(0.61)$	0.5901	$0.590^{+0.012}_{-0.011}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.802	$13.803^{+0.069}_{-0.067}$	$f\sigma_8(2.33)$	0.2976	$0.2977^{+0.0060}_{-0.0058}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.53}_{-0.50}$	$z_*$	1090.00	$1090.00^{+0.72}_{-0.69}$	$\sigma_8(2.33)$	0.3069	$0.3069^{+0.0065}_{-0.0063}$
$A_{143}^{\text{dust}}$	0.988	$0.97^{+0.45}_{-0.44}$	$r_*$	144.79	$144.80^{+0.70}_{-0.71}$	$f_{2000}^{143}$	30.8	$30^{+8}_{-7}$
$A_{217}^{\text{dust}}$	0.965	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	1.04127	$1.0412^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	107.4	$107.3^{+5.2}_{-5.2}$
$A_{143 \times 217}^{\text{dust}}$	1.000	$1.03^{+0.42}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	13.905	$13.906^{+0.068}_{-0.071}$	$f_{2000}^{143 \times 217}$	32.7	$33^{+5}_{-6}$
$c_{100}$	0.99763	$0.9975^{+0.0028}_{-0.0028}$	$z_{\text{drag}}$	1059.55	$1059.5^{+1.1}_{-1.1}$	$\chi_{\text{lensing}}^2$	9.02	$9.41 (\nu: 0.4)$
$c_{217}$	1.00136	$1.0012^{+0.0040}_{-0.0038}$	$r_{\text{drag}}$	147.50	$147.51^{+0.79}_{-0.79}$	$\chi_{\text{small}}^2$	396.2	$397.3 (\nu: 1.9)$
$H_0$	67.64	$67.6^{+1.2}_{-1.2}$	$k_{\text{D}}$	0.14034	$0.1403^{+0.0010}_{-0.0011}$	$\chi_{\text{lowl}}^2$	22.86	$22.98 (\nu: 0.3)$
$\Omega_{\Lambda}$	0.6898	$0.690^{+0.016}_{-0.017}$	$100\theta_{\text{D}}$	0.16100	$0.16100^{+0.00065}_{-0.00060}$	$\chi_{\text{CamSpec}}^2$	7051.2	$7063.2 (\nu: 13.5)$
$\Omega_{\text{m}}$	0.3102	$0.310^{+0.017}_{-0.016}$	$z_{\text{eq}}$	3376	$3375^{+64}_{-60}$	$\chi_{\text{JLA}}^2$	1034.99	$1035.07 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.14191	$0.1419^{+0.0027}_{-0.0025}$	$k_{\text{eq}}$	0.010303	$0.01030^{+0.00019}_{-0.00018}$	$\chi_{\text{6DF}}^2$	0.022	$0.048 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	0.09598	$0.0960^{+0.0011}_{-0.0011}$	$100\theta_{\text{eq}}$	0.8178	$0.818^{+0.011}_{-0.012}$	$\chi_{\text{MGS}}^2$	1.28	$1.35 (\nu: 0.1)$
$\sigma_8$	0.8086	$0.809^{+0.016}_{-0.016}$	$100\theta_{\text{s,eq}}$	0.4518	$0.4519^{+0.0058}_{-0.0060}$	$\chi_{\text{DR12BAO}}^2$	4.18	$4.6 (\nu: 0.9)$
$S_8$	0.8223	$0.822^{+0.030}_{-0.029}$	$H(0.15)$	72.90	$72.9^{+1.0}_{-1.1}$	$\chi_{\text{prior}}^2$	2.1	$7.6 (\nu: 6.0)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4504	$0.450^{+0.017}_{-0.016}$	$D_M(0.15)$	641.1	$641^{+11}_{-10}$	$\chi_{\text{CMB}}^2$	7479.3	$7492.9 (\nu: 14.5)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6035	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	82.98	$82.98^{+0.81}_{-0.80}$	$\chi_{\text{BAO}}^2$	5.48	$6.0 (\nu: 0.6)$

Best-fit  $\chi_{\text{eff}}^2 = 8521.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 8541.50$ ;  $R - 1 = 0.00920$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.18 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.02 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.23 commander\_dx12.v3.2.29: 22.86 CamSpec like\_10.7HM: 7051.17 SN - JLA Pantheon18: 1034.99



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022336	$0.02234^{+0.00047}_{-0.00047}$	$r_{\text{drag}} h$	100.44	$100.5^{+1.8}_{-2.0}$	$D_M(0.51)$	1972.8	$1972^{+24}_{-22}$
$\Omega_c h^2$	0.11821	$0.1181^{+0.0026}_{-0.0025}$	$\langle d^2 \rangle^{1/2}$	2.423	$2.422^{+0.055}_{-0.053}$	$H(0.61)$	95.46	$95.48^{+0.52}_{-0.57}$
$100\theta_{\text{MC}}$	1.04119	$1.04120^{+0.00092}_{-0.0010}$	$z_{\text{re}}$	8.05	$8.1^{+1.8}_{-1.9}$	$D_M(0.61)$	2296.4	$2296^{+26}_{-24}$
$\tau$	0.0582	$0.058^{+0.020}_{-0.019}$	$10^9 A_s$	2.106	$2.106^{+0.086}_{-0.079}$	$H(2.33)$	235.37	$235.3^{+1.7}_{-1.6}$
$\ln(10^{10} A_s)$	3.0473	$3.047^{+0.040}_{-0.038}$	$10^9 A_s e^{-2\tau}$	1.8744	$1.874^{+0.028}_{-0.027}$	$D_M(2.33)$	5757.3	$5757^{+29}_{-26}$
$n_s$	0.9692	$0.969^{+0.010}_{-0.010}$	$D_{40}$	1221.3	$1221^{+30}_{-31}$	$f\sigma_8(0.15)$	0.4513	$0.451^{+0.015}_{-0.016}$
$y_{\text{cal}}$	1.0009	$1.0009^{+0.0064}_{-0.0060}$	$D_{220}$	5726	$5726^{+97}_{-100}$	$\sigma_8(0.15)$	0.7473	$0.747^{+0.015}_{-0.015}$
$A_{100}^{\text{PS}}$	235	$241^{+60}_{-60}$	$D_{810}$	2536.3	$2535^{+34}_{-33}$	$f\sigma_8(0.38)$	0.4710	$0.471^{+0.013}_{-0.014}$
$A_{143}^{\text{PS}}$	39.5	$40^{+20}_{-20}$	$D_{1420}$	816.9	$817^{+11}_{-13}$	$\sigma_8(0.38)$	0.6632	$0.663^{+0.013}_{-0.013}$
$A_{217}^{\text{PS}}$	101.5	$102^{+30}_{-30}$	$D_{2000}$	230.67	$230.6^{+3.9}_{-4.4}$	$f\sigma_8(0.51)$	0.4704	$0.470^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	44.8	$40^{+20}_{-20}$	$n_{\text{s},0.002}$	0.9692	$0.969^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	0.6209	$0.621^{+0.012}_{-0.012}$
$A_{143}^{\text{tSZ}}$	6.49	$< 8.84$	$Y_{\text{P}}$	0.245382	$0.24538^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	0.4660	$0.466^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	0.590	$0.66^{+0.31}_{-0.33}$	$Y_{\text{P}}^{\text{BBN}}$	0.246708	$0.24671^{+0.00018}_{-0.00021}$	$\sigma_8(0.61)$	0.5910	$0.591^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	0.78	—	$10^5 D/H$	2.592	$2.592^{+0.091}_{-0.085}$	$f\sigma_8(2.33)$	0.2983	$0.2982^{+0.0059}_{-0.0058}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	Age/Gyr	13.785	$13.784^{+0.065}_{-0.059}$	$\sigma_8(2.33)$	0.3078	$0.3078^{+0.0064}_{-0.0061}$
$A^{\text{kSZ}}$	0.2	—	$z_*$	1089.81	$1089.80^{+0.69}_{-0.66}$	$f_{2000}^{143}$	30.1	$30^{+8}_{-7}$
$A_{100}^{\text{dust}}$	1.01	$1.02^{+0.53}_{-0.50}$	$r_*$	144.92	$144.94^{+0.67}_{-0.71}$	$f_{2000}^{217}$	107.0	$107.0^{+5.1}_{-5.0}$
$A_{143}^{\text{dust}}$	0.980	$0.97^{+0.44}_{-0.45}$	$100\theta_*$	1.04138	$1.04139^{+0.00092}_{-0.0010}$	$f_{2000}^{143 \times 217}$	32.2	$32^{+6}_{-6}$
$A_{217}^{\text{dust}}$	0.968	$0.97^{+0.26}_{-0.27}$	$D_M(z_*)/\text{Gpc}$	13.916	$13.918^{+0.066}_{-0.072}$	$\chi_{\text{lensing}}^2$	9.17	$9.6 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dust}}$	1.002	$1.02^{+0.43}_{-0.43}$	$z_{\text{drag}}$	1059.74	$1059.7^{+1.0}_{-1.1}$	$\chi_{\text{small}}^2$	396.8	$397.7 (\nu: 2.6)$
$c_{100}$	0.99765	$0.9976^{+0.0029}_{-0.0028}$	$r_{\text{drag}}$	147.60	$147.62^{+0.77}_{-0.77}$	$\chi_{\text{lowl}}^2$	22.60	$22.66 (\nu: 0.3)$
$c_{217}$	1.00136	$1.0012^{+0.0040}_{-0.0038}$	$k_{\text{D}}$	0.14030	$0.1403^{+0.0010}_{-0.0010}$	$\chi_{\text{CamSpec}}^2$	7052.0	$7064.2 (\nu: 14.4)$
$H_0$	68.05	$68.1^{+1.1}_{-1.2}$	$100\theta_{\text{D}}$	0.16090	$0.16091^{+0.00066}_{-0.00059}$	$\chi_{\text{H073p45}}^2$	10.58	$10.5 (\nu: 1.6)$
$\Omega_{\Lambda}$	0.6951	$0.695^{+0.014}_{-0.016}$	$z_{\text{eq}}$	3359	$3357^{+62}_{-59}$	$\chi_{\text{JLA}}^2$	1034.807	$1034.87 (\nu: 0.0)$
$\Omega_{\text{m}}$	0.3049	$0.305^{+0.016}_{-0.014}$	$k_{\text{eq}}$	0.010251	$0.01025^{+0.00019}_{-0.00018}$	$\chi_{\text{6DF}}^2$	0.000	$0.025 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	0.14119	$0.1411^{+0.0026}_{-0.0025}$	$100\theta_{\text{eq}}$	0.8213	$0.822^{+0.011}_{-0.011}$	$\chi_{\text{MGS}}^2$	1.68	$1.77 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	0.09608	$0.0961^{+0.0010}_{-0.0011}$	$100\theta_{\text{s,eq}}$	0.4536	$0.4538^{+0.0056}_{-0.0059}$	$\chi_{\text{DR12BAO}}^2$	3.49	$3.85 (\nu: 0.2)$
$\sigma_8$	0.8080	$0.808^{+0.017}_{-0.017}$	$H(0.15)$	73.26	$73.28^{+0.96}_{-1.0}$	$\chi_{\text{prior}}^2$	2.1	$7.5 (\nu: 6.0)$
$S_8$	0.8146	$0.814^{+0.029}_{-0.030}$	$D_M(0.15)$	637.5	$637^{+10}_{-9.4}$	$\chi_{\text{CMB}}^2$	7480.6	$7494.3 (\nu: 15.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4462	$0.446^{+0.016}_{-0.017}$	$H(0.38)$	83.25	$83.27^{+0.74}_{-0.78}$	$\chi_{\text{BAO}}^2$	5.16	$5.64 (\nu: 0.2)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6004	$0.600^{+0.016}_{-0.016}$	$D_M(0.38)$	1522.1	$1522^{+20}_{-19}$			
$\sigma_8/h^{0.5}$	0.9795	$0.979^{+0.023}_{-0.024}$	$H(0.51)$	89.90	$89.91^{+0.61}_{-0.65}$			

Best-fit  $\chi_{\text{eff}}^2 = 8533.26$ ;  $\bar{\chi}_{\text{eff}}^2 = 8552.81$ ;  $R - 1 = 0.02978$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.49 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.17 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.83 comman-  
der\_dx12\_v3\_2\_29: 22.60 CamSpec like\_10.7HM: 7051.98 Hubble - H073p45: 10.58 SN - JLA Pantheon18: 1034.81



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02216^{+0.00051}_{-0.00051}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.020}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$646^{+15}_{-15}$
$\Omega_{\mathrm{c}} h^2$	$0.1201^{+0.0038}_{-0.0038}$	$\sigma_8 / h^{0.5}$	$0.990^{+0.027}_{-0.027}$	$H(0.38)$	$82.7^{+1.1}_{-1.1}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0011}$	$r_{\mathrm{drag}} h$	$98.9^{+3.1}_{-2.9}$	$D_{\mathrm{M}}(0.38)$	$1538^{+30}_{-30}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.065}_{-0.064}$	$H(0.51)$	$89.43^{+0.92}_{-0.86}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.039}_{-0.027}$	$z_{\mathrm{re}}$	$< 9.41$	$D_{\mathrm{M}}(0.51)$	$1992^{+35}_{-36}$
$n_{\mathrm{s}}$	$0.964^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.082}_{-0.056}$	$H(0.61)$	$95.09^{+0.77}_{-0.72}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880^{+0.029}_{-0.029}$	$D_{\mathrm{M}}(0.61)$	$2317^{+38}_{-39}$
$A_{100}^{\mathrm{PS}}$	$243^{+60}_{-60}$	$D_{40}$	$1229^{+34}_{-32}$	$H(2.33)$	$236.4^{+2.4}_{-2.3}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5706^{+110}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5774^{+35}_{-36}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2533^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$229.5^{+4.6}_{-4.6}$	$f\sigma_8(0.38)$	$0.478^{+0.016}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.964^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.010}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24530^{+0.00020}_{-0.00024}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00020}_{-0.00024}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0093}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.627^{+0.099}_{-0.094}$	$f\sigma_8(0.61)$	$0.471^{+0.012}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.821^{+0.080}_{-0.082}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0087}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$z_*$	$1090.21^{+0.86}_{-0.86}$	$f\sigma_8(2.33)$	$0.2974^{+0.0060}_{-0.0044}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.56^{+0.91}_{-0.90}$	$\sigma_8(2.33)$	$0.3063^{+0.0067}_{-0.0047}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886^{+0.086}_{-0.085}$	$f_{2000}^{217}$	$107.6^{+5.3}_{-5.2}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.4^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$H_0$	$67.1^{+1.8}_{-1.7}$	$r_{\mathrm{drag}}$	$147.29^{+0.95}_{-0.93}$	$\chi_{\mathrm{lensing}}^2$	$9.49 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.682^{+0.023}_{-0.025}$	$k_{\mathrm{D}}$	$0.1405^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.318^{+0.025}_{-0.023}$	$100\theta_{\mathrm{D}}$	$0.16105^{+0.00065}_{-0.00063}$	$\chi_{\mathrm{lowl}}^2$	$23.5 (\nu: 0.5)$
$\Omega_{\mathrm{m}} h^2$	$0.1429^{+0.0037}_{-0.0036}$	$z_{\mathrm{eq}}$	$3401^{+88}_{-87}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.6 (\nu: 13.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0959^{+0.0011}_{-0.0011}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00027}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.0)$
$\sigma_8$	$0.811^{+0.016}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.017}_{-0.016}$	$\chi_{\mathrm{CMB}}^2$	$7492.4 (\nu: 13.9)$
$S_8$	$0.835^{+0.042}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.4494^{+0.0086}_{-0.0083}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.457^{+0.023}_{-0.023}$	$H(0.15)$	$72.5^{+1.5}_{-1.5}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7500.01; R - 1 = 0.00502$					



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223^{+0.00047}_{-0.00048}$	$\sigma_8/h^{0.5}$	$0.985^{+0.023}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1530^{+22}_{-21}$
$\Omega_{\mathrm{c}}h^2$	$0.1191^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}h$	$99.7^{+2.1}_{-2.1}$	$H(0.51)$	$89.66^{+0.69}_{-0.68}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.055}_{-0.054}$	$D_{\mathrm{M}}(0.51)$	$1982^{+26}_{-25}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$z_{\mathrm{re}}$	$< 9.54$	$H(0.61)$	$95.27^{+0.59}_{-0.59}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.037}_{-0.029}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.080}_{-0.061}$	$D_{\mathrm{M}}(0.61)$	$2307^{+28}_{-27}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877^{+0.028}_{-0.027}$	$H(2.33)$	$235.8^{+1.8}_{-1.7}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0060}$	$D_{40}$	$1225^{+31}_{-31}$	$D_{\mathrm{M}}(2.33)$	$5766^{+30}_{-30}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5714^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-33}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.4}_{-4.5}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.81$	$n_{\mathrm{s},0.002}$	$0.967^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24533^{+0.00018}_{-0.00023}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0099}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00018}_{-0.00023}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.613^{+0.093}_{-0.086}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0094}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.805^{+0.069}_{-0.068}$	$f\sigma_8(2.33)$	$0.2978^{+0.0059}_{-0.0047}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.53}_{-0.51}$	$z_*$	$1090.03^{+0.72}_{-0.70}$	$\sigma_8(2.33)$	$0.3070^{+0.0063}_{-0.0049}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.44}$	$r_*$	$144.77^{+0.72}_{-0.73}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.4^{+5.2}_{-5.2}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904^{+0.070}_{-0.071}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.5^{+1.0}_{-1.1}$	$\chi_{\mathrm{lensing}}^2$	$9.35 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.49^{+0.81}_{-0.80}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 1.8)$
$H_0$	$67.6^{+1.2}_{-1.3}$	$k_{\mathrm{D}}$	$0.1403^{+0.0010}_{-0.0011}$	$\chi_{\mathrm{lowl}}^2$	$23.04 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.689^{+0.016}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00066}_{-0.00060}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.0 (\nu: 13.4)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.017}_{-0.016}$	$z_{\mathrm{eq}}$	$3378^{+65}_{-62}$	$\chi_{6\mathrm{DF}}^2$	$0.056 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1420^{+0.0027}_{-0.0026}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00020}_{-0.00019}$	$\chi_{\mathrm{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0960^{+0.0011}_{-0.0011}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.1)$
$\sigma_8$	$0.809^{+0.016}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0060}_{-0.0062}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.0)$
$S_8$	$0.824^{+0.032}_{-0.030}$	$H(0.15)$	$72.9^{+1.1}_{-1.1}$	$\chi_{\mathrm{CMB}}^2$	$7492.6 (\nu: 14.1)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$642^{+11}_{-11}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	$82.95^{+0.82}_{-0.83}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234^{+0.00047}_{-0.00051}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.019}_{-0.023}$	$D_{\mathrm{M}}(0.15)$	$637^{+15}_{-17}$
$\Omega_{\mathrm{c}}h^2$	$0.1181^{+0.0037}_{-0.0046}$	$\sigma_8/h^{0.5}$	$0.979^{+0.027}_{-0.032}$	$H(0.38)$	$83.3^{+1.3}_{-1.1}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}}h$	$100.5^{+3.8}_{-2.9}$	$D_{\mathrm{M}}(0.38)$	$1521^{+29}_{-34}$
$\tau$	$0.059^{+0.023}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.063}_{-0.080}$	$H(0.51)$	$89.92^{+0.99}_{-0.87}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.048^{+0.038}_{-0.031}$	$z_{\mathrm{re}}$	$< 10.2$	$D_{\mathrm{M}}(0.51)$	$1972^{+34}_{-40}$
$n_{\mathrm{s}}$	$0.969^{+0.016}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.107^{+0.081}_{-0.065}$	$H(0.61)$	$95.48^{+0.76}_{-0.72}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0063}_{-0.0059}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873^{+0.029}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2296^{+37}_{-43}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$D_{40}$	$1221^{+32}_{-38}$	$H(2.33)$	$235.3^{+2.3}_{-2.8}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5724^{+99}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5757^{+35}_{-32}$
$A_{217}^{\mathrm{PS}}$	$102^{+40}_{-30}$	$D_{810}$	$2535^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.451^{+0.020}_{-0.023}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+11}_{-13}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.84$	$D_{2000}$	$230.5^{+4.3}_{-4.5}$	$f\sigma_8(0.38)$	$0.471^{+0.016}_{-0.019}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.969^{+0.016}_{-0.012}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00018}_{-0.00023}$	$f\sigma_8(0.51)$	$0.470^{+0.014}_{-0.016}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00018}_{-0.00023}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.593^{+0.098}_{-0.085}$	$f\sigma_8(0.61)$	$0.466^{+0.012}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.52}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.784^{+0.078}_{-0.070}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.43}_{-0.44}$	$z_*$	$1089.80^{+0.84}_{-0.71}$	$f\sigma_8(2.33)$	$0.2983^{+0.0058}_{-0.0052}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$r_*$	$144.9^{+1.1}_{-0.90}$	$\sigma_8(2.33)$	$0.3079^{+0.0070}_{-0.0055}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.44}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{100}$	$0.9976^{+0.0030}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.918^{+0.095}_{-0.085}$	$f_{2000}^{217}$	$107.0^{+5.1}_{-5.0}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0037}$	$z_{\mathrm{drag}}$	$1059.7^{+1.0}_{-1.1}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$H_0$	$68.1^{+2.1}_{-1.7}$	$r_{\mathrm{drag}}$	$147.6^{+1.1}_{-0.94}$	$\chi_{\mathrm{lensing}}^2$	$9.8 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.695^{+0.027}_{-0.023}$	$k_{\mathrm{D}}$	$0.1403^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{simall}}^2$	$397.9 (\nu: 3.4)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.023}_{-0.027}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00065}_{-0.00056}$	$\chi_{\mathrm{lowl}}^2$	$22.67 (\nu: 0.4)$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0036}_{-0.0045}$	$z_{\mathrm{eq}}$	$3357^{+86}_{-110}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.4 (\nu: 15.2)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0010}_{-0.0011}$	$k_{\mathrm{eq}}$	$0.01024^{+0.00026}_{-0.00033}$	$\chi_{\mathrm{H073p45}}^2$	$10.6 (\nu: 3.5)$
$\sigma_8$	$0.808^{+0.017}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.021}_{-0.016}$	$\chi_{\mathrm{prior}}^2$	$7.4 (\nu: 5.9)$
$S_8$	$0.814^{+0.040}_{-0.045}$	$100\theta_{\mathrm{s,eq}}$	$0.454^{+0.011}_{-0.0083}$	$\chi_{\mathrm{CMB}}^2$	$7494.7 (\nu: 19.8)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.446^{+0.022}_{-0.025}$	$H(0.15)$	$73.3^{+1.8}_{-1.5}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7512.76; R - 1 = 0.03489$					



## 2.46 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02233^{+0.00047}_{-0.00048}$	$\sigma_8/h^{0.5}$	$0.980^{+0.023}_{-0.023}$	$D_{\text{M}}(0.38)$	$1522^{+21}_{-20}$
$\Omega_{\text{c}}h^2$	$0.1182^{+0.0027}_{-0.0025}$	$r_{\text{drag}}h$	$100.5^{+1.9}_{-2.1}$	$H(0.51)$	$89.90^{+0.63}_{-0.67}$
$100\theta_{\text{MC}}$	$1.04119^{+0.00093}_{-0.0010}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.054}_{-0.054}$	$D_{\text{M}}(0.51)$	$1973^{+25}_{-23}$
$\tau$	$0.059^{+0.019}_{-0.016}$	$z_{\text{re}}$	$< 9.79$	$H(0.61)$	$95.47^{+0.53}_{-0.58}$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.040}_{-0.031}$	$10^9 A_{\text{s}}$	$2.107^{+0.085}_{-0.064}$	$D_{\text{M}}(0.61)$	$2296^{+27}_{-25}$
$n_{\text{s}}$	$0.969^{+0.010}_{-0.010}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.874^{+0.028}_{-0.027}$	$H(2.33)$	$235.4^{+1.8}_{-1.6}$
$y_{\text{cal}}$	$1.0008^{+0.0064}_{-0.0060}$	$D_{40}$	$1222^{+30}_{-31}$	$D_{\text{M}}(2.33)$	$5757^{+29}_{-26}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-60}$	$D_{220}$	$5725^{+98}_{-100}$	$f\sigma_8(0.15)$	$0.451^{+0.015}_{-0.016}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-33}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$817^{+11}_{-13}$	$f\sigma_8(0.38)$	$0.471^{+0.013}_{-0.014}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.5^{+3.9}_{-4.4}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$< 8.84$	$n_{\text{s},0.002}$	$0.969^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.470^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_{\text{P}}$	$0.24538^{+0.00018}_{-0.00021}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24670^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.466^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.593^{+0.092}_{-0.086}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.010}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.785^{+0.067}_{-0.060}$	$f\sigma_8(2.33)$	$0.2983^{+0.0059}_{-0.0052}$
$A_{100}^{\text{dust}}$	$1.02^{+0.53}_{-0.50}$	$z_*$	$1089.81^{+0.71}_{-0.67}$	$\sigma_8(2.33)$	$0.3078^{+0.0064}_{-0.0054}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.45}$	$r_*$	$144.93^{+0.68}_{-0.72}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.04138^{+0.00093}_{-0.0010}$	$f_{2000}^{217}$	$107.0^{+5.2}_{-5.0}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.43}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.917^{+0.067}_{-0.073}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-6}$
$c_{100}$	$0.9976^{+0.0029}_{-0.0028}$	$z_{\text{drag}}$	$1059.7^{+1.0}_{-1.1}$	$\chi_{\text{lensing}}^2$	$9.6 (\nu: 0.6)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0038}$	$r_{\text{drag}}$	$147.61^{+0.78}_{-0.76}$	$\chi_{\text{simall}}^2$	$397.7 (\nu: 2.6)$
$H_0$	$68.1^{+1.2}_{-1.2}$	$k_{\text{D}}$	$0.1403^{+0.0010}_{-0.0010}$	$\chi_{\text{lowl}}^2$	$22.69 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.695^{+0.014}_{-0.016}$	$100\theta_{\text{D}}$	$0.16091^{+0.00066}_{-0.00059}$	$\chi_{\text{CamSpec}}^2$	$7064.1 (\nu: 14.4)$
$\Omega_{\text{m}}$	$0.305^{+0.016}_{-0.014}$	$z_{\text{eq}}$	$3358^{+64}_{-60}$	$\chi_{\text{H073p45}}^2$	$10.6 (\nu: 1.7)$
$\Omega_{\text{m}}h^2$	$0.1412^{+0.0027}_{-0.0025}$	$k_{\text{eq}}$	$0.01025^{+0.00020}_{-0.00018}$	$\chi_{6\text{DF}}^2$	$0.027 (\nu: 0.0)$
$\Omega_{\text{m}}h^3$	$0.0961^{+0.0010}_{-0.0011}$	$100\theta_{\text{eq}}$	$0.821^{+0.011}_{-0.012}$	$\chi_{\text{MGS}}^2$	$1.74 (\nu: 0.1)$
$\sigma_8$	$0.808^{+0.017}_{-0.015}$	$100\theta_{\text{s,eq}}$	$0.4536^{+0.0057}_{-0.0060}$	$\chi_{\text{DR12BAO}}^2$	$3.90 (\nu: 0.3)$
$S_8$	$0.815^{+0.030}_{-0.031}$	$H(0.15)$	$73.3^{+1.0}_{-1.1}$	$\chi_{\text{prior}}^2$	$7.5 (\nu: 6.0)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.446^{+0.016}_{-0.017}$	$D_{\text{M}}(0.15)$	$638^{+10}_{-9.6}$	$\chi_{\text{CMB}}^2$	$7494.1 (\nu: 15.7)$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.600^{+0.016}_{-0.017}$	$H(0.38)$	$83.25^{+0.76}_{-0.80}$	$\chi_{\text{BAO}}^2$	$5.67 (\nu: 0.2)$

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02219^{+0.00049}_{-0.00051}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.607^{+0.019}_{-0.019}$	$D_{\text{M}}(0.15)$	$644^{+14}_{-14}$
$\Omega_{\text{c}}h^2$	$0.1197^{+0.0036}_{-0.0035}$	$\sigma_8/h^{0.5}$	$0.988^{+0.025}_{-0.026}$	$H(0.38)$	$82.8^{+1.1}_{-1.0}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0011}_{-0.0011}$	$r_{\text{drag}}h$	$99.2^{+2.8}_{-2.7}$	$D_{\text{M}}(0.38)$	$1535^{+28}_{-28}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.442^{+0.062}_{-0.063}$	$H(0.51)$	$89.53^{+0.88}_{-0.83}$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.038}_{-0.028}$	$z_{\text{re}}$	$< 9.48$	$D_{\text{M}}(0.51)$	$1988^{+33}_{-33}$
$n_{\text{s}}$	$0.965^{+0.012}_{-0.012}$	$10^9 A_{\text{s}}$	$2.097^{+0.081}_{-0.058}$	$H(0.61)$	$95.17^{+0.72}_{-0.69}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0063}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878^{+0.030}_{-0.028}$	$D_{\text{M}}(0.61)$	$2312^{+36}_{-36}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{40}$	$1227^{+32}_{-32}$	$H(2.33)$	$236.2^{+2.2}_{-2.2}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5710^{+100}_{-100}$	$D_{\text{M}}(2.33)$	$5771^{+34}_{-35}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2534^{+35}_{-33}$	$f\sigma_8(0.15)$	$0.459^{+0.020}_{-0.020}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$< 8.81$	$D_{2000}$	$229.7^{+4.6}_{-4.6}$	$f\sigma_8(0.38)$	$0.477^{+0.015}_{-0.016}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{\text{s},0.002}$	$0.965^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24532^{+0.00019}_{-0.00024}$	$f\sigma_8(0.51)$	$0.475^{+0.013}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00019}_{-0.00024}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0097}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.620^{+0.098}_{-0.090}$	$f\sigma_8(0.61)$	$0.470^{+0.012}_{-0.012}$
$A_{100}^{\text{dust}}$	$1.01^{+0.53}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.814^{+0.078}_{-0.078}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0090}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.45}$	$z_*$	$1090.12^{+0.84}_{-0.81}$	$f\sigma_8(2.33)$	$0.2975^{+0.0060}_{-0.0045}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.27}$	$r_*$	$144.65^{+0.86}_{-0.85}$	$\sigma_8(2.33)$	$0.3066^{+0.0066}_{-0.0048}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.893^{+0.081}_{-0.081}$	$f_{2000}^{217}$	$107.5^{+5.1}_{-5.1}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0038}$	$z_{\text{drag}}$	$1059.5^{+1.0}_{-1.1}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$H_0$	$67.3^{+1.7}_{-1.6}$	$r_{\text{drag}}$	$147.37^{+0.92}_{-0.89}$	$\chi_{\text{lensing}}^2$	$9.41 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.685^{+0.022}_{-0.023}$	$k_{\text{D}}$	$0.1404^{+0.0011}_{-0.0011}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.6)$
$\Omega_{\text{m}}$	$0.315^{+0.023}_{-0.022}$	$100\theta_{\text{D}}$	$0.16102^{+0.00066}_{-0.00062}$	$\chi_{\text{lowl}}^2$	$23.29 (\nu: 0.5)$
$\Omega_{\text{m}}h^2$	$0.1425^{+0.0034}_{-0.0033}$	$z_{\text{eq}}$	$3391^{+82}_{-79}$	$\chi_{\text{CamSpec}}^2$	$7062.8 (\nu: 13.3)$
$\Omega_{\text{m}}h^3$	$0.0959^{+0.0011}_{-0.0011}$	$k_{\text{eq}}$	$0.01035^{+0.00025}_{-0.00024}$	$\chi_{\text{JLA}}^2$	$1035.39 (\nu: 0.2)$
$\sigma_8$	$0.810^{+0.016}_{-0.015}$	$100\theta_{\text{eq}}$	$0.815^{+0.015}_{-0.015}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 6.1)$
$S_8$	$0.830^{+0.039}_{-0.039}$	$100\theta_{\text{s,eq}}$	$0.4504^{+0.0079}_{-0.0078}$	$\chi_{\text{CMB}}^2$	$7492.5 (\nu: 14.2)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.455^{+0.021}_{-0.021}$	$H(0.15)$	$72.6^{+1.4}_{-1.4}$		

$\bar{\chi}_{\text{eff}}^2 = 8535.44$ ;  $R - 1 = 0.00636$



## 2.48 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00047}_{-0.00046}$	$r_{\text{drag}} h$	$100.5^{+1.9}_{-2.0}$	$D_{\text{M}}(0.51)$	$1972^{+24}_{-22}$
$\Omega_c h^2$	$0.1181^{+0.0027}_{-0.0024}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.055}_{-0.052}$	$H(0.61)$	$95.48^{+0.53}_{-0.58}$
$100\theta_{\text{MC}}$	$1.04120^{+0.00092}_{-0.0010}$	$z_{\text{re}}$	$< 9.81$	$D_{\text{M}}(0.61)$	$2295^{+27}_{-24}$
$\tau$	$0.059^{+0.019}_{-0.016}$	$10^9 A_{\text{s}}$	$2.107^{+0.079}_{-0.069}$	$H(2.33)$	$235.3^{+1.8}_{-1.6}$
$\ln(10^{10} A_{\text{s}})$	$3.048^{+0.037}_{-0.033}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.028}_{-0.028}$	$D_{\text{M}}(2.33)$	$5757^{+29}_{-29}$
$n_{\text{s}}$	$0.9692^{+0.0099}_{-0.010}$	$D_{40}$	$1221^{+30}_{-30}$	$f\sigma_8(0.15)$	$0.451^{+0.015}_{-0.018}$
$y_{\text{cal}}$	$1.0008^{+0.0067}_{-0.0060}$	$D_{220}$	$5726^{+100}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.014}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2535^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.471^{+0.013}_{-0.016}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	$102^{+40}_{-30}$	$D_{2000}$	$230.6^{+4.0}_{-4.6}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.014}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$n_{\text{s},0.002}$	$0.9692^{+0.0099}_{-0.010}$	$\sigma_8(0.51)$	$0.621^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$< 8.71$	$Y_{\text{P}}$	$0.24538^{+0.00018}_{-0.00020}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.013}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.31}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00018}_{-0.00020}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.592^{+0.088}_{-0.086}$	$f\sigma_8(2.33)$	$0.2983^{+0.0059}_{-0.0051}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\text{Age}/\text{Gyr}$	$13.784^{+0.069}_{-0.059}$	$\sigma_8(2.33)$	$0.3078^{+0.0064}_{-0.0055}$
$A^{\text{kSZ}}$	—	$z_*$	$1089.79^{+0.70}_{-0.68}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{100}^{\text{dust}}$	$1.02^{+0.52}_{-0.50}$	$r_*$	$144.95^{+0.65}_{-0.73}$	$f_{2000}^{217}$	$107.0^{+5.3}_{-5.0}$
$A_{143}^{\text{dust}}$	$0.96^{+0.41}_{-0.46}$	$100\theta_*$	$1.04139^{+0.00092}_{-0.0010}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.25}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.919^{+0.065}_{-0.074}$	$\chi_{\text{lensing}}^2$	$9.6 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.38}$	$z_{\text{drag}}$	$1059.7^{+1.1}_{-1.1}$	$\chi_{\text{simall}}^2$	$397.7 (\nu: 2.6)$
$c_{100}$	$0.9976^{+0.0030}_{-0.0027}$	$r_{\text{drag}}$	$147.64^{+0.70}_{-0.76}$	$\chi_{\text{lowl}}^2$	$22.66 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$k_{\text{D}}$	$0.1403^{+0.0011}_{-0.0010}$	$\chi_{\text{CamSpec}}^2$	$7064.4 (\nu: 14.7)$
$H_0$	$68.1^{+1.1}_{-1.2}$	$100\theta_{\text{D}}$	$0.16091^{+0.00064}_{-0.00063}$	$\chi_{\text{H073p45}}^2$	$10.4 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.696^{+0.014}_{-0.016}$	$z_{\text{eq}}$	$3356^{+64}_{-58}$	$\chi_{\text{JLA}}^2$	$706.61 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.304^{+0.016}_{-0.014}$	$k_{\text{eq}}$	$0.01024^{+0.00020}_{-0.00018}$	$\chi_{6\text{DF}}^2$	$0.026 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1411^{+0.0027}_{-0.0024}$	$100\theta_{\text{eq}}$	$0.822^{+0.010}_{-0.012}$	$\chi_{\text{MGS}}^2$	$1.80 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.0961^{+0.0011}_{-0.0010}$	$100\theta_{\text{s,eq}}$	$0.4539^{+0.0054}_{-0.0060}$	$\chi_{\text{DR12BAO}}^2$	$3.84 (\nu: 0.2)$
$\sigma_8$	$0.808^{+0.016}_{-0.017}$	$H(0.15)$	$73.31^{+0.96}_{-1.0}$	$\chi_{\text{prior}}^2$	$7.5 (\nu: 6.4)$
$S_8$	$0.813^{+0.030}_{-0.034}$	$D_{\text{M}}(0.15)$	$637^{+10}_{-9.2}$	$\chi_{\text{CMB}}^2$	$7494.4 (\nu: 16.3)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.446^{+0.016}_{-0.019}$	$H(0.38)$	$83.28^{+0.74}_{-0.79}$	$\chi_{\text{BAO}}^2$	$5.67 (\nu: 0.2)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.600^{+0.015}_{-0.019}$	$D_{\text{M}}(0.38)$	$1521^{+21}_{-19}$		
$\sigma_8/h^{0.5}$	$0.979^{+0.022}_{-0.027}$	$H(0.51)$	$89.92^{+0.62}_{-0.66}$		

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



## 2.49 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02224^{+0.00047}_{-0.00048}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.022}$	$D_{\text{M}}(0.38)$	$1529^{+21}_{-21}$
$\Omega_{\text{c}}h^2$	$0.1190^{+0.0027}_{-0.0026}$	$r_{\text{drag}}h$	$99.8^{+2.0}_{-2.1}$	$H(0.51)$	$89.69^{+0.67}_{-0.67}$
$100\theta_{\text{MC}}$	$1.0410^{+0.0010}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.054}_{-0.053}$	$D_{\text{M}}(0.51)$	$1981^{+25}_{-24}$
$\tau$	$0.057^{+0.018}_{-0.015}$	$z_{\text{re}}$	$< 9.57$	$H(0.61)$	$95.29^{+0.58}_{-0.58}$
$\ln(10^{10}A_{\text{s}})$	$3.045^{+0.037}_{-0.030}$	$10^9 A_{\text{s}}$	$2.101^{+0.080}_{-0.062}$	$D_{\text{M}}(0.61)$	$2305^{+27}_{-27}$
$n_{\text{s}}$	$0.967^{+0.010}_{-0.010}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.876^{+0.028}_{-0.027}$	$H(2.33)$	$235.8^{+1.8}_{-1.7}$
$y_{\text{cal}}$	$1.0007^{+0.0066}_{-0.0060}$	$D_{40}$	$1224^{+31}_{-31}$	$D_{\text{M}}(2.33)$	$5765^{+30}_{-29}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5715^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-33}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.012}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.4}_{-4.4}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$< 8.81$	$n_{\text{s},0.002}$	$0.967^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$Y_{\text{P}}$	$0.24534^{+0.00018}_{-0.00022}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.010}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24667^{+0.00018}_{-0.00022}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.611^{+0.092}_{-0.086}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0095}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.803^{+0.068}_{-0.067}$	$f\sigma_8(2.33)$	$0.2978^{+0.0059}_{-0.0048}$
$A_{100}^{\text{dust}}$	$1.01^{+0.53}_{-0.50}$	$z_*$	$1090.00^{+0.71}_{-0.68}$	$\sigma_8(2.33)$	$0.3071^{+0.0064}_{-0.0050}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.44}$	$r_*$	$144.80^{+0.70}_{-0.71}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0412^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	$107.3^{+5.2}_{-5.2}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.907^{+0.068}_{-0.071}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$z_{\text{drag}}$	$1059.6^{+1.1}_{-1.1}$	$\chi_{\text{lensing}}^2$	$9.36 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0038}$	$r_{\text{drag}}$	$147.52^{+0.78}_{-0.79}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.9)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$k_{\text{D}}$	$0.1403^{+0.0010}_{-0.0011}$	$\chi_{\text{lowl}}^2$	$22.98 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.017}$	$100\theta_{\text{D}}$	$0.16100^{+0.00064}_{-0.00060}$	$\chi_{\text{CamSpec}}^2$	$7063.2 (\nu: 13.5)$
$\Omega_{\text{m}}$	$0.310^{+0.017}_{-0.015}$	$z_{\text{eq}}$	$3374^{+63}_{-60}$	$\chi_{\text{JLA}}^2$	$1035.06 (\nu: 0.0)$
$\Omega_{\text{m}}h^2$	$0.1418^{+0.0027}_{-0.0025}$	$k_{\text{eq}}$	$0.01030^{+0.00019}_{-0.00018}$	$\chi_{6\text{DF}}^2$	$0.046 (\nu: 0.0)$
$\Omega_{\text{m}}h^3$	$0.0960^{+0.0011}_{-0.0011}$	$100\theta_{\text{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\text{MGS}}^2$	$1.36 (\nu: 0.1)$
$\sigma_8$	$0.809^{+0.016}_{-0.014}$	$100\theta_{\text{s,eq}}$	$0.4520^{+0.0058}_{-0.0060}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.9)$
$S_8$	$0.822^{+0.030}_{-0.029}$	$H(0.15)$	$72.9^{+1.0}_{-1.1}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 6.0)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.450^{+0.017}_{-0.016}$	$D_{\text{M}}(0.15)$	$641^{+11}_{-10}$	$\chi_{\text{CMB}}^2$	$7492.8 (\nu: 14.3)$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.604^{+0.016}_{-0.015}$	$H(0.38)$	$82.99^{+0.80}_{-0.80}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.5)$

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00047}_{-0.00048}$	$r_{\text{drag}} h$	$100.5^{+1.8}_{-2.0}$	$D_M(0.51)$	$1972^{+24}_{-22}$
$\Omega_c h^2$	$0.1181^{+0.0026}_{-0.0024}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.055}_{-0.053}$	$H(0.61)$	$95.48^{+0.52}_{-0.56}$
$100\theta_{\text{MC}}$	$1.04120^{+0.00092}_{-0.0010}$	$z_{\text{re}}$	$< 9.79$	$D_M(0.61)$	$2296^{+26}_{-24}$
$\tau$	$0.059^{+0.019}_{-0.016}$	$10^9 A_s$	$2.107^{+0.084}_{-0.065}$	$H(2.33)$	$235.3^{+1.7}_{-1.6}$
$\ln(10^{10} A_s)$	$3.048^{+0.039}_{-0.031}$	$10^9 A_s e^{-2\tau}$	$1.874^{+0.028}_{-0.027}$	$D_M(2.33)$	$5757^{+29}_{-26}$
$n_s$	$0.969^{+0.010}_{-0.010}$	$D_{40}$	$1221^{+30}_{-31}$	$f\sigma_8(0.15)$	$0.451^{+0.015}_{-0.016}$
$y_{\text{cal}}$	$1.0009^{+0.0064}_{-0.0060}$	$D_{220}$	$5726^{+97}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-60}$	$D_{810}$	$2535^{+34}_{-33}$	$f\sigma_8(0.38)$	$0.471^{+0.013}_{-0.014}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$817^{+11}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.012}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{2000}$	$230.6^{+3.9}_{-4.4}$	$f\sigma_8(0.51)$	$0.470^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$n_{\text{s},0.002}$	$0.969^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$< 8.84$	$Y_{\text{P}}$	$0.24538^{+0.00018}_{-0.00021}$	$f\sigma_8(0.61)$	$0.466^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00018}_{-0.00021}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.010}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 \text{D/H}$	$2.592^{+0.091}_{-0.085}$	$f\sigma_8(2.33)$	$0.2983^{+0.0058}_{-0.0052}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\text{Age/Gyr}$	$13.784^{+0.066}_{-0.059}$	$\sigma_8(2.33)$	$0.3079^{+0.0063}_{-0.0054}$
$A^{\text{kSZ}}$	—	$z_*$	$1089.80^{+0.69}_{-0.65}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{100}^{\text{dust}}$	$1.02^{+0.53}_{-0.50}$	$r_*$	$144.94^{+0.66}_{-0.70}$	$f_{2000}^{217}$	$107.0^{+5.1}_{-5.0}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.45}$	$100\theta_*$	$1.04139^{+0.00092}_{-0.0010}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$D_M(z_*)/\text{Gpc}$	$13.918^{+0.066}_{-0.071}$	$\chi_{\text{lensing}}^2$	$9.6 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.43}$	$z_{\text{drag}}$	$1059.7^{+1.0}_{-1.1}$	$\chi_{\text{simall}}^2$	$397.7 (\nu: 2.7)$
$c_{100}$	$0.9976^{+0.0029}_{-0.0028}$	$r_{\text{drag}}$	$147.63^{+0.76}_{-0.77}$	$\chi_{\text{lowl}}^2$	$22.66 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0038}$	$k_{\text{D}}$	$0.1403^{+0.0010}_{-0.0010}$	$\chi_{\text{CamSpec}}^2$	$7064.2 (\nu: 14.4)$
$H_0$	$68.1^{+1.1}_{-1.2}$	$100\theta_{\text{D}}$	$0.16091^{+0.00066}_{-0.00059}$	$\chi_{\text{H073p45}}^2$	$10.5 (\nu: 1.5)$
$\Omega_{\Lambda}$	$0.696^{+0.014}_{-0.016}$	$z_{\text{eq}}$	$3357^{+62}_{-58}$	$\chi_{\text{JLA}}^2$	$1034.87 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.304^{+0.016}_{-0.014}$	$k_{\text{eq}}$	$0.01024^{+0.00019}_{-0.00018}$	$\chi_{6\text{DF}}^2$	$0.025 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1411^{+0.0026}_{-0.0024}$	$100\theta_{\text{eq}}$	$0.822^{+0.011}_{-0.011}$	$\chi_{\text{MGS}}^2$	$1.77 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.0961^{+0.0010}_{-0.0011}$	$100\theta_{\text{s,eq}}$	$0.4538^{+0.0056}_{-0.0059}$	$\chi_{\text{DR12BAO}}^2$	$3.84 (\nu: 0.2)$
$\sigma_8$	$0.808^{+0.016}_{-0.015}$	$H(0.15)$	$73.29^{+0.96}_{-1.0}$	$\chi_{\text{prior}}^2$	$7.5 (\nu: 6.1)$
$S_8$	$0.814^{+0.029}_{-0.031}$	$D_M(0.15)$	$637^{+10}_{-9.4}$	$\chi_{\text{CMB}}^2$	$7494.2 (\nu: 15.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.446^{+0.016}_{-0.017}$	$H(0.38)$	$83.27^{+0.74}_{-0.77}$	$\chi_{\text{BAO}}^2$	$5.64 (\nu: 0.2)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.600^{+0.015}_{-0.017}$	$D_M(0.38)$	$1522^{+20}_{-19}$		
$\sigma_8/h^{0.5}$	$0.979^{+0.023}_{-0.023}$	$H(0.51)$	$89.92^{+0.61}_{-0.64}$		

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



## 2.51 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022277	$0.02229^{+0.00039}_{-0.00039}$	$S_8$	0.8292	$0.828^{+0.034}_{-0.031}$	$100\theta_{s,eq}$	0.4499	$0.4502^{+0.0066}_{-0.0068}$
$\Omega_c h^2$	0.11981	$0.1197^{+0.0031}_{-0.0030}$	$\sigma_8 \Omega_m^{0.5}$	0.4542	$0.454^{+0.018}_{-0.017}$	$H(0.15)$	72.64	$72.7^{+1.2}_{-1.2}$
$100\theta_{MC}$	1.04085	$1.04087^{+0.00079}_{-0.00084}$	$\sigma_8 \Omega_m^{0.25}$	0.6063	$0.606^{+0.017}_{-0.016}$	$D_M(0.15)$	643.7	$643^{+12}_{-11}$
$\tau$	0.0529	$0.054^{+0.021}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9864	$0.986^{+0.023}_{-0.023}$	$H(0.38)$	82.81	$82.85^{+0.87}_{-0.86}$
$\ln(10^{10} A_s)$	3.0402	$3.041^{+0.039}_{-0.038}$	$r_{drag} h$	99.13	$99.2^{+2.3}_{-2.4}$	$D_M(0.38)$	1534.4	$1533^{+24}_{-23}$
$n_s$	0.9653	$0.966^{+0.011}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	2.439	$2.438^{+0.057}_{-0.054}$	$H(0.51)$	89.56	$89.60^{+0.69}_{-0.68}$
$y_{cal}$	1.0006	$1.0005^{+0.0065}_{-0.0066}$	$z_{re}$	7.56	$7.6^{+2.0}_{-2.0}$	$D_M(0.51)$	1987.1	$1986^{+28}_{-27}$
$A_{100}^{PS}$	235	$239^{+60}_{-60}$	$10^9 A_s$	2.091	$2.092^{+0.084}_{-0.079}$	$H(0.61)$	95.20	$95.23^{+0.56}_{-0.56}$
$A_{143}^{PS}$	46.5	$39^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8810	$1.879^{+0.029}_{-0.027}$	$D_M(0.61)$	2311.9	$2310^{+30}_{-29}$
$A_{217}^{PS}$	103.1	$102^{+30}_{-30}$	$D_{40}$	1228.3	$1227^{+31}_{-30}$	$H(2.33)$	236.34	$236.3^{+1.9}_{-1.8}$
$A_{217}^{CIB}$	43.3	$40^{+20}_{-20}$	$D_{220}$	5722	$5720^{+98}_{-98}$	$D_M(2.33)$	5768.1	$5767^{+27}_{-26}$
$A_{143}^{tSZ}$	6.16	$< 8.85$	$D_{810}$	2537.0	$2535^{+35}_{-34}$	$f\sigma_8(0.15)$	0.4585	$0.458^{+0.017}_{-0.016}$
$r_{143 \times 217}^{PS}$	0.667	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	816.1	$816^{+13}_{-12}$	$\sigma_8(0.15)$	0.7475	$0.747^{+0.014}_{-0.014}$
$r_{143 \times 217}^{CIB}$	0.85	—	$D_{2000}$	230.34	$230.3^{+4.2}_{-4.2}$	$f\sigma_8(0.38)$	0.4760	$0.476^{+0.014}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.52	—	$n_{s,0.002}$	0.9653	$0.966^{+0.011}_{-0.010}$	$\sigma_8(0.38)$	0.6623	$0.662^{+0.013}_{-0.012}$
$A^{kSZ}$	0.8	—	$Y_P$	0.245358	$0.24536^{+0.00015}_{-0.00017}$	$f\sigma_8(0.51)$	0.4742	$0.474^{+0.012}_{-0.011}$
$A_{100}^{dust}$	1.00	$1.01^{+0.51}_{-0.51}$	$Y_P^{BBN}$	0.246684	$0.24669^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	0.6196	$0.620^{+0.012}_{-0.012}$
$A_{143}^{dust}$	0.978	$0.96^{+0.45}_{-0.45}$	$10^5 D/H$	2.603	$2.600^{+0.075}_{-0.070}$	$f\sigma_8(0.61)$	0.4690	$0.469^{+0.011}_{-0.010}$
$A_{217}^{dust}$	0.975	$0.97^{+0.27}_{-0.27}$	Age/Gyr	13.808	$13.805^{+0.062}_{-0.058}$	$\sigma_8(0.61)$	0.5895	$0.590^{+0.012}_{-0.011}$
$A_{143 \times 217}^{dust}$	0.996	$1.03^{+0.42}_{-0.42}$	$z_*$	1090.02	$1089.99^{+0.68}_{-0.64}$	$f\sigma_8(2.33)$	0.2971	$0.2971^{+0.0061}_{-0.0058}$
$c_{100}$	0.99777	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	144.55	$144.57^{+0.70}_{-0.72}$	$\sigma_8(2.33)$	0.3061	$0.3062^{+0.0066}_{-0.0062}$
$c_{217}$	1.00133	$1.0011^{+0.0041}_{-0.0041}$	$100\theta_*$	1.04104	$1.04106^{+0.00078}_{-0.00082}$	$f_{2000}^{143}$	30.4	$30^{+7}_{-7}$
$c_{TE}$	0.9967	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	13.885	$13.887^{+0.066}_{-0.067}$	$f_{2000}^{217}$	106.92	$106.9^{+4.9}_{-5.0}$
$c_{EE}$	0.9925	$0.992^{+0.013}_{-0.013}$	$z_{drag}$	1059.70	$1059.74^{+0.84}_{-0.83}$	$f_{2000}^{143 \times 217}$	32.3	$32^{+5}_{-5}$
$H_0$	67.32	$67.4^{+1.3}_{-1.4}$	$r_{drag}$	147.25	$147.26^{+0.71}_{-0.74}$	$\chi_{lensing}^2$	8.83	$9.30 (\nu: 0.2)$
$\Omega_\Lambda$	0.6851	$0.686^{+0.018}_{-0.019}$	$k_D$	0.14063	$0.14063^{+0.00087}_{-0.00085}$	$\chi_{small}^2$	395.87	$396.9 (\nu: 1.3)$
$\Omega_m$	0.3149	$0.314^{+0.019}_{-0.018}$	$100\theta_D$	0.160882	$0.16087^{+0.00050}_{-0.00049}$	$\chi_{lowl}^2$	23.22	$23.22 (\nu: 0.4)$
$\Omega_m h^2$	0.14273	$0.1426^{+0.0030}_{-0.0028}$	$z_{eq}$	3395	$3393^{+71}_{-67}$	$\chi_{CamSpec}^2$	11499.6	$11514.1 (\nu: 15.3)$
$\Omega_m h^3$	0.09609	$0.09610^{+0.00080}_{-0.00081}$	$k_{eq}$	0.010363	$0.01036^{+0.00022}_{-0.00021}$	$\chi_{prior}^2$	2.1	$7.9 (\nu: 6.0)$
$\sigma_8$	0.8093	$0.809^{+0.016}_{-0.016}$	$100\theta_{eq}$	0.8142	$0.815^{+0.013}_{-0.013}$	$\chi_{CMB}^2$	11927.6	$11943.6 (\nu: 16.5)$

Best-fit  $\chi_{eff}^2 = 11929.66$ ;  $\bar{\chi}_{eff}^2 = 11951.44$ ;  $R - 1 = 0.00801$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consect8: 8.83 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.22 CamSpec like\_10.7HM\_1400\_unified: 11499.65



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02234^{+0.00036}_{-0.00037}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.603^{+0.015}_{-0.014}$	$D_{\text{M}}(0.38)$	$1529^{+19}_{-18}$
$\Omega_{\text{c}}h^2$	$0.1191^{+0.0025}_{-0.0024}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$H(0.51)$	$89.73^{+0.56}_{-0.57}$
$100\theta_{\text{MC}}$	$1.04095^{+0.00076}_{-0.00075}$	$r_{\text{drag}}h$	$99.7^{+1.9}_{-1.9}$	$D_{\text{M}}(0.51)$	$1980^{+22}_{-21}$
$\tau$	$0.055^{+0.020}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.052}_{-0.052}$	$H(0.61)$	$95.33^{+0.46}_{-0.48}$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.039}_{-0.037}$	$z_{\text{re}}$	$7.8^{+1.9}_{-1.8}$	$D_{\text{M}}(0.61)$	$2305^{+24}_{-23}$
$n_{\text{s}}$	$0.9671^{+0.0098}_{-0.0099}$	$10^9 A_{\text{s}}$	$2.097^{+0.083}_{-0.077}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$y_{\text{cal}}$	$1.0007^{+0.0065}_{-0.0064}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.877^{+0.028}_{-0.026}$	$D_{\text{M}}(2.33)$	$5763^{+23}_{-22}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1225^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5725^{+98}_{-97}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$< 8.87$	$D_{2000}$	$230.5^{+4.1}_{-4.2}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{\text{s},0.002}$	$0.9671^{+0.0098}_{-0.0099}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24538^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0099}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00013}_{-0.00016}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.592^{+0.071}_{-0.064}$	$f\sigma_8(2.33)$	$0.2975^{+0.0060}_{-0.0056}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.796^{+0.053}_{-0.051}$	$\sigma_8(2.33)$	$0.3067^{+0.0065}_{-0.0059}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.44}$	$z_*$	$1089.88^{+0.59}_{-0.55}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$r_*$	$144.70^{+0.59}_{-0.60}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	$1.04114^{+0.00076}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.898^{+0.058}_{-0.056}$	$\chi_{\text{lensing}}^2$	$9.31 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	$1059.79^{+0.79}_{-0.85}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.38^{+0.63}_{-0.64}$	$\chi_{\text{lowl}}^2$	$22.98 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\text{D}}$	$0.14054^{+0.00080}_{-0.00078}$	$\chi_{\text{CamSpec}}^2$	$11514.2 (\nu: 15.4)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$100\theta_{\text{D}}$	$0.16084^{+0.00049}_{-0.00047}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.015}$	$z_{\text{eq}}$	$3379^{+56}_{-55}$	$\chi_{\text{MGS}}^2$	$1.31 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.310^{+0.015}_{-0.014}$	$k_{\text{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.8)$
$\Omega_{\text{m}}h^2$	$0.1421^{+0.0023}_{-0.0023}$	$100\theta_{\text{eq}}$	$0.817^{+0.010}_{-0.010}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\text{m}}h^3$	$0.09611^{+0.00077}_{-0.00080}$	$100\theta_{\text{s,eq}}$	$0.4515^{+0.0053}_{-0.0053}$	$\chi_{\text{CMB}}^2$	$11943.6 (\nu: 16.6)$
$\sigma_8$	$0.808^{+0.016}_{-0.016}$	$H(0.15)$	$72.93^{+0.91}_{-0.93}$	$\chi_{\text{BAO}}^2$	$6.00 (\nu: 0.5)$
$S_8$	$0.822^{+0.028}_{-0.025}$	$D_{\text{M}}(0.15)$	$640.8^{+9.3}_{-8.9}$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.450^{+0.015}_{-0.014}$	$H(0.38)$	$83.02^{+0.69}_{-0.69}$		

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



### 2.53 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02240^{+0.00036}_{-0.00039}$	$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.017}_{-0.021}$	$D_M(0.15)$	$638^{+11}_{-16}$
$\Omega_c h^2$	$0.1185^{+0.0030}_{-0.0042}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.016}_{-0.016}$	$H(0.38)$	$83.2^{+1.2}_{-0.83}$
$100\theta_{MC}$	$1.04105^{+0.00098}_{-0.00080}$	$\sigma_8/h^{0.5}$	$0.980^{+0.023}_{-0.022}$	$D_M(0.38)$	$1523^{+23}_{-31}$
$\tau$	$0.057^{+0.020}_{-0.018}$	$r_{\text{drag}} h$	$100.2^{+3.5}_{-2.3}$	$H(0.51)$	$89.88^{+0.90}_{-0.67}$
$\ln(10^{10} A_s)$	$3.046^{+0.040}_{-0.037}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.056}_{-0.052}$	$D_M(0.51)$	$1974^{+27}_{-37}$
$n_s$	$0.9685^{+0.0098}_{-0.010}$	$z_{\text{re}}$	$7.9^{+1.9}_{-1.9}$	$H(0.61)$	$95.46^{+0.69}_{-0.55}$
$y_{\text{cal}}$	$1.0009^{+0.0065}_{-0.0066}$	$10^9 A_s$	$2.103^{+0.085}_{-0.077}$	$D_M(0.61)$	$2298^{+29}_{-39}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.028}_{-0.026}$	$H(2.33)$	$235.6^{+1.8}_{-2.6}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1223^{+30}_{-29}$	$D_M(2.33)$	$5757^{+26}_{-27}$
$A_{217}^{\text{PS}}$	$103^{+40}_{-40}$	$D_{220}$	$5732^{+96}_{-100}$	$f\sigma_8(0.15)$	$0.452^{+0.016}_{-0.020}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2537^{+34}_{-34}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.86$	$D_{1420}$	$817^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.471^{+0.013}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$0.67^{+0.30}_{-0.35}$	$D_{2000}$	$230.9^{+4.0}_{-4.2}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.9685^{+0.0098}_{-0.010}$	$f\sigma_8(0.51)$	$0.471^{+0.012}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24540^{+0.00013}_{-0.00016}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24673^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.466^{+0.011}_{-0.010}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.49}$	$10^5 \text{D/H}$	$2.581^{+0.073}_{-0.064}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.011}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.47}$	$\text{Age/Gyr}$	$13.784^{+0.059}_{-0.056}$	$f\sigma_8(2.33)$	$0.2979^{+0.0058}_{-0.0057}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1089.75^{+0.64}_{-0.61}$	$\sigma_8(2.33)$	$0.3073^{+0.0066}_{-0.0060}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.44}_{-0.43}$	$r_*$	$144.8^{+1.0}_{-0.69}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0025}$	$100\theta_*$	$1.04123^{+0.00097}_{-0.00080}$	$f_{2000}^{217}$	$106.6^{+4.7}_{-5.1}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0041}$	$D_M(z_*)/\text{Gpc}$	$13.907^{+0.086}_{-0.064}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.89^{+0.73}_{-0.84}$	$\chi_{\text{lensing}}^2$	$9.46 (\nu: 0.4)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$r_{\text{drag}}$	$147.47^{+0.99}_{-0.72}$	$\chi_{\text{simall}}^2$	$397.4 (\nu: 2.3)$
$H_0$	$68.0^{+1.9}_{-1.3}$	$k_D$	$0.14049^{+0.00085}_{-0.00095}$	$\chi_{\text{lowl}}^2$	$22.78 (\nu: 0.3)$
$\Omega_\Lambda$	$0.694^{+0.025}_{-0.018}$	$100\theta_D$	$0.16079^{+0.00048}_{-0.00045}$	$\chi_{\text{CamSpec}}^2$	$11515.1 (\nu: 16.8)$
$\Omega_m$	$0.306^{+0.018}_{-0.025}$	$z_{\text{eq}}$	$3366^{+67}_{-97}$	$\chi_{\text{H073p45}}^2$	$11.0 (\nu: 2.1)$
$\Omega_m h^2$	$0.1415^{+0.0028}_{-0.0041}$	$k_{\text{eq}}$	$0.01027^{+0.00021}_{-0.00030}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^3$	$0.09617^{+0.00074}_{-0.00081}$	$100\theta_{\text{eq}}$	$0.820^{+0.019}_{-0.013}$	$\chi_{\text{CMB}}^2$	$11944.8 (\nu: 19.6)$
$\sigma_8$	$0.808^{+0.016}_{-0.016}$	$100\theta_{s,\text{eq}}$	$0.4529^{+0.0099}_{-0.0065}$		
$S_8$	$0.816^{+0.031}_{-0.039}$	$H(0.15)$	$73.2^{+1.6}_{-1.1}$		

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



## 2.54 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02240^{+0.00034}_{-0.00037}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.015}_{-0.014}$	$D_M(0.38)$	$1523^{+18}_{-17}$
$\Omega_c h^2$	$0.1184^{+0.0024}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.979^{+0.022}_{-0.021}$	$H(0.51)$	$89.90^{+0.57}_{-0.55}$
$100\theta_{MC}$	$1.04106^{+0.00081}_{-0.00078}$	$r_{drag}h$	$100.3^{+1.8}_{-1.8}$	$D_M(0.51)$	$1973^{+21}_{-20}$
$\tau$	$0.057^{+0.020}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.053}_{-0.050}$	$H(0.61)$	$95.47^{+0.46}_{-0.47}$
$\ln(10^{10} A_s)$	$3.046^{+0.039}_{-0.037}$	$z_{re}$	$7.9^{+1.8}_{-1.8}$	$D_M(0.61)$	$2297^{+23}_{-22}$
$n_s$	$0.9688^{+0.0093}_{-0.0097}$	$10^9 A_s$	$2.103^{+0.084}_{-0.076}$	$H(2.33)$	$235.5^{+1.5}_{-1.4}$
$y_{cal}$	$1.0009^{+0.0064}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.026}_{-0.026}$	$D_M(2.33)$	$5756^{+23}_{-22}$
$A_{100}^{PS}$	$238^{+60}_{-60}$	$D_{40}$	$1223^{+30}_{-28}$	$f\sigma_8(0.15)$	$0.452^{+0.014}_{-0.013}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5733^{+97}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{217}^{PS}$	$103^{+40}_{-40}$	$D_{810}$	$2537^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.471^{+0.012}_{-0.012}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$A_{143}^{tSZ}$	$< 8.89$	$D_{2000}$	$230.9^{+4.0}_{-4.2}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.011}$
$r_{143 \times 217}^{PS}$	$0.67^{+0.30}_{-0.35}$	$n_{s,0.002}$	$0.9688^{+0.0093}_{-0.0097}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24541^{+0.00013}_{-0.00015}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.010}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24673^{+0.00013}_{-0.00015}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A^{kSZ}$	—	$10^5 D/H$	$2.580^{+0.070}_{-0.060}$	$f\sigma_8(2.33)$	$0.2979^{+0.0058}_{-0.0056}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.48}$	Age/Gyr	$13.783^{+0.052}_{-0.051}$	$\sigma_8(2.33)$	$0.3074^{+0.0063}_{-0.0058}$
$A_{143}^{dust}$	$0.95^{+0.46}_{-0.47}$	$z_*$	$1089.73^{+0.57}_{-0.53}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{dust}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$144.83^{+0.54}_{-0.58}$	$f_{2000}^{217}$	$106.5^{+4.7}_{-5.1}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.43}_{-0.42}$	$100\theta_*$	$1.04124^{+0.00081}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0025}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.053}_{-0.057}$	$\chi^2_{lensing}$	$9.45 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0041}$	$z_{drag}$	$1059.90^{+0.72}_{-0.81}$	$\chi^2_{simall}$	$397.4 (\nu: 2.2)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{drag}$	$147.49^{+0.58}_{-0.62}$	$\chi^2_{lowl}$	$22.72 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$k_D$	$0.14048^{+0.00079}_{-0.00073}$	$\chi^2_{CamSpec}$	$11515.0 (\nu: 16.1)$
$H_0$	$68.0^{+1.0}_{-1.1}$	$100\theta_D$	$0.16079^{+0.00048}_{-0.00044}$	$\chi^2_{H073p45}$	$10.8 (\nu: 1.2)$
$\Omega_\Lambda$	$0.694^{+0.013}_{-0.014}$	$z_{eq}$	$3364^{+54}_{-50}$	$\chi^2_{6DF}$	$0.021 (\nu: 0.0)$
$\Omega_m$	$0.306^{+0.014}_{-0.013}$	$k_{eq}$	$0.01027^{+0.00016}_{-0.00015}$	$\chi^2_{MGS}$	$1.64 (\nu: 0.1)$
$\Omega_m h^2$	$0.1414^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	$0.8204^{+0.0097}_{-0.010}$	$\chi^2_{DR12BAO}$	$3.92 (\nu: 0.3)$
$\Omega_m h^3$	$0.09617^{+0.00074}_{-0.00081}$	$100\theta_{s,eq}$	$0.4531^{+0.0050}_{-0.0052}$	$\chi^2_{prior}$	$7.8 (\nu: 5.9)$
$\sigma_8$	$0.808^{+0.016}_{-0.016}$	$H(0.15)$	$73.23^{+0.89}_{-0.91}$	$\chi^2_{CMB}$	$11944.6 (\nu: 17.8)$
$S_8$	$0.815^{+0.027}_{-0.025}$	$D_M(0.15)$	$637.9^{+9.0}_{-8.6}$	$\chi^2_{BAO}$	$5.58 (\nu: 0.1)$
$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.015}_{-0.013}$	$H(0.38)$	$83.24^{+0.67}_{-0.68}$		

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



## 2.55 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022311	$0.02231^{+0.00037}_{-0.00039}$	$\sigma_8 \Omega_m^{0.5}$	0.4521	$0.452^{+0.018}_{-0.016}$	$D_M(0.15)$	642.2	$642^{+11}_{-11}$
$\Omega_c h^2$	0.11940	$0.1194^{+0.0029}_{-0.0028}$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.605^{+0.016}_{-0.016}$	$H(0.38)$	82.92	$82.92^{+0.82}_{-0.82}$
$100\theta_{MC}$	1.04088	$1.04090^{+0.00079}_{-0.00081}$	$\sigma_8/h^{0.5}$	0.9844	$0.984^{+0.024}_{-0.022}$	$D_M(0.38)$	1531.3	$1531^{+23}_{-22}$
$\tau$	0.0544	$0.054^{+0.021}_{-0.019}$	$r_{drag}h$	99.45	$99.4^{+2.2}_{-2.3}$	$H(0.51)$	89.65	$89.65^{+0.66}_{-0.66}$
$\ln(10^{10} A_s)$	3.0418	$3.042^{+0.040}_{-0.038}$	$\langle d^2 \rangle^{1/2}$	2.434	$2.435^{+0.055}_{-0.055}$	$D_M(0.51)$	1983.5	$1984^{+27}_{-25}$
$n_s$	0.9664	$0.966^{+0.010}_{-0.010}$	$z_{re}$	7.69	$7.7^{+2.0}_{-2.0}$	$H(0.61)$	95.27	$95.27^{+0.54}_{-0.54}$
$y_{cal}$	1.0006	$1.0006^{+0.0066}_{-0.0065}$	$10^9 A_s$	2.094	$2.094^{+0.085}_{-0.079}$	$D_M(0.61)$	2308.0	$2308^{+29}_{-28}$
$A_{100}^{PS}$	234	$239^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8785	$1.878^{+0.028}_{-0.027}$	$H(2.33)$	236.10	$236.1^{+1.8}_{-1.7}$
$A_{143}^{PS}$	41.2	$39^{+20}_{-20}$	$D_{40}$	1225.9	$1226^{+30}_{-29}$	$D_M(2.33)$	5765.3	$5765^{+26}_{-25}$
$A_{217}^{PS}$	102.2	$103^{+30}_{-30}$	$D_{220}$	5722	$5722^{+98}_{-99}$	$f\sigma_8(0.15)$	0.4566	$0.457^{+0.017}_{-0.015}$
$A_{217}^{CIB}$	44.3	$40^{+20}_{-20}$	$D_{810}$	2535.9	$2535^{+35}_{-34}$	$\sigma_8(0.15)$	0.7473	$0.747^{+0.014}_{-0.014}$
$A_{143}^{tSZ}$	6.54	$< 8.89$	$D_{1420}$	816.2	$816^{+13}_{-12}$	$f\sigma_8(0.38)$	0.4747	$0.475^{+0.013}_{-0.013}$
$r_{143 \times 217}^{PS}$	0.612	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	230.41	$230.3^{+4.2}_{-4.1}$	$\sigma_8(0.38)$	0.6623	$0.662^{+0.013}_{-0.013}$
$r_{143 \times 217}^{CIB}$	0.79	—	$n_{s,0.002}$	0.9664	$0.966^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	0.4732	$0.473^{+0.012}_{-0.011}$
$\xi^{tSZ \times CIB}$	0.18	—	$Y_P$	0.245372	$0.24537^{+0.00014}_{-0.00017}$	$\sigma_8(0.51)$	0.6198	$0.620^{+0.012}_{-0.012}$
$A^{kSZ}$	0.1	—	$Y_P^{BBN}$	0.246698	$0.24670^{+0.00014}_{-0.00017}$	$f\sigma_8(0.61)$	0.4681	$0.468^{+0.011}_{-0.011}$
$A_{100}^{dust}$	1.00	$1.01^{+0.50}_{-0.51}$	$10^5 D/H$	2.597	$2.597^{+0.075}_{-0.068}$	$\sigma_8(0.61)$	0.5897	$0.590^{+0.012}_{-0.011}$
$A_{143}^{dust}$	0.969	$0.96^{+0.44}_{-0.44}$	Age/Gyr	13.802	$13.802^{+0.060}_{-0.056}$	$f\sigma_8(2.33)$	0.2973	$0.2973^{+0.0062}_{-0.0059}$
$A_{217}^{dust}$	0.972	$0.97^{+0.28}_{-0.27}$	$z_*$	1089.94	$1089.95^{+0.65}_{-0.61}$	$\sigma_8(2.33)$	0.3065	$0.3064^{+0.0066}_{-0.0062}$
$A_{143 \times 217}^{dust}$	1.006	$1.03^{+0.42}_{-0.42}$	$r_*$	144.63	$144.62^{+0.68}_{-0.69}$	$f_{2000}^{143}$	30.0	$30^{+7}_{-7}$
$c_{100}$	0.99767	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04107	$1.04109^{+0.00079}_{-0.00080}$	$f_{2000}^{217}$	106.8	$106.8^{+4.9}_{-5.1}$
$c_{217}$	1.00131	$1.0011^{+0.0042}_{-0.0041}$	$D_M(z_*)/\text{Gpc}$	13.893	$13.891^{+0.065}_{-0.063}$	$f_{2000}^{143 \times 217}$	32.1	$32^{+5}_{-5}$
$c_{TE}$	0.9967	$0.997^{+0.013}_{-0.013}$	$z_{drag}$	1059.74	$1059.76^{+0.82}_{-0.82}$	$\chi_{lensing}^2$	8.86	$9.30 (\nu: 0.3)$
$c_{EE}$	0.9923	$0.992^{+0.013}_{-0.012}$	$r_{drag}$	147.32	$147.31^{+0.69}_{-0.71}$	$\chi_{small}^2$	396.07	$397.0 (\nu: 1.5)$
$H_0$	67.50	$67.5^{+1.3}_{-1.3}$	$k_D$	0.14058	$0.14060^{+0.00084}_{-0.00082}$	$\chi_{lowl}^2$	23.03	$23.13 (\nu: 0.3)$
$\Omega_\Lambda$	0.6876	$0.687^{+0.017}_{-0.019}$	$100\theta_D$	0.160852	$0.16086^{+0.00050}_{-0.00048}$	$\chi_{CamSpec}^2$	11499.5	$11514.2 (\nu: 15.5)$
$\Omega_m$	0.3124	$0.313^{+0.019}_{-0.017}$	$z_{eq}$	3386	$3387^{+66}_{-64}$	$\chi_{JLA}^2$	1035.10	$1035.21 (\nu: 0.1)$
$\Omega_m h^2$	0.14235	$0.1424^{+0.0028}_{-0.0027}$	$k_{eq}$	0.010336	$0.01034^{+0.00020}_{-0.00020}$	$\chi_{prior}^2$	2.2	$7.8 (\nu: 6.1)$
$\Omega_m h^3$	0.09609	$0.09611^{+0.00077}_{-0.00080}$	$100\theta_{eq}$	0.8159	$0.816^{+0.012}_{-0.012}$	$\chi_{CMB}^2$	11927.5	$11943.6 (\nu: 16.8)$
$\sigma_8$	0.8088	$0.809^{+0.016}_{-0.016}$	$100\theta_{s,eq}$	0.4508	$0.4507^{+0.0062}_{-0.0063}$			
$S_8$	0.8254	$0.826^{+0.033}_{-0.030}$	$H(0.15)$	72.79	$72.8^{+1.1}_{-1.1}$			

Best-fit  $\chi_{eff}^2 = 12964.78$ ;  $\bar{\chi}_{eff}^2 = 12986.66$ ;  $R - 1 = 0.01285$

$\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.86 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 commander\_dx12\_v3.2\_29: 23.03 CamSpec like\_10.7HM\_1400\_unified: 11499.55 SN - JLA Pantheon18: 1035.10



## 2.56 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241^{+0.00037}_{-0.00036}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.015}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1522^{+18}_{-17}$
$\Omega_{\mathrm{c}}h^2$	$0.1183^{+0.0023}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.979^{+0.022}_{-0.023}$	$H(0.51)$	$89.91^{+0.53}_{-0.55}$
$100\theta_{\mathrm{MC}}$	$1.04107^{+0.00072}_{-0.00079}$	$r_{\mathrm{drag}}h$	$100.3^{+1.7}_{-1.8}$	$D_{\mathrm{M}}(0.51)$	$1973^{+21}_{-20}$
$\tau$	$0.058^{+0.018}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.054}_{-0.052}$	$H(0.61)$	$95.48^{+0.46}_{-0.46}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.037}_{-0.035}$	$z_{\mathrm{re}}$	$8.0^{+1.7}_{-1.8}$	$D_{\mathrm{M}}(0.61)$	$2297^{+23}_{-22}$
$n_{\mathrm{s}}$	$0.9690^{+0.0093}_{-0.0099}$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.080}_{-0.074}$	$H(2.33)$	$235.5^{+1.4}_{-1.4}$
$y_{\mathrm{cal}}$	$1.0009^{+0.0063}_{-0.0066}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875^{+0.026}_{-0.026}$	$D_{\mathrm{M}}(2.33)$	$5756^{+23}_{-22}$
$A_{100}^{\mathrm{PS}}$	$237^{+70}_{-60}$	$D_{40}$	$1222^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.451^{+0.013}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5732^{+92}_{-92}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.015}$
$A_{217}^{\mathrm{PS}}$	$103^{+40}_{-40}$	$D_{810}$	$2537^{+32}_{-33}$	$f\sigma_8(0.38)$	$0.471^{+0.012}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.99$	$D_{2000}$	$231.0^{+4.1}_{-4.0}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67^{+0.31}_{-0.34}$	$n_{\mathrm{s},0.002}$	$0.9690^{+0.0093}_{-0.0099}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24541^{+0.00014}_{-0.00015}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24673^{+0.00014}_{-0.00015}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.579^{+0.069}_{-0.066}$	$f\sigma_8(2.33)$	$0.2980^{+0.0056}_{-0.0054}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.45}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.782^{+0.051}_{-0.049}$	$\sigma_8(2.33)$	$0.3075^{+0.0060}_{-0.0058}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.42}_{-0.43}$	$z_*$	$1089.73^{+0.54}_{-0.54}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.25}_{-0.25}$	$r_*$	$144.84^{+0.53}_{-0.58}$	$f_{2000}^{217}$	$106.5^{+4.6}_{-5.3}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.45}$	$100\theta_*$	$1.04125^{+0.00069}_{-0.00079}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0025}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910^{+0.052}_{-0.055}$	$\chi_{\mathrm{lensing}}^2$	$9.46 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0038}$	$z_{\mathrm{drag}}$	$1059.90^{+0.84}_{-0.80}$	$\chi_{\mathrm{simall}}^2$	$397.5 (\nu: 2.2)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\mathrm{drag}}$	$147.50^{+0.60}_{-0.61}$	$\chi_{\mathrm{lowl}}^2$	$22.68 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14047^{+0.00080}_{-0.00074}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 (\nu: 17.8)$
$H_0$	$68.0^{+1.0}_{-1.0}$	$100\theta_{\mathrm{D}}$	$0.16079^{+0.00047}_{-0.00049}$	$\chi_{\mathrm{H073p45}}^2$	$10.7 (\nu: 1.2)$
$\Omega_{\Lambda}$	$0.694^{+0.013}_{-0.014}$	$z_{\mathrm{eq}}$	$3363^{+53}_{-51}$	$\chi_{\mathrm{JLA}}^2$	$706.63 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.014}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01026^{+0.00016}_{-0.00015}$	$\chi_{6\mathrm{DF}}^2$	$0.021 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1414^{+0.0022}_{-0.0021}$	$100\theta_{\mathrm{eq}}$	$0.8206^{+0.0095}_{-0.0099}$	$\chi_{\mathrm{MGS}}^2$	$1.66 (\nu: 0.1)$
$\Omega_{\mathrm{m}}h^3$	$0.09617^{+0.00076}_{-0.00082}$	$100\theta_{\mathrm{s,eq}}$	$0.4532^{+0.0049}_{-0.0051}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.89 (\nu: 0.2)$
$\sigma_8$	$0.808^{+0.016}_{-0.016}$	$H(0.15)$	$73.24^{+0.87}_{-0.90}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.6)$
$S_8$	$0.815^{+0.026}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$637.7^{+8.9}_{-8.5}$	$\chi_{\mathrm{CMB}}^2$	$11944.9 (\nu: 19.5)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.446^{+0.014}_{-0.015}$	$H(0.38)$	$83.25^{+0.64}_{-0.67}$	$\chi_{\mathrm{BAO}}^2$	$5.57 (\nu: 0.1)$

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



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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022352	$0.02234^{+0.00035}_{-0.00037}$	$\sigma_8 \Omega_m^{0.25}$	0.6027	$0.603^{+0.015}_{-0.014}$	$D_M(0.38)$	1528.0	$1528^{+18}_{-17}$
$\Omega_c h^2$	0.11901	$0.1190^{+0.0024}_{-0.0023}$	$\sigma_8/h^{0.5}$	0.9818	$0.982^{+0.022}_{-0.021}$	$H(0.51)$	89.74	$89.75^{+0.55}_{-0.56}$
$100\theta_{MC}$	1.04094	$1.04096^{+0.00076}_{-0.00075}$	$r_{drag}h$	99.76	$99.8^{+1.8}_{-1.8}$	$D_M(0.51)$	1979.7	$1979^{+22}_{-21}$
$\tau$	0.0546	$0.056^{+0.020}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	2.427	$2.429^{+0.052}_{-0.051}$	$H(0.61)$	95.348	$95.35^{+0.46}_{-0.47}$
$\ln(10^{10} A_s)$	3.0417	$3.043^{+0.039}_{-0.037}$	$z_{re}$	7.70	$7.8^{+1.9}_{-1.8}$	$D_M(0.61)$	2303.8	$2303^{+23}_{-23}$
$n_s$	0.9678	$0.9673^{+0.0096}_{-0.0096}$	$10^9 A_s$	2.094	$2.098^{+0.084}_{-0.077}$	$H(2.33)$	235.89	$235.8^{+1.5}_{-1.4}$
$y_{cal}$	1.0006	$1.0007^{+0.0065}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	1.8776	$1.877^{+0.028}_{-0.026}$	$D_M(2.33)$	5761.8	$5762^{+23}_{-22}$
$A_{100}^{PS}$	232	$239^{+60}_{-60}$	$D_{40}$	1223.2	$1225^{+30}_{-29}$	$f\sigma_8(0.15)$	0.4544	$0.454^{+0.014}_{-0.013}$
$A_{143}^{PS}$	47.8	$39^{+20}_{-20}$	$D_{220}$	5724	$5726^{+98}_{-97}$	$\sigma_8(0.15)$	0.7466	$0.747^{+0.015}_{-0.014}$
$A_{217}^{PS}$	104.1	$103^{+30}_{-30}$	$D_{810}$	2537.0	$2536^{+35}_{-34}$	$f\sigma_8(0.38)$	0.4730	$0.473^{+0.012}_{-0.011}$
$A_{217}^{CIB}$	42.7	$40^{+20}_{-20}$	$D_{1420}$	817.1	$816^{+13}_{-12}$	$\sigma_8(0.38)$	0.6620	$0.662^{+0.013}_{-0.013}$
$A_{143}^{tSZ}$	6.37	$< 8.87$	$D_{2000}$	230.78	$230.5^{+4.1}_{-4.2}$	$f\sigma_8(0.51)$	0.4718	$0.472^{+0.011}_{-0.010}$
$r_{143 \times 217}^{PS}$	0.695	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	0.9678	$0.9673^{+0.0096}_{-0.0096}$	$\sigma_8(0.51)$	0.6196	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{CIB}$	0.87	—	$Y_P$	0.245389	$0.24538^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	0.4670	$0.467^{+0.010}_{-0.0098}$
$\xi^{tSZ \times CIB}$	0.64	—	$Y_P^{BBN}$	0.246715	$0.24671^{+0.00013}_{-0.00016}$	$\sigma_8(0.61)$	0.5896	$0.590^{+0.012}_{-0.011}$
$A^{kSZ}$	0.3	—	$10^5 D/H$	2.589	$2.591^{+0.071}_{-0.063}$	$f\sigma_8(2.33)$	0.2973	$0.2975^{+0.0060}_{-0.0055}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.50}$	Age/Gyr	13.794	$13.794^{+0.052}_{-0.050}$	$\sigma_8(2.33)$	0.3066	$0.3068^{+0.0064}_{-0.0058}$
$A_{143}^{dust}$	0.980	$0.95^{+0.46}_{-0.43}$	$z_*$	1089.86	$1089.86^{+0.58}_{-0.53}$	$f_{2000}^{143}$	29.8	$29^{+7}_{-7}$
$A_{217}^{dust}$	0.979	$0.97^{+0.28}_{-0.27}$	$r_*$	144.70	$144.72^{+0.57}_{-0.58}$	$f_{2000}^{217}$	106.5	$106.7^{+4.9}_{-5.1}$
$A_{143 \times 217}^{dust}$	0.995	$1.03^{+0.43}_{-0.42}$	$100\theta_*$	1.04113	$1.04115^{+0.00075}_{-0.00075}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$c_{100}$	0.99779	$0.9976^{+0.0027}_{-0.0026}$	$D_M(z_*)/\text{Gpc}$	13.898	$13.900^{+0.057}_{-0.055}$	$\chi_{lensing}^2$	8.97	$9.32 (\nu: 0.3)$
$c_{217}$	1.00131	$1.0011^{+0.0041}_{-0.0041}$	$z_{drag}$	1059.82	$1059.80^{+0.78}_{-0.86}$	$\chi_{small}^2$	396.05	$397.1 (\nu: 1.7)$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.013}$	$r_{drag}$	147.37	$147.40^{+0.61}_{-0.63}$	$\chi_{lowl}^2$	22.77	$22.94 (\nu: 0.3)$
$c_{EE}$	0.9924	$0.992^{+0.013}_{-0.012}$	$k_D$	0.14056	$0.14052^{+0.00080}_{-0.00077}$	$\chi_{CamSpec}^2$	11500.2	$11514.3 (\nu: 15.5)$
$H_0$	67.69	$67.7^{+1.0}_{-1.1}$	$100\theta_D$	0.160819	$0.16084^{+0.00050}_{-0.00046}$	$\chi_{JLA}^2$	1034.98	$1035.03 (\nu: 0.0)$
$\Omega_\Lambda$	0.6901	$0.690^{+0.013}_{-0.014}$	$z_{eq}$	3378	$3377^{+55}_{-53}$	$\chi_{6DF}^2$	0.022	$0.040 (\nu: 0.0)$
$\Omega_m$	0.3099	$0.310^{+0.014}_{-0.013}$	$k_{eq}$	0.010310	$0.01031^{+0.00017}_{-0.00016}$	$\chi_{MGS}^2$	1.28	$1.36 (\nu: 0.1)$
$\Omega_m h^2$	0.14201	$0.1419^{+0.0023}_{-0.0022}$	$100\theta_{eq}$	0.8176	$0.8179^{+0.0099}_{-0.010}$	$\chi_{DR12BAO}^2$	4.23	$4.5 (\nu: 0.7)$
$\Omega_m h^3$	0.09613	$0.09612^{+0.00076}_{-0.00080}$	$100\theta_{s,eq}$	0.4516	$0.4518^{+0.0051}_{-0.0052}$	$\chi_{prior}^2$	2.0	$7.8 (\nu: 5.9)$
$\sigma_8$	0.8078	$0.808^{+0.016}_{-0.016}$	$H(0.15)$	72.96	$72.98^{+0.88}_{-0.91}$	$\chi_{CMB}^2$	11928.0	$11943.7 (\nu: 16.7)$
$S_8$	0.8210	$0.821^{+0.027}_{-0.025}$	$D_M(0.15)$	640.5	$640.4^{+9.1}_{-8.6}$	$\chi_{BAO}^2$	5.53	$5.88 (\nu: 0.4)$
$\sigma_8 \Omega_m^{0.5}$	0.4497	$0.450^{+0.015}_{-0.014}$	$H(0.38)$	83.04	$83.05^{+0.67}_{-0.68}$			

Best-fit  $\chi_{eff}^2 = 12970.49$ ;  $\bar{\chi}_{eff}^2 = 12992.39$ ;  $R - 1 = 0.01438$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.23 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.97 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 comman-  
der\_dx12\_v3\_2\_29: 22.77 CamSpec like\_10.7HM\_1400\_unified: 11500.17 SN - JLA Pantheon18: 1034.98



## 2.58 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02241^{+0.00033}_{-0.00037}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.015}_{-0.014}$	$D_M(0.38)$	$1522^{+18}_{-17}$
$\Omega_c h^2$	$0.1183^{+0.0023}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.979^{+0.022}_{-0.021}$	$H(0.51)$	$89.91^{+0.56}_{-0.54}$
$100\theta_{MC}$	$1.04107^{+0.00089}_{-0.00078}$	$r_{drag}h$	$100.4^{+1.7}_{-1.8}$	$D_M(0.51)$	$1973^{+21}_{-20}$
$\tau$	$0.057^{+0.020}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.052}_{-0.050}$	$H(0.61)$	$95.48^{+0.45}_{-0.46}$
$\ln(10^{10} A_s)$	$3.046^{+0.039}_{-0.036}$	$z_{re}$	$7.9^{+1.8}_{-1.8}$	$D_M(0.61)$	$2296^{+22}_{-21}$
$n_s$	$0.9689^{+0.0094}_{-0.0095}$	$10^9 A_s$	$2.104^{+0.084}_{-0.075}$	$H(2.33)$	$235.5^{+1.4}_{-1.4}$
$y_{cal}$	$1.0009^{+0.0064}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.026}_{-0.026}$	$D_M(2.33)$	$5756^{+22}_{-22}$
$A_{100}^{PS}$	$237^{+60}_{-60}$	$D_{40}$	$1223^{+30}_{-28}$	$f\sigma_8(0.15)$	$0.451^{+0.013}_{-0.013}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5733^{+97}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{217}^{PS}$	$103^{+40}_{-40}$	$D_{810}$	$2537^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.471^{+0.012}_{-0.011}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+12}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$A_{143}^{tSZ}$	$< 8.89$	$D_{2000}$	$230.9^{+3.9}_{-4.2}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.010}$
$r_{143 \times 217}^{PS}$	$0.67^{+0.30}_{-0.35}$	$n_{s,0.002}$	$0.9689^{+0.0094}_{-0.0095}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24541^{+0.00012}_{-0.00015}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.010}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24674^{+0.00012}_{-0.00015}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A^{kSZ}$	—	$10^5 D/H$	$2.579^{+0.069}_{-0.059}$	$f\sigma_8(2.33)$	$0.2980^{+0.0058}_{-0.0056}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.48}$	Age/Gyr	$13.782^{+0.051}_{-0.050}$	$\sigma_8(2.33)$	$0.3074^{+0.0063}_{-0.0058}$
$A_{143}^{dust}$	$0.95^{+0.46}_{-0.46}$	$z_*$	$1089.72^{+0.55}_{-0.52}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{dust}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$144.84^{+0.52}_{-0.58}$	$f_{2000}^{217}$	$106.5^{+4.7}_{-5.1}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.43}_{-0.42}$	$100\theta_*$	$1.04125^{+0.00088}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0025}$	$D_M(z_*)/\text{Gpc}$	$13.910^{+0.052}_{-0.055}$	$\chi^2_{lensing}$	$9.47 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0041}$	$z_{drag}$	$1059.90^{+0.71}_{-0.81}$	$\chi^2_{simall}$	$397.5 (\nu: 2.3)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{drag}$	$147.50^{+0.57}_{-0.61}$	$\chi^2_{lowl}$	$22.70 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$k_D$	$0.14047^{+0.00077}_{-0.00072}$	$\chi^2_{CamSpec}$	$11515.1 (\nu: 16.1)$
$H_0$	$68.0^{+1.0}_{-1.0}$	$100\theta_D$	$0.16078^{+0.00048}_{-0.00044}$	$\chi^2_{H073p45}$	$10.7 (\nu: 1.2)$
$\Omega_\Lambda$	$0.695^{+0.013}_{-0.014}$	$z_{eq}$	$3363^{+53}_{-49}$	$\chi^2_{JLA}$	$1034.87 (\nu: 0.0)$
$\Omega_m$	$0.305^{+0.014}_{-0.013}$	$k_{eq}$	$0.01026^{+0.00016}_{-0.00015}$	$\chi^2_{6DF}$	$0.019 (\nu: 0.0)$
$\Omega_m h^2$	$0.1414^{+0.0022}_{-0.0020}$	$100\theta_{eq}$	$0.8207^{+0.0094}_{-0.0097}$	$\chi^2_{MGS}$	$1.67 (\nu: 0.1)$
$\Omega_m h^3$	$0.09617^{+0.00074}_{-0.00081}$	$100\theta_{s,eq}$	$0.4532^{+0.0048}_{-0.0050}$	$\chi^2_{DR12BAO}$	$3.87 (\nu: 0.2)$
$\sigma_8$	$0.807^{+0.016}_{-0.015}$	$H(0.15)$	$73.25^{+0.86}_{-0.89}$	$\chi^2_{prior}$	$7.8 (\nu: 5.9)$
$S_8$	$0.815^{+0.026}_{-0.024}$	$D_M(0.15)$	$637.7^{+8.8}_{-8.4}$	$\chi^2_{CMB}$	$11944.7 (\nu: 17.8)$
$\sigma_8 \Omega_m^{0.5}$	$0.446^{+0.014}_{-0.013}$	$H(0.38)$	$83.26^{+0.65}_{-0.66}$	$\chi^2_{BAO}$	$5.56 (\nu: 0.1)$

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02230^{+0.00039}_{-0.00040}$	$S_8$	$0.828^{+0.034}_{-0.030}$	$100\theta_{s,eq}$	$0.4503^{+0.0066}_{-0.0067}$
$\Omega_c h^2$	$0.1196^{+0.0030}_{-0.0029}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.018}_{-0.017}$	$H(0.15)$	$72.7^{+1.1}_{-1.2}$
$100\theta_{MC}$	$1.04087^{+0.00078}_{-0.00082}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.017}_{-0.016}$	$D_M(0.15)$	$643^{+12}_{-11}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.022}$	$H(0.38)$	$82.87^{+0.85}_{-0.85}$
$\ln(10^{10} A_s)$	$3.043^{+0.038}_{-0.027}$	$r_{drag} h$	$99.3^{+2.3}_{-2.3}$	$D_M(0.38)$	$1533^{+24}_{-23}$
$n_s$	$0.966^{+0.011}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.057}_{-0.053}$	$H(0.51)$	$89.61^{+0.68}_{-0.67}$
$y_{cal}$	$1.0005^{+0.0066}_{-0.0065}$	$z_{re}$	$< 9.41$	$D_M(0.51)$	$1985^{+28}_{-27}$
$A_{100}^{PS}$	$239^{+60}_{-60}$	$10^9 A_s$	$2.096^{+0.080}_{-0.057}$	$H(0.61)$	$95.24^{+0.55}_{-0.56}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.028}_{-0.027}$	$D_M(0.61)$	$2310^{+30}_{-29}$
$A_{217}^{PS}$	$102^{+30}_{-30}$	$D_{40}$	$1227^{+31}_{-30}$	$H(2.33)$	$236.2^{+1.8}_{-1.8}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{220}$	$5720^{+98}_{-98}$	$D_M(2.33)$	$5766^{+27}_{-26}$
$A_{143}^{tSZ}$	$< 8.86$	$D_{810}$	$2535^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.016}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.012}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.3^{+4.2}_{-4.2}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.013}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.966^{+0.011}_{-0.010}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.0099}$
$A^{kSZ}$	—	$Y_P$	$0.24537^{+0.00015}_{-0.00017}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.011}$
$A_{100}^{dust}$	$1.01^{+0.51}_{-0.51}$	$Y_P^{BBN}$	$0.24669^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0090}$
$A_{143}^{dust}$	$0.96^{+0.45}_{-0.45}$	$10^5 D/H$	$2.599^{+0.076}_{-0.070}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.010}$
$A_{217}^{dust}$	$0.97^{+0.27}_{-0.27}$	$Age/Gyr$	$13.804^{+0.061}_{-0.058}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0084}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.42}$	$z_*$	$1089.98^{+0.67}_{-0.63}$	$f\sigma_8(2.33)$	$0.2974^{+0.0059}_{-0.0042}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$144.58^{+0.69}_{-0.71}$	$\sigma_8(2.33)$	$0.3065^{+0.0064}_{-0.0045}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0041}$	$100\theta_*$	$1.04107^{+0.00078}_{-0.00081}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/Gpc$	$13.888^{+0.065}_{-0.066}$	$f_{2000}^{217}$	$106.9^{+4.9}_{-5.0}$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$z_{drag}$	$1059.74^{+0.84}_{-0.84}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$H_0$	$67.4^{+1.3}_{-1.4}$	$r_{drag}$	$147.27^{+0.71}_{-0.74}$	$\chi_{lensing}^2$	$9.26 (\nu: 0.2)$
$\Omega_\Lambda$	$0.686^{+0.018}_{-0.019}$	$k_D$	$0.14062^{+0.00086}_{-0.00084}$	$\chi_{simall}^2$	$396.9 (\nu: 1.4)$
$\Omega_m$	$0.314^{+0.019}_{-0.018}$	$100\theta_D$	$0.16086^{+0.00049}_{-0.00049}$	$\chi_{lowl}^2$	$23.21 (\nu: 0.4)$
$\Omega_m h^2$	$0.1426^{+0.0029}_{-0.0028}$	$z_{eq}$	$3391^{+70}_{-66}$	$\chi_{CamSpec}^2$	$11514.0 (\nu: 15.1)$
$\Omega_m h^3$	$0.09611^{+0.00080}_{-0.00082}$	$k_{eq}$	$0.01035^{+0.00021}_{-0.00020}$	$\chi_{prior}^2$	$7.9 (\nu: 6.0)$
$\sigma_8$	$0.810^{+0.015}_{-0.014}$	$100\theta_{eq}$	$0.815^{+0.013}_{-0.013}$	$\chi_{CMB}^2$	$11943.4 (\nu: 16.0)$
$\bar{\chi}_{eff}^2 = 11951.25; R - 1 = 0.00847$					



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02234^{+0.00036}_{-0.00037}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.604^{+0.015}_{-0.013}$	$D_{\text{M}}(0.38)$	$1528^{+19}_{-18}$
$\Omega_{\text{c}}h^2$	$0.1190^{+0.0024}_{-0.0024}$	$\sigma_8/h^{0.5}$	$0.983^{+0.021}_{-0.019}$	$H(0.51)$	$89.73^{+0.56}_{-0.57}$
$100\theta_{\text{MC}}$	$1.04095^{+0.00076}_{-0.00074}$	$r_{\text{drag}}h$	$99.7^{+1.8}_{-1.9}$	$D_{\text{M}}(0.51)$	$1980^{+22}_{-21}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.051}_{-0.047}$	$H(0.61)$	$95.34^{+0.47}_{-0.47}$
$\ln(10^{10}A_{\text{s}})$	$3.044^{+0.039}_{-0.029}$	$z_{\text{re}}$	$< 9.52$	$D_{\text{M}}(0.61)$	$2304^{+24}_{-23}$
$n_{\text{s}}$	$0.9671^{+0.0097}_{-0.0098}$	$10^9 A_{\text{s}}$	$2.099^{+0.082}_{-0.060}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$y_{\text{cal}}$	$1.0007^{+0.0065}_{-0.0065}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.877^{+0.028}_{-0.026}$	$D_{\text{M}}(2.33)$	$5762^{+23}_{-22}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1225^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5725^{+99}_{-97}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.012}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$< 8.89$	$D_{2000}$	$230.5^{+4.1}_{-4.1}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.0099}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{\text{s},0.002}$	$0.9671^{+0.0097}_{-0.0098}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0093}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24538^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.468^{+0.010}_{-0.0091}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00013}_{-0.00016}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0088}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.592^{+0.071}_{-0.064}$	$f\sigma_8(2.33)$	$0.2976^{+0.0059}_{-0.0044}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.796^{+0.053}_{-0.051}$	$\sigma_8(2.33)$	$0.3069^{+0.0063}_{-0.0047}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.44}$	$z_*$	$1089.88^{+0.59}_{-0.54}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$r_*$	$144.70^{+0.59}_{-0.59}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	$1.04114^{+0.00076}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.899^{+0.058}_{-0.056}$	$\chi_{\text{lensing}}^2$	$9.26 (\nu: 0.2)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1059.79^{+0.79}_{-0.85}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.38^{+0.62}_{-0.64}$	$\chi_{\text{lowl}}^2$	$22.98 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\text{D}}$	$0.14054^{+0.00080}_{-0.00078}$	$\chi_{\text{CamSpec}}^2$	$11514.2 (\nu: 15.3)$
$H_0$	$67.7^{+1.0}_{-1.1}$	$100\theta_{\text{D}}$	$0.16084^{+0.00050}_{-0.00047}$	$\chi_{6\text{DF}}^2$	$0.045 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.015}$	$z_{\text{eq}}$	$3379^{+55}_{-54}$	$\chi_{\text{MGS}}^2$	$1.32 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.310^{+0.015}_{-0.014}$	$k_{\text{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.8)$
$\Omega_{\text{m}}h^2$	$0.1420^{+0.0023}_{-0.0023}$	$100\theta_{\text{eq}}$	$0.817^{+0.010}_{-0.010}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\text{m}}h^3$	$0.09611^{+0.00077}_{-0.00080}$	$100\theta_{\text{s,eq}}$	$0.4516^{+0.0052}_{-0.0053}$	$\chi_{\text{CMB}}^2$	$11943.5 (\nu: 16.3)$
$\sigma_8$	$0.809^{+0.016}_{-0.013}$	$H(0.15)$	$72.94^{+0.91}_{-0.93}$	$\chi_{\text{BAO}}^2$	$5.97 (\nu: 0.5)$
$S_8$	$0.822^{+0.027}_{-0.025}$	$D_{\text{M}}(0.15)$	$640.7^{+9.2}_{-8.9}$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.450^{+0.015}_{-0.014}$	$H(0.38)$	$83.03^{+0.69}_{-0.69}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02240^{+0.00035}_{-0.00039}$	$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.017}_{-0.021}$	$D_M(0.15)$	$638^{+11}_{-16}$
$\Omega_c h^2$	$0.1184^{+0.0029}_{-0.0042}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.016}_{-0.017}$	$H(0.38)$	$83.2^{+1.2}_{-0.82}$
$100\theta_{MC}$	$1.04105^{+0.00097}_{-0.00080}$	$\sigma_8/h^{0.5}$	$0.980^{+0.023}_{-0.020}$	$D_M(0.38)$	$1523^{+22}_{-31}$
$\tau$	$0.058^{+0.019}_{-0.015}$	$r_{\text{drag}} h$	$100.2^{+3.5}_{-2.3}$	$H(0.51)$	$89.88^{+0.89}_{-0.66}$
$\ln(10^{10} A_s)$	$3.047^{+0.039}_{-0.031}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.055}_{-0.049}$	$D_M(0.51)$	$1974^{+26}_{-36}$
$n_s$	$0.9686^{+0.0097}_{-0.010}$	$z_{\text{re}}$	$< 9.64$	$H(0.61)$	$95.46^{+0.69}_{-0.55}$
$y_{\text{cal}}$	$1.0009^{+0.0065}_{-0.0066}$	$10^9 A_s$	$2.105^{+0.083}_{-0.065}$	$D_M(0.61)$	$2298^{+28}_{-39}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.028}_{-0.026}$	$H(2.33)$	$235.6^{+1.8}_{-2.5}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1223^{+30}_{-30}$	$D_M(2.33)$	$5757^{+26}_{-27}$
$A_{217}^{\text{PS}}$	$103^{+40}_{-40}$	$D_{220}$	$5732^{+96}_{-100}$	$f\sigma_8(0.15)$	$0.452^{+0.016}_{-0.020}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2537^{+34}_{-34}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$< 8.86$	$D_{1420}$	$817^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.472^{+0.013}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.30}_{-0.35}$	$D_{2000}$	$230.9^{+4.0}_{-4.2}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.9686^{+0.0097}_{-0.010}$	$f\sigma_8(0.51)$	$0.471^{+0.012}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24541^{+0.00013}_{-0.00016}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0098}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24673^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.466^{+0.011}_{-0.0095}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.49}$	$10^5 D/H$	$2.580^{+0.073}_{-0.063}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0093}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.47}$	Age/Gyr	$13.784^{+0.058}_{-0.056}$	$f\sigma_8(2.33)$	$0.2980^{+0.0057}_{-0.0047}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1089.75^{+0.64}_{-0.60}$	$\sigma_8(2.33)$	$0.3075^{+0.0065}_{-0.0051}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.44}_{-0.42}$	$r_*$	$144.8^{+1.0}_{-0.69}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0025}$	$100\theta_*$	$1.04123^{+0.00096}_{-0.00080}$	$f_{2000}^{217}$	$106.5^{+4.7}_{-5.1}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.908^{+0.085}_{-0.064}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.89^{+0.72}_{-0.84}$	$\chi_{\text{lensing}}^2$	$9.41 (\nu: 0.4)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$r_{\text{drag}}$	$147.47^{+0.99}_{-0.71}$	$\chi_{\text{simall}}^2$	$397.5 (\nu: 2.4)$
$H_0$	$68.0^{+1.9}_{-1.3}$	$k_D$	$0.14049^{+0.00084}_{-0.00094}$	$\chi_{\text{lowl}}^2$	$22.78 (\nu: 0.3)$
$\Omega_\Lambda$	$0.694^{+0.025}_{-0.018}$	$100\theta_D$	$0.16079^{+0.00048}_{-0.00045}$	$\chi_{\text{CamSpec}}^2$	$11515.1 (\nu: 16.8)$
$\Omega_m$	$0.306^{+0.018}_{-0.025}$	$z_{\text{eq}}$	$3366^{+66}_{-97}$	$\chi_{\text{H073p45}}^2$	$11.0 (\nu: 2.0)$
$\Omega_m h^2$	$0.1415^{+0.0028}_{-0.0040}$	$k_{\text{eq}}$	$0.01027^{+0.00020}_{-0.00029}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^3$	$0.09617^{+0.00074}_{-0.00081}$	$100\theta_{\text{eq}}$	$0.820^{+0.019}_{-0.012}$	$\chi_{\text{CMB}}^2$	$11944.7 (\nu: 19.5)$
$\sigma_8$	$0.808^{+0.016}_{-0.014}$	$100\theta_{s,\text{eq}}$	$0.4529^{+0.0098}_{-0.0064}$		
$S_8$	$0.816^{+0.031}_{-0.039}$	$H(0.15)$	$73.2^{+1.6}_{-1.1}$		

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



## 2.62 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02241^{+0.00034}_{-0.00037}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.015}_{-0.013}$	$D_M(0.38)$	$1523^{+18}_{-17}$
$\Omega_c h^2$	$0.1184^{+0.0023}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.980^{+0.022}_{-0.019}$	$H(0.51)$	$89.90^{+0.57}_{-0.55}$
$100\theta_{MC}$	$1.04106^{+0.00090}_{-0.00078}$	$r_{drag}h$	$100.3^{+1.8}_{-1.8}$	$D_M(0.51)$	$1973^{+21}_{-20}$
$\tau$	$0.058^{+0.019}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.052}_{-0.047}$	$H(0.61)$	$95.48^{+0.46}_{-0.46}$
$\ln(10^{10} A_s)$	$3.047^{+0.039}_{-0.031}$	$z_{re}$	$< 9.64$	$D_M(0.61)$	$2297^{+23}_{-22}$
$n_s$	$0.9688^{+0.0093}_{-0.0097}$	$10^9 A_s$	$2.105^{+0.082}_{-0.065}$	$H(2.33)$	$235.5^{+1.5}_{-1.4}$
$y_{cal}$	$1.0009^{+0.0064}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.026}_{-0.026}$	$D_M(2.33)$	$5756^{+23}_{-22}$
$A_{100}^{PS}$	$237^{+60}_{-60}$	$D_{40}$	$1223^{+30}_{-28}$	$f\sigma_8(0.15)$	$0.452^{+0.014}_{-0.012}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5733^{+98}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.013}$
$A_{217}^{PS}$	$103^{+40}_{-40}$	$D_{810}$	$2537^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.471^{+0.012}_{-0.010}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{143}^{tSZ}$	$< 8.89$	$D_{2000}$	$230.9^{+4.0}_{-4.2}$	$f\sigma_8(0.51)$	$0.471^{+0.011}_{-0.0094}$
$r_{143 \times 217}^{PS}$	$0.67^{+0.30}_{-0.35}$	$n_{s,0.002}$	$0.9688^{+0.0093}_{-0.0097}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0099}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24541^{+0.00012}_{-0.00015}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.0091}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24673^{+0.00012}_{-0.00015}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0094}$
$A^{kSZ}$	—	$10^5 D/H$	$2.579^{+0.070}_{-0.060}$	$f\sigma_8(2.33)$	$0.2980^{+0.0057}_{-0.0047}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.48}$	Age/Gyr	$13.783^{+0.052}_{-0.051}$	$\sigma_8(2.33)$	$0.3075^{+0.0062}_{-0.0050}$
$A_{143}^{dust}$	$0.95^{+0.46}_{-0.47}$	$z_*$	$1089.73^{+0.56}_{-0.53}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{dust}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$144.83^{+0.53}_{-0.58}$	$f_{2000}^{217}$	$106.5^{+4.8}_{-5.1}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.43}_{-0.42}$	$100\theta_*$	$1.04124^{+0.00088}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0025}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.053}_{-0.056}$	$\chi^2_{lensing}$	$9.40 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{drag}$	$1059.90^{+0.72}_{-0.81}$	$\chi^2_{simall}$	$397.4 (\nu: 2.3)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{drag}$	$147.49^{+0.58}_{-0.62}$	$\chi^2_{lowl}$	$22.73 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$k_D$	$0.14048^{+0.00079}_{-0.00073}$	$\chi^2_{CamSpec}$	$11515.0 (\nu: 16.0)$
$H_0$	$68.0^{+1.0}_{-1.0}$	$100\theta_D$	$0.16078^{+0.00048}_{-0.00044}$	$\chi^2_{H073p45}$	$10.8 (\nu: 1.2)$
$\Omega_\Lambda$	$0.694^{+0.013}_{-0.014}$	$z_{eq}$	$3364^{+54}_{-50}$	$\chi^2_{6DF}$	$0.021 (\nu: 0.0)$
$\Omega_m$	$0.306^{+0.014}_{-0.013}$	$k_{eq}$	$0.01027^{+0.00016}_{-0.00015}$	$\chi^2_{MGS}$	$1.65 (\nu: 0.1)$
$\Omega_m h^2$	$0.1414^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	$0.8205^{+0.0097}_{-0.0099}$	$\chi^2_{DR12BAO}$	$3.91 (\nu: 0.3)$
$\Omega_m h^3$	$0.09617^{+0.00074}_{-0.00082}$	$100\theta_{s,eq}$	$0.4531^{+0.0050}_{-0.0051}$	$\chi^2_{prior}$	$7.8 (\nu: 5.9)$
$\sigma_8$	$0.808^{+0.016}_{-0.014}$	$H(0.15)$	$73.23^{+0.88}_{-0.90}$	$\chi^2_{CMB}$	$11944.5 (\nu: 17.6)$
$S_8$	$0.815^{+0.026}_{-0.024}$	$D_M(0.15)$	$637.8^{+9.0}_{-8.6}$	$\chi^2_{BAO}$	$5.58 (\nu: 0.1)$
$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.014}_{-0.013}$	$H(0.38)$	$83.24^{+0.67}_{-0.67}$		

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



### 2.63 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02232^{+0.00038}_{-0.00039}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.452^{+0.018}_{-0.016}$	$D_{\text{M}}(0.15)$	$642^{+11}_{-11}$
$\Omega_{\text{c}}h^2$	$0.1194^{+0.0029}_{-0.0028}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.605^{+0.016}_{-0.015}$	$H(0.38)$	$82.93^{+0.81}_{-0.82}$
$100\theta_{\text{MC}}$	$1.04090^{+0.00079}_{-0.00079}$	$\sigma_8/h^{0.5}$	$0.985^{+0.023}_{-0.021}$	$D_{\text{M}}(0.38)$	$1531^{+23}_{-22}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\text{drag}}h$	$99.5^{+2.2}_{-2.3}$	$H(0.51)$	$89.66^{+0.66}_{-0.66}$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.039}_{-0.028}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.055}_{-0.050}$	$D_{\text{M}}(0.51)$	$1983^{+26}_{-25}$
$n_{\text{s}}$	$0.966^{+0.010}_{-0.010}$	$z_{\text{re}}$	$< 9.47$	$H(0.61)$	$95.28^{+0.54}_{-0.54}$
$y_{\text{cal}}$	$1.0006^{+0.0066}_{-0.0065}$	$10^9 A_{\text{s}}$	$2.097^{+0.082}_{-0.058}$	$D_{\text{M}}(0.61)$	$2308^{+28}_{-27}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878^{+0.028}_{-0.027}$	$H(2.33)$	$236.1^{+1.7}_{-1.7}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1226^{+31}_{-29}$	$D_{\text{M}}(2.33)$	$5765^{+26}_{-25}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5722^{+99}_{-99}$	$f\sigma_8(0.15)$	$0.457^{+0.016}_{-0.015}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+35}_{-34}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$< 8.89$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.38)$	$0.475^{+0.013}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.4^{+4.2}_{-4.1}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{\text{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.24537^{+0.00014}_{-0.00017}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0092}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24670^{+0.00014}_{-0.00017}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.0098}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.52}$	$10^5 \text{D}/\text{H}$	$2.596^{+0.075}_{-0.068}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0087}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.43}$	$\text{Age}/\text{Gyr}$	$13.801^{+0.059}_{-0.056}$	$f\sigma_8(2.33)$	$0.2975^{+0.0059}_{-0.0043}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$z_*$	$1089.94^{+0.65}_{-0.60}$	$\sigma_8(2.33)$	$0.3067^{+0.0064}_{-0.0046}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$r_*$	$144.63^{+0.67}_{-0.66}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$100\theta_*$	$1.04109^{+0.00080}_{-0.00079}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-5.1}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0041}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.892^{+0.064}_{-0.063}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.76^{+0.82}_{-0.82}$	$\chi_{\text{lensing}}^2$	$9.25 (\nu: 0.2)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$r_{\text{drag}}$	$147.31^{+0.68}_{-0.70}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.5)$
$H_0$	$67.5^{+1.3}_{-1.3}$	$k_{\text{D}}$	$0.14059^{+0.00083}_{-0.00081}$	$\chi_{\text{lowl}}^2$	$23.12 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.688^{+0.017}_{-0.018}$	$100\theta_{\text{D}}$	$0.16085^{+0.00049}_{-0.00048}$	$\chi_{\text{CamSpec}}^2$	$11514.1 (\nu: 15.4)$
$\Omega_{\text{m}}$	$0.312^{+0.018}_{-0.017}$	$z_{\text{eq}}$	$3386^{+65}_{-63}$	$\chi_{\text{JLA}}^2$	$1035.20 (\nu: 0.1)$
$\Omega_{\text{m}}h^2$	$0.1424^{+0.0027}_{-0.0026}$	$k_{\text{eq}}$	$0.01034^{+0.00020}_{-0.00019}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.1)$
$\Omega_{\text{m}}h^3$	$0.09611^{+0.00078}_{-0.00079}$	$100\theta_{\text{eq}}$	$0.816^{+0.012}_{-0.012}$	$\chi_{\text{CMB}}^2$	$11943.5 (\nu: 16.5)$
$\sigma_8$	$0.809^{+0.016}_{-0.013}$	$100\theta_{\text{s,eq}}$	$0.4508^{+0.0062}_{-0.0062}$		
$S_8$	$0.826^{+0.033}_{-0.029}$	$H(0.15)$	$72.8^{+1.1}_{-1.1}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02241^{+0.00037}_{-0.00036}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.015}_{-0.014}$	$D_M(0.38)$	$1522^{+18}_{-17}$
$\Omega_c h^2$	$0.1183^{+0.0023}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.980^{+0.022}_{-0.020}$	$H(0.51)$	$89.91^{+0.53}_{-0.54}$
$100\theta_{MC}$	$1.04107^{+0.00072}_{-0.00079}$	$r_{drag}h$	$100.3^{+1.7}_{-1.8}$	$D_M(0.51)$	$1973^{+21}_{-20}$
$\tau$	$0.058^{+0.018}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.053}_{-0.044}$	$H(0.61)$	$95.48^{+0.46}_{-0.46}$
$\ln(10^{10} A_s)$	$3.047^{+0.037}_{-0.032}$	$z_{re}$	$< 9.62$	$D_M(0.61)$	$2297^{+22}_{-22}$
$n_s$	$0.9691^{+0.0093}_{-0.0099}$	$10^9 A_s$	$2.106^{+0.078}_{-0.066}$	$H(2.33)$	$235.5^{+1.4}_{-1.4}$
$y_{cal}$	$1.0009^{+0.0063}_{-0.0066}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.026}_{-0.026}$	$D_M(2.33)$	$5756^{+22}_{-22}$
$A_{100}^{PS}$	$237^{+60}_{-60}$	$D_{40}$	$1222^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.452^{+0.013}_{-0.013}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5732^{+95}_{-93}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.013}$
$A_{217}^{PS}$	$103^{+40}_{-40}$	$D_{810}$	$2537^{+32}_{-33}$	$f\sigma_8(0.38)$	$0.471^{+0.012}_{-0.012}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.011}$
$A_{143}^{tSZ}$	$< 8.99$	$D_{2000}$	$231.0^{+4.1}_{-4.0}$	$f\sigma_8(0.51)$	$0.471^{+0.011}_{-0.011}$
$r_{143 \times 217}^{PS}$	$0.67^{+0.31}_{-0.34}$	$n_{s,0.002}$	$0.9691^{+0.0093}_{-0.0099}$	$\sigma_8(0.51)$	$0.621^{+0.011}_{-0.0098}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24541^{+0.00014}_{-0.00015}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.0093}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24673^{+0.00014}_{-0.00015}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0094}$
$A^{kSZ}$	—	$10^5 D/H$	$2.579^{+0.068}_{-0.066}$	$f\sigma_8(2.33)$	$0.2981^{+0.0055}_{-0.0048}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.45}$	Age/Gyr	$13.782^{+0.051}_{-0.049}$	$\sigma_8(2.33)$	$0.3076^{+0.0058}_{-0.0051}$
$A_{143}^{dust}$	$0.95^{+0.42}_{-0.43}$	$z_*$	$1089.73^{+0.54}_{-0.53}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{dust}$	$0.97^{+0.25}_{-0.25}$	$r_*$	$144.84^{+0.53}_{-0.58}$	$f_{2000}^{217}$	$106.5^{+4.6}_{-5.2}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.43}_{-0.45}$	$100\theta_*$	$1.04125^{+0.00069}_{-0.00079}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0025}$	$D_M(z_*)/\text{Gpc}$	$13.910^{+0.052}_{-0.054}$	$\chi^2_{lensing}$	$9.41 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0038}$	$z_{drag}$	$1059.90^{+0.84}_{-0.81}$	$\chi^2_{simall}$	$397.5 (\nu: 2.3)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{drag}$	$147.50^{+0.60}_{-0.61}$	$\chi^2_{lowl}$	$22.69 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_D$	$0.14047^{+0.00080}_{-0.00074}$	$\chi^2_{CamSpec}$	$11515.3 (\nu: 17.9)$
$H_0$	$68.0^{+1.0}_{-1.0}$	$100\theta_D$	$0.16079^{+0.00047}_{-0.00049}$	$\chi^2_{H073p45}$	$10.7 (\nu: 1.2)$
$\Omega_\Lambda$	$0.694^{+0.013}_{-0.014}$	$z_{eq}$	$3363^{+53}_{-51}$	$\chi^2_{JLA}$	$706.63 (\nu: 0.0)$
$\Omega_m$	$0.306^{+0.014}_{-0.013}$	$k_{eq}$	$0.01026^{+0.00016}_{-0.00016}$	$\chi^2_{6DF}$	$0.020 (\nu: 0.0)$
$\Omega_m h^2$	$0.1414^{+0.0022}_{-0.0021}$	$100\theta_{eq}$	$0.8206^{+0.0098}_{-0.0098}$	$\chi^2_{MGS}$	$1.66 (\nu: 0.1)$
$\Omega_m h^3$	$0.09617^{+0.00076}_{-0.00082}$	$100\theta_{s,eq}$	$0.4532^{+0.0051}_{-0.0050}$	$\chi^2_{DR12BAO}$	$3.89 (\nu: 0.2)$
$\sigma_8$	$0.808^{+0.016}_{-0.015}$	$H(0.15)$	$73.25^{+0.87}_{-0.89}$	$\chi^2_{prior}$	$7.7 (\nu: 5.7)$
$S_8$	$0.815^{+0.026}_{-0.025}$	$D_M(0.15)$	$637.7^{+8.8}_{-8.4}$	$\chi^2_{CMB}$	$11944.9 (\nu: 19.6)$
$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.014}_{-0.013}$	$H(0.38)$	$83.25^{+0.64}_{-0.66}$	$\chi^2_{BAO}$	$5.57 (\nu: 0.1)$

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



## 2.65 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02235^{+0.00035}_{-0.00037}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.014}_{-0.013}$	$D_{\text{M}}(0.38)$	$1528^{+18}_{-17}$
$\Omega_{\text{c}} h^2$	$0.1189^{+0.0023}_{-0.0023}$	$\sigma_8 / h^{0.5}$	$0.982^{+0.021}_{-0.019}$	$H(0.51)$	$89.75^{+0.55}_{-0.55}$
$100\theta_{\text{MC}}$	$1.04096^{+0.00076}_{-0.00075}$	$r_{\text{drag}} h$	$99.8^{+1.8}_{-1.8}$	$D_{\text{M}}(0.51)$	$1979^{+21}_{-21}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.051}_{-0.047}$	$H(0.61)$	$95.36^{+0.46}_{-0.47}$
$\ln(10^{10} A_{\text{s}})$	$3.044^{+0.039}_{-0.029}$	$z_{\text{re}}$	$< 9.54$	$D_{\text{M}}(0.61)$	$2303^{+23}_{-22}$
$n_{\text{s}}$	$0.9674^{+0.0096}_{-0.0096}$	$10^9 A_{\text{s}}$	$2.100^{+0.084}_{-0.060}$	$H(2.33)$	$235.8^{+1.5}_{-1.4}$
$y_{\text{cal}}$	$1.0007^{+0.0065}_{-0.0064}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.877^{+0.028}_{-0.026}$	$D_{\text{M}}(2.33)$	$5762^{+23}_{-22}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1225^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5726^{+98}_{-97}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.012}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$< 8.86$	$D_{2000}$	$230.6^{+4.1}_{-4.2}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.0097}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{\text{s},0.002}$	$0.9674^{+0.0096}_{-0.0096}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0093}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24538^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0089}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00013}_{-0.00016}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0089}$
$A^{\text{kSZ}}$	—	$10^5 \text{D/H}$	$2.590^{+0.071}_{-0.063}$	$f\sigma_8(2.33)$	$0.2977^{+0.0059}_{-0.0044}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age/Gyr}$	$13.794^{+0.052}_{-0.050}$	$\sigma_8(2.33)$	$0.3070^{+0.0062}_{-0.0047}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.43}$	$z_*$	$1089.86^{+0.58}_{-0.52}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$r_*$	$144.73^{+0.57}_{-0.58}$	$f_{2000}^{217}$	$106.7^{+4.8}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.42}$	$100\theta_*$	$1.04115^{+0.00076}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901^{+0.057}_{-0.056}$	$\chi_{\text{lensing}}^2$	$9.27 (\nu: 0.2)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1059.80^{+0.78}_{-0.82}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.8)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.40^{+0.61}_{-0.62}$	$\chi_{\text{lowl}}^2$	$22.94 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\text{D}}$	$0.14052^{+0.00080}_{-0.00077}$	$\chi_{\text{CamSpec}}^2$	$11514.3 (\nu: 15.4)$
$H_0$	$67.7^{+1.0}_{-1.1}$	$100\theta_{\text{D}}$	$0.16083^{+0.00050}_{-0.00046}$	$\chi_{\text{JLA}}^2$	$1035.02 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.691^{+0.013}_{-0.014}$	$z_{\text{eq}}$	$3376^{+54}_{-52}$	$\chi_{6\text{DF}}^2$	$0.038 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.309^{+0.014}_{-0.013}$	$k_{\text{eq}}$	$0.01030^{+0.00017}_{-0.00016}$	$\chi_{\text{MGS}}^2$	$1.37 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1419^{+0.0023}_{-0.0022}$	$100\theta_{\text{eq}}$	$0.8180^{+0.0098}_{-0.010}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.6)$
$\Omega_{\text{m}} h^3$	$0.09612^{+0.00077}_{-0.00080}$	$100\theta_{\text{s,eq}}$	$0.4518^{+0.0051}_{-0.0051}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\sigma_8$	$0.809^{+0.016}_{-0.013}$	$H(0.15)$	$72.98^{+0.87}_{-0.90}$	$\chi_{\text{CMB}}^2$	$11943.6 (\nu: 16.4)$
$S_8$	$0.821^{+0.027}_{-0.024}$	$D_{\text{M}}(0.15)$	$640.3^{+9.0}_{-8.6}$	$\chi_{\text{BAO}}^2$	$5.86 (\nu: 0.4)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.015}_{-0.013}$	$H(0.38)$	$83.06^{+0.67}_{-0.68}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241^{+0.00033}_{-0.00037}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.015}_{-0.012}$	$D_{\mathrm{M}}(0.38)$	$1522^{+18}_{-17}$
$\Omega_{\mathrm{c}}h^2$	$0.1183^{+0.0023}_{-0.0021}$	$\sigma_8/h^{0.5}$	$0.979^{+0.022}_{-0.019}$	$H(0.51)$	$89.91^{+0.55}_{-0.54}$
$100\theta_{\mathrm{MC}}$	$1.04107^{+0.00089}_{-0.00078}$	$r_{\mathrm{drag}}h$	$100.4^{+1.7}_{-1.7}$	$D_{\mathrm{M}}(0.51)$	$1973^{+21}_{-20}$
$\tau$	$0.058^{+0.019}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.052}_{-0.047}$	$H(0.61)$	$95.49^{+0.48}_{-0.46}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.038}_{-0.032}$	$z_{\mathrm{re}}$	$< 9.64$	$D_{\mathrm{M}}(0.61)$	$2296^{+22}_{-21}$
$n_{\mathrm{s}}$	$0.9690^{+0.0093}_{-0.0095}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.082}_{-0.066}$	$H(2.33)$	$235.5^{+1.4}_{-1.4}$
$y_{\mathrm{cal}}$	$1.0009^{+0.0064}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875^{+0.026}_{-0.026}$	$D_{\mathrm{M}}(2.33)$	$5756^{+22}_{-22}$
$A_{100}^{\mathrm{PS}}$	$237^{+60}_{-60}$	$D_{40}$	$1223^{+30}_{-28}$	$f\sigma_8(0.15)$	$0.451^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5733^{+97}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$103^{+40}_{-40}$	$D_{810}$	$2537^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.471^{+0.012}_{-0.010}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+12}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.89$	$D_{2000}$	$230.9^{+3.9}_{-4.2}$	$f\sigma_8(0.51)$	$0.470^{+0.011}_{-0.0093}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67^{+0.30}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.9690^{+0.0093}_{-0.0095}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0099}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24541^{+0.00012}_{-0.00015}$	$f\sigma_8(0.61)$	$0.466^{+0.010}_{-0.0091}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24674^{+0.00012}_{-0.00015}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0094}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.578^{+0.069}_{-0.059}$	$f\sigma_8(2.33)$	$0.2981^{+0.0059}_{-0.0048}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.48}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.782^{+0.051}_{-0.050}$	$\sigma_8(2.33)$	$0.3076^{+0.0062}_{-0.0051}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.46}_{-0.46}$	$z_*$	$1089.72^{+0.55}_{-0.52}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$144.84^{+0.53}_{-0.58}$	$f_{2000}^{217}$	$106.5^{+4.7}_{-5.1}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.42}$	$100\theta_*$	$1.04125^{+0.00088}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0025}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.911^{+0.052}_{-0.055}$	$\chi_{\mathrm{lensing}}^2$	$9.42 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.91^{+0.71}_{-0.81}$	$\chi_{\mathrm{simall}}^2$	$397.5 (\nu: 2.3)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.50^{+0.57}_{-0.61}$	$\chi_{\mathrm{lowl}}^2$	$22.71 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$k_{\mathrm{D}}$	$0.14047^{+0.00077}_{-0.00074}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.0 (\nu: 16.0)$
$H_0$	$68.0^{+1.0}_{-1.0}$	$100\theta_{\mathrm{D}}$	$0.16078^{+0.00048}_{-0.00044}$	$\chi_{\mathrm{H073p45}}^2$	$10.7 (\nu: 1.1)$
$\Omega_{\Lambda}$	$0.695^{+0.012}_{-0.014}$	$z_{\mathrm{eq}}$	$3362^{+52}_{-49}$	$\chi_{\mathrm{JLA}}^2$	$1034.87 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.014}_{-0.012}$	$k_{\mathrm{eq}}$	$0.01026^{+0.00016}_{-0.00015}$	$\chi_{6\mathrm{DF}}^2$	$0.019 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1413^{+0.0022}_{-0.0020}$	$100\theta_{\mathrm{eq}}$	$0.8207^{+0.0094}_{-0.0097}$	$\chi_{\mathrm{MGS}}^2$	$1.67 (\nu: 0.1)$
$\Omega_{\mathrm{m}}h^3$	$0.09617^{+0.00074}_{-0.00082}$	$100\theta_{\mathrm{s,eq}}$	$0.4532^{+0.0048}_{-0.0050}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.86 (\nu: 0.2)$
$\sigma_8$	$0.808^{+0.016}_{-0.014}$	$H(0.15)$	$73.26^{+0.86}_{-0.88}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$S_8$	$0.815^{+0.026}_{-0.023}$	$D_{\mathrm{M}}(0.15)$	$637.6^{+8.7}_{-8.3}$	$\chi_{\mathrm{CMB}}^2$	$11944.6 (\nu: 17.7)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.446^{+0.014}_{-0.013}$	$H(0.38)$	$83.26^{+0.65}_{-0.65}$	$\chi_{\mathrm{BAO}}^2$	$5.55 (\nu: 0.1)$

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



## 2.67 base\_CamSpecHM\_TT

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02257	$0.02248^{+0.00075}_{-0.00072}$	$S_8$	0.875	$0.871^{+0.068}_{-0.066}$	$k_{\text{eq}}$	0.010181	$0.01023^{+0.00050}_{-0.00046}$
$\Omega_c h^2$	0.1170	$0.1178^{+0.0074}_{-0.0068}$	$\sigma_8 \Omega_m^{0.5}$	0.4793	$0.477^{+0.037}_{-0.036}$	$100\theta_{\text{eq}}$	0.8263	$0.823^{+0.031}_{-0.031}$
$100\theta_{\text{MC}}$	1.04136	$1.0413^{+0.0015}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	0.6493	$0.644^{+0.042}_{-0.046}$	$100\theta_{\text{s,eq}}$	0.4560	$0.454^{+0.016}_{-0.016}$
$\tau$	0.149	$0.134^{+0.087}_{-0.10}$	$\sigma_8/h^{0.5}$	1.061	$1.051^{+0.068}_{-0.076}$	$H(0.15)$	73.86	$73.5^{+2.8}_{-2.8}$
$\ln(10^{10} A_s)$	3.224	$3.20^{+0.16}_{-0.19}$	$r_{\text{drag}} h$	101.5	$100.9^{+5.7}_{-5.8}$	$D_M(0.15)$	631.8	$635^{+29}_{-27}$
$n_s$	0.9767	$0.973^{+0.023}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	2.615	$2.60^{+0.15}_{-0.18}$	$H(0.38)$	83.71	$83.5^{+2.1}_{-2.1}$
$A_{100}^{\text{PS}}$	218	$232^{+70}_{-70}$	$z_{\text{re}}$	15.5	$14.3^{+5.8}_{-8.8}$	$D_M(0.38)$	1510	$1517^{+58}_{-54}$
$A_{143}^{\text{PS}}$	45.5	$35^{+20}_{-20}$	$10^9 A_s$	2.512	$2.45^{+0.43}_{-0.43}$	$H(0.51)$	90.29	$90.1^{+1.7}_{-1.6}$
$A_{217}^{\text{PS}}$	108.9	$104^{+30}_{-30}$	$10^9 A_s e^{-2\tau}$	1.8666	$1.869^{+0.043}_{-0.041}$	$D_M(0.51)$	1959	$1966^{+67}_{-64}$
$A_{217}^{\text{CIB}}$	37.5	$37^{+20}_{-20}$	$D_{40}$	1251.9	$1253^{+49}_{-44}$	$H(0.61)$	95.79	$95.6^{+1.4}_{-1.3}$
$A_{143}^{\text{tSZ}}$	6.29	$< 8.86$	$D_{220}$	5717	$5717^{+110}_{-110}$	$D_M(0.61)$	2281	$2289^{+72}_{-69}$
$r_{143 \times 217}^{\text{PS}}$	0.787	$> 0.357$	$D_{810}$	2527.8	$2527^{+38}_{-36}$	$H(2.33)$	234.84	$235.2^{+4.3}_{-3.9}$
$r_{143 \times 217}^{\text{CIB}}$	0.78	—	$D_{1420}$	816.1	$814^{+14}_{-13}$	$D_M(2.33)$	5742	$5749^{+59}_{-60}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.99	—	$D_{2000}$	232.9	$231.9^{+5.7}_{-5.6}$	$f\sigma_8(0.15)$	0.4855	$0.483^{+0.035}_{-0.036}$
$A^{\text{kSZ}}$	0.0	—	$n_{\text{s},0.002}$	0.9767	$0.973^{+0.023}_{-0.022}$	$\sigma_8(0.15)$	0.814	$0.804^{+0.059}_{-0.066}$
$A_{100}^{\text{dust}}$	0.99	$0.998^{+0.51}_{-0.50}$	$Y_{\text{P}}$	0.245470	$0.24543^{+0.00033}_{-0.00032}$	$f\sigma_8(0.38)$	0.5089	$0.505^{+0.033}_{-0.036}$
$A_{143}^{\text{dust}}$	0.958	$0.95^{+0.46}_{-0.45}$	$Y_{\text{P}}^{\text{BBN}}$	0.246797	$0.24676^{+0.00033}_{-0.00032}$	$\sigma_8(0.38)$	0.724	$0.714^{+0.055}_{-0.061}$
$A_{217}^{\text{dust}}$	0.992	$0.98^{+0.27}_{-0.27}$	$10^5 \text{D}/\text{H}$	2.549	$2.57^{+0.14}_{-0.13}$	$f\sigma_8(0.51)$	0.5093	$0.505^{+0.033}_{-0.036}$
$A_{143 \times 217}^{\text{dust}}$	1.017	$1.02^{+0.42}_{-0.41}$	Age/Gyr	13.751	$13.77^{+0.13}_{-0.13}$	$\sigma_8(0.51)$	0.678	$0.669^{+0.053}_{-0.059}$
$y_{\text{cal}}$	1.0001	$1.0002^{+0.0066}_{-0.0064}$	$z_*$	1089.41	$1089.6^{+1.5}_{-1.4}$	$f\sigma_8(0.61)$	0.5052	$0.500^{+0.033}_{-0.037}$
$c_{100}$	0.99785	$0.9975^{+0.0027}_{-0.0028}$	$r_*$	145.05	$144.9^{+1.5}_{-1.5}$	$\sigma_8(0.61)$	0.646	$0.637^{+0.052}_{-0.056}$
$c_{217}$	1.00088	$1.0009^{+0.0040}_{-0.0040}$	$100\theta_*$	1.04153	$1.0414^{+0.0014}_{-0.0014}$	$f\sigma_8(2.33)$	0.3261	$0.322^{+0.027}_{-0.030}$
$H_0$	68.73	$68.4^{+3.3}_{-3.3}$	$D_M(z_*)/\text{Gpc}$	13.927	$13.92^{+0.13}_{-0.14}$	$\sigma_8(2.33)$	0.3370	$0.332^{+0.030}_{-0.032}$
$\Omega_\Lambda$	0.7031	$0.698^{+0.040}_{-0.047}$	$z_{\text{drag}}$	1060.20	$1060.0^{+1.4}_{-1.4}$	$f_{2000}^{143}$	25.9	$27^{+10}_{-9}$
$\Omega_{\text{m}}$	0.2969	$0.302^{+0.047}_{-0.040}$	$r_{\text{drag}}$	147.66	$147.6^{+1.4}_{-1.4}$	$f_{2000}^{217}$	103.7	$104.9^{+6.4}_{-6.3}$
$\Omega_{\text{m}} h^2$	0.1402	$0.1409^{+0.0068}_{-0.0063}$	$k_{\text{D}}$	0.14042	$0.1404^{+0.0014}_{-0.0014}$	$f_{2000}^{143 \times 217}$	29.0	$30^{+7}_{-7}$
$\Omega_{\text{m}} h^3$	0.09638	$0.0963^{+0.0013}_{-0.0012}$	$100\theta_{\text{D}}$	0.16065	$0.16074^{+0.00078}_{-0.00077}$	$\chi_{\text{CamSpec}}^2$	7045.3	$7059.6 (\nu: 14.0)$
$\sigma_8$	0.880	$0.869^{+0.061}_{-0.069}$	$z_{\text{eq}}$	3336	$3351^{+160}_{-150}$	$\chi_{\text{prior}}^2$	1.4	$7.3 (\nu: 5.7)$

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



## 2.68 base\_CamSpecHM\_TT\_lowl

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02253	$0.02242^{+0.00073}_{-0.00069}$	$\sigma_8 \Omega_m^{0.5}$	0.4693	$0.468^{+0.037}_{-0.036}$	$100\theta_{s,eq}$	0.4563	$0.455^{+0.015}_{-0.014}$
$\Omega_c h^2$	0.1169	$0.1177^{+0.0068}_{-0.0065}$	$\sigma_8 \Omega_m^{0.25}$	0.6359	$0.631^{+0.040}_{-0.042}$	$H(0.15)$	73.84	$73.5^{+2.7}_{-2.6}$
$100\theta_{MC}$	1.04132	$1.0412^{+0.0014}_{-0.0014}$	$\sigma_8/h^{0.5}$	1.039	$1.030^{+0.065}_{-0.068}$	$D_M(0.15)$	631.9	$635^{+26}_{-26}$
$\tau$	0.128	$0.113^{+0.081}_{-0.088}$	$r_{drag} h$	101.5	$100.9^{+5.5}_{-5.2}$	$H(0.38)$	83.69	$83.4^{+2.1}_{-1.9}$
$\ln(10^{10} A_s)$	3.183	$3.15^{+0.15}_{-0.17}$	$\langle d^2 \rangle^{1/2}$	2.560	$2.54^{+0.15}_{-0.16}$	$D_M(0.38)$	1511	$1518^{+52}_{-52}$
$n_s$	0.9775	$0.973^{+0.021}_{-0.020}$	$z_{re}$	14.0	$12.7^{+5.6}_{-8.3}$	$H(0.51)$	90.26	$90.1^{+1.7}_{-1.5}$
$y_{cal}$	1.0002	$1.0003^{+0.0063}_{-0.0064}$	$10^9 A_s$	2.411	$2.35^{+0.37}_{-0.37}$	$D_M(0.51)$	1959	$1967^{+61}_{-62}$
$A_{100}^{PS}$	219	$233^{+70}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8656	$1.868^{+0.040}_{-0.040}$	$H(0.61)$	95.76	$95.6^{+1.4}_{-1.2}$
$A_{143}^{PS}$	45.0	$36^{+20}_{-20}$	$D_{40}$	1234.6	$1237^{+42}_{-41}$	$D_M(0.61)$	2282	$2291^{+65}_{-67}$
$A_{217}^{PS}$	109.7	$104^{+30}_{-40}$	$D_{220}$	5706	$5708^{+100}_{-110}$	$H(2.33)$	234.71	$235.1^{+4.0}_{-3.8}$
$A_{217}^{CIB}$	37.6	$38^{+20}_{-20}$	$D_{810}$	2529.3	$2528^{+36}_{-35}$	$D_M(2.33)$	5744	$5752^{+54}_{-58}$
$A_{143}^{tSZ}$	6.20	$< 8.89$	$D_{1420}$	817.0	$815^{+13}_{-14}$	$f\sigma_8(0.15)$	0.4754	$0.473^{+0.035}_{-0.035}$
$r_{143 \times 217}^{PS}$	0.807	$> 0.359$	$D_{2000}$	232.7	$231.6^{+5.7}_{-5.8}$	$\sigma_8(0.15)$	0.798	$0.788^{+0.054}_{-0.058}$
$r_{143 \times 217}^{CIB}$	0.70	—	$n_{s,0.002}$	0.9775	$0.973^{+0.021}_{-0.020}$	$f\sigma_8(0.38)$	0.4984	$0.495^{+0.032}_{-0.033}$
$\xi^{tSZ \times CIB}$	0.96	—	$Y_P$	0.245453	$0.24541^{+0.00031}_{-0.00031}$	$\sigma_8(0.38)$	0.709	$0.700^{+0.050}_{-0.054}$
$A^{kSZ}$	0.1	—	$Y_P^{BBN}$	0.246780	$0.24674^{+0.00031}_{-0.00031}$	$f\sigma_8(0.51)$	0.4988	$0.495^{+0.032}_{-0.033}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.51}$	$10^5 D/H$	2.557	$2.58^{+0.13}_{-0.13}$	$\sigma_8(0.51)$	0.6642	$0.655^{+0.048}_{-0.051}$
$A_{143}^{dust}$	0.962	$0.96^{+0.46}_{-0.46}$	Age/Gyr	13.756	$13.77^{+0.12}_{-0.13}$	$f\sigma_8(0.61)$	0.4948	$0.490^{+0.031}_{-0.033}$
$A_{217}^{dust}$	0.978	$0.98^{+0.27}_{-0.27}$	$z_*$	1089.46	$1089.7^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	0.6324	$0.624^{+0.046}_{-0.049}$
$A_{143 \times 217}^{dust}$	1.030	$1.02^{+0.42}_{-0.42}$	$r_*$	145.12	$145.0^{+1.4}_{-1.5}$	$f\sigma_8(2.33)$	0.3195	$0.315^{+0.024}_{-0.026}$
$c_{100}$	0.99783	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04150	$1.0414^{+0.0013}_{-0.0013}$	$\sigma_8(2.33)$	0.3302	$0.325^{+0.027}_{-0.028}$
$c_{217}$	1.00070	$1.0009^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.934	$13.92^{+0.13}_{-0.13}$	$f_{2000}^{143}$	25.9	$27^{+10}_{-9}$
$H_0$	68.72	$68.3^{+3.2}_{-3.0}$	$z_{drag}$	1060.09	$1059.9^{+1.4}_{-1.3}$	$f_{2000}^{217}$	103.9	$105.3^{+6.2}_{-6.1}$
$\Omega_\Lambda$	0.7034	$0.698^{+0.038}_{-0.043}$	$r_{drag}$	147.74	$147.6^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	29.3	$30^{+7}_{-7}$
$\Omega_m$	0.2966	$0.302^{+0.043}_{-0.038}$	$k_D$	0.14030	$0.1403^{+0.0014}_{-0.0013}$	$\chi_{lowl}^2$	24.50	$24.8 (\nu: 1.4)$
$\Omega_m h^2$	0.1401	$0.1408^{+0.0063}_{-0.0061}$	$100\theta_D$	0.16071	$0.16081^{+0.00076}_{-0.00075}$	$\chi_{CamSpec}^2$	7046.4	$7060.1 (\nu: 15.0)$
$\Omega_m h^3$	0.09626	$0.0962^{+0.0013}_{-0.0012}$	$z_{eq}$	3332	$3349^{+150}_{-150}$	$\chi_{prior}^2$	1.4	$7.4 (\nu: 5.6)$
$\sigma_8$	0.862	$0.851^{+0.056}_{-0.061}$	$k_{eq}$	0.010170	$0.01022^{+0.00046}_{-0.00045}$	$\chi_{CMB}^2$	7070.9	$7084.8 (\nu: 14.5)$
$S_8$	0.857	$0.854^{+0.067}_{-0.066}$	$100\theta_{eq}$	0.8268	$0.824^{+0.030}_{-0.028}$			

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

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02239^{+0.00058}_{-0.00054}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.631^{+0.039}_{-0.043}$	$D_{\mathrm{M}}(0.15)$	$637^{+13}_{-13}$
$\Omega_{\mathrm{c}} h^2$	$0.1181^{+0.0033}_{-0.0033}$	$\sigma_8 / h^{0.5}$	$1.030^{+0.064}_{-0.070}$	$H(0.38)$	$83.3^{+1.0}_{-1.0}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$100.6^{+2.6}_{-2.6}$	$D_{\mathrm{M}}(0.38)$	$1521^{+27}_{-26}$
$\tau$	$0.109^{+0.065}_{-0.074}$	$\langle d^2 \rangle^{1/2}$	$2.54^{+0.15}_{-0.16}$	$H(0.51)$	$89.96^{+0.85}_{-0.83}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.15^{+0.13}_{-0.15}$	$z_{\mathrm{re}}$	$12.5^{+4.9}_{-6.9}$	$D_{\mathrm{M}}(0.51)$	$1971^{+32}_{-31}$
$n_{\mathrm{s}}$	$0.972^{+0.013}_{-0.013}$	$10^9 A_{\mathrm{s}}$	$2.33^{+0.31}_{-0.32}$	$H(0.61)$	$95.52^{+0.73}_{-0.70}$
$y_{\mathrm{cal}}$	$1.0003^{+0.0062}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.870^{+0.030}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2294^{+34}_{-34}$
$A_{100}^{\mathrm{PS}}$	$234^{+60}_{-60}$	$D_{40}$	$1237^{+41}_{-39}$	$H(2.33)$	$235.3^{+2.1}_{-2.0}$
$A_{143}^{\mathrm{PS}}$	$36^{+20}_{-20}$	$D_{220}$	$5707^{+100}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5755^{+35}_{-35}$
$A_{217}^{\mathrm{PS}}$	$104^{+30}_{-40}$	$D_{810}$	$2529^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.474^{+0.031}_{-0.032}$
$A_{217}^{\mathrm{CIB}}$	$38^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.786^{+0.050}_{-0.054}$
$A_{143}^{\mathrm{tSZ}}$	$< 9.02$	$D_{2000}$	$231.4^{+4.9}_{-5.2}$	$f\sigma_8(0.38)$	$0.495^{+0.031}_{-0.034}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.359$	$n_{\mathrm{s}, 0.002}$	$0.972^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	$0.698^{+0.045}_{-0.049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24540^{+0.00023}_{-0.00024}$	$f\sigma_8(0.51)$	$0.494^{+0.030}_{-0.034}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24673^{+0.00024}_{-0.00024}$	$\sigma_8(0.51)$	$0.653^{+0.043}_{-0.046}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.10}_{-0.10}$	$f\sigma_8(0.61)$	$0.490^{+0.031}_{-0.034}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780^{+0.078}_{-0.081}$	$\sigma_8(0.61)$	$0.622^{+0.041}_{-0.044}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_*$	$1089.73^{+0.85}_{-0.83}$	$f\sigma_8(2.33)$	$0.314^{+0.021}_{-0.022}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.28}_{-0.26}$	$r_*$	$144.91^{+0.81}_{-0.82}$	$\sigma_8(2.33)$	$0.324^{+0.022}_{-0.023}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.41}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$28^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916^{+0.078}_{-0.080}$	$f_{2000}^{217}$	$105.5^{+5.9}_{-5.7}$
$c_{217}$	$1.0010^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.8^{+1.3}_{-1.2}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$H_0$	$68.1^{+1.5}_{-1.5}$	$r_{\mathrm{drag}}$	$147.58^{+0.86}_{-0.89}$	$\chi_{\mathrm{lowl}}^2$	$24.7 (\nu: 1.4)$
$\Omega_{\Lambda}$	$0.696^{+0.019}_{-0.020}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7059.6 (\nu: 14.6)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.020}_{-0.019}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00071}_{-0.00070}$	$\chi_{6\mathrm{DF}}^2$	$0.044 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1411^{+0.0032}_{-0.0031}$	$z_{\mathrm{eq}}$	$3357^{+76}_{-75}$	$\chi_{\mathrm{MGS}}^2$	$1.82 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 (\nu: 0.6)$
$\sigma_8$	$0.850^{+0.054}_{-0.058}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.015}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.4 (\nu: 5.5)$
$S_8$	$0.856^{+0.056}_{-0.058}$	$100\theta_{\mathrm{s}, \mathrm{eq}}$	$0.4538^{+0.0074}_{-0.0073}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.6)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.469^{+0.030}_{-0.032}$	$H(0.15)$	$73.3^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$7084.3 (\nu: 14.0)$
$\bar{\chi}_{\mathrm{eff}}^2 = 7097.63; R - 1 = 0.01179$					



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02243^{+0.00072}_{-0.00066}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.468^{+0.037}_{-0.036}$	$100\theta_{\mathrm{s,eq}}$	$0.455^{+0.015}_{-0.014}$
$\Omega_{\mathrm{c}} h^2$	$0.1176^{+0.0065}_{-0.0065}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.632^{+0.040}_{-0.039}$	$H(0.15)$	$73.5^{+2.7}_{-2.5}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0014}_{-0.0013}$	$\sigma_8/h^{0.5}$	$1.031^{+0.064}_{-0.062}$	$D_{\mathrm{M}}(0.15)$	$635^{+25}_{-25}$
$\tau$	$0.115^{+0.079}_{-0.070}$	$r_{\mathrm{drag}} h$	$100.9^{+5.5}_{-5.0}$	$H(0.38)$	$83.5^{+2.0}_{-1.8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.16^{+0.15}_{-0.13}$	$\langle d^2 \rangle^{1/2}$	$2.54^{+0.14}_{-0.15}$	$D_{\mathrm{M}}(0.38)$	$1517^{+50}_{-52}$
$n_{\mathrm{s}}$	$0.974^{+0.021}_{-0.019}$	$z_{\mathrm{re}}$	$12.9^{+5.5}_{-6.1}$	$H(0.51)$	$90.1^{+1.6}_{-1.4}$
$y_{\mathrm{cal}}$	$1.0003^{+0.0063}_{-0.0064}$	$10^9 A_{\mathrm{s}}$	$2.36^{+0.35}_{-0.31}$	$D_{\mathrm{M}}(0.51)$	$1967^{+58}_{-61}$
$A_{100}^{\mathrm{PS}}$	$232^{+60}_{-60}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.868^{+0.039}_{-0.040}$	$H(0.61)$	$95.6^{+1.3}_{-1.1}$
$A_{143}^{\mathrm{PS}}$	$35^{+20}_{-20}$	$D_{40}$	$1237^{+43}_{-41}$	$D_{\mathrm{M}}(0.61)$	$2290^{+63}_{-67}$
$A_{217}^{\mathrm{PS}}$	$104^{+30}_{-30}$	$D_{220}$	$5708^{+100}_{-110}$	$H(2.33)$	$235.1^{+3.9}_{-3.8}$
$A_{217}^{\mathrm{CIB}}$	$38^{+20}_{-20}$	$D_{810}$	$2528^{+36}_{-35}$	$D_{\mathrm{M}}(2.33)$	$5751^{+51}_{-57}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.88$	$D_{1420}$	$815^{+13}_{-14}$	$f\sigma_8(0.15)$	$0.474^{+0.035}_{-0.034}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.359$	$D_{2000}$	$231.6^{+5.6}_{-5.6}$	$\sigma_8(0.15)$	$0.789^{+0.053}_{-0.048}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.974^{+0.021}_{-0.019}$	$f\sigma_8(0.38)$	$0.495^{+0.032}_{-0.032}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24542^{+0.00031}_{-0.00030}$	$\sigma_8(0.38)$	$0.701^{+0.049}_{-0.044}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24674^{+0.00031}_{-0.00030}$	$f\sigma_8(0.51)$	$0.495^{+0.031}_{-0.030}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.51}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.13}_{-0.13}$	$\sigma_8(0.51)$	$0.656^{+0.047}_{-0.041}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.46}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.77^{+0.11}_{-0.12}$	$f\sigma_8(0.61)$	$0.491^{+0.031}_{-0.030}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.6^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	$0.625^{+0.045}_{-0.040}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.42}$	$r_*$	$145.0^{+1.4}_{-1.4}$	$f\sigma_8(2.33)$	$0.315^{+0.024}_{-0.021}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.0414^{+0.0013}_{-0.0013}$	$\sigma_8(2.33)$	$0.326^{+0.026}_{-0.022}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.92^{+0.13}_{-0.13}$	$f_{2000}^{143}$	$27^{+9}_{-9}$
$H_0$	$68.4^{+3.1}_{-2.9}$	$z_{\mathrm{drag}}$	$1059.9^{+1.4}_{-1.3}$	$f_{2000}^{217}$	$105.2^{+6.1}_{-6.1}$
$\Omega_{\Lambda}$	$0.698^{+0.038}_{-0.041}$	$r_{\mathrm{drag}}$	$147.7^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	$30^{+7}_{-7}$
$\Omega_{\mathrm{m}}$	$0.302^{+0.041}_{-0.038}$	$k_{\mathrm{D}}$	$0.1403^{+0.0014}_{-0.0013}$	$\chi_{\mathrm{lowl}}^2$	$24.8 (\nu: 1.4)$
$\Omega_{\mathrm{m}} h^2$	$0.1407^{+0.0061}_{-0.0061}$	$100\theta_{\mathrm{D}}$	$0.16081^{+0.00075}_{-0.00075}$	$\chi_{\mathrm{CamSpec}}^2$	$7060.0 (\nu: 14.7)$
$\Omega_{\mathrm{m}} h^3$	$0.0962^{+0.0013}_{-0.0012}$	$z_{\mathrm{eq}}$	$3347^{+150}_{-150}$	$\chi_{\mathrm{prior}}^2$	$7.4 (\nu: 5.6)$
$\sigma_8$	$0.853^{+0.055}_{-0.051}$	$k_{\mathrm{eq}}$	$0.01022^{+0.00045}_{-0.00044}$	$\chi_{\mathrm{CMB}}^2$	$7084.8 (\nu: 14.3)$
$S_8$	$0.854^{+0.067}_{-0.065}$	$100\theta_{\mathrm{eq}}$	$0.824^{+0.029}_{-0.027}$		

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



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239^{+0.00058}_{-0.00053}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.632^{+0.039}_{-0.037}$	$D_{\mathrm{M}}(0.15)$	$637^{+13}_{-13}$
$\Omega_{\mathrm{c}}h^2$	$0.1181^{+0.0033}_{-0.0033}$	$\sigma_8/h^{0.5}$	$1.030^{+0.063}_{-0.059}$	$H(0.38)$	$83.3^{+1.0}_{-0.99}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}}h$	$100.6^{+2.6}_{-2.6}$	$D_{\mathrm{M}}(0.38)$	$1521^{+26}_{-26}$
$\tau$	$0.110^{+0.064}_{-0.063}$	$\langle d^2 \rangle^{1/2}$	$2.54^{+0.15}_{-0.14}$	$H(0.51)$	$89.96^{+0.85}_{-0.82}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.15^{+0.13}_{-0.12}$	$z_{\mathrm{re}}$	$12.6^{+4.8}_{-5.5}$	$D_{\mathrm{M}}(0.51)$	$1971^{+31}_{-31}$
$n_{\mathrm{s}}$	$0.972^{+0.013}_{-0.013}$	$10^9 A_{\mathrm{s}}$	$2.33^{+0.31}_{-0.27}$	$H(0.61)$	$95.52^{+0.73}_{-0.70}$
$y_{\mathrm{cal}}$	$1.0003^{+0.0062}_{-0.0064}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(0.61)$	$2294^{+34}_{-34}$
$A_{100}^{\mathrm{PS}}$	$233^{+60}_{-60}$	$D_{40}$	$1237^{+41}_{-38}$	$H(2.33)$	$235.3^{+2.1}_{-2.0}$
$A_{143}^{\mathrm{PS}}$	$36^{+20}_{-20}$	$D_{220}$	$5707^{+100}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5755^{+34}_{-35}$
$A_{217}^{\mathrm{PS}}$	$104^{+30}_{-40}$	$D_{810}$	$2529^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.474^{+0.030}_{-0.029}$
$A_{217}^{\mathrm{CIB}}$	$38^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.787^{+0.050}_{-0.046}$
$A_{143}^{\mathrm{tSZ}}$	$< 9.02$	$D_{2000}$	$231.4^{+4.9}_{-5.1}$	$f\sigma_8(0.38)$	$0.495^{+0.031}_{-0.029}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.359$	$n_{\mathrm{s},0.002}$	$0.972^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	$0.698^{+0.045}_{-0.042}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24540^{+0.00023}_{-0.00023}$	$f\sigma_8(0.51)$	$0.495^{+0.030}_{-0.029}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24673^{+0.00023}_{-0.00023}$	$\sigma_8(0.51)$	$0.654^{+0.042}_{-0.039}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.10}_{-0.10}$	$f\sigma_8(0.61)$	$0.490^{+0.030}_{-0.028}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779^{+0.078}_{-0.081}$	$\sigma_8(0.61)$	$0.622^{+0.041}_{-0.038}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_*$	$1089.73^{+0.84}_{-0.82}$	$f\sigma_8(2.33)$	$0.314^{+0.021}_{-0.019}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.28}_{-0.26}$	$r_*$	$144.91^{+0.81}_{-0.82}$	$\sigma_8(2.33)$	$0.324^{+0.022}_{-0.020}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.41}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$28^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916^{+0.078}_{-0.080}$	$f_{2000}^{217}$	$105.5^{+5.8}_{-5.7}$
$c_{217}$	$1.0010^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.8^{+1.3}_{-1.2}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$H_0$	$68.1^{+1.5}_{-1.5}$	$r_{\mathrm{drag}}$	$147.58^{+0.86}_{-0.89}$	$\chi_{\mathrm{lowl}}^2$	$24.7 (\nu: 1.3)$
$\Omega_{\Lambda}$	$0.696^{+0.019}_{-0.020}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7059.5 (\nu: 14.2)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.020}_{-0.019}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00070}_{-0.00070}$	$\chi_{6\mathrm{DF}}^2$	$0.043 (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0032}_{-0.0031}$	$z_{\mathrm{eq}}$	$3357^{+76}_{-75}$	$\chi_{\mathrm{MGS}}^2$	$1.82 (\nu: 0.2)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 (\nu: 0.5)$
$\sigma_8$	$0.851^{+0.053}_{-0.049}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.014}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.4 (\nu: 5.5)$
$S_8$	$0.856^{+0.055}_{-0.053}$	$100\theta_{\mathrm{s,eq}}$	$0.4538^{+0.0074}_{-0.0072}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.6)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.469^{+0.030}_{-0.029}$	$H(0.15)$	$73.3^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$7084.2 (\nu: 13.8)$
$\bar{\chi}_{\mathrm{eff}}^2 = 7097.56; R - 1 = 0.01150$					



## 2.72 base\_CamSpecHM\_TT\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02205	$0.02207^{+0.00056}_{-0.00053}$	$\sigma_8 \Omega_m^{0.5}$	0.4653	$0.465^{+0.036}_{-0.035}$	$100\theta_{s,eq}$	0.4462	$0.446^{+0.012}_{-0.012}$
$\Omega_c h^2$	0.1216	$0.1216^{+0.0056}_{-0.0054}$	$\sigma_8 \Omega_m^{0.25}$	0.6154	$0.615^{+0.031}_{-0.032}$	$H(0.15)$	71.90	$71.9^{+2.1}_{-2.0}$
$100\theta_{MC}$	1.04072	$1.0407^{+0.0013}_{-0.0012}$	$\sigma_8/h^{0.5}$	0.9985	$0.998^{+0.042}_{-0.043}$	$D_M(0.15)$	651.2	$651^{+21}_{-21}$
$\tau$	0.0513	$0.052^{+0.021}_{-0.022}$	$r_{drag} h$	97.71	$97.8^{+4.3}_{-4.2}$	$H(0.38)$	82.27	$82.3^{+1.5}_{-1.4}$
$\ln(10^{10} A_s)$	3.0400	$3.041^{+0.043}_{-0.046}$	$\langle d^2 \rangle^{1/2}$	2.471	$2.47^{+0.10}_{-0.10}$	$D_M(0.38)$	1549.3	$1549^{+42}_{-42}$
$n_s$	0.9590	$0.960^{+0.016}_{-0.015}$	$z_{re}$	7.47	$7.5^{+2.1}_{-2.5}$	$H(0.51)$	89.13	$89.2^{+1.2}_{-1.1}$
$y_{cal}$	1.0003	$1.0004^{+0.0064}_{-0.0065}$	$10^9 A_s$	2.091	$2.092^{+0.092}_{-0.094}$	$D_M(0.51)$	2004.6	$2004^{+48}_{-49}$
$A_{100}^{PS}$	249	$245^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8866	$1.887^{+0.036}_{-0.036}$	$H(0.61)$	94.87	$94.90^{+0.96}_{-0.85}$
$A_{143}^{PS}$	39.9	$42^{+20}_{-20}$	$D_{40}$	1240.5	$1239^{+42}_{-42}$	$D_M(0.61)$	2331	$2330^{+51}_{-52}$
$A_{217}^{PS}$	97.9	$100^{+30}_{-30}$	$D_{220}$	5710	$5709^{+110}_{-110}$	$H(2.33)$	237.30	$237.3^{+3.4}_{-3.3}$
$A_{217}^{CIB}$	44.6	$42^{+20}_{-20}$	$D_{810}$	2533.3	$2534^{+36}_{-36}$	$D_M(2.33)$	5783.3	$5782^{+40}_{-43}$
$A_{143}^{tSZ}$	4.22	$< 8.71$	$D_{1420}$	812.1	$813^{+13}_{-13}$	$f\sigma_8(0.15)$	0.4686	$0.468^{+0.032}_{-0.032}$
$r_{143 \times 217}^{PS}$	0.539	$0.64^{+0.32}_{-0.32}$	$D_{2000}$	228.72	$229.0^{+4.6}_{-4.7}$	$\sigma_8(0.15)$	0.7507	$0.751^{+0.019}_{-0.021}$
$r_{143 \times 217}^{CIB}$	0.69	—	$n_{s,0.002}$	0.9590	$0.960^{+0.016}_{-0.015}$	$f\sigma_8(0.38)$	0.4836	$0.483^{+0.025}_{-0.026}$
$\xi^{tSZ \times CIB}$	0.01	—	$Y_P$	0.245264	$0.24526^{+0.00023}_{-0.00025}$	$\sigma_8(0.38)$	0.6638	$0.664^{+0.016}_{-0.017}$
$A^{kSZ}$	3.9	—	$Y_P^{BBN}$	0.246590	$0.24659^{+0.00023}_{-0.00025}$	$f\sigma_8(0.51)$	0.4804	$0.480^{+0.021}_{-0.022}$
$A_{100}^{dust}$	1.005	$1.01^{+0.50}_{-0.49}$	$10^5 D/H$	2.646	$2.64^{+0.10}_{-0.10}$	$\sigma_8(0.51)$	0.6206	$0.621^{+0.015}_{-0.015}$
$A_{143}^{dust}$	0.986	$0.97^{+0.45}_{-0.46}$	Age/Gyr	13.842	$13.839^{+0.092}_{-0.095}$	$f\sigma_8(0.61)$	0.4742	$0.474^{+0.019}_{-0.020}$
$A_{217}^{dust}$	0.958	$0.97^{+0.27}_{-0.27}$	$z_*$	1090.47	$1090.4^{+1.1}_{-1.1}$	$\sigma_8(0.61)$	0.5901	$0.590^{+0.014}_{-0.014}$
$A_{143 \times 217}^{dust}$	1.001	$1.03^{+0.42}_{-0.41}$	$r_*$	144.25	$144.3^{+1.2}_{-1.2}$	$f\sigma_8(2.33)$	0.2969	$0.2971^{+0.0067}_{-0.0070}$
$c_{100}$	0.99748	$0.9975^{+0.0027}_{-0.0028}$	$100\theta_*$	1.04094	$1.0409^{+0.0012}_{-0.0012}$	$\sigma_8(2.33)$	0.3055	$0.3056^{+0.0071}_{-0.0072}$
$c_{217}$	1.00140	$1.0013^{+0.0042}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.858	$13.86^{+0.11}_{-0.11}$	$f_{2000}^{143}$	32.3	$32^{+8}_{-8}$
$H_0$	66.46	$66.5^{+2.4}_{-2.4}$	$z_{drag}$	1059.32	$1059.3^{+1.2}_{-1.1}$	$f_{2000}^{217}$	108.4	$108.0^{+5.1}_{-5.3}$
$\Omega_\Lambda$	0.6733	$0.674^{+0.034}_{-0.037}$	$r_{drag}$	147.02	$147.0^{+1.2}_{-1.2}$	$f_{2000}^{143 \times 217}$	33.8	$34^{+6}_{-6}$
$\Omega_m$	0.3267	$0.326^{+0.037}_{-0.034}$	$k_D$	0.14070	$0.1407^{+0.0013}_{-0.0013}$	$\chi_{simall}^2$	395.83	$397.0 (\nu: 1.4)$
$\Omega_m h^2$	0.1443	$0.1443^{+0.0053}_{-0.0052}$	$100\theta_D$	0.16112	$0.16111^{+0.00066}_{-0.00067}$	$\chi_{CamSpec}^2$	7049.7	$7062.9 (\nu: 14.0)$
$\Omega_m h^3$	0.09592	$0.0959^{+0.0012}_{-0.0011}$	$z_{eq}$	3434	$3432^{+130}_{-120}$	$\chi_{prior}^2$	2.3	$7.7 (\nu: 6.1)$
$\sigma_8$	0.8140	$0.814^{+0.023}_{-0.025}$	$k_{eq}$	0.010479	$0.01048^{+0.00038}_{-0.00038}$	$\chi_{CMB}^2$	7445.5	$7459.8 (\nu: 15.0)$
$S_8$	0.850	$0.849^{+0.065}_{-0.064}$	$100\theta_{eq}$	0.8067	$0.807^{+0.024}_{-0.022}$			

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

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



## 2.73 base\_CamSpecHM\_TTTEE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02249	$0.02246^{+0.00051}_{-0.00049}$	$\sigma_8$	0.852	$0.850^{+0.068}_{-0.059}$	$k_{\text{eq}}$	0.010269	$0.01027^{+0.00030}_{-0.00030}$
$\Omega_c h^2$	0.11831	$0.1183^{+0.0044}_{-0.0044}$	$S_8$	0.860	$0.858^{+0.058}_{-0.056}$	$100\theta_{\text{eq}}$	0.8205	$0.821^{+0.019}_{-0.018}$
$100\theta_{\text{MC}}$	1.04104	$1.04104^{+0.00089}_{-0.00086}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4709	$0.470^{+0.032}_{-0.031}$	$100\theta_{\text{s,eq}}$	0.4531	$0.4531^{+0.0098}_{-0.0094}$
$\tau$	0.112	$0.110^{+0.089}_{-0.081}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6336	$0.632^{+0.045}_{-0.041}$	$H(0.15)$	73.30	$73.3^{+1.8}_{-1.7}$
$\ln(10^{10} A_{\text{s}})$	3.154	$3.15^{+0.17}_{-0.16}$	$\sigma_8/h^{0.5}$	1.033	$1.031^{+0.075}_{-0.067}$	$D_{\text{M}}(0.15)$	637.2	$637^{+17}_{-17}$
$n_{\text{s}}$	0.9714	$0.970^{+0.017}_{-0.015}$	$r_{\text{drag}} h$	100.37	$100.4^{+3.6}_{-3.4}$	$H(0.38)$	83.31	$83.3^{+1.3}_{-1.2}$
$A_{100}^{\text{PS}}$	221	$233^{+60}_{-70}$	$\langle d^2 \rangle^{1/2}$	2.551	$2.55^{+0.17}_{-0.16}$	$D_{\text{M}}(0.38)$	1521.1	$1522^{+34}_{-35}$
$A_{143}^{\text{PS}}$	48.6	$36^{+20}_{-20}$	$z_{\text{re}}$	12.8	$12.4^{+6.4}_{-7.6}$	$H(0.51)$	89.96	$90.0^{+1.1}_{-0.97}$
$A_{217}^{\text{PS}}$	107.7	$104^{+30}_{-30}$	$10^9 A_{\text{s}}$	2.343	$2.34^{+0.43}_{-0.34}$	$D_{\text{M}}(0.51)$	1971.5	$1972^{+39}_{-41}$
$A_{217}^{\text{CIB}}$	39.2	$37^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8728	$1.872^{+0.032}_{-0.033}$	$H(0.61)$	95.53	$95.52^{+0.88}_{-0.78}$
$A_{143}^{\text{tSZ}}$	6.49	$< 8.83$	$D_{40}$	1240.1	$1243^{+48}_{-38}$	$D_{\text{M}}(0.61)$	2295.0	$2295^{+42}_{-45}$
$r_{143 \times 217}^{\text{PS}}$	0.774	$0.68^{+0.32}_{-0.31}$	$D_{220}$	5721	$5722^{+100}_{-98}$	$H(2.33)$	235.57	$235.6^{+2.6}_{-2.6}$
$r_{143 \times 217}^{\text{CIB}}$	0.87	—	$D_{810}$	2531.0	$2529^{+36}_{-35}$	$D_{\text{M}}(2.33)$	5753.1	$5754^{+35}_{-38}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	—	$D_{1420}$	815.9	$815^{+13}_{-12}$	$f\sigma_8(0.15)$	0.4762	$0.475^{+0.032}_{-0.031}$
$A^{\text{kSZ}}$	0.0	—	$D_{2000}$	231.86	$231.4^{+4.9}_{-4.5}$	$\sigma_8(0.15)$	0.788	$0.786^{+0.064}_{-0.055}$
$A_{100}^{\text{dust}}$	0.995	$1.00^{+0.50}_{-0.51}$	$n_{\text{s},0.002}$	0.9714	$0.970^{+0.017}_{-0.015}$	$f\sigma_8(0.38)$	0.4971	$0.496^{+0.035}_{-0.032}$
$A_{143}^{\text{dust}}$	0.963	$0.95^{+0.45}_{-0.45}$	$Y_{\text{P}}$	0.245439	$0.24543^{+0.00021}_{-0.00020}$	$\sigma_8(0.38)$	0.700	$0.698^{+0.059}_{-0.051}$
$A_{217}^{\text{dust}}$	0.987	$0.98^{+0.26}_{-0.27}$	$Y_{\text{P}}^{\text{BBN}}$	0.246766	$0.24676^{+0.00021}_{-0.00020}$	$f\sigma_8(0.51)$	0.4964	$0.495^{+0.036}_{-0.032}$
$A_{143 \times 217}^{\text{dust}}$	0.998	$1.02^{+0.41}_{-0.41}$	$10^5 \text{D}/\text{H}$	2.565	$2.569^{+0.092}_{-0.092}$	$\sigma_8(0.51)$	0.655	$0.653^{+0.056}_{-0.048}$
$y_{\text{cal}}$	1.0000	$1.0001^{+0.0065}_{-0.0063}$	$\text{Age}/\text{Gyr}$	13.775	$13.777^{+0.079}_{-0.084}$	$f\sigma_8(0.61)$	0.4917	$0.490^{+0.036}_{-0.033}$
$c_{100}$	0.99792	$0.9976^{+0.0027}_{-0.0027}$	$z_*$	1089.63	$1089.66^{+0.92}_{-0.92}$	$\sigma_8(0.61)$	0.623	$0.622^{+0.054}_{-0.046}$
$c_{217}$	1.00103	$1.0009^{+0.0040}_{-0.0041}$	$r_*$	144.78	$144.80^{+0.94}_{-0.92}$	$f\sigma_8(2.33)$	0.3146	$0.314^{+0.028}_{-0.024}$
$c_{\text{TE}}$	0.9925	$0.992^{+0.014}_{-0.014}$	$100\theta_*$	1.04122	$1.04122^{+0.00087}_{-0.00084}$	$\sigma_8(2.33)$	0.3247	$0.324^{+0.030}_{-0.025}$
$c_{\text{EE}}$	0.9903	$0.990^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.905	$13.907^{+0.086}_{-0.084}$	$f_{2000}^{143}$	27.3	$27^{+8}_{-8}$
$H_0$	68.09	$68.1^{+2.1}_{-2.0}$	$z_{\text{drag}}$	1060.09	$1060.03^{+0.97}_{-0.97}$	$f_{2000}^{217}$	104.7	$105.3^{+5.6}_{-5.7}$
$\Omega_{\Lambda}$	0.6949	$0.695^{+0.026}_{-0.027}$	$r_{\text{drag}}$	147.41	$147.44^{+0.90}_{-0.88}$	$f_{2000}^{143 \times 217}$	30.1	$30^{+6}_{-6}$
$\Omega_{\text{m}}$	0.3051	$0.305^{+0.027}_{-0.026}$	$k_{\text{D}}$	0.14062	$0.14057^{+0.00090}_{-0.00092}$	$\chi_{\text{CamSpec}}^2$	11495.8	$11512.0 (\nu: 15.9)$
$\Omega_{\text{m}} h^2$	0.14144	$0.1414^{+0.0041}_{-0.0041}$	$100\theta_{\text{D}}$	0.16067	$0.16071^{+0.00056}_{-0.00054}$	$\chi_{\text{prior}}^2$	1.9	$7.7 (\nu: 5.5)$
$\Omega_{\text{m}} h^3$	0.09630	$0.09626^{+0.00083}_{-0.00083}$	$z_{\text{eq}}$	3364	$3364^{+97}_{-97}$			

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

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



## 2.74 base\_CamSpecHM\_TTTEE\_lowl

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022467	$0.02243^{+0.00048}_{-0.00046}$	$S_8$	0.850	$0.846^{+0.053}_{-0.053}$	$100\theta_{s,eq}$	0.4533	$0.4530^{+0.0090}_{-0.0089}$
$\Omega_c h^2$	0.11820	$0.1184^{+0.0042}_{-0.0040}$	$\sigma_8 \Omega_m^{0.5}$	0.4655	$0.463^{+0.029}_{-0.029}$	$H(0.15)$	73.32	$73.2^{+1.6}_{-1.6}$
$100\theta_{MC}$	1.04104	$1.04102^{+0.00085}_{-0.00085}$	$\sigma_8 \Omega_m^{0.25}$	0.6265	$0.623^{+0.037}_{-0.039}$	$D_M(0.15)$	637.0	$638^{+16}_{-15}$
$\tau$	0.101	$0.094^{+0.074}_{-0.073}$	$\sigma_8/h^{0.5}$	1.022	$1.015^{+0.062}_{-0.063}$	$H(0.38)$	83.31	$83.2^{+1.2}_{-1.2}$
$\ln(10^{10} A_s)$	3.132	$3.12^{+0.14}_{-0.14}$	$r_{drag} h$	100.44	$100.3^{+3.2}_{-3.3}$	$D_M(0.38)$	1520.8	$1523^{+32}_{-32}$
$n_s$	0.9723	$0.971^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.521	$2.51^{+0.14}_{-0.15}$	$H(0.51)$	89.96	$89.91^{+0.96}_{-0.93}$
$y_{cal}$	1.0002	$1.0002^{+0.0067}_{-0.0062}$	$z_{re}$	11.9	$11.2^{+5.6}_{-7.4}$	$D_M(0.51)$	1971.2	$1973^{+38}_{-37}$
$A_{100}^{PS}$	222	$234^{+70}_{-60}$	$10^9 A_s$	2.293	$2.26^{+0.34}_{-0.30}$	$H(0.61)$	95.53	$95.48^{+0.78}_{-0.75}$
$A_{143}^{PS}$	48.3	$37^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8726	$1.872^{+0.032}_{-0.030}$	$D_M(0.61)$	2294.6	$2297^{+41}_{-40}$
$A_{217}^{PS}$	108.5	$104^{+30}_{-30}$	$D_{40}$	1231.7	$1233^{+37}_{-33}$	$H(2.33)$	235.48	$235.6^{+2.4}_{-2.3}$
$A_{217}^{CIB}$	38.8	$38^{+20}_{-20}$	$D_{220}$	5716	$5716^{+98}_{-99}$	$D_M(2.33)$	5753.6	$5756^{+34}_{-35}$
$A_{143}^{tSZ}$	6.38	$< 8.87$	$D_{810}$	2532.6	$2531^{+37}_{-34}$	$f\sigma_8(0.15)$	0.4708	$0.468^{+0.029}_{-0.029}$
$r_{143 \times 217}^{PS}$	0.768	$> 0.364$	$D_{1420}$	816.9	$816^{+12}_{-12}$	$\sigma_8(0.15)$	0.780	$0.774^{+0.052}_{-0.051}$
$r_{143 \times 217}^{CIB}$	0.84	—	$D_{2000}$	231.94	$231.3^{+4.6}_{-4.4}$	$f\sigma_8(0.38)$	0.4915	$0.489^{+0.029}_{-0.030}$
$\xi^{tSZ \times CIB}$	0.96	—	$n_{s,0.002}$	0.9723	$0.971^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	0.6922	$0.687^{+0.048}_{-0.047}$
$A^{kSZ}$	0.0	—	$Y_P$	0.245433	$0.24542^{+0.00019}_{-0.00019}$	$f\sigma_8(0.51)$	0.4909	$0.488^{+0.030}_{-0.030}$
$A_{100}^{dust}$	1.00	$1.00^{+0.51}_{-0.49}$	$Y_P^{BBN}$	0.246759	$0.24674^{+0.00019}_{-0.00019}$	$\sigma_8(0.51)$	0.6481	$0.643^{+0.045}_{-0.044}$
$A_{143}^{dust}$	0.960	$0.95^{+0.45}_{-0.46}$	$10^5 D/H$	2.568	$2.575^{+0.087}_{-0.087}$	$f\sigma_8(0.61)$	0.4863	$0.483^{+0.030}_{-0.030}$
$A_{217}^{dust}$	0.993	$0.98^{+0.27}_{-0.27}$	Age/Gyr	13.776	$13.781^{+0.075}_{-0.076}$	$\sigma_8(0.61)$	0.6169	$0.612^{+0.043}_{-0.042}$
$A_{143 \times 217}^{dust}$	1.008	$1.01^{+0.41}_{-0.41}$	$z_*$	1089.64	$1089.70^{+0.88}_{-0.85}$	$f\sigma_8(2.33)$	0.3114	$0.309^{+0.023}_{-0.022}$
$c_{100}$	0.99782	$0.9975^{+0.0028}_{-0.0026}$	$r_*$	144.82	$144.81^{+0.88}_{-0.85}$	$\sigma_8(2.33)$	0.3213	$0.319^{+0.024}_{-0.023}$
$c_{217}$	1.00104	$1.0009^{+0.0041}_{-0.0040}$	$100\theta_*$	1.04122	$1.04120^{+0.00083}_{-0.00083}$	$f_{2000}^{143}$	27.4	$28^{+8}_{-8}$
$c_{TE}$	0.9932	$0.994^{+0.014}_{-0.014}$	$D_M(z_*)/\text{Gpc}$	13.909	$13.908^{+0.081}_{-0.080}$	$f_{2000}^{217}$	104.8	$105.5^{+5.4}_{-5.5}$
$c_{EE}$	0.9906	$0.991^{+0.013}_{-0.013}$	$z_{drag}$	1060.05	$1059.96^{+0.97}_{-0.90}$	$f_{2000}^{143 \times 217}$	30.1	$31^{+6}_{-6}$
$H_0$	68.11	$68.0^{+1.9}_{-1.9}$	$r_{drag}$	147.46	$147.46^{+0.85}_{-0.83}$	$\chi_{lowl}^2$	23.92	$24.1 (\nu: 0.9)$
$\Omega_\Lambda$	0.6954	$0.694^{+0.024}_{-0.026}$	$k_D$	0.14055	$0.14053^{+0.00089}_{-0.00090}$	$\chi_{CamSpec}^2$	11496.2	$11512.2 (\nu: 16.0)$
$\Omega_m$	0.3046	$0.306^{+0.026}_{-0.024}$	$100\theta_D$	0.16070	$0.16075^{+0.00054}_{-0.00055}$	$\chi_{prior}^2$	1.9	$7.8 (\nu: 5.7)$
$\Omega_m h^2$	0.14131	$0.1415^{+0.0038}_{-0.0037}$	$z_{eq}$	3361	$3365^{+92}_{-89}$	$\chi_{CMB}^2$	11520.1	$11536.3 (\nu: 15.7)$
$\Omega_m h^3$	0.09625	$0.09620^{+0.00084}_{-0.00082}$	$k_{eq}$	0.010259	$0.01027^{+0.00028}_{-0.00027}$			
$\sigma_8$	0.843	$0.837^{+0.055}_{-0.055}$	$100\theta_{eq}$	0.8210	$0.820^{+0.018}_{-0.018}$			

Best-fit  $\chi_{eff}^2 = 11522.05$ ;  $\bar{\chi}_{eff}^2 = 11544.10$ ;  $R - 1 = 0.00836$

$\chi_{eff}^2$ : CMB - commander\_dx12\_v3\_2\_29: 23.92 CamSpec like\_10.7HM\_1400\_unified: 11496.23



## 2.75 base\_CamSpecHM\_TTTEEE\_lowl\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02244^{+0.00043}_{-0.00040}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.463^{+0.028}_{-0.029}$	$D_{\text{M}}(0.15)$	$637^{+11}_{-11}$
$\Omega_{\text{c}}h^2$	$0.1183^{+0.0028}_{-0.0028}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.623^{+0.036}_{-0.039}$	$H(0.38)$	$83.28^{+0.84}_{-0.81}$
$100\theta_{\text{MC}}$	$1.04103^{+0.00076}_{-0.00078}$	$\sigma_8/h^{0.5}$	$1.015^{+0.059}_{-0.064}$	$D_{\text{M}}(0.38)$	$1522^{+22}_{-22}$
$\tau$	$0.095^{+0.063}_{-0.071}$	$r_{\text{drag}}h$	$100.4^{+2.2}_{-2.1}$	$H(0.51)$	$89.93^{+0.69}_{-0.66}$
$\ln(10^{10}A_{\text{s}})$	$3.12^{+0.12}_{-0.14}$	$\langle d^2 \rangle^{1/2}$	$2.51^{+0.14}_{-0.15}$	$D_{\text{M}}(0.51)$	$1972^{+26}_{-26}$
$n_{\text{s}}$	$0.971^{+0.011}_{-0.011}$	$z_{\text{re}}$	$11.3^{+4.9}_{-7.0}$	$H(0.61)$	$95.50^{+0.58}_{-0.55}$
$y_{\text{cal}}$	$1.0002^{+0.0067}_{-0.0064}$	$10^9 A_{\text{s}}$	$2.26^{+0.29}_{-0.30}$	$D_{\text{M}}(0.61)$	$2296^{+28}_{-28}$
$A_{100}^{\text{PS}}$	$233^{+60}_{-60}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.872^{+0.031}_{-0.028}$	$H(2.33)$	$235.5^{+1.6}_{-1.7}$
$A_{143}^{\text{PS}}$	$36^{+20}_{-20}$	$D_{40}$	$1232^{+38}_{-33}$	$D_{\text{M}}(2.33)$	$5755^{+26}_{-27}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{220}$	$5717^{+96}_{-100}$	$f\sigma_8(0.15)$	$0.468^{+0.028}_{-0.029}$
$A_{217}^{\text{CIB}}$	$38^{+20}_{-20}$	$D_{810}$	$2530^{+36}_{-34}$	$\sigma_8(0.15)$	$0.775^{+0.046}_{-0.051}$
$A_{143}^{\text{tSZ}}$	$< 8.87$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.488^{+0.028}_{-0.030}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.360$	$D_{2000}$	$231.3^{+4.5}_{-4.2}$	$\sigma_8(0.38)$	$0.688^{+0.042}_{-0.046}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{\text{s},0.002}$	$0.971^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.488^{+0.028}_{-0.031}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.24542^{+0.00017}_{-0.00016}$	$\sigma_8(0.51)$	$0.644^{+0.040}_{-0.044}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24675^{+0.00017}_{-0.00016}$	$f\sigma_8(0.61)$	$0.483^{+0.028}_{-0.031}$
$A_{100}^{\text{dust}}$	$1.00^{+0.52}_{-0.49}$	$10^5 \text{D}/\text{H}$	$2.574^{+0.076}_{-0.078}$	$\sigma_8(0.61)$	$0.613^{+0.038}_{-0.042}$
$A_{143}^{\text{dust}}$	$0.95^{+0.44}_{-0.46}$	$\text{Age}/\text{Gyr}$	$13.780^{+0.059}_{-0.060}$	$f\sigma_8(2.33)$	$0.309^{+0.019}_{-0.021}$
$A_{217}^{\text{dust}}$	$0.98^{+0.28}_{-0.26}$	$z_*$	$1089.68^{+0.64}_{-0.67}$	$\sigma_8(2.33)$	$0.319^{+0.020}_{-0.022}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.42}_{-0.41}$	$r_*$	$144.83^{+0.65}_{-0.64}$	$f_{2000}^{143}$	$28^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0029}_{-0.0026}$	$100\theta_*$	$1.04121^{+0.00076}_{-0.00077}$	$f_{2000}^{217}$	$105.5^{+5.3}_{-5.2}$
$c_{217}$	$1.0009^{+0.0042}_{-0.0040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.910^{+0.062}_{-0.061}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{TE}$	$0.994^{+0.014}_{-0.014}$	$z_{\text{drag}}$	$1059.97^{+0.88}_{-0.87}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 0.9)$
$c_{EE}$	$0.991^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$147.48^{+0.67}_{-0.66}$	$\chi_{\text{CamSpec}}^2$	$11511.7 (\nu: 15.0)$
$H_0$	$68.1^{+1.3}_{-1.3}$	$k_{\text{D}}$	$0.14051^{+0.00079}_{-0.00083}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.695^{+0.016}_{-0.017}$	$100\theta_{\text{D}}$	$0.16074^{+0.00051}_{-0.00052}$	$\chi_{\text{MGS}}^2$	$1.69 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.305^{+0.017}_{-0.016}$	$z_{\text{eq}}$	$3362^{+62}_{-63}$	$\chi_{\text{DR12BAO}}^2$	$4.03 (\nu: 0.4)$
$\Omega_{\text{m}}h^2$	$0.1413^{+0.0026}_{-0.0026}$	$k_{\text{eq}}$	$0.01026^{+0.00019}_{-0.00019}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.7)$
$\Omega_{\text{m}}h^3$	$0.09620^{+0.00082}_{-0.00080}$	$100\theta_{\text{eq}}$	$0.821^{+0.012}_{-0.012}$	$\chi_{\text{BAO}}^2$	$5.76 (\nu: 0.3)$
$\sigma_8$	$0.838^{+0.049}_{-0.055}$	$100\theta_{\text{s,eq}}$	$0.4532^{+0.0062}_{-0.0060}$	$\chi_{\text{CMB}}^2$	$11535.7 (\nu: 14.4)$
$S_8$	$0.845^{+0.052}_{-0.053}$	$H(0.15)$	$73.3^{+1.1}_{-1.1}$		

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



## 2.76 base\_CamSpecHM\_TTTEEE\_lowl\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02244^{+0.00048}_{-0.00045}$	$S_8$	$0.847^{+0.052}_{-0.049}$	$100\theta_{\mathrm{s,eq}}$	$0.4532^{+0.0089}_{-0.0086}$
$\Omega_{\mathrm{c}} h^2$	$0.1183^{+0.0040}_{-0.0040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.464^{+0.029}_{-0.027}$	$H(0.15)$	$73.3^{+1.6}_{-1.5}$
$100\theta_{\mathrm{MC}}$	$1.04102^{+0.00085}_{-0.00085}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.624^{+0.036}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$638^{+15}_{-15}$
$\tau$	$0.097^{+0.067}_{-0.056}$	$\sigma_8/h^{0.5}$	$1.018^{+0.060}_{-0.050}$	$H(0.38)$	$83.3^{+1.2}_{-1.1}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.12^{+0.13}_{-0.11}$	$r_{\mathrm{drag}} h$	$100.3^{+3.2}_{-3.1}$	$D_{\mathrm{M}}(0.38)$	$1522^{+31}_{-31}$
$n_{\mathrm{s}}$	$0.971^{+0.014}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.51^{+0.14}_{-0.12}$	$H(0.51)$	$89.93^{+0.95}_{-0.89}$
$y_{\mathrm{cal}}$	$1.0002^{+0.0067}_{-0.0062}$	$z_{\mathrm{re}}$	$< 16.2$	$D_{\mathrm{M}}(0.51)$	$1973^{+36}_{-37}$
$A_{100}^{\mathrm{PS}}$	$233^{+70}_{-60}$	$10^9 A_{\mathrm{s}}$	$2.27^{+0.31}_{-0.24}$	$H(0.61)$	$95.50^{+0.77}_{-0.72}$
$A_{143}^{\mathrm{PS}}$	$36^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.872^{+0.032}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2296^{+39}_{-39}$
$A_{217}^{\mathrm{PS}}$	$104^{+30}_{-30}$	$D_{40}$	$1233^{+37}_{-33}$	$H(2.33)$	$235.5^{+2.3}_{-2.3}$
$A_{217}^{\mathrm{CIB}}$	$38^{+20}_{-20}$	$D_{220}$	$5716^{+97}_{-99}$	$D_{\mathrm{M}}(2.33)$	$5755^{+33}_{-34}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.89$	$D_{810}$	$2530^{+37}_{-34}$	$f\sigma_8(0.15)$	$0.469^{+0.028}_{-0.026}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.364$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.15)$	$0.776^{+0.048}_{-0.040}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$231.3^{+4.6}_{-4.3}$	$f\sigma_8(0.38)$	$0.489^{+0.029}_{-0.025}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.971^{+0.014}_{-0.013}$	$\sigma_8(0.38)$	$0.689^{+0.043}_{-0.036}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.24542^{+0.00019}_{-0.00018}$	$f\sigma_8(0.51)$	$0.489^{+0.029}_{-0.025}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.51}_{-0.49}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24675^{+0.00019}_{-0.00019}$	$\sigma_8(0.51)$	$0.645^{+0.041}_{-0.034}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.45}_{-0.46}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.574^{+0.085}_{-0.086}$	$f\sigma_8(0.61)$	$0.484^{+0.029}_{-0.024}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.26}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780^{+0.073}_{-0.075}$	$\sigma_8(0.61)$	$0.614^{+0.040}_{-0.033}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01^{+0.41}_{-0.41}$	$z_*$	$1089.69^{+0.85}_{-0.83}$	$f\sigma_8(2.33)$	$0.310^{+0.021}_{-0.017}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_*$	$144.82^{+0.87}_{-0.83}$	$\sigma_8(2.33)$	$0.320^{+0.022}_{-0.018}$
$c_{217}$	$1.0009^{+0.0041}_{-0.0040}$	$100\theta_*$	$1.04120^{+0.00083}_{-0.00083}$	$f_{2000}^{143}$	$28^{+8}_{-8}$
$c_{TE}$	$0.994^{+0.014}_{-0.013}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909^{+0.080}_{-0.078}$	$f_{2000}^{217}$	$105.4^{+5.3}_{-5.5}$
$c_{EE}$	$0.991^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.97^{+0.95}_{-0.92}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$H_0$	$68.0^{+1.8}_{-1.8}$	$r_{\mathrm{drag}}$	$147.47^{+0.85}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$24.2 (\nu: 0.9)$
$\Omega_{\Lambda}$	$0.694^{+0.023}_{-0.025}$	$k_{\mathrm{D}}$	$0.14052^{+0.00088}_{-0.00090}$	$\chi_{\mathrm{CamSpec}}^2$	$11512.0 (\nu: 15.5)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.025}_{-0.023}$	$100\theta_{\mathrm{D}}$	$0.16074^{+0.00052}_{-0.00054}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.6)$
$\Omega_{\mathrm{m}} h^2$	$0.1414^{+0.0037}_{-0.0037}$	$z_{\mathrm{eq}}$	$3363^{+89}_{-88}$	$\chi_{\mathrm{CMB}}^2$	$11536.2 (\nu: 15.4)$
$\Omega_{\mathrm{m}} h^3$	$0.09620^{+0.00083}_{-0.00081}$	$k_{\mathrm{eq}}$	$0.01027^{+0.00027}_{-0.00027}$		
$\sigma_8$	$0.839^{+0.053}_{-0.041}$	$100\theta_{\mathrm{eq}}$	$0.821^{+0.017}_{-0.017}$		

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



## 2.77 base\_CamSpecHM\_TTTEEE\_lowl\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02244^{+0.00043}_{-0.00040}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.463^{+0.028}_{-0.025}$	$D_{\mathrm{M}}(0.15)$	$637^{+11}_{-11}$
$\Omega_{\mathrm{c}}h^2$	$0.1182^{+0.0027}_{-0.0028}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.624^{+0.035}_{-0.031}$	$H(0.38)$	$83.29^{+0.83}_{-0.80}$
$100\theta_{\mathrm{MC}}$	$1.04104^{+0.00077}_{-0.00078}$	$\sigma_8/h^{0.5}$	$1.017^{+0.058}_{-0.050}$	$D_{\mathrm{M}}(0.38)$	$1522^{+22}_{-22}$
$\tau$	$0.097^{+0.062}_{-0.051}$	$r_{\mathrm{drag}}h$	$100.4^{+2.2}_{-2.1}$	$H(0.51)$	$89.94^{+0.69}_{-0.65}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.12^{+0.12}_{-0.10}$	$\langle d^2 \rangle^{1/2}$	$2.51^{+0.13}_{-0.12}$	$D_{\mathrm{M}}(0.51)$	$1972^{+25}_{-26}$
$n_{\mathrm{s}}$	$0.971^{+0.011}_{-0.011}$	$z_{\mathrm{re}}$	$< 15.8$	$H(0.61)$	$95.51^{+0.57}_{-0.54}$
$y_{\mathrm{cal}}$	$1.0002^{+0.0067}_{-0.0064}$	$10^9 A_{\mathrm{s}}$	$2.27^{+0.28}_{-0.22}$	$D_{\mathrm{M}}(0.61)$	$2296^{+27}_{-28}$
$A_{100}^{\mathrm{PS}}$	$233^{+70}_{-60}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871^{+0.031}_{-0.028}$	$H(2.33)$	$235.5^{+1.6}_{-1.7}$
$A_{143}^{\mathrm{PS}}$	$36^{+20}_{-20}$	$D_{40}$	$1233^{+37}_{-32}$	$D_{\mathrm{M}}(2.33)$	$5755^{+26}_{-27}$
$A_{217}^{\mathrm{PS}}$	$105^{+30}_{-40}$	$D_{220}$	$5717^{+98}_{-100}$	$f\sigma_8(0.15)$	$0.469^{+0.028}_{-0.025}$
$A_{217}^{\mathrm{CIB}}$	$38^{+20}_{-20}$	$D_{810}$	$2530^{+37}_{-34}$	$\sigma_8(0.15)$	$0.776^{+0.045}_{-0.038}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.489^{+0.028}_{-0.025}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.67^{+0.33}_{-0.31}$	$D_{2000}$	$231.3^{+4.5}_{-4.2}$	$\sigma_8(0.38)$	$0.689^{+0.041}_{-0.034}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.971^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.489^{+0.028}_{-0.024}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24542^{+0.00017}_{-0.00016}$	$\sigma_8(0.51)$	$0.645^{+0.038}_{-0.032}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24675^{+0.00017}_{-0.00016}$	$f\sigma_8(0.61)$	$0.484^{+0.028}_{-0.024}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.52}_{-0.48}$	$10^5\mathrm{D}/\mathrm{H}$	$2.573^{+0.075}_{-0.077}$	$\sigma_8(0.61)$	$0.614^{+0.037}_{-0.030}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.44}_{-0.46}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779^{+0.058}_{-0.060}$	$f\sigma_8(2.33)$	$0.310^{+0.019}_{-0.015}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.28}_{-0.26}$	$z_*$	$1089.68^{+0.64}_{-0.67}$	$\sigma_8(2.33)$	$0.320^{+0.020}_{-0.016}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.01^{+0.42}_{-0.41}$	$r_*$	$144.83^{+0.65}_{-0.64}$	$f_{2000}^{143}$	$28^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0026}$	$100\theta_*$	$1.04121^{+0.00076}_{-0.00077}$	$f_{2000}^{217}$	$105.5^{+5.2}_{-5.2}$
$c_{217}$	$1.0009^{+0.0043}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910^{+0.061}_{-0.060}$	$f_{2000}^{143\times 217}$	$30^{+6}_{-6}$
$c_{TE}$	$0.994^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.98^{+0.91}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$24.1\ (\nu: 0.9)$
$c_{EE}$	$0.991^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.48^{+0.67}_{-0.65}$	$\chi_{\mathrm{CamSpec}}^2$	$11511.5\ (\nu: 14.6)$
$H_0$	$68.1^{+1.3}_{-1.3}$	$k_{\mathrm{D}}$	$0.14051^{+0.00078}_{-0.00082}$	$\chi_{6\mathrm{DF}}^2$	$0.030\ (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.695^{+0.016}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16073^{+0.00051}_{-0.00051}$	$\chi_{\mathrm{MGS}}^2$	$1.71\ (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.017}_{-0.016}$	$z_{\mathrm{eq}}$	$3362^{+61}_{-62}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.01\ (\nu: 0.4)$
$\Omega_{\mathrm{m}}h^2$	$0.1413^{+0.0026}_{-0.0026}$	$k_{\mathrm{eq}}$	$0.01026^{+0.00019}_{-0.00019}$	$\chi_{\mathrm{prior}}^2$	$7.7\ (\nu: 5.7)$
$\Omega_{\mathrm{m}}h^3$	$0.09621^{+0.00082}_{-0.00080}$	$100\theta_{\mathrm{eq}}$	$0.821^{+0.012}_{-0.012}$	$\chi_{\mathrm{BAO}}^2$	$5.75\ (\nu: 0.3)$
$\sigma_8$	$0.839^{+0.048}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.4533^{+0.0062}_{-0.0059}$	$\chi_{\mathrm{CMB}}^2$	$11535.6\ (\nu: 14.3)$
$S_8$	$0.846^{+0.050}_{-0.045}$	$H(0.15)$	$73.3^{+1.1}_{-1.1}$		

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



## 2.78 base\_CamSpecHM\_TTTEE\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022266	$0.02227^{+0.00041}_{-0.00042}$	$S_8$	0.8311	$0.831^{+0.044}_{-0.042}$	$100\theta_{s,eq}$	0.4495	$0.4495^{+0.0079}_{-0.0078}$
$\Omega_c h^2$	0.12002	$0.1200^{+0.0037}_{-0.0036}$	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.455^{+0.024}_{-0.023}$	$H(0.15)$	72.56	$72.6^{+1.4}_{-1.4}$
$100\theta_{MC}$	1.04083	$1.04084^{+0.00084}_{-0.00081}$	$\sigma_8 \Omega_m^{0.25}$	0.6070	$0.607^{+0.022}_{-0.022}$	$D_M(0.15)$	644.5	$644^{+14}_{-14}$
$\tau$	0.0527	$0.053^{+0.021}_{-0.020}$	$\sigma_8/h^{0.5}$	0.9872	$0.987^{+0.031}_{-0.031}$	$H(0.38)$	82.75	$82.8^{+1.0}_{-0.98}$
$\ln(10^{10} A_s)$	3.0397	$3.040^{+0.042}_{-0.041}$	$r_{drag} h$	98.96	$99.0^{+2.8}_{-2.8}$	$D_M(0.38)$	1536.0	$1536^{+28}_{-27}$
$n_s$	0.9640	$0.964^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	2.443	$2.443^{+0.077}_{-0.073}$	$H(0.51)$	89.52	$89.53^{+0.81}_{-0.77}$
$y_{cal}$	1.0004	$1.0005^{+0.0066}_{-0.0063}$	$z_{re}$	7.54	$7.5^{+2.0}_{-2.2}$	$D_M(0.51)$	1989.0	$1989^{+33}_{-32}$
$A_{100}^{PS}$	239	$242^{+60}_{-60}$	$10^9 A_s$	2.090	$2.090^{+0.090}_{-0.085}$	$H(0.61)$	95.17	$95.18^{+0.65}_{-0.62}$
$A_{143}^{PS}$	43.9	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8808	$1.881^{+0.031}_{-0.030}$	$D_M(0.61)$	2313.8	$2314^{+35}_{-35}$
$A_{217}^{PS}$	101.4	$102^{+30}_{-30}$	$D_{40}$	1230.7	$1231^{+35}_{-34}$	$H(2.33)$	236.46	$236.5^{+2.2}_{-2.2}$
$A_{217}^{CIB}$	43.3	$40^{+20}_{-20}$	$D_{220}$	5723	$5724^{+100}_{-100}$	$D_M(2.33)$	5769.4	$5769^{+29}_{-30}$
$A_{143}^{tSZ}$	5.45	$< 8.83$	$D_{810}$	2535.1	$2535^{+37}_{-35}$	$f\sigma_8(0.15)$	0.4594	$0.459^{+0.022}_{-0.022}$
$r_{143 \times 217}^{PS}$	0.637	$0.65^{+0.31}_{-0.33}$	$D_{1420}$	815.0	$815^{+13}_{-12}$	$\sigma_8(0.15)$	0.7475	$0.747^{+0.018}_{-0.017}$
$r_{143 \times 217}^{CIB}$	0.78	—	$D_{2000}$	229.94	$229.9^{+4.3}_{-4.0}$	$f\sigma_8(0.38)$	0.4766	$0.477^{+0.018}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.39	—	$n_{s,0.002}$	0.9640	$0.964^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	0.6621	$0.662^{+0.015}_{-0.014}$
$A^{kSZ}$	1.9	—	$Y_P$	0.245353	$0.24535^{+0.00016}_{-0.00019}$	$f\sigma_8(0.51)$	0.4747	$0.475^{+0.016}_{-0.016}$
$A_{100}^{dust}$	1.01	$1.01^{+0.49}_{-0.51}$	$Y_P^{BBN}$	0.246680	$0.24668^{+0.00016}_{-0.00019}$	$\sigma_8(0.51)$	0.6194	$0.619^{+0.014}_{-0.013}$
$A_{143}^{dust}$	0.977	$0.96^{+0.46}_{-0.45}$	$10^5 D/H$	2.605	$2.606^{+0.080}_{-0.075}$	$f\sigma_8(0.61)$	0.4693	$0.469^{+0.014}_{-0.014}$
$A_{217}^{dust}$	0.968	$0.97^{+0.27}_{-0.26}$	Age/Gyr	13.811	$13.810^{+0.066}_{-0.066}$	$\sigma_8(0.61)$	0.5892	$0.589^{+0.013}_{-0.012}$
$A_{143 \times 217}^{dust}$	0.996	$1.03^{+0.41}_{-0.42}$	$z_*$	1090.05	$1090.05^{+0.75}_{-0.72}$	$f\sigma_8(2.33)$	0.2969	$0.2969^{+0.0065}_{-0.0063}$
$c_{100}$	0.99769	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	144.51	$144.51^{+0.81}_{-0.81}$	$\sigma_8(2.33)$	0.3059	$0.3059^{+0.0068}_{-0.0065}$
$c_{217}$	1.00131	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	1.04102	$1.04103^{+0.00082}_{-0.00079}$	$f_{2000}^{143}$	30.7	$30^{+7}_{-7}$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	13.881	$13.881^{+0.075}_{-0.075}$	$f_{2000}^{217}$	107.1	$107.2^{+5.0}_{-5.0}$
$c_{EE}$	0.9925	$0.992^{+0.013}_{-0.013}$	$z_{drag}$	1059.70	$1059.70^{+0.85}_{-0.87}$	$f_{2000}^{143 \times 217}$	32.6	$33^{+5}_{-5}$
$H_0$	67.23	$67.2^{+1.6}_{-1.6}$	$r_{drag}$	147.20	$147.21^{+0.82}_{-0.81}$	$\chi_{small}^2$	395.86	$396.9 (\nu: 1.4)$
$\Omega_\Lambda$	0.6838	$0.684^{+0.021}_{-0.023}$	$k_D$	0.14067	$0.14067^{+0.00090}_{-0.00092}$	$\chi_{CamSpec}^2$	11499.5	$11514.4 (\nu: 15.7)$
$\Omega_m$	0.3162	$0.316^{+0.023}_{-0.021}$	$100\theta_D$	0.160888	$0.16089^{+0.00051}_{-0.00048}$	$\chi_{prior}^2$	2.1	$7.8 (\nu: 5.9)$
$\Omega_m h^2$	0.14293	$0.1429^{+0.0034}_{-0.0034}$	$z_{eq}$	3400	$3400^{+82}_{-81}$	$\chi_{CMB}^2$	11895.4	$11911.3 (\nu: 16.5)$
$\Omega_m h^3$	0.09609	$0.09609^{+0.00086}_{-0.00084}$	$k_{eq}$	0.010378	$0.01038^{+0.00025}_{-0.00025}$			
$\sigma_8$	0.8094	$0.809^{+0.020}_{-0.020}$	$100\theta_{eq}$	0.8133	$0.813^{+0.015}_{-0.015}$			

Best-fit  $\chi_{eff}^2 = 11897.49$ ;  $\bar{\chi}_{eff}^2 = 11919.09$ ;  $R - 1 = 0.00575$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 CamSpec like\_10.7HM\_1400\_unified: 11499.49



### 3 Alens

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

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02270	$0.02263^{+0.00075}_{-0.00073}$	$\sigma_8 \Omega_m^{0.5}$	0.4286	$0.430^{+0.042}_{-0.039}$	$H(0.15)$	74.25	$74.1^{+2.7}_{-2.7}$
$\Omega_c h^2$	0.1162	$0.1164^{+0.0065}_{-0.0062}$	$\sigma_8 \Omega_m^{0.25}$	0.5833	$0.584^{+0.038}_{-0.037}$	$D_M(0.15)$	628.1	$629^{+26}_{-25}$
$100\theta_{MC}$	1.04149	$1.0414^{+0.0014}_{-0.0014}$	$\sigma_8/h^{0.5}$	0.954	$0.956^{+0.053}_{-0.052}$	$H(0.38)$	84.02	$83.9^{+2.0}_{-2.0}$
$\tau$	0.0502	$0.050^{+0.021}_{-0.027}$	$r_{drag} h$	102.2	$102.0^{+5.3}_{-5.3}$	$D_M(0.38)$	1503	$1505^{+53}_{-50}$
$A_L$	1.270	$1.25^{+0.27}_{-0.24}$	$\langle d^2 \rangle^{1/2}$	2.656	$2.64^{+0.19}_{-0.21}$	$H(0.51)$	90.53	$90.5^{+1.7}_{-1.6}$
$\ln(10^{10} A_s)$	3.0260	$3.026^{+0.044}_{-0.053}$	$z_{re}$	7.14	$7.1^{+2.0}_{-3.1}$	$D_M(0.51)$	1950	$1953^{+62}_{-59}$
$n_s$	0.9776	$0.976^{+0.018}_{-0.019}$	$10^9 A_s$	2.061	$2.062^{+0.092}_{-0.11}$	$H(0.61)$	96.00	$95.9^{+1.4}_{-1.3}$
$y_{cal}$	0.9999	$1.0001^{+0.0067}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8643	$1.864^{+0.038}_{-0.037}$	$D_M(0.61)$	2271	$2275^{+67}_{-65}$
$A_{100}^{PS}$	217	$229^{+60}_{-70}$	$D_{40}$	1200.1	$1204^{+45}_{-43}$	$H(2.33)$	234.44	$234.5^{+3.7}_{-3.5}$
$A_{143}^{PS}$	44.2	$33^{+20}_{-20}$	$D_{220}$	5727	$5728^{+110}_{-110}$	$D_M(2.33)$	5733	$5737^{+57}_{-59}$
$A_{217}^{PS}$	109.9	$104^{+30}_{-30}$	$D_{810}$	2526.2	$2525^{+37}_{-36}$	$f\sigma_8(0.15)$	0.4346	$0.436^{+0.039}_{-0.037}$
$A_{217}^{CIB}$	36.7	$37^{+20}_{-20}$	$D_{1420}$	815.6	$814^{+13}_{-13}$	$\sigma_8(0.15)$	0.7354	$0.735^{+0.023}_{-0.024}$
$A_{143}^{tSZ}$	6.24	$< 8.89$	$D_{2000}$	233.2	$232.3^{+5.3}_{-5.6}$	$f\sigma_8(0.38)$	0.4569	$0.458^{+0.032}_{-0.031}$
$r_{143 \times 217}^{PS}$	0.796	$> 0.352$	$n_{s,0.002}$	0.9776	$0.976^{+0.018}_{-0.019}$	$\sigma_8(0.38)$	0.6541	$0.654^{+0.018}_{-0.019}$
$r_{143 \times 217}^{CIB}$	0.74	—	$Y_P$	0.245516	$0.24549^{+0.00032}_{-0.00031}$	$f\sigma_8(0.51)$	0.4579	$0.458^{+0.027}_{-0.027}$
$\xi^{tSZ \times CIB}$	0.996	—	$Y_P^{BBN}$	0.246843	$0.24682^{+0.00032}_{-0.00031}$	$\sigma_8(0.51)$	0.6130	$0.613^{+0.016}_{-0.017}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.527	$2.54^{+0.14}_{-0.13}$	$f\sigma_8(0.61)$	0.4546	$0.455^{+0.024}_{-0.024}$
$A_{100}^{dust}$	1.010	$1.01^{+0.49}_{-0.49}$	Age/Gyr	13.730	$13.74^{+0.13}_{-0.13}$	$\sigma_8(0.61)$	0.5839	$0.584^{+0.014}_{-0.016}$
$A_{143}^{dust}$	0.948	$0.95^{+0.44}_{-0.45}$	$z_*$	1089.18	$1089.3^{+1.4}_{-1.3}$	$f\sigma_8(2.33)$	0.2952	$0.2950^{+0.0068}_{-0.0077}$
$A_{217}^{dust}$	0.990	$0.98^{+0.27}_{-0.26}$	$r_*$	145.17	$145.2^{+1.3}_{-1.3}$	$\sigma_8(2.33)$	0.3053	$0.3050^{+0.0068}_{-0.0083}$
$A_{143 \times 217}^{dust}$	1.016	$1.02^{+0.41}_{-0.42}$	$100\theta_*$	1.04165	$1.0416^{+0.0014}_{-0.0014}$	$f_{2000}^{143}$	25.2	$26^{+9}_{-8}$
$c_{100}$	0.99788	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.936	$13.94^{+0.12}_{-0.12}$	$f_{2000}^{217}$	103.3	$104.3^{+6.1}_{-6.1}$
$c_{217}$	1.00076	$1.0008^{+0.0042}_{-0.0040}$	$z_{drag}$	1060.43	$1060.3^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	28.5	$29^{+7}_{-7}$
$H_0$	69.18	$69.0^{+3.1}_{-3.1}$	$r_{drag}$	147.74	$147.8^{+1.3}_{-1.3}$	$\chi_{simall}^2$	395.71	$396.8 (\nu: 1.2)$
$\Omega_\Lambda$	0.7084	$0.707^{+0.035}_{-0.041}$	$k_D$	0.14043	$0.1403^{+0.0013}_{-0.0013}$	$\chi_{lowl}^2$	21.18	$21.6 (\nu: 0.5)$
$\Omega_m$	0.2916	$0.293^{+0.041}_{-0.035}$	$100\theta_D$	0.16052	$0.16061^{+0.00080}_{-0.00073}$	$\chi_{CamSpec}^2$	7046.0	$7059.9 (\nu: 14.2)$
$\Omega_m h^2$	0.1395	$0.1397^{+0.0060}_{-0.0057}$	$z_{eq}$	3319	$3322^{+140}_{-140}$	$\chi_{prior}^2$	1.4	$7.2 (\nu: 5.4)$
$\Omega_m h^3$	0.09654	$0.0964^{+0.0013}_{-0.0014}$	$k_{eq}$	0.010131	$0.01014^{+0.00044}_{-0.00042}$	$\chi_{CMB}^2$	7462.8	$7478.3 (\nu: 15.1)$
$\sigma_8$	0.7937	$0.794^{+0.028}_{-0.029}$	$100\theta_{eq}$	0.8298	$0.829^{+0.028}_{-0.028}$			
$S_8$	0.783	$0.785^{+0.077}_{-0.072}$	$100\theta_{s,eq}$	0.4578	$0.457^{+0.014}_{-0.014}$			

Best-fit  $\chi_{eff}^2 = 7464.21$ ;  $\Delta\chi_{eff}^2 = -7.53$ ;  $\bar{\chi}_{eff}^2 = 7485.53$ ;  $\Delta\bar{\chi}_{eff}^2 = -6.01$ ;  $R - 1 = 0.00653$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 ( $\Delta$  -0.12) commander\_dx12.v3.2.29: 21.18 ( $\Delta$  -2.22) CamSpec like\_10.7HM: 7045.95 ( $\Delta$  -4.38)



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02250^{+0.00057}_{-0.00057}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.022}_{-0.024}$	$H(0.38)$	$83.5^{+1.0}_{-1.0}$
$\Omega_c h^2$	$0.1178^{+0.0034}_{-0.0033}$	$\sigma_8/h^{0.5}$	$0.966^{+0.032}_{-0.036}$	$D_M(0.38)$	$1517^{+28}_{-26}$
$100\theta_{MC}$	$1.0412^{+0.0011}_{-0.0012}$	$r_{\text{drag}} h$	$100.8^{+2.6}_{-2.6}$	$H(0.51)$	$90.10^{+0.87}_{-0.87}$
$\tau$	$0.050^{+0.021}_{-0.026}$	$\langle d^2 \rangle^{1/2}$	$2.62^{+0.18}_{-0.20}$	$D_M(0.51)$	$1966^{+32}_{-31}$
$A_L$	$1.21^{+0.21}_{-0.20}$	$z_{\text{re}}$	$7.1^{+2.1}_{-3.0}$	$H(0.61)$	$95.64^{+0.76}_{-0.75}$
$\ln(10^{10} A_s)$	$3.028^{+0.043}_{-0.053}$	$10^9 A_s$	$2.065^{+0.091}_{-0.11}$	$D_M(0.61)$	$2289^{+35}_{-34}$
$n_s$	$0.972^{+0.012}_{-0.012}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.032}_{-0.029}$	$H(2.33)$	$235.3^{+2.0}_{-2.0}$
$y_{\text{cal}}$	$1.0001^{+0.0069}_{-0.0067}$	$D_{40}$	$1212^{+33}_{-34}$	$D_M(2.33)$	$5749^{+37}_{-37}$
$A_{100}^{\text{PS}}$	$230^{+70}_{-70}$	$D_{220}$	$5720^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.444^{+0.022}_{-0.022}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$D_{810}$	$2526^{+37}_{-36}$	$\sigma_8(0.15)$	$0.739^{+0.018}_{-0.022}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{1420}$	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.464^{+0.018}_{-0.019}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{2000}$	$231.8^{+5.0}_{-4.9}$	$\sigma_8(0.38)$	$0.656^{+0.015}_{-0.019}$
$A_{143}^{\text{tSZ}}$	$< 8.75$	$n_{s,0.002}$	$0.972^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	$0.464^{+0.016}_{-0.018}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.371$	$Y_P$	$0.24544^{+0.00024}_{-0.00024}$	$\sigma_8(0.51)$	$0.615^{+0.014}_{-0.017}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24677^{+0.00024}_{-0.00024}$	$f\sigma_8(0.61)$	$0.460^{+0.015}_{-0.017}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 D/H$	$2.56^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	$0.585^{+0.013}_{-0.016}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.765^{+0.085}_{-0.083}$	$f\sigma_8(2.33)$	$0.2954^{+0.0067}_{-0.0079}$
$A_{100}^{\text{dust}}$	$1.01^{+0.48}_{-0.48}$	$z_*$	$1089.57^{+0.87}_{-0.83}$	$\sigma_8(2.33)$	$0.3050^{+0.0068}_{-0.0083}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.47}$	$r_*$	$144.90^{+0.81}_{-0.79}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$104.8^{+5.4}_{-5.7}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$13.914^{+0.081}_{-0.076}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-1.3}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.3)$
$c_{217}$	$1.0008^{+0.0042}_{-0.0039}$	$r_{\text{drag}}$	$147.53^{+0.90}_{-0.84}$	$\chi_{\text{lowl}}^2$	$22.00 (\nu: 0.3)$
$H_0$	$68.4^{+1.6}_{-1.6}$	$k_D$	$0.1405^{+0.0011}_{-0.0012}$	$\chi_{\text{CamSpec}}^2$	$7058.9 (\nu: 13.4)$
$\Omega_\Lambda$	$0.698^{+0.019}_{-0.021}$	$100\theta_D$	$0.16070^{+0.00070}_{-0.00066}$	$\chi_{6\text{DF}}^2$	$0.049 (\nu: 0.0)$
$\Omega_m$	$0.302^{+0.021}_{-0.019}$	$z_{\text{eq}}$	$3353^{+76}_{-75}$	$\chi_{\text{MGS}}^2$	$1.99 (\nu: 0.2)$
$\Omega_m h^2$	$0.1409^{+0.0032}_{-0.0031}$	$k_{\text{eq}}$	$0.01023^{+0.00023}_{-0.00023}$	$\chi_{\text{DR12BAO}}^2$	$4.06 (\nu: 0.5)$
$\Omega_m h^3$	$0.0963^{+0.0012}_{-0.0014}$	$100\theta_{\text{eq}}$	$0.823^{+0.015}_{-0.014}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 5.6)$
$\sigma_8$	$0.799^{+0.020}_{-0.024}$	$100\theta_{s,\text{eq}}$	$0.4543^{+0.0074}_{-0.0074}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.801^{+0.042}_{-0.042}$	$H(0.15)$	$73.5^{+1.4}_{-1.4}$	$\chi_{\text{CMB}}^2$	$7477.8 (\nu: 14.8)$
$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.023}_{-0.023}$	$D_M(0.15)$	$635^{+14}_{-13}$		

$$\bar{\chi}_{\text{eff}}^2 = 7491.23; \Delta \bar{\chi}_{\text{eff}}^2 = -6.32; R - 1 = 0.01433$$



### 3.3 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02293^{+0.00060}_{-0.00066}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.411^{+0.034}_{-0.028}$	$H(0.15)$	$75.5^{+2.0}_{-2.2}$
$\Omega_{\text{c}} h^2$	$0.1133^{+0.0052}_{-0.0048}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.567^{+0.032}_{-0.026}$	$D_{\text{M}}(0.15)$	$617^{+21}_{-17}$
$100\theta_{\text{MC}}$	$1.0419^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.932^{+0.045}_{-0.037}$	$H(0.38)$	$84.9^{+1.5}_{-1.7}$
$\tau$	$0.052^{+0.024}_{-0.025}$	$r_{\text{drag}} h$	$104.7^{+4.2}_{-4.3}$	$D_{\text{M}}(0.38)$	$1480^{+42}_{-36}$
$A_{\text{L}}$	$1.33^{+0.26}_{-0.24}$	$\langle d^2 \rangle^{1/2}$	$2.67^{+0.19}_{-0.20}$	$H(0.51)$	$91.3^{+1.3}_{-1.3}$
$\ln(10^{10} A_{\text{s}})$	$3.023^{+0.048}_{-0.047}$	$z_{\text{re}}$	$7.2^{+2.3}_{-2.6}$	$D_{\text{M}}(0.51)$	$1922^{+50}_{-43}$
$n_{\text{s}}$	$0.984^{+0.014}_{-0.016}$	$10^9 A_{\text{s}}$	$2.06^{+0.10}_{-0.094}$	$H(0.61)$	$96.6^{+1.0}_{-1.1}$
$y_{\text{cal}}$	$1.0001^{+0.0061}_{-0.0069}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.852^{+0.034}_{-0.032}$	$D_{\text{M}}(0.61)$	$2242^{+54}_{-47}$
$A_{100}^{\text{PS}}$	$225^{+60}_{-70}$	$D_{40}$	$1188^{+39}_{-37}$	$H(2.33)$	$232.8^{+3.0}_{-2.9}$
$A_{143}^{\text{PS}}$	$30^{+20}_{-20}$	$D_{220}$	$5746^{+100}_{-120}$	$D_{\text{M}}(2.33)$	$5709^{+50}_{-43}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-40}$	$D_{810}$	$2521^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.418^{+0.032}_{-0.027}$
$A_{217}^{\text{CIB}}$	$35^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.15)$	$0.727^{+0.022}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$< 8.89$	$D_{2000}$	$233.8^{+4.7}_{-5.1}$	$f\sigma_8(0.38)$	$0.443^{+0.026}_{-0.022}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.353$	$n_{\text{s},0.002}$	$0.984^{+0.014}_{-0.016}$	$\sigma_8(0.38)$	$0.649^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24562^{+0.00026}_{-0.00027}$	$f\sigma_8(0.51)$	$0.446^{+0.023}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24695^{+0.00026}_{-0.00027}$	$\sigma_8(0.51)$	$0.609^{+0.016}_{-0.015}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.49^{+0.12}_{-0.10}$	$f\sigma_8(0.61)$	$0.444^{+0.021}_{-0.018}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.48}$	$\text{Age}/\text{Gyr}$	$13.68^{+0.11}_{-0.092}$	$\sigma_8(0.61)$	$0.581^{+0.015}_{-0.014}$
$A_{143}^{\text{dust}}$	$0.95^{+0.42}_{-0.45}$	$z_*$	$1088.7^{+1.1}_{-0.99}$	$f\sigma_8(2.33)$	$0.2943^{+0.0071}_{-0.0070}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.8^{+1.2}_{-1.2}$	$\sigma_8(2.33)$	$0.3052^{+0.0077}_{-0.0076}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.42}_{-0.42}$	$100\theta_*$	$1.0421^{+0.0011}_{-0.0012}$	$f_{2000}^{143}$	$24^{+9}_{-8}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.99^{+0.11}_{-0.11}$	$f_{2000}^{217}$	$102.9^{+5.8}_{-5.4}$
$c_{217}$	$1.0006^{+0.0041}_{-0.0043}$	$z_{\text{drag}}$	$1060.7^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$28^{+6}_{-6}$
$H_0$	$70.6^{+2.2}_{-2.5}$	$r_{\text{drag}}$	$148.3^{+1.2}_{-1.1}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.2)$
$\Omega_{\Lambda}$	$0.725^{+0.026}_{-0.031}$	$k_{\text{D}}$	$0.1400^{+0.0012}_{-0.0013}$	$\chi_{\text{lowl}}^2$	$20.64 (\nu: 0.2)$
$\Omega_{\text{m}}$	$0.275^{+0.031}_{-0.026}$	$100\theta_{\text{D}}$	$0.16039^{+0.00072}_{-0.00066}$	$\chi_{\text{CamSpec}}^2$	$7062.5 (\nu: 16.4)$
$\Omega_{\text{m}} h^2$	$0.1369^{+0.0048}_{-0.0045}$	$z_{\text{eq}}$	$3256^{+120}_{-110}$	$\chi_{\text{H073p45}}^2$	$3.3 (\nu: 2.2)$
$\Omega_{\text{m}} h^3$	$0.0966^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	$0.00994^{+0.00035}_{-0.00033}$	$\chi_{\text{prior}}^2$	$6.9 (\nu: 4.7)$
$\sigma_8$	$0.783^{+0.025}_{-0.024}$	$100\theta_{\text{eq}}$	$0.843^{+0.023}_{-0.023}$	$\chi_{\text{CMB}}^2$	$7479.9 (\nu: 16.9)$
$S_8$	$0.750^{+0.062}_{-0.051}$	$100\theta_{\text{s,eq}}$	$0.464^{+0.012}_{-0.012}$		

$$\bar{\chi}_{\text{eff}}^2 = 7490.17; \Delta \bar{\chi}_{\text{eff}}^2 = -12.71; R - 1 = 0.03353$$



### 3.4 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02263^{+0.00075}_{-0.00072}$	$\sigma_8 \Omega_m^{0.5}$	$0.431^{+0.042}_{-0.039}$	$H(0.15)$	$74.1^{+2.7}_{-2.7}$
$\Omega_c h^2$	$0.1164^{+0.0065}_{-0.0062}$	$\sigma_8 \Omega_m^{0.25}$	$0.586^{+0.038}_{-0.036}$	$D_M(0.15)$	$629^{+27}_{-24}$
$100\theta_{MC}$	$1.0414^{+0.0014}_{-0.0014}$	$\sigma_8/h^{0.5}$	$0.958^{+0.052}_{-0.050}$	$H(0.38)$	$83.9^{+2.0}_{-2.0}$
$\tau$	$0.053^{+0.017}_{-0.011}$	$r_{\text{drag}} h$	$102.1^{+5.3}_{-5.4}$	$D_M(0.38)$	$1505^{+54}_{-50}$
$A_L$	$1.24^{+0.27}_{-0.24}$	$\langle d^2 \rangle^{1/2}$	$2.64^{+0.19}_{-0.21}$	$H(0.51)$	$90.5^{+1.7}_{-1.6}$
$\ln(10^{10} A_s)$	$3.032^{+0.039}_{-0.028}$	$z_{\text{re}}$	$< 9.05$	$D_M(0.51)$	$1953^{+63}_{-60}$
$n_s$	$0.976^{+0.018}_{-0.019}$	$10^9 A_s$	$2.075^{+0.083}_{-0.057}$	$H(0.61)$	$95.9^{+1.4}_{-1.3}$
$y_{\text{cal}}$	$1.0001^{+0.0067}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.864^{+0.038}_{-0.037}$	$D_M(0.61)$	$2274^{+69}_{-65}$
$A_{100}^{\text{PS}}$	$228^{+60}_{-70}$	$D_{40}$	$1205^{+45}_{-43}$	$H(2.33)$	$234.5^{+3.7}_{-3.5}$
$A_{143}^{\text{PS}}$	$33^{+20}_{-20}$	$D_{220}$	$5727^{+110}_{-110}$	$D_M(2.33)$	$5736^{+57}_{-59}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{810}$	$2525^{+37}_{-37}$	$f\sigma_8(0.15)$	$0.437^{+0.039}_{-0.037}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-14}$	$\sigma_8(0.15)$	$0.738^{+0.021}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$< 8.89$	$D_{2000}$	$232.4^{+5.3}_{-5.6}$	$f\sigma_8(0.38)$	$0.459^{+0.031}_{-0.030}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.348$	$n_{s,0.002}$	$0.976^{+0.018}_{-0.019}$	$\sigma_8(0.38)$	$0.656^{+0.016}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.24549^{+0.00032}_{-0.00030}$	$f\sigma_8(0.51)$	$0.460^{+0.026}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24682^{+0.00033}_{-0.00030}$	$\sigma_8(0.51)$	$0.615^{+0.014}_{-0.013}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.54^{+0.14}_{-0.13}$	$f\sigma_8(0.61)$	$0.456^{+0.023}_{-0.024}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.49}$	$\text{Age/Gyr}$	$13.74^{+0.13}_{-0.13}$	$\sigma_8(0.61)$	$0.585^{+0.013}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.95^{+0.44}_{-0.45}$	$z_*$	$1089.3^{+1.4}_{-1.3}$	$f\sigma_8(2.33)$	$0.2959^{+0.0062}_{-0.0048}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$145.2^{+1.3}_{-1.3}$	$\sigma_8(2.33)$	$0.3060^{+0.0061}_{-0.0045}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.42}$	$100\theta_*$	$1.0416^{+0.0014}_{-0.0014}$	$f_{2000}^{143}$	$26^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.94^{+0.12}_{-0.12}$	$f_{2000}^{217}$	$104.3^{+6.1}_{-6.0}$
$c_{217}$	$1.0008^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1060.3^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	$29^{+7}_{-7}$
$H_0$	$69.1^{+3.1}_{-3.2}$	$r_{\text{drag}}$	$147.8^{+1.3}_{-1.3}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$\Omega_\Lambda$	$0.707^{+0.036}_{-0.042}$	$k_D$	$0.1403^{+0.0013}_{-0.0013}$	$\chi_{\text{lowl}}^2$	$21.6 (\nu: 0.6)$
$\Omega_m$	$0.293^{+0.042}_{-0.036}$	$100\theta_D$	$0.16061^{+0.00081}_{-0.00073}$	$\chi_{\text{CamSpec}}^2$	$7059.9 (\nu: 14.3)$
$\Omega_m h^2$	$0.1396^{+0.0060}_{-0.0057}$	$z_{\text{eq}}$	$3321^{+140}_{-140}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 5.4)$
$\Omega_m h^3$	$0.0964^{+0.0012}_{-0.0014}$	$k_{\text{eq}}$	$0.01014^{+0.00044}_{-0.00042}$	$\chi_{\text{CMB}}^2$	$7477.9 (\nu: 14.6)$
$\sigma_8$	$0.796^{+0.026}_{-0.026}$	$100\theta_{\text{eq}}$	$0.829^{+0.028}_{-0.028}$		
$S_8$	$0.787^{+0.077}_{-0.072}$	$100\theta_{s,\text{eq}}$	$0.458^{+0.014}_{-0.014}$		

$$\bar{\chi}_{\text{eff}}^2 = 7485.10; \Delta \bar{\chi}_{\text{eff}}^2 = -6.16; R - 1 = 0.00928$$



### 3.5 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02250^{+0.00055}_{-0.00058}$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.021}_{-0.020}$	$H(0.38)$	$83.5^{+1.0}_{-1.0}$
$\Omega_c h^2$	$0.1178^{+0.0034}_{-0.0033}$	$\sigma_8/h^{0.5}$	$0.969^{+0.030}_{-0.028}$	$D_M(0.38)$	$1517^{+28}_{-26}$
$100\theta_{MC}$	$1.0412^{+0.0011}_{-0.0012}$	$r_{drag}h$	$100.8^{+2.6}_{-2.7}$	$H(0.51)$	$90.10^{+0.87}_{-0.85}$
$\tau$	$0.053^{+0.017}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.62^{+0.18}_{-0.21}$	$D_M(0.51)$	$1966^{+33}_{-31}$
$A_L$	$1.20^{+0.20}_{-0.19}$	$z_{re}$	$< 9.08$	$H(0.61)$	$95.64^{+0.76}_{-0.72}$
$\ln(10^{10} A_s)$	$3.034^{+0.038}_{-0.027}$	$10^9 A_s$	$2.078^{+0.080}_{-0.056}$	$D_M(0.61)$	$2289^{+35}_{-34}$
$n_s$	$0.972^{+0.012}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.032}_{-0.029}$	$H(2.33)$	$235.3^{+2.0}_{-2.0}$
$y_{cal}$	$1.0001^{+0.0071}_{-0.0068}$	$D_{40}$	$1212^{+33}_{-34}$	$D_M(2.33)$	$5749^{+37}_{-37}$
$A_{100}^{PS}$	$230^{+60}_{-70}$	$D_{220}$	$5719^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.446^{+0.021}_{-0.020}$
$A_{143}^{PS}$	$35^{+20}_{-20}$	$D_{810}$	$2526^{+39}_{-37}$	$\sigma_8(0.15)$	$0.742^{+0.016}_{-0.014}$
$A_{217}^{PS}$	$104^{+30}_{-30}$	$D_{1420}$	$814^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.466^{+0.017}_{-0.017}$
$A_{217}^{CIB}$	$37^{+20}_{-20}$	$D_{2000}$	$231.8^{+5.1}_{-5.0}$	$\sigma_8(0.38)$	$0.658^{+0.013}_{-0.011}$
$A_{143}^{tSZ}$	$< 8.75$	$n_{s,0.002}$	$0.972^{+0.012}_{-0.011}$	$f\sigma_8(0.51)$	$0.466^{+0.015}_{-0.015}$
$r_{143 \times 217}^{PS}$	$> 0.371$	$Y_P$	$0.24544^{+0.00023}_{-0.00024}$	$\sigma_8(0.51)$	$0.617^{+0.012}_{-0.010}$
$r_{143 \times 217}^{CIB}$	—	$Y_P^{BBN}$	$0.24677^{+0.00023}_{-0.00024}$	$f\sigma_8(0.61)$	$0.461^{+0.014}_{-0.013}$
$\xi^{tSZ \times CIB}$	—	$10^5 D/H$	$2.56^{+0.11}_{-0.099}$	$\sigma_8(0.61)$	$0.587^{+0.012}_{-0.0094}$
$A^{kSZ}$	—	Age/Gyr	$13.765^{+0.082}_{-0.083}$	$f\sigma_8(2.33)$	$0.2964^{+0.0058}_{-0.0046}$
$A_{100}^{dust}$	$1.01^{+0.47}_{-0.49}$	$z_*$	$1089.57^{+0.86}_{-0.83}$	$\sigma_8(2.33)$	$0.3060^{+0.0061}_{-0.0047}$
$A_{143}^{dust}$	$0.96^{+0.44}_{-0.47}$	$r_*$	$144.91^{+0.81}_{-0.79}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$A_{217}^{dust}$	$0.98^{+0.27}_{-0.26}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$104.8^{+5.4}_{-5.8}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.41}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.915^{+0.080}_{-0.073}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$z_{drag}$	$1060.1^{+1.2}_{-1.2}$	$\chi_{simall}^2$	$396.4 (\nu: 0.6)$
$c_{217}$	$1.0008^{+0.0042}_{-0.0040}$	$r_{drag}$	$147.54^{+0.90}_{-0.80}$	$\chi_{lowl}^2$	$22.05 (\nu: 0.3)$
$H_0$	$68.4^{+1.6}_{-1.6}$	$k_D$	$0.1405^{+0.0010}_{-0.0012}$	$\chi_{CamSpec}^2$	$7058.9 (\nu: 13.3)$
$\Omega_\Lambda$	$0.698^{+0.019}_{-0.021}$	$100\theta_D$	$0.16071^{+0.00071}_{-0.00065}$	$\chi_{6DF}^2$	$0.049 (\nu: 0.0)$
$\Omega_m$	$0.302^{+0.021}_{-0.019}$	$z_{eq}$	$3352^{+76}_{-74}$	$\chi_{MGS}^2$	$2.00 (\nu: 0.2)$
$\Omega_m h^2$	$0.1409^{+0.0032}_{-0.0031}$	$k_{eq}$	$0.01023^{+0.00023}_{-0.00023}$	$\chi_{DR12BAO}^2$	$4.06 (\nu: 0.5)$
$\Omega_m h^3$	$0.0963^{+0.0012}_{-0.0013}$	$100\theta_{eq}$	$0.823^{+0.014}_{-0.014}$	$\chi_{prior}^2$	$7.3 (\nu: 5.7)$
$\sigma_8$	$0.801^{+0.018}_{-0.017}$	$100\theta_{s,eq}$	$0.4543^{+0.0074}_{-0.0074}$	$\chi_{BAO}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.804^{+0.041}_{-0.039}$	$H(0.15)$	$73.5^{+1.4}_{-1.4}$	$\chi_{CMB}^2$	$7477.4 (\nu: 13.9)$
$\sigma_8 \Omega_m^{0.5}$	$0.440^{+0.022}_{-0.022}$	$D_M(0.15)$	$635^{+14}_{-13}$		

$$\bar{\chi}_{\text{eff}}^2 = 7490.78; \Delta \bar{\chi}_{\text{eff}}^2 = -6.53; R - 1 = 0.01851$$



### 3.6 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02293^{+0.00060}_{-0.00066}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.412^{+0.034}_{-0.028}$	$H(0.15)$	$75.5^{+1.9}_{-2.2}$
$\Omega_{\text{c}} h^2$	$0.1133^{+0.0052}_{-0.0045}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.569^{+0.031}_{-0.028}$	$D_{\text{M}}(0.15)$	$617^{+21}_{-17}$
$100\theta_{\text{MC}}$	$1.0419^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.935^{+0.044}_{-0.038}$	$H(0.38)$	$84.9^{+1.5}_{-1.7}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\text{drag}} h$	$104.7^{+3.8}_{-4.3}$	$D_{\text{M}}(0.38)$	$1479^{+42}_{-35}$
$A_{\text{L}}$	$1.33^{+0.25}_{-0.23}$	$\langle d^2 \rangle^{1/2}$	$2.67^{+0.18}_{-0.20}$	$H(0.51)$	$91.3^{+1.2}_{-1.4}$
$\ln(10^{10} A_{\text{s}})$	$3.029^{+0.041}_{-0.031}$	$z_{\text{re}}$	$< 9.25$	$D_{\text{M}}(0.51)$	$1922^{+50}_{-42}$
$n_{\text{s}}$	$0.984^{+0.013}_{-0.016}$	$10^9 A_{\text{s}}$	$2.068^{+0.085}_{-0.064}$	$H(0.61)$	$96.6^{+1.0}_{-1.1}$
$y_{\text{cal}}$	$1.0000^{+0.0064}_{-0.0070}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.851^{+0.034}_{-0.031}$	$D_{\text{M}}(0.61)$	$2242^{+54}_{-46}$
$A_{100}^{\text{PS}}$	$225^{+70}_{-70}$	$D_{40}$	$1188^{+39}_{-35}$	$H(2.33)$	$232.8^{+3.0}_{-2.8}$
$A_{143}^{\text{PS}}$	$30^{+20}_{-20}$	$D_{220}$	$5744^{+110}_{-110}$	$D_{\text{M}}(2.33)$	$5709^{+50}_{-43}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-40}$	$D_{810}$	$2520^{+38}_{-35}$	$f\sigma_8(0.15)$	$0.419^{+0.032}_{-0.027}$
$A_{217}^{\text{CIB}}$	$35^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-12}$	$\sigma_8(0.15)$	$0.729^{+0.020}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$< 9.05$	$D_{2000}$	$233.7^{+4.8}_{-5.2}$	$f\sigma_8(0.38)$	$0.444^{+0.026}_{-0.023}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.347$	$n_{\text{s},0.002}$	$0.984^{+0.013}_{-0.016}$	$\sigma_8(0.38)$	$0.651^{+0.016}_{-0.013}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24562^{+0.00026}_{-0.00027}$	$f\sigma_8(0.51)$	$0.447^{+0.023}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24695^{+0.00026}_{-0.00027}$	$\sigma_8(0.51)$	$0.611^{+0.015}_{-0.012}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.49^{+0.12}_{-0.10}$	$f\sigma_8(0.61)$	$0.445^{+0.020}_{-0.019}$
$A_{100}^{\text{dust}}$	$1.01^{+0.47}_{-0.47}$	$\text{Age}/\text{Gyr}$	$13.68^{+0.11}_{-0.092}$	$\sigma_8(0.61)$	$0.582^{+0.014}_{-0.011}$
$A_{143}^{\text{dust}}$	$0.95^{+0.41}_{-0.47}$	$z_*$	$1088.7^{+1.1}_{-0.99}$	$f\sigma_8(2.33)$	$0.2951^{+0.0067}_{-0.0048}$
$A_{217}^{\text{dust}}$	$0.98^{+0.28}_{-0.29}$	$r_*$	$145.8^{+1.1}_{-1.2}$	$\sigma_8(2.33)$	$0.3060^{+0.0072}_{-0.0046}$
$A_{143 \times 217}^{\text{dust}}$	$1.00^{+0.42}_{-0.44}$	$100\theta_*$	$1.0421^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$24^{+9}_{-8}$
$c_{100}$	$0.9976^{+0.0029}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.99^{+0.11}_{-0.11}$	$f_{2000}^{217}$	$102.9^{+5.8}_{-5.5}$
$c_{217}$	$1.0005^{+0.0041}_{-0.0043}$	$z_{\text{drag}}$	$1060.7^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$28^{+6}_{-6}$
$H_0$	$70.6^{+2.2}_{-2.5}$	$r_{\text{drag}}$	$148.3^{+1.2}_{-1.1}$	$\chi_{\text{simall}}^2$	$396.5 (\nu: 0.8)$
$\Omega_{\Lambda}$	$0.725^{+0.024}_{-0.030}$	$k_{\text{D}}$	$0.1400^{+0.0012}_{-0.0013}$	$\chi_{\text{lowl}}^2$	$20.65 (\nu: 0.2)$
$\Omega_{\text{m}}$	$0.275^{+0.030}_{-0.024}$	$100\theta_{\text{D}}$	$0.16039^{+0.00074}_{-0.00067}$	$\chi_{\text{CamSpec}}^2$	$7062.6 (\nu: 16.9)$
$\Omega_{\text{m}} h^2$	$0.1369^{+0.0048}_{-0.0044}$	$z_{\text{eq}}$	$3255^{+120}_{-110}$	$\chi_{\text{H073p45}}^2$	$3.3 (\nu: 2.2)$
$\Omega_{\text{m}} h^3$	$0.0966^{+0.0012}_{-0.0012}$	$k_{\text{eq}}$	$0.00993^{+0.00035}_{-0.00032}$	$\chi_{\text{prior}}^2$	$6.9 (\nu: 4.8)$
$\sigma_8$	$0.785^{+0.024}_{-0.021}$	$100\theta_{\text{eq}}$	$0.843^{+0.022}_{-0.023}$	$\chi_{\text{CMB}}^2$	$7479.7 (\nu: 17.3)$
$S_8$	$0.752^{+0.061}_{-0.052}$	$100\theta_{\text{s,eq}}$	$0.465^{+0.011}_{-0.012}$		

$$\bar{\chi}_{\text{eff}}^2 = 7489.90; \Delta \bar{\chi}_{\text{eff}}^2 = -12.74; R - 1 = 0.05184$$



### 3.7 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02254	$0.02251^{+0.00050}_{-0.00051}$	$\sigma_8$	0.8000	$0.799^{+0.022}_{-0.023}$	$100\theta_{\text{eq}}$	0.8228	$0.822^{+0.017}_{-0.017}$
$\Omega_c h^2$	0.11776	$0.1179^{+0.0040}_{-0.0039}$	$S_8$	0.8023	$0.802^{+0.049}_{-0.047}$	$100\theta_{\text{s,eq}}$	0.4542	$0.4540^{+0.0089}_{-0.0087}$
$100\theta_{\text{MC}}$	1.04109	$1.04108^{+0.00087}_{-0.00084}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4394	$0.439^{+0.027}_{-0.026}$	$H(0.15)$	73.53	$73.5^{+1.6}_{-1.6}$
$\tau$	0.0508	$0.050^{+0.021}_{-0.024}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5929	$0.592^{+0.025}_{-0.025}$	$D_{\text{M}}(0.15)$	635.0	$636^{+16}_{-16}$
$A_{\text{L}}$	1.155	$1.15^{+0.19}_{-0.18}$	$\sigma_8/h^{0.5}$	0.9676	$0.967^{+0.036}_{-0.036}$	$H(0.38)$	83.47	$83.4^{+1.2}_{-1.2}$
$\ln(10^{10} A_{\text{s}})$	3.0309	$3.028^{+0.043}_{-0.049}$	$r_{\text{drag}} h$	100.81	$100.7^{+3.2}_{-3.2}$	$D_{\text{M}}(0.38)$	1516.8	$1518^{+32}_{-31}$
$n_{\text{s}}$	0.9725	$0.971^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.570	$2.56^{+0.17}_{-0.18}$	$H(0.51)$	90.09	$90.05^{+0.99}_{-0.95}$
$y_{\text{cal}}$	1.0001	$1.0000^{+0.0065}_{-0.0065}$	$z_{\text{re}}$	7.25	$7.1^{+2.0}_{-2.7}$	$D_{\text{M}}(0.51)$	1966.4	$1968^{+38}_{-37}$
$A_{100}^{\text{PS}}$	223	$232^{+60}_{-60}$	$10^9 A_{\text{s}}$	2.072	$2.065^{+0.091}_{-0.098}$	$H(0.61)$	95.64	$95.60^{+0.82}_{-0.78}$
$A_{143}^{\text{PS}}$	46.5	$36^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8715	$1.870^{+0.031}_{-0.030}$	$D_{\text{M}}(0.61)$	2289.4	$2291^{+41}_{-40}$
$A_{217}^{\text{PS}}$	109.5	$105^{+30}_{-30}$	$D_{40}$	1211.5	$1213^{+36}_{-34}$	$H(2.33)$	235.27	$235.3^{+2.3}_{-2.3}$
$A_{217}^{\text{CIB}}$	37.8	$37^{+20}_{-20}$	$D_{220}$	5726	$5723^{+100}_{-99}$	$D_{\text{M}}(2.33)$	5748.6	$5750^{+36}_{-36}$
$A_{143}^{\text{tSZ}}$	6.07	$< 8.83$	$D_{810}$	2531.0	$2528^{+35}_{-35}$	$f\sigma_8(0.15)$	0.4447	$0.445^{+0.025}_{-0.024}$
$r_{143 \times 217}^{\text{PS}}$	0.792	$> 0.365$	$D_{1420}$	816.1	$815^{+12}_{-12}$	$\sigma_8(0.15)$	0.7402	$0.739^{+0.019}_{-0.020}$
$r_{143 \times 217}^{\text{CIB}}$	0.70	—	$D_{2000}$	232.14	$231.5^{+4.2}_{-4.7}$	$f\sigma_8(0.38)$	0.4650	$0.465^{+0.021}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.94	—	$n_{\text{s},0.002}$	0.9725	$0.971^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	0.6572	$0.656^{+0.015}_{-0.017}$
$A^{\text{kSZ}}$	0.2	—	$Y_{\text{P}}$	0.245459	$0.24545^{+0.00021}_{-0.00021}$	$f\sigma_8(0.51)$	0.4647	$0.464^{+0.018}_{-0.018}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.51}_{-0.51}$	$Y_{\text{P}}^{\text{BBN}}$	0.246786	$0.24677^{+0.00021}_{-0.00021}$	$\sigma_8(0.51)$	0.6155	$0.614^{+0.014}_{-0.016}$
$A_{143}^{\text{dust}}$	0.946	$0.95^{+0.45}_{-0.45}$	$10^5 \text{D}/\text{H}$	2.555	$2.561^{+0.095}_{-0.089}$	$f\sigma_8(0.61)$	0.4606	$0.460^{+0.016}_{-0.017}$
$A_{217}^{\text{dust}}$	0.993	$0.98^{+0.27}_{-0.26}$	Age/Gyr	13.765	$13.769^{+0.080}_{-0.080}$	$\sigma_8(0.61)$	0.5859	$0.585^{+0.013}_{-0.015}$
$A_{143 \times 217}^{\text{dust}}$	1.050	$1.02^{+0.42}_{-0.41}$	$z_*$	1089.51	$1089.56^{+0.91}_{-0.86}$	$f\sigma_8(2.33)$	0.2958	$0.2952^{+0.0065}_{-0.0073}$
$c_{100}$	0.99794	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	144.88	$144.88^{+0.86}_{-0.84}$	$\sigma_8(2.33)$	0.3054	$0.3048^{+0.0067}_{-0.0074}$
$c_{217}$	1.00093	$1.0009^{+0.0041}_{-0.0040}$	$100\theta_*$	1.04127	$1.04125^{+0.00085}_{-0.00081}$	$f_{2000}^{143}$	26.7	$27^{+8}_{-7}$
$c_{\text{TE}}$	0.9917	$0.992^{+0.014}_{-0.014}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.914	$13.914^{+0.079}_{-0.078}$	$f_{2000}^{217}$	104.4	$105.1^{+5.4}_{-5.3}$
$c_{\text{EE}}$	0.9902	$0.990^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.16	$1060.1^{+1.0}_{-1.0}$	$f_{2000}^{143 \times 217}$	29.8	$30^{+6}_{-6}$
$H_0$	68.35	$68.3^{+1.9}_{-1.9}$	$r_{\text{drag}}$	147.50	$147.50^{+0.83}_{-0.83}$	$\chi_{\text{simall}}^2$	395.68	$396.8 (\nu: 1.1)$
$\Omega_{\Lambda}$	0.6983	$0.697^{+0.023}_{-0.025}$	$k_{\text{D}}$	0.14057	$0.14054^{+0.00090}_{-0.00088}$	$\chi_{\text{lowl}}^2$	21.90	$22.12 (\nu: 0.4)$
$\Omega_{\text{m}}$	0.3017	$0.303^{+0.025}_{-0.023}$	$100\theta_{\text{D}}$	0.16062	$0.16066^{+0.00058}_{-0.00055}$	$\chi_{\text{CamSpec}}^2$	11496.5	$11512.3 (\nu: 16.0)$
$\Omega_{\text{m}} h^2$	0.14095	$0.1410^{+0.0037}_{-0.0036}$	$z_{\text{eq}}$	3353	$3355^{+89}_{-87}$	$\chi_{\text{prior}}^2$	1.9	$7.7 (\nu: 5.6)$
$\Omega_{\text{m}} h^3$	0.09633	$0.09629^{+0.00089}_{-0.00086}$	$k_{\text{eq}}$	0.010233	$0.01024^{+0.00027}_{-0.00027}$	$\chi_{\text{CMB}}^2$	11914.1	$11931.2 (\nu: 16.9)$

Best-fit  $\chi_{\text{eff}}^2 = 11915.94$ ;  $\Delta\chi_{\text{eff}}^2 = -4.82$ ;  $\bar{\chi}_{\text{eff}}^2 = 11938.97$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -3.49$ ;  $R - 1 = 0.01096$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.22) commander\_dx12.v3.2.29: 21.90 ( $\Delta$  -1.10) CamSpec like\_10.7HM\_1400\_unified: 11496.51 ( $\Delta$  -3.14)



### 3.8 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02249^{+0.00044}_{-0.00044}$	$\sigma_8 \Omega_m^{0.5}$	$0.441^{+0.020}_{-0.019}$	$H(0.38)$	$83.37^{+0.87}_{-0.82}$
$\Omega_c h^2$	$0.1181^{+0.0027}_{-0.0028}$	$\sigma_8 \Omega_m^{0.25}$	$0.593^{+0.020}_{-0.020}$	$D_M(0.38)$	$1519^{+22}_{-22}$
$100\theta_{MC}$	$1.04106^{+0.00078}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.968^{+0.029}_{-0.030}$	$H(0.51)$	$90.01^{+0.71}_{-0.67}$
$\tau$	$0.049^{+0.021}_{-0.026}$	$r_{\text{drag}} h$	$100.6^{+2.2}_{-2.2}$	$D_M(0.51)$	$1970^{+26}_{-26}$
$A_L$	$1.14^{+0.17}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.16}_{-0.17}$	$H(0.61)$	$95.57^{+0.60}_{-0.56}$
$\ln(10^{10} A_s)$	$3.028^{+0.044}_{-0.048}$	$z_{\text{re}}$	$7.1^{+2.1}_{-2.9}$	$D_M(0.61)$	$2293^{+28}_{-29}$
$n_s$	$0.971^{+0.011}_{-0.011}$	$10^9 A_s$	$2.065^{+0.092}_{-0.098}$	$H(2.33)$	$235.4^{+1.6}_{-1.7}$
$y_{\text{cal}}$	$1.0000^{+0.0065}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.028}_{-0.027}$	$D_M(2.33)$	$5752^{+27}_{-28}$
$A_{100}^{\text{PS}}$	$232^{+70}_{-70}$	$D_{40}$	$1214^{+33}_{-31}$	$f\sigma_8(0.15)$	$0.446^{+0.019}_{-0.018}$
$A_{143}^{\text{PS}}$	$36^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-97}$	$\sigma_8(0.15)$	$0.739^{+0.018}_{-0.019}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-40}$	$D_{810}$	$2528^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.465^{+0.016}_{-0.016}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-12}$	$\sigma_8(0.38)$	$0.656^{+0.015}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$< 8.80$	$D_{2000}$	$231.4^{+4.2}_{-4.4}$	$f\sigma_8(0.51)$	$0.465^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.354$	$n_{s,0.002}$	$0.971^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.615^{+0.014}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.24544^{+0.00018}_{-0.00017}$	$f\sigma_8(0.61)$	$0.461^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24677^{+0.00018}_{-0.00018}$	$\sigma_8(0.61)$	$0.585^{+0.013}_{-0.015}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.563^{+0.081}_{-0.079}$	$f\sigma_8(2.33)$	$0.2953^{+0.0066}_{-0.0075}$
$A_{100}^{\text{dust}}$	$1.00^{+0.53}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.772^{+0.060}_{-0.063}$	$\sigma_8(2.33)$	$0.3047^{+0.0068}_{-0.0076}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.45}$	$z_*$	$1089.60^{+0.68}_{-0.69}$	$f_{2000}^{143}$	$27^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.98^{+0.28}_{-0.26}$	$r_*$	$144.84^{+0.65}_{-0.62}$	$f_{2000}^{217}$	$105.1^{+5.2}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.41}$	$100\theta_*$	$1.04123^{+0.00077}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$30^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.910^{+0.061}_{-0.059}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.2)$
$c_{217}$	$1.0009^{+0.0042}_{-0.0041}$	$z_{\text{drag}}$	$1060.08^{+0.96}_{-0.95}$	$\chi_{\text{lowl}}^2$	$22.17 (\nu: 0.3)$
$c_{TE}$	$0.993^{+0.013}_{-0.014}$	$r_{\text{drag}}$	$147.47^{+0.67}_{-0.65}$	$\chi_{\text{CamSpec}}^2$	$11511.8 (\nu: 15.2)$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$k_D$	$0.14056^{+0.00085}_{-0.00083}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$H_0$	$68.2^{+1.3}_{-1.3}$	$100\theta_D$	$0.16067^{+0.00055}_{-0.00053}$	$\chi_{\text{MGS}}^2$	$1.81 (\nu: 0.1)$
$\Omega_\Lambda$	$0.696^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3359^{+61}_{-62}$	$\chi_{\text{DR12BAO}}^2$	$3.93 (\nu: 0.3)$
$\Omega_m$	$0.304^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01025^{+0.00019}_{-0.00019}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_m h^2$	$0.1412^{+0.0026}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.822^{+0.012}_{-0.012}$	$\chi_{\text{BAO}}^2$	$5.77 (\nu: 0.3)$
$\Omega_m h^3$	$0.09628^{+0.00090}_{-0.00086}$	$100\theta_{s,\text{eq}}$	$0.4536^{+0.0062}_{-0.0060}$	$\chi_{\text{CMB}}^2$	$11930.7 (\nu: 16.4)$
$\sigma_8$	$0.799^{+0.019}_{-0.022}$	$H(0.15)$	$73.4^{+1.2}_{-1.1}$		
$S_8$	$0.804^{+0.036}_{-0.035}$	$D_M(0.15)$	$636^{+11}_{-11}$		

$$\bar{\chi}_{\text{eff}}^2 = 11944.29; \Delta\bar{\chi}_{\text{eff}}^2 = -3.99; R - 1 = 0.01598$$



### 3.9 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02268^{+0.00048}_{-0.00047}$	$S_8$	$0.783^{+0.045}_{-0.046}$	$H(0.15)$	$74.2^{+1.5}_{-1.5}$
$\Omega_c h^2$	$0.1161^{+0.0037}_{-0.0037}$	$\sigma_8 \Omega_m^{0.5}$	$0.429^{+0.025}_{-0.025}$	$D_M(0.15)$	$629^{+14}_{-14}$
$100\theta_{MC}$	$1.04132^{+0.00096}_{-0.00083}$	$\sigma_8 \Omega_m^{0.25}$	$0.583^{+0.024}_{-0.025}$	$H(0.38)$	$84.0^{+1.2}_{-1.1}$
$\tau$	$0.051^{+0.022}_{-0.024}$	$\sigma_8/h^{0.5}$	$0.954^{+0.034}_{-0.035}$	$D_M(0.38)$	$1504^{+29}_{-29}$
$A_L$	$1.19^{+0.24}_{-0.18}$	$r_{\text{drag}} h$	$102.1^{+3.0}_{-3.0}$	$H(0.51)$	$90.49^{+0.96}_{-0.89}$
$\ln(10^{10} A_s)$	$3.026^{+0.044}_{-0.047}$	$\langle d^2 \rangle^{1/2}$	$2.58^{+0.19}_{-0.17}$	$D_M(0.51)$	$1951^{+34}_{-35}$
$n_s$	$0.976^{+0.013}_{-0.013}$	$z_{\text{re}}$	$7.2^{+2.1}_{-2.7}$	$H(0.61)$	$95.95^{+0.79}_{-0.73}$
$y_{\text{cal}}$	$1.0000^{+0.0061}_{-0.0062}$	$10^9 A_s$	$2.063^{+0.092}_{-0.095}$	$D_M(0.61)$	$2273^{+37}_{-38}$
$A_{100}^{\text{PS}}$	$228^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.863^{+0.030}_{-0.029}$	$H(2.33)$	$234.4^{+2.2}_{-2.2}$
$A_{143}^{\text{PS}}$	$33^{+20}_{-20}$	$D_{40}$	$1204^{+35}_{-37}$	$D_M(2.33)$	$5735^{+33}_{-34}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-40}$	$D_{220}$	$5733^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.435^{+0.023}_{-0.024}$
$A_{217}^{\text{CIB}}$	$36^{+20}_{-20}$	$D_{810}$	$2526^{+33}_{-35}$	$\sigma_8(0.15)$	$0.735^{+0.019}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{1420}$	$815^{+11}_{-12}$	$f\sigma_8(0.38)$	$0.457^{+0.019}_{-0.021}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.362$	$D_{2000}$	$232.4^{+3.8}_{-4.4}$	$\sigma_8(0.38)$	$0.654^{+0.016}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.976^{+0.013}_{-0.013}$	$f\sigma_8(0.51)$	$0.458^{+0.017}_{-0.018}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24551^{+0.00022}_{-0.00018}$	$\sigma_8(0.51)$	$0.612^{+0.015}_{-0.014}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24684^{+0.00022}_{-0.00018}$	$f\sigma_8(0.61)$	$0.454^{+0.016}_{-0.016}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.55}$	$10^5 D/H$	$2.530^{+0.086}_{-0.085}$	$\sigma_8(0.61)$	$0.583^{+0.014}_{-0.014}$
$A_{143}^{\text{dust}}$	$0.94^{+0.47}_{-0.49}$	Age/Gyr	$13.737^{+0.074}_{-0.073}$	$f\sigma_8(2.33)$	$0.2949^{+0.0067}_{-0.0070}$
$A_{217}^{\text{dust}}$	$0.99^{+0.27}_{-0.26}$	$z_*$	$1089.20^{+0.82}_{-0.73}$	$\sigma_8(2.33)$	$0.3050^{+0.0068}_{-0.0073}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.40}_{-0.41}$	$r_*$	$145.20^{+0.74}_{-0.80}$	$f_{2000}^{143}$	$26^{+8}_{-7}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0026}$	$100\theta_*$	$1.04147^{+0.00094}_{-0.00082}$	$f_{2000}^{217}$	$104.2^{+5.3}_{-4.8}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.941^{+0.065}_{-0.074}$	$f_{2000}^{143 \times 217}$	$29^{+5}_{-5}$
$c_{TE}$	$0.991^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1060.38^{+0.93}_{-0.94}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.1)$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.77^{+0.75}_{-0.80}$	$\chi_{\text{lowl}}^2$	$21.45 (\nu: 0.3)$
$H_0$	$69.1^{+1.8}_{-1.7}$	$k_D$	$0.14038^{+0.00087}_{-0.00086}$	$\chi_{\text{CamSpec}}^2$	$11514.4 (\nu: 19.8)$
$\Omega_\Lambda$	$0.708^{+0.021}_{-0.022}$	$100\theta_D$	$0.16053^{+0.00054}_{-0.00049}$	$\chi_{\text{H073p45}}^2$	$7.0 (\nu: 2.3)$
$\Omega_m$	$0.292^{+0.022}_{-0.021}$	$z_{\text{eq}}$	$3318^{+82}_{-85}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.6)$
$\Omega_m h^2$	$0.1395^{+0.0034}_{-0.0036}$	$k_{\text{eq}}$	$0.01013^{+0.00025}_{-0.00026}$	$\chi_{\text{CMB}}^2$	$11932.6 (\nu: 20.0)$
$\Omega_m h^3$	$0.09640^{+0.00090}_{-0.00086}$	$100\theta_{\text{eq}}$	$0.830^{+0.017}_{-0.016}$		
$\sigma_8$	$0.793^{+0.022}_{-0.022}$	$100\theta_{s,\text{eq}}$	$0.4579^{+0.0086}_{-0.0082}$		

$$\bar{\chi}_{\text{eff}}^2 = 11947.36; \Delta\bar{\chi}_{\text{eff}}^2 = -6.91; R - 1 = 0.04484$$



### 3.10 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02251^{+0.00049}_{-0.00051}$	$\sigma_8$	$0.801^{+0.020}_{-0.018}$	$100\theta_{\text{eq}}$	$0.823^{+0.017}_{-0.018}$
$\Omega_c h^2$	$0.1178^{+0.0041}_{-0.0039}$	$S_8$	$0.804^{+0.049}_{-0.046}$	$100\theta_{\text{s,eq}}$	$0.4541^{+0.0089}_{-0.0088}$
$100\theta_{\text{MC}}$	$1.04108^{+0.00087}_{-0.00084}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.441^{+0.027}_{-0.025}$	$H(0.15)$	$73.5^{+1.6}_{-1.6}$
$\tau$	$0.053^{+0.017}_{-0.010}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.594^{+0.025}_{-0.024}$	$D_{\text{M}}(0.15)$	$636^{+16}_{-15}$
$A_{\text{L}}$	$1.14^{+0.18}_{-0.18}$	$\sigma_8/h^{0.5}$	$0.970^{+0.035}_{-0.033}$	$H(0.38)$	$83.4^{+1.2}_{-1.2}$
$\ln(10^{10} A_{\text{s}})$	$3.034^{+0.038}_{-0.027}$	$r_{\text{drag}} h$	$100.7^{+3.2}_{-3.3}$	$D_{\text{M}}(0.38)$	$1518^{+33}_{-31}$
$n_{\text{s}}$	$0.971^{+0.013}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.17}_{-0.17}$	$H(0.51)$	$90.06^{+0.98}_{-0.97}$
$y_{\text{cal}}$	$1.0000^{+0.0065}_{-0.0066}$	$z_{\text{re}}$	$< 9.01$	$D_{\text{M}}(0.51)$	$1968^{+39}_{-37}$
$A_{100}^{\text{PS}}$	$231^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.078^{+0.081}_{-0.055}$	$H(0.61)$	$95.61^{+0.82}_{-0.79}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.870^{+0.031}_{-0.030}$	$D_{\text{M}}(0.61)$	$2291^{+42}_{-40}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{40}$	$1213^{+36}_{-35}$	$H(2.33)$	$235.3^{+2.3}_{-2.2}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{220}$	$5723^{+100}_{-99}$	$D_{\text{M}}(2.33)$	$5750^{+36}_{-36}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{810}$	$2528^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.446^{+0.025}_{-0.024}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.367$	$D_{1420}$	$815^{+12}_{-13}$	$\sigma_8(0.15)$	$0.741^{+0.017}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$231.5^{+4.3}_{-4.8}$	$f\sigma_8(0.38)$	$0.466^{+0.020}_{-0.020}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.971^{+0.013}_{-0.014}$	$\sigma_8(0.38)$	$0.658^{+0.014}_{-0.012}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.24545^{+0.00020}_{-0.00021}$	$f\sigma_8(0.51)$	$0.466^{+0.018}_{-0.017}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24677^{+0.00020}_{-0.00021}$	$\sigma_8(0.51)$	$0.616^{+0.013}_{-0.010}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.45}$	$10^5 \text{D}/\text{H}$	$2.561^{+0.096}_{-0.088}$	$f\sigma_8(0.61)$	$0.461^{+0.016}_{-0.015}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$\text{Age}/\text{Gyr}$	$13.769^{+0.081}_{-0.079}$	$\sigma_8(0.61)$	$0.587^{+0.012}_{-0.0093}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.41}$	$z_*$	$1089.56^{+0.93}_{-0.85}$	$f\sigma_8(2.33)$	$0.2961^{+0.0058}_{-0.0042}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$144.89^{+0.85}_{-0.85}$	$\sigma_8(2.33)$	$0.3057^{+0.0060}_{-0.0042}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0040}$	$100\theta_*$	$1.04125^{+0.00085}_{-0.00082}$	$f_{2000}^{143}$	$27^{+8}_{-7}$
$c_{TE}$	$0.992^{+0.014}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.914^{+0.079}_{-0.078}$	$f_{2000}^{217}$	$105.0^{+5.5}_{-5.3}$
$c_{EE}$	$0.990^{+0.013}_{-0.012}$	$z_{\text{drag}}$	$1060.10^{+0.97}_{-1.0}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$H_0$	$68.3^{+1.9}_{-1.9}$	$r_{\text{drag}}$	$147.51^{+0.82}_{-0.82}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.698^{+0.023}_{-0.026}$	$k_{\text{D}}$	$0.14053^{+0.00089}_{-0.00088}$	$\chi_{\text{lowl}}^2$	$22.16 (\nu: 0.4)$
$\Omega_{\text{m}}$	$0.302^{+0.026}_{-0.023}$	$100\theta_{\text{D}}$	$0.16066^{+0.00059}_{-0.00055}$	$\chi_{\text{CamSpec}}^2$	$11512.3 (\nu: 16.0)$
$\Omega_{\text{m}} h^2$	$0.1410^{+0.0037}_{-0.0036}$	$z_{\text{eq}}$	$3354^{+90}_{-87}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.7)$
$\Omega_{\text{m}} h^3$	$0.09628^{+0.00089}_{-0.00086}$	$k_{\text{eq}}$	$0.01024^{+0.00027}_{-0.00026}$	$\chi_{\text{CMB}}^2$	$11930.9 (\nu: 16.5)$

$$\bar{\chi}_{\text{eff}}^2 = 11938.62; \Delta\bar{\chi}_{\text{eff}}^2 = -3.57; R - 1 = 0.01153$$



### 3.11 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02249^{+0.00044}_{-0.00044}$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.019}_{-0.019}$	$H(0.38)$	$83.37^{+0.88}_{-0.83}$
$\Omega_c h^2$	$0.1180^{+0.0028}_{-0.0028}$	$\sigma_8 \Omega_m^{0.25}$	$0.595^{+0.019}_{-0.018}$	$D_M(0.38)$	$1519^{+22}_{-22}$
$100\theta_{MC}$	$1.04106^{+0.00076}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.971^{+0.027}_{-0.026}$	$H(0.51)$	$90.01^{+0.72}_{-0.68}$
$\tau$	$0.053^{+0.017}_{-0.010}$	$r_{\text{drag}} h$	$100.6^{+2.2}_{-2.2}$	$D_M(0.51)$	$1969^{+26}_{-27}$
$A_L$	$1.14^{+0.17}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.17}_{-0.17}$	$H(0.61)$	$95.57^{+0.60}_{-0.56}$
$\ln(10^{10} A_s)$	$3.034^{+0.039}_{-0.026}$	$z_{\text{re}}$	$< 9.01$	$D_M(0.61)$	$2293^{+28}_{-29}$
$n_s$	$0.971^{+0.011}_{-0.011}$	$10^9 A_s$	$2.078^{+0.082}_{-0.053}$	$H(2.33)$	$235.4^{+1.7}_{-1.7}$
$y_{\text{cal}}$	$1.0000^{+0.0066}_{-0.0067}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.028}_{-0.027}$	$D_M(2.33)$	$5752^{+27}_{-29}$
$A_{100}^{\text{PS}}$	$232^{+60}_{-60}$	$D_{40}$	$1214^{+33}_{-32}$	$f\sigma_8(0.15)$	$0.447^{+0.018}_{-0.018}$
$A_{143}^{\text{PS}}$	$36^{+20}_{-20}$	$D_{220}$	$5722^{+99}_{-97}$	$\sigma_8(0.15)$	$0.742^{+0.016}_{-0.013}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{810}$	$2528^{+34}_{-36}$	$f\sigma_8(0.38)$	$0.467^{+0.015}_{-0.015}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-12}$	$\sigma_8(0.38)$	$0.658^{+0.014}_{-0.010}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{2000}$	$231.5^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	$0.466^{+0.014}_{-0.013}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.366$	$n_{s,0.002}$	$0.971^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.616^{+0.013}_{-0.0090}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.24544^{+0.00018}_{-0.00018}$	$f\sigma_8(0.61)$	$0.462^{+0.013}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24677^{+0.00018}_{-0.00018}$	$\sigma_8(0.61)$	$0.587^{+0.012}_{-0.0084}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.564^{+0.082}_{-0.079}$	$f\sigma_8(2.33)$	$0.2962^{+0.0058}_{-0.0040}$
$A_{100}^{\text{dust}}$	$1.01^{+0.53}_{-0.50}$	$\text{Age}/\text{Gyr}$	$13.772^{+0.061}_{-0.064}$	$\sigma_8(2.33)$	$0.3057^{+0.0061}_{-0.0041}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.45}$	$z_*$	$1089.60^{+0.69}_{-0.69}$	$f_{2000}^{143}$	$27^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.98^{+0.29}_{-0.27}$	$r_*$	$144.85^{+0.64}_{-0.63}$	$f_{2000}^{217}$	$105.1^{+5.1}_{-5.1}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.40}$	$100\theta_*$	$1.04124^{+0.00075}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$30^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0026}$	$D_M(z_*)/\text{Gpc}$	$13.911^{+0.061}_{-0.060}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.6)$
$c_{217}$	$1.0009^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1060.08^{+0.92}_{-0.95}$	$\chi_{\text{lowl}}^2$	$22.22 (\nu: 0.3)$
$c_{TE}$	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.48^{+0.67}_{-0.66}$	$\chi_{\text{CamSpec}}^2$	$11511.7 (\nu: 15.1)$
$c_{EE}$	$0.990^{+0.013}_{-0.012}$	$k_D$	$0.14055^{+0.00085}_{-0.00083}$	$\chi_{6\text{DF}}^2$	$0.031 (\nu: 0.0)$
$H_0$	$68.2^{+1.3}_{-1.3}$	$100\theta_D$	$0.16068^{+0.00055}_{-0.00053}$	$\chi_{\text{MGS}}^2$	$1.82 (\nu: 0.1)$
$\Omega_\Lambda$	$0.696^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3358^{+62}_{-62}$	$\chi_{\text{DR12BAO}}^2$	$3.93 (\nu: 0.3)$
$\Omega_m$	$0.304^{+0.017}_{-0.016}$	$k_{\text{eq}}$	$0.01025^{+0.00019}_{-0.00019}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^2$	$0.1412^{+0.0026}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.822^{+0.012}_{-0.012}$	$\chi_{\text{BAO}}^2$	$5.78 (\nu: 0.3)$
$\Omega_m h^3$	$0.09628^{+0.00088}_{-0.00087}$	$100\theta_{s,\text{eq}}$	$0.4537^{+0.0062}_{-0.0060}$	$\chi_{\text{CMB}}^2$	$11930.3 (\nu: 15.8)$
$\sigma_8$	$0.802^{+0.018}_{-0.015}$	$H(0.15)$	$73.4^{+1.1}_{-1.1}$		
$S_8$	$0.807^{+0.035}_{-0.034}$	$D_M(0.15)$	$636^{+11}_{-11}$		

$$\bar{\chi}_{\text{eff}}^2 = 11943.89; \Delta\bar{\chi}_{\text{eff}}^2 = -4.10; R - 1 = 0.01823$$



### 3.12 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02268^{+0.00042}_{-0.00047}$	$S_8$	$0.785^{+0.044}_{-0.040}$	$H(0.15)$	$74.2^{+1.5}_{-1.5}$
$\Omega_c h^2$	$0.1161^{+0.0037}_{-0.0035}$	$\sigma_8 \Omega_m^{0.5}$	$0.430^{+0.024}_{-0.022}$	$D_M(0.15)$	$629^{+14}_{-14}$
$100\theta_{MC}$	$1.04132^{+0.00083}_{-0.00083}$	$\sigma_8 \Omega_m^{0.25}$	$0.585^{+0.023}_{-0.021}$	$H(0.38)$	$84.0^{+1.1}_{-1.1}$
$\tau$	$0.054^{+0.018}_{-0.011}$	$\sigma_8/h^{0.5}$	$0.957^{+0.032}_{-0.030}$	$D_M(0.38)$	$1504^{+29}_{-28}$
$A_L$	$1.19^{+0.22}_{-0.18}$	$r_{\text{drag}} h$	$102.2^{+2.9}_{-3.0}$	$H(0.51)$	$90.49^{+0.87}_{-0.89}$
$\ln(10^{10} A_s)$	$3.032^{+0.039}_{-0.027}$	$\langle d^2 \rangle^{1/2}$	$2.58^{+0.17}_{-0.17}$	$D_M(0.51)$	$1951^{+34}_{-33}$
$n_s$	$0.976^{+0.012}_{-0.013}$	$z_{\text{re}}$	$< 9.16$	$H(0.61)$	$95.95^{+0.70}_{-0.73}$
$y_{\text{cal}}$	$1.0000^{+0.0061}_{-0.0064}$	$10^9 A_s$	$2.074^{+0.082}_{-0.056}$	$D_M(0.61)$	$2273^{+37}_{-35}$
$A_{100}^{\text{PS}}$	$228^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.863^{+0.031}_{-0.029}$	$H(2.33)$	$234.4^{+2.2}_{-1.9}$
$A_{143}^{\text{PS}}$	$33^{+20}_{-20}$	$D_{40}$	$1204^{+35}_{-37}$	$D_M(2.33)$	$5736^{+33}_{-31}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-40}$	$D_{220}$	$5733^{+100}_{-99}$	$f\sigma_8(0.15)$	$0.436^{+0.023}_{-0.021}$
$A_{217}^{\text{CIB}}$	$36^{+20}_{-20}$	$D_{810}$	$2526^{+34}_{-36}$	$\sigma_8(0.15)$	$0.737^{+0.017}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$D_{1420}$	$816^{+12}_{-13}$	$f\sigma_8(0.38)$	$0.458^{+0.019}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.362$	$D_{2000}$	$232.4^{+3.7}_{-4.4}$	$\sigma_8(0.38)$	$0.655^{+0.014}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.976^{+0.012}_{-0.013}$	$f\sigma_8(0.51)$	$0.459^{+0.017}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24551^{+0.00019}_{-0.00018}$	$\sigma_8(0.51)$	$0.614^{+0.014}_{-0.010}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24684^{+0.00019}_{-0.00018}$	$f\sigma_8(0.61)$	$0.456^{+0.015}_{-0.014}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.54}$	$10^5 \text{D/H}$	$2.530^{+0.086}_{-0.075}$	$\sigma_8(0.61)$	$0.585^{+0.013}_{-0.0093}$
$A_{143}^{\text{dust}}$	$0.94^{+0.47}_{-0.49}$	$\text{Age/Gyr}$	$13.737^{+0.074}_{-0.066}$	$f\sigma_8(2.33)$	$0.2958^{+0.0061}_{-0.0045}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.20^{+0.82}_{-0.69}$	$\sigma_8(2.33)$	$0.3058^{+0.0061}_{-0.0045}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.41}_{-0.42}$	$r_*$	$145.20^{+0.71}_{-0.80}$	$f_{2000}^{143}$	$26^{+8}_{-7}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0026}$	$100\theta_*$	$1.04147^{+0.00080}_{-0.00082}$	$f_{2000}^{217}$	$104.2^{+5.3}_{-4.8}$
$c_{217}$	$1.0008^{+0.0039}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.942^{+0.065}_{-0.073}$	$f_{2000}^{143 \times 217}$	$29^{+5}_{-5}$
$c_{TE}$	$0.991^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1060.37^{+0.90}_{-0.93}$	$\chi_{\text{simall}}^2$	$396.4 (\nu: 0.7)$
$c_{EE}$	$0.990^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$147.78^{+0.74}_{-0.79}$	$\chi_{\text{lowl}}^2$	$21.48 (\nu: 0.3)$
$H_0$	$69.1^{+1.7}_{-1.7}$	$k_D$	$0.14037^{+0.00086}_{-0.00085}$	$\chi_{\text{CamSpec}}^2$	$11514.2 (\nu: 17.4)$
$\Omega_\Lambda$	$0.708^{+0.020}_{-0.022}$	$100\theta_D$	$0.16053^{+0.00054}_{-0.00047}$	$\chi_{\text{H073p45}}^2$	$6.9 (\nu: 2.2)$
$\Omega_m$	$0.292^{+0.022}_{-0.020}$	$z_{\text{eq}}$	$3317^{+82}_{-76}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_m h^2$	$0.1395^{+0.0034}_{-0.0032}$	$k_{\text{eq}}$	$0.01012^{+0.00025}_{-0.00023}$	$\chi_{\text{CMB}}^2$	$11932.1 (\nu: 17.5)$
$\Omega_m h^3$	$0.09640^{+0.00087}_{-0.00086}$	$100\theta_{\text{eq}}$	$0.830^{+0.016}_{-0.016}$		
$\sigma_8$	$0.795^{+0.020}_{-0.017}$	$100\theta_{s,\text{eq}}$	$0.4579^{+0.0080}_{-0.0082}$		

$$\bar{\chi}_{\text{eff}}^2 = 11946.84; \Delta\bar{\chi}_{\text{eff}}^2 = -7.17; R - 1 = 0.04629$$



### 3.13 base\_Alens\_CamSpecHM\_TE\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02233	$0.0224^{+0.0011}_{-0.00098}$	$D_{40}$	1216	$1209^{+100}_{-96}$	$D_M(0.15)$	635.9	$634^{+27}_{-26}$
$\Omega_c h^2$	0.1177	$0.1174^{+0.0067}_{-0.0064}$	$D_{220}$	5715	$5710^{+160}_{-160}$	$H(0.38)$	83.37	$83.5^{+2.2}_{-2.0}$
$100\theta_{MC}$	1.04130	$1.0414^{+0.0014}_{-0.0014}$	$D_{810}$	2532	$2536^{+100}_{-100}$	$D_M(0.38)$	1519	$1516^{+54}_{-54}$
$\tau$	0.0504	$0.050^{+0.023}_{-0.029}$	$D_{1420}$	816	$819^{+52}_{-49}$	$H(0.51)$	89.99	$90.1^{+1.8}_{-1.6}$
$A_L$	0.89	$0.93^{+0.62}_{-0.54}$	$D_{2000}$	229.3	$231^{+24}_{-22}$	$D_M(0.51)$	1969	$1965^{+64}_{-64}$
$\ln(10^{10} A_s)$	3.028	$3.027^{+0.061}_{-0.062}$	$n_{s,0.002}$	0.969	$0.973^{+0.055}_{-0.052}$	$H(0.61)$	95.53	$95.6^{+1.5}_{-1.3}$
$n_s$	0.969	$0.973^{+0.055}_{-0.052}$	$Y_P$	0.245379	$0.24539^{+0.00045}_{-0.00044}$	$D_M(0.61)$	2292	$2288^{+69}_{-70}$
$y_{cal}$	1.0001	$0.99997^{+0.0066}_{-0.0065}$	$Y_P^{BBN}$	0.246705	$0.24672^{+0.00045}_{-0.00044}$	$H(2.33)$	235.07	$234.9^{+3.7}_{-3.6}$
$H_0$	68.25	$68.4^{+3.3}_{-3.1}$	$10^5 D/H$	2.593	$2.59^{+0.19}_{-0.19}$	$D_M(2.33)$	5755	$5751^{+63}_{-68}$
$\Omega_\Lambda$	0.6979	$0.700^{+0.038}_{-0.043}$	Age/Gyr	13.780	$13.77^{+0.14}_{-0.15}$	$f\sigma_8(0.15)$	0.4442	$0.443^{+0.035}_{-0.036}$
$\Omega_m$	0.3021	$0.300^{+0.043}_{-0.038}$	$z_*$	1089.77	$1089.7^{+1.7}_{-1.7}$	$\sigma_8(0.15)$	0.7388	$0.739^{+0.028}_{-0.028}$
$\Omega_m h^2$	0.1407	$0.1404^{+0.0060}_{-0.0057}$	$r_*$	145.05	$145.1^{+1.3}_{-1.3}$	$f\sigma_8(0.38)$	0.4643	$0.463^{+0.028}_{-0.030}$
$\Omega_m h^3$	0.09604	$0.0961^{+0.0017}_{-0.0016}$	$100\theta_*$	1.04150	$1.0416^{+0.0013}_{-0.0013}$	$\sigma_8(0.38)$	0.6560	$0.656^{+0.025}_{-0.025}$
$\sigma_8$	0.7986	$0.798^{+0.031}_{-0.032}$	$D_M(z_*)/\text{Gpc}$	13.927	$13.93^{+0.13}_{-0.12}$	$f\sigma_8(0.51)$	0.4640	$0.463^{+0.024}_{-0.026}$
$S_8$	0.801	$0.798^{+0.070}_{-0.068}$	$z_{drag}$	1059.67	$1059.8^{+2.1}_{-2.0}$	$\sigma_8(0.51)$	0.6143	$0.614^{+0.024}_{-0.023}$
$\sigma_8 \Omega_m^{0.5}$	0.4389	$0.437^{+0.038}_{-0.037}$	$r_{drag}$	147.74	$147.8^{+1.4}_{-1.3}$	$f\sigma_8(0.61)$	0.4599	$0.459^{+0.022}_{-0.024}$
$\sigma_8 \Omega_m^{0.25}$	0.5920	$0.591^{+0.034}_{-0.036}$	$k_D$	0.14016	$0.1402^{+0.0015}_{-0.0015}$	$\sigma_8(0.61)$	0.5848	$0.585^{+0.023}_{-0.022}$
$\sigma_8/h^{0.5}$	0.9666	$0.965^{+0.047}_{-0.050}$	$100\theta_D$	0.16095	$0.1609^{+0.0012}_{-0.0012}$	$f\sigma_8(2.33)$	0.2952	$0.295^{+0.012}_{-0.011}$
$r_{drag} h$	100.8	$101.1^{+5.5}_{-5.2}$	$z_{eq}$	3347	$3341^{+140}_{-140}$	$\sigma_8(2.33)$	0.3048	$0.305^{+0.013}_{-0.012}$
$\langle d^2 \rangle^{1/2}$	2.26	$2.28^{+0.56}_{-0.74}$	$k_{eq}$	0.010216	$0.01020^{+0.00044}_{-0.00042}$	$\chi_{simall}^2$	395.7	$396.9 (\nu: 1.5)$
$z_{re}$	7.25	$7.2^{+2.3}_{-3.4}$	$100\theta_{eq}$	0.8234	$0.825^{+0.029}_{-0.028}$	$\chi_{CamSpec}^2$	2575.8	$2581.9 (\nu: 6.2)$
$10^9 A_s$	2.065	$2.06^{+0.13}_{-0.12}$	$100\theta_{s,eq}$	0.4547	$0.455^{+0.014}_{-0.014}$	$\chi_{prior}^2$	10.03	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	1.867	$1.867^{+0.062}_{-0.064}$	$H(0.15)$	73.43	$73.6^{+2.9}_{-2.7}$	$\chi_{CMB}^2$	2971.5	$2978.8 (\nu: 7.6)$

Best-fit  $\chi_{eff}^2 = 2981.49$ ;  $\Delta\chi_{eff}^2 = -0.15$ ;  $\bar{\chi}_{eff}^2 = 2989.81$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.90$ ;  $R - 1 = 0.00461$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 ( $\Delta$  -0.01) CamSpec like\_10.7HM\_1400\_unified: 2575.80 ( $\Delta$  -0.15)



### 3.14 base\_Alens\_CamSpecHM\_TE\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230^{+0.00078}_{-0.00076}$	$D_{810}$	$2530^{+97}_{-95}$	$D_{\mathrm{M}}(0.51)$	$1972^{+33}_{-34}$
$\Omega_{\mathrm{c}}h^2$	$0.1181^{+0.0034}_{-0.0034}$	$D_{1420}$	$816^{+46}_{-43}$	$H(0.61)$	$95.48^{+0.86}_{-0.82}$
$100\theta_{\mathrm{MC}}$	$1.0413^{+0.0012}_{-0.0012}$	$D_{2000}$	$229^{+21}_{-19}$	$D_{\mathrm{M}}(0.61)$	$2295^{+36}_{-37}$
$\tau$	$0.050^{+0.023}_{-0.027}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.041}_{-0.041}$	$H(2.33)$	$235.3^{+2.1}_{-2.1}$
$A_{\mathrm{L}}$	$0.89^{+0.48}_{-0.49}$	$Y_{\mathrm{P}}$	$0.24536^{+0.00033}_{-0.00035}$	$D_{\mathrm{M}}(2.33)$	$5757^{+42}_{-43}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.026^{+0.061}_{-0.059}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00033}_{-0.00035}$	$f\sigma_8(0.15)$	$0.446^{+0.022}_{-0.022}$
$n_{\mathrm{s}}$	$0.968^{+0.041}_{-0.041}$	$10^5\mathrm{D}/\mathrm{H}$	$2.60^{+0.15}_{-0.14}$	$\sigma_8(0.15)$	$0.739^{+0.029}_{-0.026}$
$y_{\mathrm{cal}}$	$1.0000^{+0.0066}_{-0.0066}$	Age/Gyr	$13.785^{+0.097}_{-0.099}$	$f\sigma_8(0.38)$	$0.465^{+0.021}_{-0.020}$
$H_0$	$68.1^{+1.7}_{-1.6}$	$z_*$	$1089.8^{+1.1}_{-1.1}$	$\sigma_8(0.38)$	$0.656^{+0.025}_{-0.023}$
$\Omega_{\Lambda}$	$0.696^{+0.020}_{-0.021}$	$r_*$	$144.99^{+0.89}_{-0.89}$	$f\sigma_8(0.51)$	$0.465^{+0.019}_{-0.019}$
$\Omega_{\mathrm{m}}$	$0.304^{+0.021}_{-0.020}$	$100\theta_*$	$1.0415^{+0.0012}_{-0.0012}$	$\sigma_8(0.51)$	$0.614^{+0.024}_{-0.022}$
$\Omega_{\mathrm{m}}h^2$	$0.1410^{+0.0032}_{-0.0032}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.921^{+0.087}_{-0.085}$	$f\sigma_8(0.61)$	$0.460^{+0.019}_{-0.018}$
$\Omega_{\mathrm{m}}h^3$	$0.0960^{+0.0016}_{-0.0016}$	$z_{\mathrm{drag}}$	$1059.6^{+1.7}_{-1.8}$	$\sigma_8(0.61)$	$0.585^{+0.023}_{-0.021}$
$\sigma_8$	$0.799^{+0.031}_{-0.029}$	$r_{\mathrm{drag}}$	$147.7^{+1.0}_{-0.99}$	$f\sigma_8(2.33)$	$0.295^{+0.012}_{-0.011}$
$S_8$	$0.804^{+0.042}_{-0.041}$	$k_{\mathrm{D}}$	$0.1402^{+0.0015}_{-0.0015}$	$\sigma_8(2.33)$	$0.304^{+0.012}_{-0.011}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.441^{+0.023}_{-0.023}$	$100\theta_{\mathrm{D}}$	$0.1610^{+0.0011}_{-0.0010}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.593^{+0.026}_{-0.025}$	$z_{\mathrm{eq}}$	$3354^{+76}_{-76}$	$\chi_{\mathrm{CamSpec}}^2$	$2581.1 (\nu: 5.4)$
$\sigma_8/h^{0.5}$	$0.968^{+0.038}_{-0.038}$	$k_{\mathrm{eq}}$	$0.01024^{+0.00023}_{-0.00023}$	$\chi_{6\mathrm{DF}}^2$	$0.044 (\nu: 0.0)$
$r_{\mathrm{drag}}h$	$100.6^{+2.7}_{-2.6}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.015}_{-0.014}$	$\chi_{\mathrm{MGS}}^2$	$1.84 (\nu: 0.2)$
$\langle d^2 \rangle^{1/2}$	$2.24^{+0.51}_{-0.70}$	$100\theta_{\mathrm{s,eq}}$	$0.4540^{+0.0075}_{-0.0072}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 (\nu: 0.5)$
$z_{\mathrm{re}}$	$7.2^{+2.3}_{-3.1}$	$H(0.15)$	$73.3^{+1.5}_{-1.4}$	$\chi_{\mathrm{prior}}^2$	$11.0 (\nu: 1.0)$
$10^9 A_{\mathrm{s}}$	$2.06^{+0.13}_{-0.12}$	$D_{\mathrm{M}}(0.15)$	$637^{+14}_{-14}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.6)$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.866^{+0.063}_{-0.066}$	$H(0.38)$	$83.3^{+1.1}_{-1.1}$	$\chi_{\mathrm{CMB}}^2$	$2978.0 (\nu: 6.7)$
$D_{40}$	$1217^{+81}_{-78}$	$D_{\mathrm{M}}(0.38)$	$1521^{+28}_{-29}$		
$D_{220}$	$5707^{+160}_{-160}$	$H(0.51)$	$89.92^{+0.98}_{-0.92}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2995.04$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.94$ ;  $R - 1 = 0.00758$



### 3.15 base\_Alens\_CamSpecHM\_TE\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.0224^{+0.0011}_{-0.00099}$	$D_{40}$	$1209^{+100}_{-96}$	$D_{\mathrm{M}}(0.15)$	$634^{+27}_{-26}$
$\Omega_{\mathrm{c}}h^2$	$0.1173^{+0.0067}_{-0.0064}$	$D_{220}$	$5709^{+160}_{-170}$	$H(0.38)$	$83.5^{+2.2}_{-2.0}$
$100\theta_{\mathrm{MC}}$	$1.0414^{+0.0014}_{-0.0014}$	$D_{810}$	$2536^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1515^{+55}_{-54}$
$\tau$	$0.053^{+0.019}_{-0.012}$	$D_{1420}$	$819^{+52}_{-49}$	$H(0.51)$	$90.1^{+1.8}_{-1.6}$
$A_{\mathrm{L}}$	$0.93^{+0.61}_{-0.54}$	$D_{2000}$	$231^{+24}_{-22}$	$D_{\mathrm{M}}(0.51)$	$1965^{+64}_{-64}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.034^{+0.056}_{-0.046}$	$n_{\mathrm{s},0.002}$	$0.973^{+0.055}_{-0.052}$	$H(0.61)$	$95.6^{+1.5}_{-1.3}$
$n_{\mathrm{s}}$	$0.973^{+0.055}_{-0.052}$	$Y_{\mathrm{P}}$	$0.24539^{+0.00045}_{-0.00044}$	$D_{\mathrm{M}}(0.61)$	$2288^{+69}_{-70}$
$y_{\mathrm{cal}}$	$0.99995^{+0.0065}_{-0.0065}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24672^{+0.00045}_{-0.00044}$	$H(2.33)$	$234.9^{+3.7}_{-3.5}$
$H_0$	$68.5^{+3.3}_{-3.2}$	$10^5\mathrm{D}/\mathrm{H}$	$2.58^{+0.19}_{-0.19}$	$D_{\mathrm{M}}(2.33)$	$5750^{+63}_{-68}$
$\Omega_{\Lambda}$	$0.700^{+0.038}_{-0.043}$	Age/Gyr	$13.77^{+0.14}_{-0.15}$	$f\sigma_8(0.15)$	$0.444^{+0.035}_{-0.034}$
$\Omega_{\mathrm{m}}$	$0.300^{+0.043}_{-0.038}$	$z_*$	$1089.7^{+1.8}_{-1.7}$	$\sigma_8(0.15)$	$0.741^{+0.027}_{-0.025}$
$\Omega_{\mathrm{m}}h^2$	$0.1404^{+0.0060}_{-0.0057}$	$r_*$	$145.1^{+1.3}_{-1.3}$	$f\sigma_8(0.38)$	$0.464^{+0.027}_{-0.028}$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0017}_{-0.0016}$	$100\theta_*$	$1.0416^{+0.0013}_{-0.0013}$	$\sigma_8(0.38)$	$0.658^{+0.024}_{-0.021}$
$\sigma_8$	$0.801^{+0.029}_{-0.028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.93^{+0.12}_{-0.12}$	$f\sigma_8(0.51)$	$0.464^{+0.023}_{-0.024}$
$S_8$	$0.800^{+0.069}_{-0.066}$	$z_{\mathrm{drag}}$	$1059.8^{+2.1}_{-2.0}$	$\sigma_8(0.51)$	$0.616^{+0.022}_{-0.020}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438^{+0.038}_{-0.036}$	$r_{\mathrm{drag}}$	$147.8^{+1.4}_{-1.3}$	$f\sigma_8(0.61)$	$0.460^{+0.021}_{-0.022}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.592^{+0.033}_{-0.033}$	$k_{\mathrm{D}}$	$0.1401^{+0.0015}_{-0.0015}$	$\sigma_8(0.61)$	$0.587^{+0.022}_{-0.019}$
$\sigma_8/h^{0.5}$	$0.968^{+0.045}_{-0.046}$	$100\theta_{\mathrm{D}}$	$0.1609^{+0.0012}_{-0.0012}$	$f\sigma_8(2.33)$	$0.296^{+0.011}_{-0.0099}$
$r_{\mathrm{drag}}h$	$101.2^{+5.5}_{-5.3}$	$z_{\mathrm{eq}}$	$3339^{+140}_{-140}$	$\sigma_8(2.33)$	$0.306^{+0.012}_{-0.011}$
$\langle d^2 \rangle^{1/2}$	$2.28^{+0.56}_{-0.75}$	$k_{\mathrm{eq}}$	$0.01019^{+0.00044}_{-0.00042}$	$\chi_{\mathrm{simall}}^2$	$396.5 (\nu: 0.9)$
$z_{\mathrm{re}}$	$< 9.29$	$100\theta_{\mathrm{eq}}$	$0.825^{+0.028}_{-0.028}$	$\chi_{\mathrm{CamSpec}}^2$	$2581.9 (\nu: 6.2)$
$10^9 A_{\mathrm{s}}$	$2.08^{+0.12}_{-0.094}$	$100\theta_{\mathrm{s,eq}}$	$0.456^{+0.014}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$11.0 (\nu: 1.0)$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.868^{+0.063}_{-0.063}$	$H(0.15)$	$73.6^{+2.8}_{-2.7}$	$\chi_{\mathrm{CMB}}^2$	$2978.4 (\nu: 7.1)$

$\bar{\chi}_{\mathrm{eff}}^2 = 2989.43$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.91$ ;  $R - 1 = 0.00501$



### 3.16 base\_Alens\_CamSpecHM\_TE\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02230^{+0.00077}_{-0.00076}$	$D_{810}$	$2531^{+96}_{-98}$	$D_M(0.51)$	$1972^{+33}_{-34}$
$\Omega_c h^2$	$0.1180^{+0.0034}_{-0.0034}$	$D_{1420}$	$816^{+45}_{-46}$	$H(0.61)$	$95.48^{+0.87}_{-0.81}$
$100\theta_{MC}$	$1.0413^{+0.0012}_{-0.0012}$	$D_{2000}$	$229^{+21}_{-20}$	$D_M(0.61)$	$2295^{+36}_{-37}$
$\tau$	$0.053^{+0.018}_{-0.012}$	$n_{s,0.002}$	$0.969^{+0.040}_{-0.042}$	$H(2.33)$	$235.2^{+2.1}_{-2.1}$
$A_L$	$0.88^{+0.48}_{-0.49}$	$Y_P$	$0.24536^{+0.00032}_{-0.00035}$	$D_M(2.33)$	$5757^{+42}_{-43}$
$\ln(10^{10} A_s)$	$3.032^{+0.057}_{-0.045}$	$Y_P^{BBN}$	$0.24669^{+0.00032}_{-0.00035}$	$f\sigma_8(0.15)$	$0.447^{+0.021}_{-0.021}$
$n_s$	$0.969^{+0.040}_{-0.042}$	$10^5 D/H$	$2.60^{+0.15}_{-0.14}$	$\sigma_8(0.15)$	$0.741^{+0.027}_{-0.023}$
$y_{cal}$	$1.0000^{+0.0066}_{-0.0067}$	Age/Gyr	$13.785^{+0.096}_{-0.10}$	$f\sigma_8(0.38)$	$0.467^{+0.020}_{-0.018}$
$H_0$	$68.1^{+1.7}_{-1.6}$	$z_*$	$1089.8^{+1.1}_{-1.1}$	$\sigma_8(0.38)$	$0.658^{+0.024}_{-0.021}$
$\Omega_\Lambda$	$0.696^{+0.020}_{-0.021}$	$r_*$	$144.99^{+0.88}_{-0.90}$	$f\sigma_8(0.51)$	$0.466^{+0.019}_{-0.017}$
$\Omega_m$	$0.304^{+0.021}_{-0.020}$	$100\theta_*$	$1.0415^{+0.0012}_{-0.0012}$	$\sigma_8(0.51)$	$0.616^{+0.022}_{-0.019}$
$\Omega_m h^2$	$0.1410^{+0.0032}_{-0.0032}$	$D_M(z_*)/\text{Gpc}$	$13.922^{+0.086}_{-0.085}$	$f\sigma_8(0.61)$	$0.462^{+0.018}_{-0.016}$
$\Omega_m h^3$	$0.0960^{+0.0016}_{-0.0016}$	$z_{drag}$	$1059.6^{+1.7}_{-1.8}$	$\sigma_8(0.61)$	$0.586^{+0.021}_{-0.018}$
$\sigma_8$	$0.802^{+0.029}_{-0.025}$	$r_{drag}$	$147.7^{+1.1}_{-1.0}$	$f\sigma_8(2.33)$	$0.296^{+0.011}_{-0.0095}$
$S_8$	$0.807^{+0.041}_{-0.040}$	$k_D$	$0.1402^{+0.0015}_{-0.0015}$	$\sigma_8(2.33)$	$0.306^{+0.011}_{-0.010}$
$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.022}_{-0.022}$	$100\theta_D$	$0.1610^{+0.0011}_{-0.00099}$	$\chi_{simall}^2$	$396.5 (\nu: 1.0)$
$\sigma_8 \Omega_m^{0.25}$	$0.595^{+0.025}_{-0.023}$	$z_{eq}$	$3354^{+76}_{-76}$	$\chi_{CamSpec}^2$	$2581.2 (\nu: 5.4)$
$\sigma_8/h^{0.5}$	$0.971^{+0.038}_{-0.034}$	$k_{eq}$	$0.01024^{+0.00023}_{-0.00023}$	$\chi_{6DF}^2$	$0.044 (\nu: 0.0)$
$r_{drag} h$	$100.6^{+2.6}_{-2.6}$	$100\theta_{eq}$	$0.822^{+0.015}_{-0.014}$	$\chi_{MGS}^2$	$1.85 (\nu: 0.2)$
$\langle d^2 \rangle^{1/2}$	$2.24^{+0.51}_{-0.74}$	$100\theta_{s,eq}$	$0.4541^{+0.0075}_{-0.0072}$	$\chi_{DR12BAO}^2$	$4.1 (\nu: 0.5)$
$z_{re}$	$< 9.26$	$H(0.15)$	$73.3^{+1.5}_{-1.4}$	$\chi_{prior}^2$	$11.0 (\nu: 1.1)$
$10^9 A_s$	$2.07^{+0.12}_{-0.092}$	$D_M(0.15)$	$637^{+14}_{-14}$	$\chi_{BAO}^2$	$6.0 (\nu: 0.6)$
$10^9 A_s e^{-2\tau}$	$1.866^{+0.063}_{-0.066}$	$H(0.38)$	$83.3^{+1.2}_{-1.1}$	$\chi_{CMB}^2$	$2977.7 (\nu: 6.3)$
$D_{40}$	$1217^{+81}_{-77}$	$D_M(0.38)$	$1521^{+28}_{-29}$		
$D_{220}$	$5707^{+160}_{-160}$	$H(0.51)$	$89.92^{+0.99}_{-0.92}$		

$\bar{\chi}_{eff}^2 = 2994.70$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.00$ ;  $R - 1 = 0.00997$



### 3.17 base\_Alens\_CamSpecHM\_EE\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02349	$0.0236^{+0.0033}_{-0.0031}$	$D_{40}$	1258	$1257^{+82}_{-78}$	$D_M(0.15)$	634	$632^{+66}_{-58}$
$\Omega_c h^2$	0.1180	$0.118^{+0.014}_{-0.012}$	$D_{220}$	5982	$5998^{+520}_{-530}$	$H(0.38)$	83.7	$83.9^{+5.4}_{-4.8}$
$100\theta_{MC}$	1.03926	$1.0393^{+0.0023}_{-0.0023}$	$D_{810}$	2600	$2601^{+99}_{-100}$	$D_M(0.38)$	1514	$1510^{+130}_{-120}$
$\tau$	0.0509	$0.051^{+0.023}_{-0.026}$	$D_{1420}$	841.1	$842^{+47}_{-50}$	$H(0.51)$	90.32	$90.6^{+4.6}_{-4.0}$
$A_L$	1.14	$1.16^{+0.65}_{-0.57}$	$D_{2000}$	240.9	$242^{+19}_{-21}$	$D_M(0.51)$	1962	$1957^{+160}_{-150}$
$\ln(10^{10} A_s)$	3.059	$3.059^{+0.055}_{-0.060}$	$n_{s,0.002}$	0.9702	$0.972^{+0.038}_{-0.037}$	$H(0.61)$	95.90	$96.1^{+4.1}_{-3.3}$
$n_s$	0.9702	$0.972^{+0.038}_{-0.037}$	$Y_P$	0.24586	$0.2459^{+0.0012}_{-0.0013}$	$D_M(0.61)$	2285	$2279^{+170}_{-160}$
$y_{cal}$	1.0000	$0.9999^{+0.0064}_{-0.0063}$	$Y_P^{BBN}$	0.24719	$0.2472^{+0.0012}_{-0.0013}$	$H(2.33)$	236.2	$236.2^{+6.5}_{-5.3}$
$H_0$	68.4	$68.7^{+7.5}_{-7.3}$	$10^5 D/H$	2.39	$2.38^{+0.59}_{-0.47}$	$D_M(2.33)$	5732	$5723^{+170}_{-180}$
$\Omega_\Lambda$	0.697	$0.697^{+0.074}_{-0.10}$	Age/Gyr	13.725	$13.71^{+0.38}_{-0.41}$	$f\sigma_8(0.15)$	0.449	$0.447^{+0.086}_{-0.077}$
$\Omega_m$	0.303	$0.303^{+0.10}_{-0.074}$	$z_*$	1088.40	$1088.3^{+5.1}_{-4.2}$	$\sigma_8(0.15)$	0.7453	$0.743^{+0.036}_{-0.040}$
$\Omega_m h^2$	0.1421	$0.142^{+0.011}_{-0.0096}$	$r_*$	144.10	$144.1^{+1.7}_{-1.7}$	$f\sigma_8(0.38)$	0.469	$0.467^{+0.064}_{-0.063}$
$\Omega_m h^3$	0.09726	$0.0975^{+0.0049}_{-0.0043}$	$100\theta_*$	1.03933	$1.0394^{+0.0022}_{-0.0022}$	$\sigma_8(0.38)$	0.6616	$0.660^{+0.025}_{-0.029}$
$\sigma_8$	0.8057	$0.804^{+0.046}_{-0.051}$	$D_M(z_*)/\text{Gpc}$	13.865	$13.86^{+0.16}_{-0.16}$	$f\sigma_8(0.51)$	0.469	$0.466^{+0.052}_{-0.055}$
$S_8$	0.810	$0.81^{+0.18}_{-0.15}$	$z_{drag}$	1062.3	$1062.6^{+6.4}_{-6.4}$	$\sigma_8(0.51)$	0.6195	$0.618^{+0.022}_{-0.025}$
$\sigma_8 \Omega_m^{0.5}$	0.444	$0.442^{+0.096}_{-0.081}$	$r_{drag}$	146.40	$146.3^{+1.8}_{-1.9}$	$f\sigma_8(0.61)$	0.4643	$0.462^{+0.044}_{-0.048}$
$\sigma_8 \Omega_m^{0.25}$	0.598	$0.596^{+0.079}_{-0.074}$	$k_D$	0.14241	$0.1425^{+0.0034}_{-0.0034}$	$\sigma_8(0.61)$	0.5897	$0.589^{+0.020}_{-0.022}$
$\sigma_8/h^{0.5}$	0.974	$0.97^{+0.11}_{-0.11}$	$100\theta_D$	0.15911	$0.1590^{+0.0040}_{-0.0031}$	$f\sigma_8(2.33)$	0.2977	$0.2972^{+0.0091}_{-0.0095}$
$r_{drag} h$	100.2	$101^{+11}_{-11}$	$z_{eq}$	3380	$3377^{+260}_{-230}$	$\sigma_8(2.33)$	0.3072	$0.3070^{+0.0095}_{-0.0099}$
$\langle d^2 \rangle^{1/2}$	2.59	$2.60^{+0.59}_{-0.69}$	$k_{eq}$	0.01032	$0.01031^{+0.00081}_{-0.00070}$	$\chi_{simall}^2$	395.60	$396.8 (\nu: 1.3)$
$z_{re}$	7.07	$7.0^{+2.2}_{-2.9}$	$100\theta_{eq}$	0.819	$0.821^{+0.052}_{-0.053}$	$\chi_{CamSpec}^2$	1886.1	$1892.2 (\nu: 6.2)$
$10^9 A_s$	2.132	$2.13^{+0.12}_{-0.12}$	$100\theta_{s,eq}$	0.4515	$0.452^{+0.025}_{-0.026}$	$\chi_{prior}^2$	10.03	$11.0 (\nu: 1.0)$
$10^9 A_s e^{-2\tau}$	1.925	$1.927^{+0.065}_{-0.063}$	$H(0.15)$	73.7	$73.9^{+6.7}_{-6.3}$	$\chi_{CMB}^2$	2281.7	$2289.0 (\nu: 7.4)$

Best-fit  $\chi_{eff}^2 = 2291.75$ ;  $\Delta\chi_{eff}^2 = -0.42$ ;  $\bar{\chi}_{eff}^2 = 2300.05$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.70$ ;  $R - 1 = 0.00814$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.60 ( $\Delta$  -0.02) CamSpec like\_10.7HM\_1400\_unified: 1886.12 ( $\Delta$  -0.39)



### 3.18 base\_Alens\_CamSpecHM\_EE\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.0236^{+0.0017}_{-0.0016}$	$D_{810}$	$2601^{+87}_{-87}$	$D_M(0.51)$	$1956^{+47}_{-48}$
$\Omega_c h^2$	$0.1175^{+0.0039}_{-0.0037}$	$D_{1420}$	$842^{+37}_{-36}$	$H(0.61)$	$96.1^{+1.5}_{-1.3}$
$100\theta_{MC}$	$1.0394^{+0.0019}_{-0.0021}$	$D_{2000}$	$242^{+15}_{-14}$	$D_M(0.61)$	$2278^{+52}_{-53}$
$\tau$	$0.051^{+0.023}_{-0.026}$	$n_{s,0.002}$	$0.972^{+0.025}_{-0.027}$	$H(2.33)$	$236.0^{+2.8}_{-2.5}$
$A_L$	$1.16^{+0.59}_{-0.52}$	$Y_P$	$0.24589^{+0.00069}_{-0.00067}$	$D_M(2.33)$	$5725^{+71}_{-78}$
$\ln(10^{10} A_s)$	$3.059^{+0.056}_{-0.059}$	$Y_P^{BBN}$	$0.24722^{+0.00069}_{-0.00067}$	$f\sigma_8(0.15)$	$0.446^{+0.025}_{-0.025}$
$n_s$	$0.972^{+0.025}_{-0.027}$	$10^5 D/H$	$2.37^{+0.29}_{-0.26}$	$\sigma_8(0.15)$	$0.744^{+0.025}_{-0.025}$
$y_{cal}$	$0.99996^{+0.0065}_{-0.0065}$	$Age/Gyr$	$13.71^{+0.17}_{-0.18}$	$f\sigma_8(0.38)$	$0.466^{+0.022}_{-0.022}$
$H_0$	$68.8^{+2.3}_{-2.1}$	$z_*$	$1088.3^{+2.1}_{-2.0}$	$\sigma_8(0.38)$	$0.661^{+0.021}_{-0.021}$
$\Omega_\Lambda$	$0.700^{+0.023}_{-0.024}$	$r_*$	$144.1^{+1.3}_{-1.5}$	$f\sigma_8(0.51)$	$0.466^{+0.020}_{-0.020}$
$\Omega_m$	$0.300^{+0.024}_{-0.023}$	$100\theta_*$	$1.0394^{+0.0019}_{-0.0021}$	$\sigma_8(0.51)$	$0.619^{+0.019}_{-0.019}$
$\Omega_m h^2$	$0.1417^{+0.0039}_{-0.0035}$	$D_M(z_*)/Gpc$	$13.87^{+0.13}_{-0.15}$	$f\sigma_8(0.61)$	$0.462^{+0.018}_{-0.019}$
$\Omega_m h^3$	$0.0974^{+0.0032}_{-0.0029}$	$z_{drag}$	$1062.5^{+3.7}_{-3.7}$	$\sigma_8(0.61)$	$0.589^{+0.018}_{-0.018}$
$\sigma_8$	$0.804^{+0.027}_{-0.028}$	$r_{drag}$	$146.4^{+1.8}_{-1.9}$	$f\sigma_8(2.33)$	$0.2975^{+0.0092}_{-0.0091}$
$S_8$	$0.804^{+0.049}_{-0.048}$	$k_D$	$0.1425^{+0.0030}_{-0.0030}$	$\sigma_8(2.33)$	$0.3073^{+0.0095}_{-0.0095}$
$\sigma_8 \Omega_m^{0.5}$	$0.440^{+0.027}_{-0.027}$	$100\theta_D$	$0.1590^{+0.0022}_{-0.0020}$	$\chi_{simall}^2$	$396.8 (\nu: 1.4)$
$\sigma_8 \Omega_m^{0.25}$	$0.595^{+0.027}_{-0.027}$	$z_{eq}$	$3371^{+92}_{-84}$	$\chi_{CamSpec}^2$	$1891.3 (\nu: 5.1)$
$\sigma_8/h^{0.5}$	$0.970^{+0.039}_{-0.041}$	$k_{eq}$	$0.01029^{+0.00028}_{-0.00025}$	$\chi_{6DF}^2$	$0.057 (\nu: 0.0)$
$r_{drag} h$	$100.7^{+3.0}_{-2.9}$	$100\theta_{eq}$	$0.821^{+0.015}_{-0.016}$	$\chi_{MGS}^2$	$1.85 (\nu: 0.3)$
$\langle d^2 \rangle^{1/2}$	$2.59^{+0.59}_{-0.67}$	$100\theta_{s,eq}$	$0.4525^{+0.0079}_{-0.0082}$	$\chi_{DR12BAO}^2$	$4.6 (\nu: 0.9)$
$z_{re}$	$7.0^{+2.1}_{-2.9}$	$H(0.15)$	$73.9^{+2.1}_{-1.9}$	$\chi_{prior}^2$	$11.0 (\nu: 1.0)$
$10^9 A_s$	$2.13^{+0.12}_{-0.12}$	$D_M(0.15)$	$631^{+19}_{-19}$	$\chi_{BAO}^2$	$6.5 (\nu: 0.9)$
$10^9 A_s e^{-2\tau}$	$1.925^{+0.065}_{-0.063}$	$H(0.38)$	$83.9^{+1.7}_{-1.6}$	$\chi_{CMB}^2$	$2288.1 (\nu: 6.5)$
$D_{40}$	$1256^{+85}_{-80}$	$D_M(0.38)$	$1509^{+39}_{-40}$		
$D_{220}$	$5995^{+340}_{-350}$	$H(0.51)$	$90.5^{+1.6}_{-1.4}$		

$$\bar{\chi}_{eff}^2 = 2305.61; \Delta\bar{\chi}_{eff}^2 = 0.72; R - 1 = 0.01338$$



### 3.19 base\_Alens\_CamSpecHM\_EE\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.0236^{+0.0033}_{-0.0032}$	$D_{40}$	$1256^{+82}_{-80}$	$D_{\mathrm{M}}(0.15)$	$633^{+68}_{-58}$
$\Omega_{\mathrm{c}}h^2$	$0.118^{+0.014}_{-0.012}$	$D_{220}$	$5990^{+510}_{-530}$	$H(0.38)$	$83.9^{+5.3}_{-4.9}$
$100\theta_{\mathrm{MC}}$	$1.0393^{+0.0023}_{-0.0023}$	$D_{810}$	$2600^{+97}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1511^{+140}_{-120}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$D_{1420}$	$842^{+46}_{-50}$	$H(0.51)$	$90.5^{+4.6}_{-4.0}$
$A_{\mathrm{L}}$	$1.16^{+0.64}_{-0.56}$	$D_{2000}$	$241^{+19}_{-21}$	$D_{\mathrm{M}}(0.51)$	$1958^{+160}_{-150}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.066^{+0.050}_{-0.045}$	$n_{\mathrm{s},0.002}$	$0.972^{+0.038}_{-0.038}$	$H(0.61)$	$96.1^{+4.0}_{-3.3}$
$n_{\mathrm{s}}$	$0.972^{+0.038}_{-0.038}$	$Y_{\mathrm{P}}$	$0.2459^{+0.0012}_{-0.0013}$	$D_{\mathrm{M}}(0.61)$	$2280^{+170}_{-160}$
$y_{\mathrm{cal}}$	$0.99996^{+0.0064}_{-0.0063}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2472^{+0.0012}_{-0.0013}$	$H(2.33)$	$236.2^{+6.5}_{-5.3}$
$H_0$	$68.7^{+7.5}_{-7.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.38^{+0.60}_{-0.47}$	$D_{\mathrm{M}}(2.33)$	$5725^{+170}_{-180}$
$\Omega_{\Lambda}$	$0.697^{+0.074}_{-0.10}$	Age/Gyr	$13.71^{+0.39}_{-0.40}$	$f\sigma_8(0.15)$	$0.449^{+0.087}_{-0.077}$
$\Omega_{\mathrm{m}}$	$0.303^{+0.10}_{-0.074}$	$z_*$	$1088.3^{+5.1}_{-4.1}$	$\sigma_8(0.15)$	$0.746^{+0.034}_{-0.039}$
$\Omega_{\mathrm{m}}h^2$	$0.142^{+0.011}_{-0.0094}$	$r_*$	$144.1^{+1.7}_{-1.8}$	$f\sigma_8(0.38)$	$0.469^{+0.064}_{-0.063}$
$\Omega_{\mathrm{m}}h^3$	$0.0974^{+0.0048}_{-0.0044}$	$100\theta_*$	$1.0394^{+0.0022}_{-0.0021}$	$\sigma_8(0.38)$	$0.663^{+0.024}_{-0.027}$
$\sigma_8$	$0.807^{+0.045}_{-0.049}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.86^{+0.16}_{-0.17}$	$f\sigma_8(0.51)$	$0.468^{+0.052}_{-0.054}$
$S_8$	$0.81^{+0.18}_{-0.15}$	$z_{\mathrm{drag}}$	$1062.5^{+6.3}_{-6.5}$	$\sigma_8(0.51)$	$0.621^{+0.020}_{-0.022}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.097}_{-0.081}$	$r_{\mathrm{drag}}$	$146.4^{+1.8}_{-1.9}$	$f\sigma_8(0.61)$	$0.464^{+0.044}_{-0.048}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.598^{+0.080}_{-0.073}$	$k_{\mathrm{D}}$	$0.1425^{+0.0033}_{-0.0035}$	$\sigma_8(0.61)$	$0.591^{+0.018}_{-0.019}$
$\sigma_8/h^{0.5}$	$0.97^{+0.11}_{-0.10}$	$100\theta_{\mathrm{D}}$	$0.1591^{+0.0040}_{-0.0031}$	$f\sigma_8(2.33)$	$0.2983^{+0.0084}_{-0.0080}$
$r_{\mathrm{drag}}h$	$101^{+11}_{-11}$	$z_{\mathrm{eq}}$	$3377^{+270}_{-220}$	$\sigma_8(2.33)$	$0.3081^{+0.0089}_{-0.0081}$
$\langle d^2 \rangle^{1/2}$	$2.60^{+0.58}_{-0.69}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00082}_{-0.00068}$	$\chi_{\mathrm{simall}}^2$	$396.5 (\nu: 1.0)$
$z_{\mathrm{re}}$	$< 9.03$	$100\theta_{\mathrm{eq}}$	$0.821^{+0.051}_{-0.054}$	$\chi_{\mathrm{CamSpec}}^2$	$1892.2 (\nu: 6.3)$
$10^9 A_{\mathrm{s}}$	$2.15^{+0.11}_{-0.094}$	$100\theta_{\mathrm{s,eq}}$	$0.452^{+0.024}_{-0.026}$	$\chi_{\mathrm{prior}}^2$	$11.0 (\nu: 1.0)$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.926^{+0.065}_{-0.064}$	$H(0.15)$	$73.9^{+6.7}_{-6.5}$	$\chi_{\mathrm{CMB}}^2$	$2288.7 (\nu: 7.1)$

$\bar{\chi}_{\mathrm{eff}}^2 = 2299.69$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.72$ ;  $R - 1 = 0.00845$



### 3.20 base\_Alens\_CamSpecHM\_EE\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.0236^{+0.0017}_{-0.0016}$	$D_{810}$	$2601^{+88}_{-86}$	$D_M(0.51)$	$1957^{+47}_{-48}$
$\Omega_c h^2$	$0.1175^{+0.0039}_{-0.0037}$	$D_{1420}$	$842^{+38}_{-35}$	$H(0.61)$	$96.0^{+1.5}_{-1.3}$
$100\theta_{MC}$	$1.0393^{+0.0019}_{-0.0020}$	$D_{2000}$	$242^{+15}_{-14}$	$D_M(0.61)$	$2279^{+52}_{-53}$
$\tau$	$0.054^{+0.019}_{-0.011}$	$n_s, 0.002$	$0.972^{+0.025}_{-0.026}$	$H(2.33)$	$235.9^{+2.8}_{-2.5}$
$A_L$	$1.15^{+0.59}_{-0.53}$	$Y_P$	$0.24588^{+0.00068}_{-0.00068}$	$D_M(2.33)$	$5726^{+70}_{-77}$
$\ln(10^{10} A_s)$	$3.066^{+0.050}_{-0.044}$	$Y_P^{BBN}$	$0.24721^{+0.00068}_{-0.00068}$	$f\sigma_8(0.15)$	$0.447^{+0.025}_{-0.024}$
$n_s$	$0.972^{+0.025}_{-0.026}$	$10^5 D/H$	$2.38^{+0.29}_{-0.26}$	$\sigma_8(0.15)$	$0.747^{+0.024}_{-0.019}$
$y_{cal}$	$0.99997^{+0.0065}_{-0.0065}$	Age/Gyr	$13.71^{+0.17}_{-0.18}$	$f\sigma_8(0.38)$	$0.468^{+0.021}_{-0.020}$
$H_0$	$68.7^{+2.2}_{-2.1}$	$z_*$	$1088.3^{+2.1}_{-2.0}$	$\sigma_8(0.38)$	$0.663^{+0.020}_{-0.015}$
$\Omega_\Lambda$	$0.700^{+0.023}_{-0.024}$	$r_*$	$144.2^{+1.3}_{-1.4}$	$f\sigma_8(0.51)$	$0.468^{+0.019}_{-0.018}$
$\Omega_m$	$0.300^{+0.024}_{-0.023}$	$100\theta_*$	$1.0394^{+0.0019}_{-0.0021}$	$\sigma_8(0.51)$	$0.621^{+0.019}_{-0.014}$
$\Omega_m h^2$	$0.1417^{+0.0038}_{-0.0034}$	$D_M(z_*)/\text{Gpc}$	$13.87^{+0.13}_{-0.14}$	$f\sigma_8(0.61)$	$0.464^{+0.017}_{-0.016}$
$\Omega_m h^3$	$0.0974^{+0.0032}_{-0.0030}$	$z_{drag}$	$1062.5^{+3.7}_{-3.6}$	$\sigma_8(0.61)$	$0.591^{+0.017}_{-0.013}$
$\sigma_8$	$0.807^{+0.027}_{-0.022}$	$r_{drag}$	$146.4^{+1.8}_{-1.9}$	$f\sigma_8(2.33)$	$0.2986^{+0.0082}_{-0.0065}$
$S_8$	$0.807^{+0.048}_{-0.046}$	$k_D$	$0.1424^{+0.0030}_{-0.0029}$	$\sigma_8(2.33)$	$0.3084^{+0.0086}_{-0.0069}$
$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.026}_{-0.025}$	$100\theta_D$	$0.1591^{+0.0022}_{-0.0020}$	$\chi_{simall}^2$	$396.5 (\nu: 1.0)$
$\sigma_8 \Omega_m^{0.25}$	$0.597^{+0.025}_{-0.024}$	$z_{eq}$	$3370^{+91}_{-82}$	$\chi_{CamSpec}^2$	$1891.3 (\nu: 5.1)$
$\sigma_8/h^{0.5}$	$0.973^{+0.037}_{-0.034}$	$k_{eq}$	$0.01029^{+0.00028}_{-0.00025}$	$\chi_{6DF}^2$	$0.055 (\nu: 0.0)$
$r_{drag} h$	$100.6^{+3.0}_{-2.9}$	$100\theta_{eq}$	$0.821^{+0.015}_{-0.016}$	$\chi_{MGS}^2$	$1.85 (\nu: 0.2)$
$\langle d^2 \rangle^{1/2}$	$2.59^{+0.60}_{-0.67}$	$100\theta_{s,eq}$	$0.4526^{+0.0079}_{-0.0081}$	$\chi_{DR12BAO}^2$	$4.6 (\nu: 0.9)$
$z_{re}$	$< 9.08$	$H(0.15)$	$73.9^{+2.0}_{-1.9}$	$\chi_{prior}^2$	$11.0 (\nu: 1.0)$
$10^9 A_s$	$2.15^{+0.11}_{-0.093}$	$D_M(0.15)$	$632^{+19}_{-19}$	$\chi_{BAO}^2$	$6.5 (\nu: 0.9)$
$10^9 A_s e^{-2\tau}$	$1.924^{+0.065}_{-0.063}$	$H(0.38)$	$83.9^{+1.7}_{-1.6}$	$\chi_{CMB}^2$	$2287.7 (\nu: 6.1)$
$D_{40}$	$1255^{+79}_{-80}$	$D_M(0.38)$	$1509^{+39}_{-39}$		
$D_{220}$	$5988^{+340}_{-350}$	$H(0.51)$	$90.5^{+1.6}_{-1.4}$		

$\bar{\chi}_{eff}^2 = 2305.22$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.71$ ;  $R - 1 = 0.01446$



### 3.21 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022439	$0.02243^{+0.00049}_{-0.00045}$	$S_8$	0.8055	$0.805^{+0.048}_{-0.048}$	$H(0.15)$	73.34	$73.3^{+1.6}_{-1.6}$
$\Omega_c h^2$	0.11807	$0.1182^{+0.0040}_{-0.0040}$	$\sigma_8 \Omega_m^{0.5}$	0.4412	$0.441^{+0.026}_{-0.026}$	$D_M(0.15)$	636.8	$637^{+16}_{-16}$
$100\theta_{MC}$	1.04105	$1.04104^{+0.00084}_{-0.00086}$	$\sigma_8 \Omega_m^{0.25}$	0.5941	$0.594^{+0.024}_{-0.026}$	$H(0.38)$	83.32	$83.3^{+1.2}_{-1.1}$
$\tau$	0.0504	$0.049^{+0.020}_{-0.025}$	$\sigma_8/h^{0.5}$	0.9693	$0.969^{+0.035}_{-0.036}$	$D_M(0.38)$	1520.5	$1521^{+31}_{-32}$
$A_L$	1.062	$1.06^{+0.11}_{-0.10}$	$r_{drag}h$	100.52	$100.5^{+3.3}_{-3.1}$	$H(0.51)$	89.96	$89.94^{+0.97}_{-0.90}$
$\ln(10^{10} A_s)$	3.0296	$3.027^{+0.042}_{-0.050}$	$\langle d^2 \rangle^{1/2}$	2.472	$2.471^{+0.078}_{-0.077}$	$D_M(0.51)$	1970.8	$1972^{+36}_{-37}$
$n_s$	0.9700	$0.970^{+0.013}_{-0.013}$	$z_{re}$	7.24	$7.1^{+1.9}_{-2.9}$	$H(0.61)$	95.52	$95.51^{+0.80}_{-0.72}$
$y_{cal}$	1.0000	$1.0000^{+0.0062}_{-0.0062}$	$10^9 A_s$	2.069	$2.063^{+0.088}_{-0.10}$	$D_M(0.61)$	2294.3	$2295^{+39}_{-40}$
$A_{100}^{PS}$	240	$237^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8704	$1.871^{+0.031}_{-0.031}$	$H(2.33)$	235.37	$235.4^{+2.3}_{-2.3}$
$A_{143}^{PS}$	37	$38^{+20}_{-20}$	$D_{40}$	1215.4	$1216^{+36}_{-35}$	$D_M(2.33)$	5754.4	$5755^{+33}_{-35}$
$A_{217}^{PS}$	105.3	$103^{+30}_{-40}$	$D_{220}$	5721	$5721^{+100}_{-97}$	$f\sigma_8(0.15)$	0.4463	$0.446^{+0.024}_{-0.025}$
$A_{217}^{CIB}$	37.5	$39^{+20}_{-20}$	$D_{810}$	2530.1	$2530^{+35}_{-35}$	$\sigma_8(0.15)$	0.7401	$0.739^{+0.019}_{-0.021}$
$A_{143}^{tSZ}$	3.47	$< 8.79$	$D_{1420}$	815.2	$815^{+12}_{-12}$	$f\sigma_8(0.38)$	0.4661	$0.466^{+0.020}_{-0.021}$
$r_{143 \times 217}^{PS}$	0.676	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	230.79	$230.6^{+4.2}_{-4.1}$	$\sigma_8(0.38)$	0.6569	$0.656^{+0.015}_{-0.018}$
$r_{143 \times 217}^{CIB}$	0.41	—	$n_{s,0.002}$	0.9700	$0.970^{+0.013}_{-0.013}$	$f\sigma_8(0.51)$	0.4656	$0.465^{+0.017}_{-0.019}$
$\xi^{tSZ \times CIB}$	0.36	—	$Y_P$	0.245422	$0.24542^{+0.00019}_{-0.00018}$	$\sigma_8(0.51)$	0.6150	$0.614^{+0.014}_{-0.016}$
$A^{kSZ}$	4.7	—	$Y_P^{BBN}$	0.246749	$0.24674^{+0.00019}_{-0.00019}$	$f\sigma_8(0.61)$	0.4612	$0.461^{+0.016}_{-0.017}$
$A_{100}^{dust}$	1.02	$1.02^{+0.50}_{-0.51}$	$10^5 D/H$	2.573	$2.576^{+0.084}_{-0.088}$	$\sigma_8(0.61)$	0.5854	$0.585^{+0.013}_{-0.015}$
$A_{143}^{dust}$	0.957	$0.96^{+0.44}_{-0.46}$	Age/Gyr	13.778	$13.780^{+0.072}_{-0.078}$	$f\sigma_8(2.33)$	0.2955	$0.2950^{+0.0065}_{-0.0074}$
$A_{217}^{dust}$	0.971	$0.98^{+0.26}_{-0.26}$	$z_*$	1089.66	$1089.69^{+0.83}_{-0.86}$	$\sigma_8(2.33)$	0.3050	$0.3045^{+0.0066}_{-0.0075}$
$A_{143 \times 217}^{dust}$	1.052	$1.02^{+0.42}_{-0.42}$	$r_*$	144.88	$144.87^{+0.87}_{-0.84}$	$f_{2000}^{143}$	28.5	$29^{+7}_{-7}$
$c_{100}$	0.99749	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04123	$1.04122^{+0.00082}_{-0.00084}$	$f_{2000}^{217}$	106.0	$106.1^{+5.1}_{-5.1}$
$c_{217}$	1.00069	$1.0010^{+0.0041}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	13.914	$13.913^{+0.081}_{-0.077}$	$f_{2000}^{143 \times 217}$	31.3	$31^{+5}_{-5}$
$c_{TE}$	0.9949	$0.995^{+0.014}_{-0.012}$	$z_{drag}$	1059.97	$1059.94^{+0.95}_{-0.88}$	$\chi^2_{lensing}$	9.02	$9.8 (\nu: 1.4)$
$c_{EE}$	0.9915	$0.992^{+0.012}_{-0.013}$	$r_{drag}$	147.53	$147.52^{+0.85}_{-0.83}$	$\chi^2_{small}$	395.66	$396.8 (\nu: 1.1)$
$H_0$	68.14	$68.1^{+1.9}_{-1.8}$	$k_D$	0.14046	$0.14046^{+0.00088}_{-0.00091}$	$\chi^2_{lowl}$	22.23	$22.37 (\nu: 0.4)$
$\Omega_\Lambda$	0.6960	$0.695^{+0.024}_{-0.025}$	$100\theta_D$	0.16074	$0.16076^{+0.00053}_{-0.00054}$	$\chi^2_{CamSpec}$	11498.6	$11513.3 (\nu: 16.1)$
$\Omega_m$	0.3040	$0.305^{+0.025}_{-0.024}$	$z_{eq}$	3358	$3360^{+88}_{-89}$	$\chi^2_{prior}$	2.1	$7.7 (\nu: 5.5)$
$\Omega_m h^2$	0.14115	$0.1412^{+0.0037}_{-0.0037}$	$k_{eq}$	0.010248	$0.01025^{+0.00027}_{-0.00027}$	$\chi^2_{CMB}$	11925.5	$11942.2 (\nu: 17.0)$
$\Omega_m h^3$	0.09618	$0.09616^{+0.00083}_{-0.00078}$	$100\theta_{eq}$	0.8216	$0.821^{+0.018}_{-0.017}$			
$\sigma_8$	0.8001	$0.799^{+0.021}_{-0.024}$	$100\theta_{s,eq}$	0.4537	$0.4535^{+0.0091}_{-0.0086}$			

Best-fit  $\chi^2_{eff} = 11927.65$ ;  $\Delta\chi^2_{eff} = -2.01$ ;  $\bar{\chi}^2_{eff} = 11949.88$ ;  $\Delta\bar{\chi}^2_{eff} = -1.56$ ;  $R - 1 = 0.01480$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.02 ( $\Delta$  0.19) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 ( $\Delta$  -0.21) commander\_dx12\_v3\_2\_29: 22.23 ( $\Delta$  -0.99) CamSpec like\_10.7HM\_1400\_unified: 11498.60 ( $\Delta$  -1.05)



### 3.22 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02242^{+0.00041}_{-0.00039}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.441^{+0.020}_{-0.020}$	$H(0.38)$	$83.29^{+0.84}_{-0.81}$
$\Omega_{\text{c}} h^2$	$0.1182^{+0.0028}_{-0.0028}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.594^{+0.020}_{-0.021}$	$D_{\text{M}}(0.38)$	$1521^{+22}_{-22}$
$100\theta_{\text{MC}}$	$1.04104^{+0.00073}_{-0.00075}$	$\sigma_8/h^{0.5}$	$0.969^{+0.029}_{-0.031}$	$H(0.51)$	$89.94^{+0.68}_{-0.65}$
$\tau$	$0.049^{+0.020}_{-0.025}$	$r_{\text{drag}} h$	$100.4^{+2.2}_{-2.2}$	$D_{\text{M}}(0.51)$	$1972^{+26}_{-26}$
$A_{\text{L}}$	$1.064^{+0.098}_{-0.093}$	$\langle d^2 \rangle^{1/2}$	$2.471^{+0.080}_{-0.078}$	$H(0.61)$	$95.50^{+0.58}_{-0.54}$
$\ln(10^{10} A_{\text{s}})$	$3.027^{+0.042}_{-0.051}$	$z_{\text{re}}$	$7.1^{+2.0}_{-2.9}$	$D_{\text{M}}(0.61)$	$2295^{+28}_{-28}$
$n_{\text{s}}$	$0.969^{+0.011}_{-0.011}$	$10^9 A_{\text{s}}$	$2.063^{+0.089}_{-0.10}$	$H(2.33)$	$235.4^{+1.7}_{-1.7}$
$y_{\text{cal}}$	$1.0000^{+0.0062}_{-0.0063}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.871^{+0.028}_{-0.027}$	$D_{\text{M}}(2.33)$	$5755^{+25}_{-27}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$D_{40}$	$1216^{+34}_{-31}$	$f\sigma_8(0.15)$	$0.446^{+0.019}_{-0.019}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5720^{+100}_{-94}$	$\sigma_8(0.15)$	$0.739^{+0.018}_{-0.020}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2530^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.466^{+0.016}_{-0.017}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-13}$	$\sigma_8(0.38)$	$0.656^{+0.015}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$D_{2000}$	$230.6^{+4.2}_{-4.1}$	$f\sigma_8(0.51)$	$0.465^{+0.014}_{-0.016}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{\text{s},0.002}$	$0.969^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.614^{+0.014}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24541^{+0.00016}_{-0.00016}$	$f\sigma_8(0.61)$	$0.461^{+0.014}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24674^{+0.00016}_{-0.00016}$	$\sigma_8(0.61)$	$0.585^{+0.013}_{-0.015}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.576^{+0.073}_{-0.074}$	$f\sigma_8(2.33)$	$0.2950^{+0.0065}_{-0.0074}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.781^{+0.057}_{-0.060}$	$\sigma_8(2.33)$	$0.3045^{+0.0067}_{-0.0077}$
$A_{143}^{\text{dust}}$	$0.96^{+0.43}_{-0.46}$	$z_*$	$1089.69^{+0.65}_{-0.65}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$r_*$	$144.87^{+0.66}_{-0.65}$	$f_{2000}^{217}$	$106.1^{+5.1}_{-4.9}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.42}$	$100\theta_*$	$1.04122^{+0.00073}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$31^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.913^{+0.063}_{-0.061}$	$\chi_{\text{lensing}}^2$	$9.8 (\nu: 1.4)$
$c_{217}$	$1.0010^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1059.93^{+0.88}_{-0.84}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.1)$
$c_{TE}$	$0.995^{+0.014}_{-0.012}$	$r_{\text{drag}}$	$147.52^{+0.68}_{-0.67}$	$\chi_{\text{lowl}}^2$	$22.35 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14046^{+0.00082}_{-0.00081}$	$\chi_{\text{CamSpec}}^2$	$11512.7 (\nu: 15.3)$
$H_0$	$68.1^{+1.3}_{-1.3}$	$100\theta_{\text{D}}$	$0.16076^{+0.00049}_{-0.00050}$	$\chi_{6\text{DF}}^2$	$0.031 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.695^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3360^{+64}_{-63}$	$\chi_{\text{MGS}}^2$	$1.74 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.305^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01025^{+0.00019}_{-0.00019}$	$\chi_{\text{DR12BAO}}^2$	$3.99 (\nu: 0.4)$
$\Omega_{\text{m}} h^2$	$0.1412^{+0.0027}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.821^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.5)$
$\Omega_{\text{m}} h^3$	$0.09616^{+0.00080}_{-0.00077}$	$100\theta_{\text{s,eq}}$	$0.4535^{+0.0063}_{-0.0061}$	$\chi_{\text{CMB}}^2$	$11941.7 (\nu: 16.6)$
$\sigma_8$	$0.799^{+0.020}_{-0.023}$	$H(0.15)$	$73.3^{+1.1}_{-1.1}$	$\chi_{\text{BAO}}^2$	$5.76 (\nu: 0.3)$
$S_8$	$0.805^{+0.036}_{-0.036}$	$D_{\text{M}}(0.15)$	$637^{+11}_{-11}$		

$$\bar{\chi}_{\text{eff}}^2 = 11955.09; \Delta\bar{\chi}_{\text{eff}}^2 = -2.31; R - 1 = 0.01872$$



### 3.23 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02243^{+0.00049}_{-0.00045}$	$S_8$	$0.808^{+0.047}_{-0.047}$	$H(0.15)$	$73.3^{+1.7}_{-1.5}$
$\Omega_c h^2$	$0.1181^{+0.0039}_{-0.0041}$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.026}_{-0.026}$	$D_M(0.15)$	$637^{+15}_{-16}$
$100\theta_{MC}$	$1.04104^{+0.00085}_{-0.00086}$	$\sigma_8 \Omega_m^{0.25}$	$0.595^{+0.023}_{-0.024}$	$H(0.38)$	$83.3^{+1.2}_{-1.1}$
$\tau$	$0.0522^{+0.016}_{-0.0099}$	$\sigma_8/h^{0.5}$	$0.971^{+0.033}_{-0.033}$	$D_M(0.38)$	$1521^{+31}_{-32}$
$A_L$	$1.06^{+0.10}_{-0.10}$	$r_{\text{drag}} h$	$100.5^{+3.3}_{-3.1}$	$H(0.51)$	$89.95^{+0.97}_{-0.91}$
$\ln(10^{10} A_s)$	$3.033^{+0.037}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	$2.471^{+0.080}_{-0.077}$	$D_M(0.51)$	$1972^{+36}_{-38}$
$n_s$	$0.970^{+0.013}_{-0.013}$	$z_{\text{re}}$	$< 8.90$	$H(0.61)$	$95.51^{+0.80}_{-0.73}$
$y_{\text{cal}}$	$0.99998^{+0.0063}_{-0.0063}$	$10^9 A_s$	$2.076^{+0.078}_{-0.052}$	$D_M(0.61)$	$2295^{+39}_{-41}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.031}_{-0.031}$	$H(2.33)$	$235.4^{+2.3}_{-2.4}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{40}$	$1217^{+37}_{-35}$	$D_M(2.33)$	$5755^{+33}_{-35}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{220}$	$5720^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.447^{+0.024}_{-0.024}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2530^{+35}_{-35}$	$\sigma_8(0.15)$	$0.741^{+0.017}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{1420}$	$815^{+12}_{-13}$	$f\sigma_8(0.38)$	$0.467^{+0.019}_{-0.020}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.33}_{-0.31}$	$D_{2000}$	$230.7^{+4.2}_{-4.2}$	$\sigma_8(0.38)$	$0.658^{+0.014}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.970^{+0.013}_{-0.013}$	$f\sigma_8(0.51)$	$0.467^{+0.017}_{-0.017}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24542^{+0.00019}_{-0.00019}$	$\sigma_8(0.51)$	$0.616^{+0.013}_{-0.0099}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24674^{+0.00019}_{-0.00019}$	$f\sigma_8(0.61)$	$0.462^{+0.015}_{-0.015}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.51}$	$10^5 D/H$	$2.576^{+0.085}_{-0.088}$	$\sigma_8(0.61)$	$0.586^{+0.012}_{-0.0090}$
$A_{143}^{\text{dust}}$	$0.96^{+0.43}_{-0.46}$	$\text{Age/Gyr}$	$13.780^{+0.073}_{-0.078}$	$f\sigma_8(2.33)$	$0.2959^{+0.0057}_{-0.0041}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.69^{+0.84}_{-0.86}$	$\sigma_8(2.33)$	$0.3054^{+0.0060}_{-0.0040}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.42}$	$r_*$	$144.87^{+0.89}_{-0.82}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04122^{+0.00083}_{-0.00084}$	$f_{2000}^{217}$	$106.1^{+5.2}_{-5.1}$
$c_{217}$	$1.0010^{+0.0041}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	$13.914^{+0.081}_{-0.076}$	$f_{2000}^{143 \times 217}$	$31^{+5}_{-5}$
$c_{TE}$	$0.995^{+0.014}_{-0.012}$	$z_{\text{drag}}$	$1059.93^{+0.95}_{-0.92}$	$\chi_{\text{lensing}}^2$	$9.8 (\nu: 1.5)$
$c_{EE}$	$0.992^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$147.52^{+0.85}_{-0.80}$	$\chi_{\text{simall}}^2$	$396.31 (\nu: 0.5)$
$H_0$	$68.1^{+1.9}_{-1.8}$	$k_D$	$0.14045^{+0.00088}_{-0.00092}$	$\chi_{\text{lowl}}^2$	$22.43 (\nu: 0.5)$
$\Omega_\Lambda$	$0.695^{+0.024}_{-0.025}$	$100\theta_D$	$0.16076^{+0.00053}_{-0.00054}$	$\chi_{\text{CamSpec}}^2$	$11513.3 (\nu: 16.5)$
$\Omega_m$	$0.305^{+0.025}_{-0.024}$	$z_{\text{eq}}$	$3359^{+86}_{-91}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.5)$
$\Omega_m h^2$	$0.1412^{+0.0036}_{-0.0038}$	$k_{\text{eq}}$	$0.01025^{+0.00026}_{-0.00028}$	$\chi_{\text{CMB}}^2$	$11941.9 (\nu: 17.0)$
$\Omega_m h^3$	$0.09616^{+0.00083}_{-0.00079}$	$100\theta_{\text{eq}}$	$0.821^{+0.018}_{-0.016}$		
$\sigma_8$	$0.802^{+0.020}_{-0.018}$	$100\theta_{s,\text{eq}}$	$0.4536^{+0.0093}_{-0.0084}$		

$$\bar{\chi}_{\text{eff}}^2 = 11949.57; \Delta\bar{\chi}_{\text{eff}}^2 = -1.67; R - 1 = 0.01602$$



### 3.24 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02242^{+0.00041}_{-0.00039}$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.019}_{-0.018}$	$H(0.38)$	$83.29^{+0.85}_{-0.81}$
$\Omega_c h^2$	$0.1182^{+0.0028}_{-0.0028}$	$\sigma_8 \Omega_m^{0.25}$	$0.596^{+0.019}_{-0.018}$	$D_M(0.38)$	$1521^{+22}_{-22}$
$100\theta_{MC}$	$1.04104^{+0.00074}_{-0.00077}$	$\sigma_8/h^{0.5}$	$0.972^{+0.027}_{-0.025}$	$H(0.51)$	$89.94^{+0.69}_{-0.66}$
$\tau$	$0.052^{+0.016}_{-0.010}$	$r_{\text{drag}} h$	$100.5^{+2.2}_{-2.2}$	$D_M(0.51)$	$1972^{+26}_{-26}$
$A_L$	$1.057^{+0.092}_{-0.092}$	$\langle d^2 \rangle^{1/2}$	$2.471^{+0.082}_{-0.078}$	$H(0.61)$	$95.50^{+0.58}_{-0.54}$
$\ln(10^{10} A_s)$	$3.033^{+0.036}_{-0.025}$	$z_{\text{re}}$	$< 8.95$	$D_M(0.61)$	$2295^{+28}_{-28}$
$n_s$	$0.970^{+0.011}_{-0.011}$	$10^9 A_s$	$2.076^{+0.077}_{-0.051}$	$H(2.33)$	$235.4^{+1.7}_{-1.7}$
$y_{\text{cal}}$	$1.0000^{+0.0063}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.029}_{-0.027}$	$D_M(2.33)$	$5755^{+26}_{-27}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-70}$	$D_{40}$	$1217^{+34}_{-31}$	$f\sigma_8(0.15)$	$0.448^{+0.018}_{-0.018}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5720^{+100}_{-94}$	$\sigma_8(0.15)$	$0.741^{+0.016}_{-0.012}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2530^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.467^{+0.015}_{-0.015}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-13}$	$\sigma_8(0.38)$	$0.658^{+0.013}_{-0.0099}$
$A_{143}^{\text{tSZ}}$	$< 8.68$	$D_{2000}$	$230.6^{+4.2}_{-4.1}$	$f\sigma_8(0.51)$	$0.467^{+0.014}_{-0.013}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	$0.970^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.616^{+0.012}_{-0.0089}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.24541^{+0.00016}_{-0.00016}$	$f\sigma_8(0.61)$	$0.462^{+0.012}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24674^{+0.00016}_{-0.00016}$	$\sigma_8(0.61)$	$0.586^{+0.012}_{-0.0083}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.576^{+0.073}_{-0.074}$	$f\sigma_8(2.33)$	$0.2959^{+0.0058}_{-0.0040}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.51}$	Age/Gyr	$13.781^{+0.057}_{-0.059}$	$\sigma_8(2.33)$	$0.3054^{+0.0060}_{-0.0040}$
$A_{143}^{\text{dust}}$	$0.96^{+0.43}_{-0.44}$	$z_*$	$1089.69^{+0.65}_{-0.66}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$r_*$	$144.87^{+0.66}_{-0.65}$	$f_{2000}^{217}$	$106.1^{+5.1}_{-4.9}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.42}$	$100\theta_*$	$1.04122^{+0.00073}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$31^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.913^{+0.063}_{-0.061}$	$\chi_{\text{lensing}}^2$	$9.8 (\nu: 1.5)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	$1059.93^{+0.88}_{-0.83}$	$\chi_{\text{simall}}^2$	$396.31 (\nu: 0.5)$
$c_{TE}$	$0.995^{+0.014}_{-0.012}$	$r_{\text{drag}}$	$147.52^{+0.68}_{-0.68}$	$\chi_{\text{lowl}}^2$	$22.41 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.014}$	$k_D$	$0.14045^{+0.00081}_{-0.00081}$	$\chi_{\text{CamSpec}}^2$	$11512.7 (\nu: 15.6)$
$H_0$	$68.1^{+1.3}_{-1.3}$	$100\theta_D$	$0.16076^{+0.00049}_{-0.00050}$	$\chi_{6\text{DF}}^2$	$0.031 (\nu: 0.0)$
$\Omega_\Lambda$	$0.695^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3359^{+63}_{-63}$	$\chi_{\text{MGS}}^2$	$1.74 (\nu: 0.1)$
$\Omega_m$	$0.305^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01025^{+0.00019}_{-0.00019}$	$\chi_{\text{DR12BAO}}^2$	$3.99 (\nu: 0.4)$
$\Omega_m h^2$	$0.1412^{+0.0026}_{-0.0027}$	$100\theta_{\text{eq}}$	$0.821^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.6)$
$\Omega_m h^3$	$0.09616^{+0.00079}_{-0.00079}$	$100\theta_{s,\text{eq}}$	$0.4535^{+0.0063}_{-0.0061}$	$\chi_{\text{CMB}}^2$	$11941.3 (\nu: 16.5)$
$\sigma_8$	$0.802^{+0.018}_{-0.015}$	$H(0.15)$	$73.3^{+1.1}_{-1.1}$	$\chi_{\text{BAO}}^2$	$5.76 (\nu: 0.3)$
$S_8$	$0.808^{+0.035}_{-0.034}$	$D_M(0.15)$	$637^{+11}_{-11}$		

$$\bar{\chi}_{\text{eff}}^2 = 11954.75; \Delta\bar{\chi}_{\text{eff}}^2 = -2.51; R - 1 = 0.02132$$



### 3.25 base\_Alens\_CamSpecHM\_TT

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02262	$0.02256^{+0.00082}_{-0.00077}$	$S_8$	0.848	$0.83^{+0.13}_{-0.11}$	$100\theta_{\text{eq}}$	0.8273	$0.826^{+0.032}_{-0.031}$
$\Omega_c h^2$	0.1168	$0.1172^{+0.0073}_{-0.0070}$	$\sigma_8 \Omega_m^{0.5}$	0.464	$0.457^{+0.072}_{-0.062}$	$100\theta_{\text{s,eq}}$	0.4565	$0.456^{+0.016}_{-0.016}$
$100\theta_{\text{MC}}$	1.04141	$1.0414^{+0.0014}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	0.630	$0.618^{+0.086}_{-0.071}$	$H(0.15)$	73.98	$73.8^{+3.0}_{-2.9}$
$\tau$	0.121	$< 0.218$	$\sigma_8/h^{0.5}$	1.030	$1.01^{+0.14}_{-0.11}$	$D_{\text{M}}(0.15)$	630.6	$633^{+29}_{-28}$
$A_{\text{L}}$	1.080	$1.12^{+0.37}_{-0.31}$	$r_{\text{drag}} h$	101.7	$101.3^{+5.9}_{-5.8}$	$H(0.38)$	83.81	$83.7^{+2.3}_{-2.1}$
$\ln(10^{10} A_{\text{s}})$	3.169	$3.12^{+0.24}_{-0.19}$	$\langle d^2 \rangle^{1/2}$	2.642	$2.63^{+0.20}_{-0.21}$	$D_{\text{M}}(0.38)$	1508	$1512^{+58}_{-57}$
$n_{\text{s}}$	0.9764	$0.974^{+0.022}_{-0.022}$	$z_{\text{re}}$	13.4	$11.0^{+9.4}_{-9.2}$	$H(0.51)$	90.37	$90.3^{+1.8}_{-1.7}$
$A_{100}^{\text{PS}}$	220	$230^{+70}_{-70}$	$10^9 A_{\text{s}}$	2.38	$2.28^{+0.60}_{-0.41}$	$D_{\text{M}}(0.51)$	1956	$1961^{+68}_{-67}$
$A_{143}^{\text{PS}}$	43.7	$34^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8663	$1.867^{+0.041}_{-0.041}$	$H(0.61)$	95.86	$95.8^{+1.5}_{-1.3}$
$A_{217}^{\text{PS}}$	108.4	$104^{+30}_{-30}$	$D_{40}$	1235	$1233^{+88}_{-64}$	$D_{\text{M}}(0.61)$	2278	$2283^{+73}_{-73}$
$A_{217}^{\text{CIB}}$	37.8	$37^{+20}_{-20}$	$D_{220}$	5724	$5723^{+110}_{-110}$	$H(2.33)$	234.73	$235.0^{+4.2}_{-4.0}$
$A_{143}^{\text{tSZ}}$	6.31	$< 8.91$	$D_{810}$	2526.9	$2525^{+37}_{-36}$	$D_{\text{M}}(2.33)$	5739	$5743^{+61}_{-64}$
$r_{143 \times 217}^{\text{PS}}$	0.764	$> 0.353$	$D_{1420}$	815.5	$814^{+13}_{-13}$	$f\sigma_8(0.15)$	0.470	$0.463^{+0.070}_{-0.061}$
$r_{143 \times 217}^{\text{CIB}}$	0.78	—	$D_{2000}$	232.9	$232.1^{+5.6}_{-5.6}$	$\sigma_8(0.15)$	0.791	$0.774^{+0.099}_{-0.077}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.89	—	$n_{\text{s},0.002}$	0.9764	$0.974^{+0.022}_{-0.022}$	$f\sigma_8(0.38)$	0.494	$0.484^{+0.068}_{-0.057}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}$	0.245487	$0.24547^{+0.00035}_{-0.00034}$	$\sigma_8(0.38)$	0.703	$0.688^{+0.088}_{-0.066}$
$A_{100}^{\text{dust}}$	0.99	$1.00^{+0.50}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	0.246814	$0.24679^{+0.00035}_{-0.00034}$	$f\sigma_8(0.51)$	0.494	$0.485^{+0.066}_{-0.054}$
$A_{143}^{\text{dust}}$	0.965	$0.95^{+0.45}_{-0.46}$	$10^5 \text{D}/\text{H}$	2.541	$2.55^{+0.15}_{-0.14}$	$\sigma_8(0.51)$	0.659	$0.644^{+0.082}_{-0.061}$
$A_{217}^{\text{dust}}$	0.989	$0.98^{+0.27}_{-0.27}$	$\text{Age}/\text{Gyr}$	13.744	$13.75^{+0.13}_{-0.14}$	$f\sigma_8(0.61)$	0.490	$0.481^{+0.065}_{-0.052}$
$A_{143 \times 217}^{\text{dust}}$	1.007	$1.01^{+0.41}_{-0.42}$	$z_*$	1089.33	$1089.4^{+1.5}_{-1.5}$	$\sigma_8(0.61)$	0.628	$0.614^{+0.079}_{-0.058}$
$y_{\text{cal}}$	1.0001	$1.0000^{+0.0065}_{-0.0064}$	$r_*$	145.08	$145.0^{+1.5}_{-1.5}$	$f\sigma_8(2.33)$	0.3172	$0.310^{+0.040}_{-0.029}$
$c_{100}$	0.99783	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04157	$1.0415^{+0.0014}_{-0.0014}$	$\sigma_8(2.33)$	0.3278	$0.320^{+0.042}_{-0.029}$
$c_{217}$	1.00083	$1.0008^{+0.0040}_{-0.0040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.929	$13.92^{+0.13}_{-0.14}$	$f_{2000}^{143}$	25.8	$26^{+9}_{-9}$
$H_0$	68.87	$68.7^{+3.5}_{-3.4}$	$z_{\text{drag}}$	1060.28	$1060.2^{+1.6}_{-1.5}$	$f_{2000}^{217}$	103.7	$104.5^{+6.4}_{-6.3}$
$\Omega_{\Lambda}$	0.7048	$0.701^{+0.041}_{-0.047}$	$r_{\text{drag}}$	147.67	$147.6^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	28.8	$29^{+7}_{-7}$
$\Omega_{\text{m}}$	0.2952	$0.299^{+0.047}_{-0.041}$	$k_{\text{D}}$	0.14044	$0.1404^{+0.0014}_{-0.0014}$	$\chi_{\text{CamSpec}}^2$	7045.0	$7059.9 (\nu: 14.8)$
$\Omega_{\text{m}} h^2$	0.1400	$0.1404^{+0.0068}_{-0.0064}$	$100\theta_{\text{D}}$	0.16060	$0.16066^{+0.00082}_{-0.00080}$	$\chi_{\text{prior}}^2$	1.4	$7.2 (\nu: 5.4)$
$\Omega_{\text{m}} h^3$	0.09645	$0.0964^{+0.0013}_{-0.0013}$	$z_{\text{eq}}$	3331	$3341^{+160}_{-150}$			
$\sigma_8$	0.855	$0.836^{+0.11}_{-0.086}$	$k_{\text{eq}}$	0.010167	$0.01020^{+0.00050}_{-0.00047}$			

Best-fit  $\chi_{\text{eff}}^2 = 7046.45$ ;  $\Delta\chi_{\text{eff}}^2 = -0.25$ ;  $\bar{\chi}_{\text{eff}}^2 = 7067.10$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.23$ ;  $R - 1 = 0.00805$   
 $\chi_{\text{eff}}^2$ : CMB - CamSpec like\_10.7HM: 7045.02 ( $\Delta$  -0.23)



### 3.26 base\_Alens\_CamSpecHM\_TT\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02248^{+0.00059}_{-0.00058}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.461^{+0.064}_{-0.048}$	$H(0.15)$	$73.4^{+1.4}_{-1.3}$
$\Omega_{\text{c}}h^2$	$0.1181^{+0.0034}_{-0.0034}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.621^{+0.080}_{-0.063}$	$D_{\text{M}}(0.15)$	$636^{+13}_{-13}$
$100\theta_{\text{MC}}$	$1.0412^{+0.0012}_{-0.0011}$	$\sigma_8/h^{0.5}$	$1.01^{+0.13}_{-0.10}$	$H(0.38)$	$83.4^{+1.1}_{-1.0}$
$\tau$	$< 0.211$	$r_{\text{drag}}h$	$100.6^{+2.7}_{-2.6}$	$D_{\text{M}}(0.38)$	$1519^{+27}_{-27}$
$A_{\text{L}}$	$1.11^{+0.33}_{-0.29}$	$\langle d^2 \rangle^{1/2}$	$2.62^{+0.19}_{-0.20}$	$H(0.51)$	$90.04^{+0.89}_{-0.85}$
$\ln(10^{10}A_{\text{s}})$	$3.12^{+0.24}_{-0.18}$	$z_{\text{re}}$	$10.8^{+9.4}_{-9.1}$	$D_{\text{M}}(0.51)$	$1969^{+32}_{-32}$
$n_{\text{s}}$	$0.972^{+0.013}_{-0.013}$	$10^9 A_{\text{s}}$	$2.27^{+0.58}_{-0.39}$	$H(0.61)$	$95.60^{+0.77}_{-0.72}$
$A_{100}^{\text{PS}}$	$231^{+60}_{-60}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.871^{+0.031}_{-0.030}$	$D_{\text{M}}(0.61)$	$2292^{+34}_{-35}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$D_{40}$	$1236^{+86}_{-52}$	$H(2.33)$	$235.4^{+2.1}_{-2.1}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{220}$	$5719^{+110}_{-100}$	$D_{\text{M}}(2.33)$	$5750^{+36}_{-38}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{810}$	$2526^{+38}_{-36}$	$f\sigma_8(0.15)$	$0.466^{+0.064}_{-0.048}$
$A_{143}^{\text{tSZ}}$	$< 8.93$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.774^{+0.098}_{-0.071}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.354$	$D_{2000}$	$231.7^{+5.1}_{-4.9}$	$f\sigma_8(0.38)$	$0.487^{+0.063}_{-0.050}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{\text{s},0.002}$	$0.972^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	$0.687^{+0.087}_{-0.062}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.24544^{+0.00025}_{-0.00025}$	$f\sigma_8(0.51)$	$0.487^{+0.063}_{-0.049}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24676^{+0.00025}_{-0.00025}$	$\sigma_8(0.51)$	$0.644^{+0.081}_{-0.058}$
$A_{100}^{\text{dust}}$	$1.00^{+0.49}_{-0.49}$	$10^5 \text{D}/\text{H}$	$2.57^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	$0.482^{+0.062}_{-0.047}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.46}$	$\text{Age}/\text{Gyr}$	$13.768^{+0.081}_{-0.085}$	$\sigma_8(0.61)$	$0.613^{+0.077}_{-0.055}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.61^{+0.88}_{-0.86}$	$f\sigma_8(2.33)$	$0.309^{+0.039}_{-0.028}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.42}$	$r_*$	$144.84^{+0.84}_{-0.84}$	$\sigma_8(2.33)$	$0.319^{+0.040}_{-0.028}$
$y_{\text{cal}}$	$1.0000^{+0.0063}_{-0.0065}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$27^{+9}_{-8}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0028}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.908^{+0.083}_{-0.082}$	$f_{2000}^{217}$	$104.9^{+6.0}_{-5.6}$
$c_{217}$	$1.0008^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-1.3}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$H_0$	$68.2^{+1.6}_{-1.6}$	$r_{\text{drag}}$	$147.48^{+0.92}_{-0.91}$	$\chi_{\text{CamSpec}}^2$	$7059.1 (\nu: 13.8)$
$\Omega_{\Lambda}$	$0.697^{+0.020}_{-0.021}$	$k_{\text{D}}$	$0.1405^{+0.0012}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.046 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.303^{+0.021}_{-0.020}$	$100\theta_{\text{D}}$	$0.16072^{+0.00077}_{-0.00069}$	$\chi_{\text{MGS}}^2$	$1.86 (\nu: 0.2)$
$\Omega_{\text{m}}h^2$	$0.1412^{+0.0032}_{-0.0032}$	$z_{\text{eq}}$	$3359^{+77}_{-77}$	$\chi_{\text{DR12BAO}}^2$	$4.1 (\nu: 0.6)$
$\Omega_{\text{m}}h^3$	$0.0963^{+0.0013}_{-0.0013}$	$k_{\text{eq}}$	$0.01025^{+0.00024}_{-0.00023}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 5.4)$
$\sigma_8$	$0.837^{+0.11}_{-0.078}$	$100\theta_{\text{eq}}$	$0.822^{+0.015}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.7)$
$S_8$	$0.842^{+0.12}_{-0.088}$	$100\theta_{\text{s,eq}}$	$0.4537^{+0.0076}_{-0.0074}$		
$\bar{\chi}_{\text{eff}}^2 = 7072.33; R - 1 = 0.01128$					



### 3.27 base\_Alens\_CamSpecHM\_TT\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02256^{+0.00081}_{-0.00078}$	$S_8$	$0.85^{+0.12}_{-0.11}$	$100\theta_{\text{eq}}$	$0.826^{+0.032}_{-0.031}$
$\Omega_c h^2$	$0.1171^{+0.0073}_{-0.0069}$	$\sigma_8 \Omega_m^{0.5}$	$0.464^{+0.067}_{-0.058}$	$100\theta_{\text{s,eq}}$	$0.456^{+0.016}_{-0.016}$
$100\theta_{\text{MC}}$	$1.0414^{+0.0014}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	$0.628^{+0.079}_{-0.064}$	$H(0.15)$	$73.8^{+3.0}_{-2.9}$
$\tau$	$0.114^{+0.11}_{-0.074}$	$\sigma_8/h^{0.5}$	$1.03^{+0.13}_{-0.098}$	$D_{\text{M}}(0.15)$	$632^{+29}_{-28}$
$A_{\text{L}}$	$1.08^{+0.32}_{-0.28}$	$r_{\text{drag}} h$	$101.4^{+5.9}_{-5.8}$	$H(0.38)$	$83.7^{+2.3}_{-2.1}$
$\ln(10^{10} A_{\text{s}})$	$3.15^{+0.21}_{-0.15}$	$\langle d^2 \rangle^{1/2}$	$2.63^{+0.20}_{-0.20}$	$D_{\text{M}}(0.38)$	$1511^{+58}_{-56}$
$n_{\text{s}}$	$0.975^{+0.022}_{-0.021}$	$z_{\text{re}}$	$< 20.3$	$H(0.51)$	$90.3^{+1.8}_{-1.6}$
$A_{100}^{\text{PS}}$	$229^{+70}_{-70}$	$10^9 A_{\text{s}}$	$2.35^{+0.55}_{-0.35}$	$D_{\text{M}}(0.51)$	$1959^{+68}_{-67}$
$A_{143}^{\text{PS}}$	$34^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.866^{+0.041}_{-0.040}$	$H(0.61)$	$95.8^{+1.5}_{-1.3}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{40}$	$1238^{+83}_{-63}$	$D_{\text{M}}(0.61)$	$2282^{+73}_{-72}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{220}$	$5721^{+110}_{-110}$	$H(2.33)$	$234.9^{+4.2}_{-3.9}$
$A_{143}^{\text{tSZ}}$	$< 8.89$	$D_{810}$	$2525^{+37}_{-36}$	$D_{\text{M}}(2.33)$	$5742^{+61}_{-64}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.353$	$D_{1420}$	$814^{+14}_{-13}$	$f\sigma_8(0.15)$	$0.470^{+0.065}_{-0.057}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$232.2^{+5.6}_{-5.6}$	$\sigma_8(0.15)$	$0.787^{+0.088}_{-0.065}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.975^{+0.022}_{-0.021}$	$f\sigma_8(0.38)$	$0.492^{+0.062}_{-0.052}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.24547^{+0.00035}_{-0.00034}$	$\sigma_8(0.38)$	$0.699^{+0.079}_{-0.056}$
$A_{100}^{\text{dust}}$	$1.00^{+0.51}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24680^{+0.00035}_{-0.00034}$	$f\sigma_8(0.51)$	$0.492^{+0.061}_{-0.048}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.45}$	$10^5 \text{D/H}$	$2.55^{+0.15}_{-0.14}$	$\sigma_8(0.51)$	$0.655^{+0.074}_{-0.052}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$\text{Age/Gyr}$	$13.75^{+0.13}_{-0.14}$	$f\sigma_8(0.61)$	$0.488^{+0.059}_{-0.046}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.41}_{-0.41}$	$z_*$	$1089.4^{+1.5}_{-1.5}$	$\sigma_8(0.61)$	$0.624^{+0.070}_{-0.049}$
$y_{\text{cal}}$	$1.0000^{+0.0065}_{-0.0064}$	$r_*$	$145.0^{+1.5}_{-1.5}$	$f\sigma_8(2.33)$	$0.315^{+0.036}_{-0.024}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.0415^{+0.0014}_{-0.0014}$	$\sigma_8(2.33)$	$0.326^{+0.037}_{-0.025}$
$c_{217}$	$1.0008^{+0.0040}_{-0.0040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.93^{+0.13}_{-0.13}$	$f_{2000}^{143}$	$26^{+9}_{-9}$
$H_0$	$68.7^{+3.4}_{-3.4}$	$z_{\text{drag}}$	$1060.2^{+1.6}_{-1.5}$	$f_{2000}^{217}$	$104.4^{+6.5}_{-6.3}$
$\Omega_{\Lambda}$	$0.702^{+0.040}_{-0.046}$	$r_{\text{drag}}$	$147.6^{+1.4}_{-1.4}$	$f_{2000}^{143 \times 217}$	$29^{+7}_{-7}$
$\Omega_{\text{m}}$	$0.298^{+0.046}_{-0.040}$	$k_{\text{D}}$	$0.1404^{+0.0014}_{-0.0014}$	$\chi_{\text{CamSpec}}^2$	$7059.9 (\nu: 14.8)$
$\Omega_{\text{m}} h^2$	$0.1403^{+0.0067}_{-0.0064}$	$100\theta_{\text{D}}$	$0.16066^{+0.00082}_{-0.00080}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 5.4)$
$\Omega_{\text{m}} h^3$	$0.0964^{+0.0014}_{-0.0013}$	$z_{\text{eq}}$	$3338^{+160}_{-150}$		
$\sigma_8$	$0.850^{+0.096}_{-0.073}$	$k_{\text{eq}}$	$0.01019^{+0.00049}_{-0.00047}$		

$\bar{\chi}_{\text{eff}}^2 = 7067.05$ ;  $R - 1 = 0.01053$



### 3.28 base\_Alens\_CamSpecHM\_TT\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02248^{+0.00059}_{-0.00058}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.469^{+0.057}_{-0.042}$	$H(0.15)$	$73.4^{+1.4}_{-1.3}$
$\Omega_{\text{c}} h^2$	$0.1181^{+0.0034}_{-0.0034}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.631^{+0.072}_{-0.053}$	$D_{\text{M}}(0.15)$	$636^{+13}_{-13}$
$100\theta_{\text{MC}}$	$1.0412^{+0.0012}_{-0.0011}$	$\sigma_8/h^{0.5}$	$1.03^{+0.12}_{-0.084}$	$H(0.38)$	$83.4^{+1.1}_{-1.0}$
$\tau$	$0.110^{+0.11}_{-0.071}$	$r_{\text{drag}} h$	$100.6^{+2.7}_{-2.6}$	$D_{\text{M}}(0.38)$	$1519^{+27}_{-27}$
$A_{\text{L}}$	$1.07^{+0.27}_{-0.26}$	$\langle d^2 \rangle^{1/2}$	$2.62^{+0.19}_{-0.19}$	$H(0.51)$	$90.04^{+0.90}_{-0.84}$
$\ln(10^{10} A_{\text{s}})$	$3.15^{+0.21}_{-0.15}$	$z_{\text{re}}$	$< 20.0$	$D_{\text{M}}(0.51)$	$1969^{+32}_{-32}$
$n_{\text{s}}$	$0.972^{+0.013}_{-0.013}$	$10^9 A_{\text{s}}$	$2.34^{+0.53}_{-0.33}$	$H(0.61)$	$95.60^{+0.78}_{-0.73}$
$A_{100}^{\text{PS}}$	$231^{+60}_{-60}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.870^{+0.031}_{-0.029}$	$D_{\text{M}}(0.61)$	$2292^{+34}_{-35}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$D_{40}$	$1242^{+81}_{-52}$	$H(2.33)$	$235.4^{+2.1}_{-2.1}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{220}$	$5717^{+110}_{-100}$	$D_{\text{M}}(2.33)$	$5750^{+36}_{-38}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{810}$	$2526^{+37}_{-35}$	$f\sigma_8(0.15)$	$0.474^{+0.056}_{-0.043}$
$A_{143}^{\text{tSZ}}$	$< 8.93$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.787^{+0.088}_{-0.059}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.354$	$D_{2000}$	$231.8^{+5.0}_{-4.9}$	$f\sigma_8(0.38)$	$0.495^{+0.057}_{-0.042}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{\text{s},0.002}$	$0.972^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	$0.699^{+0.078}_{-0.052}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.24543^{+0.00025}_{-0.00025}$	$f\sigma_8(0.51)$	$0.495^{+0.056}_{-0.041}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24676^{+0.00025}_{-0.00025}$	$\sigma_8(0.51)$	$0.654^{+0.073}_{-0.049}$
$A_{100}^{\text{dust}}$	$0.999^{+0.49}_{-0.49}$	$10^5 \text{D}/\text{H}$	$2.57^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.490^{+0.055}_{-0.040}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.46}$	$\text{Age}/\text{Gyr}$	$13.769^{+0.082}_{-0.086}$	$\sigma_8(0.61)$	$0.623^{+0.069}_{-0.046}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.62^{+0.88}_{-0.86}$	$f\sigma_8(2.33)$	$0.314^{+0.035}_{-0.023}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.42}$	$r_*$	$144.85^{+0.84}_{-0.83}$	$\sigma_8(2.33)$	$0.324^{+0.036}_{-0.024}$
$y_{\text{cal}}$	$0.99999^{+0.0064}_{-0.0065}$	$100\theta_*$	$1.0414^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$27^{+9}_{-8}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0028}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.909^{+0.083}_{-0.083}$	$f_{2000}^{217}$	$104.8^{+6.0}_{-5.7}$
$c_{217}$	$1.0008^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	$1060.0^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$H_0$	$68.2^{+1.6}_{-1.6}$	$r_{\text{drag}}$	$147.49^{+0.91}_{-0.91}$	$\chi_{\text{CamSpec}}^2$	$7059.1 (\nu: 13.9)$
$\Omega_{\Lambda}$	$0.697^{+0.020}_{-0.021}$	$k_{\text{D}}$	$0.1405^{+0.0011}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.046 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.303^{+0.021}_{-0.020}$	$100\theta_{\text{D}}$	$0.16072^{+0.00076}_{-0.00069}$	$\chi_{\text{MGS}}^2$	$1.87 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	$0.1412^{+0.0032}_{-0.0032}$	$z_{\text{eq}}$	$3358^{+77}_{-76}$	$\chi_{\text{DR12BAO}}^2$	$4.1 (\nu: 0.5)$
$\Omega_{\text{m}} h^3$	$0.0963^{+0.0013}_{-0.0013}$	$k_{\text{eq}}$	$0.01025^{+0.00024}_{-0.00023}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 5.4)$
$\sigma_8$	$0.851^{+0.095}_{-0.065}$	$100\theta_{\text{eq}}$	$0.822^{+0.015}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.7)$
$S_8$	$0.855^{+0.10}_{-0.076}$	$100\theta_{\text{s,eq}}$	$0.4537^{+0.0076}_{-0.0073}$		
$\bar{\chi}_{\text{eff}}^2 = 7072.34; R - 1 = 0.01270$					



### 3.29 base\_Alens\_CamSpecHM\_TT\_lowl

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02267	$0.02266^{+0.00078}_{-0.00075}$	$S_8$	0.756	$0.793^{+0.10}_{-0.087}$	$100\theta_{\text{eq}}$	0.8283	$0.830^{+0.030}_{-0.028}$
$\Omega_c h^2$	0.1165	$0.1162^{+0.0066}_{-0.0065}$	$\sigma_8 \Omega_m^{0.5}$	0.414	$0.434^{+0.057}_{-0.047}$	$100\theta_{\text{s,eq}}$	0.4570	$0.458^{+0.015}_{-0.014}$
$100\theta_{\text{MC}}$	1.04148	$1.0415^{+0.0014}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	0.562	$0.591^{+0.066}_{-0.052}$	$H(0.15)$	74.11	$74.2^{+2.8}_{-2.7}$
$\tau$	0.010	$< 0.159$	$\sigma_8/h^{0.5}$	0.919	$0.967^{+0.10}_{-0.077}$	$D_{\text{M}}(0.15)$	629.4	$628^{+26}_{-26}$
$A_{\text{L}}$	1.362	$1.22^{+0.32}_{-0.29}$	$r_{\text{drag}} h$	101.9	$102.2^{+5.5}_{-5.3}$	$H(0.38)$	83.92	$84.0^{+2.1}_{-2.0}$
$\ln(10^{10} A_{\text{s}})$	2.947	$3.05^{+0.19}_{-0.12}$	$\langle d^2 \rangle^{1/2}$	2.652	$2.64^{+0.19}_{-0.20}$	$D_{\text{M}}(0.38)$	1505	$1503^{+53}_{-53}$
$n_{\text{s}}$	0.9760	$0.977^{+0.020}_{-0.019}$	$z_{\text{re}}$	2.1	$8.1^{+8.2}_{-6.4}$	$H(0.51)$	90.46	$90.5^{+1.7}_{-1.6}$
$y_{\text{cal}}$	1.0001	$1.0000^{+0.0064}_{-0.0064}$	$10^9 A_{\text{s}}$	1.905	$2.12^{+0.44}_{-0.25}$	$D_{\text{M}}(0.51)$	1953	$1950^{+62}_{-62}$
$A_{100}^{\text{PS}}$	218	$228^{+60}_{-70}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8667	$1.863^{+0.038}_{-0.038}$	$H(0.61)$	95.94	$96.0^{+1.4}_{-1.3}$
$A_{143}^{\text{PS}}$	45.1	$33^{+20}_{-20}$	$D_{40}$	1198	$1209^{+55}_{-47}$	$D_{\text{M}}(0.61)$	2275	$2272^{+67}_{-68}$
$A_{217}^{\text{PS}}$	108.8	$105^{+30}_{-30}$	$D_{220}$	5732	$5726^{+110}_{-110}$	$H(2.33)$	234.64	$234.4^{+3.8}_{-3.7}$
$A_{217}^{\text{CIB}}$	37.6	$36^{+20}_{-20}$	$D_{810}$	2527.5	$2524^{+36}_{-35}$	$D_{\text{M}}(2.33)$	5735	$5734^{+58}_{-61}$
$A_{143}^{\text{tSZ}}$	6.32	$< 8.92$	$D_{1420}$	815.5	$815^{+13}_{-13}$	$f\sigma_8(0.15)$	0.420	$0.440^{+0.055}_{-0.046}$
$r_{143 \times 217}^{\text{PS}}$	0.793	$> 0.355$	$D_{2000}$	232.9	$232.6^{+5.5}_{-5.5}$	$\sigma_8(0.15)$	0.708	$0.745^{+0.074}_{-0.051}$
$r_{143 \times 217}^{\text{CIB}}$	0.77	—	$n_{\text{s},0.002}$	0.9760	$0.977^{+0.020}_{-0.019}$	$f\sigma_8(0.38)$	0.4406	$0.463^{+0.052}_{-0.042}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	—	$Y_{\text{P}}$	0.245506	$0.24551^{+0.00033}_{-0.00031}$	$\sigma_8(0.38)$	0.629	$0.662^{+0.066}_{-0.043}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}^{\text{BBN}}$	0.246833	$0.24684^{+0.00033}_{-0.00032}$	$f\sigma_8(0.51)$	0.4413	$0.464^{+0.050}_{-0.039}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.50}$	$10^5 \text{D}/\text{H}$	2.532	$2.53^{+0.14}_{-0.14}$	$\sigma_8(0.51)$	0.590	$0.621^{+0.062}_{-0.039}$
$A_{143}^{\text{dust}}$	0.962	$0.95^{+0.45}_{-0.46}$	$\text{Age}/\text{Gyr}$	13.735	$13.73^{+0.13}_{-0.13}$	$f\sigma_8(0.61)$	0.4380	$0.460^{+0.049}_{-0.037}$
$A_{217}^{\text{dust}}$	0.988	$0.98^{+0.26}_{-0.26}$	$z_*$	1089.24	$1089.2^{+1.4}_{-1.4}$	$\sigma_8(0.61)$	0.5614	$0.591^{+0.059}_{-0.037}$
$A_{143 \times 217}^{\text{dust}}$	1.016	$1.01^{+0.41}_{-0.42}$	$r_*$	145.10	$145.2^{+1.4}_{-1.4}$	$f\sigma_8(2.33)$	0.2838	$0.299^{+0.030}_{-0.018}$
$c_{100}$	0.99790	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04163	$1.0417^{+0.0013}_{-0.0014}$	$\sigma_8(2.33)$	0.2934	$0.309^{+0.032}_{-0.018}$
$c_{217}$	1.00088	$1.0007^{+0.0041}_{-0.0039}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.930	$13.94^{+0.12}_{-0.12}$	$f_{2000}^{143}$	25.7	$26^{+9}_{-9}$
$H_0$	69.02	$69.2^{+3.2}_{-3.1}$	$z_{\text{drag}}$	1060.39	$1060.3^{+1.5}_{-1.5}$	$f_{2000}^{217}$	103.7	$104.0^{+6.3}_{-6.3}$
$\Omega_{\Lambda}$	0.7064	$0.708^{+0.037}_{-0.041}$	$r_{\text{drag}}$	147.67	$147.8^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	28.9	$29^{+7}_{-7}$
$\Omega_{\text{m}}$	0.2936	$0.292^{+0.041}_{-0.037}$	$k_{\text{D}}$	0.14048	$0.1403^{+0.0013}_{-0.0013}$	$\chi_{\text{lowl}}^2$	20.86	$22.0 (\nu: 1.1)$
$\Omega_{\text{m}} h^2$	0.1399	$0.1395^{+0.0062}_{-0.0059}$	$100\theta_{\text{D}}$	0.16054	$0.16059^{+0.00081}_{-0.00076}$	$\chi_{\text{CamSpec}}^2$	7046.1	$7060.0 (\nu: 14.2)$
$\Omega_{\text{m}} h^3$	0.09653	$0.0965^{+0.0013}_{-0.0013}$	$z_{\text{eq}}$	3327	$3318^{+150}_{-140}$	$\chi_{\text{prior}}^2$	1.4	$7.2 (\nu: 5.3)$
$\sigma_8$	0.764	$0.804^{+0.081}_{-0.057}$	$k_{\text{eq}}$	0.010154	$0.01013^{+0.00045}_{-0.00043}$	$\chi_{\text{CMB}}^2$	7066.9	$7082.0 (\nu: 14.2)$

Best-fit  $\chi_{\text{eff}}^2 = 7068.30$ ;  $\Delta\chi_{\text{eff}}^2 = -3.99$ ;  $\bar{\chi}_{\text{eff}}^2 = 7089.14$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -3.10$ ;  $R - 1 = 0.00730$   
 $\chi_{\text{eff}}^2$ : CMB - commander\_dx12\_v3\_2\_29: 20.86 ( $\Delta$  -3.64) CamSpec like\_10.7HM: 7046.06 ( $\Delta$  -0.32)



### 3.30 base\_Alens\_CamSpecHM\_TT\_lowl\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02251^{+0.00057}_{-0.00056}$	$\sigma_8 \Omega_m^{0.25}$	$0.597^{+0.058}_{-0.040}$	$H(0.38)$	$83.5^{+1.1}_{-1.0}$
$\Omega_c h^2$	$0.1178^{+0.0033}_{-0.0033}$	$\sigma_8/h^{0.5}$	$0.974^{+0.093}_{-0.063}$	$D_M(0.38)$	$1516^{+27}_{-27}$
$100\theta_{MC}$	$1.0413^{+0.0011}_{-0.0011}$	$r_{drag}h$	$100.9^{+2.7}_{-2.6}$	$H(0.51)$	$90.12^{+0.88}_{-0.83}$
$\tau$	$< 0.145$	$\langle d^2 \rangle^{1/2}$	$2.63^{+0.20}_{-0.19}$	$D_M(0.51)$	$1966^{+32}_{-32}$
$A_L$	$1.20^{+0.26}_{-0.26}$	$z_{re}$	$7.6^{+7.8}_{-5.9}$	$H(0.61)$	$95.66^{+0.76}_{-0.72}$
$\ln(10^{10} A_s)$	$3.04^{+0.18}_{-0.11}$	$10^9 A_s$	$2.10^{+0.40}_{-0.22}$	$D_M(0.61)$	$2289^{+34}_{-34}$
$n_s$	$0.972^{+0.012}_{-0.012}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.029}_{-0.029}$	$H(2.33)$	$235.3^{+2.0}_{-2.0}$
$y_{cal}$	$1.0000^{+0.0062}_{-0.0066}$	$D_{40}$	$1216^{+49}_{-37}$	$D_M(2.33)$	$5747^{+35}_{-36}$
$A_{100}^{PS}$	$230^{+60}_{-70}$	$D_{220}$	$5718^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.448^{+0.048}_{-0.032}$
$A_{143}^{PS}$	$34^{+20}_{-20}$	$D_{810}$	$2526^{+36}_{-34}$	$\sigma_8(0.15)$	$0.745^{+0.069}_{-0.043}$
$A_{217}^{PS}$	$104^{+30}_{-40}$	$D_{1420}$	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.468^{+0.045}_{-0.032}$
$A_{217}^{CIB}$	$37^{+20}_{-20}$	$D_{2000}$	$231.9^{+5.0}_{-4.8}$	$\sigma_8(0.38)$	$0.662^{+0.062}_{-0.037}$
$A_{143}^{tSZ}$	$< 8.81$	$n_{s,0.002}$	$0.972^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	$0.468^{+0.045}_{-0.031}$
$r_{143 \times 217}^{PS}$	$> 0.363$	$Y_P$	$0.24545^{+0.00025}_{-0.00023}$	$\sigma_8(0.51)$	$0.620^{+0.058}_{-0.034}$
$r_{143 \times 217}^{CIB}$	—	$Y_P^{BBN}$	$0.24678^{+0.00025}_{-0.00023}$	$f\sigma_8(0.61)$	$0.464^{+0.044}_{-0.030}$
$\xi^{tSZ \times CIB}$	—	$10^5 D/H$	$2.56^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	$0.590^{+0.055}_{-0.033}$
$A^{kSZ}$	—	Age/Gyr	$13.763^{+0.081}_{-0.082}$	$f\sigma_8(2.33)$	$0.298^{+0.028}_{-0.016}$
$A_{100}^{dust}$	$1.01^{+0.49}_{-0.49}$	$z_*$	$1089.55^{+0.87}_{-0.84}$	$\sigma_8(2.33)$	$0.308^{+0.029}_{-0.017}$
$A_{143}^{dust}$	$0.95^{+0.46}_{-0.45}$	$r_*$	$144.89^{+0.82}_{-0.79}$	$f_{2000}^{143}$	$27^{+9}_{-8}$
$A_{217}^{dust}$	$0.98^{+0.25}_{-0.26}$	$100\theta_*$	$1.0415^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$104.7^{+5.9}_{-5.8}$
$A_{143 \times 217}^{dust}$	$1.01^{+0.41}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$13.912^{+0.081}_{-0.077}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$z_{drag}$	$1060.1^{+1.2}_{-1.2}$	$\chi_{lowl}^2$	$22.4 (\nu: 1.0)$
$c_{217}$	$1.0009^{+0.0042}_{-0.0039}$	$r_{drag}$	$147.51^{+0.90}_{-0.86}$	$\chi_{CamSpec}^2$	$7058.9 (\nu: 13.0)$
$H_0$	$68.4^{+1.6}_{-1.6}$	$k_D$	$0.1405^{+0.0012}_{-0.0012}$	$\chi_{6DF}^2$	$0.049 (\nu: 0.0)$
$\Omega_\Lambda$	$0.698^{+0.019}_{-0.020}$	$100\theta_D$	$0.16069^{+0.00071}_{-0.00069}$	$\chi_{MGS}^2$	$2.00 (\nu: 0.2)$
$\Omega_m$	$0.302^{+0.020}_{-0.019}$	$z_{eq}$	$3353^{+74}_{-75}$	$\chi_{DR12BAO}^2$	$4.05 (\nu: 0.5)$
$\Omega_m h^2$	$0.1410^{+0.0031}_{-0.0031}$	$k_{eq}$	$0.01023^{+0.00022}_{-0.00023}$	$\chi_{prior}^2$	$7.2 (\nu: 5.3)$
$\Omega_m h^3$	$0.0964^{+0.0013}_{-0.0013}$	$100\theta_{eq}$	$0.823^{+0.015}_{-0.014}$	$\chi_{BAO}^2$	$6.1 (\nu: 0.8)$
$\sigma_8$	$0.806^{+0.075}_{-0.047}$	$100\theta_{s,eq}$	$0.4543^{+0.0075}_{-0.0072}$	$\chi_{CMB}^2$	$7081.3 (\nu: 13.5)$
$S_8$	$0.808^{+0.087}_{-0.060}$	$H(0.15)$	$73.6^{+1.4}_{-1.4}$		
$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.048}_{-0.033}$	$D_M(0.15)$	$635^{+13}_{-13}$		

$\bar{\chi}_{eff}^2 = 7094.64$ ;  $\Delta \bar{\chi}_{eff}^2 = -2.98$ ;  $R - 1 = 0.01645$



### 3.31 base\_Alens\_CamSpecHM\_TT\_lowl\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02268^{+0.00077}_{-0.00076}$	$S_8$	$0.806^{+0.097}_{-0.082}$	$100\theta_{\text{eq}}$	$0.832^{+0.030}_{-0.029}$
$\Omega_c h^2$	$0.1159^{+0.0068}_{-0.0064}$	$\sigma_8 \Omega_m^{0.5}$	$0.441^{+0.053}_{-0.045}$	$100\theta_{\text{s,eq}}$	$0.459^{+0.015}_{-0.015}$
$100\theta_{\text{MC}}$	$1.0415^{+0.0014}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.059}_{-0.047}$	$H(0.15)$	$74.4^{+2.8}_{-2.7}$
$\tau$	$0.084^{+0.083}_{-0.044}$	$\sigma_8/h^{0.5}$	$0.985^{+0.093}_{-0.070}$	$D_{\text{M}}(0.15)$	$627^{+27}_{-25}$
$A_{\text{L}}$	$1.18^{+0.28}_{-0.26}$	$r_{\text{drag}} h$	$102.5^{+5.5}_{-5.4}$	$H(0.38)$	$84.1^{+2.1}_{-2.0}$
$\ln(10^{10} A_{\text{s}})$	$3.09^{+0.16}_{-0.093}$	$\langle d^2 \rangle^{1/2}$	$2.64^{+0.20}_{-0.20}$	$D_{\text{M}}(0.38)$	$1501^{+54}_{-52}$
$n_{\text{s}}$	$0.978^{+0.020}_{-0.019}$	$z_{\text{re}}$	$< 16.6$	$H(0.51)$	$90.6^{+1.7}_{-1.6}$
$y_{\text{cal}}$	$1.0000^{+0.0064}_{-0.0065}$	$10^9 A_{\text{s}}$	$2.21^{+0.39}_{-0.20}$	$D_{\text{M}}(0.51)$	$1947^{+63}_{-61}$
$A_{100}^{\text{PS}}$	$227^{+70}_{-70}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.861^{+0.037}_{-0.038}$	$H(0.61)$	$96.0^{+1.4}_{-1.3}$
$A_{143}^{\text{PS}}$	$32^{+20}_{-20}$	$D_{40}$	$1213^{+54}_{-47}$	$D_{\text{M}}(0.61)$	$2269^{+68}_{-67}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{220}$	$5725^{+110}_{-110}$	$H(2.33)$	$234.2^{+3.9}_{-3.6}$
$A_{217}^{\text{CIB}}$	$36^{+20}_{-20}$	$D_{810}$	$2524^{+36}_{-35}$	$D_{\text{M}}(2.33)$	$5731^{+59}_{-61}$
$A_{143}^{\text{tSZ}}$	$< 8.96$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.15)$	$0.448^{+0.052}_{-0.044}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.354$	$D_{2000}$	$232.8^{+5.5}_{-5.7}$	$\sigma_8(0.15)$	$0.760^{+0.069}_{-0.041}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{\text{s},0.002}$	$0.978^{+0.020}_{-0.019}$	$f\sigma_8(0.38)$	$0.471^{+0.047}_{-0.039}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.24552^{+0.00033}_{-0.00032}$	$\sigma_8(0.38)$	$0.676^{+0.057}_{-0.036}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24684^{+0.00033}_{-0.00032}$	$f\sigma_8(0.51)$	$0.472^{+0.045}_{-0.036}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$10^5 \text{D/H}$	$2.53^{+0.14}_{-0.13}$	$\sigma_8(0.51)$	$0.634^{+0.054}_{-0.033}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.45}$	$\text{Age/Gyr}$	$13.73^{+0.13}_{-0.13}$	$f\sigma_8(0.61)$	$0.469^{+0.044}_{-0.033}$
$A_{217}^{\text{dust}}$	$0.99^{+0.27}_{-0.26}$	$z_*$	$1089.2^{+1.4}_{-1.4}$	$\sigma_8(0.61)$	$0.603^{+0.051}_{-0.030}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.41}_{-0.42}$	$r_*$	$145.3^{+1.4}_{-1.4}$	$f\sigma_8(2.33)$	$0.305^{+0.026}_{-0.015}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.0417^{+0.0013}_{-0.0013}$	$\sigma_8(2.33)$	$0.316^{+0.028}_{-0.015}$
$c_{217}$	$1.0007^{+0.0040}_{-0.0039}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.95^{+0.12}_{-0.13}$	$f_{2000}^{143}$	$25^{+9}_{-9}$
$H_0$	$69.3^{+3.2}_{-3.2}$	$z_{\text{drag}}$	$1060.4^{+1.4}_{-1.5}$	$f_{2000}^{217}$	$103.8^{+6.2}_{-6.2}$
$\Omega_{\Lambda}$	$0.710^{+0.036}_{-0.042}$	$r_{\text{drag}}$	$147.8^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$29^{+7}_{-7}$
$\Omega_{\text{m}}$	$0.290^{+0.042}_{-0.036}$	$k_{\text{D}}$	$0.1403^{+0.0013}_{-0.0013}$	$\chi_{\text{lowl}}^2$	$22.4 (\nu: 1.3)$
$\Omega_{\text{m}} h^2$	$0.1392^{+0.0062}_{-0.0059}$	$100\theta_{\text{D}}$	$0.16057^{+0.00082}_{-0.00075}$	$\chi_{\text{CamSpec}}^2$	$7059.9 (\nu: 14.4)$
$\Omega_{\text{m}} h^3$	$0.0965^{+0.0013}_{-0.0013}$	$z_{\text{eq}}$	$3311^{+150}_{-140}$	$\chi_{\text{prior}}^2$	$7.2 (\nu: 5.4)$
$\sigma_8$	$0.820^{+0.074}_{-0.046}$	$k_{\text{eq}}$	$0.01011^{+0.00045}_{-0.00043}$	$\chi_{\text{CMB}}^2$	$7082.3 (\nu: 14.4)$

$\bar{\chi}_{\text{eff}}^2 = 7089.50$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = -2.64$ ;  $R - 1 = 0.00995$



### 3.32 base\_Alens\_CamSpecHM\_TT\_lowl\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02252^{+0.00057}_{-0.00055}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.610^{+0.054}_{-0.033}$	$H(0.38)$	$83.5^{+1.1}_{-1.0}$
$\Omega_{\text{c}} h^2$	$0.1177^{+0.0033}_{-0.0033}$	$\sigma_8 / h^{0.5}$	$0.995^{+0.079}_{-0.054}$	$D_{\text{M}}(0.38)$	$1516^{+26}_{-27}$
$100\theta_{\text{MC}}$	$1.0413^{+0.0011}_{-0.0011}$	$r_{\text{drag}} h$	$100.9^{+2.6}_{-2.6}$	$H(0.51)$	$90.13^{+0.88}_{-0.84}$
$\tau$	$0.079^{+0.078}_{-0.039}$	$\langle d^2 \rangle^{1/2}$	$2.63^{+0.20}_{-0.20}$	$D_{\text{M}}(0.51)$	$1965^{+31}_{-32}$
$A_{\text{L}}$	$1.15^{+0.23}_{-0.23}$	$z_{\text{re}}$	$< 15.9$	$H(0.61)$	$95.67^{+0.76}_{-0.72}$
$\ln(10^{10} A_{\text{s}})$	$3.09^{+0.15}_{-0.083}$	$10^9 A_{\text{s}}$	$2.19^{+0.34}_{-0.18}$	$D_{\text{M}}(0.61)$	$2288^{+34}_{-34}$
$n_{\text{s}}$	$0.973^{+0.012}_{-0.012}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.869^{+0.029}_{-0.029}$	$H(2.33)$	$235.2^{+2.0}_{-2.0}$
$y_{\text{cal}}$	$0.99998^{+0.0064}_{-0.0070}$	$D_{40}$	$1221^{+46}_{-39}$	$D_{\text{M}}(2.33)$	$5747^{+35}_{-36}$
$A_{100}^{\text{PS}}$	$229^{+60}_{-70}$	$D_{220}$	$5715^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.457^{+0.043}_{-0.029}$
$A_{143}^{\text{PS}}$	$34^{+20}_{-20}$	$D_{810}$	$2526^{+36}_{-35}$	$\sigma_8(0.15)$	$0.761^{+0.059}_{-0.035}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{1420}$	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.478^{+0.043}_{-0.026}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{2000}$	$232.0^{+4.9}_{-5.1}$	$\sigma_8(0.38)$	$0.676^{+0.052}_{-0.030}$
$A_{143}^{\text{tSZ}}$	$< 8.81$	$n_{\text{s},0.002}$	$0.973^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	$0.478^{+0.038}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.363$	$Y_{\text{P}}$	$0.24545^{+0.00024}_{-0.00023}$	$\sigma_8(0.51)$	$0.633^{+0.049}_{-0.027}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00024}_{-0.00023}$	$f\sigma_8(0.61)$	$0.474^{+0.038}_{-0.025}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D/H}$	$2.56^{+0.10}_{-0.10}$	$\sigma_8(0.61)$	$0.603^{+0.046}_{-0.026}$
$A^{\text{kSZ}}$	—	$\text{Age/Gyr}$	$13.762^{+0.079}_{-0.082}$	$f\sigma_8(2.33)$	$0.304^{+0.024}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$z_*$	$1089.54^{+0.85}_{-0.84}$	$\sigma_8(2.33)$	$0.314^{+0.024}_{-0.013}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.46}$	$r_*$	$144.91^{+0.81}_{-0.78}$	$f_{2000}^{143}$	$26^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.25}_{-0.26}$	$100\theta_*$	$1.0415^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$104.6^{+5.9}_{-5.9}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.42}_{-0.41}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.915^{+0.080}_{-0.077}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0029}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-1.2}$	$\chi_{\text{lowl}}^2$	$23.0 (\nu: 1.1)$
$c_{217}$	$1.0008^{+0.0041}_{-0.0037}$	$r_{\text{drag}}$	$147.54^{+0.90}_{-0.84}$	$\chi_{\text{CamSpec}}^2$	$7058.7 (\nu: 13.3)$
$H_0$	$68.4^{+1.6}_{-1.6}$	$k_{\text{D}}$	$0.1405^{+0.0012}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.051 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.699^{+0.019}_{-0.020}$	$100\theta_{\text{D}}$	$0.16069^{+0.00071}_{-0.00069}$	$\chi_{\text{MGS}}^2$	$2.05 (\nu: 0.2)$
$\Omega_{\text{m}}$	$0.301^{+0.020}_{-0.019}$	$z_{\text{eq}}$	$3351^{+73}_{-74}$	$\chi_{\text{DR12BAO}}^2$	$4.04 (\nu: 0.5)$
$\Omega_{\text{m}} h^2$	$0.1409^{+0.0031}_{-0.0031}$	$k_{\text{eq}}$	$0.01023^{+0.00022}_{-0.00023}$	$\chi_{\text{prior}}^2$	$7.3 (\nu: 5.5)$
$\Omega_{\text{m}} h^3$	$0.0964^{+0.0013}_{-0.0012}$	$100\theta_{\text{eq}}$	$0.823^{+0.014}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8$	$0.823^{+0.064}_{-0.039}$	$100\theta_{\text{s,eq}}$	$0.4545^{+0.0074}_{-0.0072}$	$\chi_{\text{CMB}}^2$	$7081.7 (\nu: 13.8)$
$S_8$	$0.824^{+0.079}_{-0.054}$	$H(0.15)$	$73.6^{+1.4}_{-1.3}$		
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.043}_{-0.030}$	$D_{\text{M}}(0.15)$	$635^{+13}_{-13}$		

$\bar{\chi}_{\text{eff}}^2 = 7095.11$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = -2.46$ ;  $R - 1 = 0.02149$



### 3.33 base\_Alens\_CamSpecHM\_TT\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02255	$0.02253^{+0.00080}_{-0.00077}$	$S_8$	0.798	$0.800^{+0.086}_{-0.080}$	$100\theta_{\text{eq}}$	0.8245	$0.823^{+0.031}_{-0.030}$
$\Omega_c h^2$	0.1174	$0.1177^{+0.0071}_{-0.0068}$	$\sigma_8 \Omega_m^{0.5}$	0.4370	$0.438^{+0.047}_{-0.044}$	$100\theta_{\text{s,eq}}$	0.4551	$0.455^{+0.015}_{-0.015}$
$100\theta_{\text{MC}}$	1.04132	$1.0413^{+0.0014}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	0.5909	$0.592^{+0.041}_{-0.040}$	$H(0.15)$	73.71	$73.6^{+2.9}_{-2.8}$
$\tau$	0.0509	$0.050^{+0.022}_{-0.026}$	$\sigma_8/h^{0.5}$	0.965	$0.966^{+0.056}_{-0.057}$	$D_{\text{M}}(0.15)$	633.3	$634^{+29}_{-27}$
$A_{\text{L}}$	1.222	$1.21^{+0.27}_{-0.23}$	$r_{\text{drag}} h$	101.2	$101.0^{+5.8}_{-5.7}$	$H(0.38)$	83.61	$83.6^{+2.2}_{-2.1}$
$\ln(10^{10} A_{\text{s}})$	3.030	$3.030^{+0.045}_{-0.054}$	$\langle d^2 \rangle^{1/2}$	2.638	$2.63^{+0.19}_{-0.20}$	$D_{\text{M}}(0.38)$	1513	$1515^{+57}_{-56}$
$n_{\text{s}}$	0.9728	$0.971^{+0.021}_{-0.021}$	$z_{\text{re}}$	7.25	$7.2^{+2.1}_{-3.0}$	$H(0.51)$	90.20	$90.2^{+1.8}_{-1.6}$
$y_{\text{cal}}$	0.99998	$1.0001^{+0.0065}_{-0.0065}$	$10^9 A_{\text{s}}$	2.071	$2.069^{+0.095}_{-0.11}$	$D_{\text{M}}(0.51)$	1962	$1965^{+67}_{-66}$
$A_{100}^{\text{PS}}$	221	$232^{+60}_{-70}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8702	$1.870^{+0.040}_{-0.040}$	$H(0.61)$	95.73	$95.7^{+1.5}_{-1.3}$
$A_{143}^{\text{PS}}$	47.8	$35^{+20}_{-20}$	$D_{40}$	1211	$1214^{+51}_{-49}$	$D_{\text{M}}(0.61)$	2285	$2287^{+72}_{-71}$
$A_{217}^{\text{PS}}$	107.6	$103^{+30}_{-30}$	$D_{220}$	5729	$5729^{+110}_{-110}$	$H(2.33)$	235.09	$235.2^{+4.1}_{-3.8}$
$A_{217}^{\text{CIB}}$	38.9	$38^{+20}_{-20}$	$D_{810}$	2528.0	$2526^{+37}_{-37}$	$D_{\text{M}}(2.33)$	5744	$5746^{+59}_{-63}$
$A_{143}^{\text{tSZ}}$	6.40	$< 8.92$	$D_{1420}$	814.5	$813^{+13}_{-14}$	$f\sigma_8(0.15)$	0.4425	$0.444^{+0.043}_{-0.042}$
$r_{143 \times 217}^{\text{PS}}$	0.773	$> 0.345$	$D_{2000}$	232.2	$231.7^{+5.6}_{-5.8}$	$\sigma_8(0.15)$	0.7394	$0.739^{+0.024}_{-0.026}$
$r_{143 \times 217}^{\text{CIB}}$	0.85	—	$n_{\text{s},0.002}$	0.9728	$0.971^{+0.021}_{-0.021}$	$f\sigma_8(0.38)$	0.4633	$0.464^{+0.034}_{-0.034}$
$\xi^{\text{tSZ} \times \text{CIB}}$	1.00	—	$Y_{\text{P}}$	0.245464	$0.24546^{+0.00034}_{-0.00034}$	$\sigma_8(0.38)$	0.6568	$0.656^{+0.019}_{-0.021}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}^{\text{BBN}}$	0.246791	$0.24678^{+0.00034}_{-0.00034}$	$f\sigma_8(0.51)$	0.4633	$0.464^{+0.028}_{-0.030}$
$A_{100}^{\text{dust}}$	1.00	$1.01^{+0.50}_{-0.51}$	$10^5 \text{D/H}$	2.552	$2.56^{+0.15}_{-0.14}$	$\sigma_8(0.51)$	0.6152	$0.615^{+0.016}_{-0.018}$
$A_{143}^{\text{dust}}$	0.969	$0.96^{+0.46}_{-0.45}$	Age/Gyr	13.756	$13.76^{+0.13}_{-0.14}$	$f\sigma_8(0.61)$	0.4594	$0.460^{+0.025}_{-0.026}$
$A_{217}^{\text{dust}}$	0.985	$0.98^{+0.27}_{-0.27}$	$z_*$	1089.47	$1089.5^{+1.5}_{-1.4}$	$\sigma_8(0.61)$	0.5857	$0.585^{+0.015}_{-0.017}$
$A_{143 \times 217}^{\text{dust}}$	1.003	$1.02^{+0.41}_{-0.41}$	$r_*$	144.96	$144.9^{+1.4}_{-1.4}$	$f\sigma_8(2.33)$	0.2958	$0.2955^{+0.0071}_{-0.0082}$
$c_{100}$	0.99793	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04149	$1.0415^{+0.0014}_{-0.0014}$	$\sigma_8(2.33)$	0.3055	$0.3052^{+0.0071}_{-0.0082}$
$c_{217}$	1.00095	$1.0009^{+0.0041}_{-0.0040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.918	$13.91^{+0.13}_{-0.13}$	$f_{2000}^{143}$	27.0	$27^{+9}_{-9}$
$H_0$	68.55	$68.4^{+3.4}_{-3.3}$	$z_{\text{drag}}$	1060.16	$1060.1^{+1.5}_{-1.5}$	$f_{2000}^{217}$	104.3	$105.0^{+6.3}_{-6.2}$
$\Omega_{\Lambda}$	0.7007	$0.699^{+0.040}_{-0.046}$	$r_{\text{drag}}$	147.57	$147.5^{+1.3}_{-1.4}$	$f_{2000}^{143 \times 217}$	29.7	$30^{+7}_{-7}$
$\Omega_{\text{m}}$	0.2993	$0.301^{+0.046}_{-0.040}$	$k_{\text{D}}$	0.14050	$0.1405^{+0.0014}_{-0.0013}$	$\chi_{\text{simall}}^2$	395.67	$396.8 (\nu: 1.2)$
$\Omega_{\text{m}} h^2$	0.1406	$0.1409^{+0.0066}_{-0.0062}$	$100\theta_{\text{D}}$	0.16065	$0.16068^{+0.00084}_{-0.00078}$	$\chi_{\text{CamSpec}}^2$	7045.6	$7059.8 (\nu: 14.2)$
$\Omega_{\text{m}} h^3$	0.09641	$0.0964^{+0.0013}_{-0.0013}$	$z_{\text{eq}}$	3345	$3351^{+160}_{-150}$	$\chi_{\text{prior}}^2$	1.4	$7.2 (\nu: 5.5)$
$\sigma_8$	0.7989	$0.799^{+0.029}_{-0.031}$	$k_{\text{eq}}$	0.010210	$0.01023^{+0.00048}_{-0.00045}$	$\chi_{\text{CMB}}^2$	7441.3	$7456.6 (\nu: 15.5)$

Best-fit  $\chi_{\text{eff}}^2 = 7442.68$ ;  $\Delta\chi_{\text{eff}}^2 = -5.15$ ;  $\bar{\chi}_{\text{eff}}^2 = 7463.85$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -3.64$ ;  $R - 1 = 0.00741$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 ( $\Delta$  -0.16) CamSpec like\_10.7HM: 7045.62 ( $\Delta$  -4.09)



### 3.34 base\_Alens\_CamSpecHM\_TTTEEE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\text{b}}h^2$	0.02250	$0.02247^{+0.00051}_{-0.00049}$	$\Omega_{\text{m}}h^3$	0.09631	$0.09626^{+0.00087}_{-0.00085}$	$z_{\text{eq}}$	3361	$3362^{+95}_{-94}$
$\Omega_{\text{c}}h^2$	0.11815	$0.1182^{+0.0043}_{-0.0043}$	$\sigma_8$	0.843	$0.850^{+0.10}_{-0.088}$	$k_{\text{eq}}$	0.010259	$0.01026^{+0.00029}_{-0.00029}$
$100\theta_{\text{MC}}$	1.04105	$1.04105^{+0.00086}_{-0.00086}$	$S_8$	0.849	$0.86^{+0.12}_{-0.10}$	$100\theta_{\text{eq}}$	0.8212	$0.821^{+0.019}_{-0.018}$
$\tau$	0.101	$< 0.224$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.465	$0.469^{+0.065}_{-0.056}$	$100\theta_{\text{s,eq}}$	0.4534	$0.4534^{+0.0095}_{-0.0092}$
$A_{\text{L}}$	1.035	$1.02^{+0.31}_{-0.27}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.626	$0.632^{+0.082}_{-0.069}$	$H(0.15)$	73.37	$73.3^{+1.7}_{-1.7}$
$\ln(10^{10}A_{\text{s}})$	3.133	$3.15^{+0.23}_{-0.20}$	$\sigma_8/h^{0.5}$	1.021	$1.03^{+0.13}_{-0.11}$	$D_{\text{M}}(0.15)$	636.6	$637^{+17}_{-17}$
$n_{\text{s}}$	0.9716	$0.971^{+0.017}_{-0.015}$	$r_{\text{drag}}h$	100.49	$100.5^{+3.5}_{-3.3}$	$H(0.38)$	83.35	$83.3^{+1.3}_{-1.2}$
$A_{100}^{\text{PS}}$	222	$232^{+60}_{-70}$	$\langle d^2 \rangle^{1/2}$	2.566	$2.55^{+0.16}_{-0.18}$	$D_{\text{M}}(0.38)$	1519.9	$1521^{+33}_{-34}$
$A_{143}^{\text{PS}}$	48.5	$35^{+20}_{-20}$	$z_{\text{re}}$	11.9	$12.0^{+8.9}_{-9.7}$	$H(0.51)$	90.00	$90.0^{+1.0}_{-0.96}$
$A_{217}^{\text{PS}}$	108.5	$105^{+30}_{-30}$	$10^9 A_{\text{s}}$	2.29	$2.34^{+0.59}_{-0.45}$	$D_{\text{M}}(0.51)$	1970.1	$1971^{+39}_{-40}$
$A_{217}^{\text{CIB}}$	38.8	$37^{+20}_{-20}$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8725	$1.871^{+0.033}_{-0.034}$	$H(0.61)$	95.56	$95.54^{+0.85}_{-0.77}$
$A_{143}^{\text{tSZ}}$	6.30	$< 8.83$	$D_{40}$	1234	$1247^{+87}_{-60}$	$D_{\text{M}}(0.61)$	2293.4	$2294^{+42}_{-43}$
$r_{143 \times 217}^{\text{PS}}$	0.775	$> 0.363$	$D_{220}$	5724	$5720^{+110}_{-110}$	$H(2.33)$	235.49	$235.5^{+2.5}_{-2.4}$
$r_{143 \times 217}^{\text{CIB}}$	0.84	—	$D_{810}$	2530.6	$2529^{+36}_{-36}$	$D_{\text{M}}(2.33)$	5751.8	$5753^{+35}_{-38}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.996	—	$D_{1420}$	815.7	$815^{+13}_{-13}$	$f\sigma_8(0.15)$	0.470	$0.475^{+0.065}_{-0.055}$
$A^{\text{kSZ}}$	0.0	—	$D_{2000}$	231.94	$231.6^{+4.9}_{-4.8}$	$\sigma_8(0.15)$	0.780	$0.787^{+0.097}_{-0.081}$
$A_{100}^{\text{dust}}$	1.00	$0.998^{+0.50}_{-0.50}$	$n_{\text{s},0.002}$	0.9716	$0.971^{+0.017}_{-0.015}$	$f\sigma_8(0.38)$	0.491	$0.496^{+0.065}_{-0.054}$
$A_{143}^{\text{dust}}$	0.960	$0.94^{+0.46}_{-0.45}$	$Y_{\text{P}}$	0.245446	$0.24543^{+0.00021}_{-0.00020}$	$\sigma_8(0.38)$	0.692	$0.698^{+0.086}_{-0.071}$
$A_{217}^{\text{dust}}$	0.987	$0.98^{+0.27}_{-0.26}$	$Y_{\text{P}}^{\text{BBN}}$	0.246772	$0.24676^{+0.00021}_{-0.00020}$	$f\sigma_8(0.51)$	0.491	$0.495^{+0.064}_{-0.053}$
$A_{143 \times 217}^{\text{dust}}$	1.001	$1.02^{+0.41}_{-0.40}$	$10^5 \text{D}/\text{H}$	2.561	$2.567^{+0.093}_{-0.091}$	$\sigma_8(0.51)$	0.648	$0.654^{+0.080}_{-0.066}$
$y_{\text{cal}}$	1.0000	$1.0001^{+0.0065}_{-0.0064}$	Age/Gyr	13.772	$13.775^{+0.079}_{-0.082}$	$f\sigma_8(0.61)$	0.486	$0.490^{+0.062}_{-0.053}$
$c_{100}$	0.99791	$0.9976^{+0.0028}_{-0.0028}$	$z_*$	1089.59	$1089.64^{+0.90}_{-0.91}$	$\sigma_8(0.61)$	0.617	$0.622^{+0.076}_{-0.063}$
$c_{217}$	1.00098	$1.0009^{+0.0041}_{-0.0040}$	$r_*$	144.81	$144.82^{+0.90}_{-0.90}$	$f\sigma_8(2.33)$	0.3113	$0.314^{+0.039}_{-0.032}$
$c_{\text{TE}}$	0.9919	$0.992^{+0.014}_{-0.014}$	$100\theta_*$	1.04123	$1.04122^{+0.00083}_{-0.00084}$	$\sigma_8(2.33)$	0.3213	$0.324^{+0.040}_{-0.033}$
$c_{\text{EE}}$	0.9905	$0.990^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.908	$13.909^{+0.083}_{-0.083}$	$f_{2000}^{143}$	27.2	$27^{+8}_{-8}$
$H_0$	68.16	$68.1^{+2.0}_{-1.9}$	$z_{\text{drag}}$	1060.12	$1060.04^{+0.99}_{-0.99}$	$f_{2000}^{217}$	104.6	$105.1^{+5.7}_{-5.7}$
$\Omega_{\Lambda}$	0.6959	$0.695^{+0.025}_{-0.027}$	$r_{\text{drag}}$	147.43	$147.46^{+0.88}_{-0.87}$	$f_{2000}^{143 \times 217}$	29.9	$30^{+6}_{-6}$
$\Omega_{\text{m}}$	0.3041	$0.305^{+0.027}_{-0.025}$	$k_{\text{D}}$	0.14061	$0.14056^{+0.00092}_{-0.00092}$	$\chi_{\text{CamSpec}}^2$	11495.7	$11512.3 (\nu: 16.2)$
$\Omega_{\text{m}}h^2$	0.14130	$0.1413^{+0.0040}_{-0.0039}$	$100\theta_{\text{D}}$	0.16066	$0.16070^{+0.00057}_{-0.00055}$	$\chi_{\text{prior}}^2$	1.8	$7.8 (\nu: 5.6)$

Best-fit  $\chi_{\text{eff}}^2 = 11497.50$ ;  $\Delta\chi_{\text{eff}}^2 = -0.14$ ;  $\bar{\chi}_{\text{eff}}^2 = 11520.05$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.29$ ;  $R - 1 = 0.00760$   
 $\chi_{\text{eff}}^2$ : CMB - CamSpec like\_10.7HM\_1400\_unified: 11495.71 ( $\Delta$  -0.08)



### 3.35 base\_Alens\_CamSpecHM\_TTTEEE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02247^{+0.00043}_{-0.00043}$	$S_8$	$0.857^{+0.11}_{-0.094}$	$H(0.15)$	$73.3^{+1.2}_{-1.1}$
$\Omega_{\mathrm{c}} h^2$	$0.1182^{+0.0029}_{-0.0028}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.469^{+0.063}_{-0.052}$	$D_{\mathrm{M}}(0.15)$	$637^{+11}_{-11}$
$100\theta_{\mathrm{MC}}$	$1.04105^{+0.00077}_{-0.00076}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.632^{+0.081}_{-0.068}$	$H(0.38)$	$83.32^{+0.87}_{-0.84}$
$\tau$	$< 0.223$	$\sigma_8/h^{0.5}$	$1.03^{+0.13}_{-0.11}$	$D_{\mathrm{M}}(0.38)$	$1521^{+22}_{-22}$
$A_{\mathrm{L}}$	$1.02^{+0.30}_{-0.26}$	$r_{\mathrm{drag}} h$	$100.4^{+2.3}_{-2.2}$	$H(0.51)$	$89.97^{+0.70}_{-0.68}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.15^{+0.23}_{-0.21}$	$\langle d^2 \rangle^{1/2}$	$2.55^{+0.16}_{-0.17}$	$D_{\mathrm{M}}(0.51)$	$1971^{+26}_{-26}$
$n_{\mathrm{s}}$	$0.971^{+0.013}_{-0.012}$	$z_{\mathrm{re}}$	$12.0^{+9.0}_{-9.7}$	$H(0.61)$	$95.54^{+0.59}_{-0.56}$
$A_{100}^{\mathrm{PS}}$	$232^{+60}_{-60}$	$10^9 A_{\mathrm{s}}$	$2.34^{+0.59}_{-0.45}$	$D_{\mathrm{M}}(0.61)$	$2294^{+28}_{-29}$
$A_{143}^{\mathrm{PS}}$	$35^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871^{+0.030}_{-0.029}$	$H(2.33)$	$235.5^{+1.7}_{-1.7}$
$A_{217}^{\mathrm{PS}}$	$105^{+30}_{-30}$	$D_{40}$	$1247^{+87}_{-57}$	$D_{\mathrm{M}}(2.33)$	$5753^{+27}_{-27}$
$A_{217}^{\mathrm{CIB}}$	$37^{+20}_{-20}$	$D_{220}$	$5721^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.475^{+0.063}_{-0.053}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.84$	$D_{810}$	$2529^{+36}_{-35}$	$\sigma_8(0.15)$	$0.786^{+0.097}_{-0.080}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.362$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.38)$	$0.495^{+0.064}_{-0.054}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$231.5^{+4.6}_{-4.6}$	$\sigma_8(0.38)$	$0.698^{+0.086}_{-0.071}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.971^{+0.013}_{-0.012}$	$f\sigma_8(0.51)$	$0.495^{+0.063}_{-0.053}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.24543^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	$0.653^{+0.081}_{-0.066}$
$A_{100}^{\mathrm{dust}}$	$0.998^{+0.51}_{-0.50}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24676^{+0.00017}_{-0.00017}$	$f\sigma_8(0.61)$	$0.490^{+0.062}_{-0.052}$
$A_{143}^{\mathrm{dust}}$	$0.94^{+0.46}_{-0.46}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.568^{+0.081}_{-0.076}$	$\sigma_8(0.61)$	$0.622^{+0.077}_{-0.063}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.26}_{-0.27}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.776^{+0.061}_{-0.061}$	$f\sigma_8(2.33)$	$0.314^{+0.039}_{-0.032}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01^{+0.42}_{-0.40}$	$z_*$	$1089.64^{+0.69}_{-0.67}$	$\sigma_8(2.33)$	$0.324^{+0.040}_{-0.033}$
$y_{\mathrm{cal}}$	$1.0001^{+0.0065}_{-0.0063}$	$r_*$	$144.82^{+0.66}_{-0.65}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0028}$	$100\theta_*$	$1.04122^{+0.00075}_{-0.00076}$	$f_{2000}^{217}$	$105.1^{+5.5}_{-5.4}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909^{+0.063}_{-0.063}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$c_{TE}$	$0.992^{+0.014}_{-0.014}$	$z_{\mathrm{drag}}$	$1060.04^{+0.92}_{-0.91}$	$\chi_{\mathrm{CamSpec}}^2$	$11511.8 (\nu: 15.5)$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.46^{+0.68}_{-0.68}$	$\chi_{6\mathrm{DF}}^2$	$0.032 (\nu: 0.0)$
$H_0$	$68.1^{+1.3}_{-1.3}$	$k_{\mathrm{D}}$	$0.14056^{+0.00082}_{-0.00084}$	$\chi_{\mathrm{MGS}}^2$	$1.74 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.695^{+0.017}_{-0.018}$	$100\theta_{\mathrm{D}}$	$0.16070^{+0.00054}_{-0.00052}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.02 (\nu: 0.4)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.018}_{-0.017}$	$z_{\mathrm{eq}}$	$3362^{+64}_{-64}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1413^{+0.0027}_{-0.0027}$	$k_{\mathrm{eq}}$	$0.01026^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{BAO}}^2$	$5.79 (\nu: 0.3)$
$\Omega_{\mathrm{m}} h^3$	$0.09626^{+0.00086}_{-0.00084}$	$100\theta_{\mathrm{eq}}$	$0.821^{+0.012}_{-0.012}$		
$\sigma_8$	$0.850^{+0.11}_{-0.087}$	$100\theta_{\mathrm{s,eq}}$	$0.4533^{+0.0064}_{-0.0062}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11525.37; R - 1 = 0.00886$$



### 3.36 base\_Alens\_CamSpecHM\_TTTEEE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02248^{+0.00051}_{-0.00050}$	$\Omega_m h^3$	$0.09626^{+0.00085}_{-0.00085}$	$z_{\text{eq}}$	$3360^{+94}_{-94}$
$\Omega_c h^2$	$0.1181^{+0.0042}_{-0.0042}$	$\sigma_8$	$0.864^{+0.092}_{-0.076}$	$k_{\text{eq}}$	$0.01025^{+0.00029}_{-0.00029}$
$100\theta_{\text{MC}}$	$1.04105^{+0.00086}_{-0.00087}$	$S_8$	$0.870^{+0.11}_{-0.092}$	$100\theta_{\text{eq}}$	$0.821^{+0.019}_{-0.018}$
$\tau$	$0.126^{+0.10}_{-0.085}$	$\sigma_8 \Omega_m^{0.5}$	$0.477^{+0.059}_{-0.050}$	$100\theta_{\text{s,eq}}$	$0.4535^{+0.0095}_{-0.0091}$
$A_L$	$0.98^{+0.26}_{-0.24}$	$\sigma_8 \Omega_m^{0.25}$	$0.642^{+0.073}_{-0.060}$	$H(0.15)$	$73.4^{+1.8}_{-1.7}$
$\ln(10^{10} A_s)$	$3.18^{+0.20}_{-0.17}$	$\sigma_8/h^{0.5}$	$1.05^{+0.12}_{-0.095}$	$D_M(0.15)$	$637^{+17}_{-17}$
$n_s$	$0.972^{+0.016}_{-0.015}$	$r_{\text{drag}} h$	$100.5^{+3.5}_{-3.3}$	$H(0.38)$	$83.3^{+1.3}_{-1.2}$
$A_{100}^{\text{PS}}$	$231^{+60}_{-70}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.16}_{-0.17}$	$D_M(0.38)$	$1520^{+33}_{-34}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$z_{\text{re}}$	$< 20.7$	$H(0.51)$	$90.0^{+1.0}_{-0.97}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$10^9 A_s$	$2.42^{+0.52}_{-0.40}$	$D_M(0.51)$	$1970^{+39}_{-40}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.033}_{-0.033}$	$H(0.61)$	$95.55^{+0.86}_{-0.78}$
$A_{143}^{\text{tSZ}}$	$< 8.84$	$D_{40}$	$1253^{+82}_{-61}$	$D_M(0.61)$	$2294^{+42}_{-43}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.364$	$D_{220}$	$5718^{+110}_{-110}$	$H(2.33)$	$235.4^{+2.5}_{-2.4}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{810}$	$2528^{+36}_{-36}$	$D_M(2.33)$	$5753^{+36}_{-38}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.15)$	$0.482^{+0.058}_{-0.049}$
$A^{\text{kSZ}}$	—	$D_{2000}$	$231.7^{+4.9}_{-4.8}$	$\sigma_8(0.15)$	$0.799^{+0.085}_{-0.070}$
$A_{100}^{\text{dust}}$	$0.995^{+0.50}_{-0.50}$	$n_{\text{s},0.002}$	$0.972^{+0.016}_{-0.015}$	$f\sigma_8(0.38)$	$0.503^{+0.058}_{-0.048}$
$A_{143}^{\text{dust}}$	$0.94^{+0.46}_{-0.45}$	$Y_{\text{P}}$	$0.24543^{+0.00021}_{-0.00020}$	$\sigma_8(0.38)$	$0.709^{+0.075}_{-0.061}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24676^{+0.00021}_{-0.00020}$	$f\sigma_8(0.51)$	$0.503^{+0.056}_{-0.046}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.41}_{-0.41}$	$10^5 \text{D/H}$	$2.566^{+0.093}_{-0.091}$	$\sigma_8(0.51)$	$0.664^{+0.070}_{-0.057}$
$y_{\text{cal}}$	$1.0001^{+0.0065}_{-0.0064}$	$\text{Age/Gyr}$	$13.774^{+0.080}_{-0.082}$	$f\sigma_8(0.61)$	$0.498^{+0.055}_{-0.045}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0028}$	$z_*$	$1089.62^{+0.91}_{-0.91}$	$\sigma_8(0.61)$	$0.632^{+0.067}_{-0.054}$
$c_{217}$	$1.0009^{+0.0041}_{-0.0040}$	$r_*$	$144.84^{+0.90}_{-0.89}$	$f\sigma_8(2.33)$	$0.319^{+0.034}_{-0.027}$
$c_{TE}$	$0.992^{+0.014}_{-0.014}$	$100\theta_*$	$1.04123^{+0.00084}_{-0.00084}$	$\sigma_8(2.33)$	$0.329^{+0.035}_{-0.028}$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	$13.910^{+0.083}_{-0.083}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$H_0$	$68.2^{+2.0}_{-1.9}$	$z_{\text{drag}}$	$1060.05^{+0.99}_{-1.0}$	$f_{2000}^{217}$	$104.9^{+5.7}_{-5.6}$
$\Omega_\Lambda$	$0.696^{+0.025}_{-0.026}$	$r_{\text{drag}}$	$147.47^{+0.87}_{-0.87}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$\Omega_m$	$0.304^{+0.026}_{-0.025}$	$k_{\text{D}}$	$0.14055^{+0.00092}_{-0.00092}$	$\chi_{\text{CamSpec}}^2$	$11512.2 (\nu: 16.3)$
$\Omega_m h^2$	$0.1412^{+0.0039}_{-0.0039}$	$100\theta_{\text{D}}$	$0.16069^{+0.00057}_{-0.00054}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.6)$

$$\bar{\chi}_{\text{eff}}^2 = 11520.01; R - 1 = 0.00786$$



### 3.37 base\_Alens\_CamSpecHM\_TTTEEE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02247^{+0.00042}_{-0.00043}$	$S_8$	$0.870^{+0.10}_{-0.083}$	$H(0.15)$	$73.3^{+1.1}_{-1.1}$
$\Omega_c h^2$	$0.1182^{+0.0029}_{-0.0029}$	$\sigma_8 \Omega_m^{0.5}$	$0.477^{+0.056}_{-0.046}$	$D_M(0.15)$	$637^{+11}_{-11}$
$100\theta_{MC}$	$1.04105^{+0.00077}_{-0.00076}$	$\sigma_8 \Omega_m^{0.25}$	$0.642^{+0.071}_{-0.059}$	$H(0.38)$	$83.33^{+0.86}_{-0.84}$
$\tau$	$0.125^{+0.10}_{-0.085}$	$\sigma_8/h^{0.5}$	$1.05^{+0.11}_{-0.095}$	$D_M(0.38)$	$1520^{+23}_{-22}$
$A_L$	$0.98^{+0.26}_{-0.23}$	$r_{\text{drag}} h$	$100.5^{+2.3}_{-2.2}$	$H(0.51)$	$89.98^{+0.69}_{-0.68}$
$\ln(10^{10} A_s)$	$3.18^{+0.20}_{-0.17}$	$\langle d^2 \rangle^{1/2}$	$2.55^{+0.16}_{-0.17}$	$D_M(0.51)$	$1971^{+26}_{-26}$
$n_s$	$0.972^{+0.013}_{-0.012}$	$z_{\text{re}}$	$< 20.7$	$H(0.61)$	$95.54^{+0.58}_{-0.56}$
$A_{100}^{\text{PS}}$	$232^{+60}_{-60}$	$10^9 A_s$	$2.41^{+0.52}_{-0.40}$	$D_M(0.61)$	$2294^{+29}_{-29}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.030}_{-0.029}$	$H(2.33)$	$235.5^{+1.7}_{-1.7}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{40}$	$1253^{+82}_{-59}$	$D_M(2.33)$	$5753^{+27}_{-27}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{220}$	$5719^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.482^{+0.056}_{-0.045}$
$A_{143}^{\text{tSZ}}$	$< 8.86$	$D_{810}$	$2528^{+36}_{-35}$	$\sigma_8(0.15)$	$0.799^{+0.086}_{-0.069}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.366$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.38)$	$0.503^{+0.056}_{-0.047}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$231.6^{+4.6}_{-4.6}$	$\sigma_8(0.38)$	$0.709^{+0.076}_{-0.061}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{s,0.002}$	$0.972^{+0.013}_{-0.012}$	$f\sigma_8(0.51)$	$0.503^{+0.055}_{-0.046}$
$A^{\text{kSZ}}$	—	$Y_P$	$0.24543^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	$0.664^{+0.071}_{-0.057}$
$A_{100}^{\text{dust}}$	$0.995^{+0.51}_{-0.50}$	$Y_P^{\text{BBN}}$	$0.24676^{+0.00017}_{-0.00017}$	$f\sigma_8(0.61)$	$0.498^{+0.055}_{-0.045}$
$A_{143}^{\text{dust}}$	$0.94^{+0.46}_{-0.46}$	$10^5 D/H$	$2.567^{+0.080}_{-0.076}$	$\sigma_8(0.61)$	$0.632^{+0.067}_{-0.054}$
$A_{217}^{\text{dust}}$	$0.98^{+0.25}_{-0.27}$	$\text{Age/Gyr}$	$13.775^{+0.060}_{-0.061}$	$f\sigma_8(2.33)$	$0.319^{+0.034}_{-0.027}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.42}_{-0.41}$	$z_*$	$1089.63^{+0.68}_{-0.67}$	$\sigma_8(2.33)$	$0.329^{+0.035}_{-0.028}$
$y_{\text{cal}}$	$1.0001^{+0.0064}_{-0.0063}$	$r_*$	$144.83^{+0.66}_{-0.66}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0028}$	$100\theta_*$	$1.04123^{+0.00076}_{-0.00076}$	$f_{2000}^{217}$	$105.0^{+5.3}_{-5.3}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.063}_{-0.062}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$c_{TE}$	$0.992^{+0.014}_{-0.014}$	$z_{\text{drag}}$	$1060.04^{+0.92}_{-0.95}$	$\chi_{\text{CamSpec}}^2$	$11511.7 (\nu: 15.7)$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.46^{+0.68}_{-0.67}$	$\chi_{6\text{DF}}^2$	$0.032 (\nu: 0.0)$
$H_0$	$68.1^{+1.3}_{-1.3}$	$k_D$	$0.14055^{+0.00082}_{-0.00083}$	$\chi_{\text{MGS}}^2$	$1.75 (\nu: 0.1)$
$\Omega_\Lambda$	$0.696^{+0.017}_{-0.018}$	$100\theta_D$	$0.16070^{+0.00055}_{-0.00052}$	$\chi_{\text{DR12BAO}}^2$	$4.00 (\nu: 0.4)$
$\Omega_m$	$0.304^{+0.018}_{-0.017}$	$z_{\text{eq}}$	$3361^{+64}_{-64}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_m h^2$	$0.1413^{+0.0027}_{-0.0027}$	$k_{\text{eq}}$	$0.01026^{+0.00020}_{-0.00020}$	$\chi_{\text{BAO}}^2$	$5.79 (\nu: 0.3)$
$\Omega_m h^3$	$0.09626^{+0.00083}_{-0.00084}$	$100\theta_{\text{eq}}$	$0.821^{+0.012}_{-0.012}$		
$\sigma_8$	$0.864^{+0.093}_{-0.076}$	$100\theta_{s,\text{eq}}$	$0.4534^{+0.0064}_{-0.0062}$		

$$\bar{\chi}_{\text{eff}}^2 = 11525.31; R - 1 = 0.00906$$



### 3.38 base\_Alens\_CamSpecHM\_TTTEEE\_lowl

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022524	$0.02251^{+0.00049}_{-0.00048}$	$\sigma_8$	0.769	$0.805^{+0.081}_{-0.048}$	$100\theta_{\text{eq}}$	0.8220	$0.823^{+0.018}_{-0.018}$
$\Omega_c h^2$	0.11795	$0.1179^{+0.0043}_{-0.0040}$	$S_8$	0.772	$0.808^{+0.091}_{-0.066}$	$100\theta_{\text{s,eq}}$	0.4538	$0.4541^{+0.0089}_{-0.0091}$
$100\theta_{\text{MC}}$	1.04108	$1.04108^{+0.00084}_{-0.00085}$	$\sigma_8 \Omega_m^{0.5}$	0.4230	$0.443^{+0.050}_{-0.036}$	$H(0.15)$	73.45	$73.5^{+1.7}_{-1.6}$
$\tau$	0.010	$< 0.151$	$\sigma_8 \Omega_m^{0.25}$	0.570	$0.597^{+0.065}_{-0.040}$	$D_{\text{M}}(0.15)$	635.7	$636^{+16}_{-16}$
$A_{\text{L}}$	1.248	$1.14^{+0.24}_{-0.25}$	$\sigma_8/h^{0.5}$	0.930	$0.974^{+0.11}_{-0.062}$	$H(0.38)$	83.42	$83.4^{+1.2}_{-1.2}$
$\ln(10^{10} A_{\text{s}})$	2.950	$3.04^{+0.19}_{-0.11}$	$r_{\text{drag}} h$	100.66	$100.7^{+3.3}_{-3.3}$	$D_{\text{M}}(0.38)$	1518.2	$1518^{+32}_{-32}$
$n_{\text{s}}$	0.9717	$0.972^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.568	$2.56^{+0.17}_{-0.18}$	$H(0.51)$	90.05	$90.1^{+1.0}_{-0.95}$
$y_{\text{cal}}$	0.99998	$1.0001^{+0.0065}_{-0.0064}$	$z_{\text{re}}$	2.1	$7.5^{+8.4}_{-5.8}$	$D_{\text{M}}(0.51)$	1968.1	$1968^{+38}_{-38}$
$A_{100}^{\text{PS}}$	222	$232^{+60}_{-60}$	$10^9 A_{\text{s}}$	1.910	$2.10^{+0.44}_{-0.22}$	$H(0.61)$	95.60	$95.61^{+0.82}_{-0.76}$
$A_{143}^{\text{PS}}$	48.5	$35^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8720	$1.870^{+0.032}_{-0.031}$	$D_{\text{M}}(0.61)$	2291.3	$2291^{+41}_{-41}$
$A_{217}^{\text{PS}}$	108.5	$105^{+30}_{-30}$	$D_{40}$	1206.1	$1217^{+54}_{-39}$	$H(2.33)$	235.38	$235.3^{+2.5}_{-2.3}$
$A_{217}^{\text{CIB}}$	38.7	$37^{+20}_{-20}$	$D_{220}$	5725	$5722^{+100}_{-100}$	$D_{\text{M}}(2.33)$	5750.1	$5750^{+35}_{-36}$
$A_{143}^{\text{tSZ}}$	6.30	$< 8.83$	$D_{810}$	2530.4	$2528^{+34}_{-36}$	$f\sigma_8(0.15)$	0.4280	$0.448^{+0.050}_{-0.035}$
$r_{143 \times 217}^{\text{PS}}$	0.779	$> 0.370$	$D_{1420}$	815.6	$815^{+12}_{-13}$	$\sigma_8(0.15)$	0.711	$0.744^{+0.075}_{-0.043}$
$r_{143 \times 217}^{\text{CIB}}$	0.83	—	$D_{2000}$	231.89	$231.6^{+4.4}_{-4.4}$	$f\sigma_8(0.38)$	0.4472	$0.468^{+0.051}_{-0.032}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.998	—	$n_{\text{s},0.002}$	0.9717	$0.972^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	0.631	$0.661^{+0.066}_{-0.037}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}$	0.245453	$0.24545^{+0.00020}_{-0.00019}$	$f\sigma_8(0.51)$	0.4469	$0.468^{+0.051}_{-0.030}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	0.246780	$0.24677^{+0.00020}_{-0.00019}$	$\sigma_8(0.51)$	0.5911	$0.619^{+0.062}_{-0.034}$
$A_{143}^{\text{dust}}$	0.971	$0.95^{+0.45}_{-0.45}$	$10^5 D/H$	2.558	$2.561^{+0.089}_{-0.088}$	$f\sigma_8(0.61)$	0.4428	$0.463^{+0.047}_{-0.031}$
$A_{217}^{\text{dust}}$	0.993	$0.98^{+0.26}_{-0.26}$	Age/Gyr	13.768	$13.769^{+0.078}_{-0.078}$	$\sigma_8(0.61)$	0.5627	$0.589^{+0.059}_{-0.032}$
$A_{143 \times 217}^{\text{dust}}$	1.016	$1.01^{+0.42}_{-0.41}$	$z_*$	1089.55	$1089.56^{+0.87}_{-0.86}$	$f\sigma_8(2.33)$	0.2840	$0.297^{+0.030}_{-0.016}$
$c_{100}$	0.99788	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	144.85	$144.88^{+0.85}_{-0.90}$	$\sigma_8(2.33)$	0.2932	$0.307^{+0.031}_{-0.016}$
$c_{217}$	1.00107	$1.0009^{+0.0041}_{-0.0040}$	$100\theta_*$	1.04125	$1.04125^{+0.00083}_{-0.00083}$	$f_{2000}^{143}$	27.2	$27^{+8}_{-8}$
$c_{TE}$	0.9922	$0.992^{+0.014}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.911	$13.914^{+0.079}_{-0.083}$	$f_{2000}^{217}$	104.7	$105.0^{+5.4}_{-5.5}$
$c_{EE}$	0.9904	$0.990^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.16	$1060.10^{+0.97}_{-0.97}$	$f_{2000}^{143 \times 217}$	30.0	$30^{+6}_{-6}$
$H_0$	68.26	$68.3^{+1.9}_{-1.9}$	$r_{\text{drag}}$	147.46	$147.51^{+0.84}_{-0.87}$	$\chi_{\text{lowl}}^2$	21.34	$22.5 (\nu: 1.0)$
$\Omega_{\Lambda}$	0.6971	$0.697^{+0.024}_{-0.026}$	$k_{\text{D}}$	0.14059	$0.14053^{+0.00092}_{-0.00090}$	$\chi_{\text{CamSpec}}^2$	11496.5	$11512.4 (\nu: 16.3)$
$\Omega_{\text{m}}$	0.3029	$0.303^{+0.026}_{-0.024}$	$100\theta_{\text{D}}$	0.16064	$0.16066^{+0.00055}_{-0.00053}$	$\chi_{\text{prior}}^2$	1.9	$7.7 (\nu: 5.5)$
$\Omega_{\text{m}} h^2$	0.14112	$0.1410^{+0.0039}_{-0.0037}$	$z_{\text{eq}}$	3357	$3354^{+94}_{-87}$	$\chi_{\text{CMB}}^2$	11517.8	$11534.9 (\nu: 16.8)$
$\Omega_{\text{m}} h^3$	0.09633	$0.09628^{+0.00085}_{-0.00087}$	$k_{\text{eq}}$	0.010245	$0.01024^{+0.00029}_{-0.00027}$			

Best-fit  $\chi_{\text{eff}}^2 = 11519.71$ ;  $\Delta\chi_{\text{eff}}^2 = -2.34$ ;  $\bar{\chi}_{\text{eff}}^2 = 11542.67$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -1.43$ ;  $R - 1 = 0.01017$

$\chi_{\text{eff}}^2$ : CMB - commander\_dx12\_v3\_2\_29: 21.34 ( $\Delta$  -2.58) CamSpec like\_10.7HM.1400\_unified: 11496.50 ( $\Delta$  0.28)



### 3.39 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02249^{+0.00042}_{-0.00042}$	$S_8$	$0.809^{+0.084}_{-0.059}$	$H(0.15)$	$73.4^{+1.1}_{-1.1}$
$\Omega_{\mathrm{c}}h^2$	$0.1180^{+0.0028}_{-0.0028}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.046}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$636^{+11}_{-11}$
$100\theta_{\mathrm{MC}}$	$1.04106^{+0.00075}_{-0.00078}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.597^{+0.060}_{-0.038}$	$H(0.38)$	$83.37^{+0.86}_{-0.83}$
$\tau$	$< 0.146$	$\sigma_8/h^{0.5}$	$0.974^{+0.098}_{-0.060}$	$D_{\mathrm{M}}(0.38)$	$1519^{+22}_{-22}$
$A_{\mathrm{L}}$	$1.13^{+0.22}_{-0.25}$	$r_{\mathrm{drag}}h$	$100.6^{+2.2}_{-2.2}$	$H(0.51)$	$90.01^{+0.70}_{-0.67}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.04^{+0.19}_{-0.10}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.17}_{-0.17}$	$D_{\mathrm{M}}(0.51)$	$1969^{+26}_{-26}$
$n_{\mathrm{s}}$	$0.971^{+0.011}_{-0.011}$	$z_{\mathrm{re}}$	$7.4^{+8.3}_{-5.7}$	$H(0.61)$	$95.57^{+0.59}_{-0.56}$
$y_{\mathrm{cal}}$	$1.0000^{+0.0065}_{-0.0066}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.42}_{-0.21}$	$D_{\mathrm{M}}(0.61)$	$2293^{+28}_{-28}$
$A_{100}^{\mathrm{PS}}$	$232^{+60}_{-70}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871^{+0.029}_{-0.028}$	$H(2.33)$	$235.4^{+1.7}_{-1.7}$
$A_{143}^{\mathrm{PS}}$	$35^{+20}_{-20}$	$D_{40}$	$1218^{+52}_{-37}$	$D_{\mathrm{M}}(2.33)$	$5752^{+27}_{-27}$
$A_{217}^{\mathrm{PS}}$	$105^{+30}_{-30}$	$D_{220}$	$5721^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.448^{+0.046}_{-0.032}$
$A_{217}^{\mathrm{CIB}}$	$37^{+20}_{-20}$	$D_{810}$	$2528^{+33}_{-36}$	$\sigma_8(0.15)$	$0.744^{+0.073}_{-0.041}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.82$	$D_{1420}$	$815^{+12}_{-13}$	$f\sigma_8(0.38)$	$0.468^{+0.047}_{-0.031}$
$r_{143\times 217}^{\mathrm{PS}}$	$> 0.374$	$D_{2000}$	$231.5^{+4.2}_{-4.3}$	$\sigma_8(0.38)$	$0.660^{+0.065}_{-0.036}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.971^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.468^{+0.047}_{-0.029}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24544^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	$0.618^{+0.061}_{-0.033}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24677^{+0.00017}_{-0.00017}$	$f\sigma_8(0.61)$	$0.464^{+0.046}_{-0.028}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.49}$	$10^5\mathrm{D}/\mathrm{H}$	$2.564^{+0.078}_{-0.075}$	$\sigma_8(0.61)$	$0.589^{+0.058}_{-0.031}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.44}_{-0.45}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.773^{+0.060}_{-0.060}$	$f\sigma_8(2.33)$	$0.297^{+0.029}_{-0.016}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.60^{+0.67}_{-0.66}$	$\sigma_8(2.33)$	$0.307^{+0.030}_{-0.016}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.40}$	$r_*$	$144.85^{+0.64}_{-0.64}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04123^{+0.00073}_{-0.00076}$	$f_{2000}^{217}$	$105.1^{+5.2}_{-5.2}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.911^{+0.061}_{-0.062}$	$f_{2000}^{143\times 217}$	$30^{+5}_{-6}$
$c_{TE}$	$0.993^{+0.014}_{-0.013}$	$z_{\mathrm{drag}}$	$1060.08^{+0.89}_{-0.91}$	$\chi_{\mathrm{lowl}}^2$	$22.5 (\nu: 0.9)$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.48^{+0.68}_{-0.67}$	$\chi_{\mathrm{CamSpec}}^2$	$11511.8 (\nu: 15.1)$
$H_0$	$68.2^{+1.3}_{-1.3}$	$k_{\mathrm{D}}$	$0.14055^{+0.00084}_{-0.00082}$	$\chi_{6\mathrm{DF}}^2$	$0.031 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.696^{+0.017}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16068^{+0.00053}_{-0.00051}$	$\chi_{\mathrm{MGS}}^2$	$1.82 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.017}_{-0.017}$	$z_{\mathrm{eq}}$	$3358^{+63}_{-63}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.94 (\nu: 0.3)$
$\Omega_{\mathrm{m}}h^2$	$0.1412^{+0.0026}_{-0.0026}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00019}_{-0.00019}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.5)$
$\Omega_{\mathrm{m}}h^3$	$0.09627^{+0.00088}_{-0.00086}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.012}_{-0.012}$	$\chi_{\mathrm{BAO}}^2$	$5.78 (\nu: 0.3)$
$\sigma_8$	$0.804^{+0.080}_{-0.045}$	$100\theta_{\mathrm{s,eq}}$	$0.4537^{+0.0062}_{-0.0062}$	$\chi_{\mathrm{CMB}}^2$	$11534.3 (\nu: 15.7)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11547.85; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -1.38; R - 1 = 0.01201$$



### 3.40 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02252^{+0.00049}_{-0.00048}$	$\sigma_8$	$0.823^{+0.071}_{-0.041}$	$100\theta_{\text{eq}}$	$0.823^{+0.018}_{-0.018}$
$\Omega_c h^2$	$0.1177^{+0.0043}_{-0.0040}$	$S_8$	$0.825^{+0.081}_{-0.060}$	$100\theta_{\text{s,eq}}$	$0.4544^{+0.0091}_{-0.0093}$
$100\theta_{\text{MC}}$	$1.04110^{+0.00084}_{-0.00084}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.044}_{-0.033}$	$H(0.15)$	$73.5^{+1.7}_{-1.7}$
$\tau$	$0.079^{+0.083}_{-0.039}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.610^{+0.056}_{-0.035}$	$D_{\text{M}}(0.15)$	$635^{+17}_{-16}$
$A_{\text{L}}$	$1.09^{+0.21}_{-0.22}$	$\sigma_8/h^{0.5}$	$0.995^{+0.093}_{-0.053}$	$H(0.38)$	$83.5^{+1.3}_{-1.2}$
$\ln(10^{10} A_{\text{s}})$	$3.09^{+0.17}_{-0.086}$	$r_{\text{drag}} h$	$100.8^{+3.3}_{-3.3}$	$D_{\text{M}}(0.38)$	$1517^{+33}_{-33}$
$n_{\text{s}}$	$0.972^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.17}_{-0.18}$	$H(0.51)$	$90.1^{+1.0}_{-0.95}$
$y_{\text{cal}}$	$1.0001^{+0.0069}_{-0.0064}$	$z_{\text{re}}$	$< 16.4$	$D_{\text{M}}(0.51)$	$1967^{+39}_{-39}$
$A_{100}^{\text{PS}}$	$231^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.19^{+0.39}_{-0.19}$	$H(0.61)$	$95.63^{+0.83}_{-0.76}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.869^{+0.034}_{-0.031}$	$D_{\text{M}}(0.61)$	$2290^{+42}_{-42}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{40}$	$1222^{+55}_{-38}$	$H(2.33)$	$235.2^{+2.5}_{-2.3}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{220}$	$5720^{+100}_{-97}$	$D_{\text{M}}(2.33)$	$5749^{+35}_{-36}$
$A_{143}^{\text{tSZ}}$	$< 8.91$	$D_{810}$	$2528^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.457^{+0.044}_{-0.032}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.370$	$D_{1420}$	$815^{+12}_{-12}$	$\sigma_8(0.15)$	$0.761^{+0.066}_{-0.036}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$231.8^{+4.3}_{-4.5}$	$f\sigma_8(0.38)$	$0.478^{+0.044}_{-0.029}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.972^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	$0.676^{+0.058}_{-0.031}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.24545^{+0.00020}_{-0.00019}$	$f\sigma_8(0.51)$	$0.478^{+0.044}_{-0.027}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.51}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00020}_{-0.00019}$	$\sigma_8(0.51)$	$0.633^{+0.055}_{-0.028}$
$A_{143}^{\text{dust}}$	$0.95^{+0.44}_{-0.44}$	$10^5 \text{D}/\text{H}$	$2.559^{+0.089}_{-0.087}$	$f\sigma_8(0.61)$	$0.474^{+0.044}_{-0.025}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.27}$	$\text{Age}/\text{Gyr}$	$13.767^{+0.077}_{-0.079}$	$\sigma_8(0.61)$	$0.603^{+0.052}_{-0.027}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.42}$	$z_*$	$1089.54^{+0.88}_{-0.86}$	$f\sigma_8(2.33)$	$0.304^{+0.026}_{-0.013}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$144.91^{+0.85}_{-0.91}$	$\sigma_8(2.33)$	$0.314^{+0.028}_{-0.014}$
$c_{217}$	$1.0008^{+0.0041}_{-0.0040}$	$100\theta_*$	$1.04127^{+0.00082}_{-0.00082}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$c_{TE}$	$0.992^{+0.014}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.916^{+0.078}_{-0.084}$	$f_{2000}^{217}$	$104.8^{+5.3}_{-5.4}$
$c_{EE}$	$0.990^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1060.12^{+0.92}_{-0.95}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$H_0$	$68.3^{+2.0}_{-1.9}$	$r_{\text{drag}}$	$147.53^{+0.84}_{-0.88}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 1.2)$
$\Omega_{\Lambda}$	$0.698^{+0.024}_{-0.026}$	$k_{\text{D}}$	$0.14052^{+0.00093}_{-0.00089}$	$\chi_{\text{CamSpec}}^2$	$11512.4 (\nu: 16.5)$
$\Omega_{\text{m}}$	$0.302^{+0.026}_{-0.024}$	$100\theta_{\text{D}}$	$0.16066^{+0.00055}_{-0.00052}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.6)$
$\Omega_{\text{m}} h^2$	$0.1409^{+0.0040}_{-0.0037}$	$z_{\text{eq}}$	$3351^{+95}_{-88}$	$\chi_{\text{CMB}}^2$	$11535.5 (\nu: 17.2)$
$\Omega_{\text{m}} h^3$	$0.09628^{+0.00087}_{-0.00085}$	$k_{\text{eq}}$	$0.01023^{+0.00029}_{-0.00027}$		

$$\bar{\chi}_{\text{eff}}^2 = 11543.27; \Delta\bar{\chi}_{\text{eff}}^2 = -0.66; R - 1 = 0.01232$$



### 3.41 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02250^{+0.00043}_{-0.00042}$	$S_8$	$0.827^{+0.076}_{-0.049}$	$H(0.15)$	$73.4^{+1.2}_{-1.1}$
$\Omega_c h^2$	$0.1180^{+0.0029}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.042}_{-0.027}$	$D_M(0.15)$	$636^{+11}_{-11}$
$100\theta_{MC}$	$1.04106^{+0.00075}_{-0.00077}$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.056}_{-0.030}$	$H(0.38)$	$83.38^{+0.87}_{-0.83}$
$\tau$	$0.078^{+0.080}_{-0.038}$	$\sigma_8/h^{0.5}$	$0.996^{+0.085}_{-0.051}$	$D_M(0.38)$	$1519^{+22}_{-22}$
$A_L$	$1.08^{+0.20}_{-0.21}$	$r_{\text{drag}} h$	$100.6^{+2.3}_{-2.2}$	$H(0.51)$	$90.02^{+0.71}_{-0.67}$
$\ln(10^{10} A_s)$	$3.08^{+0.16}_{-0.084}$	$\langle d^2 \rangle^{1/2}$	$2.56^{+0.17}_{-0.17}$	$D_M(0.51)$	$1969^{+26}_{-26}$
$n_s$	$0.972^{+0.011}_{-0.011}$	$z_{\text{re}}$	$< 16.1$	$H(0.61)$	$95.58^{+0.60}_{-0.57}$
$y_{\text{cal}}$	$1.0001^{+0.0071}_{-0.0067}$	$10^9 A_s$	$2.19^{+0.38}_{-0.18}$	$D_M(0.61)$	$2292^{+28}_{-29}$
$A_{100}^{\text{PS}}$	$231^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.030}_{-0.028}$	$H(2.33)$	$235.4^{+1.7}_{-1.7}$
$A_{143}^{\text{PS}}$	$35^{+20}_{-20}$	$D_{40}$	$1223^{+52}_{-35}$	$D_M(2.33)$	$5752^{+27}_{-27}$
$A_{217}^{\text{PS}}$	$105^{+30}_{-30}$	$D_{220}$	$5719^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.458^{+0.042}_{-0.026}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{810}$	$2528^{+34}_{-35}$	$\sigma_8(0.15)$	$0.761^{+0.065}_{-0.034}$
$A_{143}^{\text{tSZ}}$	$< 8.89$	$D_{1420}$	$815^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.479^{+0.044}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.375$	$D_{2000}$	$231.6^{+4.2}_{-4.3}$	$\sigma_8(0.38)$	$0.676^{+0.057}_{-0.029}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.972^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.478^{+0.041}_{-0.025}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24544^{+0.00017}_{-0.00017}$	$\sigma_8(0.51)$	$0.633^{+0.054}_{-0.027}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24677^{+0.00017}_{-0.00017}$	$f\sigma_8(0.61)$	$0.474^{+0.041}_{-0.024}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.47}$	$10^5 D/H$	$2.563^{+0.079}_{-0.077}$	$\sigma_8(0.61)$	$0.602^{+0.051}_{-0.026}$
$A_{143}^{\text{dust}}$	$0.94^{+0.43}_{-0.45}$	$\text{Age/Gyr}$	$13.772^{+0.060}_{-0.061}$	$f\sigma_8(2.33)$	$0.304^{+0.026}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.28}$	$z_*$	$1089.59^{+0.67}_{-0.66}$	$\sigma_8(2.33)$	$0.314^{+0.027}_{-0.013}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.41}$	$r_*$	$144.86^{+0.65}_{-0.64}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04124^{+0.00073}_{-0.00075}$	$f_{2000}^{217}$	$105.0^{+5.2}_{-5.3}$
$c_{217}$	$1.0009^{+0.0040}_{-0.0041}$	$D_M(z_*)/\text{Gpc}$	$13.912^{+0.063}_{-0.062}$	$f_{2000}^{143 \times 217}$	$30^{+5}_{-6}$
$c_{TE}$	$0.992^{+0.014}_{-0.014}$	$z_{\text{drag}}$	$1060.08^{+0.92}_{-0.91}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 1.1)$
$c_{EE}$	$0.990^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$147.48^{+0.68}_{-0.68}$	$\chi_{\text{CamSpec}}^2$	$11511.7 (\nu: 15.4)$
$H_0$	$68.2^{+1.3}_{-1.3}$	$k_D$	$0.14055^{+0.00086}_{-0.00084}$	$\chi_{6\text{DF}}^2$	$0.032 (\nu: 0.0)$
$\Omega_\Lambda$	$0.697^{+0.017}_{-0.017}$	$100\theta_D$	$0.16067^{+0.00053}_{-0.00051}$	$\chi_{\text{MGS}}^2$	$1.84 (\nu: 0.1)$
$\Omega_m$	$0.303^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3357^{+63}_{-64}$	$\chi_{\text{DR12BAO}}^2$	$3.93 (\nu: 0.3)$
$\Omega_m h^2$	$0.1411^{+0.0026}_{-0.0027}$	$k_{\text{eq}}$	$0.01025^{+0.00019}_{-0.00019}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.5)$
$\Omega_m h^3$	$0.09627^{+0.00090}_{-0.00085}$	$100\theta_{\text{eq}}$	$0.822^{+0.012}_{-0.012}$	$\chi_{\text{BAO}}^2$	$5.80 (\nu: 0.3)$
$\sigma_8$	$0.823^{+0.070}_{-0.038}$	$100\theta_{s,\text{eq}}$	$0.4538^{+0.0064}_{-0.0062}$	$\chi_{\text{CMB}}^2$	$11534.9 (\nu: 16.3)$

$$\bar{\chi}_{\text{eff}}^2 = 11548.48; \Delta\bar{\chi}_{\text{eff}}^2 = -0.61; R - 1 = 0.01389$$



### 3.42 base\_Alens\_CamSpecHM\_TTTEEE\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022483	$0.02246^{+0.00049}_{-0.00050}$	$\sigma_8$	0.8015	$0.801^{+0.022}_{-0.026}$	$100\theta_{\text{eq}}$	0.8203	$0.820^{+0.018}_{-0.018}$
$\Omega_c h^2$	0.11835	$0.1185^{+0.0041}_{-0.0041}$	$S_8$	0.809	$0.810^{+0.051}_{-0.052}$	$100\theta_{\text{s,eq}}$	0.4530	$0.4528^{+0.0091}_{-0.0089}$
$100\theta_{\text{MC}}$	1.04101	$1.04102^{+0.00086}_{-0.00084}$	$\sigma_8 \Omega_m^{0.5}$	0.4429	$0.443^{+0.028}_{-0.028}$	$H(0.15)$	73.28	$73.2^{+1.7}_{-1.7}$
$\tau$	0.0505	$0.050^{+0.022}_{-0.027}$	$\sigma_8 \Omega_m^{0.25}$	0.5958	$0.596^{+0.026}_{-0.027}$	$D_{\text{M}}(0.15)$	637.4	$638^{+17}_{-16}$
$A_{\text{L}}$	1.137	$1.13^{+0.19}_{-0.18}$	$\sigma_8/h^{0.5}$	0.9714	$0.972^{+0.037}_{-0.039}$	$H(0.38)$	83.29	$83.3^{+1.2}_{-1.2}$
$\ln(10^{10} A_{\text{s}})$	3.031	$3.030^{+0.046}_{-0.055}$	$r_{\text{drag}} h$	100.33	$100.2^{+3.3}_{-3.3}$	$D_{\text{M}}(0.38)$	1521.6	$1523^{+34}_{-32}$
$n_{\text{s}}$	0.9699	$0.969^{+0.014}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.562	$2.55^{+0.17}_{-0.17}$	$H(0.51)$	89.95	$89.9^{+1.0}_{-0.97}$
$y_{\text{cal}}$	0.9998	$1.0001^{+0.0066}_{-0.0067}$	$z_{\text{re}}$	7.23	$7.2^{+2.1}_{-3.1}$	$D_{\text{M}}(0.51)$	1972.0	$1973^{+39}_{-38}$
$A_{100}^{\text{PS}}$	224	$234^{+60}_{-60}$	$10^9 A_{\text{s}}$	2.072	$2.070^{+0.097}_{-0.11}$	$H(0.61)$	95.52	$95.50^{+0.81}_{-0.79}$
$A_{143}^{\text{PS}}$	49.0	$36^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8732	$1.874^{+0.032}_{-0.032}$	$D_{\text{M}}(0.61)$	2295.5	$2297^{+43}_{-41}$
$A_{217}^{\text{PS}}$	107.3	$104^{+30}_{-30}$	$D_{40}$	1216.5	$1219^{+38}_{-39}$	$H(2.33)$	235.59	$235.7^{+2.4}_{-2.4}$
$A_{217}^{\text{CIB}}$	39.7	$38^{+20}_{-20}$	$D_{220}$	5726	$5728^{+100}_{-100}$	$D_{\text{M}}(2.33)$	5753.6	$5755^{+36}_{-36}$
$A_{143}^{\text{tSZ}}$	6.41	$< 8.88$	$D_{810}$	2529.8	$2530^{+36}_{-36}$	$f\sigma_8(0.15)$	0.4479	$0.448^{+0.026}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	0.758	$0.67^{+0.32}_{-0.31}$	$D_{1420}$	814.8	$814^{+13}_{-13}$	$\sigma_8(0.15)$	0.7412	$0.741^{+0.019}_{-0.023}$
$r_{143 \times 217}^{\text{CIB}}$	0.87	—	$D_{2000}$	231.47	$231.1^{+4.6}_{-4.4}$	$f\sigma_8(0.38)$	0.4674	$0.468^{+0.021}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.95	—	$n_{\text{s},0.002}$	0.9699	$0.969^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	0.6577	$0.657^{+0.016}_{-0.019}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}$	0.245438	$0.24543^{+0.00020}_{-0.00021}$	$f\sigma_8(0.51)$	0.4667	$0.467^{+0.018}_{-0.020}$
$A_{100}^{\text{dust}}$	1.003	$1.01^{+0.50}_{-0.49}$	$Y_{\text{P}}^{\text{BBN}}$	0.246765	$0.24675^{+0.00020}_{-0.00021}$	$\sigma_8(0.51)$	0.6157	$0.615^{+0.015}_{-0.018}$
$A_{143}^{\text{dust}}$	0.968	$0.95^{+0.45}_{-0.44}$	$10^5 D/\text{H}$	2.565	$2.570^{+0.094}_{-0.088}$	$f\sigma_8(0.61)$	0.4623	$0.462^{+0.017}_{-0.018}$
$A_{217}^{\text{dust}}$	0.986	$0.98^{+0.27}_{-0.27}$	Age/Gyr	13.776	$13.779^{+0.081}_{-0.078}$	$\sigma_8(0.61)$	0.5861	$0.586^{+0.014}_{-0.017}$
$A_{143 \times 217}^{\text{dust}}$	0.996	$1.02^{+0.42}_{-0.42}$	$z_*$	1089.63	$1089.68^{+0.92}_{-0.88}$	$f\sigma_8(2.33)$	0.2957	$0.2955^{+0.0070}_{-0.0081}$
$c_{100}$	0.99790	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	144.77	$144.76^{+0.88}_{-0.86}$	$\sigma_8(2.33)$	0.3052	$0.3049^{+0.0073}_{-0.0082}$
$c_{217}$	1.00108	$1.0009^{+0.0040}_{-0.0041}$	$100\theta_*$	1.04119	$1.04120^{+0.00084}_{-0.00083}$	$f_{2000}^{143}$	27.9	$28^{+8}_{-8}$
$c_{\text{TE}}$	0.9926	$0.993^{+0.014}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.905	$13.903^{+0.081}_{-0.079}$	$f_{2000}^{217}$	105.0	$105.5^{+5.5}_{-5.5}$
$c_{\text{EE}}$	0.9908	$0.991^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.09	$1060.03^{+0.97}_{-1.0}$	$f_{2000}^{143 \times 217}$	30.4	$31^{+6}_{-6}$
$H_0$	68.06	$68.0^{+1.9}_{-1.9}$	$r_{\text{drag}}$	147.40	$147.40^{+0.86}_{-0.83}$	$\chi_{\text{small}}^2$	395.68	$396.8 (\nu: 1.3)$
$\Omega_{\Lambda}$	0.6946	$0.694^{+0.024}_{-0.026}$	$k_{\text{D}}$	0.14062	$0.14061^{+0.00090}_{-0.00092}$	$\chi_{\text{CamSpec}}^2$	11496.2	$11512.2 (\nu: 15.6)$
$\Omega_{\text{m}}$	0.3054	$0.306^{+0.026}_{-0.024}$	$100\theta_{\text{D}}$	0.16067	$0.16070^{+0.00057}_{-0.00055}$	$\chi_{\text{prior}}^2$	1.8	$7.8 (\nu: 5.7)$
$\Omega_{\text{m}} h^2$	0.14148	$0.1416^{+0.0038}_{-0.0038}$	$z_{\text{eq}}$	3365	$3368^{+91}_{-91}$	$\chi_{\text{CMB}}^2$	11891.9	$11909.0 (\nu: 16.9)$
$\Omega_{\text{m}} h^3$	0.09629	$0.09627^{+0.00085}_{-0.00086}$	$k_{\text{eq}}$	0.010272	$0.01028^{+0.00028}_{-0.00028}$			

Best-fit  $\chi_{\text{eff}}^2 = 11893.69$ ;  $\Delta\chi_{\text{eff}}^2 = -3.79$ ;  $\bar{\chi}_{\text{eff}}^2 = 11916.80$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -2.29$ ;  $R - 1 = 0.00486$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.18) CamSpec like\_10.7HM\_1400\_unified: 11496.17 ( $\Delta$  -3.31)



## 4 alpha1

### 4.1 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02214	$0.02220^{+0.00059}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	0.4615	$0.461^{+0.035}_{-0.033}$	$H(0.15)$	72.11	$72.2^{+2.1}_{-2.1}$
$\Omega_c h^2$	0.1211	$0.1210^{+0.0057}_{-0.0055}$	$\sigma_8 \Omega_m^{0.25}$	0.6120	$0.612^{+0.031}_{-0.029}$	$D_M(0.15)$	649.1	$649^{+22}_{-20}$
$100\theta_{MC}$	1.04066	$1.0406^{+0.0015}_{-0.0014}$	$\sigma_8/h^{0.5}$	0.9938	$0.993^{+0.041}_{-0.041}$	$H(0.38)$	82.42	$82.5^{+1.5}_{-1.5}$
$\tau$	0.0526	$0.054^{+0.024}_{-0.022}$	$r_{drag}h$	98.11	$98.2^{+4.3}_{-4.3}$	$D_M(0.38)$	1545.1	$1544^{+43}_{-41}$
$\alpha_{-1}$	-0.0002	$-0.0012^{+0.0045}_{-0.0057}$	$\langle d^2 \rangle^{1/2}$	2.456	$2.46^{+0.10}_{-0.099}$	$H(0.51)$	89.25	$89.3^{+1.2}_{-1.1}$
$\ln(10^{10} A_s)$	3.0417	$3.045^{+0.049}_{-0.047}$	$z_{re}$	7.57	$7.7^{+2.2}_{-2.4}$	$D_M(0.51)$	1999.7	$1999^{+50}_{-48}$
$n_s$	0.9607	$0.960^{+0.021}_{-0.019}$	$10^9 A_s$	2.094	$2.10^{+0.11}_{-0.097}$	$H(0.61)$	94.96	$95.00^{+0.94}_{-0.87}$
$y_{cal}$	1.0003	$1.0005^{+0.0065}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8850	$1.887^{+0.039}_{-0.038}$	$D_M(0.61)$	2325	$2324^{+53}_{-51}$
$A_{100}^{PS}$	240	$244^{+60}_{-70}$	$D_{40}$	1222	$1216^{+61}_{-50}$	$H(2.33)$	237.00	$237.0^{+3.5}_{-3.5}$
$A_{143}^{PS}$	39.3	$41^{+20}_{-20}$	$D_{220}$	5701	$5709^{+110}_{-110}$	$D_M(2.33)$	5779.3	$5777^{+41}_{-42}$
$A_{217}^{PS}$	99.2	$100^{+30}_{-30}$	$D_{810}$	2534.4	$2536^{+36}_{-36}$	$f\sigma_8(0.15)$	0.4651	$0.465^{+0.032}_{-0.031}$
$A_{217}^{CIB}$	45.6	$41^{+20}_{-20}$	$D_{1420}$	813.5	$814^{+14}_{-13}$	$\sigma_8(0.15)$	0.7489	$0.748^{+0.019}_{-0.019}$
$A_{143}^{tSZ}$	5.89	$< 8.72$	$D_{2000}$	229.24	$229.4^{+4.9}_{-4.7}$	$f\sigma_8(0.38)$	0.4808	$0.480^{+0.025}_{-0.024}$
$r_{143 \times 217}^{PS}$	0.560	$0.64^{+0.32}_{-0.33}$	$n_{s,0.002}$	0.9607	$0.960^{+0.021}_{-0.019}$	$\sigma_8(0.38)$	0.6626	$0.662^{+0.016}_{-0.016}$
$r_{143 \times 217}^{CIB}$	0.76	—	$Y_P$	0.245301	$0.24532^{+0.00023}_{-0.00028}$	$f\sigma_8(0.51)$	0.4780	$0.478^{+0.021}_{-0.021}$
$\xi^{tSZ \times CIB}$	0.02	—	$Y_P^{BBN}$	0.246627	$0.24665^{+0.00023}_{-0.00028}$	$\sigma_8(0.51)$	0.6195	$0.619^{+0.015}_{-0.015}$
$A^{kSZ}$	1.5	—	$10^5 D/H$	2.630	$2.62^{+0.12}_{-0.11}$	$f\sigma_8(0.61)$	0.4721	$0.472^{+0.018}_{-0.019}$
$A_{100}^{dust}$	1.02	$1.02^{+0.50}_{-0.50}$	Age/Gyr	13.833	$13.829^{+0.092}_{-0.094}$	$\sigma_8(0.61)$	0.5892	$0.589^{+0.014}_{-0.014}$
$A_{143}^{dust}$	0.993	$0.98^{+0.45}_{-0.45}$	$z_*$	1090.31	$1090.2^{+1.1}_{-1.0}$	$f\sigma_8(2.33)$	0.2966	$0.2965^{+0.0070}_{-0.0070}$
$A_{217}^{dust}$	0.962	$0.97^{+0.27}_{-0.27}$	$r_*$	144.34	$144.3^{+1.4}_{-1.3}$	$\sigma_8(2.33)$	0.3053	$0.3052^{+0.0076}_{-0.0076}$
$A_{143 \times 217}^{dust}$	1.005	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	1.04086	$1.0408^{+0.0015}_{-0.0014}$	$f_{2000}^{143}$	31.3	$31^{+8}_{-8}$
$c_{100}$	0.99750	$0.9975^{+0.0028}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.867	$13.87^{+0.12}_{-0.12}$	$f_{2000}^{217}$	107.8	$107.7^{+5.4}_{-5.2}$
$c_{217}$	1.00144	$1.0012^{+0.0041}_{-0.0041}$	$z_{drag}$	1059.47	$1059.6^{+1.2}_{-1.3}$	$f_{2000}^{143 \times 217}$	33.2	$33^{+6}_{-6}$
$H_0$	66.71	$66.8^{+2.4}_{-2.5}$	$r_{drag}$	147.07	$147.0^{+1.5}_{-1.4}$	$\chi_{small}^2$	395.89	$397.1 (\nu: 1.6)$
$\Omega_\Lambda$	0.6767	$0.677^{+0.033}_{-0.038}$	$k_D$	0.14071	$0.1408^{+0.0015}_{-0.0017}$	$\chi_{lowl}^2$	22.3	$22.2 (\nu: 2.8)$
$\Omega_m$	0.3233	$0.323^{+0.038}_{-0.033}$	$100\theta_D$	0.16101	$0.16092^{+0.00085}_{-0.00075}$	$\chi_{CamSpec}^2$	7050.8	$7065.8 (\nu: 17.1)$
$\Omega_m h^2$	0.1438	$0.1438^{+0.0055}_{-0.0054}$	$z_{eq}$	3422	$3422^{+130}_{-130}$	$\chi_{prior}^2$	2.4	$7.6 (\nu: 6.0)$
$\Omega_m h^3$	0.09595	$0.0960^{+0.0012}_{-0.0012}$	$k_{eq}$	0.010444	$0.01044^{+0.00040}_{-0.00039}$	$\chi_{CMB}^2$	7469.0	$7485.1 (\nu: 16.9)$
$\sigma_8$	0.8117	$0.811^{+0.023}_{-0.023}$	$100\theta_{eq}$	0.8090	$0.809^{+0.024}_{-0.023}$			
$S_8$	0.843	$0.842^{+0.065}_{-0.061}$	$100\theta_{s,eq}$	0.4473	$0.447^{+0.013}_{-0.012}$			

Best-fit  $\chi_{eff}^2 = 7471.39$ ;  $\Delta\chi_{eff}^2 = -0.35$ ;  $\bar{\chi}_{eff}^2 = 7492.71$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.18$ ;  $R - 1 = 0.00444$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 ( $\Delta$  0.05) commander\_dx12\_v3.2.29: 22.30 ( $\Delta$  -1.10) CamSpec like\_10.7HM: 7050.85 ( $\Delta$  0.51)



## 4.2 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00057}_{-0.00060}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.021}_{-0.020}$	$H(0.38)$	$82.99^{+0.89}_{-0.90}$
$\Omega_c h^2$	$0.1190^{+0.0032}_{-0.0030}$	$\sigma_8/h^{0.5}$	$0.980^{+0.031}_{-0.029}$	$D_M(0.38)$	$1529^{+25}_{-23}$
$100\theta_{MC}$	$1.0409^{+0.0013}_{-0.0012}$	$r_{drag}h$	$99.8^{+2.4}_{-2.5}$	$H(0.51)$	$89.69^{+0.74}_{-0.73}$
$\tau$	$0.055^{+0.024}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.074}_{-0.069}$	$D_M(0.51)$	$1981^{+29}_{-27}$
$\alpha_{-1}$	$-0.0007^{+0.0043}_{-0.0055}$	$z_{re}$	$7.7^{+2.3}_{-2.2}$	$H(0.61)$	$95.30^{+0.65}_{-0.63}$
$\ln(10^{10} A_s)$	$3.042^{+0.053}_{-0.046}$	$10^9 A_s$	$2.10^{+0.11}_{-0.094}$	$D_M(0.61)$	$2305^{+31}_{-30}$
$n_s$	$0.966^{+0.015}_{-0.014}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.032}_{-0.030}$	$H(2.33)$	$235.8^{+2.1}_{-2.1}$
$y_{cal}$	$1.0007^{+0.0064}_{-0.0065}$	$D_{40}$	$1214^{+61}_{-53}$	$D_M(2.33)$	$5765^{+32}_{-32}$
$A_{100}^{PS}$	$243^{+60}_{-60}$	$D_{220}$	$5716^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.019}$
$A_{143}^{PS}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+37}_{-34}$	$\sigma_8(0.15)$	$0.745^{+0.019}_{-0.018}$
$A_{217}^{PS}$	$100^{+30}_{-40}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.472^{+0.017}_{-0.016}$
$A_{217}^{CIB}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.7}_{-4.6}$	$\sigma_8(0.38)$	$0.661^{+0.016}_{-0.015}$
$A_{143}^{tSZ}$	$< 8.87$	$n_{s,0.002}$	$0.966^{+0.015}_{-0.014}$	$f\sigma_8(0.51)$	$0.471^{+0.016}_{-0.015}$
$r_{143 \times 217}^{PS}$	$0.64^{+0.31}_{-0.33}$	$Y_P$	$0.24535^{+0.00022}_{-0.00028}$	$\sigma_8(0.51)$	$0.618^{+0.015}_{-0.014}$
$r_{143 \times 217}^{CIB}$	—	$Y_P^{BBN}$	$0.24668^{+0.00022}_{-0.00028}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{tSZ \times CIB}$	—	$10^5 D/H$	$2.60^{+0.12}_{-0.10}$	$\sigma_8(0.61)$	$0.588^{+0.014}_{-0.014}$
$A^{kSZ}$	—	Age/Gyr	$13.802^{+0.075}_{-0.074}$	$f\sigma_8(2.33)$	$0.2968^{+0.0072}_{-0.0068}$
$A_{100}^{dust}$	$1.02^{+0.50}_{-0.46}$	$z_*$	$1089.95^{+0.85}_{-0.79}$	$\sigma_8(2.33)$	$0.3060^{+0.0078}_{-0.0072}$
$A_{143}^{dust}$	$0.99^{+0.45}_{-0.47}$	$r_*$	$144.77^{+0.89}_{-0.88}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0411^{+0.0013}_{-0.0012}$	$f_{2000}^{217}$	$107.4^{+5.1}_{-5.1}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.085}_{-0.082}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$z_{drag}$	$1059.6^{+1.3}_{-1.4}$	$\chi_{simall}^2$	$397.1 (\nu: 1.9)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$r_{drag}$	$147.5^{+1.0}_{-0.97}$	$\chi_{lowl}^2$	$22 (\nu: 3.4)$
$H_0$	$67.6^{+1.4}_{-1.4}$	$k_D$	$0.1404^{+0.0013}_{-0.0015}$	$\chi_{CamSpec}^2$	$7065.8 (\nu: 17.4)$
$\Omega_\Lambda$	$0.690^{+0.018}_{-0.020}$	$100\theta_D$	$0.16093^{+0.00086}_{-0.00077}$	$\chi_{6DF}^2$	$0.061 (\nu: 0.0)$
$\Omega_m$	$0.310^{+0.020}_{-0.018}$	$z_{eq}$	$3375^{+76}_{-73}$	$\chi_{MGS}^2$	$1.35 (\nu: 0.1)$
$\Omega_m h^2$	$0.1419^{+0.0032}_{-0.0031}$	$k_{eq}$	$0.01030^{+0.00023}_{-0.00022}$	$\chi_{DR12BAO}^2$	$4.8 (\nu: 1.5)$
$\Omega_m h^3$	$0.0960^{+0.0012}_{-0.0013}$	$100\theta_{eq}$	$0.818^{+0.013}_{-0.014}$	$\chi_{prior}^2$	$7.7 (\nu: 6.0)$
$\sigma_8$	$0.806^{+0.021}_{-0.020}$	$100\theta_{s,eq}$	$0.4519^{+0.0071}_{-0.0072}$	$\chi_{BAO}^2$	$6.3 (\nu: 1.0)$
$S_8$	$0.820^{+0.039}_{-0.037}$	$H(0.15)$	$72.9^{+1.2}_{-1.2}$	$\chi_{CMB}^2$	$7485.4 (\nu: 17.0)$
$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_M(0.15)$	$641^{+12}_{-11}$		

$$\bar{\chi}_{\text{eff}}^2 = 7499.33; \Delta \bar{\chi}_{\text{eff}}^2 = 1.77; R - 1 = 0.01534$$



### 4.3 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222^{+0.00059}_{-0.00059}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.458^{+0.023}_{-0.023}$	$H(0.15)$	$72.3^{+1.6}_{-1.6}$
$\Omega_{\mathrm{c}} h^2$	$0.1206^{+0.0042}_{-0.0042}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.020}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$647^{+16}_{-16}$
$100\theta_{\mathrm{MC}}$	$1.0406^{+0.0014}_{-0.0013}$	$\sigma_8/h^{0.5}$	$0.990^{+0.026}_{-0.027}$	$H(0.38)$	$82.6^{+1.2}_{-1.1}$
$\tau$	$0.054^{+0.023}_{-0.021}$	$r_{\mathrm{drag}} h$	$98.5^{+3.4}_{-3.2}$	$D_{\mathrm{M}}(0.38)$	$1541^{+32}_{-33}$
$\alpha_{-1}$	$-0.0012^{+0.0042}_{-0.0058}$	$\langle d^2 \rangle^{1/2}$	$2.450^{+0.065}_{-0.067}$	$H(0.51)$	$89.37^{+0.98}_{-0.91}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.044}_{-0.042}$	$z_{\mathrm{re}}$	$7.7^{+2.1}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1995^{+38}_{-38}$
$n_{\mathrm{s}}$	$0.960^{+0.018}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.094}_{-0.086}$	$H(0.61)$	$95.05^{+0.80}_{-0.74}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885^{+0.032}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2320^{+41}_{-42}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-60}$	$D_{40}$	$1216^{+61}_{-48}$	$H(2.33)$	$236.8^{+2.6}_{-2.6}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5712^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5775^{+37}_{-38}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-30}$	$D_{810}$	$2536^{+36}_{-34}$	$f\sigma_8(0.15)$	$0.462^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.72$	$D_{2000}$	$229.4^{+4.9}_{-4.7}$	$f\sigma_8(0.38)$	$0.478^{+0.016}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.960^{+0.018}_{-0.016}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24533^{+0.00023}_{-0.00028}$	$f\sigma_8(0.51)$	$0.476^{+0.013}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00023}_{-0.00028}$	$\sigma_8(0.51)$	$0.619^{+0.013}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	$0.470^{+0.012}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.823^{+0.084}_{-0.084}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$z_*$	$1090.16^{+0.93}_{-0.89}$	$f\sigma_8(2.33)$	$0.2965^{+0.0067}_{-0.0066}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$r_*$	$144.4^{+1.1}_{-1.0}$	$\sigma_8(2.33)$	$0.3053^{+0.0076}_{-0.0073}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0408^{+0.0014}_{-0.0013}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.873^{+0.097}_{-0.092}$	$f_{2000}^{217}$	$107.7^{+5.4}_{-5.1}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.6^{+1.3}_{-1.4}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$66.9^{+1.9}_{-1.8}$	$r_{\mathrm{drag}}$	$147.1^{+1.1}_{-1.1}$	$\chi_{\mathrm{lensing}}^2$	$9.52 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.680^{+0.026}_{-0.027}$	$k_{\mathrm{D}}$	$0.1407^{+0.0013}_{-0.0014}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.4)$
$\Omega_{\mathrm{m}}$	$0.320^{+0.027}_{-0.026}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00085}_{-0.00075}$	$\chi_{\mathrm{lowl}}^2$	$22.2 (\nu: 2.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1434^{+0.0040}_{-0.0040}$	$z_{\mathrm{eq}}$	$3412^{+96}_{-96}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.3 (\nu: 16.5)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01042^{+0.00029}_{-0.00029}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.810^{+0.017}_{-0.016}$	$100\theta_{\mathrm{eq}}$	$0.811^{+0.019}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	$7494.0 (\nu: 17.3)$
$S_8$	$0.837^{+0.042}_{-0.042}$	$100\theta_{\mathrm{s,eq}}$	$0.4482^{+0.0095}_{-0.0090}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7501.64; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 1.40; R - 1 = 0.00636$$



#### 4.4 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00058}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	$82.95^{+0.87}_{-0.84}$
$\Omega_c h^2$	$0.1192^{+0.0029}_{-0.0028}$	$\sigma_8/h^{0.5}$	$0.984^{+0.024}_{-0.023}$	$D_M(0.38)$	$1530^{+23}_{-22}$
$100\theta_{MC}$	$1.0409^{+0.0012}_{-0.0012}$	$r_{drag}h$	$99.6^{+2.3}_{-2.2}$	$H(0.51)$	$89.66^{+0.73}_{-0.70}$
$\tau$	$0.057^{+0.023}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.057}_{-0.056}$	$D_M(0.51)$	$1983^{+27}_{-26}$
$\alpha_{-1}$	$-0.0007^{+0.0043}_{-0.0056}$	$z_{re}$	$7.9^{+2.1}_{-2.0}$	$H(0.61)$	$95.28^{+0.64}_{-0.60}$
$\ln(10^{10} A_s)$	$3.047^{+0.047}_{-0.041}$	$10^9 A_s$	$2.11^{+0.10}_{-0.086}$	$D_M(0.61)$	$2307^{+29}_{-29}$
$n_s$	$0.965^{+0.015}_{-0.014}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.029}_{-0.029}$	$H(2.33)$	$235.9^{+1.9}_{-1.9}$
$y_{cal}$	$1.0009^{+0.0064}_{-0.0065}$	$D_{40}$	$1216^{+61}_{-52}$	$D_M(2.33)$	$5766^{+32}_{-32}$
$A_{100}^{PS}$	$243^{+60}_{-60}$	$D_{220}$	$5721^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.016}$
$A_{143}^{PS}$	$40^{+20}_{-20}$	$D_{810}$	$2536^{+35}_{-34}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.015}$
$A_{217}^{PS}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{CIB}$	$41^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.6}_{-4.6}$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.013}$
$A_{143}^{tSZ}$	$< 8.81$	$n_{s,0.002}$	$0.965^{+0.015}_{-0.014}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.012}$
$r_{143 \times 217}^{PS}$	$0.64^{+0.31}_{-0.33}$	$Y_P$	$0.24536^{+0.00023}_{-0.00027}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.012}$
$r_{143 \times 217}^{CIB}$	—	$Y_P^{BBN}$	$0.24668^{+0.00023}_{-0.00027}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{tSZ \times CIB}$	—	$10^5 D/H$	$2.60^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.011}$
$A^{kSZ}$	—	Age/Gyr	$13.803^{+0.074}_{-0.074}$	$f\sigma_8(2.33)$	$0.2974^{+0.0066}_{-0.0059}$
$A_{100}^{dust}$	$1.02^{+0.50}_{-0.46}$	$z_*$	$1089.96^{+0.84}_{-0.77}$	$\sigma_8(2.33)$	$0.3066^{+0.0072}_{-0.0063}$
$A_{143}^{dust}$	$0.98^{+0.44}_{-0.47}$	$r_*$	$144.71^{+0.83}_{-0.80}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0411^{+0.0013}_{-0.0012}$	$f_{2000}^{217}$	$107.4^{+5.0}_{-5.1}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.899^{+0.079}_{-0.074}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{drag}$	$1059.7^{+1.3}_{-1.4}$	$\chi_{lensing}^2$	$9.35 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$r_{drag}$	$147.40^{+0.98}_{-0.88}$	$\chi_{simall}^2$	$397.3 (\nu: 2.0)$
$H_0$	$67.6^{+1.3}_{-1.3}$	$k_D$	$0.1405^{+0.0012}_{-0.0013}$	$\chi_{lowl}^2$	$23 (\nu: 3.4)$
$\Omega_\Lambda$	$0.689^{+0.017}_{-0.018}$	$100\theta_D$	$0.16091^{+0.00085}_{-0.00075}$	$\chi_{CamSpec}^2$	$7065.2 (\nu: 16.4)$
$\Omega_m$	$0.311^{+0.018}_{-0.017}$	$z_{eq}$	$3381^{+68}_{-67}$	$\chi_{6DF}^2$	$0.065 (\nu: 0.0)$
$\Omega_m h^2$	$0.1421^{+0.0028}_{-0.0028}$	$k_{eq}$	$0.01032^{+0.00021}_{-0.00020}$	$\chi_{MGS}^2$	$1.25 (\nu: 0.1)$
$\Omega_m h^3$	$0.0960^{+0.0012}_{-0.0013}$	$100\theta_{eq}$	$0.817^{+0.013}_{-0.012}$	$\chi_{DR12BAO}^2$	$5.0 (\nu: 1.4)$
$\sigma_8$	$0.808^{+0.017}_{-0.016}$	$100\theta_{s,eq}$	$0.4513^{+0.0065}_{-0.0064}$	$\chi_{prior}^2$	$7.6 (\nu: 5.9)$
$S_8$	$0.824^{+0.031}_{-0.030}$	$H(0.15)$	$72.8^{+1.1}_{-1.1}$	$\chi_{CMB}^2$	$7494.3 (\nu: 17.2)$
$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.017}_{-0.017}$	$D_M(0.15)$	$642^{+11}_{-11}$	$\chi_{BAO}^2$	$6.3 (\nu: 0.9)$

$$\bar{\chi}_{eff}^2 = 7508.28; \Delta \bar{\chi}_{eff}^2 = 1.80; R - 1 = 0.01595$$



#### 4.5 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02221^{+0.00058}_{-0.00058}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.461^{+0.035}_{-0.033}$	$H(0.15)$	$72.2^{+2.1}_{-2.0}$
$\Omega_{\mathrm{c}} h^2$	$0.1210^{+0.0056}_{-0.0056}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.612^{+0.030}_{-0.030}$	$D_{\mathrm{M}}(0.15)$	$648^{+22}_{-20}$
$100\theta_{\mathrm{MC}}$	$1.0406^{+0.0015}_{-0.0014}$	$\sigma_8/h^{0.5}$	$0.994^{+0.041}_{-0.040}$	$H(0.38)$	$82.5^{+1.5}_{-1.4}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$r_{\mathrm{drag}} h$	$98.2^{+4.4}_{-4.3}$	$D_{\mathrm{M}}(0.38)$	$1544^{+42}_{-41}$
$\alpha_{-1}$	$-0.0013^{+0.0044}_{-0.0057}$	$\langle d^2 \rangle^{1/2}$	$2.46^{+0.10}_{-0.098}$	$H(0.51)$	$89.3^{+1.2}_{-1.1}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.048^{+0.047}_{-0.034}$	$z_{\mathrm{re}}$	$< 9.68$	$D_{\mathrm{M}}(0.51)$	$1998^{+49}_{-48}$
$n_{\mathrm{s}}$	$0.960^{+0.021}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.11^{+0.10}_{-0.072}$	$H(0.61)$	$95.01^{+0.93}_{-0.86}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.887^{+0.038}_{-0.038}$	$D_{\mathrm{M}}(0.61)$	$2324^{+53}_{-51}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{40}$	$1216^{+60}_{-49}$	$H(2.33)$	$237.0^{+3.5}_{-3.5}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5710^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5777^{+40}_{-42}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-36}$	$f\sigma_8(0.15)$	$0.465^{+0.032}_{-0.031}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.15)$	$0.749^{+0.019}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.73$	$D_{2000}$	$229.4^{+4.8}_{-4.7}$	$f\sigma_8(0.38)$	$0.481^{+0.024}_{-0.024}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.960^{+0.021}_{-0.018}$	$\sigma_8(0.38)$	$0.663^{+0.015}_{-0.013}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00027}$	$f\sigma_8(0.51)$	$0.478^{+0.021}_{-0.021}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00028}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	$0.472^{+0.018}_{-0.018}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.827^{+0.090}_{-0.093}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$z_*$	$1090.2^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	$0.2969^{+0.0068}_{-0.0053}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.3^{+1.4}_{-1.3}$	$\sigma_8(2.33)$	$0.3056^{+0.0073}_{-0.0057}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.40}$	$100\theta_*$	$1.0408^{+0.0015}_{-0.0014}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.87^{+0.12}_{-0.12}$	$f_{2000}^{217}$	$107.7^{+5.3}_{-5.2}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.6^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$66.8^{+2.4}_{-2.4}$	$r_{\mathrm{drag}}$	$147.0^{+1.5}_{-1.4}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.677^{+0.033}_{-0.037}$	$k_{\mathrm{D}}$	$0.1408^{+0.0015}_{-0.0017}$	$\chi_{\mathrm{lowl}}^2$	$22.2 (\nu: 2.6)$
$\Omega_{\mathrm{m}}$	$0.323^{+0.037}_{-0.033}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00084}_{-0.00074}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.7 (\nu: 17.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1438^{+0.0054}_{-0.0054}$	$z_{\mathrm{eq}}$	$3421^{+130}_{-130}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01044^{+0.00040}_{-0.00039}$	$\chi_{\mathrm{CMB}}^2$	$7484.8 (\nu: 16.4)$
$\sigma_8$	$0.812^{+0.022}_{-0.021}$	$100\theta_{\mathrm{eq}}$	$0.809^{+0.024}_{-0.023}$		
$S_8$	$0.842^{+0.064}_{-0.061}$	$100\theta_{\mathrm{s,eq}}$	$0.447^{+0.013}_{-0.012}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7492.46; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 1.20; R - 1 = 0.00453$$



#### 4.6 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00057}_{-0.00059}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.021}_{-0.019}$	$H(0.38)$	$83.00^{+0.89}_{-0.89}$
$\Omega_c h^2$	$0.1190^{+0.0032}_{-0.0030}$	$\sigma_8/h^{0.5}$	$0.981^{+0.030}_{-0.028}$	$D_M(0.38)$	$1529^{+24}_{-23}$
$100\theta_{MC}$	$1.0409^{+0.0013}_{-0.0012}$	$r_{drag}h$	$99.8^{+2.4}_{-2.5}$	$H(0.51)$	$89.70^{+0.74}_{-0.73}$
$\tau$	$0.056^{+0.021}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.428^{+0.072}_{-0.066}$	$D_M(0.51)$	$1981^{+29}_{-27}$
$\alpha_{-1}$	$-0.0007^{+0.0043}_{-0.0055}$	$z_{re}$	$< 9.74$	$H(0.61)$	$95.30^{+0.65}_{-0.62}$
$\ln(10^{10} A_s)$	$3.045^{+0.047}_{-0.037}$	$10^9 A_s$	$2.10^{+0.10}_{-0.077}$	$D_M(0.61)$	$2305^{+31}_{-30}$
$n_s$	$0.965^{+0.015}_{-0.014}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.032}_{-0.030}$	$H(2.33)$	$235.8^{+2.1}_{-2.1}$
$y_{cal}$	$1.0006^{+0.0064}_{-0.0064}$	$D_{40}$	$1214^{+60}_{-52}$	$D_M(2.33)$	$5765^{+32}_{-32}$
$A_{100}^{PS}$	$243^{+60}_{-60}$	$D_{220}$	$5716^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.019}$
$A_{143}^{PS}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$\sigma_8(0.15)$	$0.746^{+0.018}_{-0.016}$
$A_{217}^{PS}$	$100^{+30}_{-40}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.473^{+0.017}_{-0.016}$
$A_{217}^{CIB}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.7}_{-4.7}$	$\sigma_8(0.38)$	$0.661^{+0.016}_{-0.013}$
$A_{143}^{tSZ}$	$< 8.88$	$n_{s,0.002}$	$0.965^{+0.015}_{-0.014}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.014}$
$r_{143 \times 217}^{PS}$	$0.64^{+0.31}_{-0.33}$	$Y_P$	$0.24536^{+0.00022}_{-0.00028}$	$\sigma_8(0.51)$	$0.619^{+0.015}_{-0.012}$
$r_{143 \times 217}^{CIB}$	—	$Y_P^{BBN}$	$0.24668^{+0.00022}_{-0.00028}$	$f\sigma_8(0.61)$	$0.467^{+0.014}_{-0.013}$
$\xi^{tSZ \times CIB}$	—	$10^5 D/H$	$2.60^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	$0.589^{+0.014}_{-0.011}$
$A^{kSZ}$	—	Age/Gyr	$13.801^{+0.075}_{-0.073}$	$f\sigma_8(2.33)$	$0.2971^{+0.0072}_{-0.0056}$
$A_{100}^{dust}$	$1.02^{+0.50}_{-0.46}$	$z_*$	$1089.94^{+0.86}_{-0.80}$	$\sigma_8(2.33)$	$0.3063^{+0.0076}_{-0.0058}$
$A_{143}^{dust}$	$0.99^{+0.45}_{-0.47}$	$r_*$	$144.77^{+0.89}_{-0.88}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0411^{+0.0013}_{-0.0012}$	$f_{2000}^{217}$	$107.4^{+5.0}_{-5.0}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.41}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.085}_{-0.082}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$z_{drag}$	$1059.7^{+1.3}_{-1.4}$	$\chi_{simall}^2$	$397.1 (\nu: 2.0)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$r_{drag}$	$147.5^{+1.0}_{-0.97}$	$\chi_{lowl}^2$	$22 (\nu: 3.3)$
$H_0$	$67.7^{+1.4}_{-1.4}$	$k_D$	$0.1404^{+0.0013}_{-0.0015}$	$\chi_{CamSpec}^2$	$7065.7 (\nu: 17.2)$
$\Omega_\Lambda$	$0.690^{+0.018}_{-0.020}$	$100\theta_D$	$0.16092^{+0.00085}_{-0.00076}$	$\chi_{6DF}^2$	$0.060 (\nu: 0.0)$
$\Omega_m$	$0.310^{+0.020}_{-0.018}$	$z_{eq}$	$3375^{+76}_{-73}$	$\chi_{MGS}^2$	$1.35 (\nu: 0.1)$
$\Omega_m h^2$	$0.1419^{+0.0032}_{-0.0031}$	$k_{eq}$	$0.01030^{+0.00023}_{-0.00022}$	$\chi_{DR12BAO}^2$	$4.8 (\nu: 1.5)$
$\Omega_m h^3$	$0.0960^{+0.0012}_{-0.0014}$	$100\theta_{eq}$	$0.818^{+0.013}_{-0.014}$	$\chi_{prior}^2$	$7.7 (\nu: 6.0)$
$\sigma_8$	$0.807^{+0.021}_{-0.018}$	$100\theta_{s,eq}$	$0.4519^{+0.0071}_{-0.0072}$	$\chi_{BAO}^2$	$6.2 (\nu: 1.0)$
$S_8$	$0.820^{+0.039}_{-0.037}$	$H(0.15)$	$72.9^{+1.2}_{-1.2}$	$\chi_{CMB}^2$	$7485.2 (\nu: 16.5)$
$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_M(0.15)$	$641^{+12}_{-11}$		

$$\bar{\chi}_{eff}^2 = 7499.10; \Delta \bar{\chi}_{eff}^2 = 1.79; R - 1 = 0.01710$$



#### 4.7 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02223^{+0.00058}_{-0.00058}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.458^{+0.023}_{-0.023}$	$H(0.15)$	$72.3^{+1.6}_{-1.5}$
$\Omega_{\mathrm{c}} h^2$	$0.1205^{+0.0040}_{-0.0041}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.019}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$647^{+16}_{-16}$
$100\theta_{\mathrm{MC}}$	$1.0406^{+0.0014}_{-0.0013}$	$\sigma_8/h^{0.5}$	$0.990^{+0.026}_{-0.027}$	$H(0.38)$	$82.6^{+1.2}_{-1.1}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$r_{\mathrm{drag}} h$	$98.5^{+3.3}_{-3.1}$	$D_{\mathrm{M}}(0.38)$	$1540^{+31}_{-32}$
$\alpha_{-1}$	$-0.0012^{+0.0042}_{-0.0058}$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.065}_{-0.066}$	$H(0.51)$	$89.39^{+0.96}_{-0.88}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.042}_{-0.031}$	$z_{\mathrm{re}}$	$< 9.62$	$D_{\mathrm{M}}(0.51)$	$1994^{+36}_{-38}$
$n_{\mathrm{s}}$	$0.961^{+0.017}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.091}_{-0.064}$	$H(0.61)$	$95.07^{+0.78}_{-0.73}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885^{+0.031}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2319^{+39}_{-41}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{40}$	$1215^{+59}_{-47}$	$H(2.33)$	$236.7^{+2.5}_{-2.6}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5713^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5774^{+35}_{-37}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.462^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.72$	$D_{2000}$	$229.4^{+4.8}_{-4.7}$	$f\sigma_8(0.38)$	$0.479^{+0.016}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.961^{+0.017}_{-0.016}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.011}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24533^{+0.00023}_{-0.00027}$	$f\sigma_8(0.51)$	$0.476^{+0.013}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00023}_{-0.00027}$	$\sigma_8(0.51)$	$0.619^{+0.012}_{-0.010}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	$0.471^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.822^{+0.081}_{-0.083}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.0096}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$z_*$	$1090.14^{+0.90}_{-0.87}$	$f\sigma_8(2.33)$	$0.2967^{+0.0065}_{-0.0050}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.4^{+1.1}_{-0.99}$	$\sigma_8(2.33)$	$0.3056^{+0.0073}_{-0.0056}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0408^{+0.0014}_{-0.0013}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.875^{+0.097}_{-0.090}$	$f_{2000}^{217}$	$107.6^{+5.2}_{-5.1}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.6^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$H_0$	$67.0^{+1.9}_{-1.8}$	$r_{\mathrm{drag}}$	$147.1^{+1.1}_{-1.0}$	$\chi_{\mathrm{lensing}}^2$	$9.50 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.680^{+0.025}_{-0.026}$	$k_{\mathrm{D}}$	$0.1407^{+0.0013}_{-0.0014}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$\Omega_{\mathrm{m}}$	$0.320^{+0.026}_{-0.025}$	$100\theta_{\mathrm{D}}$	$0.16090^{+0.00085}_{-0.00074}$	$\chi_{\mathrm{lowl}}^2$	$22.1 (\nu: 2.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1434^{+0.0039}_{-0.0040}$	$z_{\mathrm{eq}}$	$3410^{+93}_{-95}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.2 (\nu: 16.5)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0012}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01041^{+0.00028}_{-0.00029}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.810^{+0.016}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.811^{+0.018}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	$7493.7 (\nu: 16.8)$
$S_8$	$0.837^{+0.042}_{-0.042}$	$100\theta_{\mathrm{s,eq}}$	$0.4484^{+0.0094}_{-0.0087}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7501.39; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.38; R - 1 = 0.00867$$



#### 4.8 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02229^{+0.00057}_{-0.00059}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	$82.95^{+0.86}_{-0.83}$
$\Omega_{\text{c}} h^2$	$0.1192^{+0.0029}_{-0.0028}$	$\sigma_8 / h^{0.5}$	$0.984^{+0.023}_{-0.023}$	$D_{\text{M}}(0.38)$	$1530^{+22}_{-22}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$r_{\text{drag}} h$	$99.6^{+2.3}_{-2.2}$	$H(0.51)$	$89.67^{+0.73}_{-0.69}$
$\tau$	$0.057^{+0.021}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.057}_{-0.055}$	$D_{\text{M}}(0.51)$	$1982^{+26}_{-26}$
$\alpha_{-1}$	$-0.0008^{+0.0043}_{-0.0055}$	$z_{\text{re}}$	$< 9.75$	$H(0.61)$	$95.28^{+0.63}_{-0.60}$
$\ln(10^{10} A_{\text{s}})$	$3.048^{+0.046}_{-0.033}$	$10^9 A_{\text{s}}$	$2.108^{+0.098}_{-0.069}$	$D_{\text{M}}(0.61)$	$2307^{+28}_{-29}$
$n_{\text{s}}$	$0.965^{+0.015}_{-0.013}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.880^{+0.030}_{-0.029}$	$H(2.33)$	$235.9^{+1.9}_{-1.9}$
$y_{\text{cal}}$	$1.0008^{+0.0064}_{-0.0065}$	$D_{40}$	$1216^{+59}_{-52}$	$D_{\text{M}}(2.33)$	$5765^{+32}_{-32}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-60}$	$D_{220}$	$5721^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.016}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2536^{+35}_{-33}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.013}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.6}_{-4.6}$	$\sigma_8(0.38)$	$0.663^{+0.014}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$< 8.80$	$n_{\text{s},0.002}$	$0.965^{+0.015}_{-0.013}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.64^{+0.31}_{-0.33}$	$Y_{\text{P}}$	$0.24536^{+0.00022}_{-0.00027}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.011}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24668^{+0.00023}_{-0.00027}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.60^{+0.11}_{-0.10}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.010}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.803^{+0.073}_{-0.074}$	$f\sigma_8(2.33)$	$0.2975^{+0.0065}_{-0.0053}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.46}$	$z_*$	$1089.95^{+0.83}_{-0.77}$	$\sigma_8(2.33)$	$0.3067^{+0.0071}_{-0.0056}$
$A_{143}^{\text{dust}}$	$0.98^{+0.45}_{-0.47}$	$r_*$	$144.71^{+0.83}_{-0.79}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.0411^{+0.0013}_{-0.0012}$	$f_{2000}^{217}$	$107.4^{+5.0}_{-5.0}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.900^{+0.079}_{-0.074}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\text{drag}}$	$1059.7^{+1.3}_{-1.4}$	$\chi_{\text{lensing}}^2$	$9.32 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$r_{\text{drag}}$	$147.40^{+0.98}_{-0.88}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.0)$
$H_0$	$67.6^{+1.3}_{-1.3}$	$k_{\text{D}}$	$0.1405^{+0.0012}_{-0.0013}$	$\chi_{\text{lowl}}^2$	$22 (\nu: 3.3)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.018}$	$100\theta_{\text{D}}$	$0.16090^{+0.00084}_{-0.00075}$	$\chi_{\text{CamSpec}}^2$	$7065.2 (\nu: 16.4)$
$\Omega_{\text{m}}$	$0.311^{+0.018}_{-0.017}$	$z_{\text{eq}}$	$3380^{+68}_{-67}$	$\chi_{6\text{DF}}^2$	$0.063 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1421^{+0.0028}_{-0.0028}$	$k_{\text{eq}}$	$0.01032^{+0.00021}_{-0.00020}$	$\chi_{\text{MGS}}^2$	$1.26 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.0960^{+0.0012}_{-0.0013}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.4)$
$\sigma_8$	$0.809^{+0.017}_{-0.015}$	$100\theta_{\text{s,eq}}$	$0.4514^{+0.0065}_{-0.0064}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.9)$
$S_8$	$0.824^{+0.031}_{-0.031}$	$H(0.15)$	$72.8^{+1.1}_{-1.1}$	$\chi_{\text{CMB}}^2$	$7494.2 (\nu: 16.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$D_{\text{M}}(0.15)$	$642^{+11}_{-11}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.9)$

$$\bar{\chi}_{\text{eff}}^2 = 7508.12; \Delta \bar{\chi}_{\text{eff}}^2 = 1.79; R - 1 = 0.01736$$



## 5 mnu

### 5.1 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02214	$0.02205^{+0.00063}_{-0.00067}$	$S_8$	0.841	$0.833^{+0.067}_{-0.068}$	$100\theta_{s,eq}$	0.4485	$0.448^{+0.013}_{-0.012}$
$\Omega_c h^2$	0.1205	$0.1210^{+0.0059}_{-0.0057}$	$\sigma_8 \Omega_m^{0.5}$	0.4607	$0.456^{+0.037}_{-0.037}$	$H(0.15)$	72.8	$71.2^{+3.1}_{-6.8}$
$100\theta_{MC}$	1.04085	$1.0407^{+0.0013}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	0.616	$0.599^{+0.041}_{-0.073}$	$D_M(0.15)$	642	$659^{+70}_{-35}$
$\tau$	0.0507	$0.052^{+0.023}_{-0.021}$	$\sigma_8/h^{0.5}$	1.002	$0.971^{+0.062}_{-0.13}$	$H(0.38)$	82.92	$81.7^{+2.3}_{-5.1}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.856$	$r_{drag} h$	99.3	$96.7^{+6.0}_{-12}$	$D_M(0.38)$	1532	$1564^{+140}_{-71}$
$\ln(10^{10} A_s)$	3.0361	$3.039^{+0.045}_{-0.042}$	$\langle d^2 \rangle^{1/2}$	2.454	$2.444^{+0.099}_{-0.097}$	$H(0.51)$	89.66	$88.7^{+1.9}_{-4.1}$
$n_s$	0.9637	$0.962^{+0.016}_{-0.017}$	$z_{re}$	7.36	$7.5^{+2.2}_{-2.4}$	$D_M(0.51)$	1984	$2022^{+180}_{-75}$
$y_{cal}$	1.0003	$1.0005^{+0.0064}_{-0.0066}$	$10^9 A_s$	2.082	$2.088^{+0.096}_{-0.087}$	$H(0.61)$	95.30	$94.5^{+1.6}_{-3.4}$
$A_{100}^{PS}$	239	$244^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	1.8816	$1.883^{+0.036}_{-0.034}$	$D_M(0.61)$	2308	$2350^{+200}_{-82}$
$A_{143}^{PS}$	39	$42^{+20}_{-20}$	$D_{40}$	1229.4	$1230^{+39}_{-38}$	$H(2.33)$	236.3	$237.6^{+6.8}_{-4.0}$
$A_{217}^{PS}$	99.7	$101^{+30}_{-40}$	$D_{220}$	5703	$5701^{+110}_{-110}$	$D_M(2.33)$	5763	$5806^{+170}_{-85}$
$A_{217}^{CIB}$	44.5	$41^{+20}_{-20}$	$D_{810}$	2533.4	$2535^{+35}_{-37}$	$f\sigma_8(0.15)$	0.4644	$0.460^{+0.034}_{-0.038}$
$A_{143}^{tSZ}$	5.47	$< 8.55$	$D_{1420}$	813.9	$814^{+14}_{-13}$	$\sigma_8(0.15)$	0.760	$0.725^{+0.053}_{-0.13}$
$r_{143 \times 217}^{PS}$	0.578	$0.65^{+0.31}_{-0.32}$	$D_{2000}$	229.6	$229.1^{+5.0}_{-5.1}$	$f\sigma_8(0.38)$	0.4824	$0.472^{+0.030}_{-0.054}$
$r_{143 \times 217}^{CIB}$	0.71	—	$n_{s,0.002}$	0.9637	$0.962^{+0.016}_{-0.017}$	$\sigma_8(0.38)$	0.673	$0.641^{+0.048}_{-0.12}$
$\xi^{tSZ \times CIB}$	0.04	—	$Y_P$	0.245303	$0.24526^{+0.00025}_{-0.00031}$	$f\sigma_8(0.51)$	0.4807	$0.468^{+0.029}_{-0.061}$
$A^{kSZ}$	1.8	—	$Y_P^{BBN}$	0.246629	$0.24658^{+0.00025}_{-0.00031}$	$\sigma_8(0.51)$	0.630	$0.599^{+0.045}_{-0.11}$
$A_{100}^{dust}$	1.014	$1.01^{+0.50}_{-0.49}$	$10^5 D/H$	2.629	$2.65^{+0.13}_{-0.12}$	$f\sigma_8(0.61)$	0.4755	$0.462^{+0.028}_{-0.066}$
$A_{143}^{dust}$	0.980	$0.98^{+0.44}_{-0.45}$	Age/Gyr	13.796	$13.90^{+0.40}_{-0.19}$	$\sigma_8(0.61)$	0.599	$0.569^{+0.043}_{-0.11}$
$A_{217}^{dust}$	0.965	$0.97^{+0.26}_{-0.27}$	$z_*$	1090.25	$1090.4^{+1.5}_{-1.1}$	$f\sigma_8(2.33)$	0.3011	$0.288^{+0.020}_{-0.053}$
$A_{143 \times 217}^{dust}$	1.011	$1.03^{+0.42}_{-0.41}$	$r_*$	144.48	$144.4^{+1.3}_{-1.4}$	$\sigma_8(2.33)$	0.3108	$0.295^{+0.023}_{-0.060}$
$c_{100}$	0.99748	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04102	$1.0410^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	30.8	$31^{+8}_{-8}$
$c_{217}$	1.00139	$1.0013^{+0.0041}_{-0.0041}$	$D_M(z_*)/\text{Gpc}$	13.878	$13.87^{+0.12}_{-0.13}$	$f_{2000}^{217}$	107.4	$108.0^{+5.9}_{-5.5}$
$H_0$	67.5	$65.7^{+3.6}_{-8.0}$	$z_{drag}$	1059.44	$1059.3^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	32.9	$34^{+6}_{-6}$
$\Omega_\Lambda$	0.687	$0.662^{+0.055}_{-0.11}$	$r_{drag}$	147.22	$147.2^{+1.3}_{-1.3}$	$\chi_{simall}^2$	395.71	$397.0 (\nu: 1.6)$
$\Omega_m$	0.313	$0.338^{+0.11}_{-0.055}$	$k_D$	0.14056	$0.1406^{+0.0014}_{-0.0013}$	$\chi_{lowl}^2$	23.54	$23.6 (\nu: 0.8)$
$\Omega_m h^2$	0.1427	$0.145^{+0.012}_{-0.0065}$	$100\theta_D$	0.16105	$0.16112^{+0.00072}_{-0.00071}$	$\chi_{CamSpec}^2$	7049.7	$7064.5 (\nu: 16.3)$
$\Omega_\nu h^2$	0.00001	$< 0.00921$	$z_{eq}$	3409	$3418^{+130}_{-130}$	$\chi_{prior}^2$	2.3	$7.7 (\nu: 6.1)$
$\Omega_m h^3$	0.09626	$0.0952^{+0.0020}_{-0.0050}$	$k_{eq}$	0.010405	$0.01043^{+0.00041}_{-0.00039}$	$\chi_{CMB}^2$	7469.0	$7485.1 (\nu: 16.9)$
$\sigma_8$	0.823	$0.787^{+0.057}_{-0.13}$	$100\theta_{eq}$	0.8113	$0.810^{+0.025}_{-0.024}$			

Best-fit  $\chi_{eff}^2 = 7471.23$ ;  $\Delta\chi_{eff}^2 = -0.51$ ;  $\bar{\chi}_{eff}^2 = 7492.77$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.23$ ;  $R - 1 = 0.00611$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 ( $\Delta$  -0.12) commander\_dx12\_v3\_2\_29: 23.54 ( $\Delta$  0.14) CamSpec like\_10.7HM: 7049.70 ( $\Delta$  -0.64)



## 5.2 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02206^{+0.00062}_{-0.00069}$	$S_8$	$0.833^{+0.068}_{-0.067}$	$100\theta_{s,eq}$	$0.448^{+0.012}_{-0.012}$
$\Omega_c h^2$	$0.1209^{+0.0059}_{-0.0056}$	$\sigma_8 \Omega_m^{0.5}$	$0.456^{+0.037}_{-0.036}$	$H(0.15)$	$71.3^{+3.1}_{-6.9}$
$100\theta_{MC}$	$1.0407^{+0.0013}_{-0.0014}$	$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.041}_{-0.073}$	$D_M(0.15)$	$658^{+71}_{-35}$
$\tau$	$0.053^{+0.020}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.972^{+0.062}_{-0.13}$	$H(0.38)$	$81.8^{+2.4}_{-5.1}$
$\Sigma m_\nu$ [eV]	$< 0.856$	$r_{drag} h$	$96.7^{+6.0}_{-12}$	$D_M(0.38)$	$1564^{+160}_{-64}$
$\ln(10^{10} A_s)$	$3.042^{+0.043}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.098}_{-0.095}$	$H(0.51)$	$88.7^{+1.9}_{-4.1}$
$n_s$	$0.962^{+0.016}_{-0.017}$	$z_{re}$	$< 9.53$	$D_M(0.51)$	$2022^{+180}_{-76}$
$y_{cal}$	$1.0005^{+0.0064}_{-0.0066}$	$10^9 A_s$	$2.095^{+0.092}_{-0.061}$	$H(0.61)$	$94.5^{+1.6}_{-3.4}$
$A_{100}^{PS}$	$244^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.036}_{-0.034}$	$D_M(0.61)$	$2349^{+200}_{-82}$
$A_{143}^{PS}$	$42^{+20}_{-20}$	$D_{40}$	$1230^{+38}_{-38}$	$H(2.33)$	$237.5^{+6.8}_{-4.0}$
$A_{217}^{PS}$	$101^{+30}_{-40}$	$D_{220}$	$5701^{+110}_{-110}$	$D_M(2.33)$	$5806^{+170}_{-85}$
$A_{217}^{CIB}$	$41^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-37}$	$f\sigma_8(0.15)$	$0.460^{+0.034}_{-0.037}$
$A_{143}^{tSZ}$	$< 8.55$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.726^{+0.052}_{-0.13}$
$r_{143 \times 217}^{PS}$	$0.65^{+0.31}_{-0.32}$	$D_{2000}$	$229.2^{+5.0}_{-5.1}$	$f\sigma_8(0.38)$	$0.473^{+0.031}_{-0.053}$
$r_{143 \times 217}^{CIB}$	—	$n_{s,0.002}$	$0.962^{+0.016}_{-0.017}$	$\sigma_8(0.38)$	$0.642^{+0.047}_{-0.12}$
$\xi^{tSZ \times CIB}$	—	$Y_P$	$0.24526^{+0.00025}_{-0.00031}$	$f\sigma_8(0.51)$	$0.469^{+0.029}_{-0.061}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.24659^{+0.00025}_{-0.00032}$	$\sigma_8(0.51)$	$0.600^{+0.044}_{-0.12}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.50}$	$10^5 D/H$	$2.64^{+0.14}_{-0.12}$	$f\sigma_8(0.61)$	$0.462^{+0.028}_{-0.066}$
$A_{143}^{dust}$	$0.98^{+0.44}_{-0.45}$	Age/Gyr	$13.90^{+0.40}_{-0.19}$	$\sigma_8(0.61)$	$0.570^{+0.042}_{-0.11}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.27}$	$z_*$	$1090.4^{+1.5}_{-1.1}$	$f\sigma_8(2.33)$	$0.288^{+0.020}_{-0.053}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.41}$	$r_*$	$144.4^{+1.3}_{-1.4}$	$\sigma_8(2.33)$	$0.295^{+0.023}_{-0.060}$
$c_{100}$	$0.9974^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.0410^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{217}$	$1.0013^{+0.0041}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.87^{+0.12}_{-0.13}$	$f_{2000}^{217}$	$108.0^{+5.7}_{-5.5}$
$H_0$	$65.7^{+3.6}_{-8.0}$	$z_{drag}$	$1059.3^{+1.2}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$\Omega_\Lambda$	$0.663^{+0.055}_{-0.11}$	$r_{drag}$	$147.2^{+1.3}_{-1.3}$	$\chi_{simall}^2$	$396.9 (\nu: 1.6)$
$\Omega_m$	$0.337^{+0.11}_{-0.055}$	$k_D$	$0.1406^{+0.0014}_{-0.0013}$	$\chi_{lowl}^2$	$23.6 (\nu: 0.8)$
$\Omega_m h^2$	$0.145^{+0.012}_{-0.0065}$	$100\theta_D$	$0.16112^{+0.00071}_{-0.00071}$	$\chi_{CamSpec}^2$	$7064.4 (\nu: 16.1)$
$\Omega_\nu h^2$	$< 0.00921$	$z_{eq}$	$3416^{+130}_{-130}$	$\chi_{prior}^2$	$7.7 (\nu: 6.1)$
$\Omega_m h^3$	$0.0952^{+0.0020}_{-0.0050}$	$k_{eq}$	$0.01043^{+0.00041}_{-0.00039}$	$\chi_{CMB}^2$	$7484.8 (\nu: 16.4)$
$\sigma_8$	$0.788^{+0.056}_{-0.13}$	$100\theta_{eq}$	$0.810^{+0.024}_{-0.024}$		

$\bar{\chi}_{eff}^2 = 7492.51$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.25$ ;  $R - 1 = 0.00841$



### 5.3 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022312	$0.02227^{+0.00045}_{-0.00044}$	$\sigma_8$	0.821	$0.795^{+0.044}_{-0.096}$	$100\theta_{s,eq}$	0.4505	$0.4502^{+0.0079}_{-0.0077}$
$\Omega_c h^2$	0.11951	$0.1197^{+0.0036}_{-0.0036}$	$S_8$	0.8298	$0.822^{+0.043}_{-0.050}$	$H(0.15)$	73.22	$72.2^{+2.1}_{-4.7}$
$100\theta_{MC}$	1.04093	$1.04082^{+0.00088}_{-0.00089}$	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.450^{+0.024}_{-0.027}$	$D_M(0.15)$	638.0	$649^{+44}_{-24}$
$\tau$	0.0522	$0.053^{+0.021}_{-0.022}$	$\sigma_8 \Omega_m^{0.25}$	0.6107	$0.598^{+0.029}_{-0.057}$	$H(0.38)$	83.26	$82.4^{+1.6}_{-3.5}$
$\Sigma m_\nu$ [eV]	0.001	< 0.570	$\sigma_8/h^{0.5}$	0.995	$0.972^{+0.045}_{-0.10}$	$D_M(0.38)$	1523	$1544^{+89}_{-48}$
$\ln(10^{10} A_s)$	3.0374	$3.039^{+0.043}_{-0.043}$	$r_{drag} h$	100.1	$98.4^{+4.0}_{-8.2}$	$H(0.51)$	89.94	$89.2^{+1.3}_{-2.9}$
$n_s$	0.9667	$0.965^{+0.012}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.439	$2.428^{+0.073}_{-0.074}$	$D_M(0.51)$	1973	$1999^{+110}_{-57}$
$y_{cal}$	1.0003	$1.0006^{+0.0062}_{-0.0064}$	$z_{re}$	7.46	$7.5^{+2.1}_{-2.4}$	$H(0.61)$	95.53	$94.9^{+1.1}_{-2.5}$
$A_{100}^{PS}$	231	$241^{+60}_{-60}$	$10^9 A_s$	2.085	$2.088^{+0.093}_{-0.088}$	$D_M(0.61)$	2297	$2325^{+110}_{-61}$
$A_{143}^{PS}$	45.8	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8786	$1.879^{+0.029}_{-0.029}$	$H(2.33)$	235.85	$236.6^{+4.0}_{-2.6}$
$A_{217}^{PS}$	103.5	$102^{+30}_{-30}$	$D_{40}$	1224.5	$1227^{+33}_{-33}$	$D_M(2.33)$	5753	$5782^{+130}_{-53}$
$A_{217}^{CIB}$	43.3	$40^{+20}_{-20}$	$D_{220}$	5717	$5720^{+98}_{-99}$	$f\sigma_8(0.15)$	0.4587	$0.455^{+0.022}_{-0.028}$
$A_{143}^{tSZ}$	6.55	< 8.87	$D_{810}$	2535.3	$2536^{+33}_{-34}$	$\sigma_8(0.15)$	0.759	$0.733^{+0.041}_{-0.093}$
$r_{143 \times 217}^{PS}$	0.674	$0.65^{+0.31}_{-0.33}$	$D_{1420}$	816.0	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	0.4782	$0.471^{+0.021}_{-0.039}$
$r_{143 \times 217}^{CIB}$	0.85	—	$D_{2000}$	230.50	$230.1^{+4.2}_{-4.4}$	$\sigma_8(0.38)$	0.673	$0.649^{+0.037}_{-0.086}$
$\xi^{tSZ \times CIB}$	0.49	—	$n_{s,0.002}$	0.9667	$0.965^{+0.012}_{-0.013}$	$f\sigma_8(0.51)$	0.4772	$0.468^{+0.021}_{-0.045}$
$A^{kSZ}$	0.0	—	$Y_P$	0.245372	$0.24535^{+0.00017}_{-0.00020}$	$\sigma_8(0.51)$	0.630	$0.607^{+0.035}_{-0.083}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	$Y_P^{BBN}$	0.246698	$0.24668^{+0.00017}_{-0.00020}$	$f\sigma_8(0.61)$	0.4725	$0.463^{+0.020}_{-0.048}$
$A_{143}^{dust}$	0.981	$0.97^{+0.46}_{-0.46}$	$10^5 D/H$	2.597	$2.606^{+0.085}_{-0.081}$	$\sigma_8(0.61)$	0.599	$0.578^{+0.034}_{-0.080}$
$A_{217}^{dust}$	0.976	$0.97^{+0.26}_{-0.26}$	Age/Gyr	13.773	$13.84^{+0.30}_{-0.12}$	$f\sigma_8(2.33)$	0.3013	$0.292^{+0.016}_{-0.037}$
$A_{143 \times 217}^{dust}$	1.005	$1.03^{+0.41}_{-0.40}$	$z_*$	1089.95	$1090.04^{+0.86}_{-0.77}$	$\sigma_8(2.33)$	0.3113	$0.300^{+0.018}_{-0.043}$
$c_{100}$	0.99774	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	144.61	$144.57^{+0.81}_{-0.83}$	$f_{2000}^{143}$	29.8	$30^{+8}_{-7}$
$c_{217}$	1.00133	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	1.04108	$1.04105^{+0.00084}_{-0.00083}$	$f_{2000}^{217}$	106.5	$107.2^{+5.1}_{-5.1}$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	13.890	$13.887^{+0.075}_{-0.077}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$c_{EE}$	0.9923	$0.992^{+0.013}_{-0.013}$	$z_{drag}$	1059.78	$1059.68^{+0.90}_{-0.89}$	$\chi_{small}^2$	395.78	$396.9 (\nu: 1.5)$
$H_0$	67.99	$66.8^{+2.4}_{-5.3}$	$r_{drag}$	147.29	$147.27^{+0.81}_{-0.82}$	$\chi_{lowl}^2$	23.03	$23.13 (\nu: 0.4)$
$\Omega_\Lambda$	0.693	$0.678^{+0.032}_{-0.077}$	$k_D$	0.14061	$0.14061^{+0.00090}_{-0.00091}$	$\chi_{CamSpec}^2$	11499.2	$11515.5 (\nu: 18.2)$
$\Omega_m$	0.307	$0.322^{+0.077}_{-0.032}$	$100\theta_D$	0.16086	$0.16089^{+0.00050}_{-0.00052}$	$\chi_{prior}^2$	2.1	$7.8 (\nu: 5.8)$
$\Omega_m h^2$	0.1418	$0.1434^{+0.0072}_{-0.0043}$	$z_{eq}$	3389	$3393^{+81}_{-80}$	$\chi_{CMB}^2$	11918.0	$11935.6 (\nu: 18.8)$
$\Omega_\nu h^2$	0.00001	< 0.00613	$k_{eq}$	0.010344	$0.01036^{+0.00025}_{-0.00024}$			
$\Omega_m h^3$	0.09642	$0.0957^{+0.0014}_{-0.0034}$	$100\theta_{eq}$	0.8154	$0.815^{+0.015}_{-0.015}$			

Best-fit  $\chi_{eff}^2 = 11920.07$ ;  $\Delta\chi_{eff}^2 = -0.70$ ;  $\bar{\chi}_{eff}^2 = 11943.39$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.93$ ;  $R - 1 = 0.01661$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.78 ( $\Delta$  -0.12) commander\_dx12.v3.2.29: 23.03 ( $\Delta$  0.03) CamSpec like\_10.7HM\_1400\_unified: 11499.19 ( $\Delta$  -0.46)



## 5.4 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02243^{+0.00040}_{-0.00039}$	$\sigma_8$	$0.810^{+0.023}_{-0.033}$	$100\theta_{s,eq}$	$0.4539^{+0.0067}_{-0.0073}$
$\Omega_c h^2$	$0.1180^{+0.0033}_{-0.0028}$	$S_8$	$0.811^{+0.040}_{-0.035}$	$H(0.15)$	$73.6^{+1.5}_{-1.6}$
$100\theta_{MC}$	$1.04110^{+0.00090}_{-0.00079}$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.022}_{-0.019}$	$D_M(0.15)$	$634^{+16}_{-14}$
$\tau$	$0.055^{+0.023}_{-0.024}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.022}_{-0.022}$	$H(0.38)$	$83.5^{+1.1}_{-1.2}$
$\Sigma m_\nu$ [eV]	$< 0.157$	$\sigma_8/h^{0.5}$	$0.979^{+0.032}_{-0.035}$	$D_M(0.38)$	$1516^{+32}_{-28}$
$\ln(10^{10} A_s)$	$3.040^{+0.044}_{-0.044}$	$r_{drag} h$	$101.0^{+2.7}_{-3.0}$	$H(0.51)$	$90.13^{+0.91}_{-1.0}$
$n_s$	$0.970^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.414^{+0.072}_{-0.071}$	$D_M(0.51)$	$1965^{+38}_{-34}$
$y_{cal}$	$1.0007^{+0.0059}_{-0.0067}$	$z_{re}$	$7.7^{+2.2}_{-2.6}$	$H(0.61)$	$95.67^{+0.75}_{-0.85}$
$A_{100}^{PS}$	$239^{+60}_{-60}$	$10^9 A_s$	$2.091^{+0.095}_{-0.091}$	$D_M(0.61)$	$2288^{+41}_{-37}$
$A_{143}^{PS}$	$38^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.873^{+0.028}_{-0.028}$	$H(2.33)$	$235.2^{+2.1}_{-1.7}$
$A_{217}^{PS}$	$102^{+40}_{-30}$	$D_{40}$	$1220^{+32}_{-31}$	$D_M(2.33)$	$5747^{+41}_{-33}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{220}$	$5730^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.450^{+0.020}_{-0.018}$
$A_{143}^{tSZ}$	$< 8.66$	$D_{810}$	$2535^{+32}_{-35}$	$\sigma_8(0.15)$	$0.750^{+0.021}_{-0.032}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	$817^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.470^{+0.017}_{-0.017}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.9^{+3.9}_{-4.3}$	$\sigma_8(0.38)$	$0.666^{+0.018}_{-0.029}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.970^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.470^{+0.016}_{-0.016}$
$A^{kSZ}$	—	$Y_P$	$0.24542^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	$0.623^{+0.018}_{-0.028}$
$A_{100}^{dust}$	$1.01^{+0.48}_{-0.48}$	$Y_P^{BBN}$	$0.24674^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.016}$
$A_{143}^{dust}$	$0.97^{+0.50}_{-0.48}$	$10^5 D/H$	$2.575^{+0.074}_{-0.072}$	$\sigma_8(0.61)$	$0.593^{+0.018}_{-0.027}$
$A_{217}^{dust}$	$0.98^{+0.26}_{-0.25}$	Age/Gyr	$13.763^{+0.093}_{-0.072}$	$f\sigma_8(2.33)$	$0.2993^{+0.0091}_{-0.012}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.40}_{-0.37}$	$z_*$	$1089.67^{+0.69}_{-0.70}$	$\sigma_8(2.33)$	$0.309^{+0.010}_{-0.014}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0025}$	$r_*$	$144.91^{+0.64}_{-0.77}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$100\theta_*$	$1.04127^{+0.00085}_{-0.00079}$	$f_{2000}^{217}$	$106.5^{+4.9}_{-4.9}$
$c_{TE}$	$0.997^{+0.012}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	$13.917^{+0.063}_{-0.072}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-6}$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$z_{drag}$	$1059.93^{+0.81}_{-0.83}$	$\chi_{simall}^2$	$397.1 (\nu: 1.6)$
$H_0$	$68.4^{+1.7}_{-1.9}$	$r_{drag}$	$147.57^{+0.70}_{-0.78}$	$\chi_{lowl}^2$	$22.56 (\nu: 0.4)$
$\Omega_\Lambda$	$0.699^{+0.020}_{-0.024}$	$k_D$	$0.14041^{+0.00091}_{-0.00081}$	$\chi_{CamSpec}^2$	$11516.2 (\nu: 17.8)$
$\Omega_m$	$0.301^{+0.024}_{-0.020}$	$100\theta_D$	$0.16077^{+0.00047}_{-0.00051}$	$\chi_{H073p45}^2$	$9.3 (\nu: 3.1)$
$\Omega_m h^2$	$0.1408^{+0.0034}_{-0.0029}$	$z_{eq}$	$3355^{+76}_{-63}$	$\chi_{prior}^2$	$7.5 (\nu: 5.3)$
$\Omega_\nu h^2$	$< 0.00169$	$k_{eq}$	$0.01024^{+0.00023}_{-0.00019}$	$\chi_{CMB}^2$	$11935.8 (\nu: 18.2)$
$\Omega_m h^3$	$0.0963^{+0.0010}_{-0.0012}$	$100\theta_{eq}$	$0.822^{+0.012}_{-0.014}$		

$$\bar{\chi}_{eff}^2 = 11952.66; \Delta\bar{\chi}_{eff}^2 = -1.61; R - 1 = 0.05737$$



## 5.5 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02227^{+0.00044}_{-0.00045}$	$\sigma_8$	$0.795^{+0.043}_{-0.096}$	$100\theta_{s,eq}$	$0.4503^{+0.0078}_{-0.0075}$
$\Omega_c h^2$	$0.1197^{+0.0036}_{-0.0035}$	$S_8$	$0.823^{+0.043}_{-0.051}$	$H(0.15)$	$72.2^{+2.4}_{-4.2}$
$100\theta_{MC}$	$1.04083^{+0.00090}_{-0.00089}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.023}_{-0.028}$	$D_M(0.15)$	$649^{+44}_{-24}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.028}_{-0.057}$	$H(0.38)$	$82.4^{+1.6}_{-3.6}$
$\Sigma m_\nu$ [eV]	$< 0.571$	$\sigma_8/h^{0.5}$	$0.973^{+0.045}_{-0.10}$	$D_M(0.38)$	$1544^{+89}_{-48}$
$\ln(10^{10} A_s)$	$3.042^{+0.041}_{-0.029}$	$r_{drag} h$	$98.4^{+4.0}_{-8.2}$	$H(0.51)$	$89.3^{+1.3}_{-2.9}$
$n_s$	$0.965^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.072}_{-0.070}$	$D_M(0.51)$	$1999^{+110}_{-57}$
$y_{cal}$	$1.0006^{+0.0062}_{-0.0064}$	$z_{re}$	$< 9.46$	$H(0.61)$	$94.9^{+1.1}_{-2.5}$
$A_{100}^{PS}$	$241^{+60}_{-60}$	$10^9 A_s$	$2.094^{+0.088}_{-0.061}$	$D_M(0.61)$	$2324^{+110}_{-61}$
$A_{143}^{PS}$	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.029}_{-0.029}$	$H(2.33)$	$236.6^{+4.0}_{-2.6}$
$A_{217}^{PS}$	$102^{+30}_{-30}$	$D_{40}$	$1227^{+33}_{-33}$	$D_M(2.33)$	$5782^{+130}_{-53}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{220}$	$5719^{+99}_{-98}$	$f\sigma_8(0.15)$	$0.455^{+0.022}_{-0.028}$
$A_{143}^{tSZ}$	$< 8.85$	$D_{810}$	$2535^{+33}_{-34}$	$\sigma_8(0.15)$	$0.734^{+0.040}_{-0.093}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.471^{+0.021}_{-0.039}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.1^{+4.2}_{-4.3}$	$\sigma_8(0.38)$	$0.650^{+0.036}_{-0.087}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.965^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	$0.469^{+0.020}_{-0.045}$
$A^{kSZ}$	—	$Y_P$	$0.24535^{+0.00017}_{-0.00021}$	$\sigma_8(0.51)$	$0.608^{+0.034}_{-0.083}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.50}$	$Y_P^{BBN}$	$0.24668^{+0.00017}_{-0.00021}$	$f\sigma_8(0.61)$	$0.463^{+0.020}_{-0.048}$
$A_{143}^{dust}$	$0.97^{+0.46}_{-0.46}$	$10^5 D/H$	$2.605^{+0.086}_{-0.080}$	$\sigma_8(0.61)$	$0.578^{+0.033}_{-0.080}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.26}$	Age/Gyr	$13.84^{+0.30}_{-0.12}$	$f\sigma_8(2.33)$	$0.292^{+0.015}_{-0.038}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.41}_{-0.40}$	$z_*$	$1090.03^{+0.87}_{-0.76}$	$\sigma_8(2.33)$	$0.300^{+0.018}_{-0.043}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$144.58^{+0.81}_{-0.81}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	$1.04106^{+0.00085}_{-0.00083}$	$f_{2000}^{217}$	$107.1^{+5.1}_{-5.1}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	$13.888^{+0.077}_{-0.076}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{drag}$	$1059.69^{+0.89}_{-0.90}$	$\chi_{simall}^2$	$396.9 (\nu: 1.5)$
$H_0$	$66.8^{+2.7}_{-4.8}$	$r_{drag}$	$147.28^{+0.81}_{-0.80}$	$\chi_{lowl}^2$	$23.14 (\nu: 0.4)$
$\Omega_\Lambda$	$0.678^{+0.032}_{-0.077}$	$k_D$	$0.14060^{+0.00088}_{-0.00091}$	$\chi_{CamSpec}^2$	$11515.4 (\nu: 18.0)$
$\Omega_m$	$0.322^{+0.077}_{-0.032}$	$100\theta_D$	$0.16089^{+0.00050}_{-0.00051}$	$\chi_{prior}^2$	$7.8 (\nu: 5.8)$
$\Omega_m h^2$	$0.1433^{+0.0072}_{-0.0043}$	$z_{eq}$	$3392^{+79}_{-79}$	$\chi_{CMB}^2$	$11935.4 (\nu: 18.3)$
$\Omega_\nu h^2$	$< 0.00614$	$k_{eq}$	$0.01035^{+0.00024}_{-0.00024}$		
$\Omega_m h^3$	$0.0957^{+0.0014}_{-0.0034}$	$100\theta_{eq}$	$0.815^{+0.015}_{-0.015}$		

$$\bar{\chi}_{eff}^2 = 11943.12; \Delta\bar{\chi}_{eff}^2 = 0.93; R - 1 = 0.01799$$



## 5.6 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02243^{+0.00040}_{-0.00039}$	$\sigma_8$	$0.811^{+0.022}_{-0.033}$	$100\theta_{s,eq}$	$0.4540^{+0.0067}_{-0.0072}$
$\Omega_c h^2$	$0.1180^{+0.0033}_{-0.0028}$	$S_8$	$0.812^{+0.040}_{-0.034}$	$H(0.15)$	$73.6^{+1.5}_{-1.6}$
$100\theta_{MC}$	$1.04111^{+0.00089}_{-0.00080}$	$\sigma_8 \Omega_m^{0.5}$	$0.445^{+0.022}_{-0.019}$	$D_M(0.15)$	$634^{+16}_{-14}$
$\tau$	$0.056^{+0.019}_{-0.015}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.022}_{-0.021}$	$H(0.38)$	$83.5^{+1.1}_{-1.2}$
$\Sigma m_\nu$ [eV]	$< 0.158$	$\sigma_8/h^{0.5}$	$0.980^{+0.032}_{-0.034}$	$D_M(0.38)$	$1515^{+32}_{-28}$
$\ln(10^{10} A_s)$	$3.042^{+0.042}_{-0.030}$	$r_{drag} h$	$101.0^{+2.7}_{-3.0}$	$H(0.51)$	$90.14^{+0.90}_{-1.0}$
$n_s$	$0.970^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.416^{+0.068}_{-0.063}$	$D_M(0.51)$	$1965^{+38}_{-33}$
$y_{cal}$	$1.0007^{+0.0059}_{-0.0068}$	$z_{re}$	$< 9.45$	$H(0.61)$	$95.68^{+0.74}_{-0.86}$
$A_{100}^{PS}$	$239^{+60}_{-60}$	$10^9 A_s$	$2.095^{+0.090}_{-0.063}$	$D_M(0.61)$	$2288^{+41}_{-36}$
$A_{143}^{PS}$	$38^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.873^{+0.028}_{-0.028}$	$H(2.33)$	$235.2^{+2.0}_{-1.9}$
$A_{217}^{PS}$	$102^{+40}_{-30}$	$D_{40}$	$1220^{+32}_{-32}$	$D_M(2.33)$	$5747^{+41}_{-32}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{220}$	$5730^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.450^{+0.020}_{-0.018}$
$A_{143}^{tSZ}$	$< 8.76$	$D_{810}$	$2535^{+32}_{-35}$	$\sigma_8(0.15)$	$0.750^{+0.021}_{-0.031}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.32}_{-0.32}$	$D_{1420}$	$817^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.471^{+0.017}_{-0.017}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.9^{+3.9}_{-4.4}$	$\sigma_8(0.38)$	$0.666^{+0.018}_{-0.029}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.970^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.470^{+0.016}_{-0.016}$
$A^{kSZ}$	—	$Y_P$	$0.24542^{+0.00015}_{-0.00016}$	$\sigma_8(0.51)$	$0.624^{+0.017}_{-0.027}$
$A_{100}^{dust}$	$1.02^{+0.46}_{-0.49}$	$Y_P^{BBN}$	$0.24674^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.015}$
$A_{143}^{dust}$	$0.97^{+0.50}_{-0.48}$	$10^5 D/H$	$2.574^{+0.074}_{-0.071}$	$\sigma_8(0.61)$	$0.594^{+0.017}_{-0.026}$
$A_{217}^{dust}$	$0.98^{+0.26}_{-0.25}$	Age/Gyr	$13.762^{+0.094}_{-0.071}$	$f\sigma_8(2.33)$	$0.2996^{+0.0087}_{-0.012}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.40}_{-0.37}$	$z_*$	$1089.66^{+0.69}_{-0.69}$	$\sigma_8(2.33)$	$0.3095^{+0.0097}_{-0.014}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0025}$	$r_*$	$144.92^{+0.63}_{-0.77}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$100\theta_*$	$1.04128^{+0.00085}_{-0.00079}$	$f_{2000}^{217}$	$106.5^{+4.9}_{-4.9}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_M(z_*)/\text{Gpc}$	$13.917^{+0.063}_{-0.072}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-6}$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$z_{drag}$	$1059.93^{+0.80}_{-0.84}$	$\chi_{simall}^2$	$397.0 (\nu: 1.6)$
$H_0$	$68.4^{+1.7}_{-1.9}$	$r_{drag}$	$147.57^{+0.69}_{-0.78}$	$\chi_{lowl}^2$	$22.57 (\nu: 0.4)$
$\Omega_\Lambda$	$0.699^{+0.020}_{-0.024}$	$k_D$	$0.14041^{+0.00091}_{-0.00079}$	$\chi_{CamSpec}^2$	$11516.1 (\nu: 17.9)$
$\Omega_m$	$0.301^{+0.024}_{-0.020}$	$100\theta_D$	$0.16077^{+0.00047}_{-0.00051}$	$\chi_{H073p45}^2$	$9.3 (\nu: 3.1)$
$\Omega_m h^2$	$0.1408^{+0.0034}_{-0.0028}$	$z_{eq}$	$3355^{+75}_{-62}$	$\chi_{prior}^2$	$7.5 (\nu: 5.2)$
$\Omega_\nu h^2$	$< 0.00170$	$k_{eq}$	$0.01024^{+0.00023}_{-0.00019}$	$\chi_{CMB}^2$	$11935.7 (\nu: 18.1)$
$\Omega_m h^3$	$0.0964^{+0.0010}_{-0.0012}$	$100\theta_{eq}$	$0.822^{+0.012}_{-0.014}$		

$$\bar{\chi}_{eff}^2 = 11952.44; \Delta\bar{\chi}_{eff}^2 = -1.57; R - 1 = 0.06967$$



## 5.7 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022343	$0.02227^{+0.00042}_{-0.00041}$	$\sigma_8$	0.8210	$0.802^{+0.030}_{-0.063}$	$100\theta_{s,eq}$	0.4508	$0.4499^{+0.0075}_{-0.0074}$
$\Omega_c h^2$	0.11938	$0.1199^{+0.0035}_{-0.0034}$	$S_8$	0.8292	$0.827^{+0.033}_{-0.032}$	$H(0.15)$	73.29	$72.3^{+1.9}_{-3.3}$
$100\theta_{MC}$	1.04091	$1.04083^{+0.00087}_{-0.00084}$	$\sigma_8 \Omega_m^{0.5}$	0.4541	$0.453^{+0.018}_{-0.018}$	$D_M(0.15)$	637.4	$647^{+35}_{-19}$
$\tau$	0.0532	$0.054^{+0.022}_{-0.020}$	$\sigma_8 \Omega_m^{0.25}$	0.6106	$0.603^{+0.021}_{-0.028}$	$H(0.38)$	83.31	$82.6^{+1.4}_{-2.5}$
$\Sigma m_\nu$ [eV]	0.000	< 0.379	$\sigma_8/h^{0.5}$	0.9952	$0.980^{+0.033}_{-0.052}$	$D_M(0.38)$	1521	$1541^{+70}_{-38}$
$\ln(10^{10} A_s)$	3.0396	$3.042^{+0.043}_{-0.039}$	$r_{drag} h$	100.24	$98.6^{+3.6}_{-6.0}$	$H(0.51)$	89.98	$89.4^{+1.2}_{-2.1}$
$n_s$	0.9673	$0.965^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	2.438	$2.437^{+0.059}_{-0.058}$	$D_M(0.51)$	1972	$1995^{+82}_{-45}$
$y_{cal}$	1.0005	$1.0006^{+0.0066}_{-0.0065}$	$z_{re}$	7.56	$7.7^{+2.1}_{-2.1}$	$H(0.61)$	95.56	$95.04^{+0.98}_{-1.8}$
$A_{100}^{PS}$	233	$241^{+60}_{-60}$	$10^9 A_s$	2.090	$2.095^{+0.092}_{-0.081}$	$D_M(0.61)$	2295	$2320^{+90}_{-48}$
$A_{143}^{PS}$	42.3	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8786	$1.880^{+0.029}_{-0.027}$	$H(2.33)$	235.79	$236.6^{+3.3}_{-2.4}$
$A_{217}^{PS}$	103.7	$103^{+30}_{-30}$	$D_{40}$	1223.7	$1229^{+30}_{-31}$	$D_M(2.33)$	5751	$5776^{+90}_{-46}$
$A_{217}^{CIB}$	42.7	$40^{+20}_{-20}$	$D_{220}$	5719	$5721^{+100}_{-100}$	$f\sigma_8(0.15)$	0.4585	$0.458^{+0.017}_{-0.017}$
$A_{143}^{tSZ}$	6.19	< 8.79	$D_{810}$	2536.0	$2536^{+35}_{-34}$	$\sigma_8(0.15)$	0.7591	$0.740^{+0.028}_{-0.062}$
$r_{143 \times 217}^{PS}$	0.665	$0.66^{+0.32}_{-0.33}$	$D_{1420}$	816.6	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4781	$0.474^{+0.015}_{-0.018}$
$r_{143 \times 217}^{CIB}$	0.75	—	$D_{2000}$	230.77	$230.2^{+4.4}_{-4.2}$	$\sigma_8(0.38)$	0.6733	$0.656^{+0.026}_{-0.059}$
$\xi^{tSZ \times CIB}$	0.36	—	$n_{s,0.002}$	0.9673	$0.965^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	0.4773	$0.472^{+0.015}_{-0.021}$
$A^{kSZ}$	0.5	—	$Y_P$	0.245385	$0.24535^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	0.6302	$0.613^{+0.025}_{-0.057}$
$A_{100}^{dust}$	1.009	$1.01^{+0.49}_{-0.49}$	$Y_P^{BBN}$	0.246711	$0.24668^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	0.4726	$0.466^{+0.015}_{-0.024}$
$A_{143}^{dust}$	0.972	$0.96^{+0.45}_{-0.45}$	$10^5 D/H$	2.590	$2.604^{+0.078}_{-0.076}$	$\sigma_8(0.61)$	0.5997	$0.583^{+0.024}_{-0.055}$
$A_{217}^{dust}$	0.973	$0.97^{+0.27}_{-0.27}$	Age/Gyr	13.769	$13.83^{+0.21}_{-0.10}$	$f\sigma_8(2.33)$	0.3016	$0.295^{+0.011}_{-0.025}$
$A_{143 \times 217}^{dust}$	1.018	$1.02^{+0.42}_{-0.42}$	$z_*$	1089.89	$1090.04^{+0.79}_{-0.72}$	$\sigma_8(2.33)$	0.3117	$0.303^{+0.013}_{-0.030}$
$c_{100}$	0.99772	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	144.62	$144.54^{+0.78}_{-0.78}$	$f_{2000}^{143}$	29.3	$30^{+8}_{-7}$
$c_{217}$	1.00120	$1.0011^{+0.0041}_{-0.0041}$	$100\theta_*$	1.04107	$1.04104^{+0.00083}_{-0.00079}$	$f_{2000}^{217}$	106.3	$107.0^{+5.0}_{-5.0}$
$c_{TE}$	0.9961	$0.997^{+0.013}_{-0.012}$	$D_M(z_*)/\text{Gpc}$	13.891	$13.884^{+0.073}_{-0.073}$	$f_{2000}^{143 \times 217}$	31.7	$32^{+5}_{-5}$
$c_{EE}$	0.9917	$0.992^{+0.013}_{-0.013}$	$z_{drag}$	1059.82	$1059.70^{+0.88}_{-0.84}$	$\chi_{lensing}^2$	8.92	9.44 ( $\nu$ : 0.4)
$H_0$	68.06	$67.0^{+2.2}_{-3.8}$	$r_{drag}$	147.29	$147.24^{+0.79}_{-0.77}$	$\chi_{small}^2$	395.86	397.1 ( $\nu$ : 1.8)
$\Omega_\Lambda$	0.6940	$0.680^{+0.028}_{-0.054}$	$k_D$	0.14063	$0.14064^{+0.00087}_{-0.00090}$	$\chi_{lowl}^2$	22.92	23.30 ( $\nu$ : 0.4)
$\Omega_m$	0.3060	$0.320^{+0.054}_{-0.028}$	$100\theta_D$	0.160816	$0.16089^{+0.00048}_{-0.00050}$	$\chi_{CamSpec}^2$	11499.3	11514.7 ( $\nu$ : 15.9)
$\Omega_m h^2$	0.14172	$0.1432^{+0.0057}_{-0.0040}$	$z_{eq}$	3387	$3396^{+78}_{-77}$	$\chi_{prior}^2$	2.1	7.8 ( $\nu$ : 6.0)
$\Omega_\nu h^2$	0.00000	< 0.00408	$k_{eq}$	0.010336	$0.01037^{+0.00024}_{-0.00023}$	$\chi_{CMB}^2$	11927.0	11944.5 ( $\nu$ : 18.0)
$\Omega_m h^3$	0.09645	$0.0959^{+0.0012}_{-0.0022}$	$100\theta_{eq}$	0.8159	$0.814^{+0.015}_{-0.014}$			

Best-fit  $\chi_{eff}^2 = 11929.03$ ;  $\Delta\chi_{eff}^2 = -0.62$ ;  $\bar{\chi}_{eff}^2 = 11952.30$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.86$ ;  $R - 1 = 0.01307$

$\chi_{eff}^2$ : CMB - smicadx12.Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.92 ( $\Delta$  0.09) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  -0.01) commander\_dx12.v3.2.29: 22.93 ( $\Delta$  -0.29) CamSpec like\_10.7HM\_1400\_unified: 11499.28 ( $\Delta$  -0.37)



## 5.8 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00042}_{-0.00041}$	$\sigma_8$	$0.802^{+0.030}_{-0.064}$	$100\theta_{s,eq}$	$0.4500^{+0.0074}_{-0.0074}$
$\Omega_c h^2$	$0.1198^{+0.0035}_{-0.0033}$	$S_8$	$0.827^{+0.034}_{-0.032}$	$H(0.15)$	$72.3^{+1.9}_{-3.4}$
$100\theta_{MC}$	$1.04083^{+0.00087}_{-0.00083}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.018}_{-0.018}$	$D_M(0.15)$	$647^{+35}_{-19}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.021}_{-0.028}$	$H(0.38)$	$82.6^{+1.4}_{-2.6}$
$\Sigma m_\nu$ [eV]	$< 0.383$	$\sigma_8/h^{0.5}$	$0.980^{+0.033}_{-0.053}$	$D_M(0.38)$	$1541^{+71}_{-38}$
$\ln(10^{10} A_s)$	$3.044^{+0.042}_{-0.029}$	$r_{drag} h$	$98.6^{+3.6}_{-6.1}$	$H(0.51)$	$89.4^{+1.2}_{-2.1}$
$n_s$	$0.965^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.058}_{-0.057}$	$D_M(0.51)$	$1995^{+84}_{-45}$
$y_{cal}$	$1.0006^{+0.0066}_{-0.0065}$	$z_{re}$	$< 9.59$	$H(0.61)$	$95.04^{+0.98}_{-1.8}$
$A_{100}^{PS}$	$241^{+60}_{-60}$	$10^9 A_s$	$2.100^{+0.089}_{-0.060}$	$D_M(0.61)$	$2320^{+91}_{-48}$
$A_{143}^{PS}$	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.029}_{-0.027}$	$H(2.33)$	$236.6^{+3.4}_{-2.4}$
$A_{217}^{PS}$	$103^{+30}_{-30}$	$D_{40}$	$1229^{+30}_{-31}$	$D_M(2.33)$	$5776^{+91}_{-47}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{220}$	$5721^{+99}_{-99}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$A_{143}^{tSZ}$	$< 8.80$	$D_{810}$	$2536^{+35}_{-35}$	$\sigma_8(0.15)$	$0.741^{+0.028}_{-0.063}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.32}_{-0.33}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.018}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.2^{+4.4}_{-4.3}$	$\sigma_8(0.38)$	$0.656^{+0.026}_{-0.059}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.965^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.472^{+0.015}_{-0.022}$
$A^{kSZ}$	—	$Y_P$	$0.24536^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	$0.614^{+0.025}_{-0.057}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.49}$	$Y_P^{BBN}$	$0.24668^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	$0.467^{+0.015}_{-0.024}$
$A_{143}^{dust}$	$0.96^{+0.46}_{-0.45}$	$10^5 D/H$	$2.604^{+0.079}_{-0.076}$	$\sigma_8(0.61)$	$0.584^{+0.024}_{-0.055}$
$A_{217}^{dust}$	$0.97^{+0.27}_{-0.27}$	Age/Gyr	$13.83^{+0.21}_{-0.10}$	$f\sigma_8(2.33)$	$0.295^{+0.011}_{-0.026}$
$A_{143 \times 217}^{dust}$	$1.02^{+0.42}_{-0.42}$	$z_*$	$1090.03^{+0.80}_{-0.72}$	$\sigma_8(2.33)$	$0.303^{+0.013}_{-0.030}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	$144.55^{+0.78}_{-0.79}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	$1.04105^{+0.00084}_{-0.00079}$	$f_{2000}^{217}$	$107.0^{+5.0}_{-5.0}$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$D_M(z_*)/\text{Gpc}$	$13.885^{+0.072}_{-0.074}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{drag}$	$1059.71^{+0.88}_{-0.84}$	$\chi^2_{lensing}$	$9.39 (\nu: 0.3)$
$H_0$	$67.0^{+2.2}_{-3.9}$	$r_{drag}$	$147.25^{+0.79}_{-0.77}$	$\chi^2_{simall}$	$397.0 (\nu: 1.8)$
$\Omega_\Lambda$	$0.680^{+0.028}_{-0.054}$	$k_D$	$0.14063^{+0.00088}_{-0.00090}$	$\chi^2_{lowl}$	$23.29 (\nu: 0.4)$
$\Omega_m$	$0.320^{+0.054}_{-0.028}$	$100\theta_D$	$0.16088^{+0.00048}_{-0.00049}$	$\chi^2_{CamSpec}$	$11514.6 (\nu: 15.7)$
$\Omega_m h^2$	$0.1432^{+0.0058}_{-0.0039}$	$z_{eq}$	$3395^{+79}_{-76}$	$\chi^2_{prior}$	$7.8 (\nu: 6.0)$
$\Omega_\nu h^2$	$< 0.00412$	$k_{eq}$	$0.01036^{+0.00024}_{-0.00023}$	$\chi^2_{CMB}$	$11944.4 (\nu: 17.7)$
$\Omega_m h^3$	$0.0959^{+0.0012}_{-0.0022}$	$100\theta_{eq}$	$0.814^{+0.015}_{-0.015}$		

$$\bar{\chi}^2_{eff} = 11952.13; \Delta\bar{\chi}^2_{eff} = 0.88; R - 1 = 0.01210$$



## 5.9 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02222	$0.02222^{+0.00050}_{-0.00050}$	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.450^{+0.023}_{-0.028}$	$D_M(0.15)$	638.1	$641^{+14}_{-13}$
$\Omega_c h^2$	0.11938	$0.1189^{+0.0032}_{-0.0036}$	$\sigma_8 \Omega_m^{0.25}$	0.6109	$0.603^{+0.025}_{-0.036}$	$H(0.38)$	83.23	$83.02^{+0.99}_{-1.1}$
$100\theta_{MC}$	1.04101	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	0.9958	$0.982^{+0.037}_{-0.057}$	$D_M(0.38)$	1523.1	$1528^{+28}_{-26}$
$\tau$	0.0531	$0.054^{+0.022}_{-0.021}$	$r_{drag} h$	100.22	$99.9^{+2.5}_{-2.5}$	$H(0.51)$	89.90	$89.71^{+0.83}_{-0.92}$
$\Sigma m_\nu$ [eV]	0.003	$< 0.220$	$\langle d^2 \rangle^{1/2}$	2.439	$2.424^{+0.075}_{-0.087}$	$D_M(0.51)$	1973.8	$1980^{+33}_{-30}$
$\ln(10^{10} A_s)$	3.0387	$3.038^{+0.045}_{-0.045}$	$z_{re}$	7.57	$7.6^{+2.1}_{-2.3}$	$H(0.61)$	95.49	$95.31^{+0.71}_{-0.82}$
$n_s$	0.9670	$0.967^{+0.012}_{-0.011}$	$10^9 A_s$	2.088	$2.088^{+0.096}_{-0.091}$	$D_M(0.61)$	2297.4	$2304^{+36}_{-33}$
$y_{cal}$	1.0005	$1.0005^{+0.0065}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8776	$1.875^{+0.030}_{-0.030}$	$H(2.33)$	235.69	$235.7^{+2.0}_{-2.0}$
$A_{100}^{PS}$	234	$242^{+60}_{-60}$	$D_{40}$	1223.0	$1222^{+34}_{-34}$	$D_M(2.33)$	5755.3	$5764^{+43}_{-35}$
$A_{143}^{PS}$	43.5	$40^{+20}_{-20}$	$D_{220}$	5707	$5709^{+110}_{-99}$	$f\sigma_8(0.15)$	0.4588	$0.454^{+0.021}_{-0.026}$
$A_{217}^{PS}$	101.9	$101^{+30}_{-30}$	$D_{810}$	2534.3	$2533^{+36}_{-36}$	$\sigma_8(0.15)$	0.7590	$0.747^{+0.026}_{-0.046}$
$A_{217}^{CIB}$	44.6	$41^{+20}_{-20}$	$D_{1420}$	815.3	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4784	$0.473^{+0.019}_{-0.026}$
$A_{143}^{tSZ}$	6.47	$< 8.73$	$D_{2000}$	230.14	$229.9^{+4.7}_{-4.6}$	$\sigma_8(0.38)$	0.6731	$0.662^{+0.022}_{-0.041}$
$r_{143 \times 217}^{PS}$	0.626	$0.65^{+0.32}_{-0.33}$	$n_{s,0.002}$	0.9670	$0.967^{+0.012}_{-0.011}$	$f\sigma_8(0.51)$	0.4775	$0.472^{+0.018}_{-0.026}$
$r_{143 \times 217}^{CIB}$	0.84	—	$Y_P$	0.245333	$0.24533^{+0.00019}_{-0.00024}$	$\sigma_8(0.51)$	0.6301	$0.620^{+0.021}_{-0.038}$
$\xi^{tSZ \times CIB}$	0.29	—	$Y_P^{BBN}$	0.246659	$0.24666^{+0.00019}_{-0.00024}$	$f\sigma_8(0.61)$	0.4728	$0.467^{+0.017}_{-0.025}$
$A^{kSZ}$	0.3	—	$10^5 D/H$	2.615	$2.615^{+0.097}_{-0.091}$	$\sigma_8(0.61)$	0.5996	$0.590^{+0.020}_{-0.037}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	Age/Gyr	13.779	$13.80^{+0.10}_{-0.080}$	$f\sigma_8(2.33)$	0.3016	$0.2976^{+0.0093}_{-0.016}$
$A_{143}^{dust}$	0.992	$0.98^{+0.45}_{-0.44}$	$z_*$	1090.06	$1090.02^{+0.77}_{-0.75}$	$\sigma_8(2.33)$	0.3116	$0.307^{+0.010}_{-0.018}$
$A_{217}^{dust}$	0.969	$0.97^{+0.27}_{-0.26}$	$r_*$	144.71	$144.83^{+0.89}_{-0.84}$	$f_{2000}^{143}$	30.5	$30^{+8}_{-8}$
$A_{143 \times 217}^{dust}$	0.996	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	1.04118	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	107.1	$107.4^{+5.2}_{-5.1}$
$c_{100}$	0.99764	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.899	$13.909^{+0.083}_{-0.080}$	$f_{2000}^{143 \times 217}$	32.5	$33^{+5}_{-5}$
$c_{217}$	1.00136	$1.0012^{+0.0041}_{-0.0040}$	$z_{drag}$	1059.51	$1059.5^{+1.1}_{-1.1}$	$\chi_{simall}^2$	395.87	$397.0 (\nu: 1.6)$
$H_0$	67.98	$67.7^{+1.5}_{-1.6}$	$r_{drag}$	147.43	$147.55^{+0.94}_{-0.91}$	$\chi_{lowl}^2$	22.93	$22.85 (\nu: 0.4)$
$\Omega_\Lambda$	0.6935	$0.690^{+0.019}_{-0.020}$	$k_D$	0.14038	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{CamSpec}^2$	7050.5	$7063.9 (\nu: 15.9)$
$\Omega_m$	0.3065	$0.310^{+0.020}_{-0.019}$	$100\theta_D$	0.16101	$0.16103^{+0.00068}_{-0.00064}$	$\chi_{6DF}^2$	0.003	$0.054 (\nu: 0.0)$
$\Omega_m h^2$	0.14164	$0.1418^{+0.0030}_{-0.0030}$	$z_{eq}$	3384	$3373^{+75}_{-82}$	$\chi_{MGS}^2$	1.54	$1.42 (\nu: 0.1)$
$\Omega_\nu h^2$	0.00004	$< 0.00237$	$k_{eq}$	0.010327	$0.01029^{+0.00023}_{-0.00025}$	$\chi_{DR12BAO}^2$	3.66	$4.6 (\nu: 1.2)$
$\Omega_m h^3$	0.09628	$0.0960^{+0.0013}_{-0.0015}$	$100\theta_{eq}$	0.8162	$0.818^{+0.016}_{-0.014}$	$\chi_{prior}^2$	2.1	$7.6 (\nu: 6.0)$
$\sigma_8$	0.8210	$0.808^{+0.028}_{-0.050}$	$100\theta_{s,eq}$	0.4510	$0.4521^{+0.0082}_{-0.0071}$	$\chi_{BAO}^2$	5.21	$6.1 (\nu: 0.8)$
$S_8$	0.8299	$0.821^{+0.042}_{-0.051}$	$H(0.15)$	73.21	$73.0^{+1.3}_{-1.4}$	$\chi_{CMB}^2$	7469.3	$7483.8 (\nu: 15.6)$

Best-fit  $\chi_{eff}^2 = 7476.59$ ;  $\bar{\chi}_{eff}^2 = 7497.48$ ;  $\Delta\bar{\chi}_{eff}^2 = -0.07$ ;  $R - 1 = 0.00749$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 22.93 CamSpec like\_10.7HM: 7050.52



## 5.10 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02220	$0.02223^{+0.00051}_{-0.00049}$	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.602^{+0.024}_{-0.036}$	$D_M(0.38)$	1523.3	$1527^{+26}_{-24}$
$\Omega_c h^2$	0.11938	$0.1188^{+0.0031}_{-0.0036}$	$\sigma_8/h^{0.5}$	0.9942	$0.982^{+0.036}_{-0.057}$	$H(0.51)$	89.89	$89.75^{+0.79}_{-0.87}$
$100\theta_{MC}$	1.04100	$1.0411^{+0.0011}_{-0.0011}$	$r_{drag}h$	100.22	$100.0^{+2.4}_{-2.3}$	$D_M(0.51)$	1974.1	$1978^{+31}_{-29}$
$\tau$	0.0517	$0.054^{+0.023}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	2.436	$2.422^{+0.074}_{-0.089}$	$H(0.61)$	95.47	$95.35^{+0.68}_{-0.76}$
$\Sigma m_\nu$ [eV]	0.001	< 0.214	$z_{re}$	7.43	$7.6^{+2.2}_{-2.3}$	$D_M(0.61)$	2297.7	$2303^{+34}_{-31}$
$\ln(10^{10} A_s)$	3.0354	$3.038^{+0.045}_{-0.043}$	$10^9 A_s$	2.081	$2.088^{+0.096}_{-0.089}$	$H(2.33)$	235.66	$235.6^{+1.9}_{-1.9}$
$n_s$	0.9662	$0.968^{+0.012}_{-0.011}$	$10^9 A_s e^{-2\tau}$	1.8765	$1.874^{+0.030}_{-0.031}$	$D_M(2.33)$	5756.0	$5763^{+40}_{-34}$
$y_{cal}$	1.0003	$1.0005^{+0.0065}_{-0.0066}$	$D_{40}$	1223.7	$1222^{+34}_{-33}$	$f\sigma_8(0.15)$	0.4581	$0.454^{+0.021}_{-0.026}$
$A_{100}^{PS}$	237	$243^{+70}_{-60}$	$D_{220}$	5706	$5710^{+110}_{-100}$	$\sigma_8(0.15)$	0.7578	$0.747^{+0.025}_{-0.046}$
$A_{143}^{PS}$	39.2	$40^{+20}_{-20}$	$D_{810}$	2532.5	$2533^{+36}_{-36}$	$f\sigma_8(0.38)$	0.4775	$0.473^{+0.019}_{-0.026}$
$A_{217}^{PS}$	99.97	$101^{+30}_{-30}$	$D_{1420}$	814.4	$815^{+13}_{-13}$	$\sigma_8(0.38)$	0.6720	$0.663^{+0.022}_{-0.041}$
$A_{217}^{CIB}$	46.1	$41^{+20}_{-20}$	$D_{2000}$	229.76	$229.9^{+4.6}_{-4.6}$	$f\sigma_8(0.51)$	0.4766	$0.472^{+0.017}_{-0.026}$
$A_{143}^{tSZ}$	6.64	< 8.73	$n_{s,0.002}$	0.9662	$0.968^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	0.6290	$0.620^{+0.021}_{-0.038}$
$r_{143 \times 217}^{PS}$	0.559	$0.65^{+0.32}_{-0.33}$	$Y_P$	0.245326	$0.24534^{+0.00019}_{-0.00023}$	$f\sigma_8(0.61)$	0.4720	$0.467^{+0.016}_{-0.025}$
$r_{143 \times 217}^{CIB}$	0.81	—	$Y_P^{BBN}$	0.246652	$0.24666^{+0.00020}_{-0.00023}$	$\sigma_8(0.61)$	0.5986	$0.590^{+0.020}_{-0.036}$
$\xi^{tSZ \times CIB}$	0.00	—	$10^5 D/H$	2.618	$2.613^{+0.095}_{-0.092}$	$f\sigma_8(2.33)$	0.3010	$0.2977^{+0.0093}_{-0.016}$
$A^{kSZ}$	0.2	—	Age/Gyr	13.781	$13.798^{+0.094}_{-0.078}$	$\sigma_8(2.33)$	0.3110	$0.307^{+0.010}_{-0.018}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	$z_*$	1090.08	$1089.99^{+0.77}_{-0.75}$	$f_{2000}^{143}$	30.9	$30^{+8}_{-7}$
$A_{143}^{dust}$	0.988	$0.98^{+0.44}_{-0.45}$	$r_*$	144.73	$144.86^{+0.87}_{-0.80}$	$f_{2000}^{217}$	107.4	$107.3^{+5.1}_{-5.3}$
$A_{217}^{dust}$	0.963	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	1.04117	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	32.7	$33^{+6}_{-6}$
$A_{143 \times 217}^{dust}$	0.996	$1.03^{+0.41}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	13.900	$13.911^{+0.081}_{-0.079}$	$\chi_{small}^2$	395.76	$397.0 (\nu: 1.7)$
$c_{100}$	0.99759	$0.9975^{+0.0027}_{-0.0027}$	$z_{drag}$	1059.47	$1059.5^{+1.2}_{-1.1}$	$\chi_{lowl}^2$	23.01	$22.80 (\nu: 0.4)$
$c_{217}$	1.00140	$1.0012^{+0.0040}_{-0.0040}$	$r_{drag}$	147.45	$147.57^{+0.93}_{-0.89}$	$\chi_{CamSpec}^2$	7050.4	$7064.0 (\nu: 16.1)$
$H_0$	67.97	$67.8^{+1.4}_{-1.5}$	$k_D$	0.14035	$0.1402^{+0.0012}_{-0.0012}$	$\chi_{JLA}^2$	1034.85	$1035.02 (\nu: 0.0)$
$\Omega_\Lambda$	0.6935	$0.692^{+0.018}_{-0.019}$	$100\theta_D$	0.16103	$0.16102^{+0.00067}_{-0.00065}$	$\chi_{6DF}^2$	0.003	$0.044 (\nu: 0.0)$
$\Omega_m$	0.3065	$0.308^{+0.019}_{-0.018}$	$z_{eq}$	3383	$3370^{+73}_{-81}$	$\chi_{MGS}^2$	1.54	$1.49 (\nu: 0.1)$
$\Omega_m h^2$	0.14159	$0.1417^{+0.0029}_{-0.0029}$	$k_{eq}$	0.010326	$0.01029^{+0.00022}_{-0.00025}$	$\chi_{DR12BAO}^2$	3.66	$4.4 (\nu: 0.8)$
$\Omega_\nu h^2$	0.00001	< 0.00230	$100\theta_{eq}$	0.8162	$0.819^{+0.016}_{-0.013}$	$\chi_{prior}^2$	2.2	$7.6 (\nu: 5.9)$
$\Omega_m h^3$	0.09623	$0.0960^{+0.0013}_{-0.0015}$	$100\theta_{s,eq}$	0.4510	$0.4524^{+0.0081}_{-0.0069}$	$\chi_{BAO}^2$	5.21	$5.9 (\nu: 0.5)$
$\sigma_8$	0.8197	$0.808^{+0.028}_{-0.050}$	$H(0.15)$	73.20	$73.0^{+1.2}_{-1.3}$	$\chi_{CMB}^2$	7469.2	$7483.8 (\nu: 15.7)$
$S_8$	0.8285	$0.819^{+0.040}_{-0.050}$	$D_M(0.15)$	638.2	$640^{+13}_{-12}$			
$\sigma_8 \Omega_m^{0.5}$	0.4538	$0.449^{+0.022}_{-0.027}$	$H(0.38)$	83.22	$83.07^{+0.95}_{-1.0}$			

Best-fit  $\chi_{eff}^2 = 8511.39$ ;  $\bar{\chi}_{eff}^2 = 8532.36$ ;  $R - 1 = 0.00853$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.76 commander\_dx12\_v3.2.29: 23.01 CamSpec like\_10.7HM: 7050.38  
SN - JLA Pantheon18: 1034.85



### 5.11 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02222^{+0.00050}_{-0.00050}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.023}_{-0.028}$	$D_M(0.15)$	$641^{+14}_{-12}$
$\Omega_c h^2$	$0.1189^{+0.0032}_{-0.0036}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.024}_{-0.036}$	$H(0.38)$	$83.03^{+0.99}_{-1.1}$
$100\theta_{MC}$	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	$0.983^{+0.036}_{-0.058}$	$D_M(0.38)$	$1528^{+28}_{-25}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\text{drag}} h$	$99.9^{+2.5}_{-2.5}$	$H(0.51)$	$89.72^{+0.82}_{-0.93}$
$\Sigma m_\nu [\text{eV}]$	$< 0.221$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.073}_{-0.083}$	$D_M(0.51)$	$1980^{+34}_{-30}$
$\ln(10^{10} A_s)$	$3.041^{+0.043}_{-0.030}$	$z_{\text{re}}$	$< 9.54$	$H(0.61)$	$95.32^{+0.71}_{-0.82}$
$n_s$	$0.968^{+0.012}_{-0.011}$	$10^9 A_s$	$2.093^{+0.093}_{-0.063}$	$D_M(0.61)$	$2304^{+37}_{-33}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.030}_{-0.031}$	$H(2.33)$	$235.7^{+2.0}_{-2.0}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{40}$	$1222^{+35}_{-34}$	$D_M(2.33)$	$5764^{+43}_{-35}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5709^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.455^{+0.021}_{-0.026}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2533^{+36}_{-36}$	$\sigma_8(0.15)$	$0.748^{+0.025}_{-0.046}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.473^{+0.019}_{-0.026}$
$A_{143}^{\text{tSZ}}$	$< 8.73$	$D_{2000}$	$229.9^{+4.7}_{-4.6}$	$\sigma_8(0.38)$	$0.663^{+0.022}_{-0.041}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.33}$	$n_{s,0.002}$	$0.968^{+0.012}_{-0.011}$	$f\sigma_8(0.51)$	$0.472^{+0.017}_{-0.026}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.24533^{+0.00019}_{-0.00024}$	$\sigma_8(0.51)$	$0.621^{+0.020}_{-0.039}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24666^{+0.00019}_{-0.00024}$	$f\sigma_8(0.61)$	$0.468^{+0.016}_{-0.025}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.614^{+0.097}_{-0.091}$	$\sigma_8(0.61)$	$0.591^{+0.019}_{-0.037}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$\text{Age}/\text{Gyr}$	$13.80^{+0.10}_{-0.080}$	$f\sigma_8(2.33)$	$0.2979^{+0.0090}_{-0.016}$
$A_{143}^{\text{dust}}$	$0.98^{+0.45}_{-0.44}$	$z_*$	$1090.01^{+0.78}_{-0.75}$	$\sigma_8(2.33)$	$0.307^{+0.010}_{-0.018}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.83^{+0.89}_{-0.83}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.3^{+5.2}_{-5.2}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.084}_{-0.079}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	$1059.5^{+1.1}_{-1.1}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.7)$
$H_0$	$67.7^{+1.5}_{-1.6}$	$r_{\text{drag}}$	$147.55^{+0.94}_{-0.91}$	$\chi_{\text{lowl}}^2$	$22.86 (\nu: 0.4)$
$\Omega_\Lambda$	$0.691^{+0.019}_{-0.020}$	$k_D$	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{\text{CamSpec}}^2$	$7063.8 (\nu: 15.8)$
$\Omega_m$	$0.309^{+0.020}_{-0.019}$	$100\theta_D$	$0.16102^{+0.00068}_{-0.00064}$	$\chi_{6\text{DF}}^2$	$0.053 (\nu: 0.0)$
$\Omega_m h^2$	$0.1418^{+0.0030}_{-0.0030}$	$z_{\text{eq}}$	$3372^{+75}_{-82}$	$\chi_{\text{MGS}}^2$	$1.43 (\nu: 0.2)$
$\Omega_\nu h^2$	$< 0.00237$	$k_{\text{eq}}$	$0.01029^{+0.00023}_{-0.00025}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$\Omega_m h^3$	$0.0960^{+0.0013}_{-0.0016}$	$100\theta_{\text{eq}}$	$0.818^{+0.016}_{-0.014}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 6.1)$
$\sigma_8$	$0.809^{+0.027}_{-0.050}$	$100\theta_{s,\text{eq}}$	$0.4522^{+0.0083}_{-0.0071}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.821^{+0.041}_{-0.051}$	$H(0.15)$	$73.0^{+1.3}_{-1.4}$	$\chi_{\text{CMB}}^2$	$7483.6 (\nu: 15.3)$

$$\bar{\chi}_{\text{eff}}^2 = 7497.29; \Delta \bar{\chi}_{\text{eff}}^2 = -0.02; R - 1 = 0.00759$$



## 5.12 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02223^{+0.00050}_{-0.00049}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.603^{+0.024}_{-0.037}$	$D_{\text{M}}(0.38)$	$1527^{+27}_{-24}$
$\Omega_{\text{c}}h^2$	$0.1188^{+0.0032}_{-0.0037}$	$\sigma_8/h^{0.5}$	$0.983^{+0.035}_{-0.058}$	$H(0.51)$	$89.76^{+0.79}_{-0.87}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$r_{\text{drag}}h$	$100.0^{+2.4}_{-2.3}$	$D_{\text{M}}(0.51)$	$1978^{+32}_{-29}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.072}_{-0.082}$	$H(0.61)$	$95.35^{+0.68}_{-0.77}$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.215$	$z_{\text{re}}$	$< 9.58$	$D_{\text{M}}(0.61)$	$2302^{+34}_{-31}$
$\ln(10^{10}A_{\text{s}})$	$3.041^{+0.043}_{-0.031}$	$10^9 A_{\text{s}}$	$2.093^{+0.093}_{-0.063}$	$H(2.33)$	$235.6^{+1.9}_{-1.9}$
$n_{\text{s}}$	$0.968^{+0.012}_{-0.011}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.874^{+0.030}_{-0.031}$	$D_{\text{M}}(2.33)$	$5763^{+40}_{-34}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0066}$	$D_{40}$	$1222^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.026}$
$A_{100}^{\text{PS}}$	$242^{+70}_{-60}$	$D_{220}$	$5710^{+110}_{-100}$	$\sigma_8(0.15)$	$0.748^{+0.025}_{-0.046}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2533^{+36}_{-36}$	$f\sigma_8(0.38)$	$0.473^{+0.018}_{-0.027}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.022}_{-0.040}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.6}_{-4.6}$	$f\sigma_8(0.51)$	$0.472^{+0.017}_{-0.026}$
$A_{143}^{\text{tSZ}}$	$< 8.73$	$n_{\text{s},0.002}$	$0.968^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	$0.621^{+0.020}_{-0.038}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\text{P}}$	$0.24534^{+0.00019}_{-0.00023}$	$f\sigma_8(0.61)$	$0.467^{+0.016}_{-0.025}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00019}_{-0.00023}$	$\sigma_8(0.61)$	$0.591^{+0.019}_{-0.036}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D/H}$	$2.612^{+0.094}_{-0.092}$	$f\sigma_8(2.33)$	$0.2981^{+0.0091}_{-0.016}$
$A^{\text{kSZ}}$	—	$\text{Age/Gyr}$	$13.797^{+0.095}_{-0.078}$	$\sigma_8(2.33)$	$0.307^{+0.010}_{-0.018}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$z_*$	$1089.98^{+0.78}_{-0.74}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{143}^{\text{dust}}$	$0.98^{+0.45}_{-0.45}$	$r_*$	$144.86^{+0.87}_{-0.80}$	$f_{2000}^{217}$	$107.3^{+5.0}_{-5.3}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.41}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.912^{+0.081}_{-0.078}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\text{drag}}$	$1059.5^{+1.2}_{-1.1}$	$\chi_{\text{lowl}}^2$	$22.81 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$r_{\text{drag}}$	$147.57^{+0.93}_{-0.89}$	$\chi_{\text{CamSpec}}^2$	$7063.9 (\nu: 16.0)$
$H_0$	$67.8^{+1.4}_{-1.5}$	$k_{\text{D}}$	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{\text{JLA}}^2$	$1035.02 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.692^{+0.018}_{-0.019}$	$100\theta_{\text{D}}$	$0.16102^{+0.00067}_{-0.00066}$	$\chi_{6\text{DF}}^2$	$0.044 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.308^{+0.019}_{-0.018}$	$z_{\text{eq}}$	$3369^{+73}_{-82}$	$\chi_{\text{MGS}}^2$	$1.50 (\nu: 0.1)$
$\Omega_{\text{m}}h^2$	$0.1416^{+0.0029}_{-0.0029}$	$k_{\text{eq}}$	$0.01028^{+0.00022}_{-0.00025}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.8)$
$\Omega_{\nu}h^2$	$< 0.00231$	$100\theta_{\text{eq}}$	$0.819^{+0.016}_{-0.014}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.9)$
$\Omega_{\text{m}}h^3$	$0.0960^{+0.0013}_{-0.0015}$	$100\theta_{\text{s,eq}}$	$0.4524^{+0.0082}_{-0.0069}$	$\chi_{\text{BAO}}^2$	$5.9 (\nu: 0.5)$
$\sigma_8$	$0.809^{+0.027}_{-0.050}$	$H(0.15)$	$73.0^{+1.2}_{-1.3}$	$\chi_{\text{CMB}}^2$	$7483.6 (\nu: 15.5)$
$S_8$	$0.820^{+0.040}_{-0.051}$	$D_{\text{M}}(0.15)$	$640^{+13}_{-12}$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.449^{+0.022}_{-0.028}$	$H(0.38)$	$83.08^{+0.94}_{-1.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 8532.17; R - 1 = 0.00943$$



### 5.13 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022331	$0.02234^{+0.00039}_{-0.00038}$	$S_8$	0.8271	$0.820^{+0.036}_{-0.041}$	$D_M(0.15)$	637.1	$640^{+14}_{-11}$
$\Omega_c h^2$	0.11924	$0.1189^{+0.0027}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.449^{+0.020}_{-0.022}$	$H(0.38)$	83.33	$83.08^{+0.88}_{-1.1}$
$100\theta_{MC}$	1.04096	$1.04095^{+0.00076}_{-0.00077}$	$\sigma_8 \Omega_m^{0.25}$	0.6094	$0.602^{+0.023}_{-0.030}$	$D_M(0.38)$	1520.8	$1527^{+28}_{-23}$
$\tau$	0.0530	$0.053^{+0.022}_{-0.020}$	$\sigma_8/h^{0.5}$	0.9933	$0.981^{+0.035}_{-0.049}$	$H(0.51)$	89.99	$89.77^{+0.72}_{-0.93}$
$\Sigma m_\nu$ [eV]	0.005	< 0.217	$r_{\text{drag}} h$	100.34	$99.9^{+2.2}_{-2.4}$	$D_M(0.51)$	1971.1	$1979^{+33}_{-27}$
$\ln(10^{10} A_s)$	3.0382	$3.038^{+0.044}_{-0.043}$	$\langle d^2 \rangle^{1/2}$	2.435	$2.423^{+0.070}_{-0.073}$	$H(0.61)$	95.57	$95.38^{+0.62}_{-0.81}$
$n_s$	0.9673	$0.968^{+0.011}_{-0.0098}$	$z_{\text{re}}$	7.54	$7.6^{+2.1}_{-2.1}$	$D_M(0.61)$	2294.4	$2303^{+36}_{-29}$
$y_{\text{cal}}$	1.0003	$1.0005^{+0.0066}_{-0.0064}$	$10^9 A_s$	2.087	$2.087^{+0.095}_{-0.088}$	$H(2.33)$	235.71	$235.8^{+1.6}_{-1.7}$
$A_{100}^{\text{PS}}$	232	$239^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8768	$1.876^{+0.029}_{-0.029}$	$D_M(2.33)$	5750.8	$5761^{+41}_{-31}$
$A_{143}^{\text{PS}}$	41.7	$39^{+20}_{-20}$	$D_{40}$	1222.9	$1223^{+31}_{-32}$	$f\sigma_8(0.15)$	0.4574	$0.454^{+0.019}_{-0.021}$
$A_{217}^{\text{PS}}$	102.5	$103^{+30}_{-30}$	$D_{220}$	5716	$5720^{+98}_{-100}$	$\sigma_8(0.15)$	0.7579	$0.746^{+0.025}_{-0.043}$
$A_{217}^{\text{CIB}}$	43.9	$39^{+20}_{-20}$	$D_{810}$	2534.1	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	0.4771	$0.473^{+0.017}_{-0.021}$
$A_{143}^{\text{tSZ}}$	6.59	< 8.79	$D_{1420}$	815.9	$816^{+13}_{-12}$	$\sigma_8(0.38)$	0.6723	$0.662^{+0.022}_{-0.039}$
$r_{143 \times 217}^{\text{PS}}$	0.630	$0.66^{+0.31}_{-0.33}$	$D_{2000}$	230.49	$230.4^{+4.3}_{-4.2}$	$f\sigma_8(0.51)$	0.4764	$0.471^{+0.017}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	0.80	—	$n_{s,0.002}$	0.9673	$0.968^{+0.011}_{-0.0098}$	$\sigma_8(0.51)$	0.6294	$0.619^{+0.020}_{-0.036}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.26	—	$Y_P$	0.245380	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	0.4718	$0.467^{+0.016}_{-0.022}$
$A^{\text{kSZ}}$	0.0	—	$Y_P^{\text{BBN}}$	0.246706	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	0.5990	$0.589^{+0.020}_{-0.034}$
$A_{100}^{\text{dust}}$	1.011	$1.01^{+0.49}_{-0.50}$	$10^5 D/H$	2.593	$2.592^{+0.072}_{-0.071}$	$f\sigma_8(2.33)$	0.3013	$0.2974^{+0.0092}_{-0.016}$
$A_{143}^{\text{dust}}$	0.975	$0.96^{+0.45}_{-0.46}$	Age/Gyr	13.769	$13.792^{+0.095}_{-0.069}$	$\sigma_8(2.33)$	0.3114	$0.307^{+0.010}_{-0.018}$
$A_{217}^{\text{dust}}$	0.973	$0.98^{+0.26}_{-0.26}$	$z_*$	1089.90	$1089.87^{+0.60}_{-0.61}$	$f_{2000}^{143}$	29.7	$30^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	1.006	$1.03^{+0.43}_{-0.42}$	$r_*$	144.66	$144.74^{+0.70}_{-0.63}$	$f_{2000}^{217}$	106.53	$106.8^{+4.9}_{-4.9}$
$c_{100}$	0.99768	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04112	$1.04114^{+0.00076}_{-0.00077}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$c_{217}$	1.00130	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.895	$13.902^{+0.067}_{-0.061}$	$\chi_{\text{small}}^2$	395.85	$396.9 (\nu: 1.5)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.012}$	$z_{\text{drag}}$	1059.78	$1059.78^{+0.88}_{-0.84}$	$\chi_{\text{lowl}}^2$	22.91	$22.85 (\nu: 0.3)$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.34	$147.41^{+0.73}_{-0.67}$	$\chi_{\text{CamSpec}}^2$	11499.2	$11514.8 (\nu: 16.6)$
$H_0$	68.10	$67.8^{+1.3}_{-1.5}$	$k_D$	0.14057	$0.14050^{+0.00084}_{-0.00088}$	$\chi_{6\text{DF}}^2$	0.001	$0.049 (\nu: 0.0)$
$\Omega_\Lambda$	0.6946	$0.691^{+0.017}_{-0.019}$	$100\theta_D$	0.160845	$0.16085^{+0.00049}_{-0.00050}$	$\chi_{\text{MGS}}^2$	1.61	$1.41 (\nu: 0.1)$
$\Omega_m$	0.3054	$0.309^{+0.019}_{-0.017}$	$z_{\text{eq}}$	3383	$3376^{+61}_{-65}$	$\chi_{\text{DR12BAO}}^2$	3.59	$4.6 (\nu: 1.1)$
$\Omega_m h^2$	0.14162	$0.1419^{+0.0026}_{-0.0027}$	$k_{\text{eq}}$	0.010325	$0.01030^{+0.00019}_{-0.00020}$	$\chi_{\text{prior}}^2$	2.1	$7.8 (\nu: 5.9)$
$\Omega_\nu h^2$	0.00005	< 0.00233	$100\theta_{\text{eq}}$	0.8166	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{BAO}}^2$	5.20	$6.0 (\nu: 0.7)$
$\Omega_m h^3$	0.09644	$0.09616^{+0.00099}_{-0.0013}$	$100\theta_{s,\text{eq}}$	0.4511	$0.4518^{+0.0063}_{-0.0058}$	$\chi_{\text{CMB}}^2$	11917.9	$11934.6 (\nu: 16.8)$
$\sigma_8$	0.8197	$0.807^{+0.027}_{-0.045}$	$H(0.15)$	73.32	$73.0^{+1.2}_{-1.4}$			

Best-fit  $\chi_{\text{eff}}^2 = 11925.28$ ;  $\bar{\chi}_{\text{eff}}^2 = 11948.38$ ;  $\Delta\chi_{\text{eff}}^2 = 0.10$ ;  $R - 1 = 0.01113$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.59 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3\_2\_29: 22.91 CamSpec like\_10.7HM\_1400\_unified: 11499.17



### 5.14 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022328	$0.02234^{+0.00039}_{-0.00038}$	$S_8$	0.8278	$0.819^{+0.035}_{-0.039}$	$D_M(0.15)$	637.1	$639^{+13}_{-10}$
$\Omega_c h^2$	0.11927	$0.1188^{+0.0026}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	0.4534	$0.449^{+0.019}_{-0.022}$	$H(0.38)$	83.33	$83.13^{+0.85}_{-1.0}$
$100\theta_{MC}$	1.04097	$1.04096^{+0.00075}_{-0.00076}$	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.602^{+0.022}_{-0.030}$	$D_M(0.38)$	1520.8	$1526^{+26}_{-22}$
$\tau$	0.0533	$0.053^{+0.022}_{-0.020}$	$\sigma_8/h^{0.5}$	0.9943	$0.981^{+0.034}_{-0.048}$	$H(0.51)$	89.99	$89.81^{+0.70}_{-0.87}$
$\Sigma m_\nu$ [eV]	0.001	< 0.208	$r_{drag} h$	100.33	$100.0^{+2.1}_{-2.3}$	$D_M(0.51)$	1971.0	$1977^{+31}_{-26}$
$\ln(10^{10} A_s)$	3.0390	$3.038^{+0.044}_{-0.043}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.422^{+0.069}_{-0.072}$	$H(0.61)$	95.57	$95.41^{+0.60}_{-0.76}$
$n_s$	0.9673	$0.968^{+0.011}_{-0.0099}$	$z_{re}$	7.56	$7.6^{+2.1}_{-2.2}$	$D_M(0.61)$	2294.4	$2301^{+34}_{-28}$
$y_{cal}$	1.0003	$1.0005^{+0.0065}_{-0.0063}$	$10^9 A_s$	2.088	$2.087^{+0.095}_{-0.089}$	$H(2.33)$	235.71	$235.8^{+1.6}_{-1.7}$
$A_{100}^{PS}$	231	$239^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	1.8775	$1.875^{+0.029}_{-0.030}$	$D_M(2.33)$	5750.8	$5759^{+39}_{-29}$
$A_{143}^{PS}$	46.2	$39^{+20}_{-20}$	$D_{40}$	1223.3	$1223^{+30}_{-31}$	$f\sigma_8(0.15)$	0.4578	$0.453^{+0.018}_{-0.020}$
$A_{217}^{PS}$	103.8	$103^{+30}_{-30}$	$D_{220}$	5717	$5721^{+96}_{-99}$	$\sigma_8(0.15)$	0.7587	$0.747^{+0.024}_{-0.041}$
$A_{217}^{CIB}$	43.2	$39^{+20}_{-20}$	$D_{810}$	2534.9	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	0.4775	$0.472^{+0.017}_{-0.021}$
$A_{143}^{tSZ}$	6.53	< 8.73	$D_{1420}$	816.1	$816^{+12}_{-12}$	$\sigma_8(0.38)$	0.6730	$0.662^{+0.021}_{-0.036}$
$r_{143 \times 217}^{PS}$	0.679	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	230.57	$230.4^{+4.2}_{-4.2}$	$f\sigma_8(0.51)$	0.4768	$0.471^{+0.016}_{-0.021}$
$r_{143 \times 217}^{CIB}$	0.85	—	$n_{s,0.002}$	0.9673	$0.968^{+0.011}_{-0.0099}$	$\sigma_8(0.51)$	0.6300	$0.620^{+0.020}_{-0.034}$
$\xi^{tSZ \times CIB}$	0.52	—	$Y_P$	0.245379	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	0.4722	$0.467^{+0.016}_{-0.021}$
$A^{kSZ}$	0.0	—	$Y_P^{BBN}$	0.246705	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	0.5995	$0.590^{+0.019}_{-0.033}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.51}$	$10^5 D/H$	2.593	$2.591^{+0.073}_{-0.070}$	$f\sigma_8(2.33)$	0.3016	$0.2977^{+0.0090}_{-0.014}$
$A_{143}^{dust}$	0.983	$0.96^{+0.46}_{-0.48}$	Age/Gyr	13.769	$13.789^{+0.090}_{-0.066}$	$\sigma_8(2.33)$	0.3116	$0.3070^{+0.0098}_{-0.017}$
$A_{217}^{dust}$	0.978	$0.98^{+0.27}_{-0.26}$	$z_*$	1089.90	$1089.85^{+0.61}_{-0.60}$	$f_{2000}^{143}$	29.8	$29^{+7}_{-7}$
$A_{143 \times 217}^{dust}$	1.004	$1.03^{+0.42}_{-0.42}$	$r_*$	144.66	$144.76^{+0.69}_{-0.63}$	$f_{2000}^{217}$	106.51	$106.7^{+4.9}_{-5.0}$
$c_{100}$	0.99774	$0.9975^{+0.0026}_{-0.0026}$	$100\theta_*$	1.04112	$1.04115^{+0.00076}_{-0.00075}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$c_{217}$	1.00133	$1.0011^{+0.0039}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.895	$13.903^{+0.067}_{-0.060}$	$\chi_{\text{small}}^2$	395.86	$397.0 (\nu: 1.5)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.012}$	$z_{drag}$	1059.78	$1059.79^{+0.87}_{-0.85}$	$\chi_{\text{lowl}}^2$	22.93	$22.82 (\nu: 0.3)$
$c_{EE}$	0.9924	$0.992^{+0.013}_{-0.012}$	$r_{drag}$	147.34	$147.43^{+0.72}_{-0.66}$	$\chi_{\text{CamSpec}}^2$	11499.3	$11514.7 (\nu: 17.0)$
$H_0$	68.10	$67.8^{+1.2}_{-1.5}$	$k_D$	0.14057	$0.14049^{+0.00084}_{-0.00090}$	$\chi_{\text{JLA}}^2$	1034.82	$1035.00 (\nu: 0.0)$
$\Omega_\Lambda$	0.6946	$0.692^{+0.016}_{-0.019}$	$100\theta_D$	0.160847	$0.16084^{+0.00050}_{-0.00049}$	$\chi_{\text{6DF}}^2$	0.001	$0.040 (\nu: 0.0)$
$\Omega_m$	0.3054	$0.308^{+0.019}_{-0.016}$	$z_{eq}$	3384	$3374^{+60}_{-65}$	$\chi_{\text{MGS}}^2$	1.61	$1.47 (\nu: 0.1)$
$\Omega_m h^2$	0.14160	$0.1418^{+0.0025}_{-0.0026}$	$k_{eq}$	0.010327	$0.01030^{+0.00018}_{-0.00020}$	$\chi_{\text{DR12BAO}}^2$	3.60	$4.4 (\nu: 0.8)$
$\Omega_\nu h^2$	0.00001	< 0.00223	$100\theta_{eq}$	0.8165	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	2.0	$7.8 (\nu: 5.9)$
$\Omega_m h^3$	0.09643	$0.09618^{+0.00097}_{-0.0013}$	$100\theta_{s,eq}$	0.4511	$0.4521^{+0.0062}_{-0.0058}$	$\chi_{\text{BAO}}^2$	5.21	$5.89 (\nu: 0.5)$
$\sigma_8$	0.8205	$0.808^{+0.027}_{-0.043}$	$H(0.15)$	73.32	$73.1^{+1.1}_{-1.3}$	$\chi_{\text{CMB}}^2$	11918.0	$11934.5 (\nu: 17.2)$

Best-fit  $\chi_{\text{eff}}^2 = 12960.09$ ;  $\bar{\chi}_{\text{eff}}^2 = 12983.16$ ;  $R - 1 = 0.01385$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.60 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 22.93 CamSpec like\_10.7HM\_1400\_unified: 11499.25 SN - JLA Pantheon18: 1034.82



### 5.15 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00039}_{-0.00038}$	$S_8$	$0.820^{+0.035}_{-0.040}$	$D_M(0.15)$	$640^{+14}_{-11}$
$\Omega_c h^2$	$0.1189^{+0.0027}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.019}_{-0.022}$	$H(0.38)$	$83.08^{+0.88}_{-1.1}$
$100\theta_{MC}$	$1.04096^{+0.00076}_{-0.00077}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.023}_{-0.030}$	$D_M(0.38)$	$1527^{+28}_{-23}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.982^{+0.034}_{-0.049}$	$H(0.51)$	$89.78^{+0.73}_{-0.92}$
$\Sigma m_\nu$ [eV]	$< 0.218$	$r_{\text{drag}} h$	$99.9^{+2.2}_{-2.4}$	$D_M(0.51)$	$1978^{+33}_{-27}$
$\ln(10^{10} A_s)$	$3.041^{+0.042}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.069}_{-0.072}$	$H(0.61)$	$95.38^{+0.62}_{-0.81}$
$n_s$	$0.968^{+0.011}_{-0.0099}$	$z_{\text{re}}$	$< 9.49$	$D_M(0.61)$	$2302^{+36}_{-29}$
$y_{\text{cal}}$	$1.0005^{+0.0066}_{-0.0063}$	$10^9 A_s$	$2.093^{+0.090}_{-0.061}$	$H(2.33)$	$235.8^{+1.7}_{-1.7}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.029}_{-0.029}$	$D_M(2.33)$	$5761^{+41}_{-31}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1223^{+31}_{-32}$	$f\sigma_8(0.15)$	$0.454^{+0.019}_{-0.021}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5720^{+98}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.024}_{-0.042}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.473^{+0.017}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.662^{+0.021}_{-0.038}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.4^{+4.2}_{-4.1}$	$f\sigma_8(0.51)$	$0.472^{+0.016}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.968^{+0.011}_{-0.0099}$	$\sigma_8(0.51)$	$0.620^{+0.020}_{-0.036}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.016}_{-0.022}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.590^{+0.019}_{-0.035}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.49}$	$10^5 \text{D/H}$	$2.592^{+0.073}_{-0.071}$	$f\sigma_8(2.33)$	$0.2977^{+0.0089}_{-0.015}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.46}$	$\text{Age/Gyr}$	$13.792^{+0.095}_{-0.070}$	$\sigma_8(2.33)$	$0.3070^{+0.0098}_{-0.018}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.86^{+0.60}_{-0.61}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$r_*$	$144.74^{+0.70}_{-0.64}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-4.9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04115^{+0.00076}_{-0.00076}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.902^{+0.067}_{-0.061}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$z_{\text{drag}}$	$1059.79^{+0.87}_{-0.85}$	$\chi_{\text{lowl}}^2$	$22.86 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.42^{+0.72}_{-0.68}$	$\chi_{\text{CamSpec}}^2$	$11514.6 (\nu: 16.6)$
$H_0$	$67.8^{+1.3}_{-1.6}$	$k_D$	$0.14050^{+0.00084}_{-0.00088}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_\Lambda$	$0.691^{+0.017}_{-0.019}$	$100\theta_D$	$0.16084^{+0.00050}_{-0.00049}$	$\chi_{\text{MGS}}^2$	$1.42 (\nu: 0.1)$
$\Omega_m$	$0.309^{+0.019}_{-0.017}$	$z_{\text{eq}}$	$3375^{+61}_{-65}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.1)$
$\Omega_m h^2$	$0.1419^{+0.0026}_{-0.0026}$	$k_{\text{eq}}$	$0.01030^{+0.00019}_{-0.00020}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_\nu h^2$	$< 0.00235$	$100\theta_{\text{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.7)$
$\Omega_m h^3$	$0.09616^{+0.00099}_{-0.0013}$	$100\theta_{s,\text{eq}}$	$0.4519^{+0.0063}_{-0.0058}$	$\chi_{\text{CMB}}^2$	$11934.4 (\nu: 16.7)$
$\sigma_8$	$0.808^{+0.027}_{-0.045}$	$H(0.15)$	$73.0^{+1.2}_{-1.4}$		

$$\bar{\chi}_{\text{eff}}^2 = 11948.19; \Delta\bar{\chi}_{\text{eff}}^2 = 0.20; R - 1 = 0.01072$$



# 5.16 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02235^{+0.00039}_{-0.00038}$	$S_8$	$0.820^{+0.035}_{-0.039}$	$D_M(0.15)$	$639^{+13}_{-11}$
$\Omega_c h^2$	$0.1188^{+0.0027}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.019}_{-0.021}$	$H(0.38)$	$83.13^{+0.85}_{-1.0}$
$100\theta_{MC}$	$1.04097^{+0.00075}_{-0.00076}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.022}_{-0.030}$	$D_M(0.38)$	$1526^{+26}_{-21}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.982^{+0.034}_{-0.048}$	$H(0.51)$	$89.82^{+0.70}_{-0.87}$
$\Sigma m_\nu$ [eV]	$< 0.209$	$r_{\text{drag}} h$	$100.0^{+2.1}_{-2.3}$	$D_M(0.51)$	$1977^{+31}_{-26}$
$\ln(10^{10} A_s)$	$3.041^{+0.042}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.067}_{-0.071}$	$H(0.61)$	$95.41^{+0.61}_{-0.77}$
$n_s$	$0.968^{+0.011}_{-0.0096}$	$z_{\text{re}}$	$< 9.50$	$D_M(0.61)$	$2301^{+34}_{-28}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0063}$	$10^9 A_s$	$2.093^{+0.090}_{-0.060}$	$H(2.33)$	$235.7^{+1.6}_{-1.7}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.029}_{-0.030}$	$D_M(2.33)$	$5759^{+39}_{-30}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1223^{+30}_{-31}$	$f\sigma_8(0.15)$	$0.454^{+0.018}_{-0.020}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5721^{+97}_{-99}$	$\sigma_8(0.15)$	$0.748^{+0.024}_{-0.041}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	$0.473^{+0.017}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$< 8.70$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.021}_{-0.037}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.5^{+4.2}_{-4.3}$	$f\sigma_8(0.51)$	$0.472^{+0.016}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.968^{+0.011}_{-0.0096}$	$\sigma_8(0.51)$	$0.621^{+0.020}_{-0.035}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24538^{+0.00014}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.015}_{-0.021}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.591^{+0.019}_{-0.033}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	$10^5 D/H$	$2.590^{+0.073}_{-0.070}$	$f\sigma_8(2.33)$	$0.2980^{+0.0087}_{-0.015}$
$A_{143}^{\text{dust}}$	$0.97^{+0.46}_{-0.48}$	Age/Gyr	$13.789^{+0.091}_{-0.068}$	$\sigma_8(2.33)$	$0.3073^{+0.0095}_{-0.017}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$z_*$	$1089.84^{+0.61}_{-0.61}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$r_*$	$144.76^{+0.68}_{-0.63}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.0}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$100\theta_*$	$1.04116^{+0.00076}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{217}$	$1.0011^{+0.0039}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.904^{+0.066}_{-0.059}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$z_{\text{drag}}$	$1059.80^{+0.86}_{-0.82}$	$\chi_{\text{lowl}}^2$	$22.83 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$r_{\text{drag}}$	$147.44^{+0.71}_{-0.67}$	$\chi_{\text{CamSpec}}^2$	$11514.6 (\nu: 16.8)$
$H_0$	$67.8^{+1.2}_{-1.5}$	$k_D$	$0.14048^{+0.00084}_{-0.00088}$	$\chi_{\text{JLA}}^2$	$1035.00 (\nu: 0.0)$
$\Omega_\Lambda$	$0.692^{+0.016}_{-0.019}$	$100\theta_D$	$0.16084^{+0.00050}_{-0.00049}$	$\chi_{6\text{DF}}^2$	$0.040 (\nu: 0.0)$
$\Omega_m$	$0.308^{+0.019}_{-0.016}$	$z_{\text{eq}}$	$3373^{+61}_{-64}$	$\chi_{\text{MGS}}^2$	$1.48 (\nu: 0.1)$
$\Omega_m h^2$	$0.1418^{+0.0025}_{-0.0026}$	$k_{\text{eq}}$	$0.01030^{+0.00019}_{-0.00020}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.8)$
$\Omega_\nu h^2$	$< 0.00224$	$100\theta_{\text{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^3$	$0.09618^{+0.00097}_{-0.0013}$	$100\theta_{s,\text{eq}}$	$0.4521^{+0.0062}_{-0.0058}$	$\chi_{\text{BAO}}^2$	$5.88 (\nu: 0.5)$
$\sigma_8$	$0.809^{+0.026}_{-0.044}$	$H(0.15)$	$73.1^{+1.1}_{-1.3}$	$\chi_{\text{CMB}}^2$	$11934.3 (\nu: 17.0)$

$$\bar{\chi}_{\text{eff}}^2 = 12982.95; R - 1 = 0.01405$$



### 5.17 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022335	$0.02233^{+0.00036}_{-0.00037}$	$S_8$	0.8275	$0.824^{+0.028}_{-0.029}$	$D_M(0.15)$	637.1	$640^{+13}_{-11}$
$\Omega_c h^2$	0.11925	$0.1191^{+0.0024}_{-0.0025}$	$\sigma_8 \Omega_m^{0.5}$	0.4532	$0.451^{+0.015}_{-0.016}$	$H(0.38)$	83.33	$83.10^{+0.85}_{-0.99}$
$100\theta_{MC}$	1.04093	$1.04094^{+0.00077}_{-0.00077}$	$\sigma_8 \Omega_m^{0.25}$	0.6097	$0.605^{+0.016}_{-0.020}$	$D_M(0.38)$	1520.8	$1527^{+26}_{-22}$
$\tau$	0.0533	$0.054^{+0.019}_{-0.020}$	$\sigma_8/h^{0.5}$	0.9938	$0.985^{+0.025}_{-0.033}$	$H(0.51)$	89.99	$89.80^{+0.69}_{-0.84}$
$\Sigma m_\nu$ [eV]	0.004	< 0.174	$r_{\text{drag}} h$	100.33	$99.9^{+2.2}_{-2.3}$	$D_M(0.51)$	1971.1	$1978^{+31}_{-26}$
$\ln(10^{10} A_s)$	3.0391	$3.041^{+0.038}_{-0.038}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.431^{+0.052}_{-0.054}$	$H(0.61)$	95.57	$95.40^{+0.57}_{-0.73}$
$n_s$	0.9671	$0.9670^{+0.0098}_{-0.0098}$	$z_{\text{re}}$	7.56	$7.7^{+1.9}_{-2.1}$	$D_M(0.61)$	2294.4	$2302^{+33}_{-28}$
$y_{\text{cal}}$	1.0005	$1.0006^{+0.0065}_{-0.0064}$	$10^9 A_s$	2.089	$2.094^{+0.081}_{-0.079}$	$H(2.33)$	235.71	$235.9^{+1.6}_{-1.6}$
$A_{100}^{\text{PS}}$	235	$239^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8776	$1.877^{+0.026}_{-0.027}$	$D_M(2.33)$	5750.8	$5759^{+37}_{-27}$
$A_{143}^{\text{PS}}$	41.4	$39^{+20}_{-20}$	$D_{40}$	1224.1	$1225^{+29}_{-29}$	$f\sigma_8(0.15)$	0.4576	$0.456^{+0.014}_{-0.015}$
$A_{217}^{\text{PS}}$	103.7	$103^{+30}_{-40}$	$D_{220}$	5720	$5724^{+100}_{-96}$	$\sigma_8(0.15)$	0.7583	$0.750^{+0.019}_{-0.030}$
$A_{217}^{\text{CIB}}$	42.1	$39^{+20}_{-20}$	$D_{810}$	2535.1	$2535^{+36}_{-34}$	$f\sigma_8(0.38)$	0.4774	$0.475^{+0.013}_{-0.015}$
$A_{143}^{\text{tSZ}}$	5.60	< 8.73	$D_{1420}$	816.1	$816^{+13}_{-13}$	$\sigma_8(0.38)$	0.6727	$0.665^{+0.017}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	0.641	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	230.55	$230.5^{+4.2}_{-4.2}$	$f\sigma_8(0.51)$	0.4766	$0.474^{+0.012}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	0.74	—	$n_{s,0.002}$	0.9671	$0.9670^{+0.0098}_{-0.0098}$	$\sigma_8(0.51)$	0.6297	$0.622^{+0.016}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$Y_P$	0.245382	$0.24538^{+0.00013}_{-0.00016}$	$f\sigma_8(0.61)$	0.4720	$0.469^{+0.011}_{-0.015}$
$A^{\text{kSZ}}$	1.5	—	$Y_P^{\text{BBN}}$	0.246708	$0.24671^{+0.00013}_{-0.00016}$	$\sigma_8(0.61)$	0.5993	$0.592^{+0.015}_{-0.025}$
$A_{100}^{\text{dust}}$	1.010	$1.01^{+0.50}_{-0.50}$	$10^5 D/H$	2.592	$2.593^{+0.070}_{-0.065}$	$f\sigma_8(2.33)$	0.3015	$0.2986^{+0.0073}_{-0.011}$
$A_{143}^{\text{dust}}$	0.987	$0.96^{+0.45}_{-0.45}$	Age/Gyr	13.769	$13.789^{+0.085}_{-0.063}$	$\sigma_8(2.33)$	0.3115	$0.3080^{+0.0082}_{-0.013}$
$A_{217}^{\text{dust}}$	0.968	$0.98^{+0.27}_{-0.26}$	$z_*$	1089.89	$1089.89^{+0.57}_{-0.56}$	$f_{2000}^{143}$	29.6	$30^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	0.995	$1.03^{+0.43}_{-0.42}$	$r_*$	144.66	$144.70^{+0.60}_{-0.58}$	$f_{2000}^{217}$	106.61	$106.7^{+4.9}_{-4.8}$
$c_{100}$	0.99756	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04110	$1.04112^{+0.00076}_{-0.00075}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$c_{217}$	1.00108	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.895	$13.898^{+0.060}_{-0.056}$	$\chi_{\text{lensing}}^2$	8.89	$9.39 (\nu: 0.3)$
$c_{TE}$	0.9965	$0.997^{+0.013}_{-0.012}$	$z_{\text{drag}}$	1059.78	$1059.78^{+0.80}_{-0.80}$	$\chi_{\text{small}}^2$	395.87	$397.0 (\nu: 1.4)$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.34	$147.37^{+0.65}_{-0.62}$	$\chi_{\text{lowl}}^2$	22.96	$23.02 (\nu: 0.3)$
$H_0$	68.10	$67.8^{+1.3}_{-1.5}$	$k_D$	0.14058	$0.14054^{+0.00077}_{-0.00081}$	$\chi_{\text{CamSpec}}^2$	11499.2	$11514.0 (\nu: 15.2)$
$\Omega_\Lambda$	0.6946	$0.691^{+0.016}_{-0.019}$	$100\theta_D$	0.160835	$0.16085^{+0.00047}_{-0.00046}$	$\chi_{6\text{DF}}^2$	0.001	$0.045 (\nu: 0.0)$
$\Omega_m$	0.3054	$0.309^{+0.019}_{-0.016}$	$z_{\text{eq}}$	3383	$3380^{+55}_{-58}$	$\chi_{\text{MGS}}^2$	1.61	$1.40 (\nu: 0.1)$
$\Omega_m h^2$	0.14162	$0.1420^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	0.010326	$0.01032^{+0.00017}_{-0.00018}$	$\chi_{\text{DR12BAO}}^2$	3.60	$4.5 (\nu: 1.0)$
$\Omega_\nu h^2$	0.00004	< 0.00187	$100\theta_{\text{eq}}$	0.8165	$0.817^{+0.011}_{-0.010}$	$\chi_{\text{prior}}^2$	2.1	$7.7 (\nu: 5.9)$
$\Omega_m h^3$	0.09644	$0.09623^{+0.00091}_{-0.0011}$	$100\theta_{s,\text{eq}}$	0.4511	$0.4514^{+0.0056}_{-0.0052}$	$\chi_{\text{CMB}}^2$	11926.9	$11943.4 (\nu: 16.6)$
$\sigma_8$	0.8201	$0.811^{+0.020}_{-0.032}$	$H(0.15)$	73.32	$73.0^{+1.1}_{-1.3}$	$\chi_{\text{BAO}}^2$	5.21	$6.0 (\nu: 0.6)$

Best-fit  $\chi_{\text{eff}}^2 = 11934.26$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.14$ ;  $\Delta\chi_{\text{eff}}^2 = -0.26$ ;  $R - 1 = 0.00745$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.60 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.89 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 comman-  
der\_dx12\_v3\_2\_29: 22.96 CamSpec like\_10.7HM\_1400\_unified: 11499.19



# 5.18 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022346	$0.02234^{+0.00036}_{-0.00037}$	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.451^{+0.015}_{-0.016}$	$D_M(0.38)$	1519.6	$1525^{+25}_{-21}$
$\Omega_c h^2$	0.11912	$0.1190^{+0.0024}_{-0.0025}$	$\sigma_8 \Omega_m^{0.25}$	0.6091	$0.605^{+0.016}_{-0.020}$	$H(0.51)$	90.03	$89.83^{+0.66}_{-0.81}$
$100\theta_{MC}$	1.04097	$1.04095^{+0.00076}_{-0.00076}$	$\sigma_8/h^{0.5}$	0.9932	$0.986^{+0.025}_{-0.032}$	$D_M(0.51)$	1969.7	$1977^{+30}_{-25}$
$\tau$	0.0533	$0.055^{+0.019}_{-0.019}$	$r_{\text{drag}} h$	100.45	$99.99^{+2.1}_{-2.2}$	$H(0.61)$	95.60	$95.43^{+0.57}_{-0.70}$
$\Sigma m_\nu$ [eV]	0.001	< 0.164	$\langle d^2 \rangle^{1/2}$	2.435	$2.430^{+0.052}_{-0.054}$	$D_M(0.61)$	2292.9	$2300^{+33}_{-27}$
$\ln(10^{10} A_s)$	3.0391	$3.042^{+0.038}_{-0.038}$	$z_{\text{re}}$	7.56	$7.7^{+1.8}_{-2.0}$	$H(2.33)$	235.63	$235.8^{+1.5}_{-1.5}$
$n_s$	0.9675	$0.9672^{+0.0097}_{-0.0098}$	$10^9 A_s$	2.089	$2.094^{+0.080}_{-0.078}$	$D_M(2.33)$	5749.6	$5758^{+35}_{-27}$
$y_{\text{cal}}$	1.0004	$1.0006^{+0.0066}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	1.8774	$1.877^{+0.026}_{-0.026}$	$f\sigma_8(0.15)$	0.4569	$0.455^{+0.014}_{-0.015}$
$A_{100}^{\text{PS}}$	232	$239^{+60}_{-60}$	$D_{40}$	1223.3	$1225^{+28}_{-29}$	$\sigma_8(0.15)$	0.7583	$0.750^{+0.018}_{-0.029}$
$A_{143}^{\text{PS}}$	44.3	$39^{+20}_{-20}$	$D_{220}$	5721	$5724^{+99}_{-96}$	$f\sigma_8(0.38)$	0.4769	$0.475^{+0.012}_{-0.014}$
$A_{217}^{\text{PS}}$	103.3	$103^{+30}_{-30}$	$D_{810}$	2535.5	$2536^{+36}_{-34}$	$\sigma_8(0.38)$	0.6728	$0.665^{+0.016}_{-0.026}$
$A_{217}^{\text{CIB}}$	43.3	$39^{+20}_{-20}$	$D_{1420}$	816.4	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	0.4762	$0.473^{+0.012}_{-0.014}$
$A_{143}^{\text{tSZ}}$	6.49	< 8.77	$D_{2000}$	230.66	$230.5^{+4.3}_{-4.1}$	$\sigma_8(0.51)$	0.6298	$0.623^{+0.015}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	0.662	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	0.9675	$0.9672^{+0.0097}_{-0.0098}$	$f\sigma_8(0.61)$	0.4717	$0.469^{+0.011}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	0.83	—	$Y_P$	0.245386	$0.24538^{+0.00013}_{-0.00016}$	$\sigma_8(0.61)$	0.5994	$0.593^{+0.015}_{-0.024}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.42	—	$Y_P^{\text{BBN}}$	0.246712	$0.24671^{+0.00014}_{-0.00016}$	$f\sigma_8(2.33)$	0.3015	$0.2989^{+0.0070}_{-0.011}$
$A^{\text{kSZ}}$	0.1	—	$10^5 D/H$	2.590	$2.592^{+0.070}_{-0.065}$	$\sigma_8(2.33)$	0.3116	$0.3083^{+0.0080}_{-0.012}$
$A_{100}^{\text{dust}}$	1.014	$1.01^{+0.49}_{-0.50}$	Age/Gyr	13.766	$13.786^{+0.079}_{-0.061}$	$f_{2000}^{143}$	29.6	$29^{+7}_{-7}$
$A_{143}^{\text{dust}}$	0.977	$0.96^{+0.44}_{-0.46}$	$z_*$	1089.87	$1089.87^{+0.57}_{-0.55}$	$f_{2000}^{217}$	106.43	$106.7^{+5.0}_{-4.7}$
$A_{217}^{\text{dust}}$	0.975	$0.98^{+0.27}_{-0.26}$	$r_*$	144.68	$144.71^{+0.58}_{-0.57}$	$f_{2000}^{143 \times 217}$	31.8	$32^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03^{+0.43}_{-0.41}$	$100\theta_*$	1.04112	$1.04113^{+0.00075}_{-0.00075}$	$\chi^2_{\text{lensing}}$	8.88	$9.38 (\nu: 0.3)$
$c_{100}$	0.99773	$0.9976^{+0.0028}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.897	$13.899^{+0.059}_{-0.055}$	$\chi^2_{\text{simall}}$	395.86	$397.0 (\nu: 1.4)$
$c_{217}$	1.00128	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	1059.82	$1059.79^{+0.79}_{-0.81}$	$\chi^2_{\text{lowl}}$	22.90	$22.99 (\nu: 0.3)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.012}$	$r_{\text{drag}}$	147.36	$147.39^{+0.64}_{-0.61}$	$\chi^2_{\text{CamSpec}}$	11499.3	$11514.0 (\nu: 15.0)$
$c_{EE}$	0.9922	$0.992^{+0.012}_{-0.012}$	$k_D$	0.14056	$0.14053^{+0.00076}_{-0.00081}$	$\chi^2_{\text{JLA}}$	1034.80	$1034.99 (\nu: 0.0)$
$H_0$	68.17	$67.8^{+1.2}_{-1.4}$	$100\theta_D$	0.160829	$0.16084^{+0.00047}_{-0.00046}$	$\chi^2_{6\text{DF}}$	0.000	$0.037 (\nu: 0.0)$
$\Omega_\Lambda$	0.6955	$0.692^{+0.015}_{-0.018}$	$z_{\text{eq}}$	3381	$3378^{+53}_{-56}$	$\chi^2_{\text{MGS}}$	1.68	$1.46 (\nu: 0.1)$
$\Omega_m$	0.3045	$0.308^{+0.018}_{-0.015}$	$k_{\text{eq}}$	0.010318	$0.01031^{+0.00016}_{-0.00017}$	$\chi^2_{\text{DR12BAO}}$	3.52	$4.3 (\nu: 0.7)$
$\Omega_m h^2$	0.14148	$0.1419^{+0.0024}_{-0.0024}$	$100\theta_{\text{eq}}$	0.8171	$0.818^{+0.011}_{-0.010}$	$\chi^2_{\text{prior}}$	2.1	$7.7 (\nu: 5.8)$
$\Omega_\nu h^2$	0.00001	< 0.00177	$100\theta_{s,\text{eq}}$	0.4514	$0.4516^{+0.0055}_{-0.0052}$	$\chi^2_{\text{CMB}}$	11926.9	$11943.4 (\nu: 16.3)$
$\Omega_m h^3$	0.09644	$0.09625^{+0.00089}_{-0.0011}$	$H(0.15)$	73.38	$73.1^{+1.1}_{-1.2}$	$\chi^2_{\text{BAO}}$	5.20	$5.84 (\nu: 0.4)$
$\sigma_8$	0.8200	$0.812^{+0.020}_{-0.031}$	$D_M(0.15)$	636.5	$639^{+12}_{-10}$			
$S_8$	0.8261	$0.823^{+0.027}_{-0.029}$	$H(0.38)$	83.38	$83.15^{+0.82}_{-0.96}$			

Best-fit  $\chi^2_{\text{eff}} = 12968.97$ ;  $\Delta\chi^2_{\text{eff}} = -1.51$ ;  $\bar{\chi}^2_{\text{eff}} = 12991.94$ ;  $\Delta\bar{\chi}^2_{\text{eff}} = -0.45$ ;  $R - 1 = 0.00817$   
 $\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.68 ( $\Delta$  0.40) DR12BAO: 3.52 ( $\Delta$  -0.71) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consect8: 8.88 ( $\Delta$  -0.08) simall\_100x143\_offlike5\_EE\_Aplanc 395.86 ( $\Delta$  -0.19) commander\_dx12\_v3.2\_29: 22.90 ( $\Delta$  0.13) CamSpec like\_10.7HM.1400.unified: 11499.28 ( $\Delta$  -0.89) SN - JLA Pantheon18: 1034.80 ( $\Delta$  -0.18)



# 5.19 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00036}_{-0.00036}$	$S_8$	$0.824^{+0.028}_{-0.029}$	$D_M(0.15)$	$640^{+13}_{-11}$
$\Omega_c h^2$	$0.1191^{+0.0024}_{-0.0025}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.015}_{-0.016}$	$H(0.38)$	$83.11^{+0.85}_{-0.99}$
$100\theta_{MC}$	$1.04094^{+0.00077}_{-0.00077}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.016}_{-0.021}$	$D_M(0.38)$	$1527^{+26}_{-22}$
$\tau$	$0.055^{+0.017}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.986^{+0.025}_{-0.034}$	$H(0.51)$	$89.80^{+0.69}_{-0.85}$
$\Sigma m_\nu$ [eV]	$< 0.175$	$r_{\text{drag}} h$	$99.9^{+2.2}_{-2.3}$	$D_M(0.51)$	$1978^{+31}_{-26}$
$\ln(10^{10} A_s)$	$3.043^{+0.036}_{-0.028}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.051}_{-0.051}$	$H(0.61)$	$95.40^{+0.58}_{-0.74}$
$n_s$	$0.9671^{+0.0098}_{-0.0098}$	$z_{\text{re}}$	$< 9.38$	$D_M(0.61)$	$2302^{+33}_{-28}$
$y_{\text{cal}}$	$1.0006^{+0.0064}_{-0.0065}$	$10^9 A_s$	$2.097^{+0.078}_{-0.058}$	$H(2.33)$	$235.9^{+1.6}_{-1.6}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.026}_{-0.027}$	$D_M(2.33)$	$5759^{+37}_{-28}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1225^{+28}_{-28}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.015}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{220}$	$5723^{+100}_{-96}$	$\sigma_8(0.15)$	$0.750^{+0.019}_{-0.031}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$f\sigma_8(0.38)$	$0.475^{+0.013}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.75$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.38)$	$0.665^{+0.017}_{-0.028}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.5^{+4.2}_{-4.2}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.9671^{+0.0098}_{-0.0098}$	$\sigma_8(0.51)$	$0.623^{+0.016}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24538^{+0.00013}_{-0.00015}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.015}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00013}_{-0.00015}$	$\sigma_8(0.61)$	$0.593^{+0.015}_{-0.025}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$10^5 D/H$	$2.592^{+0.069}_{-0.064}$	$f\sigma_8(2.33)$	$0.2988^{+0.0072}_{-0.011}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.45}$	Age/Gyr	$13.789^{+0.085}_{-0.063}$	$\sigma_8(2.33)$	$0.3082^{+0.0081}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$z_*$	$1089.88^{+0.57}_{-0.56}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$r_*$	$144.70^{+0.60}_{-0.58}$	$f_{2000}^{217}$	$106.7^{+5.0}_{-4.9}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04113^{+0.00076}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.898^{+0.060}_{-0.056}$	$\chi^2_{\text{lensing}}$	$9.34 (\nu: 0.3)$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$z_{\text{drag}}$	$1059.79^{+0.79}_{-0.81}$	$\chi^2_{\text{simall}}$	$396.9 (\nu: 1.4)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.38^{+0.65}_{-0.62}$	$\chi^2_{\text{lowl}}$	$23.02 (\nu: 0.3)$
$H_0$	$67.8^{+1.3}_{-1.5}$	$k_D$	$0.14053^{+0.00077}_{-0.00082}$	$\chi^2_{\text{CamSpec}}$	$11513.9 (\nu: 15.1)$
$\Omega_\Lambda$	$0.691^{+0.016}_{-0.019}$	$100\theta_D$	$0.16084^{+0.00047}_{-0.00046}$	$\chi^2_{6\text{DF}}$	$0.044 (\nu: 0.0)$
$\Omega_m$	$0.309^{+0.019}_{-0.016}$	$z_{\text{eq}}$	$3379^{+55}_{-58}$	$\chi^2_{\text{MGS}}$	$1.41 (\nu: 0.1)$
$\Omega_m h^2$	$0.1420^{+0.0025}_{-0.0025}$	$k_{\text{eq}}$	$0.01031^{+0.00017}_{-0.00018}$	$\chi^2_{\text{DR12BAO}}$	$4.5 (\nu: 1.0)$
$\Omega_\nu h^2$	$< 0.00188$	$100\theta_{\text{eq}}$	$0.817^{+0.011}_{-0.010}$	$\chi^2_{\text{prior}}$	$7.7 (\nu: 5.9)$
$\Omega_m h^3$	$0.09623^{+0.00091}_{-0.0011}$	$100\theta_{s,\text{eq}}$	$0.4515^{+0.0056}_{-0.0053}$	$\chi^2_{\text{CMB}}$	$11943.2 (\nu: 16.3)$
$\sigma_8$	$0.812^{+0.020}_{-0.032}$	$H(0.15)$	$73.0^{+1.1}_{-1.3}$	$\chi^2_{\text{BAO}}$	$6.0 (\nu: 0.6)$

$$\bar{\chi}^2_{\text{eff}} = 11956.94; \Delta\bar{\chi}^2_{\text{eff}} = -0.31; R - 1 = 0.00819$$



## 5.20 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00036}_{-0.00036}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.015}_{-0.016}$	$D_M(0.38)$	$1525^{+25}_{-21}$
$\Omega_c h^2$	$0.1190^{+0.0023}_{-0.0025}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.016}_{-0.020}$	$H(0.51)$	$89.84^{+0.67}_{-0.82}$
$100\theta_{MC}$	$1.04095^{+0.00077}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.986^{+0.024}_{-0.033}$	$D_M(0.51)$	$1976^{+30}_{-25}$
$\tau$	$0.055^{+0.017}_{-0.013}$	$r_{drag}h$	$100.0^{+2.0}_{-2.2}$	$H(0.61)$	$95.43^{+0.57}_{-0.70}$
$\Sigma m_\nu$ [eV]	$< 0.166$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.051}_{-0.051}$	$D_M(0.61)$	$2300^{+32}_{-27}$
$\ln(10^{10} A_s)$	$3.043^{+0.036}_{-0.028}$	$z_{re}$	$< 9.36$	$H(2.33)$	$235.8^{+1.5}_{-1.5}$
$n_s$	$0.9673^{+0.0098}_{-0.0097}$	$10^9 A_s$	$2.097^{+0.077}_{-0.058}$	$D_M(2.33)$	$5758^{+35}_{-27}$
$y_{cal}$	$1.0006^{+0.0065}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.026}_{-0.026}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.014}$
$A_{100}^{PS}$	$239^{+60}_{-60}$	$D_{40}$	$1225^{+28}_{-29}$	$\sigma_8(0.15)$	$0.751^{+0.018}_{-0.030}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+100}_{-97}$	$f\sigma_8(0.38)$	$0.475^{+0.012}_{-0.014}$
$A_{217}^{PS}$	$103^{+30}_{-30}$	$D_{810}$	$2535^{+36}_{-34}$	$\sigma_8(0.38)$	$0.666^{+0.016}_{-0.027}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.474^{+0.011}_{-0.014}$
$A_{143}^{tSZ}$	$< 8.81$	$D_{2000}$	$230.5^{+4.2}_{-4.0}$	$\sigma_8(0.51)$	$0.623^{+0.015}_{-0.025}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.35}$	$n_{s,0.002}$	$0.9673^{+0.0098}_{-0.0097}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.014}$
$r_{143 \times 217}^{CIB}$	—	$Y_P$	$0.24538^{+0.00013}_{-0.00015}$	$\sigma_8(0.61)$	$0.593^{+0.014}_{-0.024}$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.24671^{+0.00013}_{-0.00015}$	$f\sigma_8(2.33)$	$0.2991^{+0.0069}_{-0.011}$
$A^{kSZ}$	—	$10^5 D/H$	$2.591^{+0.069}_{-0.065}$	$\sigma_8(2.33)$	$0.3085^{+0.0078}_{-0.013}$
$A_{100}^{dust}$	$1.01^{+0.49}_{-0.50}$	Age/Gyr	$13.786^{+0.080}_{-0.062}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143}^{dust}$	$0.96^{+0.44}_{-0.46}$	$z_*$	$1089.86^{+0.56}_{-0.55}$	$f_{2000}^{217}$	$106.7^{+5.0}_{-4.8}$
$A_{217}^{dust}$	$0.98^{+0.26}_{-0.26}$	$r_*$	$144.72^{+0.59}_{-0.57}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.43}_{-0.41}$	$100\theta_*$	$1.04114^{+0.00075}_{-0.00075}$	$\chi^2_{lensing}$	$9.33 (\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.900^{+0.059}_{-0.055}$	$\chi^2_{simall}$	$396.9 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$z_{drag}$	$1059.80^{+0.78}_{-0.82}$	$\chi^2_{lowl}$	$22.99 (\nu: 0.3)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$r_{drag}$	$147.39^{+0.64}_{-0.61}$	$\chi^2_{CamSpec}$	$11514.0 (\nu: 15.0)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$k_D$	$0.14052^{+0.00077}_{-0.00081}$	$\chi^2_{JLA}$	$1034.99 (\nu: 0.0)$
$H_0$	$67.8^{+1.2}_{-1.4}$	$100\theta_D$	$0.16084^{+0.00048}_{-0.00046}$	$\chi^2_{6DF}$	$0.036 (\nu: 0.0)$
$\Omega_\Lambda$	$0.692^{+0.016}_{-0.018}$	$z_{eq}$	$3378^{+53}_{-56}$	$\chi^2_{MGS}$	$1.47 (\nu: 0.1)$
$\Omega_m$	$0.308^{+0.018}_{-0.016}$	$k_{eq}$	$0.01031^{+0.00016}_{-0.00017}$	$\chi^2_{DR12BAO}$	$4.3 (\nu: 0.7)$
$\Omega_m h^2$	$0.1419^{+0.0024}_{-0.0023}$	$100\theta_{eq}$	$0.818^{+0.011}_{-0.010}$	$\chi^2_{prior}$	$7.7 (\nu: 5.8)$
$\Omega_\nu h^2$	$< 0.00179$	$100\theta_{s,eq}$	$0.4517^{+0.0055}_{-0.0051}$	$\chi^2_{CMB}$	$11943.2 (\nu: 16.0)$
$\Omega_m h^3$	$0.09625^{+0.00089}_{-0.0011}$	$H(0.15)$	$73.1^{+1.1}_{-1.2}$	$\chi^2_{BAO}$	$5.83 (\nu: 0.4)$
$\sigma_8$	$0.812^{+0.019}_{-0.032}$	$D_M(0.15)$	$639^{+12}_{-10}$		
$S_8$	$0.823^{+0.027}_{-0.028}$	$H(0.38)$	$83.15^{+0.82}_{-0.97}$		

$$\bar{\chi}^2_{eff} = 12991.75; \Delta\bar{\chi}^2_{eff} = -0.50; R - 1 = 0.00951$$



## 6 nnu

### 6.1 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02199	$0.02204^{+0.00081}_{-0.00081}$	$\sigma_8 \Omega_m^{0.5}$	0.4606	$0.460^{+0.036}_{-0.035}$	$H(0.15)$	71.1	$71.5^{+6.2}_{-5.8}$
$\Omega_c h^2$	0.1187	$0.119^{+0.011}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.609^{+0.031}_{-0.030}$	$D_M(0.15)$	659	$655^{+61}_{-56}$
$100\theta_{MC}$	1.04101	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	0.9931	$0.992^{+0.042}_{-0.043}$	$H(0.38)$	81.3	$81.8^{+6.0}_{-5.6}$
$\tau$	0.0502	$0.051^{+0.023}_{-0.022}$	$r_{drag} h$	97.7	$98.1^{+5.9}_{-5.6}$	$D_M(0.38)$	1567	$1559^{+130}_{-120}$
$N_{eff}$	2.89	$2.94^{+0.79}_{-0.72}$	$\langle d^2 \rangle^{1/2}$	2.462	$2.46^{+0.12}_{-0.12}$	$H(0.51)$	88.1	$88.6^{+5.9}_{-5.5}$
$\ln(10^{10} A_s)$	3.030	$3.033^{+0.055}_{-0.056}$	$z_{re}$	7.30	$7.4^{+2.2}_{-2.5}$	$D_M(0.51)$	2028	$2017^{+160}_{-150}$
$n_s$	0.9569	$0.959^{+0.035}_{-0.034}$	$10^9 A_s$	2.069	$2.08^{+0.12}_{-0.11}$	$H(0.61)$	93.8	$94.3^{+5.9}_{-5.5}$
$y_{cal}$	1.0003	$1.0004^{+0.0065}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	1.872	$1.874^{+0.060}_{-0.063}$	$D_M(0.61)$	2357	$2346^{+180}_{-170}$
$A_{100}^{PS}$	234	$240^{+70}_{-70}$	$D_{40}$	1238	$1236^{+58}_{-57}$	$H(2.33)$	234.8	$235.3^{+9.9}_{-9.5}$
$A_{143}^{PS}$	39	$40^{+20}_{-20}$	$D_{220}$	5700	$5702^{+100}_{-110}$	$D_M(2.33)$	5848	$5826^{+340}_{-330}$
$A_{217}^{PS}$	101.3	$102^{+30}_{-40}$	$D_{810}$	2531.6	$2532^{+37}_{-36}$	$f\sigma_8(0.15)$	0.4638	$0.463^{+0.032}_{-0.032}$
$A_{217}^{CIB}$	45.0	$40^{+20}_{-20}$	$D_{1420}$	814.7	$815^{+13}_{-13}$	$\sigma_8(0.15)$	0.7422	$0.744^{+0.035}_{-0.035}$
$A_{143}^{tSZ}$	6.61	$< 8.83$	$D_{2000}$	230.3	$230.1^{+5.9}_{-6.1}$	$f\sigma_8(0.38)$	0.4785	$0.478^{+0.025}_{-0.025}$
$r_{143 \times 217}^{PS}$	0.592	$0.65^{+0.32}_{-0.33}$	$n_{s,0.002}$	0.9569	$0.959^{+0.035}_{-0.034}$	$\sigma_8(0.38)$	0.6562	$0.658^{+0.033}_{-0.033}$
$r_{143 \times 217}^{CIB}$	0.78	—	$Y_P$	0.2431	$0.244^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	0.4752	$0.475^{+0.022}_{-0.022}$
$\xi^{tSZ \times CIB}$	0.08	—	$Y_P^{BBN}$	0.2444	$0.245^{+0.010}_{-0.011}$	$\sigma_8(0.51)$	0.6134	$0.616^{+0.032}_{-0.032}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.602	$2.61^{+0.20}_{-0.18}$	$f\sigma_8(0.61)$	0.4690	$0.469^{+0.021}_{-0.021}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.49}$	Age/Gyr	14.00	$13.94^{+0.82}_{-0.78}$	$\sigma_8(0.61)$	0.5833	$0.585^{+0.032}_{-0.031}$
$A_{143}^{dust}$	0.989	$0.97^{+0.44}_{-0.45}$	$z_*$	1090.13	$1090.2^{+1.4}_{-1.3}$	$f\sigma_8(2.33)$	0.2935	$0.295^{+0.017}_{-0.017}$
$A_{217}^{dust}$	0.967	$0.97^{+0.27}_{-0.27}$	$r_*$	145.9	$145.5^{+6.9}_{-6.7}$	$\sigma_8(2.33)$	0.3019	$0.303^{+0.019}_{-0.018}$
$A_{143 \times 217}^{dust}$	1.011	$1.03^{+0.42}_{-0.40}$	$100\theta_*$	1.04133	$1.0413^{+0.0019}_{-0.0018}$	$f_{2000}^{143}$	30.0	$30^{+10}_{-9}$
$c_{100}$	0.99758	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	14.01	$13.97^{+0.64}_{-0.62}$	$f_{2000}^{217}$	106.9	$107.1^{+6.4}_{-6.4}$
$c_{217}$	1.00132	$1.0011^{+0.0041}_{-0.0041}$	$z_{drag}$	1058.83	$1059.0^{+2.9}_{-2.9}$	$f_{2000}^{143 \times 217}$	32.2	$32^{+7}_{-7}$
$H_0$	65.7	$66.2^{+6.5}_{-6.0}$	$r_{drag}$	148.7	$148.3^{+7.2}_{-6.9}$	$\chi_{simall}^2$	395.70	$396.9 (\nu: 1.4)$
$\Omega_\Lambda$	0.6725	$0.675^{+0.046}_{-0.052}$	$k_D$	0.13952	$0.1398^{+0.0050}_{-0.0049}$	$\chi_{lowl}^2$	24.4	$24.4 (\nu: 2.7)$
$\Omega_m$	0.3275	$0.325^{+0.052}_{-0.046}$	$100\theta_D$	0.16074	$0.1608^{+0.0018}_{-0.0017}$	$\chi_{CamSpec}^2$	7049.2	$7063.3 (\nu: 16.5)$
$\Omega_m h^2$	0.1413	$0.142^{+0.012}_{-0.011}$	$z_{eq}$	3435	$3425^{+170}_{-170}$	$\chi_{prior}^2$	2.1	$7.6 (\nu: 5.8)$
$\Omega_m h^3$	0.0928	$0.094^{+0.015}_{-0.014}$	$k_{eq}$	0.010371	$0.01037^{+0.00045}_{-0.00041}$	$\chi_{CMB}^2$	7469.3	$7484.6 (\nu: 15.8)$
$\sigma_8$	0.8049	$0.807^{+0.036}_{-0.037}$	$100\theta_{eq}$	0.8065	$0.809^{+0.033}_{-0.031}$			
$S_8$	0.841	$0.839^{+0.065}_{-0.063}$	$100\theta_{s,eq}$	0.4461	$0.447^{+0.017}_{-0.016}$			

Best-fit  $\chi_{eff}^2 = 7471.42$ ;  $\Delta\chi_{eff}^2 = -0.31$ ;  $\bar{\chi}_{eff}^2 = 7492.17$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.63$ ;  $R - 1 = 0.00609$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 ( $\Delta$  -0.14) commander\_dx12\_v3\_2\_29: 24.43 ( $\Delta$  1.04) CamSpec like\_10.7HM: 7049.22 ( $\Delta$  -1.12)



## 6.2 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02202^{+0.00077}_{-0.00077}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.458^{+0.024}_{-0.023}$	$H(0.15)$	$71.3^{+5.7}_{-5.4}$
$\Omega_{\mathrm{c}} h^2$	$0.118^{+0.010}_{-0.010}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.15)$	$658^{+56}_{-52}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	$0.990^{+0.027}_{-0.028}$	$H(0.38)$	$81.5^{+5.6}_{-5.3}$
$\tau$	$0.051^{+0.022}_{-0.021}$	$r_{\mathrm{drag}} h$	$98.0^{+4.8}_{-4.5}$	$D_{\mathrm{M}}(0.38)$	$1565^{+120}_{-110}$
$N_{\mathrm{eff}}$	$2.89^{+0.75}_{-0.73}$	$\langle d^2 \rangle^{1/2}$	$2.457^{+0.081}_{-0.083}$	$H(0.51)$	$88.2^{+5.6}_{-5.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.031^{+0.055}_{-0.054}$	$z_{\mathrm{re}}$	$7.4^{+2.2}_{-2.4}$	$D_{\mathrm{M}}(0.51)$	$2025^{+150}_{-140}$
$n_{\mathrm{s}}$	$0.958^{+0.032}_{-0.031}$	$10^9 A_{\mathrm{s}}$	$2.07^{+0.12}_{-0.11}$	$H(0.61)$	$93.9^{+5.6}_{-5.4}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0064}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.869^{+0.056}_{-0.065}$	$D_{\mathrm{M}}(0.61)$	$2355^{+170}_{-160}$
$A_{100}^{\mathrm{PS}}$	$239^{+70}_{-60}$	$D_{40}$	$1237^{+48}_{-49}$	$H(2.33)$	$234.5^{+9.4}_{-9.6}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5705^{+100}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5848^{+340}_{-320}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2532^{+37}_{-35}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.742^{+0.034}_{-0.034}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.95$	$D_{2000}$	$230.4^{+5.8}_{-5.9}$	$f\sigma_8(0.38)$	$0.477^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.958^{+0.032}_{-0.031}$	$\sigma_8(0.38)$	$0.656^{+0.033}_{-0.033}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.243^{+0.010}_{-0.011}$	$f\sigma_8(0.51)$	$0.474^{+0.016}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.244^{+0.010}_{-0.011}$	$\sigma_8(0.51)$	$0.613^{+0.032}_{-0.031}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.60^{+0.18}_{-0.17}$	$f\sigma_8(0.61)$	$0.468^{+0.017}_{-0.017}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$14.00^{+0.82}_{-0.75}$	$\sigma_8(0.61)$	$0.583^{+0.031}_{-0.030}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.44}_{-0.45}$	$z_*$	$1090.0^{+1.2}_{-1.2}$	$f\sigma_8(2.33)$	$0.294^{+0.017}_{-0.016}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$146.0^{+7.2}_{-6.5}$	$\sigma_8(2.33)$	$0.302^{+0.018}_{-0.018}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	$1.0414^{+0.0018}_{-0.0018}$	$f_{2000}^{143}$	$30^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.02^{+0.67}_{-0.61}$	$f_{2000}^{217}$	$106.8^{+6.3}_{-6.2}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1058.9^{+2.8}_{-2.9}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$H_0$	$65.9^{+5.8}_{-5.5}$	$r_{\mathrm{drag}}$	$148.8^{+7.6}_{-6.8}$	$\chi_{\mathrm{lensing}}^2$	$9.33 (\nu: 0.5)$
$\Omega_{\Lambda}$	$0.675^{+0.038}_{-0.041}$	$k_{\mathrm{D}}$	$0.1394^{+0.0049}_{-0.0050}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.325^{+0.041}_{-0.038}$	$100\theta_{\mathrm{D}}$	$0.1607^{+0.0017}_{-0.0017}$	$\chi_{\mathrm{lowl}}^2$	$24.5 (\nu: 2.1)$
$\Omega_{\mathrm{m}} h^2$	$0.141^{+0.011}_{-0.011}$	$z_{\mathrm{eq}}$	$3425^{+130}_{-140}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 (\nu: 14.4)$
$\Omega_{\mathrm{m}} h^3$	$0.093^{+0.015}_{-0.014}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00036}_{-0.00034}$	$\chi_{\mathrm{prior}}^2$	$7.5 (\nu: 5.8)$
$\sigma_8$	$0.804^{+0.035}_{-0.034}$	$100\theta_{\mathrm{eq}}$	$0.808^{+0.026}_{-0.024}$	$\chi_{\mathrm{CMB}}^2$	$7493.4 (\nu: 15.5)$
$S_8$	$0.836^{+0.043}_{-0.043}$	$100\theta_{\mathrm{s,eq}}$	$0.447^{+0.013}_{-0.012}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7500.99; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.75; R - 1 = 0.00870$					



### 6.3 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_Cooke17\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02203^{+0.00069}_{-0.00068}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.029}_{-0.030}$	$H(0.38)$	$81.8^{+4.2}_{-3.9}$
$\Omega_{\mathrm{c}} h^2$	$0.1192^{+0.0079}_{-0.0075}$	$\sigma_8 / h^{0.5}$	$0.993^{+0.040}_{-0.042}$	$D_{\mathrm{M}}(0.38)$	$1559^{+94}_{-91}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0014}_{-0.0013}$	$r_{\mathrm{drag}} h$	$98.0^{+5.1}_{-4.9}$	$H(0.51)$	$88.6^{+4.0}_{-3.8}$
$\tau$	$0.051^{+0.022}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	$2.46^{+0.11}_{-0.11}$	$D_{\mathrm{M}}(0.51)$	$2017^{+120}_{-110}$
$N_{\mathrm{eff}}$	$2.94^{+0.50}_{-0.48}$	$z_{\mathrm{re}}$	$7.4^{+2.1}_{-2.3}$	$H(0.61)$	$94.2^{+4.0}_{-3.8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.033^{+0.049}_{-0.050}$	$10^9 A_{\mathrm{s}}$	$2.08^{+0.10}_{-0.10}$	$D_{\mathrm{M}}(0.61)$	$2346^{+130}_{-130}$
$n_{\mathrm{s}}$	$0.959^{+0.027}_{-0.026}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874^{+0.047}_{-0.046}$	$H(2.33)$	$235.3^{+6.7}_{-6.4}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0064}_{-0.0064}$	$D_{40}$	$1236^{+48}_{-48}$	$D_{\mathrm{M}}(2.33)$	$5826^{+230}_{-230}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{220}$	$5701^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.463^{+0.031}_{-0.031}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2532^{+35}_{-35}$	$\sigma_8(0.15)$	$0.744^{+0.027}_{-0.026}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.479^{+0.023}_{-0.025}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.9}_{-4.9}$	$\sigma_8(0.38)$	$0.658^{+0.025}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$n_{\mathrm{s},0.002}$	$0.959^{+0.027}_{-0.026}$	$f\sigma_8(0.51)$	$0.476^{+0.020}_{-0.021}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.2438^{+0.0069}_{-0.0069}$	$\sigma_8(0.51)$	$0.616^{+0.024}_{-0.023}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2451^{+0.0069}_{-0.0069}$	$f\sigma_8(0.61)$	$0.470^{+0.018}_{-0.019}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.13}_{-0.12}$	$\sigma_8(0.61)$	$0.585^{+0.023}_{-0.022}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.94^{+0.54}_{-0.53}$	$f\sigma_8(2.33)$	$0.295^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.49}$	$z_{*}$	$1090.2^{+1.0}_{-1.0}$	$\sigma_8(2.33)$	$0.303^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.44}_{-0.45}$	$r_{*}$	$145.5^{+4.5}_{-4.4}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_{*}$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{217}$	$107.1^{+5.6}_{-5.5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.97^{+0.42}_{-0.41}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.0^{+2.1}_{-2.2}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.2)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0039}$	$r_{\mathrm{drag}}$	$148.3^{+4.7}_{-4.6}$	$\chi_{\mathrm{lowl}}^2$	$24.3 (\nu: 1.8)$
$H_0$	$66.1^{+4.8}_{-4.4}$	$k_{\mathrm{D}}$	$0.1398^{+0.0035}_{-0.0034}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 (\nu: 14.8)$
$\Omega_{\Lambda}$	$0.675^{+0.040}_{-0.044}$	$100\theta_{\mathrm{D}}$	$0.1608^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{Aver15}}^2$	$0.45 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.325^{+0.044}_{-0.040}$	$z_{\mathrm{eq}}$	$3426^{+150}_{-150}$	$\chi_{\mathrm{Cooke17}}^2$	$0.28 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0082}_{-0.0077}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00040}_{-0.00038}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.7)$
$\Omega_{\mathrm{m}} h^3$	$0.0938^{+0.010}_{-0.0093}$	$100\theta_{\mathrm{eq}}$	$0.808^{+0.028}_{-0.027}$	$\chi_{\mathrm{CMB}}^2$	$7484.0 (\nu: 14.7)$
$\sigma_8$	$0.807^{+0.029}_{-0.028}$	$100\theta_{\mathrm{s,eq}}$	$0.447^{+0.014}_{-0.014}$	$\chi_{\mathrm{Abund}}^2$	$0.73 (\nu: 0.4)$
$S_8$	$0.840^{+0.064}_{-0.062}$	$H(0.15)$	$71.5^{+4.5}_{-4.2}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.460^{+0.035}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$655^{+44}_{-42}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7492.26; R - 1 = 0.00836$



## 6.4 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02206^{+0.00080}_{-0.00080}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.460^{+0.036}_{-0.035}$	$H(0.15)$	$71.7^{+6.1}_{-5.7}$
$\Omega_{\mathrm{c}} h^2$	$0.119^{+0.011}_{-0.010}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.031}_{-0.030}$	$D_{\mathrm{M}}(0.15)$	$653^{+59}_{-55}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	$0.993^{+0.042}_{-0.042}$	$H(0.38)$	$82.0^{+5.9}_{-5.5}$
$\tau$	$0.053^{+0.019}_{-0.012}$	$r_{\mathrm{drag}} h$	$98.2^{+5.8}_{-5.5}$	$D_{\mathrm{M}}(0.38)$	$1555^{+130}_{-120}$
$N_{\mathrm{eff}}$	$2.96^{+0.77}_{-0.71}$	$\langle d^2 \rangle^{1/2}$	$2.46^{+0.12}_{-0.12}$	$H(0.51)$	$88.7^{+5.8}_{-5.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.038^{+0.052}_{-0.044}$	$z_{\mathrm{re}}$	$< 9.40$	$D_{\mathrm{M}}(0.51)$	$2013^{+160}_{-150}$
$n_{\mathrm{s}}$	$0.960^{+0.034}_{-0.034}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.11}_{-0.089}$	$H(0.61)$	$94.4^{+5.8}_{-5.5}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875^{+0.059}_{-0.063}$	$D_{\mathrm{M}}(0.61)$	$2340^{+180}_{-170}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-70}$	$D_{40}$	$1234^{+57}_{-57}$	$H(2.33)$	$235.5^{+9.8}_{-9.5}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5702^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5817^{+340}_{-320}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2532^{+37}_{-36}$	$f\sigma_8(0.15)$	$0.463^{+0.032}_{-0.032}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.746^{+0.034}_{-0.034}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$230.0^{+5.9}_{-6.0}$	$f\sigma_8(0.38)$	$0.479^{+0.025}_{-0.025}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.960^{+0.034}_{-0.034}$	$\sigma_8(0.38)$	$0.660^{+0.032}_{-0.031}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.244^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.476^{+0.022}_{-0.022}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.245^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.617^{+0.031}_{-0.030}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.20}_{-0.18}$	$f\sigma_8(0.61)$	$0.470^{+0.021}_{-0.020}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.92^{+0.80}_{-0.76}$	$\sigma_8(0.61)$	$0.587^{+0.030}_{-0.029}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.45}$	$z_*$	$1090.2^{+1.4}_{-1.3}$	$f\sigma_8(2.33)$	$0.296^{+0.016}_{-0.015}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$145.3^{+6.8}_{-6.6}$	$\sigma_8(2.33)$	$0.304^{+0.018}_{-0.017}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.40}$	$100\theta_*$	$1.0412^{+0.0019}_{-0.0019}$	$f_{2000}^{143}$	$30^{+10}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96^{+0.64}_{-0.61}$	$f_{2000}^{217}$	$107.1^{+6.5}_{-6.4}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.1^{+2.8}_{-2.9}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$H_0$	$66.4^{+6.4}_{-5.9}$	$r_{\mathrm{drag}}$	$148.1^{+7.1}_{-6.9}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_{\Lambda}$	$0.677^{+0.045}_{-0.050}$	$k_{\mathrm{D}}$	$0.1399^{+0.0050}_{-0.0049}$	$\chi_{\mathrm{lowl}}^2$	$24.3 (\nu: 2.5)$
$\Omega_{\mathrm{m}}$	$0.323^{+0.050}_{-0.045}$	$100\theta_{\mathrm{D}}$	$0.1609^{+0.0018}_{-0.0017}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.2 (\nu: 16.5)$
$\Omega_{\mathrm{m}} h^2$	$0.142^{+0.012}_{-0.011}$	$z_{\mathrm{eq}}$	$3420^{+170}_{-170}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.094^{+0.015}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00044}_{-0.00041}$	$\chi_{\mathrm{CMB}}^2$	$7484.3 (\nu: 15.2)$
$\sigma_8$	$0.809^{+0.036}_{-0.035}$	$100\theta_{\mathrm{eq}}$	$0.810^{+0.033}_{-0.030}$		
$S_8$	$0.839^{+0.065}_{-0.063}$	$100\theta_{\mathrm{s,eq}}$	$0.448^{+0.016}_{-0.015}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7491.86; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.60; R - 1 = 0.00538$$



## 6.5 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02205^{+0.00074}_{-0.00075}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.458^{+0.024}_{-0.023}$	$H(0.15)$	$71.5^{+5.6}_{-5.2}$
$\Omega_{\mathrm{c}} h^2$	$0.118^{+0.010}_{-0.010}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.021}_{-0.022}$	$D_{\mathrm{M}}(0.15)$	$655^{+54}_{-51}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	$0.991^{+0.027}_{-0.028}$	$H(0.38)$	$81.7^{+5.6}_{-5.2}$
$\tau$	$0.053^{+0.018}_{-0.012}$	$r_{\mathrm{drag}} h$	$98.3^{+4.7}_{-4.2}$	$D_{\mathrm{M}}(0.38)$	$1560^{+120}_{-110}$
$N_{\mathrm{eff}}$	$2.91^{+0.74}_{-0.71}$	$\langle d^2 \rangle^{1/2}$	$2.456^{+0.081}_{-0.082}$	$H(0.51)$	$88.4^{+5.6}_{-5.3}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.035^{+0.052}_{-0.046}$	$z_{\mathrm{re}}$	$< 9.35$	$D_{\mathrm{M}}(0.51)$	$2019^{+150}_{-140}$
$n_{\mathrm{s}}$	$0.959^{+0.031}_{-0.030}$	$10^9 A_{\mathrm{s}}$	$2.08^{+0.11}_{-0.095}$	$H(0.61)$	$94.1^{+5.6}_{-5.4}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0063}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.870^{+0.056}_{-0.065}$	$D_{\mathrm{M}}(0.61)$	$2348^{+170}_{-160}$
$A_{100}^{\mathrm{PS}}$	$239^{+70}_{-60}$	$D_{40}$	$1236^{+48}_{-48}$	$H(2.33)$	$234.6^{+9.4}_{-9.5}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5705^{+100}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5837^{+340}_{-310}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2532^{+37}_{-35}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.743^{+0.033}_{-0.033}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.94$	$D_{2000}$	$230.4^{+5.8}_{-5.9}$	$f\sigma_8(0.38)$	$0.477^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.959^{+0.031}_{-0.030}$	$\sigma_8(0.38)$	$0.658^{+0.032}_{-0.032}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.243^{+0.010}_{-0.010}$	$f\sigma_8(0.51)$	$0.474^{+0.016}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.245^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.615^{+0.031}_{-0.031}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.60^{+0.18}_{-0.17}$	$f\sigma_8(0.61)$	$0.468^{+0.016}_{-0.017}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.48}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.97^{+0.80}_{-0.74}$	$\sigma_8(0.61)$	$0.585^{+0.030}_{-0.030}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.45}$	$z_*$	$1090.0^{+1.2}_{-1.2}$	$f\sigma_8(2.33)$	$0.295^{+0.016}_{-0.016}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$145.9^{+7.1}_{-6.4}$	$\sigma_8(2.33)$	$0.303^{+0.018}_{-0.018}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0414^{+0.0019}_{-0.0018}$	$f_{2000}^{143}$	$30^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01^{+0.66}_{-0.60}$	$f_{2000}^{217}$	$106.8^{+6.3}_{-6.2}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$z_{\mathrm{drag}}$	$1058.9^{+2.7}_{-2.8}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$H_0$	$66.1^{+5.7}_{-5.3}$	$r_{\mathrm{drag}}$	$148.7^{+7.4}_{-6.7}$	$\chi_{\mathrm{lensing}}^2$	$9.34 (\nu: 0.5)$
$\Omega_{\Lambda}$	$0.677^{+0.037}_{-0.038}$	$k_{\mathrm{D}}$	$0.1395^{+0.0049}_{-0.0049}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.323^{+0.038}_{-0.037}$	$100\theta_{\mathrm{D}}$	$0.1607^{+0.0017}_{-0.0017}$	$\chi_{\mathrm{lowl}}^2$	$24.3 (\nu: 1.9)$
$\Omega_{\mathrm{m}} h^2$	$0.141^{+0.011}_{-0.011}$	$z_{\mathrm{eq}}$	$3418^{+130}_{-130}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 (\nu: 14.4)$
$\Omega_{\mathrm{m}} h^3$	$0.093^{+0.015}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00035}_{-0.00034}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.8)$
$\sigma_8$	$0.806^{+0.034}_{-0.034}$	$100\theta_{\mathrm{eq}}$	$0.810^{+0.026}_{-0.023}$	$\chi_{\mathrm{CMB}}^2$	$7493.2 (\nu: 15.0)$
$S_8$	$0.835^{+0.043}_{-0.042}$	$100\theta_{\mathrm{s,eq}}$	$0.448^{+0.013}_{-0.012}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7500.70$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.69$ ;  $R - 1 = 0.00702$



## 6.6 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_Cooke17\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02205^{+0.00069}_{-0.00069}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.029}_{-0.029}$	$H(0.38)$	$81.9^{+4.2}_{-3.9}$
$\Omega_{\mathrm{c}} h^2$	$0.1192^{+0.0079}_{-0.0075}$	$\sigma_8 / h^{0.5}$	$0.994^{+0.040}_{-0.041}$	$D_{\mathrm{M}}(0.38)$	$1557^{+93}_{-90}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0014}_{-0.0013}$	$r_{\mathrm{drag}} h$	$98.1^{+5.1}_{-4.9}$	$H(0.51)$	$88.6^{+4.0}_{-3.8}$
$\tau$	$0.053^{+0.018}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.46^{+0.11}_{-0.11}$	$D_{\mathrm{M}}(0.51)$	$2014^{+110}_{-110}$
$N_{\mathrm{eff}}$	$2.95^{+0.50}_{-0.47}$	$z_{\mathrm{re}}$	$< 9.31$	$H(0.61)$	$94.3^{+4.0}_{-3.7}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.037^{+0.045}_{-0.035}$	$10^9 A_{\mathrm{s}}$	$2.085^{+0.097}_{-0.072}$	$D_{\mathrm{M}}(0.61)$	$2342^{+130}_{-120}$
$n_{\mathrm{s}}$	$0.960^{+0.026}_{-0.025}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875^{+0.048}_{-0.046}$	$H(2.33)$	$235.4^{+6.6}_{-6.5}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0063}_{-0.0064}$	$D_{40}$	$1235^{+48}_{-48}$	$D_{\mathrm{M}}(2.33)$	$5820^{+230}_{-220}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{220}$	$5701^{+100}_{-110}$	$f\sigma_8(0.15)$	$0.464^{+0.031}_{-0.031}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2532^{+36}_{-36}$	$\sigma_8(0.15)$	$0.746^{+0.026}_{-0.024}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.479^{+0.023}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.1^{+4.9}_{-4.8}$	$\sigma_8(0.38)$	$0.660^{+0.024}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.91$	$n_{\mathrm{s},0.002}$	$0.960^{+0.026}_{-0.025}$	$f\sigma_8(0.51)$	$0.476^{+0.020}_{-0.020}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.2439^{+0.0068}_{-0.0068}$	$\sigma_8(0.51)$	$0.617^{+0.023}_{-0.021}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452^{+0.0068}_{-0.0068}$	$f\sigma_8(0.61)$	$0.470^{+0.018}_{-0.018}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.13}_{-0.12}$	$\sigma_8(0.61)$	$0.587^{+0.022}_{-0.020}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.93^{+0.54}_{-0.53}$	$f\sigma_8(2.33)$	$0.295^{+0.012}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.49}$	$z_*$	$1090.2^{+1.0}_{-1.0}$	$\sigma_8(2.33)$	$0.304^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.45}$	$r_*$	$145.4^{+4.5}_{-4.4}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{217}$	$107.1^{+5.6}_{-5.4}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96^{+0.42}_{-0.41}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.1^{+2.1}_{-2.2}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.2)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0039}$	$r_{\mathrm{drag}}$	$148.2^{+4.7}_{-4.6}$	$\chi_{\mathrm{lowl}}^2$	$24.2 (\nu: 1.7)$
$H_0$	$66.2^{+4.7}_{-4.5}$	$k_{\mathrm{D}}$	$0.1399^{+0.0034}_{-0.0034}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 (\nu: 14.7)$
$\Omega_{\Lambda}$	$0.676^{+0.040}_{-0.043}$	$100\theta_{\mathrm{D}}$	$0.1609^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{Aver15}}^2$	$0.45 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.324^{+0.043}_{-0.040}$	$z_{\mathrm{eq}}$	$3422^{+150}_{-150}$	$\chi_{\mathrm{Cooke17}}^2$	$0.28 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0082}_{-0.0077}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00039}_{-0.00038}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0940^{+0.010}_{-0.0092}$	$100\theta_{\mathrm{eq}}$	$0.809^{+0.028}_{-0.027}$	$\chi_{\mathrm{CMB}}^2$	$7483.7 (\nu: 14.1)$
$\sigma_8$	$0.808^{+0.029}_{-0.026}$	$100\theta_{\mathrm{s,eq}}$	$0.447^{+0.014}_{-0.014}$	$\chi_{\mathrm{Abund}}^2$	$0.73 (\nu: 0.4)$
$S_8$	$0.840^{+0.063}_{-0.061}$	$H(0.15)$	$71.6^{+4.5}_{-4.2}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.460^{+0.035}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$654^{+43}_{-41}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7491.99; R - 1 = 0.00722$



## 6.7 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02218	$0.02220^{+0.00059}_{-0.00056}$	$\sigma_8$	0.8020	$0.803^{+0.031}_{-0.032}$	$100\theta_{\text{eq}}$	0.8118	$0.812^{+0.020}_{-0.019}$
$\Omega_c h^2$	0.1174	$0.1179^{+0.0087}_{-0.0084}$	$S_8$	0.8267	$0.826^{+0.043}_{-0.041}$	$100\theta_{\text{s,eq}}$	0.4487	$0.449^{+0.010}_{-0.0097}$
$100\theta_{\text{MC}}$	1.04112	$1.0411^{+0.0013}_{-0.0012}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4528	$0.453^{+0.024}_{-0.023}$	$H(0.15)$	71.61	$71.8^{+4.3}_{-4.1}$
$\tau$	0.0527	$0.052^{+0.022}_{-0.022}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6026	$0.603^{+0.023}_{-0.024}$	$D_{\text{M}}(0.15)$	653.2	$651^{+42}_{-39}$
$N_{\text{eff}}$	2.89	$2.92^{+0.58}_{-0.56}$	$\sigma_8/h^{0.5}$	0.9848	$0.984^{+0.031}_{-0.031}$	$H(0.38)$	81.74	$82.0^{+4.2}_{-4.1}$
$\ln(10^{10} A_{\text{s}})$	3.032	$3.032^{+0.051}_{-0.053}$	$r_{\text{drag}} h$	98.70	$98.8^{+3.7}_{-3.4}$	$D_{\text{M}}(0.38)$	1556	$1552^{+92}_{-86}$
$n_{\text{s}}$	0.9607	$0.961^{+0.024}_{-0.024}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.440^{+0.081}_{-0.078}$	$H(0.51)$	88.45	$88.7^{+4.3}_{-4.2}$
$y_{\text{cal}}$	1.0002	$1.0005^{+0.0064}_{-0.0063}$	$z_{\text{re}}$	7.50	$7.4^{+2.1}_{-2.4}$	$D_{\text{M}}(0.51)$	2015	$2009^{+120}_{-110}$
$A_{100}^{\text{PS}}$	230	$236^{+60}_{-70}$	$10^9 A_{\text{s}}$	2.074	$2.07^{+0.11}_{-0.11}$	$H(0.61)$	94.07	$94.3^{+4.3}_{-4.2}$
$A_{143}^{\text{PS}}$	42.7	$38^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.867	$1.869^{+0.049}_{-0.052}$	$D_{\text{M}}(0.61)$	2343	$2337^{+130}_{-120}$
$A_{217}^{\text{PS}}$	105.0	$103^{+30}_{-30}$	$D_{40}$	1230.9	$1231^{+42}_{-42}$	$H(2.33)$	234.1	$234.6^{+7.7}_{-7.7}$
$A_{217}^{\text{CIB}}$	41.1	$39^{+20}_{-20}$	$D_{220}$	5712	$5715^{+100}_{-100}$	$D_{\text{M}}(2.33)$	5836	$5823^{+260}_{-250}$
$A_{143}^{\text{tSZ}}$	5.90	$< 8.89$	$D_{810}$	2532.6	$2533^{+35}_{-36}$	$f\sigma_8(0.15)$	0.4568	$0.457^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\text{PS}}$	0.687	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	816.9	$816^{+13}_{-13}$	$\sigma_8(0.15)$	0.7404	$0.741^{+0.030}_{-0.030}$
$r_{143 \times 217}^{\text{CIB}}$	0.75	—	$D_{2000}$	231.3	$230.9^{+5.4}_{-5.4}$	$f\sigma_8(0.38)$	0.4733	$0.473^{+0.019}_{-0.019}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.51	—	$n_{\text{s},0.002}$	0.9607	$0.961^{+0.024}_{-0.024}$	$\sigma_8(0.38)$	0.6555	$0.656^{+0.028}_{-0.028}$
$A^{\text{kSZ}}$	0.8	—	$Y_{\text{P}}$	0.2431	$0.2436^{+0.0079}_{-0.0081}$	$f\sigma_8(0.51)$	0.4711	$0.471^{+0.018}_{-0.018}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.51}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	0.2445	$0.2449^{+0.0079}_{-0.0082}$	$\sigma_8(0.51)$	0.6132	$0.614^{+0.027}_{-0.027}$
$A_{143}^{\text{dust}}$	0.973	$0.96^{+0.45}_{-0.46}$	$10^5 \text{D}/\text{H}$	2.566	$2.57^{+0.15}_{-0.14}$	$f\sigma_8(0.61)$	0.4656	$0.466^{+0.017}_{-0.017}$
$A_{217}^{\text{dust}}$	0.979	$0.98^{+0.27}_{-0.27}$	Age/Gyr	13.97	$13.94^{+0.62}_{-0.58}$	$\sigma_8(0.61)$	0.5832	$0.584^{+0.026}_{-0.026}$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.02^{+0.41}_{-0.41}$	$z_*$	1089.77	$1089.8^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	0.2938	$0.294^{+0.014}_{-0.013}$
$c_{100}$	0.99769	$0.9975^{+0.0028}_{-0.0027}$	$r_*$	146.1	$145.8^{+5.6}_{-5.3}$	$\sigma_8(2.33)$	0.3026	$0.303^{+0.015}_{-0.014}$
$c_{217}$	1.00117	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	1.04143	$1.0414^{+0.0016}_{-0.0014}$	$f_{2000}^{143}$	28.5	$29^{+9}_{-9}$
$c_{TE}$	0.9956	$0.996^{+0.014}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.03	$14.00^{+0.52}_{-0.49}$	$f_{2000}^{217}$	105.8	$106.2^{+5.9}_{-5.6}$
$c_{EE}$	0.9902	$0.991^{+0.015}_{-0.015}$	$z_{\text{drag}}$	1059.17	$1059.3^{+2.2}_{-2.2}$	$f_{2000}^{143 \times 217}$	31.1	$31^{+6}_{-6}$
$H_0$	66.32	$66.5^{+4.3}_{-4.3}$	$r_{\text{drag}}$	148.8	$148.5^{+5.8}_{-5.5}$	$\chi_{\text{simall}}^2$	395.87	$396.8 (\nu: 1.3)$
$\Omega_{\Lambda}$	0.6813	$0.682^{+0.029}_{-0.030}$	$k_{\text{D}}$	0.13951	$0.1397^{+0.0039}_{-0.0040}$	$\chi_{\text{lowl}}^2$	23.68	$23.8 (\nu: 1.1)$
$\Omega_{\text{m}}$	0.3187	$0.318^{+0.030}_{-0.029}$	$100\theta_{\text{D}}$	0.16053	$0.1606^{+0.0014}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	11498.6	$11514.5 (\nu: 17.2)$
$\Omega_{\text{m}} h^2$	0.1402	$0.1407^{+0.0090}_{-0.0088}$	$z_{\text{eq}}$	3408	$3405^{+100}_{-100}$	$\chi_{\text{prior}}^2$	2.1	$7.9 (\nu: 5.9)$
$\Omega_{\text{m}} h^3$	0.0930	$0.094^{+0.012}_{-0.011}$	$k_{\text{eq}}$	0.010288	$0.01030^{+0.00032}_{-0.00032}$	$\chi_{\text{CMB}}^2$	11918.2	$11935.2 (\nu: 17.3)$

Best-fit  $\chi_{\text{eff}}^2 = 11920.27$ ;  $\Delta\chi_{\text{eff}}^2 = -0.49$ ;  $\bar{\chi}_{\text{eff}}^2 = 11943.05$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.59$ ;  $R - 1 = 0.00888$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.03) commander\_dx12.v3.2.29: 23.68 ( $\Delta$  0.68) CamSpec like\_10.7HM\_1400\_unified: 11498.65 ( $\Delta$  -0.99)



## 6.8 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02217^{+0.00059}_{-0.00057}$	$S_8$	$0.828^{+0.032}_{-0.033}$	$H(0.15)$	$71.5^{+4.3}_{-4.0}$
$\Omega_c h^2$	$0.1175^{+0.0085}_{-0.0081}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.018}_{-0.018}$	$D_M(0.15)$	$654^{+40}_{-38}$
$100\theta_{MC}$	$1.0411^{+0.0013}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.019}_{-0.019}$	$H(0.38)$	$81.7^{+4.2}_{-4.0}$
$\tau$	$0.053^{+0.020}_{-0.020}$	$\sigma_8/h^{0.5}$	$0.986^{+0.024}_{-0.024}$	$D_M(0.38)$	$1558^{+90}_{-87}$
$N_{\text{eff}}$	$2.88^{+0.57}_{-0.55}$	$r_{\text{drag}} h$	$98.6^{+3.3}_{-3.1}$	$H(0.51)$	$88.4^{+4.2}_{-4.1}$
$\ln(10^{10} A_s)$	$3.033^{+0.047}_{-0.047}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.065}_{-0.064}$	$D_M(0.51)$	$2017^{+110}_{-110}$
$n_s$	$0.960^{+0.024}_{-0.024}$	$z_{\text{re}}$	$7.5^{+2.0}_{-2.1}$	$H(0.61)$	$94.0^{+4.2}_{-4.2}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0061}$	$10^9 A_s$	$2.075^{+0.099}_{-0.095}$	$D_M(0.61)$	$2346^{+130}_{-120}$
$A_{100}^{\text{PS}}$	$236^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.868^{+0.050}_{-0.051}$	$H(2.33)$	$234.1^{+7.6}_{-7.6}$
$A_{143}^{\text{PS}}$	$37^{+20}_{-20}$	$D_{40}$	$1235^{+39}_{-39}$	$D_M(2.33)$	$5840^{+260}_{-250}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{220}$	$5718^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$A_{217}^{\text{CIB}}$	$38^{+20}_{-20}$	$D_{810}$	$2533^{+35}_{-36}$	$\sigma_8(0.15)$	$0.741^{+0.028}_{-0.028}$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$D_{1420}$	$817^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.360$	$D_{2000}$	$231.2^{+5.3}_{-5.3}$	$\sigma_8(0.38)$	$0.656^{+0.027}_{-0.026}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.960^{+0.024}_{-0.024}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2431^{+0.0078}_{-0.0081}$	$\sigma_8(0.51)$	$0.613^{+0.026}_{-0.025}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2444^{+0.0078}_{-0.0081}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.014}$
$A_{100}^{\text{dust}}$	$1.00^{+0.50}_{-0.50}$	$10^5 \text{D/H}$	$2.57^{+0.14}_{-0.14}$	$\sigma_8(0.61)$	$0.583^{+0.025}_{-0.024}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.46}$	$\text{Age/Gyr}$	$13.98^{+0.62}_{-0.58}$	$f\sigma_8(2.33)$	$0.294^{+0.013}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.79^{+0.98}_{-0.96}$	$\sigma_8(2.33)$	$0.303^{+0.015}_{-0.014}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.41}$	$r_*$	$146.1^{+5.6}_{-5.2}$	$f_{2000}^{143}$	$28^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.0414^{+0.0016}_{-0.0014}$	$f_{2000}^{217}$	$106.1^{+5.7}_{-5.3}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0043}$	$D_M(z_*)/\text{Gpc}$	$14.03^{+0.51}_{-0.48}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$z_{\text{drag}}$	$1059.1^{+2.2}_{-2.2}$	$\chi_{\text{lensing}}^2$	$9.08 (\nu: 0.3)$
$c_{EE}$	$0.990^{+0.015}_{-0.014}$	$r_{\text{drag}}$	$148.9^{+5.8}_{-5.4}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.1)$
$H_0$	$66.2^{+4.3}_{-4.1}$	$k_D$	$0.1395^{+0.0039}_{-0.0040}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 1.1)$
$\Omega_\Lambda$	$0.680^{+0.027}_{-0.027}$	$100\theta_D$	$0.1605^{+0.0013}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	$11513.8 (\nu: 16.5)$
$\Omega_m$	$0.320^{+0.027}_{-0.027}$	$z_{\text{eq}}$	$3412^{+95}_{-95}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 5.8)$
$\Omega_m h^2$	$0.1403^{+0.0088}_{-0.0085}$	$k_{\text{eq}}$	$0.01030^{+0.00030}_{-0.00029}$	$\chi_{\text{CMB}}^2$	$11943.8 (\nu: 17.7)$
$\Omega_m h^3$	$0.093^{+0.011}_{-0.011}$	$100\theta_{\text{eq}}$	$0.811^{+0.019}_{-0.017}$		
$\sigma_8$	$0.802^{+0.029}_{-0.029}$	$100\theta_{s,\text{eq}}$	$0.4484^{+0.0094}_{-0.0088}$		

$$\bar{\chi}_{\text{eff}}^2 = 11951.65; \Delta\bar{\chi}_{\text{eff}}^2 = 0.20; R - 1 = 0.01144$$



## 6.9 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Cooke17\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02220^{+0.00053}_{-0.00051}$	$S_8$	$0.827^{+0.042}_{-0.041}$	$H(0.15)$	$72.0^{+3.4}_{-3.2}$
$\Omega_c h^2$	$0.1183^{+0.0068}_{-0.0065}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.023}_{-0.022}$	$D_M(0.15)$	$650^{+32}_{-31}$
$100\theta_{MC}$	$1.0410^{+0.0011}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.022}_{-0.022}$	$H(0.38)$	$82.1^{+3.3}_{-3.1}$
$\tau$	$0.052^{+0.021}_{-0.022}$	$\sigma_8/h^{0.5}$	$0.985^{+0.031}_{-0.031}$	$D_M(0.38)$	$1549^{+70}_{-68}$
$N_{\text{eff}}$	$2.95^{+0.43}_{-0.41}$	$r_{\text{drag}} h$	$98.8^{+3.5}_{-3.2}$	$H(0.51)$	$88.8^{+3.3}_{-3.1}$
$\ln(10^{10} A_s)$	$3.033^{+0.047}_{-0.049}$	$\langle d^2 \rangle^{1/2}$	$2.440^{+0.079}_{-0.078}$	$D_M(0.51)$	$2005^{+88}_{-85}$
$n_s$	$0.962^{+0.021}_{-0.020}$	$z_{\text{re}}$	$7.4^{+2.1}_{-2.4}$	$H(0.61)$	$94.5^{+3.3}_{-3.1}$
$y_{\text{cal}}$	$1.0004^{+0.0065}_{-0.0062}$	$10^9 A_s$	$2.08^{+0.10}_{-0.099}$	$D_M(0.61)$	$2333^{+99}_{-96}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.042}_{-0.041}$	$H(2.33)$	$234.9^{+6.0}_{-5.8}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1230^{+40}_{-40}$	$D_M(2.33)$	$5813^{+190}_{-190}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5714^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.457^{+0.022}_{-0.021}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2533^{+34}_{-36}$	$\sigma_8(0.15)$	$0.742^{+0.025}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$< 8.88$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.474^{+0.018}_{-0.018}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.7^{+4.8}_{-4.6}$	$\sigma_8(0.38)$	$0.657^{+0.023}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.962^{+0.021}_{-0.020}$	$f\sigma_8(0.51)$	$0.472^{+0.017}_{-0.017}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2439^{+0.0059}_{-0.0059}$	$\sigma_8(0.51)$	$0.615^{+0.022}_{-0.021}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2453^{+0.0059}_{-0.0059}$	$f\sigma_8(0.61)$	$0.466^{+0.016}_{-0.016}$
$A_{100}^{\text{dust}}$	$1.00^{+0.50}_{-0.50}$	$10^5 \text{D/H}$	$2.58^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	$0.585^{+0.021}_{-0.021}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.46}$	$\text{Age/Gyr}$	$13.91^{+0.45}_{-0.45}$	$f\sigma_8(2.33)$	$0.295^{+0.011}_{-0.011}$
$A_{217}^{\text{dust}}$	$0.98^{+0.28}_{-0.27}$	$z_*$	$1089.89^{+0.83}_{-0.84}$	$\sigma_8(2.33)$	$0.304^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.41}$	$r_*$	$145.5^{+4.1}_{-4.0}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.0413^{+0.0013}_{-0.0012}$	$f_{2000}^{217}$	$106.4^{+5.2}_{-5.4}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0043}$	$D_M(z_*)/\text{Gpc}$	$13.98^{+0.38}_{-0.37}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.3^{+1.8}_{-1.8}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.3)$
$c_{EE}$	$0.991^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$148.3^{+4.2}_{-4.1}$	$\chi_{\text{lowl}}^2$	$23.7 (\nu: 0.9)$
$H_0$	$66.7^{+3.5}_{-3.3}$	$k_D$	$0.1399^{+0.0031}_{-0.0030}$	$\chi_{\text{CamSpec}}^2$	$11514.2 (\nu: 17.0)$
$\Omega_\Lambda$	$0.682^{+0.027}_{-0.027}$	$100\theta_D$	$0.16068^{+0.00099}_{-0.00099}$	$\chi_{\text{Aver15}}^2$	$0.35 (\nu: 0.1)$
$\Omega_m$	$0.318^{+0.027}_{-0.027}$	$z_{\text{eq}}$	$3404^{+95}_{-97}$	$\chi_{\text{Cooke17}}^2$	$0.35 (\nu: 0.1)$
$\Omega_m h^2$	$0.1411^{+0.0070}_{-0.0067}$	$k_{\text{eq}}$	$0.01032^{+0.00029}_{-0.00028}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 5.9)$
$\Omega_m h^3$	$0.0941^{+0.0087}_{-0.0080}$	$100\theta_{\text{eq}}$	$0.813^{+0.019}_{-0.017}$	$\chi_{\text{CMB}}^2$	$11934.7 (\nu: 17.3)$
$\sigma_8$	$0.804^{+0.027}_{-0.026}$	$100\theta_{s,\text{eq}}$	$0.4491^{+0.0095}_{-0.0089}$	$\chi_{\text{Abund}}^2$	$0.69 (\nu: 0.3)$

$$\bar{\chi}_{\text{eff}}^2 = 11943.28; R - 1 = 0.01315$$



## 6.10 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221^{+0.00059}_{-0.00056}$	$\sigma_8$	$0.804^{+0.030}_{-0.028}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.020}_{-0.019}$
$\Omega_{\mathrm{c}}h^2$	$0.1179^{+0.0086}_{-0.0084}$	$S_8$	$0.827^{+0.043}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.449^{+0.010}_{-0.0097}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0013}_{-0.0012}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.024}_{-0.023}$	$H(0.15)$	$71.9^{+4.2}_{-4.2}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.15)$	$651^{+42}_{-38}$
$N_{\mathrm{eff}}$	$2.93^{+0.58}_{-0.56}$	$\sigma_8/h^{0.5}$	$0.985^{+0.030}_{-0.029}$	$H(0.38)$	$82.1^{+4.2}_{-4.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.036^{+0.048}_{-0.038}$	$r_{\mathrm{drag}}h$	$98.9^{+3.7}_{-3.4}$	$D_{\mathrm{M}}(0.38)$	$1550^{+93}_{-85}$
$n_{\mathrm{s}}$	$0.962^{+0.024}_{-0.024}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.080}_{-0.077}$	$H(0.51)$	$88.8^{+4.2}_{-4.2}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0065}_{-0.0063}$	$z_{\mathrm{re}}$	$< 9.36$	$D_{\mathrm{M}}(0.51)$	$2007^{+120}_{-110}$
$A_{100}^{\mathrm{PS}}$	$236^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.08^{+0.10}_{-0.079}$	$H(0.61)$	$94.4^{+4.2}_{-4.2}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869^{+0.049}_{-0.052}$	$D_{\mathrm{M}}(0.61)$	$2335^{+130}_{-120}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{40}$	$1231^{+42}_{-42}$	$H(2.33)$	$234.6^{+7.7}_{-7.7}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{220}$	$5715^{+100}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5819^{+260}_{-240}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.88$	$D_{810}$	$2533^{+36}_{-36}$	$f\sigma_8(0.15)$	$0.457^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.15)$	$0.743^{+0.029}_{-0.027}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$230.9^{+5.5}_{-5.4}$	$f\sigma_8(0.38)$	$0.474^{+0.018}_{-0.018}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.962^{+0.024}_{-0.024}$	$\sigma_8(0.38)$	$0.658^{+0.027}_{-0.025}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.2437^{+0.0078}_{-0.0081}$	$f\sigma_8(0.51)$	$0.472^{+0.017}_{-0.017}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450^{+0.0078}_{-0.0081}$	$\sigma_8(0.51)$	$0.615^{+0.026}_{-0.024}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.47}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.15}_{-0.14}$	$f\sigma_8(0.61)$	$0.467^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.28}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.93^{+0.62}_{-0.58}$	$\sigma_8(0.61)$	$0.585^{+0.025}_{-0.023}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.41}$	$z_*$	$1089.8^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	$0.295^{+0.013}_{-0.012}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$145.7^{+5.4}_{-5.2}$	$\sigma_8(2.33)$	$0.304^{+0.014}_{-0.013}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$100\theta_*$	$1.0414^{+0.0016}_{-0.0015}$	$f_{2000}^{143}$	$29^{+9}_{-9}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.99^{+0.50}_{-0.49}$	$f_{2000}^{217}$	$106.2^{+5.9}_{-5.5}$
$c_{EE}$	$0.991^{+0.015}_{-0.014}$	$z_{\mathrm{drag}}$	$1059.3^{+2.2}_{-2.2}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$H_0$	$66.6^{+4.3}_{-4.3}$	$r_{\mathrm{drag}}$	$148.5^{+5.7}_{-5.5}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.3)$
$\Omega_{\Lambda}$	$0.682^{+0.028}_{-0.030}$	$k_{\mathrm{D}}$	$0.1398^{+0.0039}_{-0.0039}$	$\chi_{\mathrm{lowl}}^2$	$23.7 (\nu: 1.1)$
$\Omega_{\mathrm{m}}$	$0.318^{+0.030}_{-0.028}$	$100\theta_{\mathrm{D}}$	$0.1606^{+0.0014}_{-0.0013}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4 (\nu: 17.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1408^{+0.0090}_{-0.0087}$	$z_{\mathrm{eq}}$	$3403^{+100}_{-100}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 5.8)$
$\Omega_{\mathrm{m}}h^3$	$0.094^{+0.012}_{-0.011}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00032}_{-0.00032}$	$\chi_{\mathrm{CMB}}^2$	$11934.9 (\nu: 17.1)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11942.78; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.60; R - 1 = 0.01065$$



# 6.11 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218^{+0.00059}_{-0.00057}$	$S_8$	$0.828^{+0.032}_{-0.033}$	$H(0.15)$	$71.6^{+4.2}_{-4.1}$
$\Omega_{\mathrm{c}} h^2$	$0.1175^{+0.0085}_{-0.0081}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.454^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$653^{+41}_{-39}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0013}_{-0.0011}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.019}_{-0.019}$	$H(0.38)$	$81.8^{+4.2}_{-4.0}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.987^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1556^{+91}_{-85}$
$N_{\mathrm{eff}}$	$2.89^{+0.57}_{-0.54}$	$r_{\mathrm{drag}} h$	$98.7^{+3.3}_{-3.1}$	$H(0.51)$	$88.5^{+4.2}_{-4.0}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.035^{+0.045}_{-0.038}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.064}_{-0.064}$	$D_{\mathrm{M}}(0.51)$	$2015^{+110}_{-110}$
$n_{\mathrm{s}}$	$0.960^{+0.024}_{-0.023}$	$z_{\mathrm{re}}$	$< 9.29$	$H(0.61)$	$94.1^{+4.3}_{-4.0}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0066}_{-0.0062}$	$10^9 A_{\mathrm{s}}$	$2.081^{+0.095}_{-0.078}$	$D_{\mathrm{M}}(0.61)$	$2344^{+130}_{-120}$
$A_{100}^{\mathrm{PS}}$	$236^{+60}_{-70}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.868^{+0.050}_{-0.051}$	$H(2.33)$	$234.2^{+7.6}_{-7.6}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{40}$	$1234^{+40}_{-38}$	$D_{\mathrm{M}}(2.33)$	$5836^{+250}_{-240}$
$A_{217}^{\mathrm{PS}}$	$104^{+30}_{-30}$	$D_{220}$	$5718^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$38^{+20}_{-20}$	$D_{810}$	$2533^{+35}_{-36}$	$\sigma_8(0.15)$	$0.742^{+0.027}_{-0.025}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$D_{1420}$	$817^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.356$	$D_{2000}$	$231.2^{+5.3}_{-5.3}$	$\sigma_8(0.38)$	$0.657^{+0.026}_{-0.024}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.960^{+0.024}_{-0.023}$	$f\sigma_8(0.51)$	$0.472^{+0.015}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2432^{+0.0077}_{-0.0078}$	$\sigma_8(0.51)$	$0.614^{+0.025}_{-0.024}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2445^{+0.0077}_{-0.0078}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.51}_{-0.50}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.57^{+0.14}_{-0.14}$	$\sigma_8(0.61)$	$0.584^{+0.024}_{-0.023}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.45}_{-0.46}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.97^{+0.60}_{-0.58}$	$f\sigma_8(2.33)$	$0.294^{+0.013}_{-0.012}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.79^{+0.97}_{-0.96}$	$\sigma_8(2.33)$	$0.303^{+0.014}_{-0.013}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.41}$	$r_*$	$146.1^{+5.4}_{-5.1}$	$f_{2000}^{143}$	$28^{+9}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.0414^{+0.0016}_{-0.0014}$	$f_{2000}^{217}$	$106.1^{+5.8}_{-5.3}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0043}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.03^{+0.51}_{-0.48}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.2^{+2.2}_{-2.2}$	$\chi_{\mathrm{lensing}}^2$	$9.05 (\nu: 0.3)$
$c_{EE}$	$0.990^{+0.015}_{-0.014}$	$r_{\mathrm{drag}}$	$148.8^{+5.7}_{-5.4}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.2)$
$H_0$	$66.3^{+4.3}_{-4.1}$	$k_{\mathrm{D}}$	$0.1396^{+0.0039}_{-0.0039}$	$\chi_{\mathrm{lowl}}^2$	$24.0 (\nu: 1.1)$
$\Omega_{\Lambda}$	$0.681^{+0.027}_{-0.027}$	$100\theta_{\mathrm{D}}$	$0.1605^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.8 (\nu: 16.4)$
$\Omega_{\mathrm{m}}$	$0.319^{+0.027}_{-0.027}$	$z_{\mathrm{eq}}$	$3409^{+93}_{-95}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1403^{+0.0088}_{-0.0086}$	$k_{\mathrm{eq}}$	$0.01029^{+0.00030}_{-0.00029}$	$\chi_{\mathrm{CMB}}^2$	$11943.5 (\nu: 17.3)$
$\Omega_{\mathrm{m}} h^3$	$0.093^{+0.011}_{-0.010}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.019}_{-0.017}$		
$\sigma_8$	$0.803^{+0.028}_{-0.026}$	$100\theta_{\mathrm{s,eq}}$	$0.4486^{+0.0093}_{-0.0087}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11951.41; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.16; R - 1 = 0.01353$$



## 6.12 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Cooke17\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02220^{+0.00052}_{-0.00051}$	$S_8$	$0.828^{+0.042}_{-0.040}$	$H(0.15)$	$72.0^{+3.3}_{-3.2}$
$\Omega_c h^2$	$0.1183^{+0.0068}_{-0.0065}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.023}_{-0.022}$	$D_M(0.15)$	$650^{+32}_{-31}$
$100\theta_{MC}$	$1.0410^{+0.0011}_{-0.00098}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.021}_{-0.021}$	$H(0.38)$	$82.2^{+3.3}_{-3.1}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.986^{+0.030}_{-0.029}$	$D_M(0.38)$	$1548^{+70}_{-68}$
$N_{\text{eff}}$	$2.95^{+0.43}_{-0.41}$	$r_{\text{drag}} h$	$98.9^{+3.4}_{-3.2}$	$H(0.51)$	$88.9^{+3.3}_{-3.1}$
$\ln(10^{10} A_s)$	$3.037^{+0.045}_{-0.035}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.077}_{-0.075}$	$D_M(0.51)$	$2004^{+87}_{-84}$
$n_s$	$0.962^{+0.020}_{-0.020}$	$z_{\text{re}}$	$< 9.31$	$H(0.61)$	$94.5^{+3.3}_{-3.1}$
$y_{\text{cal}}$	$1.0004^{+0.0065}_{-0.0061}$	$10^9 A_s$	$2.084^{+0.095}_{-0.071}$	$D_M(0.61)$	$2331^{+98}_{-95}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.042}_{-0.041}$	$H(2.33)$	$235.0^{+6.1}_{-5.8}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1230^{+40}_{-39}$	$D_M(2.33)$	$5810^{+190}_{-190}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5713^{+100}_{-99}$	$f\sigma_8(0.15)$	$0.458^{+0.021}_{-0.021}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2533^{+34}_{-36}$	$\sigma_8(0.15)$	$0.744^{+0.024}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$< 8.83$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.7^{+4.8}_{-4.6}$	$\sigma_8(0.38)$	$0.659^{+0.022}_{-0.020}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.962^{+0.020}_{-0.020}$	$f\sigma_8(0.51)$	$0.473^{+0.016}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2440^{+0.0058}_{-0.0059}$	$\sigma_8(0.51)$	$0.616^{+0.021}_{-0.019}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2453^{+0.0058}_{-0.0059}$	$f\sigma_8(0.61)$	$0.467^{+0.015}_{-0.015}$
$A_{100}^{\text{dust}}$	$1.00^{+0.51}_{-0.50}$	$10^5 \text{D/H}$	$2.58^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	$0.586^{+0.020}_{-0.018}$
$A_{143}^{\text{dust}}$	$0.95^{+0.44}_{-0.47}$	$\text{Age/Gyr}$	$13.91^{+0.45}_{-0.44}$	$f\sigma_8(2.33)$	$0.295^{+0.011}_{-0.0096}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.89^{+0.83}_{-0.84}$	$\sigma_8(2.33)$	$0.304^{+0.012}_{-0.010}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.41}$	$r_*$	$145.5^{+4.0}_{-4.0}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.0413^{+0.0013}_{-0.0012}$	$f_{2000}^{217}$	$106.4^{+5.3}_{-5.4}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0043}$	$D_M(z_*)/\text{Gpc}$	$13.97^{+0.37}_{-0.37}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$z_{\text{drag}}$	$1059.4^{+1.8}_{-1.7}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.3)$
$c_{EE}$	$0.991^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$148.2^{+4.2}_{-4.1}$	$\chi_{\text{lowl}}^2$	$23.6 (\nu: 0.9)$
$H_0$	$66.7^{+3.5}_{-3.3}$	$k_D$	$0.1399^{+0.0030}_{-0.0030}$	$\chi_{\text{CamSpec}}^2$	$11514.1 (\nu: 17.0)$
$\Omega_\Lambda$	$0.683^{+0.027}_{-0.027}$	$100\theta_D$	$0.1607^{+0.0010}_{-0.00098}$	$\chi_{\text{Aver15}}^2$	$0.35 (\nu: 0.1)$
$\Omega_m$	$0.317^{+0.027}_{-0.027}$	$z_{\text{eq}}$	$3402^{+95}_{-96}$	$\chi_{\text{Cooke17}}^2$	$0.35 (\nu: 0.1)$
$\Omega_m h^2$	$0.1412^{+0.0070}_{-0.0067}$	$k_{\text{eq}}$	$0.01032^{+0.00029}_{-0.00028}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^3$	$0.0942^{+0.0087}_{-0.0079}$	$100\theta_{\text{eq}}$	$0.813^{+0.019}_{-0.018}$	$\chi_{\text{CMB}}^2$	$11934.5 (\nu: 16.9)$
$\sigma_8$	$0.805^{+0.026}_{-0.024}$	$100\theta_{s,\text{eq}}$	$0.4493^{+0.0094}_{-0.0090}$	$\chi_{\text{Abund}}^2$	$0.70 (\nu: 0.3)$

$$\bar{\chi}_{\text{eff}}^2 = 11943.02; R - 1 = 0.01235$$



### 6.13 base\_nnu\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02232	$0.02231^{+0.00052}_{-0.00048}$	$\sigma_8 \Omega_m^{0.5}$	0.4481	$0.448^{+0.019}_{-0.019}$	$H(0.38)$	82.89	$82.8^{+3.8}_{-3.3}$
$\Omega_c h^2$	0.1186	$0.1182^{+0.0093}_{-0.0084}$	$\sigma_8 \Omega_m^{0.25}$	0.6006	$0.600^{+0.022}_{-0.022}$	$D_M(0.38)$	1531	$1534^{+71}_{-73}$
$100\theta_{MC}$	1.04099	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	0.9791	$0.979^{+0.027}_{-0.028}$	$H(0.51)$	89.59	$89.4^{+3.9}_{-3.5}$
$\tau$	0.0533	$0.054^{+0.022}_{-0.020}$	$r_{drag} h$	99.76	$99.8^{+2.5}_{-2.3}$	$D_M(0.51)$	1983	$1987^{+90}_{-92}$
$N_{eff}$	3.02	$3.00^{+0.58}_{-0.51}$	$\langle d^2 \rangle^{1/2}$	2.423	$2.423^{+0.065}_{-0.068}$	$H(0.61)$	95.18	$95.0^{+4.1}_{-3.6}$
$\ln(10^{10} A_s)$	3.0368	$3.036^{+0.048}_{-0.048}$	$z_{re}$	7.57	$7.6^{+2.1}_{-2.2}$	$D_M(0.61)$	2308	$2312^{+100}_{-110}$
$n_s$	0.9667	$0.966^{+0.020}_{-0.019}$	$10^9 A_s$	2.084	$2.08^{+0.10}_{-0.098}$	$H(2.33)$	235.5	$235.1^{+8.2}_{-7.6}$
$y_{cal}$	1.0002	$1.0005^{+0.0063}_{-0.0066}$	$10^9 A_s e^{-2\tau}$	1.873	$1.871^{+0.050}_{-0.050}$	$D_M(2.33)$	5772	$5782^{+220}_{-230}$
$A_{100}^{PS}$	234	$238^{+60}_{-60}$	$D_{40}$	1222.9	$1224^{+36}_{-37}$	$f\sigma_8(0.15)$	0.4528	$0.452^{+0.018}_{-0.018}$
$A_{143}^{PS}$	45.4	$38^{+20}_{-20}$	$D_{220}$	5718	$5720^{+98}_{-100}$	$\sigma_8(0.15)$	0.7439	$0.743^{+0.029}_{-0.028}$
$A_{217}^{PS}$	101.0	$102^{+30}_{-40}$	$D_{810}$	2532.9	$2534^{+35}_{-36}$	$f\sigma_8(0.38)$	0.4714	$0.471^{+0.018}_{-0.017}$
$A_{217}^{CIB}$	43.3	$39^{+20}_{-20}$	$D_{1420}$	815.8	$816^{+13}_{-13}$	$\sigma_8(0.38)$	0.6596	$0.659^{+0.027}_{-0.025}$
$A_{143}^{tSZ}$	5.94	$< 8.91$	$D_{2000}$	230.4	$230.7^{+5.4}_{-5.2}$	$f\sigma_8(0.51)$	0.4701	$0.470^{+0.017}_{-0.017}$
$r_{143 \times 217}^{PS}$	0.641	$0.66^{+0.32}_{-0.34}$	$n_{s,0.002}$	0.9667	$0.966^{+0.020}_{-0.019}$	$\sigma_8(0.51)$	0.6173	$0.617^{+0.026}_{-0.024}$
$r_{143 \times 217}^{CIB}$	0.90	—	$Y_P$	0.2451	$0.2447^{+0.0076}_{-0.0072}$	$f\sigma_8(0.61)$	0.4653	$0.465^{+0.017}_{-0.017}$
$\xi^{tSZ \times CIB}$	0.55	—	$Y_P^{BBN}$	0.2464	$0.2460^{+0.0077}_{-0.0073}$	$\sigma_8(0.61)$	0.5874	$0.587^{+0.025}_{-0.023}$
$A^{kSZ}$	1.3	—	$10^5 D/H$	2.587	$2.58^{+0.15}_{-0.14}$	$f\sigma_8(2.33)$	0.2962	$0.296^{+0.013}_{-0.012}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.49}$	Age/Gyr	13.82	$13.84^{+0.53}_{-0.55}$	$\sigma_8(2.33)$	0.3055	$0.305^{+0.014}_{-0.013}$
$A_{143}^{dust}$	0.998	$0.96^{+0.47}_{-0.44}$	$z_*$	1089.83	$1089.8^{+1.1}_{-0.99}$	$f_{2000}^{143}$	30.1	$29^{+9}_{-8}$
$A_{217}^{dust}$	0.981	$0.98^{+0.27}_{-0.26}$	$r_*$	145.0	$145.2^{+5.2}_{-5.4}$	$f_{2000}^{217}$	106.6	$106.5^{+5.7}_{-5.8}$
$A_{143 \times 217}^{dust}$	0.974	$1.02^{+0.42}_{-0.41}$	$100\theta_*$	1.04120	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+6}_{-6}$
$c_{100}$	0.99766	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.922	$13.95^{+0.48}_{-0.50}$	$\chi_{simall}^2$	395.88	$396.9 (\nu: 1.4)$
$c_{217}$	1.00145	$1.0011^{+0.0041}_{-0.0041}$	$z_{drag}$	1059.70	$1059.6^{+2.1}_{-1.9}$	$\chi_{lowl}^2$	22.86	$23.0 (\nu: 0.6)$
$c_{TE}$	0.9966	$0.997^{+0.014}_{-0.013}$	$r_{drag}$	147.6	$147.9^{+5.4}_{-5.6}$	$\chi_{CamSpec}^2$	11500.0	$11515.3 (\nu: 17.7)$
$c_{EE}$	0.9922	$0.992^{+0.014}_{-0.014}$	$k_D$	0.14034	$0.1402^{+0.0041}_{-0.0037}$	$\chi_{6DF}^2$	0.022	$0.056 (\nu: 0.0)$
$H_0$	67.57	$67.5^{+3.7}_{-3.2}$	$100\theta_D$	0.16079	$0.1607^{+0.0013}_{-0.0012}$	$\chi_{MGS}^2$	1.28	$1.35 (\nu: 0.1)$
$\Omega_\Lambda$	0.6900	$0.690^{+0.020}_{-0.019}$	$z_{eq}$	3377	$3378^{+69}_{-73}$	$\chi_{DR12BAO}^2$	4.22	$4.7 (\nu: 1.1)$
$\Omega_m$	0.3100	$0.310^{+0.019}_{-0.020}$	$k_{eq}$	0.010292	$0.01028^{+0.00033}_{-0.00032}$	$\chi_{prior}^2$	2.3	$7.8 (\nu: 5.8)$
$\Omega_m h^2$	0.1415	$0.1411^{+0.0096}_{-0.0087}$	$100\theta_{eq}$	0.8176	$0.818^{+0.014}_{-0.013}$	$\chi_{BAO}^2$	5.52	$6.1 (\nu: 0.7)$
$\Omega_m h^3$	0.0956	$0.0952^{+0.012}_{-0.0098}$	$100\theta_{s,eq}$	0.4517	$0.4517^{+0.0072}_{-0.0065}$	$\chi_{CMB}^2$	11918.7	$11935.2 (\nu: 17.3)$
$\sigma_8$	0.8049	$0.804^{+0.031}_{-0.030}$	$H(0.15)$	72.83	$72.7^{+3.7}_{-3.3}$			
$S_8$	0.8182	$0.817^{+0.035}_{-0.035}$	$D_M(0.15)$	641.7	$643^{+31}_{-32}$			

Best-fit  $\chi_{eff}^2 = 11926.54$ ;  $\bar{\chi}_{eff}^2 = 11949.07$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.79$ ;  $R - 1 = 0.00571$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.22 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3\_2\_29: 22.86 CamSpec like\_10.7HM\_1400\_unified: 11499.97



## 6.14 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_JLA

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02230^{+0.00054}_{-0.00050}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.016}_{-0.015}$	$H(0.38)$	$82.7^{+3.5}_{-3.2}$
$\Omega_{\text{c}} h^2$	$0.1181^{+0.0089}_{-0.0076}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.018}_{-0.018}$	$D_{\text{M}}(0.38)$	$1536^{+67}_{-70}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.022}$	$H(0.51)$	$89.3^{+3.7}_{-3.3}$
$\tau$	$0.055^{+0.019}_{-0.019}$	$r_{\text{drag}} h$	$99.6^{+2.2}_{-2.3}$	$D_{\text{M}}(0.51)$	$1990^{+84}_{-87}$
$N_{\text{eff}}$	$2.99^{+0.54}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.055}_{-0.055}$	$H(0.61)$	$94.9^{+3.8}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	$3.041^{+0.041}_{-0.042}$	$z_{\text{re}}$	$7.7^{+1.9}_{-2.0}$	$D_{\text{M}}(0.61)$	$2316^{+95}_{-99}$
$n_{\text{s}}$	$0.965^{+0.018}_{-0.018}$	$10^9 A_{\text{s}}$	$2.092^{+0.088}_{-0.087}$	$H(2.33)$	$235.1^{+7.8}_{-6.9}$
$y_{\text{cal}}$	$1.0008^{+0.0063}_{-0.0061}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873^{+0.049}_{-0.045}$	$D_{\text{M}}(2.33)$	$5788^{+210}_{-220}$
$A_{100}^{\text{PS}}$	$238^{+70}_{-60}$	$D_{40}$	$1227^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5726^{+96}_{-94}$	$\sigma_8(0.15)$	$0.745^{+0.025}_{-0.025}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2536^{+34}_{-33}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+14}_{-13}$	$\sigma_8(0.38)$	$0.660^{+0.024}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$< 8.66$	$D_{2000}$	$231.0^{+5.3}_{-5.5}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.347$	$n_{\text{s},0.002}$	$0.965^{+0.018}_{-0.018}$	$\sigma_8(0.51)$	$0.618^{+0.023}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2446^{+0.0072}_{-0.0069}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2459^{+0.0072}_{-0.0070}$	$\sigma_8(0.61)$	$0.588^{+0.022}_{-0.021}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.58^{+0.14}_{-0.13}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.49}$	$\text{Age}/\text{Gyr}$	$13.86^{+0.50}_{-0.52}$	$\sigma_8(2.33)$	$0.306^{+0.012}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.42}$	$z_*$	$1089.8^{+1.0}_{-0.90}$	$f_{2000}^{143}$	$29^{+9}_{-9}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.27}$	$r_*$	$145.3^{+4.9}_{-5.1}$	$f_{2000}^{217}$	$106.4^{+5.7}_{-5.3}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.39}_{-0.41}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-7}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.95^{+0.45}_{-0.47}$	$\chi_{\text{lensing}}^2$	$9.29 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0042}$	$z_{\text{drag}}$	$1059.6^{+1.9}_{-1.8}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.4)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$148.0^{+5.1}_{-5.3}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 0.6)$
$c_{EE}$	$0.992^{+0.014}_{-0.014}$	$k_{\text{D}}$	$0.1401^{+0.0038}_{-0.0035}$	$\chi_{\text{CamSpec}}^2$	$11514.6 (\nu: 17.4)$
$H_0$	$67.3^{+3.5}_{-3.1}$	$100\theta_{\text{D}}$	$0.1607^{+0.0013}_{-0.0012}$	$\chi_{\text{JLA}}^2$	$706.78 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.019}$	$z_{\text{eq}}$	$3382^{+70}_{-64}$	$\chi_{6\text{DF}}^2$	$0.061 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.311^{+0.019}_{-0.017}$	$k_{\text{eq}}$	$0.01028^{+0.00031}_{-0.00028}$	$\chi_{\text{MGS}}^2$	$1.27 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1411^{+0.0093}_{-0.0079}$	$100\theta_{\text{eq}}$	$0.817^{+0.012}_{-0.013}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	$0.0950^{+0.011}_{-0.0094}$	$100\theta_{\text{s,eq}}$	$0.4513^{+0.0061}_{-0.0065}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.5)$
$\sigma_8$	$0.806^{+0.027}_{-0.027}$	$H(0.15)$	$72.6^{+3.5}_{-3.1}$	$\chi_{\text{CMB}}^2$	$11944.1 (\nu: 17.9)$
$S_8$	$0.821^{+0.029}_{-0.028}$	$D_{\text{M}}(0.15)$	$644^{+30}_{-31}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$

$$\bar{\chi}_{\text{eff}}^2 = 12664.75; R - 1 = 0.04059$$



# 6.15 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022296	$0.02232^{+0.00049}_{-0.00048}$	$\sigma_8 \Omega_m^{0.5}$	0.4488	$0.449^{+0.015}_{-0.015}$	$H(0.38)$	82.61	$82.8^{+3.6}_{-3.3}$
$\Omega_c h^2$	0.1179	$0.1182^{+0.0088}_{-0.0081}$	$\sigma_8 \Omega_m^{0.25}$	0.6009	$0.602^{+0.019}_{-0.019}$	$D_M(0.38)$	1536	$1534^{+69}_{-68}$
$100\theta_{MC}$	1.04105	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	0.9809	$0.982^{+0.022}_{-0.022}$	$H(0.51)$	89.29	$89.4^{+3.7}_{-3.4}$
$\tau$	0.0546	$0.056^{+0.020}_{-0.018}$	$r_{drag}h$	99.64	$99.7^{+2.1}_{-2.1}$	$D_M(0.51)$	1990	$1987^{+86}_{-87}$
$N_{eff}$	2.98	$3.00^{+0.54}_{-0.50}$	$\langle d^2 \rangle^{1/2}$	2.429	$2.431^{+0.054}_{-0.054}$	$H(0.61)$	94.88	$95.0^{+3.8}_{-3.5}$
$\ln(10^{10} A_s)$	3.0388	$3.042^{+0.044}_{-0.041}$	$z_{re}$	7.69	$7.8^{+1.9}_{-1.9}$	$D_M(0.61)$	2316	$2312^{+98}_{-100}$
$n_s$	0.9657	$0.966^{+0.018}_{-0.018}$	$10^9 A_s$	2.088	$2.094^{+0.095}_{-0.085}$	$H(2.33)$	234.9	$235.2^{+7.7}_{-7.3}$
$y_{cal}$	1.0006	$1.0007^{+0.0062}_{-0.0066}$	$10^9 A_s e^{-2\tau}$	1.8721	$1.873^{+0.047}_{-0.046}$	$D_M(2.33)$	5789	$5782^{+210}_{-220}$
$A_{100}^{PS}$	231	$238^{+70}_{-60}$	$D_{40}$	1225.3	$1226^{+34}_{-33}$	$f\sigma_8(0.15)$	0.4534	$0.454^{+0.015}_{-0.015}$
$A_{143}^{PS}$	41.8	$38^{+20}_{-20}$	$D_{220}$	5723	$5726^{+94}_{-98}$	$\sigma_8(0.15)$	0.7436	$0.745^{+0.026}_{-0.025}$
$A_{217}^{PS}$	104.0	$103^{+30}_{-40}$	$D_{810}$	2535.5	$2535^{+34}_{-35}$	$f\sigma_8(0.38)$	0.4717	$0.472^{+0.015}_{-0.015}$
$A_{217}^{CIB}$	42.9	$39^{+20}_{-20}$	$D_{1420}$	817.3	$817^{+13}_{-13}$	$\sigma_8(0.38)$	0.6592	$0.661^{+0.024}_{-0.023}$
$A_{143}^{tSZ}$	6.57	$< 8.92$	$D_{2000}$	231.0	$230.9^{+5.3}_{-5.1}$	$f\sigma_8(0.51)$	0.4704	$0.471^{+0.015}_{-0.015}$
$r_{143 \times 217}^{PS}$	0.650	$> 0.339$	$n_{s,0.002}$	0.9657	$0.966^{+0.018}_{-0.018}$	$\sigma_8(0.51)$	0.6169	$0.618^{+0.023}_{-0.022}$
$r_{143 \times 217}^{CIB}$	0.80	—	$Y_P$	0.2445	$0.2447^{+0.0072}_{-0.0071}$	$f\sigma_8(0.61)$	0.4655	$0.466^{+0.014}_{-0.014}$
$\xi^{tSZ \times CIB}$	0.33	—	$Y_P^{BBN}$	0.2458	$0.2460^{+0.0072}_{-0.0071}$	$\sigma_8(0.61)$	0.5870	$0.588^{+0.022}_{-0.021}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.577	$2.58^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	0.2960	$0.297^{+0.012}_{-0.011}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	Age/Gyr	13.86	$13.84^{+0.50}_{-0.51}$	$\sigma_8(2.33)$	0.3052	$0.306^{+0.012}_{-0.012}$
$A_{143}^{dust}$	0.968	$0.95^{+0.46}_{-0.43}$	$z_*$	1089.77	$1089.8^{+1.0}_{-0.97}$	$f_{2000}^{143}$	29.1	$29^{+9}_{-8}$
$A_{217}^{dust}$	0.975	$0.98^{+0.27}_{-0.27}$	$r_*$	145.3	$145.2^{+5.0}_{-5.0}$	$f_{2000}^{217}$	106.3	$106.5^{+5.9}_{-5.7}$
$A_{143 \times 217}^{dust}$	1.002	$1.02^{+0.41}_{-0.40}$	$100\theta_*$	1.04129	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	31.5	$32^{+6}_{-6}$
$c_{100}$	0.99776	$0.9976^{+0.0028}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.959	$13.94^{+0.46}_{-0.46}$	$\chi^2_{lensing}$	8.94	$9.32 (\nu: 0.4)$
$c_{217}$	1.00120	$1.0011^{+0.0041}_{-0.0040}$	$z_{drag}$	1059.55	$1059.6^{+1.9}_{-1.8}$	$\chi^2_{small}$	396.09	$397.1 (\nu: 1.7)$
$c_{TE}$	0.9964	$0.996^{+0.014}_{-0.013}$	$r_{drag}$	148.1	$147.9^{+5.2}_{-5.2}$	$\chi^2_{lowl}$	23.00	$23.1 (\nu: 0.6)$
$c_{EE}$	0.9918	$0.992^{+0.013}_{-0.014}$	$k_D$	0.14005	$0.1402^{+0.0038}_{-0.0036}$	$\chi^2_{CamSpec}$	11499.7	$11514.7 (\nu: 16.7)$
$H_0$	67.30	$67.5^{+3.3}_{-3.1}$	$100\theta_D$	0.16070	$0.1607^{+0.0012}_{-0.0012}$	$\chi^2_{JLA}$	1035.03	$1035.09 (\nu: 0.1)$
$\Omega_\Lambda$	0.6890	$0.690^{+0.017}_{-0.018}$	$z_{eq}$	3381	$3379^{+63}_{-64}$	$\chi^2_{6DF}$	0.030	$0.053 (\nu: 0.0)$
$\Omega_m$	0.3110	$0.310^{+0.018}_{-0.017}$	$k_{eq}$	0.010274	$0.01028^{+0.00031}_{-0.00030}$	$\chi^2_{MGS}$	1.22	$1.32 (\nu: 0.1)$
$\Omega_m h^2$	0.1409	$0.1412^{+0.0091}_{-0.0084}$	$100\theta_{eq}$	0.8170	$0.817^{+0.012}_{-0.012}$	$\chi^2_{DR12BAO}$	4.39	$4.7 (\nu: 1.0)$
$\Omega_m h^3$	0.0948	$0.0953^{+0.011}_{-0.0094}$	$100\theta_{s,eq}$	0.4514	$0.4516^{+0.0062}_{-0.0059}$	$\chi^2_{prior}$	2.0	$7.7 (\nu: 5.8)$
$\sigma_8$	0.8047	$0.806^{+0.028}_{-0.027}$	$H(0.15)$	72.55	$72.7^{+3.4}_{-3.2}$	$\chi^2_{CMB}$	11927.7	$11944.3 (\nu: 17.6)$
$S_8$	0.8194	$0.820^{+0.028}_{-0.028}$	$D_M(0.15)$	644.2	$643^{+30}_{-30}$	$\chi^2_{BAO}$	5.64	$6.1 (\nu: 0.6)$

Best-fit  $\chi^2_{eff} = 12970.39$ ;  $\Delta\chi^2_{eff} = -0.10$ ;  $\bar{\chi}^2_{eff} = 12993.15$ ;  $\Delta\bar{\chi}^2_{eff} = 0.76$ ;  $R - 1 = 0.01037$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.39 ( $\Delta$  0.16) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p-teb\_consext8: 8.94 ( $\Delta$  -0.03) simall\_100x143\_offlike5\_EE\_Aplanck 396.09 ( $\Delta$  0.04) commander\_dx12\_v3\_2.29: 23.00 ( $\Delta$  0.23) CamSpec like\_10.7HM\_1400\_unified: 11499.66 ( $\Delta$  -0.52) SN - JLA Pantheon18: 1035.03 ( $\Delta$  0.05)



## 6.16 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02230^{+0.00050}_{-0.00049}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.016}_{-0.016}$	$H(0.38)$	$82.6^{+3.6}_{-3.3}$
$\Omega_c h^2$	$0.1180^{+0.0089}_{-0.0081}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.019}_{-0.019}$	$D_M(0.38)$	$1537^{+69}_{-70}$
$100\theta_{MC}$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.982^{+0.021}_{-0.022}$	$H(0.51)$	$89.3^{+3.7}_{-3.4}$
$\tau$	$0.055^{+0.020}_{-0.018}$	$r_{\text{drag}} h$	$99.6^{+2.3}_{-2.2}$	$D_M(0.51)$	$1991^{+88}_{-88}$
$N_{\text{eff}}$	$2.98^{+0.55}_{-0.50}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.054}_{-0.055}$	$H(0.61)$	$94.9^{+3.8}_{-3.5}$
$\ln(10^{10} A_s)$	$3.040^{+0.044}_{-0.042}$	$z_{\text{re}}$	$7.8^{+1.9}_{-2.0}$	$D_M(0.61)$	$2317^{+100}_{-100}$
$n_s$	$0.965^{+0.019}_{-0.019}$	$10^9 A_s$	$2.092^{+0.094}_{-0.086}$	$H(2.33)$	$235.0^{+7.8}_{-7.3}$
$y_{\text{cal}}$	$1.0007^{+0.0062}_{-0.0066}$	$10^9 A_s e^{-2\tau}$	$1.872^{+0.047}_{-0.046}$	$D_M(2.33)$	$5791^{+220}_{-220}$
$A_{100}^{\text{PS}}$	$238^{+70}_{-60}$	$D_{40}$	$1227^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5725^{+95}_{-97}$	$\sigma_8(0.15)$	$0.744^{+0.026}_{-0.025}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.015}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.660^{+0.024}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$< 8.88$	$D_{2000}$	$230.9^{+5.3}_{-5.1}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.340$	$n_{s,0.002}$	$0.965^{+0.019}_{-0.019}$	$\sigma_8(0.51)$	$0.617^{+0.023}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2445^{+0.0073}_{-0.0070}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2458^{+0.0073}_{-0.0070}$	$\sigma_8(0.61)$	$0.588^{+0.023}_{-0.021}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.58^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$\text{Age}/\text{Gyr}$	$13.86^{+0.51}_{-0.52}$	$\sigma_8(2.33)$	$0.305^{+0.013}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.95^{+0.47}_{-0.43}$	$z_*$	$1089.8^{+1.0}_{-0.97}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.4^{+5.1}_{-5.1}$	$f_{2000}^{217}$	$106.4^{+5.9}_{-5.7}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.40}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.46}_{-0.47}$	$\chi_{\text{lensing}}^2$	$9.27 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1059.6^{+1.9}_{-1.8}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$148.1^{+5.2}_{-5.3}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 0.6)$
$c_{EE}$	$0.992^{+0.013}_{-0.014}$	$k_{\text{D}}$	$0.1401^{+0.0038}_{-0.0036}$	$\chi_{\text{CamSpec}}^2$	$11514.5 (\nu: 16.7)$
$H_0$	$67.3^{+3.5}_{-3.2}$	$100\theta_{\text{D}}$	$0.1607^{+0.0012}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.065 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.688^{+0.018}_{-0.019}$	$z_{\text{eq}}$	$3383^{+65}_{-65}$	$\chi_{\text{MGS}}^2$	$1.25 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.312^{+0.019}_{-0.018}$	$k_{\text{eq}}$	$0.01028^{+0.00031}_{-0.00030}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.3)$
$\Omega_{\text{m}} h^2$	$0.1410^{+0.0091}_{-0.0085}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.7)$
$\Omega_{\text{m}} h^3$	$0.0949^{+0.011}_{-0.0095}$	$100\theta_{\text{s,eq}}$	$0.4512^{+0.0065}_{-0.0063}$	$\chi_{\text{CMB}}^2$	$11944.1 (\nu: 17.6)$
$\sigma_8$	$0.805^{+0.028}_{-0.026}$	$H(0.15)$	$72.5^{+3.5}_{-3.2}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.8)$
$S_8$	$0.821^{+0.029}_{-0.028}$	$D_M(0.15)$	$645^{+30}_{-31}$		

$$\bar{\chi}_{\text{eff}}^2 = 11958.08; \Delta\bar{\chi}_{\text{eff}}^2 = 0.68; R - 1 = 0.01000$$



## 6.17 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02229^{+0.00046}_{-0.00046}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.447^{+0.019}_{-0.019}$	$H(0.38)$	$82.6^{+2.9}_{-2.8}$
$\Omega_{\mathrm{c}} h^2$	$0.1177^{+0.0075}_{-0.0070}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.599^{+0.021}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1537^{+58}_{-58}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	$0.978^{+0.026}_{-0.028}$	$H(0.51)$	$89.2^{+3.0}_{-2.8}$
$\tau$	$0.054^{+0.021}_{-0.020}$	$r_{\mathrm{drag}} h$	$99.7^{+2.3}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1992^{+74}_{-73}$
$N_{\mathrm{eff}}$	$2.97^{+0.44}_{-0.41}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.063}_{-0.065}$	$H(0.61)$	$94.8^{+3.0}_{-2.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.035^{+0.047}_{-0.047}$	$z_{\mathrm{re}}$	$7.6^{+2.0}_{-2.2}$	$D_{\mathrm{M}}(0.61)$	$2318^{+84}_{-83}$
$n_{\mathrm{s}}$	$0.965^{+0.017}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.08^{+0.10}_{-0.095}$	$H(2.33)$	$234.7^{+6.4}_{-6.1}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0063}_{-0.0066}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.869^{+0.043}_{-0.044}$	$D_{\mathrm{M}}(2.33)$	$5794^{+180}_{-180}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-70}$	$D_{40}$	$1225^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.452^{+0.018}_{-0.018}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5720^{+98}_{-100}$	$\sigma_8(0.15)$	$0.742^{+0.026}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2533^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.470^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.658^{+0.023}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.88$	$D_{2000}$	$230.9^{+5.1}_{-4.8}$	$f\sigma_8(0.51)$	$0.469^{+0.016}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.336$	$n_{\mathrm{s},0.002}$	$0.965^{+0.017}_{-0.017}$	$\sigma_8(0.51)$	$0.615^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2443^{+0.0059}_{-0.0058}$	$f\sigma_8(0.61)$	$0.464^{+0.016}_{-0.016}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2456^{+0.0059}_{-0.0058}$	$\sigma_8(0.61)$	$0.586^{+0.021}_{-0.020}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.57^{+0.12}_{-0.12}$	$f\sigma_8(2.33)$	$0.295^{+0.011}_{-0.010}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.87^{+0.43}_{-0.42}$	$\sigma_8(2.33)$	$0.304^{+0.012}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.47}_{-0.43}$	$z_*$	$1089.74^{+0.92}_{-0.89}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.5^{+4.2}_{-4.1}$	$f_{2000}^{217}$	$106.3^{+5.4}_{-5.5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.40}$	$100\theta_*$	$1.0414^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.97^{+0.39}_{-0.38}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.5^{+1.7}_{-1.7}$	$\chi_{\mathrm{lowl}}^2$	$23.1 (\nu: 0.5)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\mathrm{drag}}$	$148.2^{+4.3}_{-4.3}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.9 (\nu: 16.9)$
$c_{EE}$	$0.992^{+0.013}_{-0.014}$	$k_{\mathrm{D}}$	$0.1399^{+0.0031}_{-0.0031}$	$\chi_{\mathrm{Aver15}}^2$	$0.36 (\nu: 0.1)$
$H_0$	$67.3^{+2.9}_{-2.7}$	$100\theta_{\mathrm{D}}$	$0.1607^{+0.0011}_{-0.0011}$	$\chi_{6\mathrm{DF}}^2$	$0.056 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.018}_{-0.019}$	$z_{\mathrm{eq}}$	$3379^{+66}_{-67}$	$\chi_{\mathrm{MGS}}^2$	$1.32 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.019}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01026^{+0.00029}_{-0.00028}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1406^{+0.0077}_{-0.0072}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.013}_{-0.013}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^3$	$0.0946^{+0.0087}_{-0.0079}$	$100\theta_{\mathrm{s,eq}}$	$0.4515^{+0.0066}_{-0.0064}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8$	$0.803^{+0.027}_{-0.027}$	$H(0.15)$	$72.5^{+2.9}_{-2.7}$	$\chi_{\mathrm{CMB}}^2$	$11934.9 (\nu: 16.8)$
$S_8$	$0.817^{+0.035}_{-0.035}$	$D_{\mathrm{M}}(0.15)$	$645^{+26}_{-26}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.20; R - 1 = 0.00729$$



6.18 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02229^{+0.00046}_{-0.00046}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.020}_{-0.021}$	$H(0.51)$	$89.4^{+2.8}_{-2.7}$
$\Omega_{\mathrm{c}} h^2$	$0.1181^{+0.0070}_{-0.0065}$	$\sigma_8/h^{0.5}$	$0.979^{+0.026}_{-0.028}$	$D_{\mathrm{M}}(0.51)$	$1988^{+72}_{-69}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0010}_{-0.0010}$	$r_{\mathrm{drag}} h$	$99.7^{+2.3}_{-2.3}$	$H(0.61)$	$95.0^{+2.9}_{-2.8}$
$\tau$	$0.053^{+0.021}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.063}_{-0.066}$	$D_{\mathrm{M}}(0.61)$	$2314^{+82}_{-79}$
$N_{\mathrm{eff}}$	$3.00^{+0.41}_{-0.39}$	$z_{\mathrm{re}}$	$7.6^{+2.0}_{-2.2}$	$H(2.33)$	$235.1^{+5.9}_{-5.8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.036^{+0.046}_{-0.047}$	$10^9 A_{\mathrm{s}}$	$2.082^{+0.099}_{-0.095}$	$D_{\mathrm{M}}(2.33)$	$5784^{+170}_{-170}$
$n_{\mathrm{s}}$	$0.966^{+0.016}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871^{+0.042}_{-0.042}$	$f\sigma_8(0.15)$	$0.452^{+0.018}_{-0.018}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0063}_{-0.0066}$	$D_{40}$	$1224^{+33}_{-34}$	$\sigma_8(0.15)$	$0.743^{+0.025}_{-0.024}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-70}$	$D_{220}$	$5719^{+99}_{-100}$	$f\sigma_8(0.38)$	$0.471^{+0.016}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{810}$	$2533^{+35}_{-35}$	$\sigma_8(0.38)$	$0.659^{+0.022}_{-0.022}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.470^{+0.015}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.6^{+5.0}_{-4.6}$	$\sigma_8(0.51)$	$0.616^{+0.021}_{-0.021}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$n_{\mathrm{s},0.002}$	$0.966^{+0.016}_{-0.016}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.34}_{-0.32}$	$Y_{\mathrm{P}}$	$0.2447^{+0.0054}_{-0.0054}$	$\sigma_8(0.61)$	$0.587^{+0.020}_{-0.020}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2460^{+0.0054}_{-0.0054}$	$f\sigma_8(2.33)$	$0.296^{+0.010}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.11}_{-0.11}$	$\sigma_8(2.33)$	$0.305^{+0.011}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.85^{+0.41}_{-0.40}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$z_*$	$1089.80^{+0.82}_{-0.82}$	$f_{2000}^{217}$	$106.5^{+5.3}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.43}$	$r_*$	$145.3^{+3.9}_{-3.8}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.0413^{+0.0013}_{-0.0012}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.3)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.40}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95^{+0.36}_{-0.36}$	$\chi_{\mathrm{lowl}}^2$	$23.00 (\nu: 0.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+1.6}_{-1.6}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.9 (\nu: 16.8)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$r_{\mathrm{drag}}$	$148.0^{+4.0}_{-4.0}$	$\chi_{\mathrm{Aver15}}^2$	$0.36 (\nu: 0.1)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.1401^{+0.0030}_{-0.0029}$	$\chi_{\mathrm{Cooke17}}^2$	$0.35 (\nu: 0.1)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16075^{+0.00095}_{-0.00095}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$H_0$	$67.4^{+2.8}_{-2.7}$	$z_{\mathrm{eq}}$	$3378^{+67}_{-67}$	$\chi_{\mathrm{MGS}}^2$	$1.32 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.017}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01027^{+0.00028}_{-0.00027}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.019}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1410^{+0.0071}_{-0.0067}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0065}_{-0.0063}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\Omega_{\mathrm{m}} h^3$	$0.0951^{+0.0081}_{-0.0075}$	$H(0.15)$	$72.7^{+2.7}_{-2.7}$	$\chi_{\mathrm{CMB}}^2$	$11934.8 (\nu: 16.6)$
$\sigma_8$	$0.804^{+0.026}_{-0.026}$	$D_{\mathrm{M}}(0.15)$	$643^{+26}_{-24}$	$\chi_{\mathrm{Abund}}^2$	$0.71 (\nu: 0.2)$
$S_8$	$0.818^{+0.034}_{-0.034}$	$H(0.38)$	$82.7^{+2.8}_{-2.7}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.019}_{-0.019}$	$D_{\mathrm{M}}(0.38)$	$1535^{+58}_{-55}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.40; R - 1 = 0.00827$$



# 6.19 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02231^{+0.00052}_{-0.00048}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.019}_{-0.018}$	$H(0.38)$	$82.8^{+3.8}_{-3.4}$
$\Omega_{\mathrm{c}} h^2$	$0.1182^{+0.0093}_{-0.0084}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1533^{+70}_{-75}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.980^{+0.026}_{-0.025}$	$H(0.51)$	$89.5^{+3.9}_{-3.5}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\mathrm{drag}} h$	$99.8^{+2.5}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1986^{+88}_{-94}$
$N_{\mathrm{eff}}$	$3.00^{+0.58}_{-0.51}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.063}_{-0.064}$	$H(0.61)$	$95.1^{+4.1}_{-3.6}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.039^{+0.047}_{-0.038}$	$z_{\mathrm{re}}$	$< 9.44$	$D_{\mathrm{M}}(0.61)$	$2312^{+100}_{-110}$
$n_{\mathrm{s}}$	$0.966^{+0.020}_{-0.019}$	$10^9 A_{\mathrm{s}}$	$2.089^{+0.099}_{-0.077}$	$H(2.33)$	$235.1^{+8.3}_{-7.5}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0063}_{-0.0066}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871^{+0.050}_{-0.050}$	$D_{\mathrm{M}}(2.33)$	$5781^{+220}_{-230}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-60}$	$D_{40}$	$1224^{+36}_{-37}$	$f\sigma_8(0.15)$	$0.453^{+0.018}_{-0.018}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5720^{+98}_{-100}$	$\sigma_8(0.15)$	$0.744^{+0.029}_{-0.027}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2534^{+35}_{-36}$	$f\sigma_8(0.38)$	$0.471^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.38)$	$0.660^{+0.026}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.91$	$D_{2000}$	$230.7^{+5.4}_{-5.2}$	$f\sigma_8(0.51)$	$0.470^{+0.017}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.020}_{-0.019}$	$\sigma_8(0.51)$	$0.617^{+0.025}_{-0.023}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2448^{+0.0077}_{-0.0072}$	$f\sigma_8(0.61)$	$0.465^{+0.017}_{-0.016}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2461^{+0.0077}_{-0.0073}$	$\sigma_8(0.61)$	$0.588^{+0.024}_{-0.022}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.15}_{-0.14}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.84^{+0.53}_{-0.56}$	$\sigma_8(2.33)$	$0.306^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.47}_{-0.44}$	$z_*$	$1089.8^{+1.1}_{-1.0}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.2^{+5.2}_{-5.4}$	$f_{2000}^{217}$	$106.5^{+5.8}_{-5.8}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.41}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94^{+0.48}_{-0.50}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.6^{+2.1}_{-1.8}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 0.6)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\mathrm{drag}}$	$147.9^{+5.3}_{-5.6}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.1 (\nu: 17.5)$
$c_{EE}$	$0.992^{+0.014}_{-0.014}$	$k_{\mathrm{D}}$	$0.1402^{+0.0042}_{-0.0037}$	$\chi_{6\mathrm{DF}}^2$	$0.054 (\nu: 0.0)$
$H_0$	$67.5^{+3.7}_{-3.2}$	$100\theta_{\mathrm{D}}$	$0.1607^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{MGS}}^2$	$1.36 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.020}_{-0.019}$	$z_{\mathrm{eq}}$	$3377^{+69}_{-74}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.019}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01028^{+0.00033}_{-0.00032}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1411^{+0.0096}_{-0.0087}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.014}_{-0.013}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\Omega_{\mathrm{m}} h^3$	$0.0953^{+0.012}_{-0.0097}$	$100\theta_{\mathrm{s,eq}}$	$0.4518^{+0.0072}_{-0.0066}$	$\chi_{\mathrm{CMB}}^2$	$11935.0 (\nu: 17.0)$
$\sigma_8$	$0.805^{+0.030}_{-0.029}$	$H(0.15)$	$72.7^{+3.7}_{-3.3}$		
$S_8$	$0.818^{+0.034}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$643^{+31}_{-33}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.82; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.83; R - 1 = 0.00628$$



## 6.20 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_JLA\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02231^{+0.00055}_{-0.00050}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.016}_{-0.015}$	$H(0.38)$	$82.7^{+3.5}_{-3.2}$
$\Omega_{\text{c}} h^2$	$0.1181^{+0.0089}_{-0.0077}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.018}_{-0.018}$	$D_{\text{M}}(0.38)$	$1536^{+67}_{-70}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.021}$	$H(0.51)$	$89.3^{+3.7}_{-3.4}$
$\tau$	$0.056^{+0.017}_{-0.014}$	$r_{\text{drag}} h$	$99.7^{+2.1}_{-2.2}$	$D_{\text{M}}(0.51)$	$1990^{+84}_{-89}$
$N_{\text{eff}}$	$2.99^{+0.54}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.056}_{-0.052}$	$H(0.61)$	$94.9^{+3.8}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.040}_{-0.036}$	$z_{\text{re}}$	$< 9.45$	$D_{\text{M}}(0.61)$	$2315^{+96}_{-100}$
$n_{\text{s}}$	$0.966^{+0.018}_{-0.018}$	$10^9 A_{\text{s}}$	$2.095^{+0.085}_{-0.075}$	$H(2.33)$	$235.0^{+7.8}_{-6.9}$
$y_{\text{cal}}$	$1.0008^{+0.0063}_{-0.0061}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873^{+0.049}_{-0.044}$	$D_{\text{M}}(2.33)$	$5787^{+210}_{-220}$
$A_{100}^{\text{PS}}$	$237^{+70}_{-60}$	$D_{40}$	$1227^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.014}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5725^{+96}_{-92}$	$\sigma_8(0.15)$	$0.745^{+0.026}_{-0.024}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2536^{+34}_{-32}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+14}_{-13}$	$\sigma_8(0.38)$	$0.660^{+0.023}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$< 8.66$	$D_{2000}$	$231.0^{+5.3}_{-5.5}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.347$	$n_{\text{s},0.002}$	$0.966^{+0.018}_{-0.018}$	$\sigma_8(0.51)$	$0.618^{+0.023}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2446^{+0.0072}_{-0.0069}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2459^{+0.0072}_{-0.0070}$	$\sigma_8(0.61)$	$0.588^{+0.022}_{-0.020}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.58^{+0.14}_{-0.13}$	$f\sigma_8(2.33)$	$0.297^{+0.011}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.86^{+0.51}_{-0.52}$	$\sigma_8(2.33)$	$0.306^{+0.012}_{-0.011}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.43}$	$z_*$	$1089.8^{+1.0}_{-0.91}$	$f_{2000}^{143}$	$29^{+9}_{-9}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.27}$	$r_*$	$145.3^{+4.9}_{-5.1}$	$f_{2000}^{217}$	$106.4^{+5.8}_{-5.3}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.39}_{-0.41}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0016}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-7}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.95^{+0.45}_{-0.47}$	$\chi_{\text{lensing}}^2$	$9.23 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0042}$	$z_{\text{drag}}$	$1059.6^{+1.9}_{-1.8}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$148.0^{+5.0}_{-5.3}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 0.6)$
$c_{EE}$	$0.992^{+0.014}_{-0.014}$	$k_{\text{D}}$	$0.1401^{+0.0038}_{-0.0035}$	$\chi_{\text{CamSpec}}^2$	$11514.5 (\nu: 17.4)$
$H_0$	$67.3^{+3.4}_{-3.1}$	$100\theta_{\text{D}}$	$0.1607^{+0.0013}_{-0.0012}$	$\chi_{\text{JLA}}^2$	$706.78 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.019}$	$z_{\text{eq}}$	$3382^{+65}_{-63}$	$\chi_{6\text{DF}}^2$	$0.059 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.311^{+0.019}_{-0.017}$	$k_{\text{eq}}$	$0.01028^{+0.00031}_{-0.00028}$	$\chi_{\text{MGS}}^2$	$1.28 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1410^{+0.0093}_{-0.0078}$	$100\theta_{\text{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.2)$
$\Omega_{\text{m}} h^3$	$0.0950^{+0.011}_{-0.0094}$	$100\theta_{\text{s,eq}}$	$0.4513^{+0.0060}_{-0.0062}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.4)$
$\sigma_8$	$0.806^{+0.027}_{-0.026}$	$H(0.15)$	$72.6^{+3.5}_{-3.1}$	$\chi_{\text{CMB}}^2$	$11943.9 (\nu: 17.7)$
$S_8$	$0.821^{+0.028}_{-0.028}$	$D_{\text{M}}(0.15)$	$644^{+30}_{-31}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$

$$\bar{\chi}_{\text{eff}}^2 = 12664.58; R - 1 = 0.04058$$



6.21 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02232^{+0.00049}_{-0.00049}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.015}_{-0.015}$	$H(0.38)$	$82.8^{+3.6}_{-3.3}$
$\Omega_{\text{c}} h^2$	$0.1182^{+0.0088}_{-0.0082}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.019}_{-0.018}$	$D_{\text{M}}(0.38)$	$1534^{+69}_{-68}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.982^{+0.021}_{-0.021}$	$H(0.51)$	$89.4^{+3.7}_{-3.4}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$r_{\text{drag}} h$	$99.8^{+2.1}_{-2.1}$	$D_{\text{M}}(0.51)$	$1987^{+87}_{-87}$
$N_{\text{eff}}$	$3.00^{+0.54}_{-0.50}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.053}_{-0.051}$	$H(0.61)$	$95.0^{+3.8}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	$3.043^{+0.043}_{-0.037}$	$z_{\text{re}}$	$< 9.50$	$D_{\text{M}}(0.61)$	$2312^{+99}_{-100}$
$n_{\text{s}}$	$0.966^{+0.018}_{-0.019}$	$10^9 A_{\text{s}}$	$2.096^{+0.093}_{-0.076}$	$H(2.33)$	$235.2^{+7.6}_{-7.3}$
$y_{\text{cal}}$	$1.0007^{+0.0062}_{-0.0066}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873^{+0.047}_{-0.046}$	$D_{\text{M}}(2.33)$	$5782^{+210}_{-220}$
$A_{100}^{\text{PS}}$	$238^{+70}_{-60}$	$D_{40}$	$1226^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5725^{+94}_{-97}$	$\sigma_8(0.15)$	$0.745^{+0.026}_{-0.025}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.661^{+0.024}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$< 8.95$	$D_{2000}$	$230.9^{+5.3}_{-5.1}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.339$	$n_{\text{s},0.002}$	$0.966^{+0.018}_{-0.019}$	$\sigma_8(0.51)$	$0.619^{+0.023}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2447^{+0.0072}_{-0.0071}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2461^{+0.0072}_{-0.0071}$	$\sigma_8(0.61)$	$0.589^{+0.022}_{-0.021}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.58^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.297^{+0.011}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.84^{+0.51}_{-0.52}$	$\sigma_8(2.33)$	$0.306^{+0.012}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.43}$	$z_*$	$1089.8^{+1.0}_{-0.97}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.2^{+5.0}_{-5.0}$	$f_{2000}^{217}$	$106.4^{+5.9}_{-5.7}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.40}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.94^{+0.46}_{-0.46}$	$\chi_{\text{lensing}}^2$	$9.27 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1059.6^{+1.9}_{-1.9}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$147.9^{+5.2}_{-5.2}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 0.6)$
$c_{EE}$	$0.992^{+0.013}_{-0.014}$	$k_{\text{D}}$	$0.1402^{+0.0037}_{-0.0036}$	$\chi_{\text{CamSpec}}^2$	$11514.7 (\nu: 16.6)$
$H_0$	$67.5^{+3.3}_{-3.1}$	$100\theta_{\text{D}}$	$0.1607^{+0.0012}_{-0.0012}$	$\chi_{\text{JLA}}^2$	$1035.09 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.017}_{-0.018}$	$z_{\text{eq}}$	$3379^{+63}_{-64}$	$\chi_{6\text{DF}}^2$	$0.051 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.310^{+0.018}_{-0.017}$	$k_{\text{eq}}$	$0.01028^{+0.00031}_{-0.00030}$	$\chi_{\text{MGS}}^2$	$1.33 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1412^{+0.0091}_{-0.0084}$	$100\theta_{\text{eq}}$	$0.818^{+0.012}_{-0.012}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 0.9)$
$\Omega_{\text{m}} h^3$	$0.0953^{+0.011}_{-0.0096}$	$100\theta_{\text{s,eq}}$	$0.4516^{+0.0061}_{-0.0060}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.8)$
$\sigma_8$	$0.807^{+0.027}_{-0.026}$	$H(0.15)$	$72.7^{+3.4}_{-3.2}$	$\chi_{\text{CMB}}^2$	$11944.2 (\nu: 17.4)$
$S_8$	$0.820^{+0.028}_{-0.028}$	$D_{\text{M}}(0.15)$	$643^{+30}_{-30}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$

$$\bar{\chi}_{\text{eff}}^2 = 12993.02; \Delta\bar{\chi}_{\text{eff}}^2 = 0.76; R - 1 = 0.01132$$



## 6.22 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02230^{+0.00050}_{-0.00049}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.016}_{-0.016}$	$H(0.38)$	$82.6^{+3.6}_{-3.3}$
$\Omega_{\text{c}} h^2$	$0.1180^{+0.0088}_{-0.0081}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.602^{+0.019}_{-0.018}$	$D_{\text{M}}(0.38)$	$1537^{+70}_{-70}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0013}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.982^{+0.021}_{-0.021}$	$H(0.51)$	$89.3^{+3.7}_{-3.4}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$r_{\text{drag}} h$	$99.6^{+2.2}_{-2.2}$	$D_{\text{M}}(0.51)$	$1991^{+89}_{-88}$
$N_{\text{eff}}$	$2.98^{+0.55}_{-0.50}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.054}_{-0.053}$	$H(0.61)$	$94.9^{+3.8}_{-3.5}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.043}_{-0.037}$	$z_{\text{re}}$	$< 9.47$	$D_{\text{M}}(0.61)$	$2317^{+100}_{-100}$
$n_{\text{s}}$	$0.965^{+0.019}_{-0.019}$	$10^9 A_{\text{s}}$	$2.094^{+0.092}_{-0.076}$	$H(2.33)$	$235.0^{+7.7}_{-7.4}$
$y_{\text{cal}}$	$1.0007^{+0.0062}_{-0.0066}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.872^{+0.047}_{-0.046}$	$D_{\text{M}}(2.33)$	$5790^{+220}_{-220}$
$A_{100}^{\text{PS}}$	$238^{+70}_{-60}$	$D_{40}$	$1227^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5724^{+95}_{-97}$	$\sigma_8(0.15)$	$0.745^{+0.026}_{-0.025}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.660^{+0.024}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$< 8.92$	$D_{2000}$	$231.0^{+5.3}_{-5.1}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.339$	$n_{\text{s},0.002}$	$0.965^{+0.019}_{-0.019}$	$\sigma_8(0.51)$	$0.618^{+0.023}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2445^{+0.0073}_{-0.0070}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2458^{+0.0073}_{-0.0070}$	$\sigma_8(0.61)$	$0.588^{+0.022}_{-0.021}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.58^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.86^{+0.51}_{-0.52}$	$\sigma_8(2.33)$	$0.306^{+0.013}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.43}$	$z_*$	$1089.8^{+1.0}_{-0.97}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.4^{+5.1}_{-5.0}$	$f_{2000}^{217}$	$106.4^{+5.9}_{-5.7}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.40}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.96^{+0.46}_{-0.46}$	$\chi_{\text{lensing}}^2$	$9.22 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1059.6^{+1.9}_{-1.9}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$148.1^{+5.2}_{-5.2}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 0.6)$
$c_{EE}$	$0.992^{+0.013}_{-0.015}$	$k_{\text{D}}$	$0.1401^{+0.0038}_{-0.0036}$	$\chi_{\text{CamSpec}}^2$	$11514.5 (\nu: 16.6)$
$H_0$	$67.3^{+3.5}_{-3.2}$	$100\theta_{\text{D}}$	$0.1607^{+0.0012}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.063 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3383^{+64}_{-66}$	$\chi_{\text{MGS}}^2$	$1.26 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.311^{+0.018}_{-0.018}$	$k_{\text{eq}}$	$0.01028^{+0.00031}_{-0.00030}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\text{m}} h^2$	$0.1410^{+0.0091}_{-0.0084}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.7)$
$\Omega_{\text{m}} h^3$	$0.0949^{+0.011}_{-0.0095}$	$100\theta_{\text{s,eq}}$	$0.4512^{+0.0065}_{-0.0061}$	$\chi_{\text{CMB}}^2$	$11944.0 (\nu: 17.4)$
$\sigma_8$	$0.806^{+0.027}_{-0.026}$	$H(0.15)$	$72.5^{+3.5}_{-3.2}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$S_8$	$0.821^{+0.028}_{-0.028}$	$D_{\text{M}}(0.15)$	$644^{+31}_{-31}$		

$$\bar{\chi}_{\text{eff}}^2 = 11957.94; \Delta\bar{\chi}_{\text{eff}}^2 = 0.68; R - 1 = 0.01105$$



### 6.23 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02230^{+0.00046}_{-0.00046}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.448^{+0.019}_{-0.018}$	$H(0.38)$	$82.6^{+2.9}_{-2.8}$
$\Omega_{\text{c}}h^2$	$0.1177^{+0.0075}_{-0.0070}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.600^{+0.020}_{-0.020}$	$D_{\text{M}}(0.38)$	$1537^{+58}_{-58}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	$0.980^{+0.026}_{-0.025}$	$H(0.51)$	$89.3^{+3.0}_{-2.8}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\text{drag}}h$	$99.7^{+2.3}_{-2.2}$	$D_{\text{M}}(0.51)$	$1991^{+74}_{-73}$
$N_{\text{eff}}$	$2.97^{+0.44}_{-0.41}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.062}_{-0.061}$	$H(0.61)$	$94.8^{+3.0}_{-2.9}$
$\ln(10^{10}A_{\text{s}})$	$3.038^{+0.045}_{-0.035}$	$z_{\text{re}}$	$< 9.44$	$D_{\text{M}}(0.61)$	$2317^{+84}_{-83}$
$n_{\text{s}}$	$0.965^{+0.017}_{-0.016}$	$10^9 A_{\text{s}}$	$2.086^{+0.097}_{-0.073}$	$H(2.33)$	$234.7^{+6.3}_{-6.2}$
$y_{\text{cal}}$	$1.0005^{+0.0063}_{-0.0066}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.869^{+0.044}_{-0.044}$	$D_{\text{M}}(2.33)$	$5793^{+180}_{-180}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-70}$	$D_{40}$	$1225^{+34}_{-34}$	$f\sigma_8(0.15)$	$0.452^{+0.018}_{-0.018}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5720^{+98}_{-100}$	$\sigma_8(0.15)$	$0.743^{+0.025}_{-0.023}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2533^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.471^{+0.016}_{-0.016}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-13}$	$\sigma_8(0.38)$	$0.658^{+0.023}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$< 8.96$	$D_{2000}$	$230.9^{+5.1}_{-4.8}$	$f\sigma_8(0.51)$	$0.470^{+0.016}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.333$	$n_{\text{s},0.002}$	$0.965^{+0.017}_{-0.016}$	$\sigma_8(0.51)$	$0.616^{+0.021}_{-0.020}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2443^{+0.0058}_{-0.0058}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.015}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2457^{+0.0059}_{-0.0059}$	$\sigma_8(0.61)$	$0.586^{+0.021}_{-0.019}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.57^{+0.12}_{-0.12}$	$f\sigma_8(2.33)$	$0.296^{+0.011}_{-0.0097}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.87^{+0.43}_{-0.42}$	$\sigma_8(2.33)$	$0.305^{+0.011}_{-0.010}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.43}$	$z_*$	$1089.73^{+0.91}_{-0.89}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.5^{+4.2}_{-4.1}$	$f_{2000}^{217}$	$106.3^{+5.5}_{-5.5}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.40}$	$100\theta_*$	$1.0414^{+0.0013}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.97^{+0.39}_{-0.38}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1059.5^{+1.7}_{-1.6}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 0.5)$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$148.2^{+4.4}_{-4.3}$	$\chi_{\text{CamSpec}}^2$	$11514.8 (\nu: 16.7)$
$c_{EE}$	$0.991^{+0.013}_{-0.014}$	$k_{\text{D}}$	$0.1400^{+0.0031}_{-0.0031}$	$\chi_{\text{Aver15}}^2$	$0.36 (\nu: 0.1)$
$H_0$	$67.3^{+2.9}_{-2.8}$	$100\theta_{\text{D}}$	$0.1607^{+0.0011}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3379^{+66}_{-68}$	$\chi_{\text{MGS}}^2$	$1.33 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.310^{+0.018}_{-0.018}$	$k_{\text{eq}}$	$0.01026^{+0.00029}_{-0.00028}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\Omega_{\text{m}}h^2$	$0.1406^{+0.0076}_{-0.0072}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\text{m}}h^3$	$0.0947^{+0.0086}_{-0.0079}$	$100\theta_{\text{s,eq}}$	$0.4516^{+0.0066}_{-0.0062}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8$	$0.804^{+0.027}_{-0.025}$	$H(0.15)$	$72.6^{+2.9}_{-2.7}$	$\chi_{\text{CMB}}^2$	$11934.7 (\nu: 16.5)$
$S_8$	$0.817^{+0.034}_{-0.033}$	$D_{\text{M}}(0.15)$	$644^{+26}_{-26}$		

$$\bar{\chi}_{\text{eff}}^2 = 11948.97; R - 1 = 0.00928$$



## 6.24 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02229^{+0.00046}_{-0.00046}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.020}_{-0.020}$	$H(0.51)$	$89.4^{+2.8}_{-2.7}$
$\Omega_{\mathrm{c}} h^2$	$0.1181^{+0.0069}_{-0.0065}$	$\sigma_8/h^{0.5}$	$0.980^{+0.025}_{-0.025}$	$D_{\mathrm{M}}(0.51)$	$1988^{+72}_{-69}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0010}_{-0.0010}$	$r_{\mathrm{drag}} h$	$99.7^{+2.2}_{-2.2}$	$H(0.61)$	$95.0^{+2.9}_{-2.8}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.061}_{-0.061}$	$D_{\mathrm{M}}(0.61)$	$2313^{+82}_{-79}$
$N_{\mathrm{eff}}$	$3.00^{+0.40}_{-0.38}$	$z_{\mathrm{re}}$	$< 9.42$	$H(2.33)$	$235.1^{+5.9}_{-5.8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.039^{+0.045}_{-0.035}$	$10^9 A_{\mathrm{s}}$	$2.088^{+0.096}_{-0.072}$	$D_{\mathrm{M}}(2.33)$	$5783^{+170}_{-170}$
$n_{\mathrm{s}}$	$0.966^{+0.017}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871^{+0.042}_{-0.041}$	$f\sigma_8(0.15)$	$0.453^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0066}$	$D_{40}$	$1224^{+33}_{-33}$	$\sigma_8(0.15)$	$0.744^{+0.024}_{-0.022}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-70}$	$D_{220}$	$5718^{+99}_{-100}$	$f\sigma_8(0.38)$	$0.471^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{810}$	$2533^{+35}_{-35}$	$\sigma_8(0.38)$	$0.660^{+0.022}_{-0.020}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.470^{+0.015}_{-0.015}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.6^{+5.0}_{-4.6}$	$\sigma_8(0.51)$	$0.617^{+0.021}_{-0.019}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.95$	$n_{\mathrm{s},0.002}$	$0.966^{+0.017}_{-0.016}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.336$	$Y_{\mathrm{P}}$	$0.2447^{+0.0054}_{-0.0054}$	$\sigma_8(0.61)$	$0.587^{+0.020}_{-0.018}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2460^{+0.0054}_{-0.0054}$	$f\sigma_8(2.33)$	$0.296^{+0.010}_{-0.0093}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.58^{+0.11}_{-0.11}$	$\sigma_8(2.33)$	$0.305^{+0.011}_{-0.0099}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.85^{+0.41}_{-0.40}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$z_*$	$1089.80^{+0.82}_{-0.82}$	$f_{2000}^{217}$	$106.5^{+5.3}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.44}$	$r_*$	$145.2^{+3.9}_{-3.8}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.0413^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.4)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.40}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95^{+0.36}_{-0.35}$	$\chi_{\mathrm{lowl}}^2$	$23.01 (\nu: 0.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+1.6}_{-1.6}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 (\nu: 16.6)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.9^{+4.0}_{-4.0}$	$\chi_{\mathrm{Aver15}}^2$	$0.36 (\nu: 0.1)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.1401^{+0.0029}_{-0.0029}$	$\chi_{\mathrm{Cooke17}}^2$	$0.35 (\nu: 0.1)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16076^{+0.00095}_{-0.00095}$	$\chi_{6\mathrm{DF}}^2$	$0.054 (\nu: 0.0)$
$H_0$	$67.4^{+2.8}_{-2.7}$	$z_{\mathrm{eq}}$	$3378^{+64}_{-67}$	$\chi_{\mathrm{MGS}}^2$	$1.34 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.017}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01027^{+0.00028}_{-0.00027}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.0)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.018}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.013}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1411^{+0.0071}_{-0.0067}$	$100\theta_{\mathrm{s,eq}}$	$0.4517^{+0.0066}_{-0.0061}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_{\mathrm{m}} h^3$	$0.0951^{+0.0081}_{-0.0075}$	$H(0.15)$	$72.7^{+2.7}_{-2.7}$	$\chi_{\mathrm{CMB}}^2$	$11934.6 (\nu: 16.2)$
$\sigma_8$	$0.805^{+0.026}_{-0.024}$	$D_{\mathrm{M}}(0.15)$	$643^{+26}_{-25}$	$\chi_{\mathrm{Abund}}^2$	$0.71 (\nu: 0.2)$
$S_8$	$0.819^{+0.033}_{-0.033}$	$H(0.38)$	$82.7^{+2.8}_{-2.7}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1534^{+57}_{-55}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.15; R - 1 = 0.01020$$



## 6.25 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022599	$0.02261^{+0.00046}_{-0.00045}$	$S_8$	0.8140	$0.815^{+0.041}_{-0.040}$	$H(0.15)$	75.40	$75.5^{+3.1}_{-3.2}$
$\Omega_c h^2$	0.1230	$0.1231^{+0.0082}_{-0.0080}$	$\sigma_8 \Omega_m^{0.5}$	0.4459	$0.446^{+0.022}_{-0.022}$	$D_M(0.15)$	618.8	$619^{+28}_{-26}$
$100\theta_{MC}$	1.04053	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	0.6040	$0.604^{+0.023}_{-0.023}$	$H(0.38)$	85.47	$85.5^{+3.1}_{-3.2}$
$\tau$	0.0553	$0.056^{+0.022}_{-0.022}$	$\sigma_8/h^{0.5}$	0.9767	$0.977^{+0.030}_{-0.030}$	$D_M(0.38)$	1479	$1479^{+63}_{-58}$
$N_{\text{eff}}$	3.374	$3.38^{+0.46}_{-0.47}$	$r_{\text{drag}} h$	101.37	$101.4^{+2.8}_{-2.7}$	$H(0.51)$	92.18	$92.2^{+3.2}_{-3.3}$
$\ln(10^{10} A_s)$	3.0526	$3.053^{+0.048}_{-0.047}$	$\langle d^2 \rangle^{1/2}$	2.399	$2.399^{+0.071}_{-0.072}$	$D_M(0.51)$	1919	$1918^{+79}_{-73}$
$n_s$	0.9799	$0.980^{+0.017}_{-0.019}$	$z_{\text{re}}$	7.82	$7.8^{+2.1}_{-2.4}$	$H(0.61)$	97.81	$97.9^{+3.2}_{-3.3}$
$y_{\text{cal}}$	1.0006	$1.0005^{+0.0067}_{-0.0064}$	$10^9 A_s$	2.117	$2.12^{+0.10}_{-0.097}$	$D_M(0.61)$	2234	$2233^{+90}_{-83}$
$A_{100}^{\text{PS}}$	247	$247^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	1.8953	$1.896^{+0.044}_{-0.045}$	$H(2.33)$	239.8	$239.9^{+6.7}_{-6.8}$
$A_{143}^{\text{PS}}$	40.2	$43^{+20}_{-20}$	$D_{40}$	1207.3	$1207^{+36}_{-33}$	$D_M(2.33)$	5624	$5621^{+190}_{-180}$
$A_{217}^{\text{PS}}$	98.5	$101^{+30}_{-30}$	$D_{220}$	5726	$5726^{+100}_{-99}$	$f\sigma_8(0.15)$	0.4516	$0.452^{+0.021}_{-0.021}$
$A_{217}^{\text{CIB}}$	45.2	$42^{+20}_{-20}$	$D_{810}$	2538.5	$2539^{+38}_{-35}$	$\sigma_8(0.15)$	0.7575	$0.758^{+0.027}_{-0.026}$
$A_{143}^{\text{tSZ}}$	4.90	$< 8.69$	$D_{1420}$	814.4	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	0.4734	$0.474^{+0.019}_{-0.019}$
$r_{143 \times 217}^{\text{PS}}$	0.548	$0.65^{+0.32}_{-0.31}$	$D_{2000}$	228.6	$228.7^{+5.2}_{-5.2}$	$\sigma_8(0.38)$	0.6731	$0.674^{+0.024}_{-0.024}$
$r_{143 \times 217}^{\text{CIB}}$	0.72	—	$n_{s,0.002}$	0.9799	$0.980^{+0.017}_{-0.019}$	$f\sigma_8(0.51)$	0.4737	$0.474^{+0.018}_{-0.018}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.00	—	$Y_P$	0.2498	$0.2499^{+0.0059}_{-0.0063}$	$\sigma_8(0.51)$	0.6306	$0.631^{+0.023}_{-0.022}$
$A^{\text{kSZ}}$	3.0	—	$Y_P^{\text{BBN}}$	0.2511	$0.2512^{+0.0059}_{-0.0064}$	$f\sigma_8(0.61)$	0.4699	$0.470^{+0.017}_{-0.017}$
$A_{100}^{\text{dust}}$	1.02	$1.02^{+0.50}_{-0.50}$	$10^5 D/H$	2.656	$2.66^{+0.13}_{-0.14}$	$\sigma_8(0.61)$	0.6004	$0.601^{+0.022}_{-0.021}$
$A_{143}^{\text{dust}}$	0.980	$0.98^{+0.45}_{-0.45}$	Age/Gyr	13.468	$13.46^{+0.45}_{-0.42}$	$f\sigma_8(2.33)$	0.3033	$0.304^{+0.011}_{-0.011}$
$A_{217}^{\text{dust}}$	0.960	$0.97^{+0.27}_{-0.26}$	$z_*$	1090.20	$1090.2^{+1.0}_{-1.0}$	$\sigma_8(2.33)$	0.3134	$0.314^{+0.012}_{-0.012}$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03^{+0.43}_{-0.41}$	$r_*$	141.92	$141.9^{+4.4}_{-4.1}$	$f_{2000}^{143}$	32.3	$32^{+9}_{-8}$
$c_{100}$	0.99752	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04050	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	108.6	$108.4^{+5.6}_{-5.6}$
$c_{217}$	1.00146	$1.0013^{+0.0041}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.639	$13.63^{+0.40}_{-0.38}$	$f_{2000}^{143 \times 217}$	33.9	$34^{+6}_{-6}$
$c_{TE}$	0.9988	$0.999^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.92	$1061.0^{+1.6}_{-1.7}$	$\chi_{\text{small}}^2$	396.09	$397.2 (\nu: 1.7)$
$c_{EE}$	0.9965	$0.997^{+0.014}_{-0.014}$	$r_{\text{drag}}$	144.47	$144.4^{+4.5}_{-4.2}$	$\chi_{\text{lowl}}^2$	21.47	$21.54 (\nu: 0.3)$
$H_0$	70.17	$70.2^{+3.2}_{-3.2}$	$k_D$	0.14261	$0.1427^{+0.0032}_{-0.0033}$	$\chi_{\text{CamSpec}}^2$	11505.1	$11520.7 (\nu: 21.9)$
$\Omega_\Lambda$	0.7030	$0.703^{+0.020}_{-0.021}$	$100\theta_D$	0.16152	$0.1615^{+0.0011}_{-0.0012}$	$\chi_{\text{H073p45}}^2$	3.9	$4.3 (\nu: 4.5)$
$\Omega_m$	0.2970	$0.297^{+0.021}_{-0.020}$	$z_{\text{eq}}$	3332	$3332^{+80}_{-79}$	$\chi_{\text{prior}}^2$	2.4	$7.9 (\nu: 6.2)$
$\Omega_m h^2$	0.1462	$0.1464^{+0.0083}_{-0.0081}$	$k_{\text{eq}}$	0.010391	$0.01040^{+0.00033}_{-0.00032}$	$\chi_{\text{CMB}}^2$	11922.6	$11939.4 (\nu: 20.9)$
$\Omega_m h^3$	0.1026	$0.1028^{+0.0095}_{-0.0093}$	$100\theta_{\text{eq}}$	0.8266	$0.827^{+0.016}_{-0.015}$			
$\sigma_8$	0.8182	$0.819^{+0.029}_{-0.028}$	$100\theta_{s,\text{eq}}$	0.4562	$0.4562^{+0.0080}_{-0.0077}$			

Best-fit  $\chi_{\text{eff}}^2 = 11928.99$ ;  $\bar{\chi}_{\text{eff}}^2 = 11951.65$ ;  $\Delta\chi_{\text{eff}}^2 = -2.61$ ;  $R - 1 = 0.01475$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.09 commander\_dx12\_v3.2\_29: 21.47 CamSpec like\_10.7HM\_1400\_unified: 11505.09 Hubble - H073p45: 3.91



## 6.26 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02256^{+0.00043}_{-0.00041}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.449^{+0.019}_{-0.019}$	$H(0.38)$	$85.2^{+2.9}_{-2.9}$
$\Omega_{\text{c}}h^2$	$0.1232^{+0.0084}_{-0.0080}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.606^{+0.023}_{-0.022}$	$D_{\text{M}}(0.38)$	$1485^{+57}_{-53}$
$100\theta_{\text{MC}}$	$1.0405^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	$0.980^{+0.027}_{-0.027}$	$H(0.51)$	$91.9^{+3.0}_{-3.1}$
$\tau$	$0.055^{+0.022}_{-0.021}$	$r_{\text{drag}}h$	$101.0^{+2.1}_{-2.1}$	$D_{\text{M}}(0.51)$	$1926^{+72}_{-67}$
$N_{\text{eff}}$	$3.35^{+0.45}_{-0.47}$	$\langle d^2 \rangle^{1/2}$	$2.407^{+0.064}_{-0.064}$	$H(0.61)$	$97.6^{+3.1}_{-3.2}$
$\ln(10^{10}A_{\text{s}})$	$3.052^{+0.048}_{-0.045}$	$z_{\text{re}}$	$7.8^{+2.1}_{-2.2}$	$D_{\text{M}}(0.61)$	$2243^{+83}_{-76}$
$n_{\text{s}}$	$0.978^{+0.016}_{-0.017}$	$10^9 A_{\text{s}}$	$2.12^{+0.10}_{-0.094}$	$H(2.33)$	$239.8^{+6.8}_{-6.8}$
$y_{\text{cal}}$	$1.0005^{+0.0068}_{-0.0065}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.896^{+0.044}_{-0.046}$	$D_{\text{M}}(2.33)$	$5635^{+180}_{-170}$
$A_{100}^{\text{PS}}$	$246^{+60}_{-60}$	$D_{40}$	$1210^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.454^{+0.019}_{-0.018}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5723^{+110}_{-94}$	$\sigma_8(0.15)$	$0.758^{+0.026}_{-0.027}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2539^{+38}_{-35}$	$f\sigma_8(0.38)$	$0.475^{+0.018}_{-0.018}$
$A_{217}^{\text{CIB}}$	$42^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.38)$	$0.673^{+0.023}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$< 8.66$	$D_{2000}$	$228.7^{+5.2}_{-5.1}$	$f\sigma_8(0.51)$	$0.475^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.31}$	$n_{\text{s},0.002}$	$0.978^{+0.016}_{-0.017}$	$\sigma_8(0.51)$	$0.630^{+0.022}_{-0.023}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2495^{+0.0057}_{-0.0062}$	$f\sigma_8(0.61)$	$0.471^{+0.017}_{-0.017}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2508^{+0.0057}_{-0.0062}$	$\sigma_8(0.61)$	$0.600^{+0.021}_{-0.022}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.66^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.303^{+0.011}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.02^{+0.51}_{-0.48}$	$\text{Age}/\text{Gyr}$	$13.49^{+0.44}_{-0.40}$	$\sigma_8(2.33)$	$0.313^{+0.012}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.44}$	$z_*$	$1090.2^{+1.1}_{-1.0}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$142.0^{+4.4}_{-4.2}$	$f_{2000}^{217}$	$108.3^{+5.5}_{-5.5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.65^{+0.41}_{-0.38}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1060.8^{+1.6}_{-1.6}$	$\chi_{\text{lowl}}^2$	$21.73 (\nu: 0.3)$
$c_{TE}$	$0.999^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$144.6^{+4.5}_{-4.3}$	$\chi_{\text{CamSpec}}^2$	$11519.5 (\nu: 20.0)$
$c_{EE}$	$0.996^{+0.013}_{-0.014}$	$k_{\text{D}}$	$0.1426^{+0.0033}_{-0.0033}$	$\chi_{\text{H073p45}}^2$	$5.2 (\nu: 4.1)$
$H_0$	$69.8^{+2.8}_{-2.8}$	$100\theta_{\text{D}}$	$0.1615^{+0.0011}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.036 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.700^{+0.016}_{-0.016}$	$z_{\text{eq}}$	$3344^{+61}_{-61}$	$\chi_{\text{MGS}}^2$	$2.04 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.300^{+0.016}_{-0.016}$	$k_{\text{eq}}$	$0.01042^{+0.00032}_{-0.00030}$	$\chi_{\text{DR12BAO}}^2$	$3.84 (\nu: 0.2)$
$\Omega_{\text{m}}h^2$	$0.1464^{+0.0085}_{-0.0080}$	$100\theta_{\text{eq}}$	$0.824^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_{\text{m}}h^3$	$0.1022^{+0.0091}_{-0.0092}$	$100\theta_{\text{s,eq}}$	$0.4550^{+0.0060}_{-0.0059}$	$\chi_{\text{BAO}}^2$	$5.92 (\nu: 0.4)$
$\sigma_8$	$0.819^{+0.028}_{-0.029}$	$H(0.15)$	$75.1^{+2.8}_{-2.8}$	$\chi_{\text{CMB}}^2$	$11938.4 (\nu: 19.5)$
$S_8$	$0.819^{+0.035}_{-0.034}$	$D_{\text{M}}(0.15)$	$622^{+25}_{-23}$		

$$\bar{\chi}_{\text{eff}}^2 = 11957.32; R - 1 = 0.01940$$



## 6.27 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02256^{+0.00043}_{-0.00040}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.449^{+0.019}_{-0.018}$	$H(0.38)$	$85.2^{+2.9}_{-2.9}$
$\Omega_{\text{c}} h^2$	$0.1232^{+0.0083}_{-0.0080}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.022}_{-0.022}$	$D_{\text{M}}(0.38)$	$1485^{+56}_{-52}$
$100\theta_{\text{MC}}$	$1.0405^{+0.0011}_{-0.0011}$	$\sigma_8/h^{0.5}$	$0.980^{+0.027}_{-0.027}$	$H(0.51)$	$92.0^{+2.9}_{-3.0}$
$\tau$	$0.055^{+0.022}_{-0.021}$	$r_{\text{drag}} h$	$101.0^{+2.0}_{-2.0}$	$D_{\text{M}}(0.51)$	$1926^{+71}_{-66}$
$N_{\text{eff}}$	$3.36^{+0.44}_{-0.47}$	$\langle d^2 \rangle^{1/2}$	$2.406^{+0.064}_{-0.064}$	$H(0.61)$	$97.6^{+3.0}_{-3.2}$
$\ln(10^{10} A_{\text{s}})$	$3.052^{+0.048}_{-0.046}$	$z_{\text{re}}$	$7.8^{+2.1}_{-2.2}$	$D_{\text{M}}(0.61)$	$2242^{+81}_{-76}$
$n_{\text{s}}$	$0.979^{+0.015}_{-0.016}$	$10^9 A_{\text{s}}$	$2.12^{+0.10}_{-0.094}$	$H(2.33)$	$239.8^{+6.8}_{-6.8}$
$y_{\text{cal}}$	$1.0005^{+0.0068}_{-0.0065}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.896^{+0.044}_{-0.046}$	$D_{\text{M}}(2.33)$	$5635^{+190}_{-170}$
$A_{100}^{\text{PS}}$	$246^{+60}_{-60}$	$D_{40}$	$1210^{+34}_{-32}$	$f\sigma_8(0.15)$	$0.454^{+0.019}_{-0.018}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5723^{+110}_{-95}$	$\sigma_8(0.15)$	$0.758^{+0.026}_{-0.027}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2539^{+38}_{-35}$	$f\sigma_8(0.38)$	$0.475^{+0.018}_{-0.018}$
$A_{217}^{\text{CIB}}$	$42^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.38)$	$0.673^{+0.023}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$< 8.68$	$D_{2000}$	$228.7^{+5.2}_{-5.1}$	$f\sigma_8(0.51)$	$0.475^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.31}$	$n_{\text{s},0.002}$	$0.979^{+0.015}_{-0.016}$	$\sigma_8(0.51)$	$0.630^{+0.022}_{-0.023}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2495^{+0.0057}_{-0.0062}$	$f\sigma_8(0.61)$	$0.471^{+0.017}_{-0.017}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2508^{+0.0057}_{-0.0062}$	$\sigma_8(0.61)$	$0.600^{+0.021}_{-0.022}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.66^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.303^{+0.011}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.02^{+0.51}_{-0.49}$	$\text{Age}/\text{Gyr}$	$13.49^{+0.44}_{-0.39}$	$\sigma_8(2.33)$	$0.313^{+0.011}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.44}$	$z_*$	$1090.2^{+1.0}_{-1.0}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$142.0^{+4.4}_{-4.2}$	$f_{2000}^{217}$	$108.3^{+5.5}_{-5.5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.65^{+0.41}_{-0.38}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1060.8^{+1.6}_{-1.6}$	$\chi_{\text{lowl}}^2$	$21.73 (\nu: 0.3)$
$c_{TE}$	$0.999^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$144.6^{+4.5}_{-4.3}$	$\chi_{\text{CamSpec}}^2$	$11519.6 (\nu: 19.9)$
$c_{EE}$	$0.996^{+0.013}_{-0.014}$	$k_{\text{D}}$	$0.1426^{+0.0033}_{-0.0033}$	$\chi_{\text{H073p45}}^2$	$5.1 (\nu: 4.0)$
$H_0$	$69.8^{+2.7}_{-2.7}$	$100\theta_{\text{D}}$	$0.1615^{+0.0011}_{-0.0012}$	$\chi_{\text{JLA}}^2$	$1034.81 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.700^{+0.015}_{-0.016}$	$z_{\text{eq}}$	$3344^{+59}_{-59}$	$\chi_{6\text{DF}}^2$	$0.035 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.300^{+0.016}_{-0.015}$	$k_{\text{eq}}$	$0.01041^{+0.00032}_{-0.00030}$	$\chi_{\text{MGS}}^2$	$2.05 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1464^{+0.0084}_{-0.0080}$	$100\theta_{\text{eq}}$	$0.824^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$3.81 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	$0.1023^{+0.0091}_{-0.0091}$	$100\theta_{\text{s,eq}}$	$0.4550^{+0.0058}_{-0.0058}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\sigma_8$	$0.819^{+0.028}_{-0.029}$	$H(0.15)$	$75.1^{+2.8}_{-2.8}$	$\chi_{\text{BAO}}^2$	$5.90 (\nu: 0.3)$
$S_8$	$0.819^{+0.035}_{-0.034}$	$D_{\text{M}}(0.15)$	$622^{+24}_{-23}$	$\chi_{\text{CMB}}^2$	$11938.4 (\nu: 19.4)$

$$\bar{\chi}_{\text{eff}}^2 = 12992.06; R - 1 = 0.01918$$



## 6.28 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02259^{+0.00047}_{-0.00045}$	$S_8$	$0.820^{+0.032}_{-0.032}$	$H(0.15)$	$75.2^{+3.1}_{-3.0}$
$\Omega_c h^2$	$0.1231^{+0.0079}_{-0.0076}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.018}_{-0.018}$	$D_M(0.15)$	$621^{+27}_{-26}$
$100\theta_{MC}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.019}_{-0.019}$	$H(0.38)$	$85.3^{+3.1}_{-3.1}$
$\tau$	$0.058^{+0.021}_{-0.020}$	$\sigma_8/h^{0.5}$	$0.982^{+0.023}_{-0.023}$	$D_M(0.38)$	$1483^{+60}_{-57}$
$N_{\text{eff}}$	$3.36^{+0.46}_{-0.47}$	$r_{\text{drag}} h$	$101.1^{+2.6}_{-2.5}$	$H(0.51)$	$92.0^{+3.2}_{-3.1}$
$\ln(10^{10} A_s)$	$3.058^{+0.045}_{-0.043}$	$\langle d^2 \rangle^{1/2}$	$2.411^{+0.058}_{-0.058}$	$D_M(0.51)$	$1923^{+76}_{-73}$
$n_s$	$0.979^{+0.017}_{-0.018}$	$z_{\text{re}}$	$8.0^{+2.0}_{-2.1}$	$H(0.61)$	$97.7^{+3.3}_{-3.2}$
$y_{\text{cal}}$	$1.0008^{+0.0069}_{-0.0062}$	$10^9 A_s$	$2.129^{+0.098}_{-0.089}$	$D_M(0.61)$	$2240^{+87}_{-82}$
$A_{100}^{\text{PS}}$	$247^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.897^{+0.041}_{-0.042}$	$H(2.33)$	$239.8^{+6.6}_{-6.5}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{40}$	$1211^{+33}_{-33}$	$D_M(2.33)$	$5631^{+180}_{-180}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{220}$	$5731^{+100}_{-97}$	$f\sigma_8(0.15)$	$0.455^{+0.017}_{-0.017}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{810}$	$2541^{+38}_{-33}$	$\sigma_8(0.15)$	$0.760^{+0.024}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$< 8.66$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.476^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.31}$	$D_{2000}$	$228.9^{+5.2}_{-5.1}$	$\sigma_8(0.38)$	$0.675^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.979^{+0.017}_{-0.018}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2496^{+0.0059}_{-0.0062}$	$\sigma_8(0.51)$	$0.632^{+0.021}_{-0.021}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2509^{+0.0059}_{-0.0063}$	$f\sigma_8(0.61)$	$0.472^{+0.014}_{-0.014}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.49}$	$10^5 D/H$	$2.65^{+0.13}_{-0.14}$	$\sigma_8(0.61)$	$0.602^{+0.020}_{-0.020}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.43}$	Age/Gyr	$13.48^{+0.44}_{-0.42}$	$f\sigma_8(2.33)$	$0.304^{+0.011}_{-0.010}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1090.22^{+0.96}_{-1.0}$	$\sigma_8(2.33)$	$0.314^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.44}_{-0.41}$	$r_*$	$142.0^{+4.2}_{-4.1}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	$108.3^{+5.5}_{-5.5}$
$c_{217}$	$1.0013^{+0.0042}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	$13.64^{+0.39}_{-0.38}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{TE}$	$0.999^{+0.012}_{-0.013}$	$z_{\text{drag}}$	$1060.9^{+1.6}_{-1.7}$	$\chi_{\text{lensing}}^2$	$9.92 (\nu: 0.5)$
$c_{EE}$	$0.996^{+0.014}_{-0.014}$	$r_{\text{drag}}$	$144.5^{+4.4}_{-4.2}$	$\chi_{\text{simall}}^2$	$397.5 (\nu: 2.3)$
$H_0$	$70.0^{+3.1}_{-3.0}$	$k_D$	$0.1426^{+0.0032}_{-0.0032}$	$\chi_{\text{lowl}}^2$	$21.79 (\nu: 0.3)$
$\Omega_\Lambda$	$0.701^{+0.019}_{-0.020}$	$100\theta_D$	$0.1615^{+0.0011}_{-0.0011}$	$\chi_{\text{CamSpec}}^2$	$11519.4 (\nu: 20.4)$
$\Omega_m$	$0.299^{+0.020}_{-0.019}$	$z_{\text{eq}}$	$3341^{+73}_{-74}$	$\chi_{\text{H073p45}}^2$	$5.0 (\nu: 5.0)$
$\Omega_m h^2$	$0.1463^{+0.0081}_{-0.0078}$	$k_{\text{eq}}$	$0.01041^{+0.00031}_{-0.00029}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.3)$
$\Omega_m h^3$	$0.1024^{+0.0093}_{-0.0092}$	$100\theta_{\text{eq}}$	$0.825^{+0.015}_{-0.014}$	$\chi_{\text{CMB}}^2$	$11948.6 (\nu: 21.5)$
$\sigma_8$	$0.821^{+0.025}_{-0.025}$	$100\theta_{s,\text{eq}}$	$0.4553^{+0.0075}_{-0.0070}$		

$$\bar{\chi}_{\text{eff}}^2 = 11961.40; \Delta\bar{\chi}_{\text{eff}}^2 = -2.22; R - 1 = 0.02109$$



## 6.29 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02255^{+0.00043}_{-0.00042}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.016}_{-0.016}$	$H(0.38)$	$85.1^{+2.9}_{-2.8}$
$\Omega_{\text{c}} h^2$	$0.1230^{+0.0079}_{-0.0077}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.608^{+0.018}_{-0.018}$	$D_{\text{M}}(0.38)$	$1488^{+55}_{-53}$
$100\theta_{\text{MC}}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.022}$	$H(0.51)$	$91.8^{+3.0}_{-3.0}$
$\tau$	$0.057^{+0.021}_{-0.019}$	$r_{\text{drag}} h$	$100.8^{+2.0}_{-2.0}$	$D_{\text{M}}(0.51)$	$1929^{+69}_{-67}$
$N_{\text{eff}}$	$3.34^{+0.45}_{-0.45}$	$\langle d^2 \rangle^{1/2}$	$2.415^{+0.053}_{-0.052}$	$H(0.61)$	$97.5^{+3.0}_{-3.0}$
$\ln(10^{10} A_{\text{s}})$	$3.056^{+0.042}_{-0.040}$	$z_{\text{re}}$	$8.0^{+2.0}_{-2.0}$	$D_{\text{M}}(0.61)$	$2246^{+80}_{-77}$
$n_{\text{s}}$	$0.978^{+0.015}_{-0.016}$	$10^9 A_{\text{s}}$	$2.125^{+0.091}_{-0.084}$	$H(2.33)$	$239.7^{+6.6}_{-6.6}$
$y_{\text{cal}}$	$1.0007^{+0.0068}_{-0.0063}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.897^{+0.041}_{-0.042}$	$D_{\text{M}}(2.33)$	$5642^{+180}_{-170}$
$A_{100}^{\text{PS}}$	$246^{+60}_{-60}$	$D_{40}$	$1213^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.456^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5729^{+100}_{-96}$	$\sigma_8(0.15)$	$0.759^{+0.023}_{-0.023}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2540^{+37}_{-33}$	$f\sigma_8(0.38)$	$0.476^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.674^{+0.021}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$< 8.68$	$D_{2000}$	$229.0^{+5.3}_{-5.2}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.31}$	$n_{\text{s},0.002}$	$0.978^{+0.015}_{-0.016}$	$\sigma_8(0.51)$	$0.631^{+0.020}_{-0.020}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2493^{+0.0057}_{-0.0060}$	$f\sigma_8(0.61)$	$0.472^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2506^{+0.0058}_{-0.0060}$	$\sigma_8(0.61)$	$0.601^{+0.019}_{-0.019}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.65^{+0.13}_{-0.13}$	$f\sigma_8(2.33)$	$0.303^{+0.010}_{-0.0098}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.48}$	$\text{Age}/\text{Gyr}$	$13.51^{+0.43}_{-0.40}$	$\sigma_8(2.33)$	$0.313^{+0.011}_{-0.011}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.44}$	$z_*$	$1090.23^{+0.97}_{-1.0}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$142.1^{+4.2}_{-4.0}$	$f_{2000}^{217}$	$108.2^{+5.6}_{-5.5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.44}_{-0.41}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.66^{+0.40}_{-0.38}$	$\chi_{\text{lensing}}^2$	$9.80 (\nu: 0.3)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1060.8^{+1.5}_{-1.6}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 1.8)$
$c_{TE}$	$0.998^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$144.7^{+4.3}_{-4.2}$	$\chi_{\text{lowl}}^2$	$21.90 (\nu: 0.3)$
$c_{EE}$	$0.996^{+0.013}_{-0.014}$	$k_{\text{D}}$	$0.1425^{+0.0032}_{-0.0031}$	$\chi_{\text{CamSpec}}^2$	$11518.7 (\nu: 19.3)$
$H_0$	$69.7^{+2.8}_{-2.7}$	$100\theta_{\text{D}}$	$0.1614^{+0.0011}_{-0.0011}$	$\chi_{\text{H073p45}}^2$	$5.5 (\nu: 4.3)$
$\Omega_{\Lambda}$	$0.699^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3348^{+59}_{-57}$	$\chi_{6\text{DF}}^2$	$0.030 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.301^{+0.015}_{-0.015}$	$k_{\text{eq}}$	$0.01042^{+0.00030}_{-0.00029}$	$\chi_{\text{MGS}}^2$	$1.96 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1462^{+0.0081}_{-0.0079}$	$100\theta_{\text{eq}}$	$0.824^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$3.81 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	$0.1019^{+0.0091}_{-0.0088}$	$100\theta_{\text{s,eq}}$	$0.4546^{+0.0057}_{-0.0056}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.1)$
$\sigma_8$	$0.820^{+0.025}_{-0.025}$	$H(0.15)$	$75.0^{+2.8}_{-2.7}$	$\chi_{\text{CMB}}^2$	$11947.7 (\nu: 19.8)$
$S_8$	$0.822^{+0.029}_{-0.029}$	$D_{\text{M}}(0.15)$	$623^{+24}_{-23}$	$\chi_{\text{BAO}}^2$	$5.80 (\nu: 0.3)$

$$\bar{\chi}_{\text{eff}}^2 = 11966.84; \Delta\bar{\chi}_{\text{eff}}^2 = -1.97; R - 1 = 0.02276$$



### 6.30 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022562	$0.02256^{+0.00043}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	0.6075	$0.608^{+0.018}_{-0.018}$	$H(0.51)$	91.85	$91.8^{+2.9}_{-2.9}$
$\Omega_c h^2$	0.1232	$0.1231^{+0.0079}_{-0.0077}$	$\sigma_8/h^{0.5}$	0.9821	$0.983^{+0.022}_{-0.022}$	$D_M(0.51)$	1928	$1929^{+69}_{-66}$
$100\theta_{MC}$	1.04053	$1.0405^{+0.0011}_{-0.0010}$	$r_{drag}h$	100.81	$100.8^{+1.9}_{-1.9}$	$H(0.61)$	97.50	$97.5^{+3.0}_{-3.0}$
$\tau$	0.0560	$0.057^{+0.021}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	2.413	$2.415^{+0.053}_{-0.051}$	$D_M(0.61)$	2245	$2246^{+79}_{-75}$
$N_{eff}$	3.343	$3.34^{+0.45}_{-0.45}$	$z_{re}$	7.90	$8.0^{+1.9}_{-2.0}$	$H(2.33)$	239.8	$239.7^{+6.6}_{-6.5}$
$\ln(10^{10} A_s)$	3.0548	$3.056^{+0.042}_{-0.040}$	$10^9 A_s$	2.122	$2.125^{+0.091}_{-0.084}$	$D_M(2.33)$	5639	$5641^{+180}_{-170}$
$n_s$	0.9775	$0.978^{+0.015}_{-0.016}$	$10^9 A_s e^{-2\tau}$	1.8967	$1.897^{+0.041}_{-0.042}$	$f\sigma_8(0.15)$	0.4555	$0.455^{+0.015}_{-0.015}$
$y_{cal}$	1.0006	$1.0007^{+0.0068}_{-0.0063}$	$D_{40}$	1212.5	$1213^{+31}_{-31}$	$\sigma_8(0.15)$	0.7587	$0.759^{+0.023}_{-0.023}$
$A_{100}^{PS}$	246	$246^{+60}_{-60}$	$D_{220}$	5727	$5729^{+100}_{-96}$	$f\sigma_8(0.38)$	0.4763	$0.476^{+0.014}_{-0.014}$
$A_{143}^{PS}$	40.5	$43^{+20}_{-20}$	$D_{810}$	2539.4	$2540^{+37}_{-33}$	$\sigma_8(0.38)$	0.6737	$0.674^{+0.021}_{-0.021}$
$A_{217}^{PS}$	99.2	$101^{+30}_{-30}$	$D_{1420}$	814.6	$815^{+14}_{-13}$	$f\sigma_8(0.51)$	0.4762	$0.476^{+0.014}_{-0.014}$
$A_{217}^{CIB}$	45.0	$41^{+20}_{-20}$	$D_{2000}$	228.8	$229.0^{+5.3}_{-5.2}$	$\sigma_8(0.51)$	0.6309	$0.631^{+0.020}_{-0.020}$
$A_{143}^{tSZ}$	5.07	$< 8.70$	$n_{s,0.002}$	0.9775	$0.978^{+0.015}_{-0.016}$	$f\sigma_8(0.61)$	0.4720	$0.472^{+0.014}_{-0.014}$
$r_{143 \times 217}^{PS}$	0.557	$0.65^{+0.32}_{-0.31}$	$Y_P$	0.2494	$0.2493^{+0.0057}_{-0.0060}$	$\sigma_8(0.61)$	0.6007	$0.601^{+0.019}_{-0.019}$
$r_{143 \times 217}^{CIB}$	0.73	—	$Y_P^{BBN}$	0.2507	$0.2506^{+0.0057}_{-0.0060}$	$f\sigma_8(2.33)$	0.3032	$0.3034^{+0.0099}_{-0.0098}$
$\xi^{tSZ \times CIB}$	0.02	—	$10^5 D/H$	2.652	$2.65^{+0.13}_{-0.14}$	$\sigma_8(2.33)$	0.3131	$0.313^{+0.011}_{-0.011}$
$A^{kSZ}$	2.7	—	Age/Gyr	13.503	$13.51^{+0.43}_{-0.39}$	$f_{2000}^{143}$	32.1	$32^{+9}_{-8}$
$A_{100}^{dust}$	1.018	$1.01^{+0.51}_{-0.48}$	$z_*$	1090.24	$1090.23^{+0.96}_{-1.0}$	$f_{2000}^{217}$	108.4	$108.2^{+5.6}_{-5.5}$
$A_{143}^{dust}$	0.976	$0.96^{+0.44}_{-0.44}$	$r_*$	142.04	$142.1^{+4.3}_{-4.0}$	$f_{2000}^{143 \times 217}$	33.8	$34^{+6}_{-6}$
$A_{217}^{dust}$	0.965	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	1.04052	$1.0405^{+0.0014}_{-0.0013}$	$\chi_{lensing}^2$	9.46	$9.80 (\nu: 0.3)$
$A_{143 \times 217}^{dust}$	1.004	$1.03^{+0.43}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	13.651	$13.66^{+0.39}_{-0.37}$	$\chi_{small}^2$	396.28	$397.3 (\nu: 1.9)$
$c_{100}$	0.99758	$0.9976^{+0.0027}_{-0.0026}$	$z_{drag}$	1060.85	$1060.8^{+1.5}_{-1.6}$	$\chi_{lowl}^2$	21.82	$21.89 (\nu: 0.3)$
$c_{217}$	1.00150	$1.0013^{+0.0041}_{-0.0039}$	$r_{drag}$	144.61	$144.7^{+4.4}_{-4.2}$	$\chi_{CamSpec}^2$	11503.8	$11518.7 (\nu: 19.3)$
$c_{TE}$	0.9983	$0.998^{+0.012}_{-0.013}$	$k_D$	0.14254	$0.1425^{+0.0032}_{-0.0032}$	$\chi_{H073p45}^2$	5.1	$5.5 (\nu: 4.1)$
$c_{EE}$	0.9957	$0.996^{+0.013}_{-0.014}$	$100\theta_D$	0.16145	$0.1614^{+0.0011}_{-0.0011}$	$\chi_{JLA}^2$	1034.745	$1034.81 (\nu: 0.0)$
$H_0$	69.71	$69.7^{+2.7}_{-2.6}$	$z_{eq}$	3349	$3348^{+57}_{-55}$	$\chi_{6DF}^2$	0.004	$0.029 (\nu: 0.0)$
$\Omega_\Lambda$	0.6988	$0.699^{+0.014}_{-0.015}$	$k_{eq}$	0.010423	$0.01042^{+0.00030}_{-0.00029}$	$\chi_{MGS}^2$	1.89	$1.97 (\nu: 0.1)$
$\Omega_m$	0.3012	$0.301^{+0.015}_{-0.014}$	$100\theta_{eq}$	0.8234	$0.824^{+0.011}_{-0.011}$	$\chi_{DR12BAO}^2$	3.43	$3.79 (\nu: 0.1)$
$\Omega_m h^2$	0.1464	$0.1463^{+0.0081}_{-0.0078}$	$100\theta_{s,eq}$	0.4545	$0.4546^{+0.0055}_{-0.0055}$	$\chi_{prior}^2$	2.4	$7.8 (\nu: 6.1)$
$\Omega_m h^3$	0.1020	$0.1020^{+0.0091}_{-0.0088}$	$H(0.15)$	74.98	$75.0^{+2.7}_{-2.7}$	$\chi_{CMB}^2$	11931.3	$11947.7 (\nu: 19.7)$
$\sigma_8$	0.8200	$0.820^{+0.025}_{-0.025}$	$D_M(0.15)$	622.6	$623^{+24}_{-23}$	$\chi_{BAO}^2$	5.33	$5.79 (\nu: 0.2)$
$S_8$	0.8216	$0.822^{+0.028}_{-0.028}$	$H(0.38)$	85.11	$85.1^{+2.8}_{-2.8}$			
$\sigma_8 \Omega_m^{0.5}$	0.4500	$0.450^{+0.016}_{-0.015}$	$D_M(0.38)$	1487	$1488^{+55}_{-52}$			

Best-fit  $\chi_{eff}^2 = 12978.85$ ;  $\bar{\chi}_{eff}^2 = 13001.59$ ;  $\Delta\chi_{eff}^2 = -2.05$ ;  $R - 1 = 0.02251$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.46 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.28 commander\_dx12\_v3.2.29: 21.82 CamSpec like\_10.7HM.1400\_unified: 11503.77 Hubble - H073p45: 5.08 SN - JLA Pantheon18: 1034.74



### 6.31 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02261^{+0.00046}_{-0.00046}$	$S_8$	$0.815^{+0.041}_{-0.040}$	$H(0.15)$	$75.5^{+3.1}_{-3.2}$
$\Omega_{\text{c}}h^2$	$0.1231^{+0.0081}_{-0.0080}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.446^{+0.022}_{-0.022}$	$D_{\text{M}}(0.15)$	$618^{+28}_{-26}$
$100\theta_{\text{MC}}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.605^{+0.023}_{-0.023}$	$H(0.38)$	$85.6^{+3.1}_{-3.2}$
$\tau$	$0.056^{+0.020}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.978^{+0.029}_{-0.029}$	$D_{\text{M}}(0.38)$	$1478^{+63}_{-58}$
$N_{\text{eff}}$	$3.38^{+0.46}_{-0.47}$	$r_{\text{drag}}h$	$101.4^{+2.8}_{-2.7}$	$H(0.51)$	$92.3^{+3.2}_{-3.3}$
$\ln(10^{10}A_{\text{s}})$	$3.055^{+0.047}_{-0.037}$	$\langle d^2 \rangle^{1/2}$	$2.401^{+0.070}_{-0.068}$	$D_{\text{M}}(0.51)$	$1917^{+79}_{-73}$
$n_{\text{s}}$	$0.981^{+0.017}_{-0.019}$	$z_{\text{re}}$	$< 9.74$	$H(0.61)$	$97.9^{+3.2}_{-3.3}$
$y_{\text{cal}}$	$1.0005^{+0.0067}_{-0.0064}$	$10^9 A_{\text{s}}$	$2.12^{+0.10}_{-0.078}$	$D_{\text{M}}(0.61)$	$2233^{+90}_{-83}$
$A_{100}^{\text{PS}}$	$247^{+60}_{-70}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.896^{+0.043}_{-0.045}$	$H(2.33)$	$239.9^{+6.7}_{-6.8}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{40}$	$1207^{+36}_{-33}$	$D_{\text{M}}(2.33)$	$5620^{+190}_{-170}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{220}$	$5726^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.452^{+0.021}_{-0.021}$
$A_{217}^{\text{CIB}}$	$42^{+20}_{-20}$	$D_{810}$	$2539^{+38}_{-35}$	$\sigma_8(0.15)$	$0.759^{+0.026}_{-0.025}$
$A_{143}^{\text{tSZ}}$	$< 8.69$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.019}_{-0.019}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.30}$	$D_{2000}$	$228.7^{+5.2}_{-5.2}$	$\sigma_8(0.38)$	$0.674^{+0.024}_{-0.023}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{\text{s},0.002}$	$0.981^{+0.017}_{-0.019}$	$f\sigma_8(0.51)$	$0.474^{+0.017}_{-0.018}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.2499^{+0.0058}_{-0.0063}$	$\sigma_8(0.51)$	$0.632^{+0.022}_{-0.021}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2512^{+0.0059}_{-0.0063}$	$f\sigma_8(0.61)$	$0.471^{+0.017}_{-0.017}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.50}$	$10^5 \text{D}/\text{H}$	$2.66^{+0.13}_{-0.14}$	$\sigma_8(0.61)$	$0.601^{+0.022}_{-0.020}$
$A_{143}^{\text{dust}}$	$0.98^{+0.45}_{-0.45}$	$\text{Age}/\text{Gyr}$	$13.46^{+0.45}_{-0.41}$	$f\sigma_8(2.33)$	$0.304^{+0.011}_{-0.011}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1090.2^{+1.0}_{-1.0}$	$\sigma_8(2.33)$	$0.314^{+0.012}_{-0.011}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.41}$	$r_*$	$141.8^{+4.3}_{-4.1}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	$108.4^{+5.5}_{-5.7}$
$c_{217}$	$1.0013^{+0.0041}_{-0.0040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.63^{+0.40}_{-0.38}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{TE}$	$0.999^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1061.0^{+1.6}_{-1.7}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.8)$
$c_{EE}$	$0.997^{+0.014}_{-0.014}$	$r_{\text{drag}}$	$144.4^{+4.5}_{-4.2}$	$\chi_{\text{lowl}}^2$	$21.54 (\nu: 0.3)$
$H_0$	$70.2^{+3.1}_{-3.2}$	$k_{\text{D}}$	$0.1427^{+0.0032}_{-0.0033}$	$\chi_{\text{CamSpec}}^2$	$11520.6 (\nu: 21.8)$
$\Omega_{\Lambda}$	$0.703^{+0.020}_{-0.021}$	$100\theta_{\text{D}}$	$0.1615^{+0.0011}_{-0.0012}$	$\chi_{\text{H073p45}}^2$	$4.3 (\nu: 4.5)$
$\Omega_{\text{m}}$	$0.297^{+0.021}_{-0.020}$	$z_{\text{eq}}$	$3332^{+79}_{-79}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.3)$
$\Omega_{\text{m}}h^2$	$0.1464^{+0.0082}_{-0.0081}$	$k_{\text{eq}}$	$0.01040^{+0.00033}_{-0.00032}$	$\chi_{\text{CMB}}^2$	$11939.3 (\nu: 20.6)$
$\Omega_{\text{m}}h^3$	$0.1029^{+0.0095}_{-0.0093}$	$100\theta_{\text{eq}}$	$0.827^{+0.016}_{-0.015}$		
$\sigma_8$	$0.819^{+0.028}_{-0.027}$	$100\theta_{\text{s,eq}}$	$0.4563^{+0.0080}_{-0.0077}$		

$$\bar{\chi}_{\text{eff}}^2 = 11951.46; \Delta\bar{\chi}_{\text{eff}}^2 = -2.54; R - 1 = 0.01420$$



### 6.32 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02256^{+0.00043}_{-0.00041}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.019}_{-0.019}$	$H(0.38)$	$85.2^{+2.9}_{-2.9}$
$\Omega_{\mathrm{c}} h^2$	$0.1232^{+0.0082}_{-0.0080}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1485^{+57}_{-53}$
$100\theta_{\mathrm{MC}}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.981^{+0.027}_{-0.026}$	$H(0.51)$	$92.0^{+3.0}_{-3.1}$
$\tau$	$0.056^{+0.020}_{-0.015}$	$r_{\mathrm{drag}} h$	$101.0^{+2.1}_{-2.0}$	$D_{\mathrm{M}}(0.51)$	$1926^{+72}_{-67}$
$N_{\mathrm{eff}}$	$3.35^{+0.45}_{-0.47}$	$\langle d^2 \rangle^{1/2}$	$2.408^{+0.063}_{-0.059}$	$H(0.61)$	$97.6^{+3.0}_{-3.2}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.054^{+0.046}_{-0.037}$	$z_{\mathrm{re}}$	$< 9.65$	$D_{\mathrm{M}}(0.61)$	$2242^{+83}_{-76}$
$n_{\mathrm{s}}$	$0.979^{+0.016}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.12^{+0.10}_{-0.077}$	$H(2.33)$	$239.8^{+6.8}_{-6.9}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0068}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.896^{+0.043}_{-0.046}$	$D_{\mathrm{M}}(2.33)$	$5635^{+190}_{-170}$
$A_{100}^{\mathrm{PS}}$	$246^{+60}_{-60}$	$D_{40}$	$1210^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.454^{+0.019}_{-0.018}$
$A_{143}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5723^{+110}_{-94}$	$\sigma_8(0.15)$	$0.758^{+0.026}_{-0.026}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2539^{+38}_{-35}$	$f\sigma_8(0.38)$	$0.476^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.38)$	$0.674^{+0.023}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.63$	$D_{2000}$	$228.8^{+5.2}_{-5.1}$	$f\sigma_8(0.51)$	$0.476^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.31}$	$n_{\mathrm{s},0.002}$	$0.979^{+0.016}_{-0.017}$	$\sigma_8(0.51)$	$0.631^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2495^{+0.0057}_{-0.0063}$	$f\sigma_8(0.61)$	$0.471^{+0.017}_{-0.016}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2508^{+0.0057}_{-0.0063}$	$\sigma_8(0.61)$	$0.601^{+0.021}_{-0.021}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.66^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.303^{+0.011}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.48}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.49^{+0.44}_{-0.39}$	$\sigma_8(2.33)$	$0.313^{+0.011}_{-0.012}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.44}_{-0.44}$	$z_*$	$1090.2^{+1.1}_{-1.1}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$142.0^{+4.5}_{-4.0}$	$f_{2000}^{217}$	$108.3^{+5.5}_{-5.5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.65^{+0.42}_{-0.37}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.6)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0039}$	$z_{\mathrm{drag}}$	$1060.8^{+1.6}_{-1.6}$	$\chi_{\mathrm{lowl}}^2$	$21.74 (\nu: 0.3)$
$c_{TE}$	$0.999^{+0.012}_{-0.013}$	$r_{\mathrm{drag}}$	$144.6^{+4.6}_{-4.2}$	$\chi_{\mathrm{CamSpec}}^2$	$11519.4 (\nu: 19.8)$
$c_{EE}$	$0.996^{+0.013}_{-0.014}$	$k_{\mathrm{D}}$	$0.1426^{+0.0032}_{-0.0033}$	$\chi_{\mathrm{H073p45}}^2$	$5.1 (\nu: 4.1)$
$H_0$	$69.8^{+2.8}_{-2.8}$	$100\theta_{\mathrm{D}}$	$0.1615^{+0.0011}_{-0.0012}$	$\chi_{6\mathrm{DF}}^2$	$0.037 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.700^{+0.015}_{-0.016}$	$z_{\mathrm{eq}}$	$3344^{+60}_{-61}$	$\chi_{\mathrm{MGS}}^2$	$2.05 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.300^{+0.016}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01041^{+0.00032}_{-0.00030}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.84 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1464^{+0.0083}_{-0.0080}$	$100\theta_{\mathrm{eq}}$	$0.824^{+0.012}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_{\mathrm{m}} h^3$	$0.1023^{+0.0091}_{-0.0093}$	$100\theta_{\mathrm{s,eq}}$	$0.4550^{+0.0060}_{-0.0059}$	$\chi_{\mathrm{BAO}}^2$	$5.93 (\nu: 0.4)$
$\sigma_8$	$0.820^{+0.027}_{-0.028}$	$H(0.15)$	$75.1^{+2.8}_{-2.8}$	$\chi_{\mathrm{CMB}}^2$	$11938.2 (\nu: 19.1)$
$S_8$	$0.820^{+0.035}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$622^{+25}_{-23}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.12; R - 1 = 0.01923$$



### 6.33 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02257^{+0.00042}_{-0.00041}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.019}_{-0.018}$	$H(0.38)$	$85.2^{+2.8}_{-2.9}$
$\Omega_c h^2$	$0.1232^{+0.0082}_{-0.0080}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.022}_{-0.022}$	$D_M(0.38)$	$1485^{+57}_{-52}$
$100\theta_{MC}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8/h^{0.5}$	$0.981^{+0.027}_{-0.025}$	$H(0.51)$	$92.0^{+2.9}_{-3.1}$
$\tau$	$0.056^{+0.020}_{-0.015}$	$r_{\text{drag}} h$	$101.0^{+2.0}_{-2.0}$	$D_M(0.51)$	$1925^{+72}_{-66}$
$N_{\text{eff}}$	$3.36^{+0.44}_{-0.47}$	$\langle d^2 \rangle^{1/2}$	$2.408^{+0.062}_{-0.058}$	$H(0.61)$	$97.6^{+3.0}_{-3.2}$
$\ln(10^{10} A_s)$	$3.054^{+0.046}_{-0.037}$	$z_{\text{re}}$	$< 9.65$	$D_M(0.61)$	$2242^{+83}_{-75}$
$n_s$	$0.979^{+0.015}_{-0.017}$	$10^9 A_s$	$2.120^{+0.099}_{-0.077}$	$H(2.33)$	$239.8^{+6.8}_{-6.9}$
$y_{\text{cal}}$	$1.0005^{+0.0068}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.896^{+0.043}_{-0.046}$	$D_M(2.33)$	$5634^{+190}_{-160}$
$A_{100}^{\text{PS}}$	$246^{+60}_{-60}$	$D_{40}$	$1210^{+34}_{-33}$	$f\sigma_8(0.15)$	$0.454^{+0.019}_{-0.018}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{220}$	$5723^{+110}_{-94}$	$\sigma_8(0.15)$	$0.758^{+0.026}_{-0.026}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2539^{+38}_{-35}$	$f\sigma_8(0.38)$	$0.476^{+0.018}_{-0.017}$
$A_{217}^{\text{CIB}}$	$42^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.38)$	$0.674^{+0.023}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$< 8.65$	$D_{2000}$	$228.8^{+5.2}_{-5.1}$	$f\sigma_8(0.51)$	$0.475^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.31}$	$n_{s,0.002}$	$0.979^{+0.015}_{-0.017}$	$\sigma_8(0.51)$	$0.631^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2495^{+0.0056}_{-0.0062}$	$f\sigma_8(0.61)$	$0.471^{+0.017}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2508^{+0.0057}_{-0.0062}$	$\sigma_8(0.61)$	$0.601^{+0.021}_{-0.021}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.66^{+0.14}_{-0.14}$	$f\sigma_8(2.33)$	$0.303^{+0.011}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.48}$	$\text{Age/Gyr}$	$13.49^{+0.44}_{-0.39}$	$\sigma_8(2.33)$	$0.313^{+0.011}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.44}$	$z_*$	$1090.2^{+1.1}_{-1.1}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$142.0^{+4.5}_{-4.0}$	$f_{2000}^{217}$	$108.3^{+5.5}_{-5.5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.65^{+0.42}_{-0.37}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1060.9^{+1.6}_{-1.6}$	$\chi_{\text{lowl}}^2$	$21.73 (\nu: 0.3)$
$c_{TE}$	$0.999^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$144.6^{+4.6}_{-4.2}$	$\chi_{\text{CamSpec}}^2$	$11519.4 (\nu: 19.8)$
$c_{EE}$	$0.996^{+0.013}_{-0.014}$	$k_D$	$0.1426^{+0.0032}_{-0.0033}$	$\chi_{\text{H073p45}}^2$	$5.1 (\nu: 3.9)$
$H_0$	$69.9^{+2.7}_{-2.7}$	$100\theta_D$	$0.1615^{+0.0011}_{-0.0012}$	$\chi_{\text{JLA}}^2$	$1034.81 (\nu: 0.0)$
$\Omega_\Lambda$	$0.700^{+0.015}_{-0.015}$	$z_{\text{eq}}$	$3344^{+58}_{-59}$	$\chi_{6\text{DF}}^2$	$0.035 (\nu: 0.0)$
$\Omega_m$	$0.300^{+0.015}_{-0.015}$	$k_{\text{eq}}$	$0.01041^{+0.00031}_{-0.00030}$	$\chi_{\text{MGS}}^2$	$2.06 (\nu: 0.1)$
$\Omega_m h^2$	$0.1464^{+0.0083}_{-0.0080}$	$100\theta_{\text{eq}}$	$0.824^{+0.011}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$3.81 (\nu: 0.2)$
$\Omega_m h^3$	$0.1023^{+0.0091}_{-0.0093}$	$100\theta_{s,\text{eq}}$	$0.4550^{+0.0058}_{-0.0057}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\sigma_8$	$0.820^{+0.027}_{-0.028}$	$H(0.15)$	$75.1^{+2.7}_{-2.8}$	$\chi_{\text{BAO}}^2$	$5.90 (\nu: 0.4)$
$S_8$	$0.820^{+0.035}_{-0.034}$	$D_M(0.15)$	$622^{+25}_{-23}$	$\chi_{\text{CMB}}^2$	$11938.2 (\nu: 19.0)$

$$\bar{\chi}_{\text{eff}}^2 = 12991.86; R - 1 = 0.01898$$



### 6.34 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02259^{+0.00047}_{-0.00046}$	$S_8$	$0.820^{+0.032}_{-0.032}$	$H(0.15)$	$75.2^{+3.1}_{-3.0}$
$\Omega_c h^2$	$0.1231^{+0.0078}_{-0.0076}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.018}_{-0.017}$	$D_M(0.15)$	$621^{+27}_{-26}$
$100\theta_{MC}$	$1.0405^{+0.0011}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.019}_{-0.019}$	$H(0.38)$	$85.3^{+3.1}_{-3.1}$
$\tau$	$0.058^{+0.020}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.982^{+0.023}_{-0.023}$	$D_M(0.38)$	$1483^{+60}_{-57}$
$N_{\text{eff}}$	$3.36^{+0.46}_{-0.47}$	$r_{\text{drag}} h$	$101.1^{+2.6}_{-2.4}$	$H(0.51)$	$92.1^{+3.2}_{-3.1}$
$\ln(10^{10} A_s)$	$3.059^{+0.044}_{-0.036}$	$\langle d^2 \rangle^{1/2}$	$2.412^{+0.058}_{-0.057}$	$D_M(0.51)$	$1923^{+76}_{-73}$
$n_s$	$0.979^{+0.017}_{-0.018}$	$z_{\text{re}}$	$< 9.87$	$H(0.61)$	$97.7^{+3.3}_{-3.2}$
$y_{\text{cal}}$	$1.0008^{+0.0068}_{-0.0062}$	$10^9 A_s$	$2.131^{+0.097}_{-0.076}$	$D_M(0.61)$	$2239^{+87}_{-82}$
$A_{100}^{\text{PS}}$	$247^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.897^{+0.041}_{-0.042}$	$H(2.33)$	$239.8^{+6.6}_{-6.5}$
$A_{143}^{\text{PS}}$	$43^{+20}_{-20}$	$D_{40}$	$1211^{+33}_{-33}$	$D_M(2.33)$	$5631^{+180}_{-180}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{220}$	$5731^{+100}_{-97}$	$f\sigma_8(0.15)$	$0.455^{+0.017}_{-0.017}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{810}$	$2541^{+37}_{-33}$	$\sigma_8(0.15)$	$0.760^{+0.023}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$< 8.65$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.476^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.31}$	$D_{2000}$	$228.9^{+5.2}_{-5.1}$	$\sigma_8(0.38)$	$0.675^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.979^{+0.017}_{-0.018}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2496^{+0.0059}_{-0.0062}$	$\sigma_8(0.51)$	$0.632^{+0.021}_{-0.020}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2509^{+0.0059}_{-0.0063}$	$f\sigma_8(0.61)$	$0.472^{+0.014}_{-0.014}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$10^5 D/H$	$2.65^{+0.13}_{-0.14}$	$\sigma_8(0.61)$	$0.602^{+0.020}_{-0.020}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.44}$	Age/Gyr	$13.48^{+0.44}_{-0.42}$	$f\sigma_8(2.33)$	$0.304^{+0.011}_{-0.010}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1090.21^{+0.96}_{-1.0}$	$\sigma_8(2.33)$	$0.314^{+0.011}_{-0.011}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.41}$	$r_*$	$142.0^{+4.2}_{-4.0}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$f_{2000}^{217}$	$108.3^{+5.5}_{-5.5}$
$c_{217}$	$1.0013^{+0.0042}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	$13.64^{+0.39}_{-0.37}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$c_{TE}$	$0.999^{+0.012}_{-0.013}$	$z_{\text{drag}}$	$1060.9^{+1.6}_{-1.7}$	$\chi_{\text{lensing}}^2$	$9.90 (\nu: 0.4)$
$c_{EE}$	$0.996^{+0.014}_{-0.014}$	$r_{\text{drag}}$	$144.5^{+4.4}_{-4.1}$	$\chi_{\text{simall}}^2$	$397.5 (\nu: 2.3)$
$H_0$	$70.0^{+3.1}_{-3.0}$	$k_D$	$0.1426^{+0.0032}_{-0.0032}$	$\chi_{\text{lowl}}^2$	$21.78 (\nu: 0.3)$
$\Omega_\Lambda$	$0.701^{+0.019}_{-0.020}$	$100\theta_D$	$0.1615^{+0.0011}_{-0.0011}$	$\chi_{\text{CamSpec}}^2$	$11519.4 (\nu: 20.3)$
$\Omega_m$	$0.299^{+0.020}_{-0.019}$	$z_{\text{eq}}$	$3340^{+72}_{-74}$	$\chi_{\text{H073p45}}^2$	$4.9 (\nu: 5.0)$
$\Omega_m h^2$	$0.1463^{+0.0081}_{-0.0078}$	$k_{\text{eq}}$	$0.01041^{+0.00030}_{-0.00029}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.2)$
$\Omega_m h^3$	$0.1024^{+0.0093}_{-0.0092}$	$100\theta_{\text{eq}}$	$0.825^{+0.015}_{-0.014}$	$\chi_{\text{CMB}}^2$	$11948.5 (\nu: 21.3)$
$\sigma_8$	$0.821^{+0.025}_{-0.025}$	$100\theta_{s,\text{eq}}$	$0.4554^{+0.0074}_{-0.0070}$		

$$\bar{\chi}_{\text{eff}}^2 = 11961.28; \Delta\bar{\chi}_{\text{eff}}^2 = -2.23; R - 1 = 0.02116$$



### 6.35 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02256^{+0.00043}_{-0.00040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.018}_{-0.018}$	$H(0.51)$	$91.8^{+2.9}_{-2.9}$
$\Omega_{\mathrm{c}} h^2$	$0.1230^{+0.0078}_{-0.0078}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.51)$	$1929^{+69}_{-66}$
$100\theta_{\mathrm{MC}}$	$1.0405^{+0.0011}_{-0.0010}$	$r_{\mathrm{drag}} h$	$100.9^{+1.9}_{-1.9}$	$H(0.61)$	$97.5^{+3.0}_{-3.0}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.415^{+0.052}_{-0.050}$	$D_{\mathrm{M}}(0.61)$	$2246^{+79}_{-75}$
$N_{\mathrm{eff}}$	$3.34^{+0.45}_{-0.45}$	$z_{\mathrm{re}}$	$< 9.67$	$H(2.33)$	$239.7^{+6.5}_{-6.6}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.057^{+0.041}_{-0.035}$	$10^9 A_{\mathrm{s}}$	$2.127^{+0.090}_{-0.073}$	$D_{\mathrm{M}}(2.33)$	$5641^{+180}_{-170}$
$n_{\mathrm{s}}$	$0.978^{+0.015}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.896^{+0.040}_{-0.042}$	$f\sigma_8(0.15)$	$0.456^{+0.015}_{-0.015}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0068}_{-0.0063}$	$D_{40}$	$1213^{+32}_{-31}$	$\sigma_8(0.15)$	$0.759^{+0.023}_{-0.023}$
$A_{100}^{\mathrm{PS}}$	$246^{+60}_{-60}$	$D_{220}$	$5729^{+100}_{-96}$	$f\sigma_8(0.38)$	$0.477^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$D_{810}$	$2540^{+37}_{-33}$	$\sigma_8(0.38)$	$0.674^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.0^{+5.3}_{-5.1}$	$\sigma_8(0.51)$	$0.632^{+0.020}_{-0.020}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.66$	$n_{\mathrm{s},0.002}$	$0.978^{+0.015}_{-0.016}$	$f\sigma_8(0.61)$	$0.472^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.31}$	$Y_{\mathrm{P}}$	$0.2493^{+0.0057}_{-0.0060}$	$\sigma_8(0.61)$	$0.601^{+0.019}_{-0.019}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2506^{+0.0057}_{-0.0060}$	$f\sigma_8(2.33)$	$0.3035^{+0.0098}_{-0.0098}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.65^{+0.13}_{-0.13}$	$\sigma_8(2.33)$	$0.313^{+0.011}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.51^{+0.43}_{-0.39}$	$f_{2000}^{143}$	$32^{+9}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.48}$	$z_*$	$1090.23^{+0.95}_{-1.0}$	$f_{2000}^{217}$	$108.2^{+5.6}_{-5.6}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.44}$	$r_*$	$142.1^{+4.3}_{-4.0}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	$1.0405^{+0.0014}_{-0.0013}$	$\chi_{\mathrm{lensing}}^2$	$9.77 (\nu: 0.3)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.66^{+0.39}_{-0.37}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 1.9)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$z_{\mathrm{drag}}$	$1060.8^{+1.5}_{-1.6}$	$\chi_{\mathrm{lowl}}^2$	$21.89 (\nu: 0.3)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0039}$	$r_{\mathrm{drag}}$	$144.7^{+4.4}_{-4.1}$	$\chi_{\mathrm{CamSpec}}^2$	$11518.7 (\nu: 19.2)$
$c_{TE}$	$0.998^{+0.012}_{-0.013}$	$k_{\mathrm{D}}$	$0.1425^{+0.0031}_{-0.0032}$	$\chi_{\mathrm{H073p45}}^2$	$5.5 (\nu: 4.1)$
$c_{EE}$	$0.996^{+0.013}_{-0.014}$	$100\theta_{\mathrm{D}}$	$0.1614^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{JLA}}^2$	$1034.81 (\nu: 0.0)$
$H_0$	$69.7^{+2.7}_{-2.7}$	$z_{\mathrm{eq}}$	$3347^{+56}_{-55}$	$\chi_{6\mathrm{DF}}^2$	$0.029 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.699^{+0.014}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01041^{+0.00030}_{-0.00029}$	$\chi_{\mathrm{MGS}}^2$	$1.98 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.301^{+0.015}_{-0.014}$	$100\theta_{\mathrm{eq}}$	$0.824^{+0.011}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.78 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1462^{+0.0080}_{-0.0078}$	$100\theta_{\mathrm{s,eq}}$	$0.4547^{+0.0055}_{-0.0055}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.1)$
$\Omega_{\mathrm{m}} h^3$	$0.1020^{+0.0090}_{-0.0088}$	$H(0.15)$	$75.0^{+2.7}_{-2.7}$	$\chi_{\mathrm{CMB}}^2$	$11947.6 (\nu: 19.4)$
$\sigma_8$	$0.821^{+0.025}_{-0.025}$	$D_{\mathrm{M}}(0.15)$	$623^{+24}_{-23}$	$\chi_{\mathrm{BAO}}^2$	$5.79 (\nu: 0.2)$
$S_8$	$0.822^{+0.028}_{-0.028}$	$H(0.38)$	$85.1^{+2.8}_{-2.8}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.016}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1488^{+55}_{-52}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 13001.46; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.07; R - 1 = 0.02255$$



## 7 nnu+meffsterile

### 7.1 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}} h^2$	0.022298	$0.02237^{+0.00046}_{-0.00045}$	$\Omega_{\mathrm{m}} h^3$	0.09691	$0.0981^{+0.0064}_{-0.0027}$	$100\theta_{\mathrm{eq}}$	0.8160	$0.827^{+0.059}_{-0.021}$
$\Omega_{\mathrm{c}} h^2$	0.1202	$0.1198^{+0.0078}_{-0.012}$	$\sigma_8$	0.811	$0.778^{+0.050}_{-0.086}$	$100\theta_{\mathrm{s,eq}}$	0.4508	$0.456^{+0.031}_{-0.011}$
$100\theta_{\mathrm{MC}}$	1.04084	$1.04068^{+0.00088}_{-0.0010}$	$S_8$	0.828	$0.805^{+0.053}_{-0.076}$	$H(0.15)$	73.00	$72.8^{+2.8}_{-1.7}$
$\tau$	0.0547	$0.053^{+0.023}_{-0.021}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4536	$0.441^{+0.029}_{-0.042}$	$D_{\mathrm{M}}(0.15)$	640.4	$643^{+18}_{-26}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.00	$< 1.04$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6067	$0.586^{+0.035}_{-0.056}$	$H(0.38)$	83.15	$83.1^{+2.7}_{-1.3}$
$N_{\mathrm{eff}}$	3.089	$< 3.50$	$\sigma_8/h^{0.5}$	0.986	$0.948^{+0.054}_{-0.098}$	$D_{\mathrm{M}}(0.38)$	1527.0	$1531^{+35}_{-55}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0445	$3.043^{+0.050}_{-0.045}$	$r_{\mathrm{drag}} h$	99.44	$98.3^{+3.5}_{-4.4}$	$H(0.51)$	89.90	$90.0^{+2.6}_{-1.1}$
$n_{\mathrm{s}}$	0.9671	$0.967^{+0.018}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.430^{+0.076}_{-0.074}$	$D_{\mathrm{M}}(0.51)$	1978	$1982^{+41}_{-69}$
$y_{\mathrm{cal}}$	1.0006	$1.0005^{+0.0065}_{-0.0067}$	$z_{\mathrm{re}}$	7.75	$7.6^{+2.3}_{-2.3}$	$H(0.61)$	95.54	$95.7^{+2.3}_{-1.1}$
$A_{100}^{\mathrm{PS}}$	239	$244^{+60}_{-60}$	$10^9 A_{\mathrm{s}}$	2.100	$2.10^{+0.11}_{-0.093}$	$D_{\mathrm{M}}(0.61)$	2302	$2305^{+44}_{-77}$
$A_{143}^{\mathrm{PS}}$	44.7	$42^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8822	$1.886^{+0.038}_{-0.034}$	$H(2.33)$	236.8	$238.6^{+6.1}_{-4.0}$
$A_{217}^{\mathrm{PS}}$	102.0	$101^{+30}_{-30}$	$D_{40}$	1225.7	$1222^{+37}_{-39}$	$D_{\mathrm{M}}(2.33)$	5749	$5734^{+58}_{-130}$
$A_{217}^{\mathrm{CIB}}$	42.1	$41^{+20}_{-20}$	$D_{220}$	5719	$5717^{+100}_{-100}$	$f\sigma_8(0.15)$	0.4581	$0.445^{+0.028}_{-0.042}$
$A_{143}^{\mathrm{tSZ}}$	4.79	$< 8.82$	$D_{810}$	2536.7	$2536^{+37}_{-36}$	$\sigma_8(0.15)$	0.750	$0.718^{+0.047}_{-0.081}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.682	$0.65^{+0.31}_{-0.31}$	$D_{1420}$	815.3	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4762	$0.460^{+0.028}_{-0.044}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.70	—	$D_{2000}$	229.99	$229.0^{+4.6}_{-4.9}$	$\sigma_8(0.38)$	0.664	$0.636^{+0.042}_{-0.074}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.55	—	$n_{\mathrm{s}, 0.002}$	0.9671	$0.967^{+0.018}_{-0.014}$	$f\sigma_8(0.51)$	0.4747	$0.458^{+0.028}_{-0.045}$
$A^{\mathrm{kSZ}}$	3.0	—	$Y_{\mathrm{P}}$	0.24594	$0.2471^{+0.0044}_{-0.0019}$	$\sigma_8(0.51)$	0.622	$0.595^{+0.040}_{-0.070}$
$A_{100}^{\mathrm{dust}}$	1.01	$1.01^{+0.52}_{-0.51}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24727	$0.2484^{+0.0044}_{-0.0019}$	$f\sigma_8(0.61)$	0.4697	$0.453^{+0.027}_{-0.045}$
$A_{143}^{\mathrm{dust}}$	0.969	$0.97^{+0.44}_{-0.45}$	$10^5 \mathrm{D}/\mathrm{H}$	2.614	$2.63^{+0.12}_{-0.094}$	$\sigma_8(0.61)$	0.592	$0.566^{+0.038}_{-0.067}$
$A_{217}^{\mathrm{dust}}$	0.966	$0.97^{+0.27}_{-0.27}$	$\mathrm{Age}/\mathrm{Gyr}$	13.763	$13.73^{+0.14}_{-0.30}$	$f\sigma_8(2.33)$	0.2983	$0.285^{+0.020}_{-0.034}$
$A_{143 \times 217}^{\mathrm{dust}}$	1.021	$1.03^{+0.42}_{-0.41}$	$z_*$	1090.07	$1090.2^{+1.0}_{-0.88}$	$\sigma_8(2.33)$	0.3075	$0.293^{+0.022}_{-0.037}$
$c_{100}$	0.99762	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	144.22	$143.3^{+1.9}_{-3.2}$	$f_{2000}^{143}$	30.6	$31^{+8}_{-8}$
$c_{217}$	1.00124	$1.0012^{+0.0040}_{-0.0041}$	$100\theta_*$	1.04101	$1.04080^{+0.00091}_{-0.0011}$	$f_{2000}^{217}$	107.2	$108.0^{+5.5}_{-5.2}$
$c_{TE}$	0.9969	$0.997^{+0.013}_{-0.012}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.853	$13.77^{+0.18}_{-0.30}$	$f_{2000}^{143 \times 217}$	32.8	$34^{+6}_{-6}$
$c_{EE}$	0.9933	$0.993^{+0.014}_{-0.013}$	$z_{\mathrm{drag}}$	1059.82	$1060.2^{+1.5}_{-1.1}$	$\chi_{\mathrm{simall}}^2$	396.18	$397.0 (\nu: 1.6)$
$H_0$	67.69	$67.4^{+3.0}_{-2.1}$	$r_{\mathrm{drag}}$	146.90	$146.0^{+1.9}_{-3.3}$	$\chi_{\mathrm{lowl}}^2$	23.00	$22.9 (\nu: 0.6)$
$\Omega_{\Lambda}$	0.6876	$0.679^{+0.027}_{-0.038}$	$k_{\mathrm{D}}$	0.14085	$0.1416^{+0.0028}_{-0.0016}$	$\chi_{\mathrm{CamSpec}}^2$	11500.0	$11517.5 (\nu: 18.9)$
$\Omega_{\mathrm{m}}$	0.3124	$0.321^{+0.038}_{-0.027}$	$100\theta_{\mathrm{D}}$	0.16101	$0.16107^{+0.00099}_{-0.00064}$	$\chi_{\mathrm{prior}}^2$	2.2	$7.9 (\nu: 6.2)$
$\Omega_{\mathrm{m}} h^2$	0.1432	$0.1457^{+0.0091}_{-0.0054}$	$z_{\mathrm{eq}}$	3386	$3339^{+110}_{-260}$	$\chi_{\mathrm{CMB}}^2$	11919.1	$11937.4 (\nu: 19.1)$
$\Omega_{\nu} h^2$	0.0007	$0.0035^{+0.0083}_{-0.0030}$	$k_{\mathrm{eq}}$	0.01036	$0.01031^{+0.00035}_{-0.00067}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11921.37$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 0.61$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11945.34$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 2.88$ ;  $R - 1 = 0.02481$

$\chi_{\mathrm{eff}}^2$ : CMB - simall.100x143\_offlike5\_EE\_Aplanck\_B: 396.18 ( $\Delta$  0.28) commander\_dx12\_v3.2.29: 23.00 ( $\Delta$  0.00) CamSpec like\_10.7HM.1400\_unified: 11499.96 ( $\Delta$  0.31)



## 7.2 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00045}_{-0.00043}$	$\Omega_m h^3$	$0.0980^{+0.0060}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.824^{+0.051}_{-0.018}$
$\Omega_c h^2$	$0.1201^{+0.0073}_{-0.011}$	$\sigma_8$	$0.783^{+0.042}_{-0.066}$	$100\theta_{\text{s,eq}}$	$0.455^{+0.027}_{-0.0096}$
$100\theta_{\text{MC}}$	$1.04066^{+0.00080}_{-0.00099}$	$S_8$	$0.812^{+0.042}_{-0.058}$	$H(0.15)$	$72.7^{+2.8}_{-1.6}$
$\tau$	$0.054^{+0.022}_{-0.020}$	$\sigma_8 \Omega_m^{0.5}$	$0.445^{+0.023}_{-0.032}$	$D_{\text{M}}(0.15)$	$644^{+17}_{-25}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.963$	$\sigma_8 \Omega_m^{0.25}$	$0.590^{+0.028}_{-0.044}$	$H(0.38)$	$83.0^{+2.6}_{-1.1}$
$N_{\text{eff}}$	$< 3.48$	$\sigma_8/h^{0.5}$	$0.955^{+0.044}_{-0.074}$	$D_{\text{M}}(0.38)$	$1534^{+32}_{-55}$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.046}_{-0.040}$	$r_{\text{drag}} h$	$98.1^{+3.3}_{-4.0}$	$H(0.51)$	$89.9^{+2.5}_{-0.97}$
$n_{\text{s}}$	$0.966^{+0.018}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.059}_{-0.061}$	$D_{\text{M}}(0.51)$	$1985^{+37}_{-68}$
$y_{\text{cal}}$	$1.0007^{+0.0066}_{-0.0066}$	$z_{\text{re}}$	$7.7^{+2.1}_{-2.1}$	$H(0.61)$	$95.6^{+2.5}_{-1.0}$
$A_{100}^{\text{PS}}$	$244^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.105^{+0.099}_{-0.083}$	$D_{\text{M}}(0.61)$	$2309^{+40}_{-77}$
$A_{143}^{\text{PS}}$	$42^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.888^{+0.036}_{-0.031}$	$H(2.33)$	$238.6^{+5.7}_{-3.7}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{40}$	$1226^{+34}_{-34}$	$D_{\text{M}}(2.33)$	$5739^{+48}_{-140}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{220}$	$5720^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.449^{+0.022}_{-0.032}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{810}$	$2538^{+37}_{-36}$	$\sigma_8(0.15)$	$0.723^{+0.041}_{-0.063}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.464^{+0.022}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$229.2^{+4.6}_{-4.5}$	$\sigma_8(0.38)$	$0.639^{+0.038}_{-0.057}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s}, 0.002}$	$0.966^{+0.018}_{-0.013}$	$f\sigma_8(0.51)$	$0.461^{+0.022}_{-0.035}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.2470^{+0.0043}_{-0.0018}$	$\sigma_8(0.51)$	$0.598^{+0.036}_{-0.054}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2483^{+0.0043}_{-0.0018}$	$f\sigma_8(0.61)$	$0.456^{+0.022}_{-0.036}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.45}$	$10^5 \text{D}/\text{H}$	$2.63^{+0.12}_{-0.088}$	$\sigma_8(0.61)$	$0.569^{+0.035}_{-0.053}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$\text{Age}/\text{Gyr}$	$13.74^{+0.13}_{-0.31}$	$f\sigma_8(2.33)$	$0.287^{+0.018}_{-0.027}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$z_*$	$1090.28^{+0.98}_{-0.78}$	$\sigma_8(2.33)$	$0.295^{+0.019}_{-0.029}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$r_*$	$143.4^{+1.8}_{-3.0}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$100\theta_*$	$1.04079^{+0.00083}_{-0.0011}$	$f_{2000}^{217}$	$108.0^{+5.4}_{-5.2}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.16}_{-0.28}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{EE}$	$0.993^{+0.014}_{-0.014}$	$z_{\text{drag}}$	$1060.1^{+1.4}_{-1.1}$	$\chi_{\text{lensing}}^2$	$9.25 (\nu: 0.4)$
$H_0$	$67.2^{+2.9}_{-1.9}$	$r_{\text{drag}}$	$146.0^{+1.8}_{-3.1}$	$\chi_{\text{small}}^2$	$397.1 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.677^{+0.026}_{-0.035}$	$k_{\text{D}}$	$0.1416^{+0.0026}_{-0.0015}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 0.5)$
$\Omega_{\text{m}}$	$0.323^{+0.035}_{-0.026}$	$100\theta_{\text{D}}$	$0.16106^{+0.00097}_{-0.00062}$	$\chi_{\text{CamSpec}}^2$	$11516.6 (\nu: 17.1)$
$\Omega_{\text{m}} h^2$	$0.1458^{+0.0084}_{-0.0049}$	$z_{\text{eq}}$	$3351^{+93}_{-230}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_{\nu} h^2$	$0.0033^{+0.0080}_{-0.0029}$	$k_{\text{eq}}$	$0.01034^{+0.00032}_{-0.00060}$	$\chi_{\text{CMB}}^2$	$11946.1 (\nu: 18.6)$

$$\bar{\chi}_{\text{eff}}^2 = 11954.00; \Delta\bar{\chi}_{\text{eff}}^2 = 2.56; R - 1 = 0.02353$$



### 7.3 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02237^{+0.00046}_{-0.00044}$	$\Omega_m h^3$	$0.0982^{+0.0063}_{-0.0027}$	$100\theta_{\text{eq}}$	$0.827^{+0.060}_{-0.021}$
$\Omega_c h^2$	$0.1198^{+0.0077}_{-0.012}$	$\sigma_8$	$0.779^{+0.049}_{-0.085}$	$100\theta_{\text{s,eq}}$	$0.456^{+0.031}_{-0.011}$
$100\theta_{\text{MC}}$	$1.04068^{+0.00087}_{-0.0010}$	$S_8$	$0.806^{+0.053}_{-0.076}$	$H(0.15)$	$72.8^{+2.8}_{-1.7}$
$\tau$	$0.054^{+0.020}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.441^{+0.029}_{-0.042}$	$D_{\text{M}}(0.15)$	$643^{+18}_{-26}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.04$	$\sigma_8 \Omega_m^{0.25}$	$0.586^{+0.035}_{-0.056}$	$H(0.38)$	$83.2^{+2.7}_{-1.2}$
$N_{\text{eff}}$	$< 3.51$	$\sigma_8/h^{0.5}$	$0.949^{+0.054}_{-0.096}$	$D_{\text{M}}(0.38)$	$1531^{+35}_{-56}$
$\ln(10^{10} A_{\text{s}})$	$3.046^{+0.048}_{-0.031}$	$r_{\text{drag}} h$	$98.4^{+3.5}_{-4.4}$	$H(0.51)$	$90.0^{+2.6}_{-1.0}$
$n_{\text{s}}$	$0.968^{+0.018}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.074}_{-0.072}$	$D_{\text{M}}(0.51)$	$1981^{+41}_{-70}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0067}$	$z_{\text{re}}$	$< 9.62$	$H(0.61)$	$95.7^{+2.3}_{-1.1}$
$A_{100}^{\text{PS}}$	$244^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.10^{+0.10}_{-0.065}$	$D_{\text{M}}(0.61)$	$2304^{+43}_{-78}$
$A_{143}^{\text{PS}}$	$42^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.886^{+0.038}_{-0.034}$	$H(2.33)$	$238.6^{+6.1}_{-4.1}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{40}$	$1222^{+37}_{-39}$	$D_{\text{M}}(2.33)$	$5733^{+58}_{-130}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{220}$	$5717^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.445^{+0.028}_{-0.042}$
$A_{143}^{\text{tSZ}}$	$< 8.82$	$D_{810}$	$2536^{+37}_{-37}$	$\sigma_8(0.15)$	$0.719^{+0.046}_{-0.081}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.31}$	$D_{1420}$	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.461^{+0.028}_{-0.043}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$229.1^{+4.6}_{-4.8}$	$\sigma_8(0.38)$	$0.637^{+0.042}_{-0.074}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s}, 0.002}$	$0.968^{+0.018}_{-0.014}$	$f\sigma_8(0.51)$	$0.459^{+0.027}_{-0.044}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.2471^{+0.0044}_{-0.0020}$	$\sigma_8(0.51)$	$0.595^{+0.040}_{-0.070}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.51}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2485^{+0.0044}_{-0.0020}$	$f\sigma_8(0.61)$	$0.453^{+0.027}_{-0.045}$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.45}$	$10^5 \text{D}/\text{H}$	$2.63^{+0.12}_{-0.094}$	$\sigma_8(0.61)$	$0.566^{+0.038}_{-0.067}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$\text{Age}/\text{Gyr}$	$13.72^{+0.14}_{-0.31}$	$f\sigma_8(2.33)$	$0.286^{+0.020}_{-0.034}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_*$	$1090.2^{+1.0}_{-0.88}$	$\sigma_8(2.33)$	$0.294^{+0.021}_{-0.037}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$143.3^{+1.9}_{-3.2}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$100\theta_*$	$1.04080^{+0.00089}_{-0.0011}$	$f_{2000}^{217}$	$108.0^{+5.5}_{-5.2}$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.18}_{-0.30}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{EE}$	$0.993^{+0.014}_{-0.013}$	$z_{\text{drag}}$	$1060.2^{+1.5}_{-1.1}$	$\chi_{\text{small}}^2$	$396.9 (\nu: 1.7)$
$H_0$	$67.4^{+3.0}_{-2.1}$	$r_{\text{drag}}$	$146.0^{+2.0}_{-3.3}$	$\chi_{\text{lowl}}^2$	$22.9 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.679^{+0.027}_{-0.038}$	$k_{\text{D}}$	$0.1416^{+0.0026}_{-0.0018}$	$\chi_{\text{CamSpec}}^2$	$11517.4 (\nu: 18.8)$
$\Omega_{\text{m}}$	$0.321^{+0.038}_{-0.027}$	$100\theta_{\text{D}}$	$0.16107^{+0.00099}_{-0.00064}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.2)$
$\Omega_{\text{m}} h^2$	$0.1457^{+0.0091}_{-0.0054}$	$z_{\text{eq}}$	$3339^{+110}_{-260}$	$\chi_{\text{CMB}}^2$	$11937.2 (\nu: 18.7)$
$\Omega_{\nu} h^2$	$0.0035^{+0.0083}_{-0.0030}$	$k_{\text{eq}}$	$0.01031^{+0.00035}_{-0.00067}$		

$$\bar{\chi}_{\text{eff}}^2 = 11945.16; \Delta\bar{\chi}_{\text{eff}}^2 = 2.97; R - 1 = 0.02558$$



## 7.4 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02235^{+0.00045}_{-0.00042}$	$\Omega_m h^3$	$0.0980^{+0.0061}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.824^{+0.052}_{-0.018}$
$\Omega_c h^2$	$0.1201^{+0.0074}_{-0.011}$	$\sigma_8$	$0.784^{+0.042}_{-0.067}$	$100\theta_{\text{s,eq}}$	$0.455^{+0.027}_{-0.0095}$
$100\theta_{\text{MC}}$	$1.04066^{+0.00080}_{-0.00099}$	$S_8$	$0.812^{+0.042}_{-0.059}$	$H(0.15)$	$72.7^{+2.8}_{-1.6}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	$0.445^{+0.023}_{-0.032}$	$D_{\text{M}}(0.15)$	$644^{+16}_{-25}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.967$	$\sigma_8 \Omega_m^{0.25}$	$0.590^{+0.028}_{-0.045}$	$H(0.38)$	$83.0^{+2.6}_{-1.1}$
$N_{\text{eff}}$	$< 3.49$	$\sigma_8/h^{0.5}$	$0.955^{+0.047}_{-0.070}$	$D_{\text{M}}(0.38)$	$1533^{+32}_{-56}$
$\ln(10^{10} A_{\text{s}})$	$3.049^{+0.045}_{-0.031}$	$r_{\text{drag}} h$	$98.2^{+3.3}_{-4.1}$	$H(0.51)$	$89.9^{+2.6}_{-0.94}$
$n_{\text{s}}$	$0.967^{+0.018}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.442^{+0.058}_{-0.060}$	$D_{\text{M}}(0.51)$	$1985^{+37}_{-69}$
$y_{\text{cal}}$	$1.0007^{+0.0066}_{-0.0066}$	$z_{\text{re}}$	$< 9.67$	$H(0.61)$	$95.6^{+2.5}_{-0.98}$
$A_{100}^{\text{PS}}$	$244^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.109^{+0.096}_{-0.064}$	$D_{\text{M}}(0.61)$	$2308^{+40}_{-77}$
$A_{143}^{\text{PS}}$	$42^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.888^{+0.037}_{-0.031}$	$H(2.33)$	$238.6^{+5.7}_{-3.7}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{40}$	$1226^{+34}_{-34}$	$D_{\text{M}}(2.33)$	$5738^{+53}_{-130}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{220}$	$5720^{+110}_{-99}$	$f\sigma_8(0.15)$	$0.449^{+0.022}_{-0.032}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{810}$	$2538^{+37}_{-36}$	$\sigma_8(0.15)$	$0.723^{+0.040}_{-0.063}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.464^{+0.022}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$229.2^{+4.6}_{-4.5}$	$\sigma_8(0.38)$	$0.640^{+0.037}_{-0.058}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s}, 0.002}$	$0.967^{+0.018}_{-0.013}$	$f\sigma_8(0.51)$	$0.462^{+0.022}_{-0.036}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.2470^{+0.0043}_{-0.0018}$	$\sigma_8(0.51)$	$0.598^{+0.036}_{-0.055}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.49}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2483^{+0.0043}_{-0.0018}$	$f\sigma_8(0.61)$	$0.456^{+0.022}_{-0.036}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.45}$	$10^5 \text{D}/\text{H}$	$2.63^{+0.12}_{-0.088}$	$\sigma_8(0.61)$	$0.569^{+0.034}_{-0.053}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$\text{Age}/\text{Gyr}$	$13.74^{+0.13}_{-0.31}$	$f\sigma_8(2.33)$	$0.287^{+0.018}_{-0.027}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$z_*$	$1090.27^{+0.99}_{-0.79}$	$\sigma_8(2.33)$	$0.295^{+0.019}_{-0.029}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$r_*$	$143.4^{+1.8}_{-3.0}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$100\theta_*$	$1.04079^{+0.00083}_{-0.0011}$	$f_{2000}^{217}$	$107.9^{+5.4}_{-5.2}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.17}_{-0.28}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{EE}$	$0.993^{+0.014}_{-0.014}$	$z_{\text{drag}}$	$1060.1^{+1.3}_{-1.1}$	$\chi_{\text{lensing}}^2$	$9.21 (\nu: 0.4)$
$H_0$	$67.2^{+2.9}_{-1.9}$	$r_{\text{drag}}$	$146.0^{+1.8}_{-3.1}$	$\chi_{\text{small}}^2$	$397.1 (\nu: 1.9)$
$\Omega_{\Lambda}$	$0.677^{+0.026}_{-0.035}$	$k_{\text{D}}$	$0.1416^{+0.0026}_{-0.0015}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 0.5)$
$\Omega_{\text{m}}$	$0.323^{+0.035}_{-0.026}$	$100\theta_{\text{D}}$	$0.16106^{+0.00098}_{-0.00062}$	$\chi_{\text{CamSpec}}^2$	$11516.5 (\nu: 17.1)$
$\Omega_{\text{m}} h^2$	$0.1457^{+0.0084}_{-0.0049}$	$z_{\text{eq}}$	$3350^{+92}_{-230}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_{\nu} h^2$	$0.0033^{+0.0079}_{-0.0029}$	$k_{\text{eq}}$	$0.01034^{+0.00032}_{-0.00061}$	$\chi_{\text{CMB}}^2$	$11946.0 (\nu: 18.3)$

$$\bar{\chi}_{\text{eff}}^2 = 11953.86; \Delta\bar{\chi}_{\text{eff}}^2 = 2.61; R - 1 = 0.02344$$



## 7.5 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022350	$0.02243^{+0.00042}_{-0.00039}$	$\sigma_8$	0.806	$0.788^{+0.043}_{-0.073}$	$H(0.15)$	73.00	$73.4^{+2.6}_{-1.3}$
$\Omega_c h^2$	0.1148	$0.1187^{+0.0087}_{-0.013}$	$S_8$	0.818	$0.801^{+0.047}_{-0.073}$	$D_M(0.15)$	640.1	$637^{+13}_{-23}$
$100\theta_{MC}$	1.04097	$1.04082^{+0.00086}_{-0.0010}$	$\sigma_8 \Omega_m^{0.5}$	0.4483	$0.439^{+0.026}_{-0.040}$	$H(0.38)$	83.07	$83.6^{+2.4}_{-1.2}$
$\tau$	0.0538	$0.055^{+0.021}_{-0.021}$	$\sigma_8 \Omega_m^{0.25}$	0.6012	$0.588^{+0.032}_{-0.053}$	$D_M(0.38)$	1527.2	$1519^{+27}_{-52}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.38	$< 1.15$	$\sigma_8/h^{0.5}$	0.980	$0.955^{+0.046}_{-0.085}$	$H(0.51)$	89.76	$90.3^{+2.5}_{-1.1}$
$N_{\text{eff}}$	3.047	$< 3.53$	$r_{\text{drag}} h$	99.86	$99.7^{+2.3}_{-2.2}$	$D_M(0.51)$	1978.7	$1967^{+32}_{-65}$
$\ln(10^{10} A_s)$	3.0404	$3.044^{+0.047}_{-0.045}$	$\langle d^2 \rangle^{1/2}$	2.425	$2.415^{+0.066}_{-0.068}$	$H(0.61)$	95.36	$96.0^{+2.5}_{-1.1}$
$n_s$	0.9680	$0.970^{+0.017}_{-0.013}$	$z_{\text{re}}$	7.62	$7.7^{+2.0}_{-2.3}$	$D_M(0.61)$	2303	$2290^{+35}_{-75}$
$y_{\text{cal}}$	1.0009	$1.0006^{+0.0064}_{-0.0063}$	$10^9 A_s$	2.091	$2.10^{+0.10}_{-0.092}$	$H(2.33)$	235.81	$237.5^{+5.6}_{-3.0}$
$A_{100}^{\text{PS}}$	235	$243^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	1.8778	$1.881^{+0.040}_{-0.031}$	$D_M(2.33)$	5761	$5725^{+58}_{-140}$
$A_{143}^{\text{PS}}$	43.8	$41^{+20}_{-20}$	$D_{40}$	1222.9	$1218^{+34}_{-35}$	$f\sigma_8(0.15)$	0.4530	$0.444^{+0.025}_{-0.040}$
$A_{217}^{\text{PS}}$	104.5	$102^{+30}_{-40}$	$D_{220}$	5726	$5723^{+99}_{-100}$	$\sigma_8(0.15)$	0.745	$0.728^{+0.040}_{-0.067}$
$A_{217}^{\text{CIB}}$	41.8	$41^{+20}_{-20}$	$D_{810}$	2538.5	$2536^{+34}_{-35}$	$f\sigma_8(0.38)$	0.4718	$0.462^{+0.025}_{-0.042}$
$A_{143}^{\text{tSZ}}$	5.70	$< 8.78$	$D_{1420}$	817.4	$815^{+12}_{-13}$	$\sigma_8(0.38)$	0.6609	$0.646^{+0.036}_{-0.060}$
$r_{143 \times 217}^{\text{PS}}$	0.693	$0.65^{+0.31}_{-0.33}$	$D_{2000}$	230.94	$229.5^{+4.3}_{-4.5}$	$f\sigma_8(0.51)$	0.4707	$0.461^{+0.025}_{-0.042}$
$r_{143 \times 217}^{\text{CIB}}$	0.71	—	$n_{s,0.002}$	0.9680	$0.970^{+0.017}_{-0.013}$	$\sigma_8(0.51)$	0.6186	$0.604^{+0.034}_{-0.057}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.48	—	$Y_P$	0.24540	$0.2469^{+0.0049}_{-0.0017}$	$f\sigma_8(0.61)$	0.4659	$0.456^{+0.024}_{-0.041}$
$A^{\text{kSZ}}$	1.2	—	$Y_P^{\text{BBN}}$	0.24673	$0.2483^{+0.0049}_{-0.0017}$	$\sigma_8(0.61)$	0.5886	$0.575^{+0.032}_{-0.054}$
$A_{100}^{\text{dust}}$	1.01	$1.02^{+0.50}_{-0.51}$	$10^5 \text{D/H}$	2.590	$2.62^{+0.13}_{-0.084}$	$f\sigma_8(2.33)$	0.2969	$0.290^{+0.016}_{-0.028}$
$A_{143}^{\text{dust}}$	0.958	$0.97^{+0.45}_{-0.44}$	Age/Gyr	13.793	$13.71^{+0.14}_{-0.34}$	$\sigma_8(2.33)$	0.3062	$0.299^{+0.017}_{-0.029}$
$A_{217}^{\text{dust}}$	0.975	$0.97^{+0.27}_{-0.27}$	$z_*$	1089.85	$1090.01^{+0.92}_{-0.68}$	$f_{2000}^{143}$	29.4	$31^{+8}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	1.030	$1.03^{+0.42}_{-0.43}$	$r_*$	144.74	$143.7^{+1.5}_{-3.4}$	$f_{2000}^{217}$	106.5	$107.6^{+5.1}_{-5.1}$
$c_{100}$	0.99777	$0.9975^{+0.0028}_{-0.0028}$	$100\theta_*$	1.04116	$1.04094^{+0.00089}_{-0.0012}$	$f_{2000}^{143 \times 217}$	31.9	$33^{+6}_{-5}$
$c_{217}$	1.00120	$1.0012^{+0.0041}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.901	$13.81^{+0.14}_{-0.32}$	$\chi_{\text{simall}}^2$	395.95	$397.1 (\nu: 1.7)$
$c_{TE}$	0.9969	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1059.82	$1060.2^{+1.5}_{-0.99}$	$\chi_{\text{lowl}}^2$	22.71	$22.47 (\nu: 0.4)$
$c_{EE}$	0.9925	$0.994^{+0.014}_{-0.013}$	$r_{\text{drag}}$	147.41	$146.4^{+1.6}_{-3.6}$	$\chi_{\text{CamSpec}}^2$	11500.3	$11517.3 (\nu: 18.6)$
$H_0$	67.75	$68.1^{+2.6}_{-1.5}$	$k_D$	0.14051	$0.1413^{+0.0026}_{-0.0015}$	$\chi_{6\text{DF}}^2$	0.016	$0.058 (\nu: 0.0)$
$\Omega_\Lambda$	0.6909	$0.690^{+0.018}_{-0.018}$	$100\theta_D$	0.16083	$0.1610^{+0.0011}_{-0.00065}$	$\chi_{\text{MGS}}^2$	1.34	$1.30 (\nu: 0.1)$
$\Omega_m$	0.3091	$0.310^{+0.018}_{-0.018}$	$z_{\text{eq}}$	3278	$3321^{+93}_{-280}$	$\chi_{\text{DR12BAO}}^2$	4.08	$4.9 (\nu: 1.2)$
$\Omega_m h^2$	0.1419	$0.1439^{+0.0075}_{-0.0038}$	$k_{\text{eq}}$	0.01008	$0.01024^{+0.00036}_{-0.00070}$	$\chi_{\text{prior}}^2$	2.1	$7.9 (\nu: 6.0)$
$\Omega_\nu h^2$	0.0047	$0.0028^{+0.012}_{-0.0023}$	$100\theta_{\text{eq}}$	0.8388	$0.830^{+0.065}_{-0.019}$	$\chi_{\text{BAO}}^2$	5.44	$6.2 (\nu: 0.8)$
$\Omega_m h^3$	0.0961	$0.0980^{+0.0074}_{-0.0026}$	$100\theta_{s,\text{eq}}$	0.4628	$0.458^{+0.034}_{-0.0098}$	$\chi_{\text{CMB}}^2$	11919.0	$11936.9 (\nu: 18.4)$

Best-fit  $\chi_{\text{eff}}^2 = 11926.47$ ;  $\bar{\chi}_{\text{eff}}^2 = 11950.99$ ;  $\Delta\chi_{\text{eff}}^2 = 2.71$ ;  $R - 1 = 0.01562$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.08 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.95 commander\_dx12\_v3.2.29: 22.71 CamSpec like\_10.7HM\_1400\_unified: 11500.30



## 7.6 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02243^{+0.00043}_{-0.00038}$	$S_8$	$0.801^{+0.047}_{-0.073}$	$H(0.38)$	$83.6^{+2.5}_{-1.2}$
$\Omega_c h^2$	$0.1186^{+0.0089}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.026}_{-0.040}$	$D_M(0.38)$	$1517^{+27}_{-51}$
$100\theta_{MC}$	$1.04083^{+0.00086}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.588^{+0.031}_{-0.053}$	$H(0.51)$	$90.4^{+2.5}_{-1.1}$
$\tau$	$0.055^{+0.021}_{-0.021}$	$\sigma_8/h^{0.5}$	$0.955^{+0.046}_{-0.085}$	$D_M(0.51)$	$1966^{+32}_{-64}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.15$	$r_{\text{drag}} h$	$99.8^{+2.2}_{-2.1}$	$H(0.61)$	$96.0^{+2.6}_{-1.1}$
$N_{\text{eff}}$	$< 3.54$	$\langle d^2 \rangle^{1/2}$	$2.413^{+0.065}_{-0.066}$	$D_M(0.61)$	$2288^{+35}_{-73}$
$\ln(10^{10} A_s)$	$3.044^{+0.047}_{-0.045}$	$z_{\text{re}}$	$7.7^{+2.0}_{-2.2}$	$H(2.33)$	$237.4^{+5.7}_{-3.0}$
$n_s$	$0.971^{+0.017}_{-0.013}$	$10^9 A_s$	$2.10^{+0.10}_{-0.092}$	$D_M(2.33)$	$5723^{+59}_{-150}$
$y_{\text{cal}}$	$1.0006^{+0.0064}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.040}_{-0.031}$	$f\sigma_8(0.15)$	$0.443^{+0.025}_{-0.040}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-70}$	$D_{40}$	$1218^{+34}_{-35}$	$\sigma_8(0.15)$	$0.729^{+0.040}_{-0.068}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5724^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.462^{+0.025}_{-0.042}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2536^{+34}_{-34}$	$\sigma_8(0.38)$	$0.646^{+0.036}_{-0.061}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-13}$	$f\sigma_8(0.51)$	$0.461^{+0.024}_{-0.042}$
$A_{143}^{\text{tSZ}}$	$< 8.78$	$D_{2000}$	$229.6^{+4.3}_{-4.5}$	$\sigma_8(0.51)$	$0.605^{+0.033}_{-0.057}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.971^{+0.017}_{-0.013}$	$f\sigma_8(0.61)$	$0.456^{+0.024}_{-0.042}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2470^{+0.0049}_{-0.0017}$	$\sigma_8(0.61)$	$0.576^{+0.032}_{-0.054}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2483^{+0.0050}_{-0.0017}$	$f\sigma_8(2.33)$	$0.291^{+0.016}_{-0.028}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.61^{+0.13}_{-0.085}$	$\sigma_8(2.33)$	$0.300^{+0.017}_{-0.029}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.51}$	$\text{Age/Gyr}$	$13.70^{+0.14}_{-0.35}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.44}$	$z_*$	$1090.00^{+0.93}_{-0.68}$	$f_{2000}^{217}$	$107.6^{+5.1}_{-5.2}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$143.7^{+1.5}_{-3.5}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.43}$	$100\theta_*$	$1.04095^{+0.00091}_{-0.0012}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.15}_{-0.33}$	$\chi_{\text{lowl}}^2$	$22.41 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1060.2^{+1.5}_{-1.0}$	$\chi_{\text{CamSpec}}^2$	$11517.4 (\nu: 18.5)$
$c_{TE}$	$0.998^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.4^{+1.6}_{-3.6}$	$\chi_{\text{JLA}}^2$	$1035.04 (\nu: 0.0)$
$c_{EE}$	$0.994^{+0.014}_{-0.013}$	$k_D$	$0.1413^{+0.0027}_{-0.0015}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$H_0$	$68.2^{+2.5}_{-1.4}$	$100\theta_D$	$0.1610^{+0.0011}_{-0.00065}$	$\chi_{\text{MGS}}^2$	$1.37 (\nu: 0.1)$
$\Omega_\Lambda$	$0.691^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3319^{+90}_{-280}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.0)$
$\Omega_m$	$0.309^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01024^{+0.00036}_{-0.00070}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_m h^2$	$0.1438^{+0.0078}_{-0.0038}$	$100\theta_{\text{eq}}$	$0.830^{+0.065}_{-0.018}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_\nu h^2$	$0.0027^{+0.012}_{-0.0022}$	$100\theta_{s,\text{eq}}$	$0.458^{+0.033}_{-0.011}$	$\chi_{\text{CMB}}^2$	$11936.9 (\nu: 18.4)$
$\Omega_m h^3$	$0.0981^{+0.0075}_{-0.0027}$	$H(0.15)$	$73.5^{+2.6}_{-1.3}$		
$\sigma_8$	$0.788^{+0.043}_{-0.073}$	$D_M(0.15)$	$636^{+13}_{-22}$		

$$\bar{\chi}_{\text{eff}}^2 = 12985.86; R - 1 = 0.01581$$



## 7.7 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02241^{+0.00041}_{-0.00037}$	$S_8$	$0.799^{+0.047}_{-0.072}$	$H(0.38)$	$83.4^{+2.0}_{-1.0}$
$\Omega_c h^2$	$0.1179^{+0.0076}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.026}_{-0.039}$	$D_M(0.38)$	$1522^{+24}_{-44}$
$100\theta_{MC}$	$1.04087^{+0.00082}_{-0.00091}$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.031}_{-0.053}$	$H(0.51)$	$90.1^{+2.0}_{-0.94}$
$\tau$	$0.054^{+0.021}_{-0.022}$	$\sigma_8/h^{0.5}$	$0.953^{+0.047}_{-0.084}$	$D_M(0.51)$	$1972^{+28}_{-55}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.18$	$r_{\text{drag}} h$	$99.7^{+2.2}_{-2.2}$	$H(0.61)$	$95.8^{+2.0}_{-0.86}$
$N_{\text{eff}}$	$< 3.41$	$\langle d^2 \rangle^{1/2}$	$2.417^{+0.066}_{-0.066}$	$D_M(0.61)$	$2295^{+30}_{-62}$
$\ln(10^{10} A_s)$	$3.042^{+0.046}_{-0.044}$	$z_{\text{re}}$	$7.7^{+2.1}_{-2.4}$	$H(2.33)$	$237.0^{+4.9}_{-2.3}$
$n_s$	$0.969^{+0.015}_{-0.012}$	$10^9 A_s$	$2.095^{+0.098}_{-0.091}$	$D_M(2.33)$	$5737^{+46}_{-120}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.035}_{-0.029}$	$f\sigma_8(0.15)$	$0.443^{+0.025}_{-0.040}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$D_{40}$	$1220^{+33}_{-33}$	$\sigma_8(0.15)$	$0.726^{+0.038}_{-0.066}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5723^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.461^{+0.025}_{-0.041}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2536^{+35}_{-35}$	$\sigma_8(0.38)$	$0.644^{+0.034}_{-0.059}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.459^{+0.024}_{-0.041}$
$A_{143}^{\text{tSZ}}$	$< 8.78$	$D_{2000}$	$229.7^{+4.2}_{-4.2}$	$\sigma_8(0.51)$	$0.603^{+0.032}_{-0.055}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.969^{+0.015}_{-0.012}$	$f\sigma_8(0.61)$	$0.455^{+0.024}_{-0.041}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2465^{+0.0038}_{-0.0013}$	$\sigma_8(0.61)$	$0.573^{+0.031}_{-0.053}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2478^{+0.0038}_{-0.0013}$	$f\sigma_8(2.33)$	$0.289^{+0.016}_{-0.027}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.61^{+0.10}_{-0.080}$	$\sigma_8(2.33)$	$0.298^{+0.016}_{-0.028}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.74^{+0.11}_{-0.27}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.96^{+0.77}_{-0.65}$	$f_{2000}^{217}$	$107.4^{+5.1}_{-5.1}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.0^{+1.3}_{-2.7}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.43}$	$100\theta_*$	$1.04101^{+0.00084}_{-0.0010}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.12}_{-0.25}$	$\chi_{\text{lowl}}^2$	$22.60 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.92}$	$\chi_{\text{CamSpec}}^2$	$11516.9 (\nu: 17.8)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.8}$	$\chi_{\text{Aver15}}^2$	$0.61 (\nu: 0.1)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.1411^{+0.0023}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.058 (\nu: 0.0)$
$H_0$	$68.0^{+2.2}_{-1.3}$	$100\theta_{\text{D}}$	$0.16097^{+0.00088}_{-0.00059}$	$\chi_{\text{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.018}$	$z_{\text{eq}}$	$3316^{+98}_{-280}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\text{m}}$	$0.311^{+0.018}_{-0.017}$	$k_{\text{eq}}$	$0.01021^{+0.00034}_{-0.00069}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\text{m}} h^2$	$0.1434^{+0.0061}_{-0.0033}$	$100\theta_{\text{eq}}$	$0.831^{+0.064}_{-0.020}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_{\nu} h^2$	$0.0030^{+0.012}_{-0.0025}$	$100\theta_{\text{s,eq}}$	$0.459^{+0.034}_{-0.010}$	$\chi_{\text{CMB}}^2$	$11936.5 (\nu: 17.9)$
$\Omega_{\text{m}} h^3$	$0.0974^{+0.0057}_{-0.0020}$	$H(0.15)$	$73.2^{+2.2}_{-1.2}$		
$\sigma_8$	$0.786^{+0.041}_{-0.071}$	$D_M(0.15)$	$638^{+12}_{-19}$		

$$\bar{\chi}_{\text{eff}}^2 = 11951.21; R - 1 = 0.01810$$



## 7.8 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02240^{+0.00040}_{-0.00037}$	$S_8$	$0.799^{+0.047}_{-0.072}$	$H(0.38)$	$83.4^{+1.9}_{-1.0}$
$\Omega_c h^2$	$0.1179^{+0.0071}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.026}_{-0.039}$	$D_M(0.38)$	$1522^{+23}_{-43}$
$100\theta_{MC}$	$1.04087^{+0.00081}_{-0.00089}$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.031}_{-0.053}$	$H(0.51)$	$90.1^{+1.9}_{-0.92}$
$\tau$	$0.054^{+0.021}_{-0.022}$	$\sigma_8/h^{0.5}$	$0.953^{+0.046}_{-0.084}$	$D_M(0.51)$	$1972^{+28}_{-54}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.18$	$r_{\text{drag}} h$	$99.7^{+2.2}_{-2.2}$	$H(0.61)$	$95.7^{+2.0}_{-0.85}$
$N_{\text{eff}}$	$< 3.39$	$\langle d^2 \rangle^{1/2}$	$2.417^{+0.066}_{-0.066}$	$D_M(0.61)$	$2295^{+30}_{-61}$
$\ln(10^{10} A_s)$	$3.042^{+0.046}_{-0.044}$	$z_{\text{re}}$	$7.7^{+2.1}_{-2.4}$	$H(2.33)$	$237.0^{+4.6}_{-2.3}$
$n_s$	$0.969^{+0.014}_{-0.012}$	$10^9 A_s$	$2.095^{+0.098}_{-0.091}$	$D_M(2.33)$	$5738^{+45}_{-110}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.035}_{-0.029}$	$f\sigma_8(0.15)$	$0.443^{+0.025}_{-0.040}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-70}$	$D_{40}$	$1220^{+33}_{-33}$	$\sigma_8(0.15)$	$0.726^{+0.038}_{-0.066}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.461^{+0.024}_{-0.041}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2535^{+35}_{-35}$	$\sigma_8(0.38)$	$0.644^{+0.034}_{-0.059}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.459^{+0.024}_{-0.041}$
$A_{143}^{\text{tSZ}}$	$< 8.78$	$D_{2000}$	$229.7^{+4.2}_{-4.1}$	$\sigma_8(0.51)$	$0.603^{+0.032}_{-0.055}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.969^{+0.014}_{-0.012}$	$f\sigma_8(0.61)$	$0.455^{+0.023}_{-0.041}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2465^{+0.0036}_{-0.0013}$	$\sigma_8(0.61)$	$0.573^{+0.031}_{-0.053}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2478^{+0.0036}_{-0.0013}$	$f\sigma_8(2.33)$	$0.289^{+0.016}_{-0.027}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.609^{+0.092}_{-0.075}$	$\sigma_8(2.33)$	$0.298^{+0.016}_{-0.028}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.74^{+0.11}_{-0.26}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.97^{+0.71}_{-0.62}$	$f_{2000}^{217}$	$107.5^{+5.0}_{-5.0}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.0^{+1.2}_{-2.6}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.43}$	$100\theta_*$	$1.04102^{+0.00084}_{-0.00099}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.12}_{-0.24}$	$\chi_{\text{lowl}}^2$	$22.61 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.91}$	$\chi_{\text{CamSpec}}^2$	$11516.8 (\nu: 17.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.7}$	$\chi_{\text{Aver15}}^2$	$0.60 (\nu: 0.1)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.1411^{+0.0022}_{-0.0011}$	$\chi_{\text{Cooke17}}^2$	$0.12 (\nu: 0.0)$
$H_0$	$67.9^{+2.2}_{-1.3}$	$100\theta_{\text{D}}$	$0.16097^{+0.00080}_{-0.00056}$	$\chi_{\text{6DF}}^2$	$0.058 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3317^{+98}_{-280}$	$\chi_{\text{MGS}}^2$	$1.28 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.311^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01021^{+0.00033}_{-0.00069}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\text{m}} h^2$	$0.1434^{+0.0056}_{-0.0033}$	$100\theta_{\text{eq}}$	$0.831^{+0.065}_{-0.020}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\nu} h^2$	$0.0030^{+0.012}_{-0.0025}$	$100\theta_{\text{s,eq}}$	$0.459^{+0.034}_{-0.010}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_{\text{m}} h^3$	$0.0974^{+0.0054}_{-0.0020}$	$H(0.15)$	$73.2^{+2.2}_{-1.2}$	$\chi_{\text{CMB}}^2$	$11936.5 (\nu: 17.7)$
$\sigma_8$	$0.786^{+0.041}_{-0.072}$	$D_M(0.15)$	$638^{+11}_{-19}$	$\chi_{\text{Abund}}^2$	$0.72 (\nu: 0.2)$

$$\bar{\chi}_{\text{eff}}^2 = 11951.25; R - 1 = 0.01822$$



## 7.9 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02243^{+0.00042}_{-0.00038}$	$\sigma_8$	$0.789^{+0.042}_{-0.070}$	$H(0.15)$	$73.4^{+2.6}_{-1.3}$
$\Omega_c h^2$	$0.1187^{+0.0088}_{-0.012}$	$S_8$	$0.802^{+0.047}_{-0.070}$	$D_M(0.15)$	$637^{+13}_{-23}$
$100\theta_{MC}$	$1.04082^{+0.00086}_{-0.0010}$	$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.026}_{-0.038}$	$H(0.38)$	$83.6^{+2.5}_{-1.2}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	$0.589^{+0.032}_{-0.051}$	$D_M(0.38)$	$1518^{+27}_{-52}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.11$	$\sigma_8/h^{0.5}$	$0.956^{+0.046}_{-0.082}$	$H(0.51)$	$90.3^{+2.5}_{-1.1}$
$N_{\text{eff}}$	$< 3.54$	$r_{\text{drag}} h$	$99.7^{+2.3}_{-2.2}$	$D_M(0.51)$	$1967^{+32}_{-65}$
$\ln(10^{10} A_s)$	$3.046^{+0.042}_{-0.033}$	$\langle d^2 \rangle^{1/2}$	$2.417^{+0.064}_{-0.063}$	$H(0.61)$	$96.0^{+2.6}_{-1.1}$
$n_s$	$0.971^{+0.017}_{-0.013}$	$z_{\text{re}}$	$< 9.52$	$D_M(0.61)$	$2289^{+35}_{-75}$
$y_{\text{cal}}$	$1.0006^{+0.0064}_{-0.0063}$	$10^9 A_s$	$2.103^{+0.091}_{-0.069}$	$H(2.33)$	$237.5^{+5.6}_{-3.0}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.040}_{-0.031}$	$D_M(2.33)$	$5725^{+58}_{-150}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{40}$	$1218^{+34}_{-35}$	$f\sigma_8(0.15)$	$0.444^{+0.025}_{-0.039}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5723^{+99}_{-100}$	$\sigma_8(0.15)$	$0.729^{+0.039}_{-0.066}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{810}$	$2536^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.462^{+0.025}_{-0.040}$
$A_{143}^{\text{tSZ}}$	$< 8.78$	$D_{1420}$	$815^{+12}_{-13}$	$\sigma_8(0.38)$	$0.646^{+0.035}_{-0.059}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.33}$	$D_{2000}$	$229.6^{+4.3}_{-4.6}$	$f\sigma_8(0.51)$	$0.461^{+0.025}_{-0.040}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.971^{+0.017}_{-0.013}$	$\sigma_8(0.51)$	$0.605^{+0.033}_{-0.055}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2470^{+0.0049}_{-0.0017}$	$f\sigma_8(0.61)$	$0.456^{+0.024}_{-0.040}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2483^{+0.0049}_{-0.0017}$	$\sigma_8(0.61)$	$0.576^{+0.032}_{-0.053}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.51}$	$10^5 \text{D}/\text{H}$	$2.62^{+0.13}_{-0.085}$	$f\sigma_8(2.33)$	$0.291^{+0.016}_{-0.027}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.44}$	$\text{Age}/\text{Gyr}$	$13.71^{+0.14}_{-0.35}$	$\sigma_8(2.33)$	$0.300^{+0.017}_{-0.028}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$z_*$	$1090.01^{+0.92}_{-0.69}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.43}$	$r_*$	$143.7^{+1.5}_{-3.5}$	$f_{2000}^{217}$	$107.6^{+5.1}_{-5.1}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$100\theta_*$	$1.04094^{+0.00090}_{-0.0012}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.15}_{-0.32}$	$\chi_{\text{small}}^2$	$397.0 (\nu: 1.7)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1060.2^{+1.4}_{-0.99}$	$\chi_{\text{lowl}}^2$	$22.48 (\nu: 0.4)$
$c_{EE}$	$0.994^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$146.4^{+1.6}_{-3.6}$	$\chi_{\text{CamSpec}}^2$	$11517.2 (\nu: 18.1)$
$H_0$	$68.1^{+2.6}_{-1.5}$	$k_D$	$0.1413^{+0.0026}_{-0.0015}$	$\chi_{\text{6DF}}^2$	$0.057 (\nu: 0.0)$
$\Omega_\Lambda$	$0.690^{+0.018}_{-0.018}$	$100\theta_D$	$0.1610^{+0.0011}_{-0.00064}$	$\chi_{\text{MGS}}^2$	$1.31 (\nu: 0.1)$
$\Omega_m$	$0.310^{+0.018}_{-0.018}$	$z_{\text{eq}}$	$3321^{+93}_{-270}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_m h^2$	$0.1439^{+0.0076}_{-0.0038}$	$k_{\text{eq}}$	$0.01024^{+0.00036}_{-0.00069}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.0)$
$\Omega_\nu h^2$	$0.0028^{+0.012}_{-0.0027}$	$100\theta_{\text{eq}}$	$0.830^{+0.063}_{-0.019}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_m h^3$	$0.0981^{+0.0074}_{-0.0027}$	$100\theta_{s,\text{eq}}$	$0.458^{+0.033}_{-0.0098}$	$\chi_{\text{CMB}}^2$	$11936.7 (\nu: 17.9)$

$$\bar{\chi}_{\text{eff}}^2 = 11950.77; \Delta\bar{\chi}_{\text{eff}}^2 = 2.78; R - 1 = 0.01713$$



# 7.10 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02244^{+0.00043}_{-0.00038}$	$S_8$	$0.801^{+0.047}_{-0.070}$	$H(0.38)$	$83.6^{+2.5}_{-1.2}$
$\Omega_c h^2$	$0.1187^{+0.0089}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.026}_{-0.038}$	$D_M(0.38)$	$1517^{+27}_{-51}$
$100\theta_{MC}$	$1.04083^{+0.00086}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	$0.589^{+0.031}_{-0.051}$	$H(0.51)$	$90.4^{+2.5}_{-1.1}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.956^{+0.045}_{-0.082}$	$D_M(0.51)$	$1965^{+32}_{-64}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.10$	$r_{\text{drag}} h$	$99.8^{+2.2}_{-2.1}$	$H(0.61)$	$96.0^{+2.6}_{-1.1}$
$N_{\text{eff}}$	$< 3.54$	$\langle d^2 \rangle^{1/2}$	$2.415^{+0.064}_{-0.062}$	$D_M(0.61)$	$2287^{+36}_{-73}$
$\ln(10^{10} A_s)$	$3.046^{+0.045}_{-0.031}$	$z_{\text{re}}$	$< 9.52$	$H(2.33)$	$237.4^{+5.8}_{-3.0}$
$n_s$	$0.971^{+0.017}_{-0.012}$	$10^9 A_s$	$2.103^{+0.096}_{-0.064}$	$D_M(2.33)$	$5723^{+59}_{-150}$
$y_{\text{cal}}$	$1.0006^{+0.0064}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.040}_{-0.031}$	$f\sigma_8(0.15)$	$0.444^{+0.025}_{-0.039}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-70}$	$D_{40}$	$1218^{+34}_{-35}$	$\sigma_8(0.15)$	$0.730^{+0.039}_{-0.066}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5724^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.462^{+0.025}_{-0.040}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2536^{+34}_{-34}$	$\sigma_8(0.38)$	$0.647^{+0.035}_{-0.059}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+12}_{-13}$	$f\sigma_8(0.51)$	$0.461^{+0.024}_{-0.040}$
$A_{143}^{\text{tSZ}}$	$< 8.78$	$D_{2000}$	$229.6^{+4.3}_{-4.5}$	$\sigma_8(0.51)$	$0.606^{+0.033}_{-0.055}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.971^{+0.017}_{-0.012}$	$f\sigma_8(0.61)$	$0.456^{+0.024}_{-0.040}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2470^{+0.0050}_{-0.0017}$	$\sigma_8(0.61)$	$0.576^{+0.032}_{-0.053}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2483^{+0.0050}_{-0.0017}$	$f\sigma_8(2.33)$	$0.291^{+0.016}_{-0.027}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.61^{+0.13}_{-0.085}$	$\sigma_8(2.33)$	$0.300^{+0.017}_{-0.028}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.70^{+0.14}_{-0.35}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.99^{+0.93}_{-0.68}$	$f_{2000}^{217}$	$107.6^{+5.1}_{-5.2}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$143.7^{+1.6}_{-3.5}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.43}$	$100\theta_*$	$1.04095^{+0.00091}_{-0.0012}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.15}_{-0.33}$	$\chi_{\text{lowl}}^2$	$22.42 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0039}$	$z_{\text{drag}}$	$1060.2^{+1.5}_{-0.97}$	$\chi_{\text{CamSpec}}^2$	$11517.3 (\nu: 18.1)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.4^{+1.6}_{-3.7}$	$\chi_{\text{JLA}}^2$	$1035.04 (\nu: 0.0)$
$c_{EE}$	$0.994^{+0.014}_{-0.013}$	$k_{\text{D}}$	$0.1413^{+0.0027}_{-0.0015}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$H_0$	$68.2^{+2.5}_{-1.5}$	$100\theta_{\text{D}}$	$0.1610^{+0.0011}_{-0.00066}$	$\chi_{\text{MGS}}^2$	$1.37 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.691^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3319^{+90}_{-270}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.9)$
$\Omega_{\text{m}}$	$0.309^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01024^{+0.00036}_{-0.00069}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\text{m}} h^2$	$0.1438^{+0.0078}_{-0.0038}$	$100\theta_{\text{eq}}$	$0.830^{+0.063}_{-0.018}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_{\nu} h^2$	$0.0027^{+0.012}_{-0.0026}$	$100\theta_{\text{s,eq}}$	$0.458^{+0.033}_{-0.0094}$	$\chi_{\text{CMB}}^2$	$11936.7 (\nu: 17.9)$
$\Omega_{\text{m}} h^3$	$0.0981^{+0.0076}_{-0.0027}$	$H(0.15)$	$73.5^{+2.6}_{-1.3}$		
$\sigma_8$	$0.789^{+0.042}_{-0.071}$	$D_M(0.15)$	$636^{+13}_{-22}$		

$$\bar{\chi}_{\text{eff}}^2 = 12985.64; R - 1 = 0.01787$$



# 7.11 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02241^{+0.00040}_{-0.00037}$	$S_8$	$0.800^{+0.047}_{-0.069}$	$H(0.38)$	$83.4^{+2.2}_{-0.93}$
$\Omega_c h^2$	$0.1179^{+0.0076}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.026}_{-0.038}$	$D_M(0.38)$	$1522^{+24}_{-43}$
$100\theta_{MC}$	$1.04087^{+0.00082}_{-0.00091}$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.031}_{-0.050}$	$H(0.51)$	$90.1^{+2.0}_{-0.93}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.954^{+0.046}_{-0.081}$	$D_M(0.51)$	$1972^{+28}_{-54}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.16$	$r_{\text{drag}} h$	$99.7^{+2.2}_{-2.2}$	$H(0.61)$	$95.8^{+2.0}_{-0.86}$
$N_{\text{eff}}$	$< 3.41$	$\langle d^2 \rangle^{1/2}$	$2.419^{+0.065}_{-0.060}$	$D_M(0.61)$	$2294^{+31}_{-62}$
$\ln(10^{10} A_s)$	$3.044^{+0.044}_{-0.030}$	$z_{\text{re}}$	$< 9.52$	$H(2.33)$	$237.0^{+4.9}_{-2.3}$
$n_s$	$0.969^{+0.015}_{-0.012}$	$10^9 A_s$	$2.100^{+0.088}_{-0.067}$	$D_M(2.33)$	$5737^{+46}_{-110}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.036}_{-0.029}$	$f\sigma_8(0.15)$	$0.443^{+0.025}_{-0.038}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$D_{40}$	$1220^{+33}_{-33}$	$\sigma_8(0.15)$	$0.727^{+0.038}_{-0.064}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.461^{+0.024}_{-0.040}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2535^{+35}_{-35}$	$\sigma_8(0.38)$	$0.645^{+0.034}_{-0.057}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.460^{+0.024}_{-0.039}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{2000}$	$229.7^{+4.2}_{-4.3}$	$\sigma_8(0.51)$	$0.603^{+0.032}_{-0.054}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.969^{+0.015}_{-0.012}$	$f\sigma_8(0.61)$	$0.455^{+0.023}_{-0.039}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2465^{+0.0038}_{-0.0013}$	$\sigma_8(0.61)$	$0.574^{+0.030}_{-0.051}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2479^{+0.0038}_{-0.0013}$	$f\sigma_8(2.33)$	$0.290^{+0.015}_{-0.026}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.61^{+0.10}_{-0.081}$	$\sigma_8(2.33)$	$0.299^{+0.016}_{-0.027}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.50}$	$\text{Age}/\text{Gyr}$	$13.73^{+0.11}_{-0.27}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.96^{+0.77}_{-0.65}$	$f_{2000}^{217}$	$107.4^{+5.1}_{-5.1}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.0^{+1.3}_{-2.7}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.43}$	$100\theta_*$	$1.04101^{+0.00084}_{-0.0010}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.12}_{-0.26}$	$\chi_{\text{lowl}}^2$	$22.61 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0038}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.89}$	$\chi_{\text{CamSpec}}^2$	$11516.7 (\nu: 17.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.8}$	$\chi_{\text{Aver15}}^2$	$0.62 (\nu: 0.1)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.1411^{+0.0023}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.057 (\nu: 0.0)$
$H_0$	$68.0^{+2.2}_{-1.3}$	$100\theta_{\text{D}}$	$0.16097^{+0.00089}_{-0.00059}$	$\chi_{\text{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.017}_{-0.018}$	$z_{\text{eq}}$	$3316^{+97}_{-280}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\text{m}}$	$0.310^{+0.018}_{-0.017}$	$k_{\text{eq}}$	$0.01021^{+0.00034}_{-0.00066}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\text{m}} h^2$	$0.1434^{+0.0061}_{-0.0033}$	$100\theta_{\text{eq}}$	$0.831^{+0.063}_{-0.020}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_{\nu} h^2$	$0.0030^{+0.012}_{-0.0025}$	$100\theta_{\text{s,eq}}$	$0.459^{+0.033}_{-0.010}$	$\chi_{\text{CMB}}^2$	$11936.3 (\nu: 17.4)$
$\Omega_{\text{m}} h^3$	$0.0974^{+0.0057}_{-0.0020}$	$H(0.15)$	$73.3^{+2.2}_{-1.2}$		
$\sigma_8$	$0.787^{+0.041}_{-0.069}$	$D_M(0.15)$	$638^{+12}_{-19}$		

$$\bar{\chi}_{\text{eff}}^2 = 11950.98; R - 1 = 0.01936$$



## 7.12 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02240^{+0.00040}_{-0.00036}$	$S_8$	$0.800^{+0.046}_{-0.069}$	$H(0.38)$	$83.4^{+2.1}_{-0.92}$
$\Omega_c h^2$	$0.1179^{+0.0071}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.025}_{-0.038}$	$D_M(0.38)$	$1522^{+23}_{-43}$
$100\theta_{MC}$	$1.04087^{+0.00082}_{-0.00089}$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.030}_{-0.050}$	$H(0.51)$	$90.1^{+1.9}_{-0.92}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.954^{+0.046}_{-0.081}$	$D_M(0.51)$	$1972^{+28}_{-53}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 1.17$	$r_{\text{drag}} h$	$99.7^{+2.2}_{-2.1}$	$H(0.61)$	$95.8^{+2.0}_{-0.84}$
$N_{\text{eff}}$	$< 3.39$	$\langle d^2 \rangle^{1/2}$	$2.419^{+0.065}_{-0.060}$	$D_M(0.61)$	$2295^{+30}_{-60}$
$\ln(10^{10} A_s)$	$3.044^{+0.044}_{-0.030}$	$z_{\text{re}}$	$< 9.52$	$H(2.33)$	$237.0^{+4.6}_{-2.3}$
$n_s$	$0.969^{+0.015}_{-0.012}$	$10^9 A_s$	$2.100^{+0.088}_{-0.067}$	$D_M(2.33)$	$5737^{+45}_{-110}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.035}_{-0.029}$	$f\sigma_8(0.15)$	$0.443^{+0.025}_{-0.039}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$D_{40}$	$1220^{+33}_{-32}$	$\sigma_8(0.15)$	$0.727^{+0.038}_{-0.065}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.461^{+0.024}_{-0.040}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2535^{+35}_{-35}$	$\sigma_8(0.38)$	$0.645^{+0.034}_{-0.057}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.460^{+0.023}_{-0.039}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{2000}$	$229.7^{+4.2}_{-4.2}$	$\sigma_8(0.51)$	$0.603^{+0.032}_{-0.054}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.969^{+0.015}_{-0.012}$	$f\sigma_8(0.61)$	$0.455^{+0.023}_{-0.039}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2465^{+0.0036}_{-0.0013}$	$\sigma_8(0.61)$	$0.574^{+0.030}_{-0.051}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2478^{+0.0036}_{-0.0013}$	$f\sigma_8(2.33)$	$0.290^{+0.015}_{-0.026}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.608^{+0.092}_{-0.075}$	$\sigma_8(2.33)$	$0.299^{+0.016}_{-0.027}$
$A_{100}^{\text{dust}}$	$1.02^{+0.50}_{-0.50}$	$\text{Age/Gyr}$	$13.74^{+0.10}_{-0.26}$	$f_{2000}^{143}$	$31^{+7}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.96^{+0.71}_{-0.62}$	$f_{2000}^{217}$	$107.4^{+5.1}_{-5.0}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.0^{+1.3}_{-2.6}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.43}$	$100\theta_*$	$1.04101^{+0.00084}_{-0.00099}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.12}_{-0.24}$	$\chi_{\text{lowl}}^2$	$22.62 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0038}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.88}$	$\chi_{\text{CamSpec}}^2$	$11516.6 (\nu: 17.3)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.7}$	$\chi_{\text{Aver15}}^2$	$0.61 (\nu: 0.1)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.1411^{+0.0022}_{-0.0011}$	$\chi_{\text{Cooke17}}^2$	$0.12 (\nu: 0.0)$
$H_0$	$67.9^{+2.2}_{-1.3}$	$100\theta_{\text{D}}$	$0.16097^{+0.00080}_{-0.00056}$	$\chi_{\text{6DF}}^2$	$0.057 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.018}$	$z_{\text{eq}}$	$3317^{+98}_{-280}$	$\chi_{\text{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\text{m}}$	$0.311^{+0.018}_{-0.017}$	$k_{\text{eq}}$	$0.01021^{+0.00033}_{-0.00067}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_{\text{m}} h^2$	$0.1434^{+0.0057}_{-0.0033}$	$100\theta_{\text{eq}}$	$0.831^{+0.064}_{-0.020}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\nu} h^2$	$0.0030^{+0.012}_{-0.0025}$	$100\theta_{\text{s,eq}}$	$0.459^{+0.033}_{-0.010}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_{\text{m}} h^3$	$0.0974^{+0.0054}_{-0.0020}$	$H(0.15)$	$73.2^{+2.2}_{-1.2}$	$\chi_{\text{CMB}}^2$	$11936.2 (\nu: 17.3)$
$\sigma_8$	$0.787^{+0.040}_{-0.069}$	$D_M(0.15)$	$638^{+11}_{-19}$	$\chi_{\text{Abund}}^2$	$0.73 (\nu: 0.2)$

$$\bar{\chi}_{\text{eff}}^2 = 11951.02; R - 1 = 0.01932$$



### 7.13 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022343	$0.02241^{+0.00042}_{-0.00039}$	$S_8$	0.8223	$0.809^{+0.037}_{-0.061}$	$H(0.38)$	83.00	$83.4^{+3.0}_{-1.1}$
$\Omega_c h^2$	0.1191	$0.1192^{+0.0081}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	0.4504	$0.443^{+0.020}_{-0.034}$	$D_M(0.38)$	1529.1	$1522^{+25}_{-58}$
$100\theta_{MC}$	1.04094	$1.04081^{+0.00080}_{-0.00096}$	$\sigma_8 \Omega_m^{0.25}$	0.6032	$0.593^{+0.025}_{-0.045}$	$H(0.51)$	89.71	$90.2^{+3.1}_{-0.96}$
$\tau$	0.0546	$0.056^{+0.021}_{-0.018}$	$\sigma_8/h^{0.5}$	0.982	$0.963^{+0.036}_{-0.072}$	$D_M(0.51)$	1981	$1971^{+30}_{-73}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.011	$< 0.972$	$r_{\text{drag}} h$	99.64	$99.5^{+2.1}_{-2.2}$	$H(0.61)$	95.33	$95.9^{+3.2}_{-0.91}$
$N_{\text{eff}}$	3.046	$< 3.52$	$\langle d^2 \rangle^{1/2}$	2.429	$2.427^{+0.053}_{-0.055}$	$D_M(0.61)$	2305	$2294^{+34}_{-83}$
$\ln(10^{10} A_s)$	3.0410	$3.048^{+0.042}_{-0.039}$	$z_{\text{re}}$	7.70	$7.9^{+1.9}_{-1.9}$	$H(2.33)$	235.99	$237.5^{+5.5}_{-2.9}$
$n_s$	0.9673	$0.969^{+0.017}_{-0.012}$	$10^9 A_s$	2.093	$2.109^{+0.089}_{-0.080}$	$D_M(2.33)$	5763	$5731^{+57}_{-150}$
$y_{\text{cal}}$	1.0002	$1.0008^{+0.0062}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	1.8762	$1.883^{+0.038}_{-0.031}$	$f\sigma_8(0.15)$	0.4550	$0.448^{+0.020}_{-0.034}$
$A_{100}^{\text{PS}}$	236	$243^{+60}_{-60}$	$D_{40}$	1223.1	$1222^{+32}_{-35}$	$\sigma_8(0.15)$	0.7466	$0.733^{+0.034}_{-0.058}$
$A_{143}^{\text{PS}}$	47.5	$41^{+20}_{-20}$	$D_{220}$	5717	$5726^{+99}_{-100}$	$f\sigma_8(0.38)$	0.4735	$0.466^{+0.020}_{-0.035}$
$A_{217}^{\text{PS}}$	103.5	$102^{+30}_{-40}$	$D_{810}$	2535.0	$2538^{+33}_{-34}$	$\sigma_8(0.38)$	0.6619	$0.650^{+0.031}_{-0.052}$
$A_{217}^{\text{CIB}}$	39.8	$40^{+20}_{-20}$	$D_{1420}$	816.1	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	0.4722	$0.465^{+0.020}_{-0.035}$
$A_{143}^{\text{tSZ}}$	4.40	$< 8.67$	$D_{2000}$	230.54	$229.8^{+4.1}_{-4.5}$	$\sigma_8(0.51)$	0.6194	$0.608^{+0.030}_{-0.049}$
$r_{143 \times 217}^{\text{PS}}$	0.725	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	0.9673	$0.969^{+0.017}_{-0.012}$	$f\sigma_8(0.61)$	0.4672	$0.460^{+0.020}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	0.73	—	$Y_P$	0.24539	$0.2467^{+0.0049}_{-0.0015}$	$\sigma_8(0.61)$	0.5894	$0.579^{+0.028}_{-0.047}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.94	—	$Y_P^{\text{BBN}}$	0.24671	$0.2481^{+0.0049}_{-0.0015}$	$f\sigma_8(2.33)$	0.2972	$0.292^{+0.015}_{-0.024}$
$A^{\text{kSZ}}$	3.4	—	$10^5 D/H$	2.591	$2.61^{+0.11}_{-0.078}$	$\sigma_8(2.33)$	0.3064	$0.301^{+0.016}_{-0.025}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.50}_{-0.51}$	Age/Gyr	13.796	$13.72^{+0.13}_{-0.35}$	$f_{2000}^{143}$	29.7	$31^{+8}_{-7}$
$A_{143}^{\text{dust}}$	0.975	$0.96^{+0.45}_{-0.46}$	$z_*$	1089.88	$1090.04^{+0.81}_{-0.63}$	$f_{2000}^{217}$	106.4	$107.5^{+5.3}_{-5.0}$
$A_{217}^{\text{dust}}$	0.982	$0.97^{+0.26}_{-0.26}$	$r_*$	144.66	$143.8^{+1.5}_{-3.5}$	$f_{2000}^{143 \times 217}$	32.0	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	1.019	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	1.04113	$1.04094^{+0.00083}_{-0.0012}$	$\chi_{\text{lensing}}^2$	8.94	$9.5 (\nu: 0.5)$
$c_{100}$	0.99765	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.895	$13.81^{+0.14}_{-0.32}$	$\chi_{\text{small}}^2$	396.07	$397.3 (\nu: 2.1)$
$c_{217}$	1.00128	$1.0012^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	1059.82	$1060.1^{+1.5}_{-0.98}$	$\chi_{\text{lowl}}^2$	22.86	$22.72 (\nu: 0.4)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	147.34	$146.4^{+1.5}_{-3.6}$	$\chi_{\text{CamSpec}}^2$	11500.0	$11516.1 (\nu: 16.9)$
$c_{EE}$	0.9920	$0.993^{+0.013}_{-0.013}$	$k_D$	0.14058	$0.1413^{+0.0027}_{-0.0014}$	$\chi_{6\text{DF}}^2$	0.030	$0.073 (\nu: 0.0)$
$H_0$	67.63	$67.9^{+2.9}_{-1.4}$	$100\theta_D$	0.16083	$0.1610^{+0.0010}_{-0.00059}$	$\chi_{\text{MGS}}^2$	1.22	$1.18 (\nu: 0.1)$
$\Omega_\Lambda$	0.6892	$0.688^{+0.017}_{-0.017}$	$z_{\text{eq}}$	3379	$3338^{+83}_{-240}$	$\chi_{\text{DR12BAO}}^2$	4.42	$5.2 (\nu: 1.5)$
$\Omega_m$	0.3108	$0.312^{+0.017}_{-0.017}$	$k_{\text{eq}}$	0.010315	$0.01028^{+0.00031}_{-0.00060}$	$\chi_{\text{prior}}^2$	2.1	$7.8 (\nu: 5.9)$
$\Omega_m h^2$	0.1422	$0.1440^{+0.0072}_{-0.0036}$	$100\theta_{\text{eq}}$	0.8175	$0.826^{+0.054}_{-0.016}$	$\chi_{\text{CMB}}^2$	11927.8	$11945.6 (\nu: 18.3)$
$\Omega_\nu h^2$	0.0008	$0.0024^{+0.0092}_{-0.0022}$	$100\theta_{s,\text{eq}}$	0.4516	$0.456^{+0.028}_{-0.0085}$	$\chi_{\text{BAO}}^2$	5.67	$6.5 (\nu: 1.1)$
$\Omega_m h^3$	0.0961	$0.0978^{+0.0075}_{-0.0025}$	$H(0.15)$	72.90	$73.3^{+2.9}_{-1.2}$			
$\sigma_8$	0.8079	$0.794^{+0.036}_{-0.062}$	$D_M(0.15)$	641.1	$638^{+12}_{-25}$			

Best-fit  $\chi_{\text{eff}}^2 = 11935.63$ ;  $\bar{\chi}_{\text{eff}}^2 = 11959.89$ ;  $\Delta\chi_{\text{eff}}^2 = 2.49$ ;  $R - 1 = 0.03604$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.42 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.94 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 commander\_dx12\_v3.2.29: 22.86 CamSpec like\_10.7HM\_1400\_unified: 11499.95



# 7.14 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022368	$0.02241^{+0.00043}_{-0.00038}$	$S_8$	0.8213	$0.809^{+0.037}_{-0.061}$	$H(0.38)$	83.34	$83.5^{+3.0}_{-1.0}$
$\Omega_c h^2$	0.1197	$0.1192^{+0.0084}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	0.4499	$0.443^{+0.020}_{-0.033}$	$D_M(0.38)$	1522.2	$1520^{+25}_{-58}$
$100\theta_{MC}$	1.04086	$1.04082^{+0.00080}_{-0.00097}$	$\sigma_8 \Omega_m^{0.25}$	0.6034	$0.593^{+0.025}_{-0.045}$	$H(0.51)$	90.05	$90.3^{+3.1}_{-0.97}$
$\tau$	0.0548	$0.057^{+0.021}_{-0.018}$	$\sigma_8/h^{0.5}$	0.982	$0.964^{+0.035}_{-0.072}$	$D_M(0.51)$	1972	$1969^{+30}_{-73}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.000	$< 0.962$	$r_{\text{drag}} h$	99.87	$99.6^{+2.0}_{-2.1}$	$H(0.61)$	95.67	$95.9^{+2.7}_{-1.1}$
$N_{\text{eff}}$	3.093	$< 3.53$	$\langle d^2 \rangle^{1/2}$	2.428	$2.426^{+0.054}_{-0.054}$	$D_M(0.61)$	2295	$2292^{+34}_{-84}$
$\ln(10^{10} A_s)$	3.0433	$3.049^{+0.041}_{-0.038}$	$z_{\text{re}}$	7.73	$7.9^{+2.0}_{-1.9}$	$H(2.33)$	236.54	$237.4^{+5.7}_{-2.9}$
$n_s$	0.9679	$0.970^{+0.017}_{-0.012}$	$10^9 A_s$	2.097	$2.110^{+0.089}_{-0.079}$	$D_M(2.33)$	5743	$5729^{+58}_{-150}$
$y_{\text{cal}}$	1.0005	$1.0008^{+0.0062}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	1.8796	$1.883^{+0.038}_{-0.031}$	$f\sigma_8(0.15)$	0.4547	$0.448^{+0.020}_{-0.034}$
$A_{100}^{\text{PS}}$	240	$243^{+60}_{-60}$	$D_{40}$	1224.1	$1221^{+32}_{-34}$	$\sigma_8(0.15)$	0.7481	$0.734^{+0.034}_{-0.059}$
$A_{143}^{\text{PS}}$	40.6	$41^{+20}_{-20}$	$D_{220}$	5725	$5727^{+98}_{-100}$	$f\sigma_8(0.38)$	0.4735	$0.466^{+0.019}_{-0.036}$
$A_{217}^{\text{PS}}$	100.4	$102^{+30}_{-30}$	$D_{810}$	2535.3	$2538^{+33}_{-34}$	$\sigma_8(0.38)$	0.6634	$0.651^{+0.031}_{-0.052}$
$A_{217}^{\text{CIB}}$	44.6	$40^{+20}_{-20}$	$D_{1420}$	815.2	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	0.4724	$0.465^{+0.020}_{-0.036}$
$A_{143}^{\text{tSZ}}$	5.93	$< 8.64$	$D_{2000}$	229.98	$229.8^{+4.0}_{-4.5}$	$\sigma_8(0.51)$	0.6209	$0.609^{+0.030}_{-0.049}$
$r_{143 \times 217}^{\text{PS}}$	0.577	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	0.9679	$0.970^{+0.017}_{-0.012}$	$f\sigma_8(0.61)$	0.4677	$0.460^{+0.020}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	0.78	—	$Y_P$	0.24602	$0.2468^{+0.0051}_{-0.0016}$	$\sigma_8(0.61)$	0.5909	$0.580^{+0.028}_{-0.047}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.11	—	$Y_P^{\text{BBN}}$	0.24735	$0.2481^{+0.0051}_{-0.0016}$	$f\sigma_8(2.33)$	0.2980	$0.293^{+0.014}_{-0.024}$
$A^{\text{kSZ}}$	1.1	—	$10^5 D/H$	2.602	$2.61^{+0.11}_{-0.077}$	$\sigma_8(2.33)$	0.3074	$0.302^{+0.015}_{-0.025}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.51}$	Age/Gyr	13.750	$13.71^{+0.14}_{-0.36}$	$f_{2000}^{143}$	30.9	$31^{+8}_{-7}$
$A_{143}^{\text{dust}}$	0.980	$0.96^{+0.45}_{-0.45}$	$z_*$	1089.95	$1090.02^{+0.82}_{-0.62}$	$f_{2000}^{217}$	107.3	$107.5^{+5.4}_{-5.0}$
$A_{217}^{\text{dust}}$	0.974	$0.97^{+0.26}_{-0.26}$	$r_*$	144.27	$143.8^{+1.5}_{-3.6}$	$f_{2000}^{143 \times 217}$	32.6	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	1.006	$1.03^{+0.42}_{-0.40}$	$100\theta_*$	1.04102	$1.04094^{+0.00083}_{-0.0012}$	$\chi_{\text{lensing}}^2$	9.02	$9.5 (\nu: 0.5)$
$c_{100}$	0.99761	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.858	$13.81^{+0.14}_{-0.33}$	$\chi_{\text{small}}^2$	396.12	$397.4 (\nu: 2.2)$
$c_{217}$	1.00143	$1.0012^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	1059.93	$1060.2^{+1.6}_{-0.99}$	$\chi_{\text{lowl}}^2$	22.86	$22.66 (\nu: 0.4)$
$c_{TE}$	0.9965	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	146.93	$146.4^{+1.6}_{-3.7}$	$\chi_{\text{CamSpec}}^2$	11500.0	$11516.2 (\nu: 17.0)$
$c_{EE}$	0.9929	$0.993^{+0.013}_{-0.013}$	$k_D$	0.14086	$0.1413^{+0.0028}_{-0.0015}$	$\chi_{\text{JLA}}^2$	1034.94	$1035.11 (\nu: 0.1)$
$H_0$	67.97	$68.0^{+2.9}_{-1.4}$	$100\theta_D$	0.16094	$0.1610^{+0.0010}_{-0.00060}$	$\chi_{6\text{DF}}^2$	0.016	$0.060 (\nu: 0.0)$
$\Omega_\Lambda$	0.6910	$0.689^{+0.016}_{-0.017}$	$z_{\text{eq}}$	3375	$3337^{+80}_{-240}$	$\chi_{\text{MGS}}^2$	1.34	$1.25 (\nu: 0.1)$
$\Omega_m$	0.3090	$0.311^{+0.017}_{-0.016}$	$k_{\text{eq}}$	0.010332	$0.01028^{+0.00032}_{-0.00060}$	$\chi_{\text{DR12BAO}}^2$	4.09	$5.0 (\nu: 1.2)$
$\Omega_m h^2$	0.1428	$0.1439^{+0.0076}_{-0.0035}$	$100\theta_{\text{eq}}$	0.8182	$0.826^{+0.054}_{-0.016}$	$\chi_{\text{prior}}^2$	2.3	$7.8 (\nu: 6.0)$
$\Omega_\nu h^2$	0.0006	$0.0023^{+0.0093}_{-0.0021}$	$100\theta_{s,\text{eq}}$	0.4520	$0.456^{+0.028}_{-0.0083}$	$\chi_{\text{CMB}}^2$	11928.1	$11945.8 (\nu: 18.5)$
$\Omega_m h^3$	0.0970	$0.0979^{+0.0077}_{-0.0026}$	$H(0.15)$	73.24	$73.3^{+2.9}_{-1.2}$	$\chi_{\text{BAO}}^2$	5.45	$6.3 (\nu: 0.8)$
$\sigma_8$	0.8093	$0.795^{+0.036}_{-0.062}$	$D_M(0.15)$	638.0	$637^{+12}_{-25}$			

Best-fit  $\chi_{\text{eff}}^2 = 12970.74$ ;  $\Delta\chi_{\text{eff}}^2 = 0.26$ ;  $\bar{\chi}_{\text{eff}}^2 = 12994.91$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.52$ ;  $R - 1 = 0.03797$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.34 ( $\Delta$  0.06) DR12BAO: 4.09 ( $\Delta$  -0.14) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consect8: 9.02 ( $\Delta$  0.06) small\_100x143\_offlike5\_EE\_Aplanck 396.12 ( $\Delta$  0.07) commander\_dx12\_v3\_2.29: 22.86 ( $\Delta$  0.09) CamSpec like\_10.7HM\_1400\_unified: 11500.05 ( $\Delta$  -0.12) SN - JLA Pantheon18: 1034.94 ( $\Delta$  -0.04)



# 7.15 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02239^{+0.00039}_{-0.00038}$	$S_8$	$0.808^{+0.037}_{-0.061}$	$H(0.38)$	$83.3^{+2.1}_{-0.92}$
$\Omega_c h^2$	$0.1186^{+0.0066}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.033}$	$D_M(0.38)$	$1525^{+22}_{-41}$
$100\theta_{MC}$	$1.04085^{+0.00077}_{-0.00086}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.024}_{-0.044}$	$H(0.51)$	$90.0^{+2.1}_{-0.83}$
$\tau$	$0.056^{+0.021}_{-0.018}$	$\sigma_8/h^{0.5}$	$0.962^{+0.035}_{-0.072}$	$D_M(0.51)$	$1975^{+27}_{-51}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.989$	$r_{\text{drag}} h$	$99.4^{+2.1}_{-2.1}$	$H(0.61)$	$95.7^{+2.2}_{-0.78}$
$N_{\text{eff}}$	$< 3.39$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.053}_{-0.054}$	$D_M(0.61)$	$2298^{+30}_{-59}$
$\ln(10^{10} A_s)$	$3.047^{+0.040}_{-0.038}$	$z_{\text{re}}$	$7.9^{+1.9}_{-2.0}$	$H(2.33)$	$237.1^{+4.5}_{-2.2}$
$n_s$	$0.968^{+0.014}_{-0.012}$	$10^9 A_s$	$2.106^{+0.087}_{-0.078}$	$D_M(2.33)$	$5741^{+42}_{-120}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.032}_{-0.030}$	$f\sigma_8(0.15)$	$0.447^{+0.020}_{-0.034}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{40}$	$1223^{+31}_{-34}$	$\sigma_8(0.15)$	$0.732^{+0.031}_{-0.057}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5726^{+97}_{-100}$	$f\sigma_8(0.38)$	$0.465^{+0.019}_{-0.035}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2537^{+33}_{-34}$	$\sigma_8(0.38)$	$0.649^{+0.028}_{-0.051}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.464^{+0.019}_{-0.035}$
$A_{143}^{\text{tSZ}}$	$< 8.64$	$D_{2000}$	$229.9^{+4.0}_{-4.2}$	$\sigma_8(0.51)$	$0.607^{+0.026}_{-0.048}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.968^{+0.014}_{-0.012}$	$f\sigma_8(0.61)$	$0.459^{+0.019}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2464^{+0.0035}_{-0.0012}$	$\sigma_8(0.61)$	$0.578^{+0.025}_{-0.046}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2477^{+0.0035}_{-0.0012}$	$f\sigma_8(2.33)$	$0.292^{+0.013}_{-0.023}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.609^{+0.099}_{-0.072}$	$\sigma_8(2.33)$	$0.300^{+0.014}_{-0.024}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age/Gyr}$	$13.743^{+0.097}_{-0.29}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.45}$	$z_*$	$1090.00^{+0.74}_{-0.60}$	$f_{2000}^{217}$	$107.3^{+5.0}_{-5.0}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.0^{+1.2}_{-2.5}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.40}$	$100\theta_*$	$1.04100^{+0.00078}_{-0.00097}$	$\chi_{\text{lensing}}^2$	$9.4 (\nu: 0.5)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.83^{+0.12}_{-0.24}$	$\chi_{\text{small}}^2$	$397.3 (\nu: 2.0)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.93}$	$\chi_{\text{lowl}}^2$	$22.83 (\nu: 0.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.6}$	$\chi_{\text{CamSpec}}^2$	$11515.7 (\nu: 16.2)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_D$	$0.1411^{+0.0022}_{-0.0011}$	$\chi_{\text{Aver15}}^2$	$0.56 (\nu: 0.1)$
$H_0$	$67.8^{+2.1}_{-1.2}$	$100\theta_D$	$0.16096^{+0.00084}_{-0.00054}$	$\chi_{6\text{DF}}^2$	$0.074 (\nu: 0.0)$
$\Omega_\Lambda$	$0.688^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3336^{+85}_{-240}$	$\chi_{\text{MGS}}^2$	$1.16 (\nu: 0.1)$
$\Omega_m$	$0.312^{+0.017}_{-0.016}$	$k_{\text{eq}}$	$0.01026^{+0.00029}_{-0.00059}$	$\chi_{\text{DR12BAO}}^2$	$5.3 (\nu: 1.5)$
$\Omega_m h^2$	$0.1436^{+0.0056}_{-0.0032}$	$100\theta_{\text{eq}}$	$0.827^{+0.054}_{-0.017}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_\nu h^2$	$0.0025^{+0.011}_{-0.0020}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.029}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$11945.3 (\nu: 17.7)$
$\Omega_m h^3$	$0.0973^{+0.0052}_{-0.0020}$	$H(0.15)$	$73.1^{+2.1}_{-1.1}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 1.1)$
$\sigma_8$	$0.792^{+0.033}_{-0.061}$	$D_M(0.15)$	$639^{+11}_{-18}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.11; R - 1 = 0.03672$$



**7.16 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02238^{+0.00039}_{-0.00037}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.033}$	$H(0.51)$	$90.0^{+2.0}_{-0.81}$
$\Omega_c h^2$	$0.1186^{+0.0064}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.024}_{-0.044}$	$D_M(0.51)$	$1975^{+26}_{-50}$
$100\theta_{MC}$	$1.04085^{+0.00076}_{-0.00084}$	$\sigma_8/h^{0.5}$	$0.962^{+0.035}_{-0.072}$	$H(0.61)$	$95.7^{+2.1}_{-0.75}$
$\tau$	$0.056^{+0.020}_{-0.018}$	$r_{\text{drag}} h$	$99.4^{+2.1}_{-2.1}$	$D_M(0.61)$	$2298^{+29}_{-57}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.991$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.053}_{-0.054}$	$H(2.33)$	$237.1^{+4.3}_{-2.2}$
$N_{\text{eff}}$	$< 3.37$	$z_{\text{re}}$	$7.9^{+1.9}_{-2.0}$	$D_M(2.33)$	$5741^{+41}_{-120}$
$\ln(10^{10} A_s)$	$3.047^{+0.040}_{-0.038}$	$10^9 A_s$	$2.105^{+0.086}_{-0.078}$	$f\sigma_8(0.15)$	$0.447^{+0.020}_{-0.034}$
$n_s$	$0.968^{+0.014}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.031}_{-0.030}$	$\sigma_8(0.15)$	$0.732^{+0.031}_{-0.057}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0065}$	$D_{40}$	$1223^{+31}_{-34}$	$f\sigma_8(0.38)$	$0.465^{+0.019}_{-0.035}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5725^{+98}_{-100}$	$\sigma_8(0.38)$	$0.649^{+0.028}_{-0.051}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2537^{+33}_{-34}$	$f\sigma_8(0.51)$	$0.464^{+0.018}_{-0.035}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.51)$	$0.607^{+0.026}_{-0.048}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$229.9^{+3.9}_{-4.1}$	$f\sigma_8(0.61)$	$0.459^{+0.018}_{-0.035}$
$A_{143}^{\text{tSZ}}$	$< 8.64$	$n_{s,0.002}$	$0.968^{+0.014}_{-0.011}$	$\sigma_8(0.61)$	$0.578^{+0.025}_{-0.046}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$Y_P$	$0.2464^{+0.0034}_{-0.0012}$	$f\sigma_8(2.33)$	$0.291^{+0.013}_{-0.023}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2477^{+0.0034}_{-0.0012}$	$\sigma_8(2.33)$	$0.300^{+0.014}_{-0.024}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.609^{+0.091}_{-0.069}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.745^{+0.095}_{-0.28}$	$f_{2000}^{217}$	$107.4^{+5.0}_{-4.9}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$z_*$	$1090.00^{+0.69}_{-0.59}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.45}$	$r_*$	$144.0^{+1.2}_{-2.4}$	$\chi_{\text{lensing}}^2$	$9.4 (\nu: 0.5)$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	$1.04100^{+0.00077}_{-0.00094}$	$\chi_{\text{small}}^2$	$397.3 (\nu: 2.0)$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.40}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.11}_{-0.22}$	$\chi_{\text{lowl}}^2$	$22.84 (\nu: 0.4)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.88}$	$\chi_{\text{CamSpec}}^2$	$11515.6 (\nu: 16.1)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.5}$	$\chi_{\text{Aver15}}^2$	$0.55 (\nu: 0.1)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$k_D$	$0.1411^{+0.0021}_{-0.0011}$	$\chi_{\text{Cooke17}}^2$	$0.12 (\nu: 0.0)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$100\theta_D$	$0.16096^{+0.00078}_{-0.00052}$	$\chi_{6\text{DF}}^2$	$0.074 (\nu: 0.0)$
$H_0$	$67.8^{+2.1}_{-1.2}$	$z_{\text{eq}}$	$3336^{+85}_{-240}$	$\chi_{\text{MGS}}^2$	$1.16 (\nu: 0.1)$
$\Omega_\Lambda$	$0.688^{+0.016}_{-0.017}$	$k_{\text{eq}}$	$0.01026^{+0.00028}_{-0.00059}$	$\chi_{\text{DR12BAO}}^2$	$5.3 (\nu: 1.5)$
$\Omega_m$	$0.312^{+0.017}_{-0.016}$	$100\theta_{\text{eq}}$	$0.827^{+0.054}_{-0.017}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_m h^2$	$0.1435^{+0.0053}_{-0.0031}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.029}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$11945.2 (\nu: 17.6)$
$\Omega_\nu h^2$	$0.0025^{+0.011}_{-0.0020}$	$H(0.15)$	$73.1^{+2.0}_{-1.1}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 1.0)$
$\Omega_m h^3$	$0.0973^{+0.0051}_{-0.0020}$	$D_M(0.15)$	$640^{+11}_{-18}$	$\chi_{\text{Abund}}^2$	$0.67 (\nu: 0.1)$
$\sigma_8$	$0.792^{+0.033}_{-0.061}$	$H(0.38)$	$83.3^{+2.0}_{-0.90}$		
$S_8$	$0.808^{+0.037}_{-0.061}$	$D_M(0.38)$	$1525^{+22}_{-40}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.15; R - 1 = 0.03562$$



# 7.17 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02241^{+0.00043}_{-0.00039}$	$S_8$	$0.810^{+0.037}_{-0.062}$	$H(0.38)$	$83.4^{+3.0}_{-1.1}$
$\Omega_c h^2$	$0.1192^{+0.0082}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.034}$	$D_M(0.38)$	$1522^{+25}_{-58}$
$100\theta_{MC}$	$1.04081^{+0.00079}_{-0.00096}$	$\sigma_8 \Omega_m^{0.25}$	$0.593^{+0.025}_{-0.045}$	$H(0.51)$	$90.2^{+3.1}_{-0.97}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.963^{+0.036}_{-0.072}$	$D_M(0.51)$	$1971^{+30}_{-73}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.972$	$r_{\text{drag}} h$	$99.5^{+2.1}_{-2.2}$	$H(0.61)$	$95.9^{+3.2}_{-0.92}$
$N_{\text{eff}}$	$< 3.52$	$\langle d^2 \rangle^{1/2}$	$2.428^{+0.053}_{-0.054}$	$D_M(0.61)$	$2293^{+33}_{-84}$
$\ln(10^{10} A_s)$	$3.049^{+0.041}_{-0.033}$	$z_{\text{re}}$	$< 9.67$	$H(2.33)$	$237.5^{+5.5}_{-2.9}$
$n_s$	$0.969^{+0.017}_{-0.012}$	$10^9 A_s$	$2.110^{+0.088}_{-0.068}$	$D_M(2.33)$	$5730^{+51}_{-180}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.038}_{-0.031}$	$f\sigma_8(0.15)$	$0.448^{+0.020}_{-0.034}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-60}$	$D_{40}$	$1222^{+32}_{-34}$	$\sigma_8(0.15)$	$0.734^{+0.034}_{-0.058}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5726^{+99}_{-100}$	$f\sigma_8(0.38)$	$0.466^{+0.020}_{-0.036}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2538^{+33}_{-34}$	$\sigma_8(0.38)$	$0.650^{+0.031}_{-0.052}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.465^{+0.020}_{-0.035}$
$A_{143}^{\text{tSZ}}$	$< 8.68$	$D_{2000}$	$229.8^{+4.1}_{-4.5}$	$\sigma_8(0.51)$	$0.609^{+0.029}_{-0.049}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.969^{+0.017}_{-0.012}$	$f\sigma_8(0.61)$	$0.460^{+0.020}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2468^{+0.0049}_{-0.0015}$	$\sigma_8(0.61)$	$0.579^{+0.028}_{-0.047}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2481^{+0.0050}_{-0.0016}$	$f\sigma_8(2.33)$	$0.292^{+0.015}_{-0.024}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.61^{+0.11}_{-0.078}$	$\sigma_8(2.33)$	$0.301^{+0.015}_{-0.025}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age}/\text{Gyr}$	$13.72^{+0.13}_{-0.35}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.46}$	$z_*$	$1090.04^{+0.81}_{-0.63}$	$f_{2000}^{217}$	$107.5^{+5.3}_{-5.0}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$143.8^{+1.5}_{-3.5}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.04094^{+0.00082}_{-0.0012}$	$\chi_{\text{lensing}}^2$	$9.46 (\nu: 0.5)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.14}_{-0.32}$	$\chi_{\text{small}}^2$	$397.3 (\nu: 2.1)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	$1060.2^{+1.5}_{-0.98}$	$\chi_{\text{lowl}}^2$	$22.72 (\nu: 0.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.4^{+1.5}_{-3.6}$	$\chi_{\text{CamSpec}}^2$	$11516.0 (\nu: 16.9)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.1413^{+0.0027}_{-0.0014}$	$\chi_{6\text{DF}}^2$	$0.071 (\nu: 0.0)$
$H_0$	$67.9^{+2.9}_{-1.4}$	$100\theta_{\text{D}}$	$0.1610^{+0.0010}_{-0.00059}$	$\chi_{\text{MGS}}^2$	$1.19 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.688^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3338^{+82}_{-240}$	$\chi_{\text{DR12BAO}}^2$	$5.2 (\nu: 1.5)$
$\Omega_{\text{m}}$	$0.312^{+0.017}_{-0.016}$	$k_{\text{eq}}$	$0.01028^{+0.00032}_{-0.00061}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\text{m}} h^2$	$0.1440^{+0.0073}_{-0.0036}$	$100\theta_{\text{eq}}$	$0.826^{+0.054}_{-0.016}$	$\chi_{\text{CMB}}^2$	$11945.5 (\nu: 18.3)$
$\Omega_{\nu} h^2$	$0.0024^{+0.0091}_{-0.0022}$	$100\theta_{\text{s,eq}}$	$0.456^{+0.029}_{-0.0085}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 1.0)$
$\Omega_{\text{m}} h^3$	$0.0979^{+0.0075}_{-0.0025}$	$H(0.15)$	$73.3^{+2.9}_{-1.2}$		
$\sigma_8$	$0.794^{+0.036}_{-0.063}$	$D_M(0.15)$	$638^{+12}_{-25}$		

$$\bar{\chi}_{\text{eff}}^2 = 11959.80; \Delta\bar{\chi}_{\text{eff}}^2 = 2.54; R - 1 = 0.03599$$



7.18 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02242^{+0.00043}_{-0.00039}$	$S_8$	$0.809^{+0.036}_{-0.061}$	$H(0.38)$	$83.5^{+3.0}_{-1.1}$
$\Omega_c h^2$	$0.1192^{+0.0085}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.033}$	$D_M(0.38)$	$1520^{+25}_{-58}$
$100\theta_{MC}$	$1.04082^{+0.00079}_{-0.00098}$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.025}_{-0.045}$	$H(0.51)$	$90.3^{+3.1}_{-0.98}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.964^{+0.035}_{-0.072}$	$D_M(0.51)$	$1969^{+30}_{-73}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.963$	$r_{\text{drag}} h$	$99.6^{+2.0}_{-2.1}$	$H(0.61)$	$95.9^{+2.7}_{-1.1}$
$N_{\text{eff}}$	$< 3.54$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.053}_{-0.054}$	$D_M(0.61)$	$2291^{+33}_{-84}$
$\ln(10^{10} A_s)$	$3.050^{+0.041}_{-0.033}$	$z_{\text{re}}$	$< 9.68$	$H(2.33)$	$237.4^{+5.7}_{-2.9}$
$n_s$	$0.970^{+0.017}_{-0.012}$	$10^9 A_s$	$2.111^{+0.087}_{-0.068}$	$D_M(2.33)$	$5728^{+59}_{-150}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.038}_{-0.031}$	$f\sigma_8(0.15)$	$0.448^{+0.020}_{-0.034}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-60}$	$D_{40}$	$1221^{+32}_{-34}$	$\sigma_8(0.15)$	$0.735^{+0.034}_{-0.059}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5727^{+98}_{-100}$	$f\sigma_8(0.38)$	$0.466^{+0.019}_{-0.036}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2538^{+33}_{-34}$	$\sigma_8(0.38)$	$0.651^{+0.031}_{-0.053}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.465^{+0.020}_{-0.036}$
$A_{143}^{\text{tSZ}}$	$< 8.64$	$D_{2000}$	$229.8^{+4.0}_{-4.5}$	$\sigma_8(0.51)$	$0.610^{+0.029}_{-0.049}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.970^{+0.017}_{-0.012}$	$f\sigma_8(0.61)$	$0.460^{+0.020}_{-0.036}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2468^{+0.0051}_{-0.0016}$	$\sigma_8(0.61)$	$0.580^{+0.028}_{-0.047}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2481^{+0.0051}_{-0.0016}$	$f\sigma_8(2.33)$	$0.293^{+0.014}_{-0.024}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.61^{+0.11}_{-0.077}$	$\sigma_8(2.33)$	$0.302^{+0.015}_{-0.025}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age/Gyr}$	$13.71^{+0.14}_{-0.36}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.45}$	$z_*$	$1090.02^{+0.82}_{-0.62}$	$f_{2000}^{217}$	$107.4^{+5.4}_{-5.0}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$143.8^{+1.5}_{-3.6}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$100\theta_*$	$1.04094^{+0.00082}_{-0.0012}$	$\chi_{\text{lensing}}^2$	$9.5 (\nu: 0.5)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.14}_{-0.33}$	$\chi_{\text{small}}^2$	$397.4 (\nu: 2.2)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1060.2^{+1.6}_{-1.0}$	$\chi_{\text{lowl}}^2$	$22.66 (\nu: 0.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.4^{+1.6}_{-3.7}$	$\chi_{\text{CamSpec}}^2$	$11516.1 (\nu: 17.0)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_D$	$0.1413^{+0.0028}_{-0.0015}$	$\chi_{\text{JLA}}^2$	$1035.11 (\nu: 0.1)$
$H_0$	$68.0^{+2.9}_{-1.4}$	$100\theta_D$	$0.1610^{+0.0010}_{-0.00060}$	$\chi_{\text{6DF}}^2$	$0.059 (\nu: 0.0)$
$\Omega_\Lambda$	$0.689^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3337^{+79}_{-240}$	$\chi_{\text{MGS}}^2$	$1.25 (\nu: 0.1)$
$\Omega_m$	$0.311^{+0.017}_{-0.016}$	$k_{\text{eq}}$	$0.01028^{+0.00032}_{-0.00060}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_m h^2$	$0.1439^{+0.0076}_{-0.0036}$	$100\theta_{\text{eq}}$	$0.826^{+0.054}_{-0.016}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_\nu h^2$	$0.0023^{+0.0092}_{-0.0021}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.028}_{-0.0082}$	$\chi_{\text{CMB}}^2$	$11945.7 (\nu: 18.5)$
$\Omega_m h^3$	$0.0979^{+0.0077}_{-0.0026}$	$H(0.15)$	$73.3^{+2.9}_{-1.2}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.8)$
$\sigma_8$	$0.795^{+0.036}_{-0.063}$	$D_M(0.15)$	$637^{+12}_{-25}$		

$$\bar{\chi}_{\text{eff}}^2 = 12994.82; \Delta\bar{\chi}_{\text{eff}}^2 = 2.57; R - 1 = 0.03782$$



**7.19 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15\_zre6p5**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02239^{+0.00039}_{-0.00038}$	$S_8$	$0.809^{+0.037}_{-0.061}$	$H(0.38)$	$83.3^{+2.1}_{-0.92}$
$\Omega_c h^2$	$0.1186^{+0.0066}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.033}$	$D_M(0.38)$	$1525^{+22}_{-41}$
$100\theta_{MC}$	$1.04085^{+0.00076}_{-0.00086}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.024}_{-0.045}$	$H(0.51)$	$90.0^{+2.1}_{-0.83}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.962^{+0.035}_{-0.072}$	$D_M(0.51)$	$1975^{+27}_{-51}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.991$	$r_{\text{drag}} h$	$99.5^{+2.1}_{-2.1}$	$H(0.61)$	$95.7^{+2.2}_{-0.79}$
$N_{\text{eff}}$	$< 3.39$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.053}_{-0.052}$	$D_M(0.61)$	$2298^{+30}_{-59}$
$\ln(10^{10} A_s)$	$3.048^{+0.040}_{-0.031}$	$z_{\text{re}}$	$< 9.64$	$H(2.33)$	$237.1^{+4.5}_{-2.2}$
$n_s$	$0.968^{+0.014}_{-0.012}$	$10^9 A_s$	$2.108^{+0.085}_{-0.065}$	$D_M(2.33)$	$5740^{+42}_{-120}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.032}_{-0.030}$	$f\sigma_8(0.15)$	$0.447^{+0.020}_{-0.034}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{40}$	$1223^{+31}_{-34}$	$\sigma_8(0.15)$	$0.732^{+0.031}_{-0.058}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{220}$	$5726^{+98}_{-100}$	$f\sigma_8(0.38)$	$0.465^{+0.019}_{-0.035}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2537^{+33}_{-34}$	$\sigma_8(0.38)$	$0.649^{+0.028}_{-0.051}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+11}_{-12}$	$f\sigma_8(0.51)$	$0.464^{+0.019}_{-0.035}$
$A_{143}^{\text{tSZ}}$	$< 8.64$	$D_{2000}$	$229.9^{+3.9}_{-4.2}$	$\sigma_8(0.51)$	$0.607^{+0.026}_{-0.048}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.968^{+0.014}_{-0.012}$	$f\sigma_8(0.61)$	$0.459^{+0.018}_{-0.035}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2464^{+0.0035}_{-0.0012}$	$\sigma_8(0.61)$	$0.578^{+0.025}_{-0.046}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2477^{+0.0036}_{-0.0012}$	$f\sigma_8(2.33)$	$0.292^{+0.013}_{-0.024}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.61^{+0.10}_{-0.072}$	$\sigma_8(2.33)$	$0.301^{+0.014}_{-0.024}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$\text{Age/Gyr}$	$13.743^{+0.097}_{-0.29}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.45}$	$z_*$	$1090.00^{+0.74}_{-0.60}$	$f_{2000}^{217}$	$107.3^{+5.0}_{-5.0}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.0^{+1.2}_{-2.5}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.40}$	$100\theta_*$	$1.04099^{+0.00078}_{-0.00097}$	$\chi_{\text{lensing}}^2$	$9.41 (\nu: 0.5)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$D_M(z_*)/\text{Gpc}$	$13.83^{+0.12}_{-0.24}$	$\chi_{\text{small}}^2$	$397.3 (\nu: 2.1)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.93}$	$\chi_{\text{lowl}}^2$	$22.83 (\nu: 0.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.6}$	$\chi_{\text{CamSpec}}^2$	$11515.7 (\nu: 16.2)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$k_D$	$0.1411^{+0.0022}_{-0.0011}$	$\chi_{\text{Aver15}}^2$	$0.57 (\nu: 0.1)$
$H_0$	$67.8^{+2.1}_{-1.2}$	$100\theta_D$	$0.16096^{+0.00085}_{-0.00054}$	$\chi_{6\text{DF}}^2$	$0.072 (\nu: 0.0)$
$\Omega_\Lambda$	$0.688^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3336^{+85}_{-240}$	$\chi_{\text{MGS}}^2$	$1.17 (\nu: 0.1)$
$\Omega_m$	$0.312^{+0.017}_{-0.016}$	$k_{\text{eq}}$	$0.01026^{+0.00028}_{-0.00059}$	$\chi_{\text{DR12BAO}}^2$	$5.2 (\nu: 1.5)$
$\Omega_m h^2$	$0.1436^{+0.0056}_{-0.0032}$	$100\theta_{\text{eq}}$	$0.827^{+0.054}_{-0.017}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_\nu h^2$	$0.0025^{+0.011}_{-0.0020}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.029}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$11945.2 (\nu: 17.6)$
$\Omega_m h^3$	$0.0973^{+0.0053}_{-0.0020}$	$H(0.15)$	$73.1^{+2.1}_{-1.1}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 1.0)$
$\sigma_8$	$0.793^{+0.033}_{-0.062}$	$D_M(0.15)$	$639^{+11}_{-18}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.01; R - 1 = 0.03614$$



## 7.20 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02239^{+0.00039}_{-0.00037}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.020}_{-0.033}$	$H(0.51)$	$90.0^{+2.0}_{-0.82}$
$\Omega_c h^2$	$0.1186^{+0.0063}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.024}_{-0.045}$	$D_M(0.51)$	$1975^{+27}_{-50}$
$100\theta_{MC}$	$1.04085^{+0.00076}_{-0.00084}$	$\sigma_8/h^{0.5}$	$0.962^{+0.035}_{-0.072}$	$H(0.61)$	$95.7^{+2.1}_{-0.76}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$r_{\text{drag}} h$	$99.4^{+2.1}_{-2.1}$	$D_M(0.61)$	$2298^{+29}_{-57}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.994$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.053}_{-0.052}$	$H(2.33)$	$237.1^{+4.3}_{-2.2}$
$N_{\text{eff}}$	$< 3.37$	$z_{\text{re}}$	$< 9.63$	$D_M(2.33)$	$5741^{+41}_{-120}$
$\ln(10^{10} A_s)$	$3.048^{+0.040}_{-0.031}$	$10^9 A_s$	$2.107^{+0.085}_{-0.065}$	$f\sigma_8(0.15)$	$0.447^{+0.019}_{-0.034}$
$n_s$	$0.968^{+0.014}_{-0.012}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.031}_{-0.030}$	$\sigma_8(0.15)$	$0.732^{+0.030}_{-0.058}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0065}$	$D_{40}$	$1223^{+31}_{-34}$	$f\sigma_8(0.38)$	$0.465^{+0.019}_{-0.035}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5725^{+97}_{-100}$	$\sigma_8(0.38)$	$0.649^{+0.028}_{-0.051}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2537^{+33}_{-34}$	$f\sigma_8(0.51)$	$0.464^{+0.018}_{-0.035}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$816^{+11}_{-12}$	$\sigma_8(0.51)$	$0.607^{+0.026}_{-0.048}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$229.9^{+3.9}_{-4.1}$	$f\sigma_8(0.61)$	$0.459^{+0.018}_{-0.035}$
$A_{143}^{\text{tSZ}}$	$< 8.64$	$n_{s,0.002}$	$0.968^{+0.014}_{-0.012}$	$\sigma_8(0.61)$	$0.578^{+0.025}_{-0.046}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$Y_P$	$0.2464^{+0.0034}_{-0.0012}$	$f\sigma_8(2.33)$	$0.292^{+0.013}_{-0.024}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2477^{+0.0034}_{-0.0012}$	$\sigma_8(2.33)$	$0.300^{+0.014}_{-0.025}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 D/H$	$2.609^{+0.091}_{-0.069}$	$f_{2000}^{143}$	$30^{+8}_{-7}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.744^{+0.096}_{-0.28}$	$f_{2000}^{217}$	$107.3^{+5.0}_{-4.9}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	$z_*$	$1090.00^{+0.69}_{-0.58}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.45}$	$r_*$	$144.0^{+1.2}_{-2.4}$	$\chi_{\text{lensing}}^2$	$9.40 (\nu: 0.5)$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	$1.04100^{+0.00077}_{-0.00094}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.1)$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.40}$	$D_M(z_*)/\text{Gpc}$	$13.84^{+0.11}_{-0.23}$	$\chi_{\text{lowl}}^2$	$22.84 (\nu: 0.4)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0026}$	$z_{\text{drag}}$	$1060.1^{+1.2}_{-0.92}$	$\chi_{\text{CamSpec}}^2$	$11515.6 (\nu: 16.1)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$r_{\text{drag}}$	$146.7^{+1.3}_{-2.5}$	$\chi_{\text{Aver15}}^2$	$0.56 (\nu: 0.1)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$k_D$	$0.1411^{+0.0021}_{-0.0011}$	$\chi_{\text{Cooke17}}^2$	$0.12 (\nu: 0.0)$
$c_{EE}$	$0.993^{+0.013}_{-0.013}$	$100\theta_D$	$0.16096^{+0.00078}_{-0.00052}$	$\chi_{6\text{DF}}^2$	$0.073 (\nu: 0.0)$
$H_0$	$67.8^{+2.0}_{-1.2}$	$z_{\text{eq}}$	$3336^{+85}_{-240}$	$\chi_{\text{MGS}}^2$	$1.16 (\nu: 0.1)$
$\Omega_\Lambda$	$0.688^{+0.016}_{-0.017}$	$k_{\text{eq}}$	$0.01026^{+0.00028}_{-0.00059}$	$\chi_{\text{DR12BAO}}^2$	$5.3 (\nu: 1.5)$
$\Omega_m$	$0.312^{+0.017}_{-0.016}$	$100\theta_{\text{eq}}$	$0.827^{+0.054}_{-0.017}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_m h^2$	$0.1435^{+0.0053}_{-0.0032}$	$100\theta_{s,\text{eq}}$	$0.456^{+0.029}_{-0.0088}$	$\chi_{\text{CMB}}^2$	$11945.1 (\nu: 17.5)$
$\Omega_\nu h^2$	$0.0025^{+0.011}_{-0.0020}$	$H(0.15)$	$73.1^{+2.0}_{-1.1}$	$\chi_{\text{BAO}}^2$	$6.5 (\nu: 1.0)$
$\Omega_m h^3$	$0.0973^{+0.0051}_{-0.0020}$	$D_M(0.15)$	$639^{+11}_{-18}$	$\chi_{\text{Abund}}^2$	$0.67 (\nu: 0.1)$
$\sigma_8$	$0.792^{+0.033}_{-0.062}$	$H(0.38)$	$83.3^{+2.0}_{-0.91}$		
$S_8$	$0.808^{+0.037}_{-0.061}$	$D_M(0.38)$	$1525^{+22}_{-40}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.05; R - 1 = 0.03510$$



## 8 nnu+mnu

### 8.1 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02206	$0.02190^{+0.00091}_{-0.0011}$	$\sigma_8$	0.820	$0.776^{+0.073}_{-0.15}$	$100\theta_{\text{eq}}$	0.8085	$0.804^{+0.035}_{-0.034}$
$\Omega_c h^2$	0.1191	$0.119^{+0.011}_{-0.0095}$	$S_8$	0.843	$0.835^{+0.065}_{-0.069}$	$100\theta_{\text{s,eq}}$	0.4471	$0.445^{+0.018}_{-0.017}$
$100\theta_{\text{MC}}$	1.04106	$1.0409^{+0.0016}_{-0.0016}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4619	$0.457^{+0.035}_{-0.038}$	$H(0.15)$	72.0	$69.8^{+7.5}_{-9.8}$
$\tau$	0.0516	$0.051^{+0.022}_{-0.022}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.615	$0.596^{+0.042}_{-0.078}$	$D_{\text{M}}(0.15)$	650	$675^{+100}_{-70}$
$\Sigma m_\nu$ [eV]	0.00	< 1.02	$\sigma_8/h^{0.5}$	1.004	$0.969^{+0.065}_{-0.14}$	$H(0.38)$	82.1	$80.3^{+6.9}_{-8.3}$
$N_{\text{eff}}$	2.93	$2.88^{+0.79}_{-0.72}$	$r_{\text{drag}} h$	98.8	$95.4^{+8.2}_{-14}$	$D_{\text{M}}(0.38)$	1548	$1599^{+200}_{-200}$
$\ln(10^{10} A_{\text{s}})$	3.033	$3.030^{+0.056}_{-0.057}$	$\langle d^2 \rangle^{1/2}$	2.466	$2.46^{+0.13}_{-0.12}$	$H(0.51)$	88.8	$87.3^{+6.7}_{-7.6}$
$n_{\text{s}}$	0.9589	$0.954^{+0.037}_{-0.040}$	$z_{\text{re}}$	7.43	$7.4^{+2.2}_{-2.5}$	$D_{\text{M}}(0.51)$	2005	$2065^{+300}_{-200}$
$y_{\text{cal}}$	0.99999	$1.0004^{+0.0064}_{-0.0065}$	$10^9 A_{\text{s}}$	2.077	$2.07^{+0.12}_{-0.12}$	$H(0.61)$	94.5	$93.1^{+6.5}_{-7.1}$
$A_{100}^{\text{PS}}$	238	$241^{+70}_{-70}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.873	$1.871^{+0.058}_{-0.061}$	$D_{\text{M}}(0.61)$	2332	$2398^{+300}_{-200}$
$A_{143}^{\text{PS}}$	39	$40^{+20}_{-20}$	$D_{40}$	1236	$1240^{+59}_{-57}$	$H(2.33)$	234.9	$235.7^{+9.8}_{-9.0}$
$A_{217}^{\text{PS}}$	100.4	$102^{+30}_{-30}$	$D_{220}$	5701	$5700^{+110}_{-110}$	$D_{\text{M}}(2.33)$	5811	$5892^{+460}_{-370}$
$A_{217}^{\text{CIB}}$	43.8	$40^{+20}_{-20}$	$D_{810}$	2530.1	$2532^{+37}_{-38}$	$f\sigma_8(0.15)$	0.4652	$0.460^{+0.033}_{-0.038}$
$A_{143}^{\text{tSZ}}$	5.44	< 8.78	$D_{1420}$	813.7	$815^{+14}_{-14}$	$\sigma_8(0.15)$	0.757	$0.714^{+0.071}_{-0.15}$
$r_{143 \times 217}^{\text{PS}}$	0.593	$0.65^{+0.31}_{-0.33}$	$D_{2000}$	230.0	$229.9^{+6.0}_{-6.1}$	$f\sigma_8(0.38)$	0.4822	$0.470^{+0.031}_{-0.059}$
$r_{143 \times 217}^{\text{CIB}}$	0.72	—	$n_{\text{s},0.002}$	0.9589	$0.954^{+0.037}_{-0.040}$	$\sigma_8(0.38)$	0.670	$0.630^{+0.063}_{-0.15}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.13	—	$Y_{\text{P}}$	0.2438	$0.243^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	0.480	$0.464^{+0.032}_{-0.068}$
$A^{\text{kSZ}}$	1.9	—	$Y_{\text{P}}^{\text{BBN}}$	0.2451	$0.244^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	0.626	$0.588^{+0.065}_{-0.13}$
$A_{100}^{\text{dust}}$	1.00	$1.01^{+0.50}_{-0.51}$	$10^5 \text{D}/\text{H}$	2.605	$2.61^{+0.18}_{-0.17}$	$f\sigma_8(0.61)$	0.474	$0.457^{+0.032}_{-0.074}$
$A_{143}^{\text{dust}}$	0.978	$0.97^{+0.46}_{-0.45}$	Age/Gyr	13.91	$14.1^{+1.1}_{-0.87}$	$\sigma_8(0.61)$	0.596	$0.559^{+0.059}_{-0.14}$
$A_{217}^{\text{dust}}$	0.957	$0.97^{+0.27}_{-0.26}$	$z_*$	1090.12	$1090.3^{+1.5}_{-1.3}$	$f\sigma_8(2.33)$	0.2992	$0.282^{+0.029}_{-0.067}$
$A_{143 \times 217}^{\text{dust}}$	0.996	$1.03^{+0.42}_{-0.41}$	$r_*$	145.5	$145.9^{+6.7}_{-6.7}$	$\sigma_8(2.33)$	0.309	$0.289^{+0.034}_{-0.074}$
$c_{100}$	0.99751	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04130	$1.0413^{+0.0019}_{-0.0018}$	$f_{2000}^{143}$	30.3	$30^{+10}_{-9}$
$c_{217}$	1.00118	$1.0012^{+0.0040}_{-0.0040}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.97	$14.01^{+0.63}_{-0.63}$	$f_{2000}^{217}$	106.9	$107.3^{+6.5}_{-6.5}$
$H_0$	66.7	$64^{+8}_{-10}$	$z_{\text{drag}}$	1059.06	$1058.6^{+3.1}_{-3.3}$	$f_{2000}^{143 \times 217}$	32.3	$33^{+7}_{-7}$
$\Omega_\Lambda$	0.682	$0.649^{+0.076}_{-0.15}$	$r_{\text{drag}}$	148.3	$148.8^{+7.1}_{-7.0}$	$\chi_{\text{simall}}^2$	395.79	$396.9 (\nu: 1.4)$
$\Omega_{\text{m}}$	0.318	$0.351^{+0.15}_{-0.076}$	$k_{\text{D}}$	0.13982	$0.1395^{+0.0051}_{-0.0048}$	$\chi_{\text{lowl}}^2$	24.3	$25.0 (\nu: 3.3)$
$\Omega_{\text{m}} h^2$	0.1411	$0.143^{+0.013}_{-0.011}$	$100\theta_{\text{D}}$	0.16082	$0.1608^{+0.0017}_{-0.0017}$	$\chi_{\text{CamSpec}}^2$	7048.9	$7064.2 (\nu: 18.1)$
$\Omega_\nu h^2$	0.00001	< 0.00971	$z_{\text{eq}}$	3424	$3447^{+200}_{-180}$	$\chi_{\text{prior}}^2$	2.1	$7.6 (\nu: 6.1)$
$\Omega_{\text{m}} h^3$	0.0941	$0.092^{+0.016}_{-0.016}$	$k_{\text{eq}}$	0.010371	$0.01040^{+0.00044}_{-0.00040}$	$\chi_{\text{CMB}}^2$	7469.0	$7486.0 (\nu: 18.0)$

Best-fit  $\chi_{\text{eff}}^2 = 7471.08$ ;  $\Delta\chi_{\text{eff}}^2 = -0.66$ ;  $\bar{\chi}_{\text{eff}}^2 = 7493.68$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.14$ ;  $R - 1 = 0.00504$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.79 ( $\Delta$  -0.04) commander\_dx12\_v3\_2\_29: 24.32 ( $\Delta$  0.92) CamSpec like\_10.7HM: 7048.88 ( $\Delta$  -1.46)



## 8.2 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02204	$0.02187^{+0.00089}_{-0.0010}$	$S_8$	0.8351	$0.840^{+0.045}_{-0.045}$	$H(0.15)$	71.8	$69.5^{+7.0}_{-8.3}$
$\Omega_c h^2$	0.1176	$0.118^{+0.011}_{-0.0092}$	$\sigma_8 \Omega_m^{0.5}$	0.4574	$0.460^{+0.024}_{-0.024}$	$D_M(0.15)$	651	$677^{+100}_{-70}$
$100\theta_{MC}$	1.04112	$1.0410^{+0.0016}_{-0.0015}$	$\sigma_8 \Omega_m^{0.25}$	0.6103	$0.599^{+0.029}_{-0.045}$	$H(0.38)$	81.9	$80.0^{+6.5}_{-7.1}$
$\tau$	0.0506	$0.051^{+0.022}_{-0.021}$	$\sigma_8/h^{0.5}$	0.998	$0.975^{+0.043}_{-0.081}$	$D_M(0.38)$	1552	$1605^{+200}_{-100}$
$\Sigma m_\nu$ [eV]	0.002	$< 0.773$	$r_{\text{drag}} h$	99.1	$95.4^{+7.4}_{-12}$	$H(0.51)$	88.6	$87.0^{+6.4}_{-6.5}$
$N_{\text{eff}}$	2.88	$2.82^{+0.75}_{-0.68}$	$\langle d^2 \rangle^{1/2}$	2.457	$2.47^{+0.11}_{-0.091}$	$D_M(0.51)$	2010	$2073^{+200}_{-200}$
$\ln(10^{10} A_s)$	3.028	$3.030^{+0.054}_{-0.055}$	$z_{\text{re}}$	7.30	$7.4^{+2.1}_{-2.4}$	$H(0.61)$	94.1	$92.8^{+6.3}_{-6.2}$
$n_s$	0.9579	$0.952^{+0.034}_{-0.037}$	$10^9 A_s$	2.066	$2.07^{+0.12}_{-0.11}$	$D_M(0.61)$	2339	$2407^{+300}_{-200}$
$y_{\text{cal}}$	1.0002	$1.0004^{+0.0064}_{-0.0066}$	$10^9 A_s e^{-2\tau}$	1.867	$1.869^{+0.057}_{-0.058}$	$H(2.33)$	233.8	$234.9^{+9.6}_{-8.5}$
$A_{100}^{\text{PS}}$	237	$240^{+60}_{-70}$	$D_{40}$	1236	$1245^{+54}_{-51}$	$D_M(2.33)$	5833	$5912^{+400}_{-360}$
$A_{143}^{\text{PS}}$	38	$40^{+20}_{-20}$	$D_{220}$	5706	$5700^{+110}_{-110}$	$f\sigma_8(0.15)$	0.4609	$0.462^{+0.021}_{-0.022}$
$A_{217}^{\text{PS}}$	100.5	$102^{+30}_{-40}$	$D_{810}$	2529.6	$2532^{+37}_{-37}$	$\sigma_8(0.15)$	0.752	$0.717^{+0.060}_{-0.11}$
$A_{217}^{\text{CIB}}$	43.8	$40^{+20}_{-20}$	$D_{1420}$	814.3	$815^{+14}_{-14}$	$f\sigma_8(0.38)$	0.4782	$0.472^{+0.021}_{-0.033}$
$A_{143}^{\text{tSZ}}$	5.73	$< 8.81$	$D_{2000}$	230.3	$230.3^{+5.9}_{-5.8}$	$\sigma_8(0.38)$	0.666	$0.633^{+0.058}_{-0.11}$
$r_{143 \times 217}^{\text{PS}}$	0.594	$0.66^{+0.32}_{-0.34}$	$n_{s,0.002}$	0.9579	$0.952^{+0.034}_{-0.037}$	$f\sigma_8(0.51)$	0.4763	$0.467^{+0.023}_{-0.041}$
$r_{143 \times 217}^{\text{CIB}}$	0.70	—	$Y_P$	0.2430	$0.242^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	0.623	$0.591^{+0.056}_{-0.10}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.08	—	$Y_P^{\text{BBN}}$	0.2443	$0.243^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	0.4709	$0.459^{+0.024}_{-0.047}$
$A^{\text{kSZ}}$	1.4	—	$10^5 D/H$	2.589	$2.60^{+0.18}_{-0.17}$	$\sigma_8(0.61)$	0.592	$0.561^{+0.054}_{-0.098}$
$A_{100}^{\text{dust}}$	1.01	$1.00^{+0.50}_{-0.50}$	Age/Gyr	13.96	$14.15^{+0.95}_{-0.85}$	$f\sigma_8(2.33)$	0.2976	$0.283^{+0.027}_{-0.049}$
$A_{143}^{\text{dust}}$	0.970	$0.97^{+0.46}_{-0.46}$	$z_*$	1089.96	$1090.2^{+1.5}_{-1.3}$	$\sigma_8(2.33)$	0.3071	$0.290^{+0.031}_{-0.055}$
$A_{217}^{\text{dust}}$	0.962	$0.97^{+0.27}_{-0.27}$	$r_*$	146.2	$146.4^{+6.4}_{-6.5}$	$f_{2000}^{143}$	29.9	$30^{+9}_{-9}$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03^{+0.41}_{-0.40}$	$100\theta_*$	1.04142	$1.0414^{+0.0019}_{-0.0019}$	$f_{2000}^{217}$	106.6	$106.9^{+6.5}_{-6.4}$
$c_{100}$	0.99757	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	14.03	$14.06^{+0.60}_{-0.60}$	$f_{2000}^{143 \times 217}$	32.0	$32^{+7}_{-7}$
$c_{217}$	1.00119	$1.0011^{+0.0039}_{-0.0041}$	$z_{\text{drag}}$	1058.87	$1058.5^{+3.0}_{-3.2}$	$\chi_{\text{lensing}}^2$	8.77	$9.2 (\nu: 0.6)$
$H_0$	66.5	$64^{+7}_{-9}$	$r_{\text{drag}}$	149.0	$149.3^{+6.7}_{-6.8}$	$\chi_{\text{small}}^2$	395.68	$396.9 (\nu: 1.4)$
$\Omega_\Lambda$	0.684	$0.649^{+0.063}_{-0.14}$	$k_D$	0.13931	$0.1391^{+0.0050}_{-0.0045}$	$\chi_{\text{lowl}}^2$	24.3	$25.4 (\nu: 3.1)$
$\Omega_m$	0.316	$0.351^{+0.14}_{-0.063}$	$100\theta_D$	0.16068	$0.1606^{+0.0017}_{-0.0016}$	$\chi_{\text{CamSpec}}^2$	7049.2	$7063.1 (\nu: 15.5)$
$\Omega_m h^2$	0.1397	$0.142^{+0.013}_{-0.010}$	$z_{\text{eq}}$	3415	$3459^{+190}_{-160}$	$\chi_{\text{prior}}^2$	2.0	$7.6 (\nu: 6.0)$
$\Omega_\nu h^2$	0.00002	$< 0.00714$	$k_{\text{eq}}$	0.010304	$0.01039^{+0.00043}_{-0.00037}$	$\chi_{\text{CMB}}^2$	7477.9	$7494.7 (\nu: 17.9)$
$\Omega_m h^3$	0.0930	$0.091^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	0.8102	$0.802^{+0.031}_{-0.033}$			
$\sigma_8$	0.814	$0.780^{+0.060}_{-0.11}$	$100\theta_{s,\text{eq}}$	0.4480	$0.444^{+0.016}_{-0.017}$			

Best-fit  $\chi_{\text{eff}}^2 = 7479.93$ ;  $\Delta\chi_{\text{eff}}^2 = -0.75$ ;  $\bar{\chi}_{\text{eff}}^2 = 7502.27$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 2.03$ ;  $R - 1 = 0.00874$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.77 ( $\Delta$  -0.14) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.19) commander\_dx12\_v3\_2\_29: 24.30 ( $\Delta$  0.88) CamSpec like\_10.7HM: 7049.15 ( $\Delta$  -1.03)



### 8.3 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02221	$0.02216^{+0.00063}_{-0.00061}$	$\Omega_m h^3$	0.0934	$0.093^{+0.012}_{-0.011}$	$100\theta_{\text{eq}}$	0.8125	$0.811^{+0.020}_{-0.020}$
$\Omega_c h^2$	0.1173	$0.1178^{+0.0093}_{-0.0082}$	$\sigma_8$	0.815	$0.789^{+0.050}_{-0.11}$	$100\theta_{\text{s,eq}}$	0.4491	$0.4485^{+0.0099}_{-0.010}$
$100\theta_{\text{MC}}$	1.04115	$1.0411^{+0.0013}_{-0.0013}$	$S_8$	0.8299	$0.823^{+0.047}_{-0.049}$	$H(0.15)$	72.2	$71.2^{+4.9}_{-5.8}$
$\tau$	0.0522	$0.052^{+0.022}_{-0.022}$	$\sigma_8 \Omega_m^{0.5}$	0.4546	$0.451^{+0.026}_{-0.027}$	$D_{\text{M}}(0.15)$	647	$659^{+64}_{-46}$
$\Sigma m_\nu$ [eV]	0.001	< 0.587	$\sigma_8 \Omega_m^{0.25}$	0.6086	$0.596^{+0.032}_{-0.055}$	$H(0.38)$	82.20	$81.4^{+4.7}_{-5.1}$
$N_{\text{eff}}$	2.89	$2.90^{+0.62}_{-0.55}$	$\sigma_8/h^{0.5}$	0.996	$0.972^{+0.047}_{-0.094}$	$D_{\text{M}}(0.38)$	1544	$1567^{+130}_{-100}$
$\ln(10^{10} A_s)$	3.032	$3.032^{+0.052}_{-0.051}$	$r_{\text{drag}} h$	99.6	$97.8^{+4.7}_{-8.2}$	$H(0.51)$	88.85	$88.2^{+4.7}_{-4.8}$
$n_s$	0.9615	$0.960^{+0.025}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	2.448	$2.437^{+0.084}_{-0.082}$	$D_{\text{M}}(0.51)$	2000	$2027^{+160}_{-130}$
$y_{\text{cal}}$	1.0005	$1.0005^{+0.0066}_{-0.0067}$	$z_{\text{re}}$	7.43	$7.4^{+2.2}_{-2.4}$	$H(0.61)$	94.42	$93.9^{+4.7}_{-4.6}$
$A_{100}^{\text{PS}}$	227	$237^{+60}_{-70}$	$10^9 A_s$	2.074	$2.07^{+0.11}_{-0.10}$	$D_{\text{M}}(0.61)$	2328	$2357^{+180}_{-140}$
$A_{143}^{\text{PS}}$	44.4	$38^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.868	$1.868^{+0.051}_{-0.051}$	$H(2.33)$	233.8	$234.8^{+8.5}_{-7.7}$
$A_{217}^{\text{PS}}$	105.7	$103^{+30}_{-30}$	$D_{40}$	1230.8	$1233^{+42}_{-42}$	$D_{\text{M}}(2.33)$	5818	$5846^{+280}_{-270}$
$A_{217}^{\text{CIB}}$	41.2	$39^{+20}_{-20}$	$D_{220}$	5717	$5717^{+100}_{-100}$	$f\sigma_8(0.15)$	0.4584	$0.455^{+0.024}_{-0.027}$
$A_{143}^{\text{tSZ}}$	6.46	< 8.83	$D_{810}$	2534.3	$2533^{+37}_{-37}$	$\sigma_8(0.15)$	0.753	$0.727^{+0.047}_{-0.10}$
$r_{143 \times 217}^{\text{PS}}$	0.695	$0.66^{+0.31}_{-0.34}$	$D_{1420}$	817.4	$817^{+13}_{-14}$	$f\sigma_8(0.38)$	0.4767	$0.469^{+0.024}_{-0.038}$
$r_{143 \times 217}^{\text{CIB}}$	0.82	—	$D_{2000}$	231.6	$230.9^{+5.3}_{-5.6}$	$\sigma_8(0.38)$	0.667	$0.643^{+0.044}_{-0.096}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.58	—	$n_{\text{s},0.002}$	0.9615	$0.960^{+0.025}_{-0.025}$	$f\sigma_8(0.51)$	0.4753	$0.466^{+0.024}_{-0.044}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}$	0.2433	$0.2433^{+0.0083}_{-0.0079}$	$\sigma_8(0.51)$	0.624	$0.602^{+0.042}_{-0.092}$
$A_{100}^{\text{dust}}$	1.00	$1.01^{+0.52}_{-0.51}$	$Y_{\text{P}}^{\text{BBN}}$	0.2446	$0.2446^{+0.0083}_{-0.0080}$	$f\sigma_8(0.61)$	0.4702	$0.460^{+0.024}_{-0.047}$
$A_{143}^{\text{dust}}$	0.970	$0.96^{+0.45}_{-0.45}$	$10^5 \text{D/H}$	2.563	$2.57^{+0.15}_{-0.14}$	$\sigma_8(0.61)$	0.594	$0.572^{+0.041}_{-0.089}$
$A_{217}^{\text{dust}}$	0.984	$0.98^{+0.27}_{-0.27}$	Age/Gyr	13.93	$13.99^{+0.67}_{-0.63}$	$f\sigma_8(2.33)$	0.2985	$0.289^{+0.020}_{-0.042}$
$A_{143 \times 217}^{\text{dust}}$	1.005	$1.02^{+0.41}_{-0.42}$	$z_*$	1089.73	$1089.9^{+1.2}_{-1.0}$	$\sigma_8(2.33)$	0.3082	$0.297^{+0.023}_{-0.048}$
$c_{100}$	0.99775	$0.9975^{+0.0027}_{-0.0028}$	$r_*$	146.0	$145.9^{+5.4}_{-5.6}$	$f_{2000}^{143}$	28.4	$29^{+9}_{-8}$
$c_{217}$	1.00114	$1.0010^{+0.0042}_{-0.0041}$	$100\theta_*$	1.04142	$1.0414^{+0.0016}_{-0.0016}$	$f_{2000}^{217}$	105.6	$106.3^{+6.0}_{-5.9}$
$c_{TE}$	0.9954	$0.996^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.02	$14.01^{+0.50}_{-0.52}$	$f_{2000}^{143 \times 217}$	30.8	$31^{+7}_{-6}$
$c_{EE}$	0.9902	$0.990^{+0.015}_{-0.015}$	$z_{\text{drag}}$	1059.25	$1059.2^{+2.3}_{-2.2}$	$\chi_{\text{simall}}^2$	395.79	$396.9 (\nu: 1.4)$
$H_0$	67.0	$65.8^{+5.1}_{-6.4}$	$r_{\text{drag}}$	148.8	$148.7^{+5.6}_{-5.8}$	$\chi_{\text{lowl}}^2$	23.66	$23.9 (\nu: 1.2)$
$\Omega_\Lambda$	0.689	$0.672^{+0.038}_{-0.079}$	$k_{\text{D}}$	0.13956	$0.1396^{+0.0042}_{-0.0039}$	$\chi_{\text{CamSpec}}^2$	11498.0	$11515.4 (\nu: 18.9)$
$\Omega_{\text{m}}$	0.311	$0.328^{+0.079}_{-0.038}$	$100\theta_{\text{D}}$	0.16052	$0.1606^{+0.0014}_{-0.0013}$	$\chi_{\text{prior}}^2$	2.0	$8.0 (\nu: 6.2)$
$\Omega_{\text{m}} h^2$	0.1395	$0.141^{+0.010}_{-0.0089}$	$z_{\text{eq}}$	3404	$3411^{+110}_{-100}$	$\chi_{\text{CMB}}^2$	11917.5	$11936.2 (\nu: 19.2)$
$\Omega_\nu h^2$	0.00001	< 0.00594	$k_{\text{eq}}$	0.010283	$0.01031^{+0.00035}_{-0.00032}$			

Best-fit  $\chi_{\text{eff}}^2 = 11919.53$ ;  $\Delta\chi_{\text{eff}}^2 = -1.23$ ;  $\bar{\chi}_{\text{eff}}^2 = 11944.15$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.69$ ;  $R - 1 = 0.00883$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.79 ( $\Delta$  -0.11) commander\_dx12.v3.2.29: 23.66 ( $\Delta$  0.66) CamSpec like\_10.7HM\_1400\_unified: 11498.05 ( $\Delta$  -1.60)



#### 8.4 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02217	$0.02215^{+0.00060}_{-0.00058}$	$\Omega_m h^3$	0.0921	$0.093^{+0.012}_{-0.010}$	$100\theta_{\text{eq}}$	0.8111	$0.810^{+0.019}_{-0.019}$
$\Omega_c h^2$	0.1163	$0.1175^{+0.0089}_{-0.0080}$	$\sigma_8$	0.811	$0.795^{+0.039}_{-0.068}$	$100\theta_{\text{s,eq}}$	0.4484	$0.4479^{+0.0094}_{-0.0099}$
$100\theta_{\text{MC}}$	1.04128	$1.0411^{+0.0013}_{-0.0012}$	$S_8$	0.8283	$0.828^{+0.034}_{-0.033}$	$H(0.15)$	71.73	$71.1^{+4.5}_{-5.0}$
$\tau$	0.0509	$0.053^{+0.021}_{-0.020}$	$\sigma_8 \Omega_m^{0.5}$	0.4537	$0.453^{+0.019}_{-0.018}$	$D_{\text{M}}(0.15)$	651.8	$659^{+54}_{-42}$
$\Sigma m_\nu$ [eV]	0.000	< 0.416	$\sigma_8 \Omega_m^{0.25}$	0.6065	$0.600^{+0.023}_{-0.031}$	$H(0.38)$	81.72	$81.4^{+4.4}_{-4.6}$
$N_{\text{eff}}$	2.82	$2.87^{+0.59}_{-0.53}$	$\sigma_8/h^{0.5}$	0.9942	$0.980^{+0.032}_{-0.055}$	$D_{\text{M}}(0.38)$	1554	$1567^{+110}_{-93}$
$\ln(10^{10} A_s)$	3.0266	$3.034^{+0.050}_{-0.047}$	$r_{\text{drag}} h$	99.4	$98.0^{+4.2}_{-6.8}$	$H(0.51)$	88.36	$88.1^{+4.4}_{-4.3}$
$n_s$	0.9585	$0.958^{+0.024}_{-0.023}$	$\langle d^2 \rangle^{1/2}$	2.450	$2.447^{+0.068}_{-0.066}$	$D_{\text{M}}(0.51)$	2013	$2028^{+140}_{-110}$
$y_{\text{cal}}$	1.0005	$1.0006^{+0.0066}_{-0.0068}$	$z_{\text{re}}$	7.28	$7.5^{+2.1}_{-2.2}$	$H(0.61)$	93.91	$93.8^{+4.4}_{-4.1}$
$A_{100}^{\text{PS}}$	227	$236^{+60}_{-70}$	$10^9 A_s$	2.063	$2.08^{+0.11}_{-0.095}$	$D_{\text{M}}(0.61)$	2342	$2358^{+150}_{-130}$
$A_{143}^{\text{PS}}$	45.0	$37^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.863	$1.868^{+0.049}_{-0.050}$	$H(2.33)$	232.9	$234.3^{+8.2}_{-7.5}$
$A_{217}^{\text{PS}}$	105.5	$103^{+30}_{-30}$	$D_{40}$	1234.8	$1237^{+40}_{-40}$	$D_{\text{M}}(2.33)$	5848	$5854^{+260}_{-250}$
$A_{217}^{\text{CIB}}$	41.1	$39^{+20}_{-20}$	$D_{220}$	5720	$5719^{+100}_{-100}$	$f\sigma_8(0.15)$	0.4574	$0.457^{+0.017}_{-0.017}$
$A_{143}^{\text{tSZ}}$	6.43	< 8.75	$D_{810}$	2532.9	$2534^{+37}_{-38}$	$\sigma_8(0.15)$	0.749	$0.733^{+0.039}_{-0.067}$
$r_{143 \times 217}^{\text{PS}}$	0.713	$0.67^{+0.31}_{-0.34}$	$D_{1420}$	817.6	$817^{+13}_{-14}$	$f\sigma_8(0.38)$	0.4752	$0.472^{+0.017}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	0.83	—	$D_{2000}$	231.9	$231.2^{+5.5}_{-5.6}$	$\sigma_8(0.38)$	0.663	$0.649^{+0.037}_{-0.065}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.66	—	$n_{\text{s},0.002}$	0.9585	$0.958^{+0.024}_{-0.023}$	$f\sigma_8(0.51)$	0.4735	$0.469^{+0.017}_{-0.024}$
$A^{\text{kSZ}}$	0.0	—	$Y_{\text{P}}$	0.2423	$0.2429^{+0.0079}_{-0.0078}$	$\sigma_8(0.51)$	0.6207	$0.607^{+0.036}_{-0.062}$
$A_{100}^{\text{dust}}$	1.01	$1.00^{+0.53}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	0.2436	$0.2442^{+0.0079}_{-0.0078}$	$f\sigma_8(0.61)$	0.4683	$0.463^{+0.018}_{-0.027}$
$A_{143}^{\text{dust}}$	0.977	$0.95^{+0.45}_{-0.47}$	$10^5 \text{D/H}$	2.546	$2.57^{+0.15}_{-0.14}$	$\sigma_8(0.61)$	0.5905	$0.577^{+0.035}_{-0.060}$
$A_{217}^{\text{dust}}$	0.982	$0.98^{+0.27}_{-0.26}$	Age/Gyr	14.00	$14.01^{+0.60}_{-0.59}$	$f\sigma_8(2.33)$	0.2967	$0.291^{+0.017}_{-0.028}$
$A_{143 \times 217}^{\text{dust}}$	1.005	$1.02^{+0.41}_{-0.43}$	$z_*$	1089.63	$1089.8^{+1.1}_{-1.0}$	$\sigma_8(2.33)$	0.3063	$0.299^{+0.020}_{-0.033}$
$c_{100}$	0.99776	$0.9976^{+0.0028}_{-0.0027}$	$r_*$	146.7	$146.2^{+5.3}_{-5.3}$	$f_{2000}^{143}$	28.1	$28^{+9}_{-8}$
$c_{217}$	1.00115	$1.0010^{+0.0042}_{-0.0040}$	$100\theta_*$	1.04160	$1.0415^{+0.0016}_{-0.0016}$	$f_{2000}^{217}$	105.4	$106.0^{+6.1}_{-5.7}$
$c_{TE}$	0.9951	$0.996^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.085	$14.04^{+0.49}_{-0.50}$	$f_{2000}^{143 \times 217}$	30.6	$31^{+6}_{-6}$
$c_{EE}$	0.9894	$0.990^{+0.014}_{-0.015}$	$z_{\text{drag}}$	1059.02	$1059.1^{+2.2}_{-2.2}$	$\chi_{\text{lensing}}^2$	8.57	$9.19 (\nu: 0.4)$
$H_0$	66.5	$65.8^{+4.6}_{-5.3}$	$r_{\text{drag}}$	149.5	$149.0^{+5.5}_{-5.6}$	$\chi_{\text{small}}^2$	395.68	$397.0 (\nu: 1.5)$
$\Omega_\Lambda$	0.6869	$0.674^{+0.034}_{-0.064}$	$k_{\text{D}}$	0.13909	$0.1395^{+0.0040}_{-0.0038}$	$\chi_{\text{lowl}}^2$	24.10	$24.2 (\nu: 1.1)$
$\Omega_{\text{m}}$	0.3131	$0.326^{+0.064}_{-0.034}$	$100\theta_{\text{D}}$	0.16036	$0.1605^{+0.0013}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	11497.8	$11514.2 (\nu: 16.6)$
$\Omega_{\text{m}} h^2$	0.1385	$0.141^{+0.010}_{-0.0086}$	$z_{\text{eq}}$	3412	$3417^{+100}_{-97}$	$\chi_{\text{prior}}^2$	2.1	$8.0 (\nu: 6.1)$
$\Omega_\nu h^2$	0.00000	< 0.00418	$k_{\text{eq}}$	0.010255	$0.01030^{+0.00033}_{-0.00031}$	$\chi_{\text{CMB}}^2$	11926.1	$11944.6 (\nu: 18.9)$

Best-fit  $\chi_{\text{eff}}^2 = 11928.16$ ;  $\Delta\chi_{\text{eff}}^2 = -1.50$ ;  $\bar{\chi}_{\text{eff}}^2 = 11952.59$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.14$ ;  $R - 1 = 0.01252$

$\chi_{\text{eff}}^2$ : CMB - smicadx12.Dec5.ftl.mv2.ndclpp.p.teb.consext8: 8.57 ( $\Delta$  -0.26) small\_100x143\_offlike5.EE.Aplanck\_B: 395.68 ( $\Delta$  -0.19) commander\_dx12.v3.2.29: 24.10 ( $\Delta$  0.88) CamSpec like\_10.7HM.1400.unified: 11497.75 ( $\Delta$  -1.90)



## 8.5 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02218	$0.02224^{+0.00062}_{-0.00061}$	$\sigma_8 \Omega_m^{0.5}$	0.4540	$0.450^{+0.026}_{-0.027}$	$H(0.38)$	83.24	$83.2^{+4.0}_{-4.0}$
$\Omega_c h^2$	0.1195	$0.120^{+0.011}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.603^{+0.031}_{-0.036}$	$D_M(0.38)$	1523	$1525^{+83}_{-75}$
$100\theta_{MC}$	1.04098	$1.0410^{+0.0016}_{-0.0015}$	$\sigma_8/h^{0.5}$	0.9945	$0.982^{+0.042}_{-0.056}$	$H(0.51)$	89.91	$90.0^{+4.1}_{-4.2}$
$\tau$	0.0520	$0.054^{+0.021}_{-0.021}$	$r_{drag} h$	100.22	$99.9^{+2.7}_{-2.7}$	$D_M(0.51)$	1974	$1975^{+100}_{-95}$
$\Sigma m_\nu$ [eV]	0.000	< 0.244	$\langle d^2 \rangle^{1/2}$	2.438	$2.422^{+0.081}_{-0.088}$	$H(0.61)$	95.49	$95.6^{+4.2}_{-4.3}$
$N_{eff}$	3.05	$3.09^{+0.63}_{-0.63}$	$z_{re}$	7.47	$7.6^{+2.1}_{-2.3}$	$D_M(0.61)$	2297	$2299^{+120}_{-110}$
$\ln(10^{10} A_s)$	3.036	$3.040^{+0.053}_{-0.052}$	$10^9 A_s$	2.082	$2.09^{+0.11}_{-0.11}$	$H(2.33)$	235.7	$236.3^{+9.1}_{-9.2}$
$n_s$	0.9659	$0.969^{+0.023}_{-0.023}$	$10^9 A_s e^{-2\tau}$	1.876	$1.877^{+0.057}_{-0.059}$	$D_M(2.33)$	5755	$5751^{+270}_{-240}$
$y_{cal}$	1.0002	$1.0005^{+0.0064}_{-0.0064}$	$D_{40}$	1224.3	$1221^{+40}_{-40}$	$f\sigma_8(0.15)$	0.4582	$0.455^{+0.025}_{-0.026}$
$A_{100}^{PS}$	243	$243^{+60}_{-70}$	$D_{220}$	5705	$5709^{+100}_{-100}$	$\sigma_8(0.15)$	0.7581	$0.748^{+0.038}_{-0.047}$
$A_{143}^{PS}$	40	$41^{+20}_{-20}$	$D_{810}$	2531.3	$2534^{+37}_{-37}$	$f\sigma_8(0.38)$	0.4777	$0.473^{+0.024}_{-0.026}$
$A_{217}^{PS}$	98.0	$101^{+30}_{-40}$	$D_{1420}$	813.6	$815^{+14}_{-14}$	$\sigma_8(0.38)$	0.6723	$0.663^{+0.034}_{-0.042}$
$A_{217}^{CIB}$	45.0	$41^{+20}_{-20}$	$D_{2000}$	229.4	$229.7^{+6.2}_{-5.9}$	$f\sigma_8(0.51)$	0.4768	$0.472^{+0.023}_{-0.026}$
$A_{143}^{tSZ}$	5.21	< 8.81	$n_{s,0.002}$	0.9659	$0.969^{+0.023}_{-0.023}$	$\sigma_8(0.51)$	0.6293	$0.620^{+0.032}_{-0.039}$
$r_{143 \times 217}^{PS}$	0.582	$0.65^{+0.31}_{-0.33}$	$Y_P$	0.2454	$0.2458^{+0.0083}_{-0.0089}$	$f\sigma_8(0.61)$	0.4722	$0.467^{+0.023}_{-0.025}$
$r_{143 \times 217}^{CIB}$	0.71	—	$Y_P^{BBN}$	0.2467	$0.2472^{+0.0083}_{-0.0089}$	$\sigma_8(0.61)$	0.5988	$0.590^{+0.031}_{-0.037}$
$\xi^{tSZ \times CIB}$	0.09	—	$10^5 D/H$	2.624	$2.62^{+0.18}_{-0.18}$	$f\sigma_8(2.33)$	0.3012	$0.298^{+0.015}_{-0.017}$
$A^{kSZ}$	2.3	—	Age/Gyr	13.78	$13.77^{+0.63}_{-0.57}$	$\sigma_8(2.33)$	0.3111	$0.307^{+0.016}_{-0.019}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	$z_*$	1090.12	$1090.1^{+1.3}_{-1.3}$	$f_{2000}^{143}$	31.1	$31^{+9}_{-9}$
$A_{143}^{dust}$	0.979	$0.98^{+0.45}_{-0.46}$	$r_*$	144.7	$144.5^{+6.2}_{-5.7}$	$f_{2000}^{217}$	107.6	$107.6^{+6.3}_{-6.4}$
$A_{217}^{dust}$	0.966	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	1.04115	$1.0412^{+0.0019}_{-0.0018}$	$f_{2000}^{143 \times 217}$	33.1	$33^{+7}_{-7}$
$A_{143 \times 217}^{dust}$	1.023	$1.03^{+0.42}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	13.90	$13.88^{+0.58}_{-0.53}$	$\chi_{simall}^2$	395.81	$397.0 (\nu: 1.5)$
$c_{100}$	0.99757	$0.9975^{+0.0027}_{-0.0027}$	$z_{drag}$	1059.44	$1059.6^{+2.2}_{-2.4}$	$\chi_{lowl}^2$	23.10	$22.8 (\nu: 0.8)$
$c_{217}$	1.00164	$1.0012^{+0.0040}_{-0.0040}$	$r_{drag}$	147.4	$147.2^{+6.5}_{-5.9}$	$\chi_{CamSpec}^2$	7050.2	$7064.9 (\nu: 17.1)$
$H_0$	67.98	$67.9^{+3.8}_{-3.8}$	$k_D$	0.14033	$0.1405^{+0.0044}_{-0.0045}$	$\chi_{6DF}^2$	0.003	$0.060 (\nu: 0.0)$
$\Omega_\Lambda$	0.6935	$0.691^{+0.020}_{-0.023}$	$100\theta_D$	0.16108	$0.1611^{+0.0016}_{-0.0016}$	$\chi_{MGS}^2$	1.54	$1.44 (\nu: 0.2)$
$\Omega_m$	0.3065	$0.309^{+0.023}_{-0.020}$	$z_{eq}$	3382	$3371^{+87}_{-90}$	$\chi_{DR12BAO}^2$	3.66	$4.7 (\nu: 1.4)$
$\Omega_m h^2$	0.1416	$0.143^{+0.011}_{-0.011}$	$k_{eq}$	0.010327	$0.01031^{+0.00040}_{-0.00038}$	$\chi_{prior}^2$	2.4	$7.7 (\nu: 6.1)$
$\Omega_\nu h^2$	0.00000	< 0.00261	$100\theta_{eq}$	0.8163	$0.819^{+0.017}_{-0.016}$	$\chi_{BAO}^2$	5.20	$6.2 (\nu: 1.0)$
$\Omega_m h^3$	0.0963	$0.097^{+0.012}_{-0.012}$	$100\theta_{s,eq}$	0.4511	$0.4523^{+0.0089}_{-0.0083}$	$\chi_{CMB}^2$	7469.1	$7484.7 (\nu: 16.3)$
$\sigma_8$	0.8200	$0.809^{+0.041}_{-0.050}$	$H(0.15)$	73.21	$73.2^{+3.8}_{-3.9}$			
$S_8$	0.8289	$0.821^{+0.047}_{-0.050}$	$D_M(0.15)$	638.1	$639^{+37}_{-33}$			

Best-fit  $\chi_{eff}^2 = 7476.70$ ;  $\bar{\chi}_{eff}^2 = 7498.64$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.09$ ;  $R - 1 = 0.00711$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12\_v3.2.29: 23.10 CamSpec like\_10.7HM: 7050.23



## 8.6 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02223	$0.02226^{+0.00060}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	0.4538	$0.449^{+0.025}_{-0.026}$	$H(0.38)$	83.49	$83.4^{+3.9}_{-3.9}$
$\Omega_c h^2$	0.1197	$0.120^{+0.011}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	0.6107	$0.603^{+0.030}_{-0.035}$	$D_M(0.38)$	1518	$1521^{+80}_{-73}$
$100\theta_{MC}$	1.04101	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	0.9950	$0.981^{+0.041}_{-0.055}$	$H(0.51)$	90.16	$90.1^{+4.0}_{-4.1}$
$\tau$	0.0532	$0.054^{+0.021}_{-0.021}$	$r_{drag} h$	100.44	$100.1^{+2.5}_{-2.5}$	$D_M(0.51)$	1967	$1971^{+100}_{-93}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.238$	$\langle d^2 \rangle^{1/2}$	2.435	$2.420^{+0.079}_{-0.086}$	$H(0.61)$	95.74	$95.7^{+4.1}_{-4.3}$
$N_{eff}$	3.08	$3.10^{+0.62}_{-0.61}$	$z_{re}$	7.59	$7.6^{+2.1}_{-2.4}$	$D_M(0.61)$	2290	$2294^{+120}_{-110}$
$\ln(10^{10} A_s)$	3.039	$3.040^{+0.053}_{-0.052}$	$10^9 A_s$	2.089	$2.09^{+0.11}_{-0.11}$	$H(2.33)$	236.0	$236.4^{+8.9}_{-9.1}$
$n_s$	0.9682	$0.969^{+0.022}_{-0.023}$	$10^9 A_s e^{-2\tau}$	1.879	$1.878^{+0.057}_{-0.059}$	$D_M(2.33)$	5741	$5744^{+260}_{-230}$
$y_{cal}$	1.0004	$1.0005^{+0.0065}_{-0.0063}$	$D_{40}$	1220.8	$1220^{+39}_{-39}$	$f\sigma_8(0.15)$	0.4582	$0.454^{+0.024}_{-0.025}$
$A_{100}^{PS}$	238	$243^{+60}_{-70}$	$D_{220}$	5704	$5709^{+100}_{-100}$	$\sigma_8(0.15)$	0.7601	$0.748^{+0.038}_{-0.045}$
$A_{143}^{PS}$	40	$41^{+20}_{-20}$	$D_{810}$	2533.4	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	0.4781	$0.473^{+0.023}_{-0.025}$
$A_{217}^{PS}$	100.6	$101^{+30}_{-40}$	$D_{1420}$	814.6	$815^{+14}_{-13}$	$\sigma_8(0.38)$	0.6743	$0.664^{+0.034}_{-0.041}$
$A_{217}^{CIB}$	45.5	$41^{+20}_{-20}$	$D_{2000}$	229.8	$229.6^{+6.1}_{-5.9}$	$f\sigma_8(0.51)$	0.4774	$0.472^{+0.023}_{-0.025}$
$A_{143}^{tSZ}$	6.22	$< 8.73$	$n_{s,0.002}$	0.9682	$0.969^{+0.022}_{-0.023}$	$\sigma_8(0.51)$	0.6312	$0.621^{+0.032}_{-0.038}$
$r_{143 \times 217}^{PS}$	0.571	$0.65^{+0.32}_{-0.34}$	$Y_P$	0.2458	$0.2460^{+0.0081}_{-0.0085}$	$f\sigma_8(0.61)$	0.4729	$0.468^{+0.022}_{-0.025}$
$r_{143 \times 217}^{CIB}$	0.77	—	$Y_P^{BBN}$	0.2471	$0.2474^{+0.0081}_{-0.0085}$	$\sigma_8(0.61)$	0.6007	$0.591^{+0.030}_{-0.036}$
$\xi^{tSZ \times CIB}$	0.02	—	$10^5 D/H$	2.624	$2.63^{+0.18}_{-0.18}$	$f\sigma_8(2.33)$	0.3022	$0.298^{+0.015}_{-0.017}$
$A^{kSZ}$	0.5	—	Age/Gyr	13.75	$13.75^{+0.61}_{-0.56}$	$\sigma_8(2.33)$	0.3123	$0.308^{+0.016}_{-0.019}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	$z_*$	1090.10	$1090.1^{+1.3}_{-1.3}$	$f_{2000}^{143}$	30.9	$31^{+9}_{-9}$
$A_{143}^{dust}$	0.990	$0.98^{+0.46}_{-0.46}$	$r_*$	144.5	$144.4^{+6.2}_{-5.6}$	$f_{2000}^{217}$	107.4	$107.6^{+6.2}_{-6.4}$
$A_{217}^{dust}$	0.963	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	1.04115	$1.0411^{+0.0019}_{-0.0018}$	$f_{2000}^{143 \times 217}$	32.8	$33^{+7}_{-7}$
$A_{143 \times 217}^{dust}$	1.000	$1.03^{+0.41}_{-0.43}$	$D_M(z_*)/\text{Gpc}$	13.87	$13.87^{+0.57}_{-0.52}$	$\chi_{simall}^2$	395.87	$397.0 (\nu: 1.5)$
$c_{100}$	0.99755	$0.9975^{+0.0027}_{-0.0028}$	$z_{drag}$	1059.59	$1059.7^{+2.1}_{-2.3}$	$\chi_{lowl}^2$	22.77	$22.7 (\nu: 0.7)$
$c_{217}$	1.00139	$1.0012^{+0.0041}_{-0.0040}$	$r_{drag}$	147.2	$147.1^{+6.4}_{-5.9}$	$\chi_{CamSpec}^2$	7050.7	$7065.1 (\nu: 16.9)$
$H_0$	68.25	$68.1^{+3.7}_{-3.6}$	$k_D$	0.14055	$0.1406^{+0.0043}_{-0.0045}$	$\chi_{JLA}^2$	1034.80	$1035.02 (\nu: 0.1)$
$\Omega_\Lambda$	0.6952	$0.692^{+0.019}_{-0.021}$	$100\theta_D$	0.16111	$0.1611^{+0.0015}_{-0.0016}$	$\chi_{6DF}^2$	0.000	$0.048 (\nu: 0.0)$
$\Omega_m$	0.3048	$0.308^{+0.021}_{-0.019}$	$z_{eq}$	3377	$3367^{+82}_{-84}$	$\chi_{MGS}^2$	1.68	$1.52 (\nu: 0.2)$
$\Omega_m h^2$	0.1420	$0.143^{+0.011}_{-0.011}$	$k_{eq}$	0.010331	$0.01031^{+0.00040}_{-0.00037}$	$\chi_{DR12BAO}^2$	3.50	$4.4 (\nu: 1.0)$
$\Omega_\nu h^2$	0.00000	$< 0.00255$	$100\theta_{eq}$	0.8174	$0.819^{+0.017}_{-0.015}$	$\chi_{prior}^2$	2.1	$7.7 (\nu: 6.1)$
$\Omega_m h^3$	0.0969	$0.097^{+0.012}_{-0.012}$	$100\theta_{s,eq}$	0.4516	$0.4527^{+0.0085}_{-0.0078}$	$\chi_{BAO}^2$	5.18	$6.0 (\nu: 0.6)$
$\sigma_8$	0.8220	$0.809^{+0.040}_{-0.048}$	$H(0.15)$	73.47	$73.3^{+3.7}_{-3.7}$	$\chi_{CMB}^2$	7469.3	$7484.8 (\nu: 16.3)$
$S_8$	0.8285	$0.820^{+0.046}_{-0.048}$	$D_M(0.15)$	635.7	$638^{+35}_{-32}$			

Best-fit  $\chi_{eff}^2 = 8511.44$ ;  $\bar{\chi}_{eff}^2 = 8533.53$ ;  $R - 1 = 0.00839$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.50 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 22.77 CamSpec like\_10.7HM: 7050.67  
SN - JLA Pantheon18: 1034.80



## 8.7 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02217	$0.02221^{+0.00057}_{-0.00056}$	$\sigma_8 \Omega_m^{0.5}$	0.4537	$0.449^{+0.025}_{-0.027}$	$H(0.38)$	82.82	$82.8^{+3.2}_{-3.1}$
$\Omega_c h^2$	0.1184	$0.1185^{+0.0085}_{-0.0080}$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.602^{+0.029}_{-0.034}$	$D_M(0.38)$	1531	$1532^{+65}_{-62}$
$100\theta_{MC}$	1.04116	$1.0411^{+0.0014}_{-0.0014}$	$\sigma_8/h^{0.5}$	0.9949	$0.981^{+0.041}_{-0.054}$	$H(0.51)$	89.47	$89.5^{+3.2}_{-3.2}$
$\tau$	0.0531	$0.054^{+0.021}_{-0.021}$	$r_{drag} h$	100.10	$99.8^{+2.6}_{-2.7}$	$D_M(0.51)$	1984	$1985^{+82}_{-78}$
$\Sigma m_\nu$ [eV]	0.001	< 0.229	$\langle d^2 \rangle^{1/2}$	2.441	$2.425^{+0.079}_{-0.086}$	$H(0.61)$	95.04	$95.1^{+3.3}_{-3.3}$
$N_{eff}$	2.982	$3.02^{+0.49}_{-0.47}$	$z_{re}$	7.56	$7.6^{+2.0}_{-2.3}$	$D_M(0.61)$	2309	$2310^{+93}_{-89}$
$\ln(10^{10} A_s)$	3.0354	$3.037^{+0.049}_{-0.049}$	$10^9 A_s$	2.081	$2.08^{+0.10}_{-0.10}$	$H(2.33)$	234.8	$235.3^{+7.4}_{-7.1}$
$n_s$	0.9643	$0.966^{+0.019}_{-0.019}$	$10^9 A_s e^{-2\tau}$	1.8713	$1.873^{+0.047}_{-0.049}$	$D_M(2.33)$	5782	$5777^{+200}_{-190}$
$y_{cal}$	1.0003	$1.0005^{+0.0064}_{-0.0063}$	$D_{40}$	1226.0	$1223^{+37}_{-37}$	$f\sigma_8(0.15)$	0.4578	$0.454^{+0.024}_{-0.025}$
$A_{100}^{PS}$	238	$241^{+60}_{-60}$	$D_{220}$	5705	$5709^{+100}_{-100}$	$\sigma_8(0.15)$	0.7561	$0.745^{+0.034}_{-0.045}$
$A_{143}^{PS}$	38	$40^{+20}_{-20}$	$D_{810}$	2531.0	$2533^{+35}_{-36}$	$f\sigma_8(0.38)$	0.4770	$0.472^{+0.023}_{-0.025}$
$A_{217}^{PS}$	99.4	$101^{+30}_{-30}$	$D_{1420}$	814.7	$815^{+14}_{-13}$	$\sigma_8(0.38)$	0.6705	$0.661^{+0.031}_{-0.040}$
$A_{217}^{CIB}$	44.4	$41^{+20}_{-20}$	$D_{2000}$	230.1	$230.1^{+5.5}_{-5.4}$	$f\sigma_8(0.51)$	0.4760	$0.471^{+0.022}_{-0.025}$
$A_{143}^{tSZ}$	5.35	< 8.68	$n_{s,0.002}$	0.9643	$0.966^{+0.019}_{-0.019}$	$\sigma_8(0.51)$	0.6275	$0.619^{+0.029}_{-0.038}$
$r_{143 \times 217}^{PS}$	0.573	$0.65^{+0.32}_{-0.35}$	$Y_P$	0.2445	$0.2449^{+0.0066}_{-0.0066}$	$f\sigma_8(0.61)$	0.4713	$0.466^{+0.021}_{-0.025}$
$r_{143 \times 217}^{CIB}$	0.70	—	$Y_P^{BBN}$	0.2458	$0.2463^{+0.0066}_{-0.0066}$	$\sigma_8(0.61)$	0.5971	$0.589^{+0.028}_{-0.036}$
$\xi^{tSZ \times CIB}$	0.05	—	$10^5 D/H$	2.602	$2.61^{+0.16}_{-0.15}$	$f\sigma_8(2.33)$	0.3002	$0.297^{+0.013}_{-0.016}$
$A^{kSZ}$	1.8	—	Age/Gyr	13.842	$13.83^{+0.48}_{-0.46}$	$\sigma_8(2.33)$	0.3102	$0.306^{+0.015}_{-0.018}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.51}$	$z_*$	1089.97	$1090.0^{+1.1}_{-1.1}$	$f_{2000}^{143}$	30.3	$30^{+9}_{-9}$
$A_{143}^{dust}$	0.981	$0.98^{+0.45}_{-0.46}$	$r_*$	145.33	$145.1^{+4.8}_{-4.6}$	$f_{2000}^{217}$	106.9	$107.2^{+6.0}_{-6.0}$
$A_{217}^{dust}$	0.956	$0.97^{+0.28}_{-0.26}$	$100\theta_*$	1.04137	$1.0413^{+0.0016}_{-0.0016}$	$f_{2000}^{143 \times 217}$	32.2	$33^{+6}_{-6}$
$A_{143 \times 217}^{dust}$	1.003	$1.03^{+0.41}_{-0.43}$	$D_M(z_*)/\text{Gpc}$	13.956	$13.94^{+0.44}_{-0.43}$	$\chi_{simall}^2$	395.88	$397.0 (\nu: 1.5)$
$c_{100}$	0.99744	$0.9975^{+0.0027}_{-0.0028}$	$z_{drag}$	1059.28	$1059.4^{+1.9}_{-2.0}$	$\chi_{lowl}^2$	23.28	$23.0 (\nu: 0.7)$
$c_{217}$	1.00128	$1.0012^{+0.0040}_{-0.0040}$	$r_{drag}$	148.08	$147.8^{+4.9}_{-4.8}$	$\chi_{CamSpec}^2$	7050.0	$7064.4 (\nu: 16.3)$
$H_0$	67.60	$67.5^{+3.1}_{-3.0}$	$k_D$	0.13992	$0.1401^{+0.0035}_{-0.0036}$	$\chi_{Aver15}^2$	0.05	$0.52 (\nu: 0.3)$
$\Omega_\Lambda$	0.6924	$0.690^{+0.020}_{-0.022}$	$100\theta_D$	0.16089	$0.1610^{+0.0013}_{-0.0013}$	$\chi_{6DF}^2$	0.006	$0.063 (\nu: 0.0)$
$\Omega_m$	0.3076	$0.310^{+0.022}_{-0.020}$	$z_{eq}$	3388	$3375^{+83}_{-86}$	$\chi_{MGS}^2$	1.47	$1.38 (\nu: 0.2)$
$\Omega_m h^2$	0.1406	$0.1414^{+0.0089}_{-0.0084}$	$k_{eq}$	0.010296	$0.01028^{+0.00034}_{-0.00033}$	$\chi_{DR12BAO}^2$	3.76	$4.8 (\nu: 1.5)$
$\Omega_\nu h^2$	0.00001	< 0.00244	$100\theta_{eq}$	0.8154	$0.818^{+0.016}_{-0.015}$	$\chi_{prior}^2$	2.2	$7.7 (\nu: 6.0)$
$\Omega_m h^3$	0.0950	$0.0955^{+0.0097}_{-0.0090}$	$100\theta_{s,eq}$	0.4506	$0.4519^{+0.0084}_{-0.0079}$	$\chi_{BAO}^2$	5.23	$6.2 (\nu: 1.0)$
$\sigma_8$	0.8180	$0.806^{+0.037}_{-0.048}$	$H(0.15)$	72.82	$72.8^{+3.1}_{-3.0}$	$\chi_{CMB}^2$	7469.2	$7484.4 (\nu: 15.7)$
$S_8$	0.8283	$0.820^{+0.046}_{-0.049}$	$D_M(0.15)$	641.6	$642^{+29}_{-27}$			

Best-fit  $\chi_{eff}^2 = 7476.67$ ;  $\bar{\chi}_{eff}^2 = 7498.80$ ;  $R - 1 = 0.00899$   
 $\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.05 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.76 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 23.28  
CamSpec like\_10.7HM: 7050.02



## 8.8 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02218	$0.02220^{+0.00056}_{-0.00057}$	$\sigma_8 \Omega_m^{0.25}$	0.6102	$0.602^{+0.029}_{-0.035}$	$H(0.51)$	89.46	$89.6^{+3.0}_{-3.0}$
$\Omega_c h^2$	0.1185	$0.1186^{+0.0077}_{-0.0074}$	$\sigma_8/h^{0.5}$	0.9962	$0.982^{+0.041}_{-0.055}$	$D_M(0.51)$	1985	$1984^{+79}_{-74}$
$100\theta_{MC}$	1.04111	$1.0411^{+0.0013}_{-0.0013}$	$r_{drag} h$	99.99	$99.8^{+2.6}_{-2.6}$	$H(0.61)$	95.03	$95.2^{+3.1}_{-3.1}$
$\tau$	0.0530	$0.053^{+0.021}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	2.445	$2.425^{+0.079}_{-0.086}$	$D_M(0.61)$	2310	$2309^{+90}_{-84}$
$\Sigma m_\nu$ [eV]	0.002	< 0.229	$z_{re}$	7.55	$7.6^{+2.0}_{-2.3}$	$H(2.33)$	234.9	$235.4^{+6.7}_{-6.5}$
$N_{eff}$	2.983	$3.03^{+0.44}_{-0.44}$	$10^9 A_s$	2.084	$2.08^{+0.10}_{-0.099}$	$D_M(2.33)$	5782	$5774^{+190}_{-180}$
$\ln(10^{10} A_s)$	3.0367	$3.037^{+0.048}_{-0.049}$	$10^9 A_s e^{-2\tau}$	1.8742	$1.873^{+0.045}_{-0.046}$	$f\sigma_8(0.15)$	0.4588	$0.454^{+0.023}_{-0.025}$
$n_s$	0.9642	$0.967^{+0.018}_{-0.019}$	$D_{40}$	1227.8	$1223^{+36}_{-36}$	$\sigma_8(0.15)$	0.7568	$0.746^{+0.033}_{-0.045}$
$y_{cal}$	1.0006	$1.0005^{+0.0064}_{-0.0063}$	$D_{220}$	5712	$5709^{+100}_{-100}$	$f\sigma_8(0.38)$	0.4779	$0.473^{+0.022}_{-0.025}$
$A_{100}^{PS}$	234	$242^{+60}_{-60}$	$D_{810}$	2534.3	$2533^{+35}_{-36}$	$\sigma_8(0.38)$	0.6710	$0.661^{+0.030}_{-0.040}$
$A_{143}^{PS}$	45.4	$40^{+20}_{-20}$	$D_{1420}$	815.8	$815^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4768	$0.471^{+0.021}_{-0.025}$
$A_{217}^{PS}$	103.4	$101^{+30}_{-30}$	$D_{2000}$	230.5	$230.0^{+5.1}_{-4.9}$	$\sigma_8(0.51)$	0.6280	$0.619^{+0.028}_{-0.038}$
$A_{217}^{CIB}$	41.7	$41^{+20}_{-20}$	$n_{s,0.002}$	0.9642	$0.967^{+0.018}_{-0.019}$	$f\sigma_8(0.61)$	0.4719	$0.467^{+0.020}_{-0.025}$
$A_{143}^{tSZ}$	5.45	< 8.67	$Y_P$	0.2445	$0.2450^{+0.0059}_{-0.0062}$	$\sigma_8(0.61)$	0.5975	$0.589^{+0.027}_{-0.036}$
$r_{143 \times 217}^{PS}$	0.695	$0.65^{+0.32}_{-0.35}$	$Y_P^{BBN}$	0.2458	$0.2464^{+0.0059}_{-0.0062}$	$f\sigma_8(2.33)$	0.3004	$0.297^{+0.013}_{-0.016}$
$r_{143 \times 217}^{CIB}$	0.76	—	$10^5 D/H$	2.600	$2.61^{+0.13}_{-0.13}$	$\sigma_8(2.33)$	0.3103	$0.306^{+0.014}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.63	—	Age/Gyr	13.842	$13.82^{+0.45}_{-0.43}$	$f_{2000}^{143}$	29.9	$30^{+8}_{-8}$
$A^{kSZ}$	2.1	—	$z_*$	1089.97	$1089.99^{+0.95}_{-0.96}$	$f_{2000}^{217}$	106.8	$107.3^{+5.6}_{-5.6}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.51}$	$r_*$	145.28	$145.0^{+4.4}_{-4.2}$	$f_{2000}^{143 \times 217}$	32.2	$33^{+6}_{-6}$
$A_{143}^{dust}$	0.984	$0.98^{+0.45}_{-0.46}$	$100\theta_*$	1.04132	$1.0413^{+0.0015}_{-0.0014}$	$\chi_{small}^2$	395.86	$397.0 (\nu: 1.4)$
$A_{217}^{dust}$	0.975	$0.97^{+0.28}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	13.952	$13.93^{+0.41}_{-0.39}$	$\chi_{lowl}^2$	23.35	$23.0 (\nu: 0.7)$
$A_{143 \times 217}^{dust}$	1.017	$1.03^{+0.41}_{-0.43}$	$z_{drag}$	1059.32	$1059.4^{+1.9}_{-1.9}$	$\chi_{CamSpec}^2$	7050.2	$7064.2 (\nu: 15.9)$
$c_{100}$	0.99769	$0.9975^{+0.0027}_{-0.0027}$	$r_{drag}$	148.02	$147.8^{+4.6}_{-4.4}$	$\chi_{Aver15}^2$	0.05	$0.47 (\nu: 0.2)$
$c_{217}$	1.00127	$1.0012^{+0.0040}_{-0.0039}$	$k_D$	0.13998	$0.1401^{+0.0033}_{-0.0034}$	$\chi_{Cooke17}^2$	0.04	$0.29 (\nu: 0.1)$
$H_0$	67.55	$67.6^{+2.9}_{-2.9}$	$100\theta_D$	0.16086	$0.1610^{+0.0011}_{-0.0011}$	$\chi_{6DF}^2$	0.010	$0.063 (\nu: 0.0)$
$\Omega_\Lambda$	0.6916	$0.690^{+0.020}_{-0.022}$	$z_{eq}$	3391	$3375^{+83}_{-85}$	$\chi_{MGS}^2$	1.41	$1.39 (\nu: 0.2)$
$\Omega_m$	0.3084	$0.310^{+0.022}_{-0.020}$	$k_{eq}$	0.010306	$0.01028^{+0.00033}_{-0.00031}$	$\chi_{DR12BAO}^2$	3.89	$4.8 (\nu: 1.5)$
$\Omega_m h^2$	0.1407	$0.1415^{+0.0081}_{-0.0079}$	$100\theta_{eq}$	0.8148	$0.818^{+0.016}_{-0.015}$	$\chi_{prior}^2$	2.0	$7.7 (\nu: 5.9)$
$\Omega_\nu h^2$	0.00002	< 0.00243	$100\theta_{s,eq}$	0.4503	$0.4519^{+0.0083}_{-0.0078}$	$\chi_{BAO}^2$	5.30	$6.2 (\nu: 1.0)$
$\Omega_m h^3$	0.0951	$0.0956^{+0.0089}_{-0.0085}$	$H(0.15)$	72.78	$72.8^{+2.9}_{-2.9}$	$\chi_{CMB}^2$	7469.4	$7484.2 (\nu: 15.3)$
$\sigma_8$	0.8188	$0.807^{+0.036}_{-0.048}$	$D_M(0.15)$	642.0	$642^{+28}_{-26}$	$\chi_{Abund}^2$	0.09	$0.76 (\nu: 0.4)$
$S_8$	0.8302	$0.820^{+0.044}_{-0.048}$	$H(0.38)$	82.80	$82.9^{+3.0}_{-3.0}$			
$\sigma_8 \Omega_m^{0.5}$	0.4547	$0.449^{+0.024}_{-0.026}$	$D_M(0.38)$	1532	$1531^{+62}_{-59}$			

Best-fit  $\chi_{eff}^2 = 7476.77$ ;  $\bar{\chi}_{eff}^2 = 7498.82$ ;  $R - 1 = 0.00839$

$\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.05 D\_Cooke2017: 0.04 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.88 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 23.35 CamSpec like\_10.7HM: 7050.16



## 8.9 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02227^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.025}_{-0.026}$	$H(0.38)$	$83.4^{+3.9}_{-3.9}$
$\Omega_c h^2$	$0.120^{+0.011}_{-0.010}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.030}_{-0.035}$	$D_M(0.38)$	$1521^{+79}_{-73}$
$100\theta_{MC}$	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	$0.982^{+0.040}_{-0.055}$	$H(0.51)$	$90.1^{+4.0}_{-4.1}$
$\tau$	$0.055^{+0.019}_{-0.014}$	$r_{\text{drag}} h$	$100.1^{+2.5}_{-2.5}$	$D_M(0.51)$	$1971^{+100}_{-93}$
$\Sigma m_\nu [\text{eV}]$	$< 0.239$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.078}_{-0.083}$	$H(0.61)$	$95.7^{+4.1}_{-4.2}$
$N_{\text{eff}}$	$3.10^{+0.62}_{-0.60}$	$z_{\text{re}}$	$< 9.56$	$D_M(0.61)$	$2294^{+120}_{-110}$
$\ln(10^{10} A_s)$	$3.043^{+0.050}_{-0.042}$	$10^9 A_s$	$2.10^{+0.11}_{-0.087}$	$H(2.33)$	$236.4^{+8.9}_{-9.0}$
$n_s$	$0.970^{+0.022}_{-0.023}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.056}_{-0.059}$	$D_M(2.33)$	$5742^{+260}_{-230}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0063}$	$D_{40}$	$1220^{+39}_{-39}$	$f\sigma_8(0.15)$	$0.455^{+0.024}_{-0.025}$
$A_{100}^{\text{PS}}$	$243^{+60}_{-70}$	$D_{220}$	$5709^{+100}_{-100}$	$\sigma_8(0.15)$	$0.749^{+0.037}_{-0.045}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	$0.474^{+0.023}_{-0.026}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.665^{+0.033}_{-0.040}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.6^{+6.1}_{-5.9}$	$f\sigma_8(0.51)$	$0.473^{+0.022}_{-0.025}$
$A_{143}^{\text{tSZ}}$	$< 8.71$	$n_{s,0.002}$	$0.970^{+0.022}_{-0.023}$	$\sigma_8(0.51)$	$0.622^{+0.031}_{-0.038}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.34}$	$Y_P$	$0.2461^{+0.0081}_{-0.0085}$	$f\sigma_8(0.61)$	$0.468^{+0.022}_{-0.025}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2474^{+0.0081}_{-0.0085}$	$\sigma_8(0.61)$	$0.592^{+0.030}_{-0.036}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.63^{+0.18}_{-0.18}$	$f\sigma_8(2.33)$	$0.299^{+0.015}_{-0.017}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.75^{+0.61}_{-0.55}$	$\sigma_8(2.33)$	$0.308^{+0.016}_{-0.019}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	$z_*$	$1090.1^{+1.3}_{-1.3}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$A_{143}^{\text{dust}}$	$0.98^{+0.46}_{-0.46}$	$r_*$	$144.4^{+6.1}_{-5.6}$	$f_{2000}^{217}$	$107.6^{+6.2}_{-6.4}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	$1.0411^{+0.0019}_{-0.0018}$	$f_{2000}^{143 \times 217}$	$33^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$13.87^{+0.57}_{-0.52}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\text{drag}}$	$1059.7^{+2.1}_{-2.3}$	$\chi_{\text{lowl}}^2$	$22.7 (\nu: 0.7)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$r_{\text{drag}}$	$147.1^{+6.3}_{-5.8}$	$\chi_{\text{CamSpec}}^2$	$7064.9 (\nu: 16.7)$
$H_0$	$68.1^{+3.7}_{-3.6}$	$k_D$	$0.1406^{+0.0043}_{-0.0045}$	$\chi_{\text{JLA}}^2$	$1035.02 (\nu: 0.1)$
$\Omega_\Lambda$	$0.692^{+0.019}_{-0.020}$	$100\theta_D$	$0.1611^{+0.0015}_{-0.0016}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_m$	$0.308^{+0.020}_{-0.019}$	$z_{\text{eq}}$	$3366^{+83}_{-86}$	$\chi_{\text{MGS}}^2$	$1.54 (\nu: 0.2)$
$\Omega_m h^2$	$0.143^{+0.011}_{-0.011}$	$k_{\text{eq}}$	$0.01031^{+0.00039}_{-0.00037}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.9)$
$\Omega_\nu h^2$	$< 0.00257$	$100\theta_{\text{eq}}$	$0.820^{+0.017}_{-0.015}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 6.1)$
$\Omega_m h^3$	$0.097^{+0.012}_{-0.012}$	$100\theta_{s,\text{eq}}$	$0.4528^{+0.0084}_{-0.0078}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$
$\sigma_8$	$0.810^{+0.040}_{-0.049}$	$H(0.15)$	$73.3^{+3.7}_{-3.7}$	$\chi_{\text{CMB}}^2$	$7484.6 (\nu: 15.9)$
$S_8$	$0.821^{+0.046}_{-0.048}$	$D_M(0.15)$	$637^{+35}_{-32}$		

$$\bar{\chi}_{\text{eff}}^2 = 8533.27; R - 1 = 0.00802$$



## 8.10 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02224	$0.02230^{+0.00050}_{-0.00052}$	$\sigma_8$	0.8138	$0.806^{+0.036}_{-0.044}$	$H(0.15)$	72.47	$72.7^{+3.6}_{-3.3}$
$\Omega_c h^2$	0.1169	$0.1181^{+0.0090}_{-0.0088}$	$S_8$	0.8240	$0.819^{+0.037}_{-0.040}$	$D_M(0.15)$	644.7	$643^{+32}_{-31}$
$100\theta_{MC}$	1.04122	$1.0411^{+0.0013}_{-0.0012}$	$\sigma_8 \Omega_m^{0.5}$	0.4513	$0.449^{+0.020}_{-0.022}$	$H(0.38)$	82.42	$82.7^{+3.6}_{-3.5}$
$\tau$	0.0531	$0.053^{+0.022}_{-0.020}$	$\sigma_8 \Omega_m^{0.25}$	0.6060	$0.601^{+0.025}_{-0.030}$	$D_M(0.38)$	1539	$1534^{+73}_{-71}$
$\Sigma m_\nu$ [eV]	0.002	< 0.211	$\sigma_8/h^{0.5}$	0.9922	$0.981^{+0.034}_{-0.048}$	$H(0.51)$	89.04	$89.4^{+3.7}_{-3.6}$
$N_{\text{eff}}$	2.90	$2.99^{+0.56}_{-0.52}$	$r_{\text{drag}} h$	100.10	$99.8^{+2.5}_{-2.4}$	$D_M(0.51)$	1994	$1988^{+92}_{-90}$
$\ln(10^{10} A_s)$	3.033	$3.036^{+0.051}_{-0.049}$	$\langle d^2 \rangle^{1/2}$	2.439	$2.426^{+0.073}_{-0.078}$	$H(0.61)$	94.58	$95.0^{+3.9}_{-3.7}$
$n_s$	0.9633	$0.966^{+0.020}_{-0.020}$	$z_{\text{re}}$	7.51	$7.5^{+2.2}_{-2.2}$	$D_M(0.61)$	2320	$2313^{+100}_{-100}$
$y_{\text{cal}}$	1.0004	$1.0005^{+0.0063}_{-0.0064}$	$10^9 A_s$	2.075	$2.08^{+0.11}_{-0.099}$	$H(2.33)$	233.6	$235.1^{+8.0}_{-7.9}$
$A_{100}^{\text{PS}}$	227	$238^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	1.866	$1.872^{+0.050}_{-0.052}$	$D_M(2.33)$	5810	$5784^{+230}_{-220}$
$A_{143}^{\text{PS}}$	47.3	$38^{+20}_{-20}$	$D_{40}$	1227.0	$1226^{+37}_{-36}$	$f\sigma_8(0.15)$	0.4555	$0.453^{+0.020}_{-0.021}$
$A_{217}^{\text{PS}}$	105.8	$102^{+30}_{-40}$	$D_{220}$	5716	$5721^{+100}_{-97}$	$\sigma_8(0.15)$	0.7522	$0.745^{+0.034}_{-0.041}$
$A_{217}^{\text{CIB}}$	40.9	$39^{+20}_{-20}$	$D_{810}$	2533.4	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	0.4746	$0.472^{+0.019}_{-0.022}$
$A_{143}^{\text{tSZ}}$	6.33	< 8.82	$D_{1420}$	817.5	$816^{+13}_{-13}$	$\sigma_8(0.38)$	0.6670	$0.660^{+0.031}_{-0.038}$
$r_{143 \times 217}^{\text{PS}}$	0.725	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	231.6	$230.7^{+5.3}_{-5.3}$	$f\sigma_8(0.51)$	0.4736	$0.471^{+0.019}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	0.85	—	$n_{s,0.002}$	0.9633	$0.966^{+0.020}_{-0.020}$	$\sigma_8(0.51)$	0.6243	$0.618^{+0.029}_{-0.036}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.76	—	$Y_P$	0.2434	$0.2446^{+0.0075}_{-0.0074}$	$f\sigma_8(0.61)$	0.4689	$0.466^{+0.019}_{-0.022}$
$A^{\text{kSZ}}$	0.2	—	$Y_P^{\text{BBN}}$	0.2447	$0.2459^{+0.0075}_{-0.0074}$	$\sigma_8(0.61)$	0.5941	$0.588^{+0.028}_{-0.034}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.51}_{-0.50}$	$10^5 \text{D/H}$	2.560	$2.58^{+0.15}_{-0.14}$	$f\sigma_8(2.33)$	0.2987	$0.297^{+0.014}_{-0.016}$
$A_{143}^{\text{dust}}$	0.984	$0.96^{+0.46}_{-0.46}$	Age/Gyr	13.91	$13.85^{+0.54}_{-0.53}$	$\sigma_8(2.33)$	0.3086	$0.306^{+0.015}_{-0.018}$
$A_{217}^{\text{dust}}$	0.988	$0.98^{+0.27}_{-0.26}$	$z_*$	1089.67	$1089.8^{+1.0}_{-1.1}$	$f_{2000}^{143}$	28.5	$29^{+9}_{-8}$
$A_{143 \times 217}^{\text{dust}}$	1.012	$1.02^{+0.41}_{-0.41}$	$r_*$	146.1	$145.3^{+5.3}_{-5.2}$	$f_{2000}^{217}$	105.6	$106.5^{+5.8}_{-5.8}$
$c_{100}$	0.99774	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04148	$1.0413^{+0.0016}_{-0.0015}$	$f_{2000}^{143 \times 217}$	30.9	$32^{+6}_{-6}$
$c_{217}$	1.00116	$1.0011^{+0.0040}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	14.024	$13.95^{+0.50}_{-0.48}$	$\chi_{\text{simall}}^2$	395.84	$396.9 (\nu: 1.5)$
$c_{TE}$	0.9957	$0.997^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1059.28	$1059.6^{+2.0}_{-2.0}$	$\chi_{\text{lowl}}^2$	23.33	$23.1 (\nu: 0.7)$
$c_{EE}$	0.9908	$0.992^{+0.014}_{-0.014}$	$r_{\text{drag}}$	148.8	$148.0^{+5.5}_{-5.4}$	$\chi_{\text{CamSpec}}^2$	11498.5	$11515.1 (\nu: 18.1)$
$H_0$	67.27	$67.4^{+3.5}_{-3.3}$	$k_D$	0.13954	$0.1401^{+0.0039}_{-0.0039}$	$\chi_{6\text{DF}}^2$	0.006	$0.059 (\nu: 0.0)$
$\Omega_\Lambda$	0.6924	$0.690^{+0.019}_{-0.020}$	$100\theta_D$	0.16054	$0.1607^{+0.0013}_{-0.0013}$	$\chi_{\text{MGS}}^2$	1.47	$1.36 (\nu: 0.1)$
$\Omega_m$	0.3076	$0.310^{+0.020}_{-0.019}$	$z_{\text{eq}}$	3391	$3380^{+73}_{-74}$	$\chi_{\text{DR12BAO}}^2$	3.77	$4.8 (\nu: 1.3)$
$\Omega_m h^2$	0.1392	$0.1411^{+0.0096}_{-0.0092}$	$k_{\text{eq}}$	0.010249	$0.01028^{+0.00033}_{-0.00032}$	$\chi_{\text{prior}}^2$	2.0	$7.8 (\nu: 5.9)$
$\Omega_\nu h^2$	0.00002	< 0.00225	$100\theta_{\text{eq}}$	0.8151	$0.817^{+0.014}_{-0.014}$	$\chi_{\text{BAO}}^2$	5.25	$6.2 (\nu: 0.9)$
$\Omega_m h^3$	0.0936	$0.095^{+0.011}_{-0.010}$	$100\theta_{s,\text{eq}}$	0.4504	$0.4514^{+0.0072}_{-0.0070}$	$\chi_{\text{CMB}}^2$	11917.7	$11935.2 (\nu: 17.8)$

Best-fit  $\chi_{\text{eff}}^2 = 11924.95$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.25$ ;  $\Delta\chi_{\text{eff}}^2 = 0.97$ ;  $R - 1 = 0.00978$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.77 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.84 commander\_dx12\_v3\_2\_29: 23.33 CamSpec like\_10.7HM\_1400\_unified: 11498.54



# 8.11 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022281	$0.02232^{+0.00048}_{-0.00050}$	$S_8$	0.8234	$0.818^{+0.037}_{-0.039}$	$H(0.38)$	82.67	$82.9^{+3.5}_{-3.4}$
$\Omega_c h^2$	0.1174	$0.1183^{+0.0090}_{-0.0089}$	$\sigma_8 \Omega_m^{0.5}$	0.4510	$0.448^{+0.020}_{-0.022}$	$D_M(0.38)$	1533	$1531^{+69}_{-68}$
$100\theta_{MC}$	1.04116	$1.0411^{+0.0013}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	0.6061	$0.601^{+0.025}_{-0.029}$	$H(0.51)$	89.30	$89.6^{+3.6}_{-3.5}$
$\tau$	0.0525	$0.053^{+0.022}_{-0.020}$	$\sigma_8/h^{0.5}$	0.9914	$0.981^{+0.034}_{-0.047}$	$D_M(0.51)$	1987	$1984^{+88}_{-86}$
$\Sigma m_\nu$ [eV]	0.000	< 0.206	$r_{\text{drag}} h$	100.22	$99.9^{+2.4}_{-2.3}$	$H(0.61)$	94.84	$95.1^{+3.7}_{-3.7}$
$N_{\text{eff}}$	2.94	$3.01^{+0.54}_{-0.52}$	$\langle d^2 \rangle^{1/2}$	2.436	$2.424^{+0.071}_{-0.076}$	$D_M(0.61)$	2313	$2309^{+100}_{-99}$
$\ln(10^{10} A_s)$	3.033	$3.037^{+0.051}_{-0.049}$	$z_{\text{re}}$	7.45	$7.6^{+2.2}_{-2.2}$	$H(2.33)$	234.1	$235.2^{+8.0}_{-7.9}$
$n_s$	0.9640	$0.966^{+0.020}_{-0.020}$	$10^9 A_s$	2.076	$2.08^{+0.11}_{-0.10}$	$D_M(2.33)$	5794	$5776^{+230}_{-220}$
$y_{\text{cal}}$	1.0004	$1.0006^{+0.0063}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.869	$1.872^{+0.050}_{-0.051}$	$f\sigma_8(0.15)$	0.4552	$0.453^{+0.019}_{-0.021}$
$A_{100}^{\text{PS}}$	229	$239^{+60}_{-60}$	$D_{40}$	1226.8	$1225^{+37}_{-36}$	$\sigma_8(0.15)$	0.7531	$0.746^{+0.034}_{-0.040}$
$A_{143}^{\text{PS}}$	43.1	$39^{+20}_{-20}$	$D_{220}$	5720	$5722^{+99}_{-97}$	$f\sigma_8(0.38)$	0.4746	$0.472^{+0.019}_{-0.021}$
$A_{217}^{\text{PS}}$	104.4	$102^{+30}_{-40}$	$D_{810}$	2533.7	$2534^{+36}_{-36}$	$\sigma_8(0.38)$	0.6679	$0.661^{+0.030}_{-0.036}$
$A_{217}^{\text{CIB}}$	42.2	$40^{+20}_{-20}$	$D_{1420}$	817.1	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4737	$0.471^{+0.019}_{-0.021}$
$A_{143}^{\text{tSZ}}$	6.53	< 8.85	$D_{2000}$	231.3	$230.7^{+5.3}_{-5.4}$	$\sigma_8(0.51)$	0.6251	$0.619^{+0.029}_{-0.034}$
$r_{143 \times 217}^{\text{PS}}$	0.675	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	0.9640	$0.966^{+0.020}_{-0.020}$	$f\sigma_8(0.61)$	0.4691	$0.466^{+0.019}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	0.80	—	$Y_P$	0.2439	$0.2448^{+0.0073}_{-0.0074}$	$\sigma_8(0.61)$	0.5949	$0.589^{+0.028}_{-0.033}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.45	—	$Y_P^{\text{BBN}}$	0.2452	$0.2461^{+0.0073}_{-0.0074}$	$f\sigma_8(2.33)$	0.2992	$0.297^{+0.014}_{-0.015}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.565	$2.58^{+0.15}_{-0.15}$	$\sigma_8(2.33)$	0.3091	$0.306^{+0.015}_{-0.017}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.51}_{-0.51}$	Age/Gyr	13.87	$13.83^{+0.54}_{-0.51}$	$f_{2000}^{143}$	28.8	$29^{+9}_{-9}$
$A_{143}^{\text{dust}}$	0.974	$0.96^{+0.45}_{-0.46}$	$z_*$	1089.70	$1089.8^{+1.0}_{-1.1}$	$f_{2000}^{217}$	105.9	$106.6^{+5.7}_{-5.8}$
$A_{217}^{\text{dust}}$	0.980	$0.98^{+0.27}_{-0.26}$	$r_*$	145.7	$145.2^{+5.3}_{-5.1}$	$f_{2000}^{143 \times 217}$	31.2	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	1.04140	$1.0413^{+0.0016}_{-0.0015}$	$\chi_{\text{small}}^2$	395.79	$397.0 (\nu: 1.5)$
$c_{100}$	0.99775	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.993	$13.94^{+0.49}_{-0.47}$	$\chi_{\text{lowl}}^2$	23.28	$23.0 (\nu: 0.7)$
$c_{217}$	1.00120	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	1059.44	$1059.6^{+2.0}_{-1.9}$	$\chi_{\text{CamSpec}}^2$	11498.6	$11515.2 (\nu: 18.1)$
$c_{TE}$	0.9957	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	148.4	$147.9^{+5.5}_{-5.3}$	$\chi_{\text{JLA}}^2$	1034.85	$1035.05 (\nu: 0.1)$
$c_{EE}$	0.9909	$0.992^{+0.014}_{-0.014}$	$k_D$	0.13981	$0.1402^{+0.0039}_{-0.0038}$	$\chi_{6\text{DF}}^2$	0.003	$0.047 (\nu: 0.0)$
$H_0$	67.52	$67.6^{+3.4}_{-3.2}$	$100\theta_D$	0.16059	$0.1608^{+0.0013}_{-0.0013}$	$\chi_{\text{MGS}}^2$	1.54	$1.44 (\nu: 0.1)$
$\Omega_\Lambda$	0.6935	$0.691^{+0.018}_{-0.019}$	$z_{\text{eq}}$	3388	$3377^{+70}_{-71}$	$\chi_{\text{DR12BAO}}^2$	3.67	$4.5 (\nu: 0.9)$
$\Omega_m$	0.3065	$0.309^{+0.019}_{-0.018}$	$k_{\text{eq}}$	0.010265	$0.01028^{+0.00033}_{-0.00032}$	$\chi_{\text{prior}}^2$	2.0	$7.9 (\nu: 6.0)$
$\Omega_m h^2$	0.1397	$0.1412^{+0.0096}_{-0.0092}$	$100\theta_{\text{eq}}$	0.8156	$0.818^{+0.014}_{-0.013}$	$\chi_{\text{BAO}}^2$	5.21	$6.0 (\nu: 0.6)$
$\Omega_\nu h^2$	0.00000	< 0.00218	$100\theta_{s,\text{eq}}$	0.4507	$0.4518^{+0.0069}_{-0.0067}$	$\chi_{\text{CMB}}^2$	11917.7	$11935.2 (\nu: 17.9)$
$\Omega_m h^3$	0.0943	$0.095^{+0.011}_{-0.010}$	$H(0.15)$	72.71	$72.8^{+3.4}_{-3.2}$			
$\sigma_8$	0.8146	$0.807^{+0.036}_{-0.043}$	$D_M(0.15)$	642.5	$642^{+31}_{-30}$			

Best-fit  $\chi_{\text{eff}}^2 = 12959.81$ ;  $\bar{\chi}_{\text{eff}}^2 = 12984.10$ ;  $R - 1 = 0.01027$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.67 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.79 commander\_dx12\_v3\_2\_29: 23.28 CamSpec like\_10.7HM\_1400\_unified: 11498.65 SN - JLA Pantheon18: 1034.85



## 8.12 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022260	$0.02228^{+0.00046}_{-0.00048}$	$S_8$	0.8258	$0.819^{+0.037}_{-0.039}$	$H(0.38)$	82.46	$82.6^{+2.9}_{-2.8}$
$\Omega_c h^2$	0.1173	$0.1177^{+0.0076}_{-0.0070}$	$\sigma_8 \Omega_m^{0.5}$	0.4523	$0.448^{+0.020}_{-0.022}$	$D_M(0.38)$	1538	$1537^{+59}_{-58}$
$100\theta_{MC}$	1.04116	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	0.6070	$0.601^{+0.024}_{-0.029}$	$H(0.51)$	89.09	$89.2^{+3.0}_{-2.9}$
$\tau$	0.0529	$0.053^{+0.022}_{-0.021}$	$\sigma_8/h^{0.5}$	0.9931	$0.981^{+0.034}_{-0.048}$	$D_M(0.51)$	1993	$1991^{+75}_{-74}$
$\Sigma m_\nu$ [eV]	0.003	< 0.209	$r_{\text{drag}} h$	99.99	$99.7^{+2.4}_{-2.4}$	$H(0.61)$	94.64	$94.8^{+3.1}_{-3.0}$
$N_{\text{eff}}$	2.915	$2.97^{+0.45}_{-0.42}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.427^{+0.072}_{-0.076}$	$D_M(0.61)$	2320	$2317^{+85}_{-84}$
$\ln(10^{10} A_s)$	3.0333	$3.035^{+0.048}_{-0.046}$	$z_{\text{re}}$	7.49	$7.5^{+2.1}_{-2.2}$	$H(2.33)$	233.9	$234.7^{+6.6}_{-6.3}$
$n_s$	0.9630	$0.965^{+0.017}_{-0.017}$	$10^9 A_s$	2.077	$2.08^{+0.10}_{-0.094}$	$D_M(2.33)$	5806	$5794^{+180}_{-180}$
$y_{\text{cal}}$	1.0004	$1.0006^{+0.0063}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8682	$1.870^{+0.044}_{-0.044}$	$f\sigma_8(0.15)$	0.4564	$0.453^{+0.019}_{-0.020}$
$A_{100}^{\text{PS}}$	228	$238^{+60}_{-60}$	$D_{40}$	1228.6	$1226^{+36}_{-35}$	$\sigma_8(0.15)$	0.7529	$0.744^{+0.031}_{-0.040}$
$A_{143}^{\text{PS}}$	44.6	$38^{+20}_{-20}$	$D_{220}$	5720	$5721^{+100}_{-96}$	$f\sigma_8(0.38)$	0.4754	$0.471^{+0.019}_{-0.021}$
$A_{217}^{\text{PS}}$	104.8	$102^{+30}_{-40}$	$D_{810}$	2534.0	$2533^{+36}_{-35}$	$\sigma_8(0.38)$	0.6675	$0.659^{+0.028}_{-0.036}$
$A_{217}^{\text{CIB}}$	41.7	$39^{+20}_{-20}$	$D_{1420}$	817.4	$817^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4743	$0.470^{+0.018}_{-0.021}$
$A_{143}^{\text{tSZ}}$	6.48	< 8.84	$D_{2000}$	231.5	$230.9^{+4.9}_{-5.1}$	$\sigma_8(0.51)$	0.6248	$0.617^{+0.026}_{-0.034}$
$r_{143 \times 217}^{\text{PS}}$	0.700	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	0.9630	$0.965^{+0.017}_{-0.017}$	$f\sigma_8(0.61)$	0.4695	$0.465^{+0.018}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	0.82	—	$Y_{\text{P}}$	0.2436	$0.2443^{+0.0060}_{-0.0060}$	$\sigma_8(0.61)$	0.5945	$0.587^{+0.025}_{-0.033}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.59	—	$Y_{\text{P}}^{\text{BBN}}$	0.2449	$0.2456^{+0.0060}_{-0.0060}$	$f\sigma_8(2.33)$	0.2989	$0.296^{+0.012}_{-0.015}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.561	$2.57^{+0.13}_{-0.12}$	$\sigma_8(2.33)$	0.3087	$0.305^{+0.014}_{-0.017}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.51}_{-0.51}$	Age/Gyr	13.899	$13.87^{+0.43}_{-0.43}$	$f_{2000}^{143}$	28.5	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	0.973	$0.96^{+0.45}_{-0.46}$	$z_*$	1089.68	$1089.75^{+0.94}_{-0.93}$	$f_{2000}^{217}$	105.6	$106.4^{+5.6}_{-5.5}$
$A_{217}^{\text{dust}}$	0.981	$0.98^{+0.27}_{-0.26}$	$r_*$	145.90	$145.5^{+4.3}_{-4.2}$	$f_{2000}^{143 \times 217}$	30.9	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	1.006	$1.02^{+0.41}_{-0.41}$	$100\theta_*$	1.04141	$1.0414^{+0.0013}_{-0.0013}$	$\chi_{\text{small}}^2$	395.83	$396.9 (\nu: 1.5)$
$c_{100}$	0.99779	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	14.010	$13.97^{+0.40}_{-0.39}$	$\chi_{\text{lowl}}^2$	23.45	$23.2 (\nu: 0.6)$
$c_{217}$	1.00120	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	1059.36	$1059.5^{+1.7}_{-1.7}$	$\chi_{\text{CamSpec}}^2$	11498.3	$11514.7 (\nu: 17.3)$
$c_{TE}$	0.9955	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	148.62	$148.2^{+4.4}_{-4.4}$	$\chi_{\text{Aver15}}^2$	0.00	$0.37 (\nu: 0.1)$
$c_{EE}$	0.9906	$0.992^{+0.014}_{-0.014}$	$k_{\text{D}}$	0.13968	$0.1399^{+0.0032}_{-0.0031}$	$\chi_{6\text{DF}}^2$	0.010	$0.060 (\nu: 0.0)$
$H_0$	67.28	$67.3^{+2.9}_{-2.8}$	$100\theta_{\text{D}}$	0.16053	$0.1607^{+0.0011}_{-0.0011}$	$\chi_{\text{MGS}}^2$	1.41	$1.33 (\nu: 0.1)$
$\Omega_\Lambda$	0.6917	$0.689^{+0.019}_{-0.020}$	$z_{\text{eq}}$	3394	$3382^{+70}_{-70}$	$\chi_{\text{DR12BAO}}^2$	3.90	$4.8 (\nu: 1.3)$
$\Omega_{\text{m}}$	0.3083	$0.311^{+0.020}_{-0.019}$	$k_{\text{eq}}$	0.010268	$0.01027^{+0.00029}_{-0.00028}$	$\chi_{\text{prior}}^2$	2.0	$7.8 (\nu: 5.9)$
$\Omega_{\text{m}} h^2$	0.1396	$0.1406^{+0.0080}_{-0.0074}$	$100\theta_{\text{eq}}$	0.8144	$0.817^{+0.014}_{-0.013}$	$\chi_{\text{BAO}}^2$	5.31	$6.2 (\nu: 0.9)$
$\Omega_\nu h^2$	0.00003	< 0.00222	$100\theta_{\text{s,eq}}$	0.4501	$0.4513^{+0.0069}_{-0.0067}$	$\chi_{\text{CMB}}^2$	11917.6	$11934.8 (\nu: 17.2)$
$\Omega_{\text{m}} h^3$	0.0939	$0.0947^{+0.0088}_{-0.0081}$	$H(0.15)$	72.48	$72.5^{+2.9}_{-2.7}$			
$\sigma_8$	0.8146	$0.805^{+0.033}_{-0.043}$	$D_M(0.15)$	644.6	$644^{+26}_{-26}$			

Best-fit  $\chi_{\text{eff}}^2 = 11924.93$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.22$ ;  $R - 1 = 0.01005$

$\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.00 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.90 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.83 commander\_dx12\_v3.2.29: 23.45 CamSpec like\_10.7HM.1400\_unified: 11498.32



### 8.13 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022251	$0.02228^{+0.00046}_{-0.00047}$	$S_8$	0.8282	$0.820^{+0.036}_{-0.040}$	$H(0.38)$	82.70	$82.7^{+2.8}_{-2.7}$
$\Omega_c h^2$	0.1181	$0.1182^{+0.0070}_{-0.0065}$	$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.449^{+0.020}_{-0.022}$	$D_M(0.38)$	1534	$1535^{+57}_{-56}$
$100\theta_{MC}$	1.04108	$1.0410^{+0.0011}_{-0.0010}$	$\sigma_8 \Omega_m^{0.25}$	0.6088	$0.601^{+0.024}_{-0.030}$	$H(0.51)$	89.35	$89.4^{+2.9}_{-2.7}$
$\tau$	0.0531	$0.053^{+0.021}_{-0.021}$	$\sigma_8/h^{0.5}$	0.9946	$0.981^{+0.034}_{-0.049}$	$D_M(0.51)$	1987	$1988^{+72}_{-71}$
$\Sigma m_\nu$ [eV]	0.003	< 0.211	$r_{\text{drag}} h$	99.99	$99.7^{+2.4}_{-2.4}$	$H(0.61)$	94.92	$95.0^{+3.0}_{-2.8}$
$N_{\text{eff}}$	2.959	$2.99^{+0.42}_{-0.39}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.427^{+0.073}_{-0.077}$	$D_M(0.61)$	2313	$2313^{+82}_{-80}$
$\ln(10^{10} A_s)$	3.0355	$3.036^{+0.048}_{-0.046}$	$z_{\text{re}}$	7.53	$7.5^{+2.1}_{-2.3}$	$H(2.33)$	234.6	$235.1^{+6.1}_{-5.8}$
$n_s$	0.9642	$0.965^{+0.017}_{-0.017}$	$10^9 A_s$	2.081	$2.08^{+0.10}_{-0.094}$	$D_M(2.33)$	5789	$5784^{+170}_{-170}$
$y_{\text{cal}}$	1.0003	$1.0005^{+0.0063}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	1.8715	$1.872^{+0.042}_{-0.042}$	$f\sigma_8(0.15)$	0.4578	$0.454^{+0.019}_{-0.021}$
$A_{100}^{\text{PS}}$	230	$239^{+60}_{-60}$	$D_{40}$	1226.9	$1226^{+36}_{-34}$	$\sigma_8(0.15)$	0.7552	$0.745^{+0.030}_{-0.041}$
$A_{143}^{\text{PS}}$	44.4	$39^{+20}_{-20}$	$D_{220}$	5715	$5720^{+100}_{-96}$	$f\sigma_8(0.38)$	0.4768	$0.472^{+0.018}_{-0.021}$
$A_{217}^{\text{PS}}$	103.9	$102^{+30}_{-40}$	$D_{810}$	2533.7	$2534^{+36}_{-35}$	$\sigma_8(0.38)$	0.6695	$0.660^{+0.027}_{-0.037}$
$A_{217}^{\text{CIB}}$	42.7	$39^{+20}_{-20}$	$D_{1420}$	816.5	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4757	$0.471^{+0.018}_{-0.021}$
$A_{143}^{\text{tSZ}}$	6.51	< 8.82	$D_{2000}$	231.02	$230.6^{+4.7}_{-4.8}$	$\sigma_8(0.51)$	0.6266	$0.618^{+0.026}_{-0.035}$
$r_{143 \times 217}^{\text{PS}}$	0.676	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	0.9642	$0.965^{+0.017}_{-0.017}$	$f\sigma_8(0.61)$	0.4709	$0.466^{+0.017}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	0.83	—	$Y_{\text{P}}$	0.2442	$0.2446^{+0.0056}_{-0.0056}$	$\sigma_8(0.61)$	0.5963	$0.588^{+0.024}_{-0.033}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.49	—	$Y_{\text{P}}^{\text{BBN}}$	0.2455	$0.2459^{+0.0056}_{-0.0056}$	$f\sigma_8(2.33)$	0.2998	$0.297^{+0.012}_{-0.015}$
$A^{\text{kSZ}}$	0.0	—	$10^5 \text{D}/\text{H}$	2.578	$2.58^{+0.11}_{-0.11}$	$\sigma_8(2.33)$	0.3097	$0.306^{+0.013}_{-0.017}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.51}_{-0.51}$	$\text{Age}/\text{Gyr}$	13.859	$13.85^{+0.40}_{-0.40}$	$f_{2000}^{143}$	29.1	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	0.974	$0.96^{+0.45}_{-0.46}$	$z_*$	1089.81	$1089.81^{+0.84}_{-0.84}$	$f_{2000}^{217}$	106.1	$106.6^{+5.5}_{-5.4}$
$A_{217}^{\text{dust}}$	0.978	$0.98^{+0.28}_{-0.26}$	$r_*$	145.46	$145.3^{+3.9}_{-3.9}$	$f_{2000}^{143 \times 217}$	31.4	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	1.000	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	1.04130	$1.0413^{+0.0013}_{-0.0012}$	$\chi_{\text{small}}^2$	395.85	$396.9 (\nu: 1.4)$
$c_{100}$	0.99775	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.970	$13.95^{+0.36}_{-0.36}$	$\chi_{\text{lowl}}^2$	23.31	$23.1 (\nu: 0.6)$
$c_{217}$	1.00127	$1.0011^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	1059.44	$1059.6^{+1.6}_{-1.6}$	$\chi_{\text{CamSpec}}^2$	11498.5	$11514.7 (\nu: 17.2)$
$c_{TE}$	0.9960	$0.997^{+0.013}_{-0.012}$	$r_{\text{drag}}$	148.18	$148.0^{+4.1}_{-4.1}$	$\chi_{\text{Aver15}}^2$	0.02	$0.36 (\nu: 0.1)$
$c_{EE}$	0.9914	$0.992^{+0.014}_{-0.013}$	$k_{\text{D}}$	0.13996	$0.1401^{+0.0030}_{-0.0029}$	$\chi_{\text{Cooke17}}^2$	0.18	$0.35 (\nu: 0.1)$
$H_0$	67.48	$67.4^{+2.8}_{-2.7}$	$100\theta_{\text{D}}$	0.16068	$0.16075^{+0.00099}_{-0.00097}$	$\chi_{6\text{DF}}^2$	0.010	$0.059 (\nu: 0.0)$
$\Omega_\Lambda$	0.6917	$0.689^{+0.019}_{-0.020}$	$z_{\text{eq}}$	3393	$3381^{+71}_{-70}$	$\chi_{\text{MGS}}^2$	1.41	$1.33 (\nu: 0.1)$
$\Omega_{\text{m}}$	0.3083	$0.311^{+0.020}_{-0.019}$	$k_{\text{eq}}$	0.010295	$0.01028^{+0.00028}_{-0.00027}$	$\chi_{\text{DR12BAO}}^2$	3.90	$4.8 (\nu: 1.3)$
$\Omega_{\text{m}} h^2$	0.1404	$0.1411^{+0.0073}_{-0.0069}$	$100\theta_{\text{eq}}$	0.8146	$0.817^{+0.014}_{-0.013}$	$\chi_{\text{prior}}^2$	2.0	$7.8 (\nu: 5.9)$
$\Omega_\nu h^2$	0.00004	< 0.00225	$100\theta_{\text{s,eq}}$	0.4502	$0.4514^{+0.0069}_{-0.0067}$	$\chi_{\text{BAO}}^2$	5.32	$6.2 (\nu: 0.9)$
$\Omega_{\text{m}} h^3$	0.0947	$0.0951^{+0.0082}_{-0.0075}$	$H(0.15)$	72.70	$72.7^{+2.8}_{-2.7}$	$\chi_{\text{CMB}}^2$	11917.6	$11934.7 (\nu: 17.0)$
$\sigma_8$	0.8170	$0.806^{+0.032}_{-0.044}$	$D_M(0.15)$	642.7	$643^{+25}_{-25}$	$\chi_{\text{Abund}}^2$	0.20	$0.71 (\nu: 0.2)$

Best-fit  $\chi_{\text{eff}}^2 = 11925.20$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.45$ ;  $R - 1 = 0.01051$

$\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.02 D\_Cooke2017: 0.18 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.90 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12.v3.2.29: 23.31 CamSpec like\_10.7HM.1400\_unified: 11498.48



## 8.14 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02232^{+0.00048}_{-0.00050}$	$S_8$	$0.819^{+0.036}_{-0.038}$	$H(0.38)$	$82.9^{+3.6}_{-3.4}$
$\Omega_c h^2$	$0.1183^{+0.0090}_{-0.0089}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.020}_{-0.021}$	$D_M(0.38)$	$1531^{+69}_{-68}$
$100\theta_{MC}$	$1.0410^{+0.0013}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.025}_{-0.029}$	$H(0.51)$	$89.6^{+3.6}_{-3.5}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.982^{+0.033}_{-0.045}$	$D_M(0.51)$	$1983^{+88}_{-87}$
$\Sigma m_\nu$ [eV]	$< 0.207$	$r_{\text{drag}} h$	$99.9^{+2.4}_{-2.3}$	$H(0.61)$	$95.2^{+3.8}_{-3.7}$
$N_{\text{eff}}$	$3.01^{+0.54}_{-0.52}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.069}_{-0.071}$	$D_M(0.61)$	$2308^{+100}_{-99}$
$\ln(10^{10} A_s)$	$3.039^{+0.050}_{-0.038}$	$z_{\text{re}}$	$< 9.51$	$H(2.33)$	$235.2^{+8.0}_{-7.9}$
$n_s$	$0.966^{+0.020}_{-0.020}$	$10^9 A_s$	$2.09^{+0.11}_{-0.078}$	$D_M(2.33)$	$5775^{+230}_{-220}$
$y_{\text{cal}}$	$1.0006^{+0.0064}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	$1.872^{+0.050}_{-0.051}$	$f\sigma_8(0.15)$	$0.454^{+0.019}_{-0.020}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-70}$	$D_{40}$	$1224^{+37}_{-36}$	$\sigma_8(0.15)$	$0.747^{+0.033}_{-0.040}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-97}$	$f\sigma_8(0.38)$	$0.472^{+0.019}_{-0.021}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2534^{+36}_{-36}$	$\sigma_8(0.38)$	$0.662^{+0.030}_{-0.036}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	$0.471^{+0.019}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$< 8.86$	$D_{2000}$	$230.7^{+5.3}_{-5.4}$	$\sigma_8(0.51)$	$0.620^{+0.028}_{-0.034}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	$0.966^{+0.020}_{-0.020}$	$f\sigma_8(0.61)$	$0.467^{+0.019}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2449^{+0.0072}_{-0.0074}$	$\sigma_8(0.61)$	$0.590^{+0.027}_{-0.032}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2462^{+0.0073}_{-0.0074}$	$f\sigma_8(2.33)$	$0.297^{+0.014}_{-0.015}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.58^{+0.14}_{-0.15}$	$\sigma_8(2.33)$	$0.307^{+0.015}_{-0.017}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.51}$	Age/Gyr	$13.83^{+0.54}_{-0.52}$	$f_{2000}^{143}$	$29^{+9}_{-8}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.46}$	$z_*$	$1089.8^{+1.0}_{-1.1}$	$f_{2000}^{217}$	$106.5^{+5.8}_{-5.8}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$145.1^{+5.3}_{-5.1}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	$1.0413^{+0.0016}_{-0.0015}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.94^{+0.49}_{-0.47}$	$\chi_{\text{lowl}}^2$	$23.0 (\nu: 0.7)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	$1059.7^{+1.9}_{-1.9}$	$\chi_{\text{CamSpec}}^2$	$11515.1 (\nu: 17.9)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.8^{+5.5}_{-5.3}$	$\chi_{\text{JLA}}^2$	$1035.04 (\nu: 0.1)$
$c_{EE}$	$0.992^{+0.015}_{-0.014}$	$k_D$	$0.1402^{+0.0039}_{-0.0038}$	$\chi_{6\text{DF}}^2$	$0.046 (\nu: 0.0)$
$H_0$	$67.6^{+3.4}_{-3.2}$	$100\theta_D$	$0.1608^{+0.0013}_{-0.0013}$	$\chi_{\text{MGS}}^2$	$1.45 (\nu: 0.1)$
$\Omega_\Lambda$	$0.691^{+0.018}_{-0.019}$	$z_{\text{eq}}$	$3376^{+70}_{-70}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.9)$
$\Omega_m$	$0.309^{+0.019}_{-0.018}$	$k_{\text{eq}}$	$0.01028^{+0.00033}_{-0.00032}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.0)$
$\Omega_m h^2$	$0.1412^{+0.0096}_{-0.0093}$	$100\theta_{\text{eq}}$	$0.818^{+0.014}_{-0.013}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.6)$
$\Omega_\nu h^2$	$< 0.00220$	$100\theta_{s,\text{eq}}$	$0.4518^{+0.0069}_{-0.0066}$	$\chi_{\text{CMB}}^2$	$11935.0 (\nu: 17.5)$
$\Omega_m h^3$	$0.096^{+0.011}_{-0.010}$	$H(0.15)$	$72.9^{+3.4}_{-3.2}$		
$\sigma_8$	$0.808^{+0.035}_{-0.042}$	$D_M(0.15)$	$641^{+31}_{-30}$		

$$\bar{\chi}_{\text{eff}}^2 = 12983.89; R - 1 = 0.01046$$



## 8.15 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02220	$0.02221^{+0.00059}_{-0.00061}$	$\sigma_8 \Omega_m^{0.5}$	0.4546	$0.452^{+0.018}_{-0.018}$	$H(0.38)$	83.07	$83.0^{+4.0}_{-3.8}$
$\Omega_c h^2$	0.1191	$0.119^{+0.010}_{-0.0093}$	$\sigma_8 \Omega_m^{0.25}$	0.6104	$0.606^{+0.023}_{-0.023}$	$D_M(0.38)$	1527	$1530^{+80}_{-77}$
$100\theta_{MC}$	1.04103	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	0.9955	$0.987^{+0.028}_{-0.034}$	$H(0.51)$	89.74	$89.7^{+4.1}_{-4.0}$
$\tau$	0.0530	$0.055^{+0.021}_{-0.019}$	$r_{drag} h$	100.10	$99.8^{+2.6}_{-2.6}$	$D_M(0.51)$	1978	$1982^{+100}_{-98}$
$\Sigma m_\nu$ [eV]	0.003	$< 0.182$	$\langle d^2 \rangle^{1/2}$	2.443	$2.434^{+0.062}_{-0.062}$	$H(0.61)$	95.32	$95.3^{+4.2}_{-4.1}$
$N_{eff}$	3.02	$3.04^{+0.62}_{-0.58}$	$z_{re}$	7.56	$7.7^{+2.1}_{-2.0}$	$D_M(0.61)$	2302	$2306^{+120}_{-110}$
$\ln(10^{10} A_s)$	3.0373	$3.041^{+0.049}_{-0.045}$	$10^9 A_s$	2.085	$2.09^{+0.10}_{-0.092}$	$H(2.33)$	235.4	$235.7^{+8.8}_{-8.5}$
$n_s$	0.9647	$0.966^{+0.023}_{-0.022}$	$10^9 A_s e^{-2\tau}$	1.875	$1.876^{+0.051}_{-0.053}$	$D_M(2.33)$	5765	$5768^{+250}_{-240}$
$y_{cal}$	1.0004	$1.0006^{+0.0062}_{-0.0062}$	$D_{40}$	1227.0	$1225^{+38}_{-38}$	$f\sigma_8(0.15)$	0.4588	$0.457^{+0.018}_{-0.017}$
$A_{100}^{PS}$	244	$242^{+60}_{-70}$	$D_{220}$	5710	$5713^{+100}_{-100}$	$\sigma_8(0.15)$	0.7578	$0.750^{+0.032}_{-0.032}$
$A_{143}^{PS}$	37	$40^{+20}_{-20}$	$D_{810}$	2531.6	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	0.4781	$0.475^{+0.017}_{-0.017}$
$A_{217}^{PS}$	99.5	$101^{+30}_{-40}$	$D_{1420}$	814.0	$815^{+14}_{-14}$	$\sigma_8(0.38)$	0.6719	$0.665^{+0.030}_{-0.029}$
$A_{217}^{CIB}$	42.6	$41^{+20}_{-20}$	$D_{2000}$	229.8	$230.0^{+5.9}_{-5.9}$	$f\sigma_8(0.51)$	0.4770	$0.474^{+0.017}_{-0.017}$
$A_{143}^{tSZ}$	4.28	$< 8.80$	$n_{s,0.002}$	0.9647	$0.966^{+0.023}_{-0.022}$	$\sigma_8(0.51)$	0.6289	$0.623^{+0.028}_{-0.028}$
$r_{143 \times 217}^{PS}$	0.542	$0.65^{+0.32}_{-0.33}$	$Y_P$	0.2450	$0.2452^{+0.0081}_{-0.0082}$	$f\sigma_8(0.61)$	0.4723	$0.469^{+0.017}_{-0.017}$
$r_{143 \times 217}^{CIB}$	0.66	—	$Y_P^{BBN}$	0.2464	$0.2465^{+0.0082}_{-0.0082}$	$\sigma_8(0.61)$	0.5984	$0.592^{+0.027}_{-0.026}$
$\xi^{tSZ \times CIB}$	0.00	—	$10^5 D/H$	2.611	$2.61^{+0.18}_{-0.17}$	$f\sigma_8(2.33)$	0.3010	$0.299^{+0.014}_{-0.013}$
$A^{kSZ}$	3.7	—	Age/Gyr	13.80	$13.81^{+0.59}_{-0.57}$	$\sigma_8(2.33)$	0.3109	$0.308^{+0.015}_{-0.014}$
$A_{100}^{dust}$	0.999	$1.01^{+0.50}_{-0.50}$	$z_*$	1090.04	$1090.0^{+1.3}_{-1.2}$	$f_{2000}^{143}$	30.8	$30^{+9}_{-9}$
$A_{143}^{dust}$	0.977	$0.97^{+0.46}_{-0.46}$	$r_*$	144.9	$144.9^{+5.8}_{-5.6}$	$f_{2000}^{217}$	107.4	$107.3^{+6.3}_{-6.1}$
$A_{217}^{dust}$	0.974	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	1.04122	$1.0412^{+0.0018}_{-0.0018}$	$f_{2000}^{143 \times 217}$	32.6	$33^{+7}_{-7}$
$A_{143 \times 217}^{dust}$	1.009	$1.03^{+0.41}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	13.92	$13.91^{+0.54}_{-0.52}$	$\chi_{lensing}^2$	8.90	$9.51 (\nu: 0.4)$
$c_{100}$	0.99736	$0.9975^{+0.0027}_{-0.0027}$	$z_{drag}$	1059.44	$1059.5^{+2.2}_{-2.3}$	$\chi_{small}^2$	395.85	$397.1 (\nu: 1.7)$
$c_{217}$	1.00127	$1.0012^{+0.0041}_{-0.0040}$	$r_{drag}$	147.6	$147.6^{+6.0}_{-5.8}$	$\chi_{lowl}^2$	23.31	$23.2 (\nu: 0.8)$
$H_0$	67.80	$67.6^{+3.9}_{-3.7}$	$k_D$	0.14025	$0.1403^{+0.0043}_{-0.0042}$	$\chi_{CamSpec}^2$	7049.9	$7063.7 (\nu: 14.8)$
$\Omega_\Lambda$	0.6925	$0.690^{+0.020}_{-0.022}$	$100\theta_D$	0.16096	$0.1610^{+0.0015}_{-0.0015}$	$\chi_{6DF}^2$	0.006	$0.062 (\nu: 0.0)$
$\Omega_m$	0.3075	$0.310^{+0.022}_{-0.020}$	$z_{eq}$	3387	$3380^{+78}_{-82}$	$\chi_{MGS}^2$	1.47	$1.38 (\nu: 0.2)$
$\Omega_m h^2$	0.1414	$0.142^{+0.011}_{-0.0098}$	$k_{eq}$	0.010324	$0.01031^{+0.00035}_{-0.00034}$	$\chi_{DR12BAO}^2$	3.77	$4.8 (\nu: 1.4)$
$\Omega_\nu h^2$	0.00003	$< 0.00194$	$100\theta_{eq}$	0.8155	$0.817^{+0.016}_{-0.014}$	$\chi_{prior}^2$	2.3	$7.6 (\nu: 5.9)$
$\Omega_m h^3$	0.0959	$0.096^{+0.012}_{-0.011}$	$100\theta_{s,eq}$	0.4506	$0.4515^{+0.0080}_{-0.0073}$	$\chi_{CMB}^2$	7478.0	$7493.5 (\nu: 16.0)$
$\sigma_8$	0.8198	$0.812^{+0.034}_{-0.033}$	$H(0.15)$	73.04	$72.9^{+3.9}_{-3.7}$	$\chi_{BAO}^2$	5.25	$6.2 (\nu: 1.0)$
$S_8$	0.8299	$0.825^{+0.034}_{-0.033}$	$D_M(0.15)$	639.7	$641^{+35}_{-34}$			

Best-fit  $\chi_{eff}^2 = 7485.59$ ;  $\bar{\chi}_{eff}^2 = 7507.28$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.80$ ;  $R - 1 = 0.00494$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.77 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.90 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3\_2\_29: 23.31 CamSpec like\_10.7HM: 7049.94



# 8.16 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02219	$0.02223^{+0.00058}_{-0.00058}$	$\sigma_8 \Omega_m^{0.5}$	0.4533	$0.451^{+0.018}_{-0.018}$	$H(0.38)$	83.01	$83.1^{+3.9}_{-3.7}$
$\Omega_c h^2$	0.1187	$0.119^{+0.010}_{-0.0093}$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.606^{+0.022}_{-0.023}$	$D_M(0.38)$	1527	$1526^{+77}_{-74}$
$100\theta_{MC}$	1.04110	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	0.9944	$0.987^{+0.027}_{-0.034}$	$H(0.51)$	89.66	$89.8^{+4.0}_{-3.9}$
$\tau$	0.0530	$0.055^{+0.021}_{-0.019}$	$r_{drag} h$	100.22	$99.97^{+2.5}_{-2.4}$	$D_M(0.51)$	1979	$1977^{+97}_{-93}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.177$	$\langle d^2 \rangle^{1/2}$	2.440	$2.432^{+0.060}_{-0.061}$	$H(0.61)$	95.23	$95.4^{+4.2}_{-4.0}$
$N_{eff}$	3.01	$3.06^{+0.61}_{-0.57}$	$z_{re}$	7.56	$7.8^{+2.0}_{-2.0}$	$D_M(0.61)$	2304	$2301^{+110}_{-110}$
$\ln(10^{10} A_s)$	3.0365	$3.042^{+0.048}_{-0.044}$	$10^9 A_s$	2.083	$2.10^{+0.10}_{-0.091}$	$H(2.33)$	235.1	$235.9^{+8.8}_{-8.4}$
$n_s$	0.9648	$0.967^{+0.022}_{-0.021}$	$10^9 A_s e^{-2\tau}$	1.874	$1.877^{+0.051}_{-0.053}$	$D_M(2.33)$	5771	$5759^{+240}_{-240}$
$y_{cal}$	1.0004	$1.0006^{+0.0061}_{-0.0061}$	$D_{40}$	1226.4	$1224^{+37}_{-38}$	$f\sigma_8(0.15)$	0.4576	$0.456^{+0.017}_{-0.017}$
$A_{100}^{PS}$	239	$242^{+60}_{-70}$	$D_{220}$	5711	$5714^{+100}_{-100}$	$\sigma_8(0.15)$	0.7569	$0.751^{+0.032}_{-0.031}$
$A_{143}^{PS}$	39	$41^{+20}_{-20}$	$D_{810}$	2532.1	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	0.4770	$0.475^{+0.017}_{-0.017}$
$A_{217}^{PS}$	99.7	$101^{+30}_{-40}$	$D_{1420}$	814.6	$815^{+13}_{-13}$	$\sigma_8(0.38)$	0.6712	$0.666^{+0.029}_{-0.028}$
$A_{217}^{CIB}$	45.3	$41^{+20}_{-20}$	$D_{2000}$	230.0	$229.9^{+5.9}_{-5.9}$	$f\sigma_8(0.51)$	0.4761	$0.474^{+0.017}_{-0.017}$
$A_{143}^{tSZ}$	6.10	$< 8.79$	$n_{s,0.002}$	0.9648	$0.967^{+0.022}_{-0.021}$	$\sigma_8(0.51)$	0.6283	$0.623^{+0.028}_{-0.027}$
$r_{143 \times 217}^{PS}$	0.559	$0.65^{+0.32}_{-0.33}$	$Y_P$	0.2448	$0.2454^{+0.0080}_{-0.0081}$	$f\sigma_8(0.61)$	0.4714	$0.469^{+0.017}_{-0.017}$
$r_{143 \times 217}^{CIB}$	0.76	—	$Y_P^{BBN}$	0.2461	$0.2468^{+0.0080}_{-0.0081}$	$\sigma_8(0.61)$	0.5979	$0.593^{+0.027}_{-0.026}$
$\xi^{tSZ \times CIB}$	0.01	—	$10^5 D/H$	2.607	$2.62^{+0.18}_{-0.17}$	$f\sigma_8(2.33)$	0.3007	$0.299^{+0.013}_{-0.013}$
$A^{kSZ}$	0.9	—	Age/Gyr	13.82	$13.79^{+0.58}_{-0.56}$	$\sigma_8(2.33)$	0.3106	$0.309^{+0.014}_{-0.014}$
$A_{100}^{dust}$	1.02	$1.01^{+0.50}_{-0.50}$	$z_*$	1089.99	$1090.0^{+1.3}_{-1.2}$	$f_{2000}^{143}$	30.8	$31^{+9}_{-9}$
$A_{143}^{dust}$	0.986	$0.97^{+0.45}_{-0.47}$	$r_*$	145.1	$144.7^{+5.7}_{-5.5}$	$f_{2000}^{217}$	107.3	$107.4^{+6.2}_{-6.1}$
$A_{217}^{dust}$	0.963	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	1.04129	$1.0412^{+0.0018}_{-0.0018}$	$f_{2000}^{143 \times 217}$	32.6	$33^{+7}_{-7}$
$A_{143 \times 217}^{dust}$	1.004	$1.03^{+0.42}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	13.94	$13.90^{+0.53}_{-0.52}$	$\chi_{lensing}^2$	8.87	$9.55 (\nu: 0.4)$
$c_{100}$	0.99757	$0.9975^{+0.0027}_{-0.0027}$	$z_{drag}$	1059.40	$1059.6^{+2.2}_{-2.2}$	$\chi_{small}^2$	395.9	$397.1 (\nu: 1.7)$
$c_{217}$	1.00137	$1.0012^{+0.0042}_{-0.0040}$	$r_{drag}$	147.8	$147.4^{+5.9}_{-5.8}$	$\chi_{lowl}^2$	23.25	$23.0 (\nu: 0.7)$
$H_0$	67.79	$67.8^{+3.7}_{-3.5}$	$k_D$	0.14008	$0.1404^{+0.0042}_{-0.0042}$	$\chi_{CamSpec}^2$	7050.1	$7063.8 (\nu: 14.9)$
$\Omega_\Lambda$	0.6934	$0.691^{+0.019}_{-0.020}$	$100\theta_D$	0.16094	$0.1610^{+0.0015}_{-0.0015}$	$\chi_{JLA}^2$	1034.86	$1035.05 (\nu: 0.1)$
$\Omega_m$	0.3066	$0.309^{+0.020}_{-0.019}$	$z_{eq}$	3384	$3376^{+74}_{-79}$	$\chi_{6DF}^2$	0.003	$0.049 (\nu: 0.0)$
$\Omega_m h^2$	0.1409	$0.142^{+0.010}_{-0.0098}$	$k_{eq}$	0.010301	$0.01031^{+0.00035}_{-0.00034}$	$\chi_{MGS}^2$	1.54	$1.47 (\nu: 0.1)$
$\Omega_\nu h^2$	0.00001	$< 0.00189$	$100\theta_{eq}$	0.8161	$0.818^{+0.015}_{-0.014}$	$\chi_{DR12BAO}^2$	3.65	$4.5 (\nu: 1.0)$
$\Omega_m h^3$	0.0955	$0.096^{+0.012}_{-0.011}$	$100\theta_{s,eq}$	0.4510	$0.4518^{+0.0077}_{-0.0070}$	$\chi_{prior}^2$	2.2	$7.6 (\nu: 5.9)$
$\sigma_8$	0.8187	$0.813^{+0.033}_{-0.032}$	$H(0.15)$	73.00	$73.1^{+3.8}_{-3.6}$	$\chi_{CMB}^2$	7478.0	$7493.5 (\nu: 16.0)$
$S_8$	0.8277	$0.824^{+0.033}_{-0.033}$	$D_M(0.15)$	639.9	$640^{+34}_{-33}$	$\chi_{BAO}^2$	5.20	$6.0 (\nu: 0.6)$

Best-fit  $\chi_{eff}^2 = 8520.27$ ;  $\Delta\chi_{eff}^2 = -1.61$ ;  $\bar{\chi}_{eff}^2 = 8542.17$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.67$ ;  $R - 1 = 0.00504$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.54 ( $\Delta$  0.26) DR12BAO: 3.65 ( $\Delta$  -0.53) CMB - smicadx12.Dec5.ftl\_mv2\_ndclpp-p.teb.consext8: 8.87 ( $\Delta$  -0.15) small\_100x143.offlike5\_EE\_Aplanc  
395.85 ( $\Delta$  -0.38) commander\_dx12\_v3.2\_29: 23.25 ( $\Delta$  0.40) CamSpec like\_10.7HM: 7050.07 ( $\Delta$  -1.10) SN - JLA Pantheon18: 1034.86 ( $\Delta$  -0.14)



## 8.17 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02213	$0.02219^{+0.00055}_{-0.00055}$	$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.452^{+0.018}_{-0.018}$	$H(0.38)$	82.61	$82.7^{+3.2}_{-3.0}$
$\Omega_c h^2$	0.1180	$0.1183^{+0.0080}_{-0.0076}$	$\sigma_8 \Omega_m^{0.25}$	0.6086	$0.605^{+0.021}_{-0.022}$	$D_M(0.38)$	1536	$1536^{+64}_{-63}$
$100\theta_{MC}$	1.04120	$1.0411^{+0.0014}_{-0.0013}$	$\sigma_8/h^{0.5}$	0.9947	$0.987^{+0.027}_{-0.033}$	$H(0.51)$	89.25	$89.4^{+3.3}_{-3.1}$
$\tau$	0.0529	$0.055^{+0.021}_{-0.018}$	$r_{drag} h$	99.98	$99.7^{+2.5}_{-2.6}$	$D_M(0.51)$	1990	$1989^{+81}_{-79}$
$\Sigma m_\nu$ [eV]	0.001	< 0.172	$\langle d^2 \rangle^{1/2}$	2.444	$2.436^{+0.060}_{-0.060}$	$H(0.61)$	94.82	$94.9^{+3.3}_{-3.2}$
$N_{eff}$	2.953	$2.99^{+0.49}_{-0.45}$	$z_{re}$	7.54	$7.7^{+2.0}_{-1.9}$	$D_M(0.61)$	2316	$2315^{+92}_{-91}$
$\ln(10^{10} A_s)$	3.0338	$3.039^{+0.045}_{-0.042}$	$10^9 A_s$	2.078	$2.089^{+0.096}_{-0.086}$	$H(2.33)$	234.4	$235.0^{+7.1}_{-6.7}$
$n_s$	0.9628	$0.965^{+0.019}_{-0.019}$	$10^9 A_s e^{-2\tau}$	1.8690	$1.872^{+0.045}_{-0.045}$	$D_M(2.33)$	5795	$5787^{+190}_{-190}$
$y_{cal}$	1.0002	$1.0006^{+0.0062}_{-0.0062}$	$D_{40}$	1228.0	$1227^{+36}_{-35}$	$f\sigma_8(0.15)$	0.4577	$0.456^{+0.017}_{-0.017}$
$A_{100}^{PS}$	239	$241^{+60}_{-70}$	$D_{220}$	5705	$5713^{+100}_{-100}$	$\sigma_8(0.15)$	0.7547	$0.749^{+0.027}_{-0.030}$
$A_{143}^{PS}$	38	$40^{+20}_{-20}$	$D_{810}$	2529.9	$2533^{+34}_{-35}$	$f\sigma_8(0.38)$	0.4766	$0.475^{+0.016}_{-0.016}$
$A_{217}^{PS}$	99.8	$101^{+30}_{-40}$	$D_{1420}$	814.4	$815^{+13}_{-13}$	$\sigma_8(0.38)$	0.6691	$0.664^{+0.025}_{-0.027}$
$A_{217}^{CIB}$	44.5	$40^{+20}_{-20}$	$D_{2000}$	230.1	$230.3^{+5.4}_{-5.3}$	$f\sigma_8(0.51)$	0.4755	$0.473^{+0.016}_{-0.016}$
$A_{143}^{tSZ}$	5.75	< 8.82	$n_{s,0.002}$	0.9628	$0.965^{+0.019}_{-0.019}$	$\sigma_8(0.51)$	0.6262	$0.621^{+0.024}_{-0.026}$
$r_{143 \times 217}^{PS}$	0.568	$0.65^{+0.32}_{-0.34}$	$Y_P$	0.2440	$0.2446^{+0.0065}_{-0.0064}$	$f\sigma_8(0.61)$	0.4707	$0.468^{+0.016}_{-0.016}$
$r_{143 \times 217}^{CIB}$	0.74	—	$Y_P^{BBN}$	0.2454	$0.2459^{+0.0065}_{-0.0064}$	$\sigma_8(0.61)$	0.5958	$0.591^{+0.023}_{-0.025}$
$\xi^{tSZ \times CIB}$	0.04	—	$10^5 D/H$	2.598	$2.60^{+0.15}_{-0.14}$	$f\sigma_8(2.33)$	0.2996	$0.298^{+0.012}_{-0.012}$
$A^{kSZ}$	1.4	—	Age/Gyr	13.873	$13.85^{+0.46}_{-0.46}$	$\sigma_8(2.33)$	0.3094	$0.307^{+0.013}_{-0.013}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	$z_*$	1089.94	$1089.9^{+1.1}_{-1.0}$	$f_{2000}^{143}$	30.4	$30^{+9}_{-8}$
$A_{143}^{dust}$	0.992	$0.97^{+0.45}_{-0.46}$	$r_*$	145.61	$145.3^{+4.5}_{-4.5}$	$f_{2000}^{217}$	107.0	$107.0^{+5.9}_{-5.7}$
$A_{217}^{dust}$	0.961	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	1.04143	$1.0413^{+0.0016}_{-0.0015}$	$f_{2000}^{143 \times 217}$	32.3	$32^{+6}_{-6}$
$A_{143 \times 217}^{dust}$	0.9998	$1.03^{+0.42}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	13.982	$13.95^{+0.42}_{-0.42}$	$\chi_{lensing}^2$	8.80	$9.41 (\nu: 0.4)$
$c_{100}$	0.99755	$0.9975^{+0.0028}_{-0.0027}$	$z_{drag}$	1059.17	$1059.3^{+1.9}_{-1.9}$	$\chi_{small}^2$	395.9	$397.1 (\nu: 1.7)$
$c_{217}$	1.00120	$1.0012^{+0.0042}_{-0.0040}$	$r_{drag}$	148.37	$148.1^{+4.7}_{-4.7}$	$\chi_{lowl}^2$	23.49	$23.3 (\nu: 0.7)$
$H_0$	67.39	$67.4^{+3.1}_{-3.0}$	$k_D$	0.13970	$0.1399^{+0.0034}_{-0.0034}$	$\chi_{CamSpec}^2$	7050.0	$7063.3 (\nu: 14.2)$
$\Omega_\Lambda$	0.6914	$0.689^{+0.019}_{-0.021}$	$100\theta_D$	0.16084	$0.1609^{+0.0013}_{-0.0012}$	$\chi_{Aver15}^2$	0.01	$0.45 (\nu: 0.2)$
$\Omega_m$	0.3086	$0.311^{+0.021}_{-0.019}$	$z_{eq}$	3391	$3383^{+74}_{-75}$	$\chi_{6DF}^2$	0.010	$0.064 (\nu: 0.0)$
$\Omega_m h^2$	0.1401	$0.1410^{+0.0085}_{-0.0080}$	$k_{eq}$	0.010284	$0.01029^{+0.00030}_{-0.00030}$	$\chi_{MGS}^2$	1.41	$1.33 (\nu: 0.1)$
$\Omega_\nu h^2$	0.00001	< 0.00182	$100\theta_{eq}$	0.8148	$0.816^{+0.014}_{-0.013}$	$\chi_{DR12BAO}^2$	3.87	$4.8 (\nu: 1.5)$
$\Omega_m h^3$	0.0944	$0.0950^{+0.0095}_{-0.0086}$	$100\theta_{s,eq}$	0.4503	$0.4511^{+0.0073}_{-0.0069}$	$\chi_{prior}^2$	2.1	$7.5 (\nu: 5.9)$
$\sigma_8$	0.8166	$0.810^{+0.029}_{-0.031}$	$H(0.15)$	72.61	$72.6^{+3.1}_{-3.0}$	$\chi_{CMB}^2$	7478.1	$7493.1 (\nu: 15.4)$
$S_8$	0.8282	$0.825^{+0.033}_{-0.033}$	$D_M(0.15)$	643.5	$644^{+29}_{-28}$	$\chi_{BAO}^2$	5.29	$6.2 (\nu: 1.0)$

Best-fit  $\chi_{eff}^2 = 7485.47$ ;  $\bar{\chi}_{eff}^2 = 7507.32$ ;  $R - 1 = 0.00578$   
 $\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.01 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.88 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.80 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 23.49 CamSpec like\_10.7HM: 7049.95



# 8.18 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02216	$0.02218^{+0.00055}_{-0.00055}$	$\sigma_8 \Omega_m^{0.25}$	0.6086	$0.605^{+0.020}_{-0.021}$	$H(0.51)$	89.40	$89.4^{+3.1}_{-2.9}$
$\Omega_c h^2$	0.1182	$0.1185^{+0.0072}_{-0.0070}$	$\sigma_8/h^{0.5}$	0.9943	$0.987^{+0.027}_{-0.033}$	$D_M(0.51)$	1986	$1988^{+77}_{-75}$
$100\theta_{MC}$	1.04111	$1.0411^{+0.0013}_{-0.0013}$	$r_{drag} h$	100.09	$99.7^{+2.5}_{-2.6}$	$H(0.61)$	94.97	$95.0^{+3.1}_{-3.0}$
$\tau$	0.0530	$0.055^{+0.021}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.436^{+0.060}_{-0.059}$	$D_M(0.61)$	2311	$2313^{+88}_{-86}$
$\Sigma m_\nu$ [eV]	0.002	< 0.173	$z_{re}$	7.55	$7.7^{+2.0}_{-1.9}$	$H(2.33)$	234.6	$235.2^{+6.5}_{-6.3}$
$N_{eff}$	2.973	$3.00^{+0.44}_{-0.42}$	$10^9 A_s$	2.080	$2.090^{+0.097}_{-0.085}$	$D_M(2.33)$	5786	$5783^{+180}_{-180}$
$\ln(10^{10} A_s)$	3.0351	$3.039^{+0.045}_{-0.042}$	$10^9 A_s e^{-2\tau}$	1.8711	$1.873^{+0.043}_{-0.042}$	$f\sigma_8(0.15)$	0.4574	$0.456^{+0.017}_{-0.017}$
$n_s$	0.9638	$0.965^{+0.018}_{-0.018}$	$D_{40}$	1227.1	$1227^{+35}_{-34}$	$\sigma_8(0.15)$	0.7554	$0.749^{+0.026}_{-0.029}$
$y_{cal}$	1.0006	$1.0006^{+0.0062}_{-0.0062}$	$D_{220}$	5709	$5712^{+99}_{-100}$	$f\sigma_8(0.38)$	0.4766	$0.475^{+0.016}_{-0.016}$
$A_{100}^{PS}$	238	$242^{+60}_{-60}$	$D_{810}$	2531.7	$2533^{+34}_{-35}$	$\sigma_8(0.38)$	0.6698	$0.664^{+0.024}_{-0.027}$
$A_{143}^{PS}$	38	$40^{+20}_{-20}$	$D_{1420}$	814.9	$815^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4756	$0.473^{+0.015}_{-0.015}$
$A_{217}^{PS}$	99.2	$101^{+30}_{-40}$	$D_{2000}$	230.21	$230.2^{+5.0}_{-4.9}$	$\sigma_8(0.51)$	0.6269	$0.621^{+0.023}_{-0.025}$
$A_{217}^{CIB}$	45.2	$40^{+20}_{-20}$	$n_{s,0.002}$	0.9638	$0.965^{+0.018}_{-0.018}$	$f\sigma_8(0.61)$	0.4708	$0.469^{+0.015}_{-0.015}$
$A_{143}^{tSZ}$	6.05	< 8.82	$Y_P$	0.2443	$0.2447^{+0.0060}_{-0.0059}$	$\sigma_8(0.61)$	0.5965	$0.591^{+0.022}_{-0.024}$
$r_{143 \times 217}^{PS}$	0.542	$0.65^{+0.32}_{-0.33}$	$Y_P^{BBN}$	0.2457	$0.2460^{+0.0060}_{-0.0059}$	$f\sigma_8(2.33)$	0.3000	$0.298^{+0.011}_{-0.012}$
$r_{143 \times 217}^{CIB}$	0.79	—	$10^5 D/H$	2.600	$2.61^{+0.13}_{-0.13}$	$\sigma_8(2.33)$	0.3099	$0.307^{+0.012}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.01	—	Age/Gyr	13.853	$13.85^{+0.43}_{-0.43}$	$f_{2000}^{143}$	30.4	$30^{+8}_{-8}$
$A^{kSZ}$	1.1	—	$z_*$	1089.95	$1089.98^{+0.93}_{-0.92}$	$f_{2000}^{217}$	107.0	$107.1^{+5.6}_{-5.4}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.51}$	$r_*$	145.44	$145.2^{+4.2}_{-4.1}$	$f_{2000}^{143 \times 217}$	32.2	$32^{+6}_{-6}$
$A_{143}^{dust}$	0.995	$0.97^{+0.45}_{-0.46}$	$100\theta_*$	1.04133	$1.0413^{+0.0015}_{-0.0014}$	$\chi^2_{lensing}$	8.82	$9.42 (\nu: 0.4)$
$A_{217}^{dust}$	0.963	$0.97^{+0.26}_{-0.27}$	$D_M(z_*)/\text{Gpc}$	13.967	$13.95^{+0.39}_{-0.39}$	$\chi^2_{small}$	395.8	$397.0 (\nu: 1.7)$
$A_{143 \times 217}^{dust}$	0.982	$1.03^{+0.42}_{-0.41}$	$z_{drag}$	1059.25	$1059.3^{+1.8}_{-1.9}$	$\chi^2_{lowl}$	23.32	$23.3 (\nu: 0.6)$
$c_{100}$	0.99752	$0.9975^{+0.0028}_{-0.0027}$	$r_{drag}$	148.19	$148.0^{+4.4}_{-4.3}$	$\chi^2_{CamSpec}$	7050.0	$7063.1 (\nu: 13.8)$
$c_{217}$	1.00128	$1.0012^{+0.0042}_{-0.0040}$	$k_D$	0.13983	$0.1400^{+0.0032}_{-0.0032}$	$\chi^2_{Aver15}$	0.04	$0.41 (\nu: 0.2)$
$H_0$	67.54	$67.4^{+3.0}_{-2.9}$	$100\theta_D$	0.16086	$0.1609^{+0.0011}_{-0.0011}$	$\chi^2_{Cooke17}$	0.04	$0.29 (\nu: 0.1)$
$\Omega_\Lambda$	0.6923	$0.689^{+0.019}_{-0.022}$	$z_{eq}$	3387	$3382^{+73}_{-74}$	$\chi^2_{6DF}$	0.006	$0.064 (\nu: 0.0)$
$\Omega_m$	0.3077	$0.311^{+0.022}_{-0.019}$	$k_{eq}$	0.010286	$0.01029^{+0.00028}_{-0.00029}$	$\chi^2_{MGS}$	1.47	$1.33 (\nu: 0.1)$
$\Omega_m h^2$	0.1404	$0.1412^{+0.0078}_{-0.0074}$	$100\theta_{eq}$	0.8155	$0.816^{+0.014}_{-0.013}$	$\chi^2_{DR12BAO}$	3.76	$4.8 (\nu: 1.5)$
$\Omega_\nu h^2$	0.00003	< 0.00182	$100\theta_{s,eq}$	0.4507	$0.4512^{+0.0072}_{-0.0067}$	$\chi^2_{prior}$	2.2	$7.6 (\nu: 5.9)$
$\Omega_m h^3$	0.0948	$0.0952^{+0.0088}_{-0.0081}$	$H(0.15)$	72.76	$72.7^{+3.0}_{-2.9}$	$\chi^2_{CMB}$	7478.0	$7492.9 (\nu: 14.9)$
$\sigma_8$	0.8172	$0.810^{+0.028}_{-0.030}$	$D_M(0.15)$	642.1	$643^{+28}_{-27}$	$\chi^2_{BAO}$	5.24	$6.2 (\nu: 1.0)$
$S_8$	0.8276	$0.825^{+0.032}_{-0.032}$	$H(0.38)$	82.76	$82.7^{+3.0}_{-2.9}$	$\chi^2_{Abund}$	0.07	$0.70 (\nu: 0.3)$
$\sigma_8 \Omega_m^{0.5}$	0.4533	$0.452^{+0.018}_{-0.018}$	$D_M(0.38)$	1532	$1534^{+62}_{-60}$			

Best-fit  $\chi^2_{eff} = 7485.51$ ;  $\bar{\chi}^2_{eff} = 7507.35$ ;  $R - 1 = 0.00593$

$\chi^2_{eff}$ : Abund - Yp\_Aver2015: 0.04 D\_Cooke2017: 0.04 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.76 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.82  
small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3\_2\_29: 23.32 CamSpec like\_10.7HM: 7049.98



# 8.19 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02224^{+0.00058}_{-0.00058}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.018}_{-0.018}$	$H(0.38)$	$83.2^{+3.8}_{-3.7}$
$\Omega_{\mathrm{c}} h^2$	$0.119^{+0.010}_{-0.0093}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.022}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1526^{+77}_{-74}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0015}_{-0.0015}$	$\sigma_8/h^{0.5}$	$0.987^{+0.027}_{-0.035}$	$H(0.51)$	$89.9^{+4.0}_{-3.9}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$r_{\mathrm{drag}} h$	$100.0^{+2.5}_{-2.4}$	$D_{\mathrm{M}}(0.51)$	$1977^{+98}_{-93}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.178$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.060}_{-0.060}$	$H(0.61)$	$95.5^{+4.1}_{-4.0}$
$N_{\mathrm{eff}}$	$3.06^{+0.61}_{-0.57}$	$z_{\mathrm{re}}$	$< 9.57$	$D_{\mathrm{M}}(0.61)$	$2301^{+110}_{-110}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.047}_{-0.039}$	$10^9 A_{\mathrm{s}}$	$2.10^{+0.10}_{-0.081}$	$H(2.33)$	$235.9^{+8.8}_{-8.4}$
$n_{\mathrm{s}}$	$0.967^{+0.022}_{-0.021}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.051}_{-0.053}$	$D_{\mathrm{M}}(2.33)$	$5758^{+240}_{-230}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0061}_{-0.0061}$	$D_{40}$	$1224^{+37}_{-38}$	$f\sigma_8(0.15)$	$0.456^{+0.018}_{-0.018}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-70}$	$D_{220}$	$5713^{+100}_{-100}$	$\sigma_8(0.15)$	$0.752^{+0.032}_{-0.031}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.666^{+0.029}_{-0.028}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+5.9}_{-5.9}$	$f\sigma_8(0.51)$	$0.474^{+0.017}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.79$	$n_{\mathrm{s},0.002}$	$0.967^{+0.022}_{-0.021}$	$\sigma_8(0.51)$	$0.624^{+0.027}_{-0.027}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$Y_{\mathrm{P}}$	$0.2455^{+0.0080}_{-0.0081}$	$f\sigma_8(0.61)$	$0.470^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2468^{+0.0080}_{-0.0081}$	$\sigma_8(0.61)$	$0.594^{+0.026}_{-0.026}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.18}_{-0.17}$	$f\sigma_8(2.33)$	$0.299^{+0.013}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.79^{+0.58}_{-0.56}$	$\sigma_8(2.33)$	$0.309^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$z_*$	$1090.0^{+1.3}_{-1.2}$	$f_{2000}^{143}$	$30^{+9}_{-9}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.46}$	$r_*$	$144.7^{+5.8}_{-5.5}$	$f_{2000}^{217}$	$107.4^{+6.2}_{-6.1}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0412^{+0.0018}_{-0.0018}$	$f_{2000}^{143 \times 217}$	$33^{+7}_{-7}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.90^{+0.53}_{-0.51}$	$\chi_{\mathrm{lensing}}^2$	$9.52 (\nu: 0.4)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+2.2}_{-2.2}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.8)$
$c_{217}$	$1.0012^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.4^{+6.0}_{-5.8}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 0.7)$
$H_0$	$67.8^{+3.7}_{-3.6}$	$k_{\mathrm{D}}$	$0.1404^{+0.0042}_{-0.0042}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 (\nu: 14.9)$
$\Omega_{\Lambda}$	$0.691^{+0.019}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.1610^{+0.0015}_{-0.0014}$	$\chi_{\mathrm{JLA}}^2$	$1035.04 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.020}_{-0.019}$	$z_{\mathrm{eq}}$	$3374^{+73}_{-79}$	$\chi_{6\mathrm{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.142^{+0.010}_{-0.0098}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00035}_{-0.00035}$	$\chi_{\mathrm{MGS}}^2$	$1.48 (\nu: 0.1)$
$\Omega_{\nu} h^2$	$< 0.00190$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.015}_{-0.014}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 (\nu: 0.9)$
$\Omega_{\mathrm{m}} h^3$	$0.096^{+0.012}_{-0.011}$	$100\theta_{\mathrm{s,eq}}$	$0.4520^{+0.0077}_{-0.0069}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.0)$
$\sigma_8$	$0.813^{+0.033}_{-0.032}$	$H(0.15)$	$73.1^{+3.8}_{-3.6}$	$\chi_{\mathrm{CMB}}^2$	$7493.4 (\nu: 15.9)$
$S_8$	$0.824^{+0.034}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$639^{+34}_{-33}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.6)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8542.04; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.69; R - 1 = 0.00589$$



## 8.20 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022261	$0.02228^{+0.00049}_{-0.00048}$	$S_8$	0.8250	$0.822^{+0.030}_{-0.030}$	$H(0.38)$	82.32	$82.6^{+3.6}_{-3.2}$
$\Omega_c h^2$	0.1168	$0.1178^{+0.0086}_{-0.0079}$	$\sigma_8 \Omega_m^{0.5}$	0.4519	$0.450^{+0.016}_{-0.016}$	$D_M(0.38)$	1541	$1537^{+69}_{-70}$
$100\theta_{MC}$	1.04121	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	0.6064	$0.603^{+0.020}_{-0.022}$	$H(0.51)$	88.94	$89.2^{+3.7}_{-3.4}$
$\tau$	0.0531	$0.054^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9929	$0.985^{+0.026}_{-0.033}$	$D_M(0.51)$	1996	$1992^{+86}_{-88}$
$\Sigma m_\nu$ [eV]	0.001	< 0.176	$r_{\text{drag}} h$	99.99	$99.7^{+2.4}_{-2.4}$	$H(0.61)$	94.48	$94.8^{+3.7}_{-3.5}$
$N_{\text{eff}}$	2.89	$2.96^{+0.54}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	2.443	$2.435^{+0.057}_{-0.058}$	$D_M(0.61)$	2324	$2318^{+99}_{-100}$
$\ln(10^{10} A_s)$	3.0331	$3.038^{+0.047}_{-0.044}$	$z_{\text{re}}$	7.51	$7.7^{+2.0}_{-2.0}$	$H(2.33)$	233.5	$234.7^{+7.7}_{-7.2}$
$n_s$	0.9621	$0.964^{+0.020}_{-0.019}$	$10^9 A_s$	2.076	$2.09^{+0.10}_{-0.089}$	$D_M(2.33)$	5815	$5794^{+210}_{-220}$
$y_{\text{cal}}$	1.0007	$1.0007^{+0.0063}_{-0.0061}$	$10^9 A_s e^{-2\tau}$	1.8669	$1.871^{+0.047}_{-0.047}$	$f\sigma_8(0.15)$	0.4559	$0.455^{+0.015}_{-0.016}$
$A_{100}^{\text{PS}}$	227	$238^{+60}_{-70}$	$D_{40}$	1230.5	$1229^{+34}_{-35}$	$\sigma_8(0.15)$	0.7521	$0.747^{+0.029}_{-0.032}$
$A_{143}^{\text{PS}}$	45.8	$38^{+20}_{-20}$	$D_{220}$	5725	$5725^{+97}_{-94}$	$f\sigma_8(0.38)$	0.4749	$0.473^{+0.015}_{-0.016}$
$A_{217}^{\text{PS}}$	105.8	$103^{+30}_{-30}$	$D_{810}$	2534.8	$2535^{+35}_{-34}$	$\sigma_8(0.38)$	0.6668	$0.662^{+0.026}_{-0.030}$
$A_{217}^{\text{CIB}}$	41.1	$39^{+20}_{-20}$	$D_{1420}$	818.0	$817^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4737	$0.472^{+0.015}_{-0.016}$
$A_{143}^{\text{tSZ}}$	6.50	< 8.82	$D_{2000}$	231.8	$231.0^{+5.1}_{-5.2}$	$\sigma_8(0.51)$	0.6240	$0.620^{+0.025}_{-0.028}$
$r_{143 \times 217}^{\text{PS}}$	0.715	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	0.9621	$0.964^{+0.020}_{-0.019}$	$f\sigma_8(0.61)$	0.4690	$0.467^{+0.015}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	0.84	—	$Y_{\text{P}}$	0.2432	$0.2442^{+0.0072}_{-0.0070}$	$\sigma_8(0.61)$	0.5938	$0.590^{+0.024}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.69	—	$Y_{\text{P}}^{\text{BBN}}$	0.2445	$0.2455^{+0.0072}_{-0.0070}$	$f\sigma_8(2.33)$	0.2985	$0.297^{+0.012}_{-0.013}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.552	$2.57^{+0.15}_{-0.14}$	$\sigma_8(2.33)$	0.3084	$0.307^{+0.014}_{-0.014}$
$A_{100}^{\text{dust}}$	1.00	$1.01^{+0.50}_{-0.50}$	Age/Gyr	13.92	$13.87^{+0.51}_{-0.51}$	$f_{2000}^{143}$	28.3	$29^{+9}_{-8}$
$A_{143}^{\text{dust}}$	0.973	$0.96^{+0.44}_{-0.45}$	$z_*$	1089.62	$1089.8^{+1.0}_{-0.98}$	$f_{2000}^{217}$	105.5	$106.3^{+5.8}_{-5.6}$
$A_{217}^{\text{dust}}$	0.983	$0.98^{+0.27}_{-0.27}$	$r_*$	146.15	$145.5^{+4.9}_{-5.0}$	$f_{2000}^{143 \times 217}$	30.7	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	1.001	$1.02^{+0.42}_{-0.42}$	$100\theta_*$	1.04148	$1.0414^{+0.0015}_{-0.0015}$	$\chi_{\text{lensing}}^2$	8.62	$9.27 (\nu: 0.3)$
$c_{100}$	0.99780	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	14.033	$13.97^{+0.46}_{-0.46}$	$\chi_{\text{small}}^2$	395.85	$397.0 (\nu: 1.4)$
$c_{217}$	1.00113	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	1059.32	$1059.5^{+1.9}_{-1.9}$	$\chi_{\text{lowl}}^2$	23.58	$23.4 (\nu: 0.7)$
$c_{TE}$	0.9954	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	148.9	$148.2^{+5.1}_{-5.2}$	$\chi_{\text{CamSpec}}^2$	11498.2	$11514.1 (\nu: 16.3)$
$c_{EE}$	0.9901	$0.991^{+0.014}_{-0.014}$	$k_{\text{D}}$	0.13952	$0.1400^{+0.0038}_{-0.0036}$	$\chi_{6\text{DF}}^2$	0.010	$0.059 (\nu: 0.0)$
$H_0$	67.16	$67.3^{+3.5}_{-3.1}$	$100\theta_{\text{D}}$	0.16045	$0.1607^{+0.0013}_{-0.0012}$	$\chi_{\text{MGS}}^2$	1.41	$1.33 (\nu: 0.1)$
$\Omega_\Lambda$	0.6916	$0.689^{+0.019}_{-0.020}$	$z_{\text{eq}}$	3395	$3386^{+66}_{-69}$	$\chi_{\text{DR12BAO}}^2$	3.90	$4.8 (\nu: 1.3)$
$\Omega_{\text{m}}$	0.3084	$0.311^{+0.020}_{-0.019}$	$k_{\text{eq}}$	0.010252	$0.01028^{+0.00030}_{-0.00028}$	$\chi_{\text{prior}}^2$	2.0	$7.8 (\nu: 5.7)$
$\Omega_{\text{m}} h^2$	0.1391	$0.1406^{+0.0091}_{-0.0082}$	$100\theta_{\text{eq}}$	0.8143	$0.816^{+0.013}_{-0.012}$	$\chi_{\text{CMB}}^2$	11926.3	$11943.7 (\nu: 17.3)$
$\Omega_\nu h^2$	0.00001	< 0.00186	$100\theta_{\text{s,eq}}$	0.4500	$0.4509^{+0.0067}_{-0.0063}$	$\chi_{\text{BAO}}^2$	5.31	$6.2 (\nu: 0.9)$
$\Omega_{\text{m}} h^3$	0.0934	$0.0947^{+0.011}_{-0.0093}$	$H(0.15)$	72.36	$72.5^{+3.5}_{-3.2}$			
$\sigma_8$	0.8137	$0.808^{+0.030}_{-0.034}$	$D_M(0.15)$	645.7	$645^{+30}_{-31}$			

Best-fit  $\chi_{\text{eff}}^2 = 11933.58$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.66$ ;  $\Delta\chi_{\text{eff}}^2 = 0.26$ ;  $R - 1 = 0.00614$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.90 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.62 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12.v3.2.29: 23.58 CamSpec like\_10.7HM.1400\_unified: 11498.22



## 8.21 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022256	$0.02230^{+0.00048}_{-0.00047}$	$S_8$	0.8240	$0.822^{+0.029}_{-0.030}$	$H(0.38)$	82.43	$82.7^{+3.5}_{-3.2}$
$\Omega_c h^2$	0.1169	$0.1180^{+0.0087}_{-0.0079}$	$\sigma_8 \Omega_m^{0.5}$	0.4513	$0.450^{+0.016}_{-0.016}$	$D_M(0.38)$	1538	$1534^{+67}_{-68}$
$100\theta_{MC}$	1.04122	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	0.6061	$0.603^{+0.020}_{-0.021}$	$H(0.51)$	89.05	$89.4^{+3.6}_{-3.3}$
$\tau$	0.0532	$0.055^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9922	$0.985^{+0.025}_{-0.032}$	$D_M(0.51)$	1993	$1988^{+85}_{-86}$
$\Sigma m_\nu$ [eV]	0.001	< 0.168	$r_{\text{drag}} h$	100.10	$99.9^{+2.3}_{-2.3}$	$H(0.61)$	94.58	$95.0^{+3.7}_{-3.4}$
$N_{\text{eff}}$	2.90	$2.98^{+0.53}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	2.440	$2.434^{+0.056}_{-0.057}$	$D_M(0.61)$	2320	$2313^{+97}_{-98}$
$\ln(10^{10} A_s)$	3.0331	$3.039^{+0.047}_{-0.043}$	$z_{\text{re}}$	7.52	$7.7^{+1.9}_{-2.0}$	$H(2.33)$	233.6	$234.8^{+7.6}_{-7.2}$
$n_s$	0.9629	$0.965^{+0.020}_{-0.019}$	$10^9 A_s$	2.076	$2.09^{+0.10}_{-0.088}$	$D_M(2.33)$	5810	$5787^{+210}_{-210}$
$y_{\text{cal}}$	1.0005	$1.0007^{+0.0062}_{-0.0060}$	$10^9 A_s e^{-2\tau}$	1.8665	$1.872^{+0.047}_{-0.046}$	$f\sigma_8(0.15)$	0.4554	$0.455^{+0.015}_{-0.016}$
$A_{100}^{\text{PS}}$	228	$238^{+60}_{-70}$	$D_{40}$	1228.3	$1228^{+34}_{-35}$	$\sigma_8(0.15)$	0.7523	$0.748^{+0.028}_{-0.030}$
$A_{143}^{\text{PS}}$	42.6	$38^{+20}_{-20}$	$D_{220}$	5720	$5726^{+97}_{-95}$	$f\sigma_8(0.38)$	0.4746	$0.473^{+0.015}_{-0.015}$
$A_{217}^{\text{PS}}$	104.7	$103^{+30}_{-30}$	$D_{810}$	2533.7	$2535^{+35}_{-34}$	$\sigma_8(0.38)$	0.6671	$0.663^{+0.026}_{-0.028}$
$A_{217}^{\text{CIB}}$	41.7	$39^{+20}_{-20}$	$D_{1420}$	817.5	$817^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4736	$0.472^{+0.015}_{-0.016}$
$A_{143}^{\text{tSZ}}$	6.47	< 8.78	$D_{2000}$	231.6	$231.0^{+5.2}_{-5.2}$	$\sigma_8(0.51)$	0.6244	$0.621^{+0.025}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	0.680	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	0.9629	$0.965^{+0.020}_{-0.019}$	$f\sigma_8(0.61)$	0.4689	$0.467^{+0.015}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	0.79	—	$Y_P$	0.2434	$0.2444^{+0.0071}_{-0.0069}$	$\sigma_8(0.61)$	0.5941	$0.591^{+0.024}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.47	—	$Y_P^{\text{BBN}}$	0.2447	$0.2457^{+0.0071}_{-0.0069}$	$f\sigma_8(2.33)$	0.2988	$0.298^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.557	$2.58^{+0.15}_{-0.14}$	$\sigma_8(2.33)$	0.3086	$0.307^{+0.013}_{-0.014}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.51}$	Age/Gyr	13.91	$13.86^{+0.50}_{-0.51}$	$f_{2000}^{143}$	28.4	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	0.967	$0.96^{+0.45}_{-0.44}$	$z_*$	1089.65	$1089.8^{+1.0}_{-0.99}$	$f_{2000}^{217}$	105.6	$106.4^{+5.9}_{-5.6}$
$A_{217}^{\text{dust}}$	0.982	$0.98^{+0.27}_{-0.27}$	$r_*$	146.06	$145.4^{+4.9}_{-4.9}$	$f_{2000}^{143 \times 217}$	30.8	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03^{+0.43}_{-0.43}$	$100\theta_*$	1.04147	$1.0413^{+0.0015}_{-0.0015}$	$\chi_{\text{lensing}}^2$	8.66	$9.30 (\nu: 0.3)$
$c_{100}$	0.99774	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	14.024	$13.96^{+0.46}_{-0.46}$	$\chi_{\text{small}}^2$	395.86	$397.0 (\nu: 1.5)$
$c_{217}$	1.00119	$1.0011^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	1059.32	$1059.6^{+1.9}_{-1.8}$	$\chi_{\text{lowl}}^2$	23.43	$23.3 (\nu: 0.6)$
$c_{TE}$	0.9954	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	148.8	$148.1^{+5.1}_{-5.1}$	$\chi_{\text{CamSpec}}^2$	11498.3	$11514.2 (\nu: 16.2)$
$c_{EE}$	0.9904	$0.992^{+0.014}_{-0.014}$	$k_D$	0.13956	$0.1400^{+0.0038}_{-0.0035}$	$\chi_{\text{JLA}}^2$	1034.88	$1035.06 (\nu: 0.1)$
$H_0$	67.28	$67.5^{+3.3}_{-3.1}$	$100\theta_D$	0.16051	$0.1607^{+0.0013}_{-0.0012}$	$\chi_{6\text{DF}}^2$	0.006	$0.047 (\nu: 0.0)$
$\Omega_\Lambda$	0.6925	$0.691^{+0.018}_{-0.019}$	$z_{\text{eq}}$	3391	$3383^{+64}_{-67}$	$\chi_{\text{MGS}}^2$	1.47	$1.40 (\nu: 0.1)$
$\Omega_m$	0.3075	$0.309^{+0.019}_{-0.018}$	$k_{\text{eq}}$	0.010250	$0.01028^{+0.00030}_{-0.00028}$	$\chi_{\text{DR12BAO}}^2$	3.77	$4.5 (\nu: 0.9)$
$\Omega_m h^2$	0.1392	$0.1407^{+0.0091}_{-0.0082}$	$100\theta_{\text{eq}}$	0.8150	$0.817^{+0.013}_{-0.012}$	$\chi_{\text{prior}}^2$	2.1	$7.8 (\nu: 5.8)$
$\Omega_\nu h^2$	0.00001	< 0.00178	$100\theta_{s,\text{eq}}$	0.4504	$0.4512^{+0.0065}_{-0.0061}$	$\chi_{\text{CMB}}^2$	11926.3	$11943.8 (\nu: 17.3)$
$\Omega_m h^3$	0.0936	$0.0950^{+0.011}_{-0.0093}$	$H(0.15)$	72.47	$72.7^{+3.4}_{-3.1}$	$\chi_{\text{BAO}}^2$	5.25	$6.0 (\nu: 0.6)$
$\sigma_8$	0.8139	$0.809^{+0.030}_{-0.032}$	$D_M(0.15)$	644.6	$643^{+29}_{-29}$			

Best-fit  $\chi_{\text{eff}}^2 = 12968.49$ ;  $\Delta\chi_{\text{eff}}^2 = -2.00$ ;  $\bar{\chi}_{\text{eff}}^2 = 12992.58$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.19$ ;  $R - 1 = 0.00612$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.02) MGS: 1.47 ( $\Delta$  0.19) DR12BAO: 3.77 ( $\Delta$  -0.46) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consect8: 8.66 ( $\Delta$  -0.31) small\_100x143\_offlike5\_EE\_Aplanc 395.86 ( $\Delta$  -0.19) commander\_dx12\_v3.2\_29: 23.43 ( $\Delta$  0.66) CamSpec like\_10.7HM.1400\_unified: 11498.34 ( $\Delta$  -1.83) SN - JLA Pantheon18: 1034.88 ( $\Delta$  -0.10)



## 8.22 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022234	$0.02227^{+0.00045}_{-0.00045}$	$S_8$	0.8245	$0.822^{+0.029}_{-0.030}$	$H(0.38)$	82.26	$82.5^{+2.9}_{-2.8}$
$\Omega_c h^2$	0.1167	$0.1176^{+0.0072}_{-0.0067}$	$\sigma_8 \Omega_m^{0.5}$	0.4516	$0.450^{+0.016}_{-0.016}$	$D_M(0.38)$	1542	$1539^{+59}_{-58}$
$100\theta_{MC}$	1.04126	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	0.6059	$0.603^{+0.019}_{-0.021}$	$H(0.51)$	88.88	$89.1^{+3.0}_{-2.8}$
$\tau$	0.0531	$0.054^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9925	$0.985^{+0.026}_{-0.032}$	$D_M(0.51)$	1998	$1994^{+74}_{-74}$
$\Sigma m_\nu$ [eV]	0.002	$< 0.172$	$r_{\text{drag}} h$	99.99	$99.7^{+2.3}_{-2.4}$	$H(0.61)$	94.41	$94.7^{+3.1}_{-2.9}$
$N_{\text{eff}}$	2.881	$2.95^{+0.44}_{-0.41}$	$\langle d^2 \rangle^{1/2}$	2.442	$2.436^{+0.055}_{-0.057}$	$D_M(0.61)$	2325	$2320^{+84}_{-84}$
$\ln(10^{10} A_s)$	3.0323	$3.037^{+0.045}_{-0.042}$	$z_{\text{re}}$	7.51	$7.6^{+1.9}_{-2.0}$	$H(2.33)$	233.4	$234.5^{+6.4}_{-6.0}$
$n_s$	0.9621	$0.964^{+0.017}_{-0.017}$	$10^9 A_s$	2.074	$2.085^{+0.095}_{-0.085}$	$D_M(2.33)$	5820	$5801^{+180}_{-180}$
$y_{\text{cal}}$	1.0004	$1.0007^{+0.0063}_{-0.0060}$	$10^9 A_s e^{-2\tau}$	1.8653	$1.870^{+0.042}_{-0.041}$	$f\sigma_8(0.15)$	0.4557	$0.455^{+0.015}_{-0.016}$
$A_{100}^{\text{PS}}$	225	$237^{+60}_{-60}$	$D_{40}$	1229.3	$1229^{+32}_{-33}$	$\sigma_8(0.15)$	0.7515	$0.746^{+0.026}_{-0.031}$
$A_{143}^{\text{PS}}$	49.7	$38^{+20}_{-20}$	$D_{220}$	5720	$5725^{+97}_{-94}$	$f\sigma_8(0.38)$	0.4746	$0.473^{+0.014}_{-0.015}$
$A_{217}^{\text{PS}}$	106.4	$103^{+30}_{-30}$	$D_{810}$	2533.7	$2534^{+35}_{-33}$	$\sigma_8(0.38)$	0.6663	$0.662^{+0.024}_{-0.028}$
$A_{217}^{\text{CIB}}$	40.5	$39^{+20}_{-20}$	$D_{1420}$	817.7	$817^{+13}_{-12}$	$f\sigma_8(0.51)$	0.4734	$0.472^{+0.014}_{-0.015}$
$A_{143}^{\text{tSZ}}$	6.50	$< 8.78$	$D_{2000}$	231.74	$231.1^{+4.9}_{-4.9}$	$\sigma_8(0.51)$	0.6236	$0.619^{+0.023}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	0.752	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	0.9621	$0.964^{+0.017}_{-0.017}$	$f\sigma_8(0.61)$	0.4686	$0.467^{+0.014}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	0.89	—	$Y_{\text{P}}$	0.2431	$0.2440^{+0.0060}_{-0.0059}$	$\sigma_8(0.61)$	0.5933	$0.589^{+0.022}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.93	—	$Y_{\text{P}}^{\text{BBN}}$	0.2444	$0.2453^{+0.0060}_{-0.0059}$	$f\sigma_8(2.33)$	0.2983	$0.297^{+0.011}_{-0.012}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.554	$2.57^{+0.13}_{-0.12}$	$\sigma_8(2.33)$	0.3081	$0.306^{+0.012}_{-0.014}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.51}$	$\text{Age/Gyr}$	13.933	$13.89^{+0.43}_{-0.43}$	$f_{2000}^{143}$	28.4	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	0.979	$0.96^{+0.45}_{-0.44}$	$z_*$	1089.63	$1089.73^{+0.92}_{-0.87}$	$f_{2000}^{217}$	105.4	$106.2^{+5.5}_{-5.4}$
$A_{217}^{\text{dust}}$	0.991	$0.98^{+0.27}_{-0.27}$	$r_*$	146.26	$145.7^{+4.1}_{-4.1}$	$f_{2000}^{143 \times 217}$	30.8	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	1.005	$1.03^{+0.43}_{-0.42}$	$100\theta_*$	1.04153	$1.0414^{+0.0013}_{-0.0013}$	$\chi_{\text{lensing}}^2$	8.62	$9.24 (\nu: 0.3)$
$c_{100}$	0.99787	$0.9976^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	14.043	$13.99^{+0.38}_{-0.39}$	$\chi_{\text{small}}^2$	395.85	$397.0 (\nu: 1.4)$
$c_{217}$	1.00123	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	1059.25	$1059.4^{+1.7}_{-1.6}$	$\chi_{\text{lowl}}^2$	23.55	$23.5 (\nu: 0.6)$
$c_{TE}$	0.9956	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	149.00	$148.4^{+4.3}_{-4.3}$	$\chi_{\text{CamSpec}}^2$	11498.3	$11513.7 (\nu: 15.6)$
$c_{EE}$	0.9905	$0.991^{+0.013}_{-0.014}$	$k_{\text{D}}$	0.13941	$0.1398^{+0.0031}_{-0.0030}$	$\chi_{\text{Aver15}}^2$	0.01	$0.35 (\nu: 0.1)$
$H_0$	67.11	$67.2^{+2.9}_{-2.7}$	$100\theta_{\text{D}}$	0.16047	$0.1606^{+0.0011}_{-0.0011}$	$\chi_{6\text{DF}}^2$	0.010	$0.058 (\nu: 0.0)$
$\Omega_\Lambda$	0.6916	$0.689^{+0.018}_{-0.020}$	$z_{\text{eq}}$	3394	$3387^{+64}_{-64}$	$\chi_{\text{MGS}}^2$	1.41	$1.31 (\nu: 0.1)$
$\Omega_{\text{m}}$	0.3084	$0.311^{+0.020}_{-0.018}$	$k_{\text{eq}}$	0.010244	$0.01027^{+0.00027}_{-0.00025}$	$\chi_{\text{DR12BAO}}^2$	3.88	$4.8 (\nu: 1.2)$
$\Omega_{\text{m}} h^2$	0.1389	$0.1404^{+0.0076}_{-0.0070}$	$100\theta_{\text{eq}}$	0.8144	$0.816^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	1.9	$7.8 (\nu: 5.8)$
$\Omega_\nu h^2$	0.00002	$< 0.00182$	$100\theta_{s,\text{eq}}$	0.4501	$0.4507^{+0.0062}_{-0.0061}$	$\chi_{\text{CMB}}^2$	11926.4	$11943.4 (\nu: 16.8)$
$\Omega_{\text{m}} h^3$	0.0932	$0.0943^{+0.0087}_{-0.0079}$	$H(0.15)$	72.30	$72.4^{+2.9}_{-2.7}$	$\chi_{\text{BAO}}^2$	5.30	$6.1 (\nu: 0.8)$
$\sigma_8$	0.8131	$0.808^{+0.027}_{-0.033}$	$D_M(0.15)$	646.2	$645^{+26}_{-26}$			

Best-fit  $\chi_{\text{eff}}^2 = 11933.58$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.68$ ;  $R - 1 = 0.00718$

$\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.88 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb.consext8: 8.62 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2.29: 23.55 CamSpec like\_10.7HM.1400.unified: 11498.33



### 8.23 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022234	$0.02227^{+0.00046}_{-0.00045}$	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.451^{+0.016}_{-0.016}$	$H(0.51)$	89.13	$89.3^{+2.8}_{-2.7}$
$\Omega_c h^2$	0.1174	$0.1181^{+0.0067}_{-0.0064}$	$\sigma_8 \Omega_m^{0.25}$	0.6073	$0.604^{+0.018}_{-0.020}$	$D_M(0.51)$	1992	$1990^{+71}_{-70}$
$100\theta_{MC}$	1.04113	$1.0411^{+0.0010}_{-0.0010}$	$\sigma_8/h^{0.5}$	0.9934	$0.986^{+0.026}_{-0.032}$	$H(0.61)$	94.69	$94.9^{+2.9}_{-2.8}$
$\tau$	0.0531	$0.054^{+0.020}_{-0.019}$	$r_{\text{drag}} h$	99.99	$99.7^{+2.3}_{-2.4}$	$D_M(0.61)$	2318	$2316^{+81}_{-80}$
$\Sigma m_\nu$ [eV]	0.001	< 0.174	$\langle d^2 \rangle^{1/2}$	2.442	$2.435^{+0.056}_{-0.057}$	$H(2.33)$	234.0	$234.9^{+5.9}_{-5.8}$
$N_{\text{eff}}$	2.925	$2.98^{+0.41}_{-0.39}$	$z_{\text{re}}$	7.52	$7.6^{+1.9}_{-2.0}$	$D_M(2.33)$	5803	$5790^{+170}_{-170}$
$\ln(10^{10} A_s)$	3.0332	$3.038^{+0.045}_{-0.041}$	$10^9 A_s$	2.076	$2.087^{+0.095}_{-0.085}$	$f\sigma_8(0.15)$	0.4566	$0.455^{+0.015}_{-0.015}$
$n_s$	0.9629	$0.964^{+0.017}_{-0.016}$	$10^9 A_s e^{-2\tau}$	1.8672	$1.872^{+0.040}_{-0.040}$	$\sigma_8(0.15)$	0.7533	$0.748^{+0.025}_{-0.030}$
$y_{\text{cal}}$	1.0001	$1.0006^{+0.0063}_{-0.0060}$	$D_{40}$	1227.8	$1228^{+32}_{-33}$	$f\sigma_8(0.38)$	0.4756	$0.474^{+0.014}_{-0.015}$
$A_{100}^{\text{PS}}$	231	$238^{+60}_{-60}$	$D_{220}$	5714	$5723^{+97}_{-93}$	$\sigma_8(0.38)$	0.6679	$0.663^{+0.023}_{-0.028}$
$A_{143}^{\text{PS}}$	42.3	$38^{+20}_{-20}$	$D_{810}$	2531.4	$2534^{+35}_{-33}$	$f\sigma_8(0.51)$	0.4745	$0.473^{+0.014}_{-0.015}$
$A_{217}^{\text{PS}}$	103.4	$103^{+30}_{-40}$	$D_{1420}$	816.1	$816^{+13}_{-12}$	$\sigma_8(0.51)$	0.6250	$0.620^{+0.022}_{-0.026}$
$A_{217}^{\text{CIB}}$	42.8	$39^{+20}_{-20}$	$D_{2000}$	231.02	$230.8^{+4.8}_{-4.6}$	$f\sigma_8(0.61)$	0.4697	$0.468^{+0.014}_{-0.015}$
$A_{143}^{\text{tSZ}}$	6.50	< 8.78	$n_{s,0.002}$	0.9629	$0.964^{+0.017}_{-0.016}$	$\sigma_8(0.61)$	0.5947	$0.590^{+0.021}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	0.661	$0.66^{+0.30}_{-0.33}$	$Y_P$	0.2437	$0.2444^{+0.0055}_{-0.0055}$	$f\sigma_8(2.33)$	0.2990	$0.297^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\text{CIB}}$	0.79	—	$Y_P^{\text{BBN}}$	0.2450	$0.2457^{+0.0055}_{-0.0055}$	$\sigma_8(2.33)$	0.3089	$0.307^{+0.012}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.38	—	$10^5 D/H$	2.569	$2.58^{+0.11}_{-0.11}$	$f_{2000}^{143}$	29.0	$29^{+8}_{-8}$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.893	$13.86^{+0.40}_{-0.40}$	$f_{2000}^{217}$	105.9	$106.4^{+5.3}_{-5.3}$
$A_{100}^{\text{dust}}$	0.998	$1.01^{+0.51}_{-0.51}$	$z_*$	1089.74	$1089.80^{+0.82}_{-0.80}$	$f_{2000}^{143 \times 217}$	31.3	$32^{+6}_{-6}$
$A_{143}^{\text{dust}}$	0.972	$0.96^{+0.45}_{-0.44}$	$r_*$	145.83	$145.4^{+3.9}_{-3.8}$	$\chi_{\text{lensing}}^2$	8.70	$9.28 (\nu: 0.3)$
$A_{217}^{\text{dust}}$	0.974	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	1.04138	$1.0413^{+0.0012}_{-0.0012}$	$\chi_{\text{small}}^2$	395.85	$396.9 (\nu: 1.4)$
$A_{143 \times 217}^{\text{dust}}$	1.008	$1.03^{+0.43}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	14.003	$13.96^{+0.36}_{-0.36}$	$\chi_{\text{lowl}}^2$	23.46	$23.4 (\nu: 0.5)$
$c_{100}$	0.99768	$0.9976^{+0.0027}_{-0.0028}$	$z_{\text{drag}}$	1059.32	$1059.5^{+1.6}_{-1.6}$	$\chi_{\text{CamSpec}}^2$	11498.3	$11513.7 (\nu: 15.5)$
$c_{217}$	1.00121	$1.0011^{+0.0040}_{-0.0040}$	$r_{\text{drag}}$	148.55	$148.1^{+4.1}_{-4.0}$	$\chi_{\text{Aver15}}^2$	0.00	$0.33 (\nu: 0.1)$
$c_{TE}$	0.9958	$0.996^{+0.013}_{-0.013}$	$k_D$	0.13969	$0.1400^{+0.0029}_{-0.0029}$	$\chi_{\text{Cooke17}}^2$	0.27	$0.38 (\nu: 0.1)$
$c_{EE}$	0.9910	$0.992^{+0.013}_{-0.013}$	$100\theta_D$	0.16060	$0.16071^{+0.00099}_{-0.00095}$	$\chi_{6\text{DF}}^2$	0.010	$0.057 (\nu: 0.0)$
$H_0$	67.31	$67.3^{+2.8}_{-2.7}$	$z_{\text{eq}}$	3393	$3386^{+64}_{-63}$	$\chi_{\text{MGS}}^2$	1.41	$1.32 (\nu: 0.1)$
$\Omega_\Lambda$	0.6917	$0.689^{+0.018}_{-0.020}$	$k_{\text{eq}}$	0.010271	$0.01028^{+0.00025}_{-0.00025}$	$\chi_{\text{DR12BAO}}^2$	3.89	$4.8 (\nu: 1.2)$
$\Omega_m$	0.3083	$0.311^{+0.020}_{-0.018}$	$100\theta_{\text{eq}}$	0.8146	$0.816^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	2.1	$7.8 (\nu: 5.8)$
$\Omega_m h^2$	0.1397	$0.1408^{+0.0071}_{-0.0067}$	$100\theta_{s,\text{eq}}$	0.4502	$0.4509^{+0.0062}_{-0.0060}$	$\chi_{\text{CMB}}^2$	11926.3	$11943.3 (\nu: 16.7)$
$\Omega_\nu h^2$	0.00001	< 0.00184	$H(0.15)$	72.52	$72.6^{+2.8}_{-2.6}$	$\chi_{\text{BAO}}^2$	5.31	$6.1 (\nu: 0.8)$
$\Omega_m h^3$	0.0940	$0.0949^{+0.0081}_{-0.0075}$	$D_M(0.15)$	644.3	$644^{+25}_{-25}$	$\chi_{\text{Abund}}^2$	0.27	$0.72 (\nu: 0.2)$
$\sigma_8$	0.8150	$0.809^{+0.026}_{-0.032}$	$H(0.38)$	82.50	$82.6^{+2.8}_{-2.7}$			
$S_8$	0.8262	$0.823^{+0.029}_{-0.029}$	$D_M(0.38)$	1537	$1536^{+57}_{-56}$			

Best-fit  $\chi_{\text{eff}}^2 = 11933.95$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.95$ ;  $R - 1 = 0.00786$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.00 D.Cooke2017: 0.27 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.89 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.70  
simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12.v3.2\_29: 23.46 CamSpec like\_10.7HM\_1400\_unified: 11498.26



## 8.24 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02230^{+0.00047}_{-0.00047}$	$S_8$	$0.822^{+0.028}_{-0.030}$	$H(0.38)$	$82.7^{+3.5}_{-3.2}$
$\Omega_c h^2$	$0.1180^{+0.0086}_{-0.0078}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.016}_{-0.016}$	$D_M(0.38)$	$1534^{+67}_{-67}$
$100\theta_{MC}$	$1.0411^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.020}_{-0.021}$	$H(0.51)$	$89.4^{+3.6}_{-3.3}$
$\tau$	$0.056^{+0.018}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.986^{+0.025}_{-0.032}$	$D_M(0.51)$	$1987^{+84}_{-86}$
$\Sigma m_\nu$ [eV]	$< 0.169$	$r_{\text{drag}} h$	$99.9^{+2.3}_{-2.3}$	$H(0.61)$	$95.0^{+3.7}_{-3.4}$
$N_{\text{eff}}$	$2.98^{+0.53}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.055}_{-0.056}$	$D_M(0.61)$	$2313^{+96}_{-98}$
$\ln(10^{10} A_s)$	$3.040^{+0.046}_{-0.037}$	$z_{\text{re}}$	$< 9.43$	$H(2.33)$	$234.8^{+7.6}_{-7.2}$
$n_s$	$0.965^{+0.020}_{-0.019}$	$10^9 A_s$	$2.092^{+0.098}_{-0.076}$	$D_M(2.33)$	$5786^{+210}_{-210}$
$y_{\text{cal}}$	$1.0007^{+0.0062}_{-0.0060}$	$10^9 A_s e^{-2\tau}$	$1.872^{+0.047}_{-0.046}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.016}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-70}$	$D_{40}$	$1228^{+33}_{-35}$	$\sigma_8(0.15)$	$0.748^{+0.028}_{-0.031}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5725^{+97}_{-94}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.015}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+35}_{-34}$	$\sigma_8(0.38)$	$0.664^{+0.025}_{-0.028}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.472^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.78$	$D_{2000}$	$231.0^{+5.2}_{-5.2}$	$\sigma_8(0.51)$	$0.621^{+0.024}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.965^{+0.020}_{-0.019}$	$f\sigma_8(0.61)$	$0.468^{+0.015}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.2444^{+0.0071}_{-0.0069}$	$\sigma_8(0.61)$	$0.591^{+0.024}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2458^{+0.0071}_{-0.0069}$	$f\sigma_8(2.33)$	$0.298^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	—	$10^5 \text{D/H}$	$2.58^{+0.15}_{-0.13}$	$\sigma_8(2.33)$	$0.307^{+0.013}_{-0.014}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	Age/Gyr	$13.85^{+0.50}_{-0.50}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.44}$	$z_*$	$1089.8^{+1.0}_{-0.98}$	$f_{2000}^{217}$	$106.4^{+5.8}_{-5.6}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$145.4^{+4.9}_{-4.9}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.43}$	$100\theta_*$	$1.0413^{+0.0015}_{-0.0015}$	$\chi_{\text{lensing}}^2$	$9.25 (\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.45}_{-0.46}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$z_{\text{drag}}$	$1059.6^{+1.9}_{-1.9}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.6)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$148.1^{+5.1}_{-5.1}$	$\chi_{\text{CamSpec}}^2$	$11514.1 (\nu: 16.2)$
$c_{EE}$	$0.992^{+0.014}_{-0.014}$	$k_{\text{D}}$	$0.1401^{+0.0038}_{-0.0035}$	$\chi_{\text{JLA}}^2$	$1035.05 (\nu: 0.1)$
$H_0$	$67.5^{+3.4}_{-3.1}$	$100\theta_{\text{D}}$	$0.1607^{+0.0013}_{-0.0012}$	$\chi_{6\text{DF}}^2$	$0.045 (\nu: 0.0)$
$\Omega_\Lambda$	$0.691^{+0.018}_{-0.019}$	$z_{\text{eq}}$	$3382^{+64}_{-66}$	$\chi_{\text{MGS}}^2$	$1.41 (\nu: 0.1)$
$\Omega_m$	$0.309^{+0.019}_{-0.018}$	$k_{\text{eq}}$	$0.01027^{+0.00030}_{-0.00028}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.9)$
$\Omega_m h^2$	$0.1408^{+0.0090}_{-0.0082}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_\nu h^2$	$< 0.00180$	$100\theta_{s,\text{eq}}$	$0.4513^{+0.0065}_{-0.0061}$	$\chi_{\text{CMB}}^2$	$11943.7 (\nu: 17.2)$
$\Omega_m h^3$	$0.0950^{+0.011}_{-0.0092}$	$H(0.15)$	$72.7^{+3.4}_{-3.1}$	$\chi_{\text{BAO}}^2$	$5.9 (\nu: 0.5)$
$\sigma_8$	$0.810^{+0.029}_{-0.032}$	$D_M(0.15)$	$643^{+29}_{-30}$		

$$\bar{\chi}_{\text{eff}}^2 = 12992.45; \Delta\bar{\chi}_{\text{eff}}^2 = 0.20; R - 1 = 0.00689$$



## 9 nnu+yhe

### 9.1 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02219	$0.02222^{+0.00061}_{-0.00058}$	$\Omega_m h^3$	0.0905	$0.091^{+0.016}_{-0.013}$	$100\theta_{\text{eq}}$	0.8098	$0.811^{+0.020}_{-0.020}$
$\Omega_c h^2$	0.1151	$0.116^{+0.014}_{-0.011}$	$\sigma_8$	0.7983	$0.800^{+0.035}_{-0.031}$	$100\theta_{\text{s,eq}}$	0.4477	$0.448^{+0.010}_{-0.010}$
$100\theta_{\text{MC}}$	1.04185	$1.0419^{+0.0034}_{-0.0037}$	$S_8$	0.8246	$0.824^{+0.043}_{-0.040}$	$H(0.15)$	70.9	$71.2^{+5.4}_{-4.7}$
$\tau$	0.0527	$0.053^{+0.022}_{-0.023}$	$\sigma_8 \Omega_m^{0.5}$	0.4516	$0.452^{+0.024}_{-0.022}$	$D_{\text{M}}(0.15)$	659.9	$657^{+47}_{-48}$
$N_{\text{eff}}$	2.74	$2.78^{+0.91}_{-0.74}$	$\sigma_8 \Omega_m^{0.25}$	0.6004	$0.601^{+0.025}_{-0.024}$	$H(0.38)$	81.0	$81.3^{+5.5}_{-4.8}$
$Y_{\text{P}}$	0.255	$0.256^{+0.054}_{-0.061}$	$\sigma_8/h^{0.5}$	0.9853	$0.985^{+0.031}_{-0.029}$	$D_{\text{M}}(0.38)$	1572	$1566^{+110}_{-110}$
$\ln(10^{10} A_{\text{s}})$	3.029	$3.031^{+0.051}_{-0.051}$	$r_{\text{drag}} h$	98.58	$98.8^{+3.4}_{-3.5}$	$H(0.51)$	87.6	$88.0^{+5.6}_{-4.9}$
$n_{\text{s}}$	0.9609	$0.962^{+0.025}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	2.440	$2.438^{+0.082}_{-0.075}$	$D_{\text{M}}(0.51)$	2034	$2027^{+130}_{-140}$
$y_{\text{cal}}$	1.0003	$1.0005^{+0.0064}_{-0.0066}$	$z_{\text{re}}$	7.50	$7.5^{+2.1}_{-2.5}$	$H(0.61)$	93.2	$93.5^{+5.8}_{-5.0}$
$A_{100}^{\text{PS}}$	232	$240^{+70}_{-70}$	$10^9 A_{\text{s}}$	2.069	$2.07^{+0.11}_{-0.10}$	$D_{\text{M}}(0.61)$	2366	$2358^{+150}_{-160}$
$A_{143}^{\text{PS}}$	44.4	$40^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.862	$1.865^{+0.054}_{-0.053}$	$H(2.33)$	232.2	$233^{+12}_{-9.9}$
$A_{217}^{\text{PS}}$	106.8	$102^{+30}_{-40}$	$D_{40}$	1228.2	$1228^{+48}_{-45}$	$D_{\text{M}}(2.33)$	5889	$5872^{+320}_{-340}$
$A_{217}^{\text{CIB}}$	39.8	$40^{+20}_{-20}$	$D_{220}$	5711	$5715^{+100}_{-99}$	$f\sigma_8(0.15)$	0.4555	$0.455^{+0.022}_{-0.021}$
$A_{143}^{\text{tSZ}}$	5.46	$< 8.80$	$D_{810}$	2533.2	$2533^{+35}_{-35}$	$\sigma_8(0.15)$	0.7368	$0.738^{+0.033}_{-0.030}$
$r_{143 \times 217}^{\text{PS}}$	0.731	$0.66^{+0.31}_{-0.32}$	$D_{1420}$	816.8	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4716	$0.472^{+0.020}_{-0.019}$
$r_{143 \times 217}^{\text{CIB}}$	0.65	—	$D_{2000}$	231.0	$230.4^{+6.1}_{-6.2}$	$\sigma_8(0.38)$	0.6522	$0.654^{+0.031}_{-0.028}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.62	—	$n_{\text{s},0.002}$	0.9609	$0.962^{+0.025}_{-0.025}$	$f\sigma_8(0.51)$	0.4693	$0.470^{+0.019}_{-0.018}$
$A^{\text{kSZ}}$	1.6	—	$Y_{\text{P}}$	0.255	$0.256^{+0.054}_{-0.061}$	$\sigma_8(0.51)$	0.6100	$0.611^{+0.029}_{-0.027}$
$A_{100}^{\text{dust}}$	0.99	$1.01^{+0.51}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	0.256	$0.258^{+0.054}_{-0.061}$	$f\sigma_8(0.61)$	0.4637	$0.464^{+0.019}_{-0.018}$
$A_{143}^{\text{dust}}$	0.963	$0.96^{+0.45}_{-0.45}$	Age/Gyr	14.10	$14.06^{+0.76}_{-0.80}$	$\sigma_8(0.61)$	0.5802	$0.582^{+0.028}_{-0.026}$
$A_{217}^{\text{dust}}$	0.978	$0.97^{+0.27}_{-0.26}$	$z_*$	1089.96	$1090.1^{+1.6}_{-1.5}$	$f\sigma_8(2.33)$	0.2922	$0.293^{+0.015}_{-0.014}$
$A_{143 \times 217}^{\text{dust}}$	1.046	$1.02^{+0.43}_{-0.41}$	$r_*$	147.4	$147.1^{+7.3}_{-7.9}$	$\sigma_8(2.33)$	0.3009	$0.302^{+0.016}_{-0.015}$
$c_{100}$	0.99771	$0.9975^{+0.0026}_{-0.0027}$	$100\theta_*$	1.04190	$1.0419^{+0.0025}_{-0.0026}$	$f_{2000}^{143}$	29.0	$30^{+10}_{-10}$
$c_{217}$	1.00096	$1.0011^{+0.0042}_{-0.0042}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.15	$14.12^{+0.67}_{-0.73}$	$f_{2000}^{217}$	106.2	$107.0^{+7.0}_{-6.7}$
$c_{\text{TE}}$	0.9966	$0.997^{+0.014}_{-0.014}$	$z_{\text{drag}}$	1059.36	$1059.5^{+2.6}_{-2.6}$	$f_{2000}^{143 \times 217}$	31.7	$32^{+8}_{-8}$
$c_{\text{EE}}$	0.9917	$0.993^{+0.018}_{-0.017}$	$r_{\text{drag}}$	150.2	$149.8^{+7.5}_{-8.1}$	$\chi_{\text{simall}}^2$	395.87	$396.9 (\nu: 1.4)$
$H_0$	65.6	$65.9^{+5.3}_{-4.7}$	$k_{\text{D}}$	0.1382	$0.1384^{+0.0078}_{-0.0063}$	$\chi_{\text{lowl}}^2$	23.44	$23.5 (\nu: 1.2)$
$\Omega_{\Lambda}$	0.6799	$0.681^{+0.027}_{-0.031}$	$100\theta_{\text{D}}$	0.16070	$0.1609^{+0.0019}_{-0.0018}$	$\chi_{\text{CamSpec}}^2$	11498.8	$11515.3 (\nu: 18.4)$
$\Omega_{\text{m}}$	0.3201	$0.319^{+0.031}_{-0.027}$	$z_{\text{eq}}$	3422	$3418^{+120}_{-110}$	$\chi_{\text{prior}}^2$	1.9	$7.9 (\nu: 6.0)$
$\Omega_{\text{m}} h^2$	0.1379	$0.139^{+0.014}_{-0.011}$	$k_{\text{eq}}$	0.010225	$0.01024^{+0.00043}_{-0.00038}$	$\chi_{\text{CMB}}^2$	11918.1	$11935.7 (\nu: 19.1)$

Best-fit  $\chi_{\text{eff}}^2 = 11920.00$ ;  $\Delta\chi_{\text{eff}}^2 = -0.76$ ;  $\bar{\chi}_{\text{eff}}^2 = 11943.57$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.12$ ;  $R - 1 = 0.00989$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.03) commander\_dx12.v3.2.29: 23.44 ( $\Delta$  0.44) CamSpec like\_10.7HM\_1400\_unified: 11498.75 ( $\Delta$  -0.90)



## 9.2 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02233^{+0.00055}_{-0.00051}$	$S_8$	$0.816^{+0.035}_{-0.036}$	$H(0.38)$	$82.2^{+4.9}_{-4.1}$
$\Omega_c h^2$	$0.116^{+0.014}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.019}_{-0.020}$	$D_M(0.38)$	$1545^{+85}_{-92}$
$100\theta_{MC}$	$1.0418^{+0.0035}_{-0.0036}$	$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.024}_{-0.024}$	$H(0.51)$	$88.8^{+5.1}_{-4.2}$
$\tau$	$0.054^{+0.021}_{-0.020}$	$\sigma_8/h^{0.5}$	$0.980^{+0.028}_{-0.026}$	$D_M(0.51)$	$2002^{+110}_{-120}$
$N_{\text{eff}}$	$2.88^{+0.87}_{-0.69}$	$r_{\text{drag}} h$	$99.7^{+2.4}_{-2.2}$	$H(0.61)$	$94.4^{+5.3}_{-4.4}$
$Y_P$	$0.257^{+0.055}_{-0.060}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.067}_{-0.066}$	$D_M(0.61)$	$2330^{+120}_{-130}$
$\ln(10^{10} A_s)$	$3.036^{+0.053}_{-0.049}$	$z_{\text{re}}$	$7.6^{+2.0}_{-2.1}$	$H(2.33)$	$234^{+12}_{-9.8}$
$n_s$	$0.967^{+0.021}_{-0.021}$	$10^9 A_s$	$2.08^{+0.11}_{-0.10}$	$D_M(2.33)$	$5823^{+280}_{-300}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.869^{+0.050}_{-0.055}$	$f\sigma_8(0.15)$	$0.452^{+0.019}_{-0.019}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$D_{40}$	$1220^{+43}_{-38}$	$\sigma_8(0.15)$	$0.741^{+0.031}_{-0.030}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5719^{+110}_{-100}$	$f\sigma_8(0.38)$	$0.470^{+0.019}_{-0.019}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2534^{+36}_{-36}$	$\sigma_8(0.38)$	$0.657^{+0.029}_{-0.027}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	$0.469^{+0.019}_{-0.019}$
$A_{143}^{\text{tSZ}}$	$< 8.97$	$D_{2000}$	$230.1^{+5.9}_{-6.2}$	$\sigma_8(0.51)$	$0.615^{+0.027}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.967^{+0.021}_{-0.021}$	$f\sigma_8(0.61)$	$0.464^{+0.019}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.257^{+0.055}_{-0.060}$	$\sigma_8(0.61)$	$0.585^{+0.026}_{-0.024}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.258^{+0.055}_{-0.061}$	$f\sigma_8(2.33)$	$0.295^{+0.014}_{-0.012}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.94^{+0.68}_{-0.73}$	$\sigma_8(2.33)$	$0.304^{+0.014}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.51}$	$z_*$	$1090.1^{+1.5}_{-1.6}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143}^{\text{dust}}$	$0.97^{+0.46}_{-0.46}$	$r_*$	$146.3^{+6.9}_{-7.4}$	$f_{2000}^{217}$	$107.3^{+6.6}_{-6.6}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	$1.0417^{+0.0024}_{-0.0025}$	$f_{2000}^{143 \times 217}$	$33^{+8}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$14.04^{+0.63}_{-0.68}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$z_{\text{drag}}$	$1059.9^{+2.4}_{-2.3}$	$\chi_{\text{lowl}}^2$	$22.7 (\nu: 0.7)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$r_{\text{drag}}$	$149.0^{+7.1}_{-7.6}$	$\chi_{\text{CamSpec}}^2$	$11516.0 (\nu: 18.2)$
$c_{TE}$	$0.998^{+0.014}_{-0.013}$	$k_D$	$0.1390^{+0.0074}_{-0.0061}$	$\chi_{6\text{DF}}^2$	$0.058 (\nu: 0.0)$
$c_{EE}$	$0.994^{+0.017}_{-0.017}$	$100\theta_D$	$0.1610^{+0.0017}_{-0.0017}$	$\chi_{\text{MGS}}^2$	$1.32 (\nu: 0.1)$
$H_0$	$67.0^{+4.4}_{-3.7}$	$z_{\text{eq}}$	$3390^{+87}_{-88}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.1)$
$\Omega_\Lambda$	$0.689^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01023^{+0.00044}_{-0.00040}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_m$	$0.311^{+0.019}_{-0.019}$	$100\theta_{\text{eq}}$	$0.816^{+0.015}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\Omega_m h^2$	$0.139^{+0.014}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4508^{+0.0077}_{-0.0073}$	$\chi_{\text{CMB}}^2$	$11935.7 (\nu: 18.6)$
$\Omega_m h^3$	$0.093^{+0.015}_{-0.012}$	$H(0.15)$	$72.2^{+4.5}_{-3.8}$		
$\sigma_8$	$0.802^{+0.033}_{-0.032}$	$D_M(0.15)$	$648^{+37}_{-39}$		

$$\bar{\chi}_{\text{eff}}^2 = 11949.72; \Delta\bar{\chi}_{\text{eff}}^2 = 1.44; R - 1 = 0.01974$$



### 9.3 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02220^{+0.00062}_{-0.00057}$	$\sigma_8$	$0.800^{+0.030}_{-0.029}$	$H(0.15)$	$71.0^{+5.2}_{-4.7}$
$\Omega_c h^2$	$0.116^{+0.013}_{-0.011}$	$S_8$	$0.827^{+0.034}_{-0.033}$	$D_M(0.15)$	$659^{+48}_{-47}$
$100\theta_{MC}$	$1.0419^{+0.0034}_{-0.0036}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.019}_{-0.018}$	$H(0.38)$	$81.1^{+5.2}_{-4.8}$
$\tau$	$0.054^{+0.021}_{-0.020}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.020}_{-0.020}$	$D_M(0.38)$	$1570^{+110}_{-110}$
$N_{\text{eff}}$	$2.76^{+0.86}_{-0.73}$	$\sigma_8/h^{0.5}$	$0.987^{+0.025}_{-0.024}$	$H(0.51)$	$87.8^{+5.4}_{-4.9}$
$Y_P$	$0.255^{+0.056}_{-0.060}$	$r_{\text{drag}} h$	$98.6^{+3.4}_{-3.2}$	$D_M(0.51)$	$2033^{+140}_{-130}$
$\ln(10^{10} A_s)$	$3.033^{+0.046}_{-0.044}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.067}_{-0.065}$	$H(0.61)$	$93.4^{+5.5}_{-5.1}$
$n_s$	$0.961^{+0.024}_{-0.024}$	$z_{\text{re}}$	$7.6^{+2.0}_{-2.1}$	$D_M(0.61)$	$2364^{+160}_{-150}$
$y_{\text{cal}}$	$1.0006^{+0.0063}_{-0.0063}$	$10^9 A_s$	$2.075^{+0.098}_{-0.090}$	$H(2.33)$	$233^{+11}_{-9.6}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.864^{+0.051}_{-0.052}$	$D_M(2.33)$	$5883^{+330}_{-320}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1231^{+44}_{-42}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5717^{+100}_{-98}$	$\sigma_8(0.15)$	$0.739^{+0.030}_{-0.029}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.473^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$D_{1420}$	$816^{+13}_{-14}$	$\sigma_8(0.38)$	$0.654^{+0.028}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{2000}$	$230.6^{+5.8}_{-6.1}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.961^{+0.024}_{-0.024}$	$\sigma_8(0.51)$	$0.612^{+0.027}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.255^{+0.056}_{-0.060}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.257^{+0.056}_{-0.060}$	$\sigma_8(0.61)$	$0.582^{+0.026}_{-0.025}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	Age/Gyr	$14.08^{+0.78}_{-0.77}$	$f\sigma_8(2.33)$	$0.293^{+0.014}_{-0.013}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1090.0^{+1.5}_{-1.6}$	$\sigma_8(2.33)$	$0.302^{+0.015}_{-0.014}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$147.2^{+7.1}_{-7.5}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.42}_{-0.42}$	$100\theta_*$	$1.0419^{+0.0025}_{-0.0025}$	$f_{2000}^{217}$	$106.8^{+6.7}_{-6.7}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$14.13^{+0.65}_{-0.69}$	$f_{2000}^{143 \times 217}$	$32^{+8}_{-8}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	$1059.5^{+2.5}_{-2.5}$	$\chi_{\text{lensing}}^2$	$9.05 (\nu: 0.3)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$150.0^{+7.3}_{-7.7}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.3)$
$c_{EE}$	$0.992^{+0.017}_{-0.017}$	$k_D$	$0.1383^{+0.0072}_{-0.0064}$	$\chi_{\text{lowl}}^2$	$23.8 (\nu: 1.2)$
$H_0$	$65.7^{+5.2}_{-4.7}$	$100\theta_D$	$0.1608^{+0.0018}_{-0.0018}$	$\chi_{\text{CamSpec}}^2$	$11514.7 (\nu: 17.3)$
$\Omega_\Lambda$	$0.679^{+0.028}_{-0.029}$	$z_{\text{eq}}$	$3424^{+110}_{-110}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m$	$0.321^{+0.029}_{-0.028}$	$k_{\text{eq}}$	$0.01024^{+0.00040}_{-0.00035}$	$\chi_{\text{CMB}}^2$	$11944.4 (\nu: 18.8)$
$\Omega_m h^2$	$0.138^{+0.013}_{-0.011}$	$100\theta_{\text{eq}}$	$0.810^{+0.021}_{-0.020}$		
$\Omega_m h^3$	$0.091^{+0.015}_{-0.013}$	$100\theta_{s,\text{eq}}$	$0.448^{+0.011}_{-0.0099}$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.22; \Delta\bar{\chi}_{\text{eff}}^2 = 0.78; R - 1 = 0.01363$$



#### 9.4 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02232^{+0.00054}_{-0.00051}$	$S_8$	$0.820^{+0.030}_{-0.029}$	$H(0.38)$	$82.1^{+4.7}_{-4.0}$
$\Omega_c h^2$	$0.116^{+0.013}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.016}_{-0.016}$	$D_M(0.38)$	$1548^{+83}_{-91}$
$100\theta_{MC}$	$1.0417^{+0.0035}_{-0.0036}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.019}_{-0.019}$	$H(0.51)$	$88.7^{+4.9}_{-4.1}$
$\tau$	$0.056^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	$0.983^{+0.023}_{-0.022}$	$D_M(0.51)$	$2005^{+100}_{-120}$
$N_{\text{eff}}$	$2.88^{+0.79}_{-0.68}$	$r_{\text{drag}} h$	$99.5^{+2.3}_{-2.2}$	$H(0.61)$	$94.3^{+5.1}_{-4.3}$
$Y_P$	$0.256^{+0.054}_{-0.061}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.056}_{-0.055}$	$D_M(0.61)$	$2333^{+120}_{-130}$
$\ln(10^{10} A_s)$	$3.040^{+0.041}_{-0.041}$	$z_{\text{re}}$	$7.8^{+1.9}_{-2.0}$	$H(2.33)$	$234^{+11}_{-9.7}$
$n_s$	$0.966^{+0.020}_{-0.021}$	$10^9 A_s$	$2.091^{+0.088}_{-0.084}$	$D_M(2.33)$	$5828^{+280}_{-290}$
$y_{\text{cal}}$	$1.0008^{+0.0064}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.047}_{-0.049}$	$f\sigma_8(0.15)$	$0.454^{+0.016}_{-0.016}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$D_{40}$	$1224^{+41}_{-39}$	$\sigma_8(0.15)$	$0.743^{+0.027}_{-0.027}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5724^{+110}_{-98}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.015}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-35}$	$\sigma_8(0.38)$	$0.658^{+0.026}_{-0.025}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	$0.470^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.94$	$D_{2000}$	$230.3^{+5.8}_{-6.4}$	$\sigma_8(0.51)$	$0.616^{+0.025}_{-0.023}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.966^{+0.020}_{-0.021}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.256^{+0.054}_{-0.061}$	$\sigma_8(0.61)$	$0.586^{+0.024}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.257^{+0.054}_{-0.061}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.95^{+0.66}_{-0.70}$	$\sigma_8(2.33)$	$0.305^{+0.013}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.52}$	$z_*$	$1090.0^{+1.5}_{-1.6}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143}^{\text{dust}}$	$0.96^{+0.47}_{-0.45}$	$r_*$	$146.3^{+6.8}_{-7.0}$	$f_{2000}^{217}$	$107.2^{+6.9}_{-6.8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	$1.0417^{+0.0024}_{-0.0025}$	$f_{2000}^{143 \times 217}$	$32^{+8}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$14.04^{+0.62}_{-0.65}$	$\chi_{\text{lensing}}^2$	$9.27 (\nu: 0.4)$
$c_{100}$	$0.9976^{+0.0026}_{-0.0029}$	$z_{\text{drag}}$	$1059.9^{+2.3}_{-2.4}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.7)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$r_{\text{drag}}$	$149.0^{+6.9}_{-7.3}$	$\chi_{\text{lowl}}^2$	$23.0 (\nu: 0.8)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$k_D$	$0.1390^{+0.0069}_{-0.0060}$	$\chi_{\text{CamSpec}}^2$	$11515.3 (\nu: 17.8)$
$c_{EE}$	$0.993^{+0.017}_{-0.017}$	$100\theta_D$	$0.1610^{+0.0017}_{-0.0018}$	$\chi_{6\text{DF}}^2$	$0.068 (\nu: 0.0)$
$H_0$	$66.8^{+4.4}_{-3.7}$	$z_{\text{eq}}$	$3395^{+85}_{-88}$	$\chi_{\text{MGS}}^2$	$1.22 (\nu: 0.1)$
$\Omega_\Lambda$	$0.688^{+0.019}_{-0.018}$	$k_{\text{eq}}$	$0.01024^{+0.00041}_{-0.00037}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.3)$
$\Omega_m$	$0.312^{+0.018}_{-0.019}$	$100\theta_{\text{eq}}$	$0.815^{+0.015}_{-0.014}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_m h^2$	$0.139^{+0.013}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4504^{+0.0079}_{-0.0072}$	$\chi_{\text{CMB}}^2$	$11944.7 (\nu: 19.1)$
$\Omega_m h^3$	$0.093^{+0.015}_{-0.012}$	$H(0.15)$	$72.1^{+4.5}_{-3.7}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.9)$
$\sigma_8$	$0.804^{+0.029}_{-0.028}$	$D_M(0.15)$	$649^{+36}_{-40}$		

$$\bar{\chi}_{\text{eff}}^2 = 11958.81; \Delta\bar{\chi}_{\text{eff}}^2 = 1.41; R - 1 = 0.01792$$



## 9.5 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02223^{+0.00061}_{-0.00058}$	$\Omega_m h^3$	$0.092^{+0.016}_{-0.013}$	$100\theta_{\text{eq}}$	$0.811^{+0.020}_{-0.020}$
$\Omega_c h^2$	$0.116^{+0.014}_{-0.011}$	$\sigma_8$	$0.801^{+0.034}_{-0.030}$	$100\theta_{\text{s,eq}}$	$0.448^{+0.010}_{-0.010}$
$100\theta_{\text{MC}}$	$1.0419^{+0.0034}_{-0.0037}$	$S_8$	$0.825^{+0.044}_{-0.040}$	$H(0.15)$	$71.3^{+5.4}_{-4.7}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.024}_{-0.022}$	$D_{\text{M}}(0.15)$	$657^{+48}_{-48}$
$N_{\text{eff}}$	$2.78^{+0.88}_{-0.74}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.024}_{-0.023}$	$H(0.38)$	$81.3^{+5.5}_{-4.8}$
$Y_{\text{P}}$	$0.257^{+0.053}_{-0.060}$	$\sigma_8/h^{0.5}$	$0.986^{+0.030}_{-0.028}$	$D_{\text{M}}(0.38)$	$1565^{+110}_{-110}$
$\ln(10^{10} A_{\text{s}})$	$3.034^{+0.048}_{-0.040}$	$r_{\text{drag}} h$	$98.8^{+3.4}_{-3.4}$	$H(0.51)$	$88.0^{+5.6}_{-4.9}$
$n_{\text{s}}$	$0.962^{+0.025}_{-0.024}$	$\langle d^2 \rangle^{1/2}$	$2.440^{+0.082}_{-0.075}$	$D_{\text{M}}(0.51)$	$2026^{+140}_{-140}$
$y_{\text{cal}}$	$1.0005^{+0.0064}_{-0.0066}$	$z_{\text{re}}$	$< 9.47$	$H(0.61)$	$93.6^{+5.8}_{-5.0}$
$A_{100}^{\text{PS}}$	$240^{+70}_{-70}$	$10^9 A_{\text{s}}$	$2.08^{+0.10}_{-0.082}$	$D_{\text{M}}(0.61)$	$2357^{+150}_{-160}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.865^{+0.054}_{-0.054}$	$H(2.33)$	$233^{+12}_{-10}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{40}$	$1227^{+47}_{-45}$	$D_{\text{M}}(2.33)$	$5871^{+320}_{-330}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{220}$	$5715^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.456^{+0.022}_{-0.021}$
$A_{143}^{\text{tSZ}}$	$< 8.80$	$D_{810}$	$2533^{+35}_{-35}$	$\sigma_8(0.15)$	$0.740^{+0.032}_{-0.029}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$D_{1420}$	$816^{+13}_{-14}$	$f\sigma_8(0.38)$	$0.472^{+0.019}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$230.4^{+6.0}_{-6.2}$	$\sigma_8(0.38)$	$0.655^{+0.030}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.962^{+0.025}_{-0.024}$	$f\sigma_8(0.51)$	$0.470^{+0.019}_{-0.018}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.257^{+0.053}_{-0.060}$	$\sigma_8(0.51)$	$0.613^{+0.029}_{-0.025}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$Y_{\text{P}}^{\text{BBN}}$	$0.258^{+0.053}_{-0.060}$	$f\sigma_8(0.61)$	$0.465^{+0.018}_{-0.017}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.45}$	Age/Gyr	$14.05^{+0.77}_{-0.79}$	$\sigma_8(0.61)$	$0.583^{+0.028}_{-0.025}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1090.1^{+1.6}_{-1.6}$	$f\sigma_8(2.33)$	$0.294^{+0.015}_{-0.013}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.41}$	$r_*$	$147.1^{+7.3}_{-7.8}$	$\sigma_8(2.33)$	$0.302^{+0.016}_{-0.014}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$100\theta_*$	$1.0419^{+0.0025}_{-0.0026}$	$f_{2000}^{143}$	$30^{+10}_{-9}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0042}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.11^{+0.67}_{-0.72}$	$f_{2000}^{217}$	$107.0^{+7.1}_{-6.7}$
$c_{TE}$	$0.997^{+0.014}_{-0.014}$	$z_{\text{drag}}$	$1059.6^{+2.6}_{-2.6}$	$f_{2000}^{143 \times 217}$	$32^{+8}_{-8}$
$c_{EE}$	$0.993^{+0.018}_{-0.017}$	$r_{\text{drag}}$	$149.8^{+7.5}_{-8.0}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.4)$
$H_0$	$66.0^{+5.3}_{-4.7}$	$k_{\text{D}}$	$0.1384^{+0.0075}_{-0.0063}$	$\chi_{\text{lowl}}^2$	$23.5 (\nu: 1.2)$
$\Omega_{\Lambda}$	$0.682^{+0.027}_{-0.031}$	$100\theta_{\text{D}}$	$0.1609^{+0.0019}_{-0.0018}$	$\chi_{\text{CamSpec}}^2$	$11515.2 (\nu: 18.5)$
$\Omega_{\text{m}}$	$0.318^{+0.031}_{-0.027}$	$z_{\text{eq}}$	$3417^{+120}_{-110}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.0)$
$\Omega_{\text{m}} h^2$	$0.139^{+0.014}_{-0.011}$	$k_{\text{eq}}$	$0.01024^{+0.00043}_{-0.00038}$	$\chi_{\text{CMB}}^2$	$11935.4 (\nu: 18.9)$

$$\bar{\chi}_{\text{eff}}^2 = 11943.30; \Delta\bar{\chi}_{\text{eff}}^2 = 1.12; R - 1 = 0.00937$$



## 9.6 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02233^{+0.00054}_{-0.00051}$	$S_8$	$0.817^{+0.035}_{-0.035}$	$H(0.38)$	$82.2^{+4.9}_{-4.0}$
$\Omega_c h^2$	$0.116^{+0.014}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.448^{+0.019}_{-0.019}$	$D_M(0.38)$	$1545^{+84}_{-92}$
$100\theta_{MC}$	$1.0418^{+0.0035}_{-0.0037}$	$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.024}_{-0.023}$	$H(0.51)$	$88.8^{+5.1}_{-4.2}$
$\tau$	$0.055^{+0.019}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.981^{+0.028}_{-0.024}$	$D_M(0.51)$	$2002^{+110}_{-120}$
$N_{\text{eff}}$	$2.88^{+0.87}_{-0.68}$	$r_{\text{drag}} h$	$99.7^{+2.4}_{-2.2}$	$H(0.61)$	$94.4^{+5.3}_{-4.5}$
$Y_P$	$0.257^{+0.054}_{-0.061}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.065}_{-0.062}$	$D_M(0.61)$	$2329^{+120}_{-130}$
$\ln(10^{10} A_s)$	$3.038^{+0.051}_{-0.038}$	$z_{\text{re}}$	$< 9.47$	$H(2.33)$	$234^{+12}_{-9.9}$
$n_s$	$0.967^{+0.021}_{-0.021}$	$10^9 A_s$	$2.09^{+0.11}_{-0.079}$	$D_M(2.33)$	$5823^{+280}_{-300}$
$y_{\text{cal}}$	$1.0006^{+0.0065}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.869^{+0.050}_{-0.054}$	$f\sigma_8(0.15)$	$0.452^{+0.019}_{-0.018}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$D_{40}$	$1220^{+43}_{-38}$	$\sigma_8(0.15)$	$0.742^{+0.031}_{-0.029}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5719^{+110}_{-99}$	$f\sigma_8(0.38)$	$0.471^{+0.019}_{-0.018}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2534^{+35}_{-37}$	$\sigma_8(0.38)$	$0.658^{+0.028}_{-0.026}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-14}$	$f\sigma_8(0.51)$	$0.469^{+0.019}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$< 8.92$	$D_{2000}$	$230.1^{+5.9}_{-6.2}$	$\sigma_8(0.51)$	$0.616^{+0.027}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.967^{+0.021}_{-0.021}$	$f\sigma_8(0.61)$	$0.464^{+0.019}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.257^{+0.054}_{-0.061}$	$\sigma_8(0.61)$	$0.586^{+0.026}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.258^{+0.055}_{-0.061}$	$f\sigma_8(2.33)$	$0.295^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.94^{+0.67}_{-0.73}$	$\sigma_8(2.33)$	$0.305^{+0.014}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.51}$	$z_*$	$1090.0^{+1.5}_{-1.6}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143}^{\text{dust}}$	$0.97^{+0.46}_{-0.45}$	$r_*$	$146.3^{+6.9}_{-7.5}$	$f_{2000}^{217}$	$107.3^{+6.8}_{-6.6}$
$A_{217}^{\text{dust}}$	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	$1.0417^{+0.0024}_{-0.0026}$	$f_{2000}^{143 \times 217}$	$33^{+8}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$14.04^{+0.63}_{-0.69}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0029}$	$z_{\text{drag}}$	$1059.9^{+2.5}_{-2.4}$	$\chi_{\text{lowl}}^2$	$22.8 (\nu: 0.7)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$r_{\text{drag}}$	$149.0^{+7.1}_{-7.6}$	$\chi_{\text{CamSpec}}^2$	$11515.8 (\nu: 18.0)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$k_D$	$0.1390^{+0.0074}_{-0.0060}$	$\chi_{6\text{DF}}^2$	$0.057 (\nu: 0.0)$
$c_{EE}$	$0.994^{+0.017}_{-0.017}$	$100\theta_D$	$0.1610^{+0.0017}_{-0.0017}$	$\chi_{\text{MGS}}^2$	$1.33 (\nu: 0.1)$
$H_0$	$67.0^{+4.5}_{-3.7}$	$z_{\text{eq}}$	$3389^{+86}_{-88}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\Omega_\Lambda$	$0.689^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01023^{+0.00044}_{-0.00039}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_m$	$0.311^{+0.019}_{-0.019}$	$100\theta_{\text{eq}}$	$0.816^{+0.015}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\Omega_m h^2$	$0.139^{+0.014}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4509^{+0.0077}_{-0.0073}$	$\chi_{\text{CMB}}^2$	$11935.5 (\nu: 18.2)$
$\Omega_m h^3$	$0.093^{+0.016}_{-0.012}$	$H(0.15)$	$72.2^{+4.5}_{-3.8}$		
$\sigma_8$	$0.803^{+0.033}_{-0.031}$	$D_M(0.15)$	$648^{+37}_{-40}$		

$$\bar{\chi}_{\text{eff}}^2 = 11949.50; \Delta\bar{\chi}_{\text{eff}}^2 = 1.52; R - 1 = 0.02228$$



## 9.7 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02221^{+0.00062}_{-0.00057}$	$\sigma_8$	$0.801^{+0.030}_{-0.029}$	$H(0.15)$	$71.1^{+5.2}_{-4.7}$
$\Omega_c h^2$	$0.116^{+0.013}_{-0.011}$	$S_8$	$0.827^{+0.034}_{-0.033}$	$D_M(0.15)$	$659^{+48}_{-47}$
$100\theta_{MC}$	$1.0419^{+0.0034}_{-0.0037}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.018}_{-0.018}$	$H(0.38)$	$81.1^{+5.2}_{-4.7}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.019}_{-0.019}$	$D_M(0.38)$	$1569^{+110}_{-110}$
$N_{\text{eff}}$	$2.76^{+0.87}_{-0.73}$	$\sigma_8/h^{0.5}$	$0.988^{+0.025}_{-0.023}$	$H(0.51)$	$87.8^{+5.4}_{-4.9}$
$Y_P$	$0.256^{+0.056}_{-0.060}$	$r_{\text{drag}} h$	$98.6^{+3.4}_{-3.2}$	$D_M(0.51)$	$2031^{+140}_{-130}$
$\ln(10^{10} A_s)$	$3.035^{+0.044}_{-0.039}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.067}_{-0.064}$	$H(0.61)$	$93.4^{+5.5}_{-5.1}$
$n_s$	$0.961^{+0.024}_{-0.024}$	$z_{\text{re}}$	$< 9.38$	$D_M(0.61)$	$2363^{+150}_{-150}$
$y_{\text{cal}}$	$1.0006^{+0.0063}_{-0.0063}$	$10^9 A_s$	$2.080^{+0.094}_{-0.080}$	$H(2.33)$	$233^{+11}_{-9.6}$
$A_{100}^{\text{PS}}$	$239^{+70}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.864^{+0.051}_{-0.053}$	$D_M(2.33)$	$5881^{+330}_{-320}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1230^{+43}_{-42}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5717^{+100}_{-99}$	$\sigma_8(0.15)$	$0.739^{+0.029}_{-0.027}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-36}$	$f\sigma_8(0.38)$	$0.473^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.82$	$D_{1420}$	$816^{+13}_{-14}$	$\sigma_8(0.38)$	$0.655^{+0.028}_{-0.026}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.30}_{-0.32}$	$D_{2000}$	$230.6^{+5.7}_{-6.1}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.961^{+0.024}_{-0.024}$	$\sigma_8(0.51)$	$0.612^{+0.027}_{-0.025}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.256^{+0.056}_{-0.060}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.257^{+0.056}_{-0.060}$	$\sigma_8(0.61)$	$0.582^{+0.026}_{-0.024}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	Age/Gyr	$14.08^{+0.77}_{-0.77}$	$f\sigma_8(2.33)$	$0.293^{+0.014}_{-0.013}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1090.0^{+1.6}_{-1.6}$	$\sigma_8(2.33)$	$0.302^{+0.015}_{-0.014}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$147.2^{+7.1}_{-7.5}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.43}_{-0.42}$	$100\theta_*$	$1.0419^{+0.0025}_{-0.0025}$	$f_{2000}^{217}$	$106.8^{+6.9}_{-6.8}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$14.13^{+0.65}_{-0.69}$	$f_{2000}^{143 \times 217}$	$32^{+8}_{-8}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$z_{\text{drag}}$	$1059.5^{+2.5}_{-2.5}$	$\chi_{\text{lensing}}^2$	$9.02 (\nu: 0.3)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$r_{\text{drag}}$	$150.0^{+7.4}_{-7.8}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{EE}$	$0.992^{+0.017}_{-0.017}$	$k_D$	$0.1383^{+0.0072}_{-0.0064}$	$\chi_{\text{lowl}}^2$	$23.7 (\nu: 1.2)$
$H_0$	$65.8^{+5.2}_{-4.8}$	$100\theta_D$	$0.1608^{+0.0018}_{-0.0018}$	$\chi_{\text{CamSpec}}^2$	$11514.6 (\nu: 17.3)$
$\Omega_\Lambda$	$0.680^{+0.027}_{-0.030}$	$z_{\text{eq}}$	$3422^{+110}_{-110}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m$	$0.320^{+0.030}_{-0.027}$	$k_{\text{eq}}$	$0.01024^{+0.00040}_{-0.00035}$	$\chi_{\text{CMB}}^2$	$11944.2 (\nu: 18.4)$
$\Omega_m h^2$	$0.138^{+0.013}_{-0.011}$	$100\theta_{\text{eq}}$	$0.810^{+0.021}_{-0.019}$		
$\Omega_m h^3$	$0.091^{+0.015}_{-0.013}$	$100\theta_{s,\text{eq}}$	$0.448^{+0.011}_{-0.0099}$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.01; \Delta\bar{\chi}_{\text{eff}}^2 = 0.76; R - 1 = 0.01202$$



## 9.8 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02232^{+0.00054}_{-0.00051}$	$S_8$	$0.820^{+0.029}_{-0.029}$	$H(0.38)$	$82.1^{+4.7}_{-3.9}$
$\Omega_c h^2$	$0.116^{+0.013}_{-0.011}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.016}_{-0.016}$	$D_M(0.38)$	$1548^{+82}_{-90}$
$100\theta_{MC}$	$1.0418^{+0.0035}_{-0.0036}$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.019}_{-0.019}$	$H(0.51)$	$88.7^{+4.9}_{-4.1}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.022}$	$D_M(0.51)$	$2005^{+100}_{-120}$
$N_{\text{eff}}$	$2.87^{+0.79}_{-0.67}$	$r_{\text{drag}} h$	$99.6^{+2.3}_{-2.1}$	$H(0.61)$	$94.3^{+5.0}_{-4.4}$
$Y_P$	$0.256^{+0.054}_{-0.061}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.055}_{-0.054}$	$D_M(0.61)$	$2333^{+120}_{-130}$
$\ln(10^{10} A_s)$	$3.041^{+0.041}_{-0.037}$	$z_{\text{re}}$	$< 9.50$	$H(2.33)$	$234^{+11}_{-9.6}$
$n_s$	$0.966^{+0.020}_{-0.021}$	$10^9 A_s$	$2.093^{+0.087}_{-0.077}$	$D_M(2.33)$	$5828^{+280}_{-290}$
$y_{\text{cal}}$	$1.0008^{+0.0064}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.047}_{-0.049}$	$f\sigma_8(0.15)$	$0.454^{+0.016}_{-0.016}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-70}$	$D_{40}$	$1224^{+41}_{-39}$	$\sigma_8(0.15)$	$0.743^{+0.027}_{-0.026}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5724^{+110}_{-98}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.015}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-35}$	$\sigma_8(0.38)$	$0.659^{+0.025}_{-0.024}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-14}$	$f\sigma_8(0.51)$	$0.470^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.94$	$D_{2000}$	$230.3^{+5.8}_{-6.4}$	$\sigma_8(0.51)$	$0.616^{+0.024}_{-0.023}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.966^{+0.020}_{-0.021}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.256^{+0.054}_{-0.061}$	$\sigma_8(0.61)$	$0.586^{+0.024}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.258^{+0.054}_{-0.061}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.012}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.95^{+0.66}_{-0.70}$	$\sigma_8(2.33)$	$0.305^{+0.013}_{-0.012}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.51}$	$z_*$	$1090.0^{+1.5}_{-1.6}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143}^{\text{dust}}$	$0.96^{+0.47}_{-0.45}$	$r_*$	$146.3^{+6.8}_{-7.0}$	$f_{2000}^{217}$	$107.2^{+7.0}_{-6.8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.0417^{+0.0024}_{-0.0025}$	$f_{2000}^{143 \times 217}$	$32^{+8}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$14.05^{+0.62}_{-0.65}$	$\chi_{\text{lensing}}^2$	$9.23 (\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0026}_{-0.0029}$	$z_{\text{drag}}$	$1059.9^{+2.3}_{-2.4}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.8)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$r_{\text{drag}}$	$149.0^{+6.9}_{-7.3}$	$\chi_{\text{lowl}}^2$	$23.0 (\nu: 0.8)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$k_D$	$0.1390^{+0.0069}_{-0.0060}$	$\chi_{\text{CamSpec}}^2$	$11515.2 (\nu: 17.8)$
$c_{EE}$	$0.993^{+0.017}_{-0.017}$	$100\theta_D$	$0.1610^{+0.0017}_{-0.0018}$	$\chi_{6\text{DF}}^2$	$0.067 (\nu: 0.0)$
$H_0$	$66.8^{+4.4}_{-3.7}$	$z_{\text{eq}}$	$3394^{+85}_{-88}$	$\chi_{\text{MGS}}^2$	$1.23 (\nu: 0.1)$
$\Omega_\Lambda$	$0.688^{+0.018}_{-0.018}$	$k_{\text{eq}}$	$0.01024^{+0.00041}_{-0.00037}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.2)$
$\Omega_m$	$0.312^{+0.018}_{-0.018}$	$100\theta_{\text{eq}}$	$0.815^{+0.015}_{-0.014}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_m h^2$	$0.139^{+0.013}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4504^{+0.0079}_{-0.0072}$	$\chi_{\text{CMB}}^2$	$11944.6 (\nu: 18.9)$
$\Omega_m h^3$	$0.093^{+0.015}_{-0.012}$	$H(0.15)$	$72.1^{+4.5}_{-3.7}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.8)$
$\sigma_8$	$0.804^{+0.029}_{-0.028}$	$D_M(0.15)$	$649^{+36}_{-40}$		

$$\bar{\chi}_{\text{eff}}^2 = 11958.67; \Delta\bar{\chi}_{\text{eff}}^2 = 1.41; R - 1 = 0.01939$$



## 9.9 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02236	$0.02219^{+0.00058}_{-0.00057}$	$\sigma_8$	0.8214	$0.801^{+0.032}_{-0.031}$	$H(0.15)$	73.26	$71.7^{+4.9}_{-4.2}$
$\Omega_c h^2$	0.1208	$0.117^{+0.010}_{-0.0098}$	$S_8$	0.8367	$0.826^{+0.040}_{-0.041}$	$D_M(0.15)$	638.0	$653^{+43}_{-44}$
$100\theta_{MC}$	1.04069	$1.0412^{+0.0018}_{-0.0017}$	$\sigma_8 \Omega_m^{0.5}$	0.4583	$0.452^{+0.022}_{-0.022}$	$H(0.38)$	83.43	$81.8^{+4.8}_{-4.3}$
$\tau$	0.0637	$0.052^{+0.021}_{-0.021}$	$\sigma_8 \Omega_m^{0.25}$	0.6135	$0.602^{+0.023}_{-0.023}$	$D_M(0.38)$	1522	$1556^{+95}_{-98}$
$N_{\text{eff}}$	3.13	$2.89^{+0.70}_{-0.63}$	$\sigma_8/h^{0.5}$	0.9964	$0.984^{+0.029}_{-0.030}$	$H(0.51)$	90.18	$88.5^{+4.9}_{-4.4}$
$Y_P$	0.2438	$0.244^{+0.010}_{-0.010}$	$r_{\text{drag}} h$	99.56	$98.7^{+3.6}_{-3.4}$	$D_M(0.51)$	1971	$2014^{+120}_{-120}$
$\ln(10^{10} A_s)$	3.067	$3.031^{+0.050}_{-0.050}$	$\langle d^2 \rangle^{1/2}$	2.459	$2.441^{+0.076}_{-0.076}$	$H(0.61)$	95.83	$94.1^{+4.9}_{-4.5}$
$n_s$	0.9690	$0.960^{+0.024}_{-0.023}$	$z_{\text{re}}$	8.63	$7.4^{+2.0}_{-2.4}$	$D_M(0.61)$	2294	$2343^{+140}_{-140}$
$y_{\text{cal}}$	1.0019	$1.0004^{+0.0064}_{-0.0062}$	$10^9 A_s$	2.147	$2.07^{+0.11}_{-0.10}$	$H(2.33)$	237.3	$234.1^{+9.0}_{-8.9}$
$A_{100}^{\text{PS}}$	234	$237^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.890	$1.867^{+0.053}_{-0.054}$	$D_M(2.33)$	5732	$5835^{+280}_{-280}$
$A_{143}^{\text{PS}}$	47.2	$38^{+20}_{-20}$	$D_{40}$	1229.3	$1232^{+41}_{-40}$	$f\sigma_8(0.15)$	0.4629	$0.456^{+0.021}_{-0.021}$
$A_{217}^{\text{PS}}$	105.6	$103^{+30}_{-30}$	$D_{220}$	5736	$5717^{+100}_{-99}$	$\sigma_8(0.15)$	0.7590	$0.740^{+0.031}_{-0.030}$
$A_{217}^{\text{CIB}}$	40.8	$39^{+20}_{-20}$	$D_{810}$	2544.7	$2532^{+37}_{-35}$	$f\sigma_8(0.38)$	0.4816	$0.473^{+0.018}_{-0.018}$
$A_{143}^{\text{tSZ}}$	5.40	$< 8.92$	$D_{1420}$	818.8	$816^{+13}_{-12}$	$\sigma_8(0.38)$	0.6728	$0.655^{+0.029}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	0.732	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	231.3	$231.0^{+5.2}_{-5.0}$	$f\sigma_8(0.51)$	0.4802	$0.471^{+0.018}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	0.74	—	$n_{s,0.002}$	0.9690	$0.960^{+0.024}_{-0.023}$	$\sigma_8(0.51)$	0.6297	$0.613^{+0.028}_{-0.026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.76	—	$Y_P$	0.2438	$0.244^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	0.4752	$0.465^{+0.017}_{-0.017}$
$A^{\text{kSZ}}$	1.7	—	$Y_P^{\text{BBN}}$	0.2452	$0.245^{+0.010}_{-0.010}$	$\sigma_8(0.61)$	0.5991	$0.583^{+0.027}_{-0.025}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.51}$	Age/Gyr	13.72	$13.97^{+0.67}_{-0.66}$	$f\sigma_8(2.33)$	0.3021	$0.294^{+0.014}_{-0.013}$
$A_{143}^{\text{dust}}$	0.955	$0.96^{+0.46}_{-0.46}$	$z_*$	1089.97	$1089.80^{+0.99}_{-0.95}$	$\sigma_8(2.33)$	0.3115	$0.302^{+0.016}_{-0.014}$
$A_{217}^{\text{dust}}$	0.978	$0.98^{+0.27}_{-0.27}$	$r_*$	143.8	$146.1^{+6.4}_{-6.1}$	$f_{2000}^{143}$	29.4	$29^{+8}_{-8}$
$A_{143 \times 217}^{\text{dust}}$	1.021	$1.02^{+0.41}_{-0.42}$	$100\theta_*$	1.04089	$1.0415^{+0.0019}_{-0.0018}$	$f_{2000}^{217}$	106.6	$106.2^{+5.6}_{-5.6}$
$c_{100}$	0.99783	$0.9975^{+0.0027}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	13.82	$14.03^{+0.58}_{-0.57}$	$f_{2000}^{143 \times 217}$	31.9	$31^{+6}_{-6}$
$c_{217}$	1.00118	$1.0011^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	1059.93	$1059.2^{+2.0}_{-2.0}$	$\chi_{\text{simall}}^2$	399.05	$396.8 (\nu: 1.2)$
$c_{TE}$	0.9961	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	146.5	$148.8^{+6.6}_{-6.3}$	$\chi_{\text{lowl}}^2$	23.05	$23.9 (\nu: 1.0)$
$c_{EE}$	0.9923	$0.990^{+0.015}_{-0.014}$	$k_D$	0.14128	$0.1395^{+0.0049}_{-0.0048}$	$\chi_{\text{CamSpec}}^2$	11499.5	$11514.4 (\nu: 17.1)$
$H_0$	67.96	$66.4^{+4.9}_{-4.3}$	$100\theta_D$	0.16091	$0.1606^{+0.0012}_{-0.0012}$	$\chi_{\text{Aver15}}^2$	0.00	$0.96 (\nu: 0.9)$
$\Omega_\Lambda$	0.6887	$0.681^{+0.029}_{-0.030}$	$z_{\text{eq}}$	3383	$3408^{+110}_{-110}$	$\chi_{\text{prior}}^2$	2.4	$7.9 (\nu: 6.0)$
$\Omega_m$	0.3113	$0.319^{+0.030}_{-0.029}$	$k_{\text{eq}}$	0.010381	$0.01029^{+0.00034}_{-0.00035}$	$\chi_{\text{CMB}}^2$	11921.6	$11935.1 (\nu: 17.2)$
$\Omega_m h^2$	0.1438	$0.140^{+0.011}_{-0.010}$	$100\theta_{\text{eq}}$	0.8166	$0.812^{+0.021}_{-0.020}$			
$\Omega_m h^3$	0.0977	$0.093^{+0.013}_{-0.012}$	$100\theta_{s,\text{eq}}$	0.4511	$0.449^{+0.011}_{-0.010}$			

Best-fit  $\chi_{\text{eff}}^2 = 11924.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 11943.94$ ;  $R - 1 = 0.01231$

$\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 399.05 commander\_dx12\_v3.2\_29: 23.05 CamSpec like\_10.7HM\_1400\_unified: 11499.50



## 9.10 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02230^{+0.00047}_{-0.00047}$	$S_8$	$0.817^{+0.035}_{-0.035}$	$H(0.38)$	$82.7^{+3.9}_{-3.7}$
$\Omega_c h^2$	$0.118^{+0.010}_{-0.0096}$	$\sigma_8 \Omega_m^{0.5}$	$0.448^{+0.019}_{-0.019}$	$D_M(0.38)$	$1535^{+76}_{-76}$
$100\theta_{MC}$	$1.0410^{+0.0016}_{-0.0016}$	$\sigma_8 \Omega_m^{0.25}$	$0.600^{+0.023}_{-0.024}$	$H(0.51)$	$89.4^{+4.0}_{-3.8}$
$\tau$	$0.053^{+0.021}_{-0.021}$	$\sigma_8/h^{0.5}$	$0.979^{+0.028}_{-0.028}$	$D_M(0.51)$	$1988^{+97}_{-95}$
$N_{\text{eff}}$	$3.00^{+0.63}_{-0.57}$	$r_{\text{drag}} h$	$99.7^{+2.3}_{-2.3}$	$H(0.61)$	$95.0^{+4.2}_{-4.0}$
$Y_P$	$0.2441^{+0.0097}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.066}_{-0.066}$	$D_M(0.61)$	$2314^{+110}_{-110}$
$\ln(10^{10} A_s)$	$3.035^{+0.051}_{-0.047}$	$z_{\text{re}}$	$7.5^{+2.0}_{-2.2}$	$H(2.33)$	$235.1^{+9.0}_{-8.4}$
$n_s$	$0.966^{+0.019}_{-0.018}$	$10^9 A_s$	$2.08^{+0.11}_{-0.096}$	$D_M(2.33)$	$5785^{+250}_{-240}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0061}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.052}_{-0.052}$	$f\sigma_8(0.15)$	$0.452^{+0.019}_{-0.019}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$D_{40}$	$1225^{+34}_{-34}$	$\sigma_8(0.15)$	$0.742^{+0.031}_{-0.029}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.471^{+0.018}_{-0.019}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2534^{+37}_{-35}$	$\sigma_8(0.38)$	$0.658^{+0.028}_{-0.027}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+14}_{-12}$	$f\sigma_8(0.51)$	$0.469^{+0.018}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$< 8.88$	$D_{2000}$	$230.7^{+5.1}_{-5.0}$	$\sigma_8(0.51)$	$0.616^{+0.026}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.966^{+0.019}_{-0.018}$	$f\sigma_8(0.61)$	$0.465^{+0.018}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2441^{+0.0097}_{-0.010}$	$\sigma_8(0.61)$	$0.586^{+0.025}_{-0.024}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2455^{+0.0098}_{-0.011}$	$f\sigma_8(2.33)$	$0.296^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.85^{+0.58}_{-0.57}$	$\sigma_8(2.33)$	$0.305^{+0.014}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$z_*$	$1089.77^{+0.94}_{-0.97}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	$0.95^{+0.45}_{-0.45}$	$r_*$	$145.3^{+5.7}_{-5.7}$	$f_{2000}^{217}$	$106.5^{+5.7}_{-5.8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.0413^{+0.0017}_{-0.0017}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.40}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.95^{+0.53}_{-0.53}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.2)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0029}$	$z_{\text{drag}}$	$1059.6^{+1.8}_{-1.8}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 0.6)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$r_{\text{drag}}$	$148.0^{+5.9}_{-5.9}$	$\chi_{\text{CamSpec}}^2$	$11515.0 (\nu: 16.1)$
$c_{TE}$	$0.996^{+0.012}_{-0.012}$	$k_D$	$0.1401^{+0.0046}_{-0.0044}$	$\chi_{\text{Aver15}}^2$	$0.97 (\nu: 0.9)$
$c_{EE}$	$0.992^{+0.014}_{-0.013}$	$100\theta_D$	$0.1607^{+0.0011}_{-0.0011}$	$\chi_{6\text{DF}}^2$	$0.058 (\nu: 0.0)$
$H_0$	$67.4^{+3.7}_{-3.5}$	$z_{\text{eq}}$	$3379^{+72}_{-71}$	$\chi_{\text{MGS}}^2$	$1.31 (\nu: 0.1)$
$\Omega_\Lambda$	$0.689^{+0.018}_{-0.019}$	$k_{\text{eq}}$	$0.01028^{+0.00036}_{-0.00034}$	$\chi_{\text{DR12BAO}}^2$	$4.8 (\nu: 1.2)$
$\Omega_m$	$0.311^{+0.019}_{-0.018}$	$100\theta_{\text{eq}}$	$0.817^{+0.014}_{-0.013}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_m h^2$	$0.141^{+0.011}_{-0.0098}$	$100\theta_{s,\text{eq}}$	$0.4516^{+0.0068}_{-0.0067}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\Omega_m h^3$	$0.095^{+0.012}_{-0.011}$	$H(0.15)$	$72.7^{+3.8}_{-3.5}$	$\chi_{\text{CMB}}^2$	$11934.9 (\nu: 15.8)$
$\sigma_8$	$0.803^{+0.033}_{-0.031}$	$D_M(0.15)$	$643^{+34}_{-33}$		

$$\bar{\chi}_{\text{eff}}^2 = 11949.86; R - 1 = 0.01509$$



### 9.11 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02216^{+0.00057}_{-0.00054}$	$\sigma_8$	$0.801^{+0.030}_{-0.028}$	$H(0.15)$	$71.4^{+4.7}_{-4.3}$
$\Omega_c h^2$	$0.117^{+0.010}_{-0.0090}$	$S_8$	$0.828^{+0.033}_{-0.033}$	$D_M(0.15)$	$656^{+44}_{-43}$
$100\theta_{MC}$	$1.0412^{+0.0017}_{-0.0017}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.018}_{-0.018}$	$H(0.38)$	$81.5^{+4.8}_{-4.4}$
$\tau$	$0.053^{+0.019}_{-0.020}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.019}_{-0.019}$	$D_M(0.38)$	$1562^{+97}_{-96}$
$N_{\text{eff}}$	$2.85^{+0.71}_{-0.62}$	$\sigma_8/h^{0.5}$	$0.986^{+0.022}_{-0.023}$	$H(0.51)$	$88.2^{+4.9}_{-4.3}$
$Y_P$	$0.2441^{+0.0098}_{-0.010}$	$r_{\text{drag}} h$	$98.5^{+3.3}_{-3.2}$	$D_M(0.51)$	$2022^{+120}_{-120}$
$\ln(10^{10} A_s)$	$3.031^{+0.046}_{-0.048}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.063}_{-0.065}$	$H(0.61)$	$93.8^{+5.0}_{-4.4}$
$n_s$	$0.959^{+0.023}_{-0.023}$	$z_{\text{re}}$	$7.5^{+1.9}_{-2.2}$	$D_M(0.61)$	$2352^{+140}_{-140}$
$y_{\text{cal}}$	$1.0006^{+0.0064}_{-0.0063}$	$10^9 A_s$	$2.073^{+0.098}_{-0.098}$	$H(2.33)$	$233.7^{+9.1}_{-8.1}$
$A_{100}^{\text{PS}}$	$236^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.866^{+0.051}_{-0.051}$	$D_M(2.33)$	$5852^{+280}_{-290}$
$A_{143}^{\text{PS}}$	$37^{+20}_{-20}$	$D_{40}$	$1235^{+37}_{-37}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5719^{+100}_{-100}$	$\sigma_8(0.15)$	$0.739^{+0.029}_{-0.027}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2533^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.473^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.82$	$D_{1420}$	$817^{+13}_{-12}$	$\sigma_8(0.38)$	$0.655^{+0.027}_{-0.026}$
$r_{143 \times 217}^{\text{PS}}$	$0.67^{+0.31}_{-0.33}$	$D_{2000}$	$231.3^{+5.2}_{-5.1}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.959^{+0.023}_{-0.023}$	$\sigma_8(0.51)$	$0.612^{+0.026}_{-0.025}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2441^{+0.0098}_{-0.010}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.014}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2454^{+0.0099}_{-0.010}$	$\sigma_8(0.61)$	$0.582^{+0.026}_{-0.025}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	Age/Gyr	$14.01^{+0.65}_{-0.68}$	$f\sigma_8(2.33)$	$0.293^{+0.014}_{-0.013}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.44}$	$z_*$	$1089.78^{+0.92}_{-0.89}$	$\sigma_8(2.33)$	$0.302^{+0.015}_{-0.015}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$146.4^{+5.9}_{-6.2}$	$f_{2000}^{143}$	$28^{+8}_{-8}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.40}_{-0.41}$	$100\theta_*$	$1.0415^{+0.0018}_{-0.0018}$	$f_{2000}^{217}$	$106.0^{+5.5}_{-5.4}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$14.06^{+0.54}_{-0.57}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{217}$	$1.0010^{+0.0040}_{-0.0039}$	$z_{\text{drag}}$	$1059.1^{+2.0}_{-1.9}$	$\chi_{\text{lensing}}^2$	$9.03 (\nu: 0.3)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$149.2^{+6.1}_{-6.4}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.1)$
$c_{EE}$	$0.990^{+0.014}_{-0.014}$	$k_D$	$0.1393^{+0.0050}_{-0.0045}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 1.0)$
$H_0$	$66.1^{+4.8}_{-4.4}$	$100\theta_D$	$0.1605^{+0.0012}_{-0.0011}$	$\chi_{\text{CamSpec}}^2$	$11513.6 (\nu: 15.4)$
$\Omega_\Lambda$	$0.680^{+0.027}_{-0.029}$	$z_{\text{eq}}$	$3415^{+110}_{-100}$	$\chi_{\text{Aver15}}^2$	$0.9 (\nu: 0.9)$
$\Omega_m$	$0.320^{+0.029}_{-0.027}$	$k_{\text{eq}}$	$0.01028^{+0.00033}_{-0.00032}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^2$	$0.140^{+0.010}_{-0.0093}$	$100\theta_{\text{eq}}$	$0.811^{+0.019}_{-0.019}$	$\chi_{\text{CMB}}^2$	$11943.6 (\nu: 16.6)$
$\Omega_m h^3$	$0.092^{+0.014}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4481^{+0.0099}_{-0.0097}$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.31; R - 1 = 0.01285$$



## 9.12 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02229^{+0.00048}_{-0.00047}$	$S_8$	$0.821^{+0.028}_{-0.029}$	$H(0.38)$	$82.6^{+3.9}_{-3.6}$
$\Omega_c h^2$	$0.1180^{+0.0099}_{-0.0095}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.016}_{-0.016}$	$D_M(0.38)$	$1538^{+76}_{-75}$
$100\theta_{MC}$	$1.0411^{+0.0016}_{-0.0016}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.019}_{-0.019}$	$H(0.51)$	$89.2^{+4.1}_{-3.8}$
$\tau$	$0.055^{+0.019}_{-0.018}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.022}$	$D_M(0.51)$	$1993^{+96}_{-96}$
$N_{\text{eff}}$	$2.98^{+0.61}_{-0.57}$	$r_{\text{drag}} h$	$99.5^{+2.2}_{-2.2}$	$H(0.61)$	$94.8^{+4.2}_{-3.9}$
$Y_P$	$0.2441^{+0.0097}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.055}_{-0.055}$	$D_M(0.61)$	$2319^{+110}_{-110}$
$\ln(10^{10} A_s)$	$3.039^{+0.042}_{-0.041}$	$z_{\text{re}}$	$7.7^{+1.8}_{-1.9}$	$H(2.33)$	$234.9^{+8.4}_{-8.2}$
$n_s$	$0.964^{+0.019}_{-0.018}$	$10^9 A_s$	$2.089^{+0.090}_{-0.084}$	$D_M(2.33)$	$5793^{+240}_{-240}$
$y_{\text{cal}}$	$1.0007^{+0.0065}_{-0.0060}$	$10^9 A_s e^{-2\tau}$	$1.872^{+0.050}_{-0.049}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$D_{40}$	$1228^{+33}_{-33}$	$\sigma_8(0.15)$	$0.744^{+0.027}_{-0.026}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5726^{+100}_{-97}$	$f\sigma_8(0.38)$	$0.472^{+0.014}_{-0.015}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+36}_{-33}$	$\sigma_8(0.38)$	$0.659^{+0.025}_{-0.024}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{2000}$	$230.9^{+5.0}_{-5.0}$	$\sigma_8(0.51)$	$0.617^{+0.024}_{-0.023}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	$0.964^{+0.019}_{-0.018}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2441^{+0.0097}_{-0.011}$	$\sigma_8(0.61)$	$0.587^{+0.023}_{-0.022}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2454^{+0.0098}_{-0.011}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.87^{+0.58}_{-0.57}$	$\sigma_8(2.33)$	$0.305^{+0.013}_{-0.012}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$z_*$	$1089.77^{+0.89}_{-0.91}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	$0.95^{+0.44}_{-0.44}$	$r_*$	$145.4^{+5.6}_{-5.6}$	$f_{2000}^{217}$	$106.4^{+5.8}_{-5.7}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	$1.0413^{+0.0016}_{-0.0017}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.40}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.52}_{-0.51}$	$\chi_{\text{lensing}}^2$	$9.26 (\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0029}$	$z_{\text{drag}}$	$1059.5^{+1.8}_{-1.8}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$r_{\text{drag}}$	$148.1^{+5.8}_{-5.7}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.6)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$k_D$	$0.1401^{+0.0045}_{-0.0044}$	$\chi_{\text{CamSpec}}^2$	$11514.1 (\nu: 15.2)$
$c_{EE}$	$0.991^{+0.014}_{-0.014}$	$100\theta_D$	$0.1607^{+0.0011}_{-0.0011}$	$\chi_{\text{Aver15}}^2$	$0.96 (\nu: 0.9)$
$H_0$	$67.2^{+3.8}_{-3.4}$	$z_{\text{eq}}$	$3385^{+71}_{-74}$	$\chi_{6\text{DF}}^2$	$0.068 (\nu: 0.0)$
$\Omega_\Lambda$	$0.688^{+0.018}_{-0.019}$	$k_{\text{eq}}$	$0.01028^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.22 (\nu: 0.1)$
$\Omega_m$	$0.312^{+0.019}_{-0.018}$	$100\theta_{\text{eq}}$	$0.816^{+0.013}_{-0.013}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.3)$
$\Omega_m h^2$	$0.141^{+0.010}_{-0.0095}$	$100\theta_{s,\text{eq}}$	$0.4510^{+0.0070}_{-0.0065}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_m h^3$	$0.095^{+0.012}_{-0.011}$	$H(0.15)$	$72.5^{+3.8}_{-3.5}$	$\chi_{\text{CMB}}^2$	$11943.7 (\nu: 15.9)$
$\sigma_8$	$0.805^{+0.029}_{-0.027}$	$D_M(0.15)$	$645^{+33}_{-33}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.9)$

$$\bar{\chi}_{\text{eff}}^2 = 11958.76; R - 1 = 0.01459$$



### 9.13 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02220^{+0.00057}_{-0.00058}$	$\sigma_8$	$0.803^{+0.032}_{-0.029}$	$H(0.15)$	$71.7^{+4.9}_{-4.3}$
$\Omega_c h^2$	$0.117^{+0.010}_{-0.0099}$	$S_8$	$0.826^{+0.040}_{-0.041}$	$D_M(0.15)$	$652^{+43}_{-44}$
$100\theta_{MC}$	$1.0412^{+0.0018}_{-0.0017}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.022}_{-0.023}$	$H(0.38)$	$81.9^{+4.9}_{-4.3}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.023}_{-0.023}$	$D_M(0.38)$	$1554^{+96}_{-98}$
$N_{\text{eff}}$	$2.90^{+0.69}_{-0.63}$	$\sigma_8/h^{0.5}$	$0.985^{+0.028}_{-0.029}$	$H(0.51)$	$88.6^{+4.9}_{-4.3}$
$Y_P$	$0.244^{+0.010}_{-0.010}$	$r_{\text{drag}} h$	$98.8^{+3.6}_{-3.4}$	$D_M(0.51)$	$2012^{+120}_{-120}$
$\ln(10^{10} A_s)$	$3.035^{+0.047}_{-0.037}$	$\langle d^2 \rangle^{1/2}$	$2.444^{+0.076}_{-0.075}$	$H(0.61)$	$94.2^{+4.9}_{-4.4}$
$n_s$	$0.961^{+0.024}_{-0.022}$	$z_{\text{re}}$	$< 9.26$	$D_M(0.61)$	$2341^{+140}_{-140}$
$y_{\text{cal}}$	$1.0004^{+0.0064}_{-0.0062}$	$10^9 A_s$	$2.08^{+0.10}_{-0.077}$	$H(2.33)$	$234.2^{+9.0}_{-8.9}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.867^{+0.054}_{-0.055}$	$D_M(2.33)$	$5831^{+280}_{-280}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{40}$	$1232^{+41}_{-40}$	$f\sigma_8(0.15)$	$0.457^{+0.021}_{-0.021}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5716^{+100}_{-99}$	$\sigma_8(0.15)$	$0.741^{+0.030}_{-0.028}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2532^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.473^{+0.018}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$< 8.94$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.656^{+0.028}_{-0.026}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$231.0^{+5.3}_{-5.0}$	$f\sigma_8(0.51)$	$0.471^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.961^{+0.024}_{-0.022}$	$\sigma_8(0.51)$	$0.614^{+0.027}_{-0.024}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.244^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	$0.466^{+0.017}_{-0.017}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.245^{+0.010}_{-0.010}$	$\sigma_8(0.61)$	$0.584^{+0.027}_{-0.024}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	Age/Gyr	$13.96^{+0.66}_{-0.66}$	$f\sigma_8(2.33)$	$0.294^{+0.014}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.46}$	$z_*$	$1089.8^{+1.0}_{-0.95}$	$\sigma_8(2.33)$	$0.303^{+0.015}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$146.0^{+6.4}_{-6.1}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.42}$	$100\theta_*$	$1.0414^{+0.0019}_{-0.0018}$	$f_{2000}^{217}$	$106.1^{+5.6}_{-5.6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$14.02^{+0.59}_{-0.56}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0041}$	$z_{\text{drag}}$	$1059.3^{+2.0}_{-2.0}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.2)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$148.8^{+6.6}_{-6.3}$	$\chi_{\text{lowl}}^2$	$23.9 (\nu: 1.0)$
$c_{EE}$	$0.990^{+0.015}_{-0.014}$	$k_D$	$0.1396^{+0.0049}_{-0.0048}$	$\chi_{\text{CamSpec}}^2$	$11514.2 (\nu: 17.2)$
$H_0$	$66.5^{+4.9}_{-4.3}$	$100\theta_D$	$0.1606^{+0.0012}_{-0.0012}$	$\chi_{\text{Aver15}}^2$	$0.96 (\nu: 0.9)$
$\Omega_\Lambda$	$0.682^{+0.029}_{-0.030}$	$z_{\text{eq}}$	$3406^{+110}_{-110}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 6.0)$
$\Omega_m$	$0.318^{+0.030}_{-0.029}$	$k_{\text{eq}}$	$0.01029^{+0.00035}_{-0.00035}$	$\chi_{\text{CMB}}^2$	$11934.8 (\nu: 16.9)$
$\Omega_m h^2$	$0.140^{+0.011}_{-0.010}$	$100\theta_{\text{eq}}$	$0.812^{+0.021}_{-0.019}$		
$\Omega_m h^3$	$0.093^{+0.013}_{-0.012}$	$100\theta_{s,\text{eq}}$	$0.449^{+0.011}_{-0.0098}$		

$$\bar{\chi}_{\text{eff}}^2 = 11943.65; R - 1 = 0.01349$$



# 9.14 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00047}_{-0.00048}$	$S_8$	$0.818^{+0.035}_{-0.033}$	$H(0.38)$	$82.7^{+3.9}_{-3.7}$
$\Omega_{\mathrm{c}} h^2$	$0.118^{+0.011}_{-0.0096}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1534^{+77}_{-75}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0016}_{-0.0017}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.022}_{-0.021}$	$H(0.51)$	$89.4^{+4.0}_{-3.9}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.980^{+0.027}_{-0.024}$	$D_{\mathrm{M}}(0.51)$	$1988^{+97}_{-95}$
$N_{\mathrm{eff}}$	$3.00^{+0.63}_{-0.58}$	$r_{\mathrm{drag}} h$	$99.7^{+2.3}_{-2.2}$	$H(0.61)$	$95.0^{+4.1}_{-4.0}$
$Y_{\mathrm{P}}$	$0.2441^{+0.0098}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.064}_{-0.058}$	$D_{\mathrm{M}}(0.61)$	$2313^{+110}_{-110}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.038^{+0.048}_{-0.035}$	$z_{\mathrm{re}}$	$< 9.34$	$H(2.33)$	$235.1^{+9.0}_{-8.4}$
$n_{\mathrm{s}}$	$0.966^{+0.019}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.10}_{-0.073}$	$D_{\mathrm{M}}(2.33)$	$5784^{+250}_{-240}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0061}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871^{+0.052}_{-0.052}$	$f\sigma_8(0.15)$	$0.453^{+0.018}_{-0.018}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-60}$	$D_{40}$	$1225^{+34}_{-33}$	$\sigma_8(0.15)$	$0.744^{+0.030}_{-0.027}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5721^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.471^{+0.018}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2533^{+37}_{-35}$	$\sigma_8(0.38)$	$0.659^{+0.027}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.470^{+0.017}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.85$	$D_{2000}$	$230.7^{+5.1}_{-5.1}$	$\sigma_8(0.51)$	$0.617^{+0.026}_{-0.023}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.019}_{-0.018}$	$f\sigma_8(0.61)$	$0.465^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2441^{+0.0098}_{-0.010}$	$\sigma_8(0.61)$	$0.587^{+0.025}_{-0.022}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454^{+0.0098}_{-0.010}$	$f\sigma_8(2.33)$	$0.296^{+0.013}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.85^{+0.59}_{-0.56}$	$\sigma_8(2.33)$	$0.305^{+0.014}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$z_*$	$1089.77^{+0.94}_{-0.98}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$r_*$	$145.3^{+5.7}_{-5.7}$	$f_{2000}^{217}$	$106.4^{+5.8}_{-5.7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.28}$	$100\theta_*$	$1.0413^{+0.0017}_{-0.0017}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.40}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95^{+0.53}_{-0.53}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.2)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0029}$	$z_{\mathrm{drag}}$	$1059.6^{+1.8}_{-1.8}$	$\chi_{\mathrm{lowl}}^2$	$23.1 (\nu: 0.6)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.9^{+5.9}_{-5.8}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 (\nu: 16.2)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$k_{\mathrm{D}}$	$0.1402^{+0.0046}_{-0.0044}$	$\chi_{\mathrm{Aver15}}^2$	$0.96 (\nu: 0.9)$
$c_{EE}$	$0.992^{+0.014}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.1607^{+0.0012}_{-0.0011}$	$\chi_{6\mathrm{DF}}^2$	$0.056 (\nu: 0.0)$
$H_0$	$67.4^{+3.7}_{-3.5}$	$z_{\mathrm{eq}}$	$3378^{+72}_{-70}$	$\chi_{\mathrm{MGS}}^2$	$1.33 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01028^{+0.00036}_{-0.00034}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.019}_{-0.018}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.013}_{-0.013}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_{\mathrm{m}} h^2$	$0.141^{+0.011}_{-0.0098}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0067}_{-0.0067}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\Omega_{\mathrm{m}} h^3$	$0.095^{+0.012}_{-0.011}$	$H(0.15)$	$72.7^{+3.8}_{-3.5}$	$\chi_{\mathrm{CMB}}^2$	$11934.7 (\nu: 15.7)$
$\sigma_8$	$0.805^{+0.032}_{-0.028}$	$D_{\mathrm{M}}(0.15)$	$643^{+34}_{-33}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.59; R - 1 = 0.01728$$



9.15 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02217^{+0.00056}_{-0.00054}$	$\sigma_8$	$0.802^{+0.029}_{-0.026}$	$H(0.15)$	$71.5^{+4.7}_{-4.2}$
$\Omega_c h^2$	$0.117^{+0.010}_{-0.0091}$	$S_8$	$0.828^{+0.033}_{-0.032}$	$D_M(0.15)$	$655^{+42}_{-42}$
$100\theta_{MC}$	$1.0412^{+0.0017}_{-0.0017}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.018}_{-0.018}$	$H(0.38)$	$81.6^{+4.8}_{-4.3}$
$\tau$	$0.054^{+0.017}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.019}_{-0.018}$	$D_M(0.38)$	$1560^{+96}_{-96}$
$N_{\text{eff}}$	$2.86^{+0.70}_{-0.62}$	$\sigma_8/h^{0.5}$	$0.986^{+0.022}_{-0.023}$	$H(0.51)$	$88.3^{+4.8}_{-4.4}$
$Y_P$	$0.2441^{+0.0098}_{-0.010}$	$r_{\text{drag}} h$	$98.6^{+3.3}_{-3.1}$	$D_M(0.51)$	$2020^{+120}_{-120}$
$\ln(10^{10} A_s)$	$3.034^{+0.045}_{-0.036}$	$\langle d^2 \rangle^{1/2}$	$2.449^{+0.062}_{-0.064}$	$H(0.61)$	$93.9^{+4.9}_{-4.4}$
$n_s$	$0.959^{+0.023}_{-0.022}$	$z_{\text{re}}$	$< 9.17$	$D_M(0.61)$	$2349^{+140}_{-140}$
$y_{\text{cal}}$	$1.0005^{+0.0064}_{-0.0062}$	$10^9 A_s$	$2.079^{+0.095}_{-0.073}$	$H(2.33)$	$233.8^{+9.1}_{-8.1}$
$A_{100}^{\text{PS}}$	$236^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.866^{+0.052}_{-0.051}$	$D_M(2.33)$	$5848^{+280}_{-280}$
$A_{143}^{\text{PS}}$	$37^{+20}_{-20}$	$D_{40}$	$1235^{+35}_{-37}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.016}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5719^{+100}_{-99}$	$\sigma_8(0.15)$	$0.740^{+0.029}_{-0.025}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2533^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.87$	$D_{1420}$	$817^{+13}_{-12}$	$\sigma_8(0.38)$	$0.656^{+0.027}_{-0.024}$
$r_{143 \times 217}^{\text{PS}}$	$0.67^{+0.30}_{-0.33}$	$D_{2000}$	$231.2^{+5.2}_{-5.1}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.959^{+0.023}_{-0.022}$	$\sigma_8(0.51)$	$0.613^{+0.026}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2441^{+0.0098}_{-0.010}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.014}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2454^{+0.0099}_{-0.010}$	$\sigma_8(0.61)$	$0.583^{+0.025}_{-0.023}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.51}$	Age/Gyr	$14.00^{+0.66}_{-0.67}$	$f\sigma_8(2.33)$	$0.294^{+0.014}_{-0.012}$
$A_{143}^{\text{dust}}$	$0.95^{+0.46}_{-0.45}$	$z_*$	$1089.77^{+0.89}_{-0.89}$	$\sigma_8(2.33)$	$0.303^{+0.015}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.98^{+0.26}_{-0.26}$	$r_*$	$146.4^{+5.9}_{-6.2}$	$f_{2000}^{143}$	$28^{+8}_{-8}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.40}_{-0.40}$	$100\theta_*$	$1.0415^{+0.0018}_{-0.0018}$	$f_{2000}^{217}$	$106.0^{+5.5}_{-5.4}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$14.05^{+0.55}_{-0.57}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-6}$
$c_{217}$	$1.0010^{+0.0040}_{-0.0039}$	$z_{\text{drag}}$	$1059.1^{+2.0}_{-1.9}$	$\chi_{\text{lensing}}^2$	$8.99 (\nu: 0.2)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$149.1^{+6.2}_{-6.4}$	$\chi_{\text{simall}}^2$	$396.7 (\nu: 1.1)$
$c_{EE}$	$0.990^{+0.014}_{-0.014}$	$k_D$	$0.1393^{+0.0050}_{-0.0046}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 0.9)$
$H_0$	$66.2^{+4.7}_{-4.2}$	$100\theta_D$	$0.1605^{+0.0012}_{-0.0011}$	$\chi_{\text{CamSpec}}^2$	$11513.5 (\nu: 15.4)$
$\Omega_\Lambda$	$0.680^{+0.027}_{-0.027}$	$z_{\text{eq}}$	$3412^{+100}_{-100}$	$\chi_{\text{Aver15}}^2$	$0.9 (\nu: 0.9)$
$\Omega_m$	$0.320^{+0.027}_{-0.027}$	$k_{\text{eq}}$	$0.01028^{+0.00032}_{-0.00032}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_m h^2$	$0.140^{+0.010}_{-0.0093}$	$100\theta_{\text{eq}}$	$0.811^{+0.019}_{-0.018}$	$\chi_{\text{CMB}}^2$	$11943.3 (\nu: 16.2)$
$\Omega_m h^3$	$0.093^{+0.014}_{-0.011}$	$100\theta_{s,\text{eq}}$	$0.4484^{+0.0097}_{-0.0092}$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.02; R - 1 = 0.01312$$



9.16 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02229^{+0.00048}_{-0.00047}$	$S_8$	$0.821^{+0.028}_{-0.029}$	$H(0.38)$	$82.6^{+3.9}_{-3.6}$
$\Omega_c h^2$	$0.1180^{+0.0098}_{-0.0095}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.015}_{-0.016}$	$D_M(0.38)$	$1538^{+76}_{-75}$
$100\theta_{MC}$	$1.0411^{+0.0016}_{-0.0016}$	$\sigma_8 \Omega_m^{0.25}$	$0.602^{+0.018}_{-0.018}$	$H(0.51)$	$89.2^{+4.0}_{-3.8}$
$\tau$	$0.056^{+0.017}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.020}$	$D_M(0.51)$	$1993^{+96}_{-95}$
$N_{\text{eff}}$	$2.98^{+0.61}_{-0.57}$	$r_{\text{drag}} h$	$99.6^{+2.2}_{-2.2}$	$H(0.61)$	$94.8^{+4.1}_{-3.9}$
$Y_P$	$0.2441^{+0.0097}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.054}_{-0.053}$	$D_M(0.61)$	$2319^{+110}_{-110}$
$\ln(10^{10} A_s)$	$3.041^{+0.041}_{-0.035}$	$z_{\text{re}}$	$< 9.33$	$H(2.33)$	$234.9^{+8.4}_{-8.2}$
$n_s$	$0.965^{+0.019}_{-0.018}$	$10^9 A_s$	$2.092^{+0.088}_{-0.072}$	$D_M(2.33)$	$5793^{+240}_{-240}$
$y_{\text{cal}}$	$1.0007^{+0.0063}_{-0.0060}$	$10^9 A_s e^{-2\tau}$	$1.871^{+0.050}_{-0.049}$	$f\sigma_8(0.15)$	$0.454^{+0.015}_{-0.015}$
$A_{100}^{\text{PS}}$	$237^{+60}_{-60}$	$D_{40}$	$1228^{+33}_{-33}$	$\sigma_8(0.15)$	$0.744^{+0.027}_{-0.025}$
$A_{143}^{\text{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5726^{+100}_{-97}$	$f\sigma_8(0.38)$	$0.472^{+0.014}_{-0.014}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+36}_{-33}$	$\sigma_8(0.38)$	$0.660^{+0.025}_{-0.023}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.79$	$D_{2000}$	$231.0^{+5.0}_{-4.9}$	$\sigma_8(0.51)$	$0.617^{+0.024}_{-0.022}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{s,0.002}$	$0.965^{+0.019}_{-0.018}$	$f\sigma_8(0.61)$	$0.466^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.2441^{+0.0097}_{-0.011}$	$\sigma_8(0.61)$	$0.587^{+0.023}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2454^{+0.0098}_{-0.011}$	$f\sigma_8(2.33)$	$0.296^{+0.012}_{-0.011}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.87^{+0.58}_{-0.57}$	$\sigma_8(2.33)$	$0.305^{+0.013}_{-0.012}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$z_*$	$1089.76^{+0.90}_{-0.91}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$A_{143}^{\text{dust}}$	$0.95^{+0.44}_{-0.45}$	$r_*$	$145.4^{+5.6}_{-5.6}$	$f_{2000}^{217}$	$106.4^{+5.7}_{-5.7}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	$1.0413^{+0.0016}_{-0.0017}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.40}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.96^{+0.52}_{-0.51}$	$\chi_{\text{lensing}}^2$	$9.21 (\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0029}$	$z_{\text{drag}}$	$1059.5^{+1.8}_{-1.8}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$r_{\text{drag}}$	$148.1^{+5.8}_{-5.7}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.6)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$k_D$	$0.1401^{+0.0045}_{-0.0044}$	$\chi_{\text{CamSpec}}^2$	$11514.1 (\nu: 15.2)$
$c_{EE}$	$0.991^{+0.014}_{-0.014}$	$100\theta_D$	$0.1607^{+0.0011}_{-0.0011}$	$\chi_{\text{Aver15}}^2$	$0.96 (\nu: 0.9)$
$H_0$	$67.2^{+3.7}_{-3.5}$	$z_{\text{eq}}$	$3384^{+70}_{-73}$	$\chi_{6\text{DF}}^2$	$0.066 (\nu: 0.0)$
$\Omega_\Lambda$	$0.688^{+0.018}_{-0.018}$	$k_{\text{eq}}$	$0.01028^{+0.00033}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.23 (\nu: 0.1)$
$\Omega_m$	$0.312^{+0.018}_{-0.018}$	$100\theta_{\text{eq}}$	$0.816^{+0.013}_{-0.013}$	$\chi_{\text{DR12BAO}}^2$	$5.0 (\nu: 1.3)$
$\Omega_m h^2$	$0.141^{+0.010}_{-0.0095}$	$100\theta_{s,\text{eq}}$	$0.4511^{+0.0069}_{-0.0065}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.8)$
$\Omega_m h^3$	$0.095^{+0.012}_{-0.011}$	$H(0.15)$	$72.5^{+3.7}_{-3.5}$	$\chi_{\text{CMB}}^2$	$11943.6 (\nu: 15.8)$
$\sigma_8$	$0.805^{+0.028}_{-0.026}$	$D_M(0.15)$	$645^{+33}_{-33}$	$\chi_{\text{BAO}}^2$	$6.3 (\nu: 0.9)$

$$\bar{\chi}_{\text{eff}}^2 = 11958.57; R - 1 = 0.01608$$



# 10 nrun

## 10.1 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02215	$0.02216^{+0.00060}_{-0.00060}$	$\sigma_8 \Omega_m^{0.5}$	0.4596	$0.459^{+0.035}_{-0.033}$	$H(0.15)$	72.28	$72.3^{+2.0}_{-2.0}$
$\Omega_c h^2$	0.1207	$0.1206^{+0.0056}_{-0.0053}$	$\sigma_8 \Omega_m^{0.25}$	0.6108	$0.610^{+0.030}_{-0.030}$	$D_M(0.15)$	647.3	$647^{+21}_{-20}$
$100\theta_{MC}$	1.04082	$1.0408^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	0.9925	$0.991^{+0.041}_{-0.041}$	$H(0.38)$	82.55	$82.6^{+1.5}_{-1.4}$
$\tau$	0.0529	$0.053^{+0.023}_{-0.022}$	$r_{\text{drag}} h$	98.46	$98.6^{+4.2}_{-4.2}$	$D_M(0.38)$	1541.6	$1541^{+41}_{-40}$
$\ln(10^{10} A_s)$	3.0419	$3.041^{+0.048}_{-0.048}$	$\langle d^2 \rangle^{1/2}$	2.448	$2.445^{+0.098}_{-0.096}$	$H(0.51)$	89.35	$89.4^{+1.2}_{-1.1}$
$n_s$	0.9624	$0.963^{+0.016}_{-0.016}$	$z_{\text{re}}$	7.59	$7.6^{+2.2}_{-2.5}$	$D_M(0.51)$	1995.6	$1994^{+48}_{-47}$
$dn_s/d \ln k$	-0.0033	$-0.003^{+0.019}_{-0.020}$	$10^9 A_s$	2.094	$2.09^{+0.10}_{-0.098}$	$H(0.61)$	95.04	$95.07^{+0.94}_{-0.89}$
$y_{\text{cal}}$	1.0006	$1.0004^{+0.0065}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8842	$1.883^{+0.039}_{-0.036}$	$D_M(0.61)$	2321	$2320^{+51}_{-51}$
$A_{100}^{\text{PS}}$	245	$244^{+60}_{-70}$	$D_{40}$	1224	$1223^{+54}_{-54}$	$H(2.33)$	236.78	$236.7^{+3.5}_{-3.2}$
$A_{143}^{\text{PS}}$	39.9	$42^{+20}_{-20}$	$D_{220}$	5706	$5704^{+110}_{-110}$	$D_M(2.33)$	5775.7	$5775^{+43}_{-43}$
$A_{217}^{\text{PS}}$	98.4	$100^{+30}_{-40}$	$D_{810}$	2535.5	$2535^{+37}_{-35}$	$f\sigma_8(0.15)$	0.4634	$0.463^{+0.031}_{-0.031}$
$A_{217}^{\text{CIB}}$	45.4	$42^{+20}_{-20}$	$D_{1420}$	813.5	$814^{+14}_{-14}$	$\sigma_8(0.15)$	0.7493	$0.749^{+0.020}_{-0.020}$
$A_{143}^{\text{tSZ}}$	5.16	$< 8.66$	$D_{2000}$	229.1	$229.1^{+5.2}_{-5.1}$	$f\sigma_8(0.38)$	0.4798	$0.479^{+0.024}_{-0.025}$
$r_{143 \times 217}^{\text{PS}}$	0.549	$0.64^{+0.32}_{-0.32}$	$n_{s,0.002}$	0.973	$0.974^{+0.061}_{-0.058}$	$\sigma_8(0.38)$	0.6632	$0.663^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\text{CIB}}$	0.74	—	$Y_P$	0.245306	$0.24530^{+0.00024}_{-0.00028}$	$f\sigma_8(0.51)$	0.4773	$0.477^{+0.021}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.00	—	$Y_P^{\text{BBN}}$	0.246632	$0.24663^{+0.00024}_{-0.00029}$	$\sigma_8(0.51)$	0.6202	$0.620^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	2.6	—	$10^5 D/H$	2.627	$2.63^{+0.12}_{-0.11}$	$f\sigma_8(0.61)$	0.4716	$0.471^{+0.018}_{-0.019}$
$A_{100}^{\text{dust}}$	1.02	$1.02^{+0.50}_{-0.51}$	Age/Gyr	13.825	$13.823^{+0.098}_{-0.097}$	$\sigma_8(0.61)$	0.5899	$0.590^{+0.014}_{-0.014}$
$A_{143}^{\text{dust}}$	0.986	$0.98^{+0.45}_{-0.46}$	$z_*$	1090.26	$1090.2^{+1.1}_{-1.0}$	$f\sigma_8(2.33)$	0.2971	$0.2970^{+0.0072}_{-0.0068}$
$A_{217}^{\text{dust}}$	0.961	$0.97^{+0.27}_{-0.27}$	$r_*$	144.42	$144.5^{+1.2}_{-1.3}$	$\sigma_8(2.33)$	0.3059	$0.3059^{+0.0077}_{-0.0072}$
$A_{143 \times 217}^{\text{dust}}$	1.002	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	1.04103	$1.0410^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	32.0	$32^{+9}_{-9}$
$c_{100}$	0.99751	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.873	$13.88^{+0.12}_{-0.12}$	$f_{2000}^{217}$	108.3	$108.0^{+5.6}_{-5.8}$
$c_{217}$	1.00149	$1.0013^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	1059.47	$1059.5^{+1.2}_{-1.3}$	$f_{2000}^{143 \times 217}$	33.7	$34^{+6}_{-6}$
$H_0$	66.91	$67.0^{+2.4}_{-2.3}$	$r_{\text{drag}}$	147.16	$147.2^{+1.3}_{-1.3}$	$\chi_{\text{small}}^2$	395.9	$397.0 (\nu: 1.6)$
$\Omega_\Lambda$	0.6795	$0.680^{+0.032}_{-0.036}$	$k_D$	0.14063	$0.1406^{+0.0014}_{-0.0014}$	$\chi_{\text{lowl}}^2$	22.73	$23.1 (\nu: 2.2)$
$\Omega_m$	0.3205	$0.320^{+0.036}_{-0.032}$	$100\theta_D$	0.16103	$0.16103^{+0.00077}_{-0.00073}$	$\chi_{\text{CamSpec}}^2$	7050.5	$7064.2 (\nu: 16.0)$
$\Omega_m h^2$	0.1435	$0.1434^{+0.0054}_{-0.0051}$	$z_{\text{eq}}$	3413	$3410^{+130}_{-120}$	$\chi_{\text{prior}}^2$	2.4	$7.7 (\nu: 6.1)$
$\Omega_m h^3$	0.09599	$0.0960^{+0.0013}_{-0.0013}$	$k_{\text{eq}}$	0.010417	$0.01041^{+0.00039}_{-0.00037}$	$\chi_{\text{CMB}}^2$	7469.1	$7484.4 (\nu: 15.9)$
$\sigma_8$	0.8118	$0.811^{+0.023}_{-0.024}$	$100\theta_{\text{eq}}$	0.8107	$0.811^{+0.023}_{-0.023}$			
$S_8$	0.839	$0.838^{+0.063}_{-0.060}$	$100\theta_{s,\text{eq}}$	0.4482	$0.448^{+0.012}_{-0.012}$			

Best-fit  $\chi_{\text{eff}}^2 = 7471.52$ ;  $\Delta\chi_{\text{eff}}^2 = -0.22$ ;  $\bar{\chi}_{\text{eff}}^2 = 7492.14$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.60$ ;  $R - 1 = 0.00818$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 ( $\Delta$  0.07) commander\_dx12\_v3.2.29: 22.73 ( $\Delta$  -0.67) CamSpec like\_10.7HM: 7050.50 ( $\Delta$  0.16)



## 10.2 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02225^{+0.00054}_{-0.00055}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.021}_{-0.020}$	$H(0.38)$	$83.01^{+0.91}_{-0.91}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0032}_{-0.0031}$	$\sigma_8/h^{0.5}$	$0.981^{+0.031}_{-0.029}$	$D_{\mathrm{M}}(0.38)$	$1528^{+24}_{-23}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$99.8^{+2.4}_{-2.4}$	$H(0.51)$	$89.71^{+0.76}_{-0.75}$
$\tau$	$0.055^{+0.023}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.074}_{-0.072}$	$D_{\mathrm{M}}(0.51)$	$1980^{+29}_{-28}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.050}_{-0.047}$	$z_{\mathrm{re}}$	$7.7^{+2.2}_{-2.4}$	$H(0.61)$	$95.31^{+0.64}_{-0.64}$
$n_{\mathrm{s}}$	$0.967^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.11}_{-0.097}$	$D_{\mathrm{M}}(0.61)$	$2305^{+31}_{-30}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.003^{+0.019}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.032}_{-0.030}$	$H(2.33)$	$235.8^{+2.1}_{-1.9}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0068}_{-0.0064}$	$D_{40}$	$1217^{+53}_{-50}$	$D_{\mathrm{M}}(2.33)$	$5764^{+33}_{-33}$
$A_{100}^{\mathrm{PS}}$	$243^{+60}_{-70}$	$D_{220}$	$5710^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+37}_{-34}$	$\sigma_8(0.15)$	$0.746^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$D_{1420}$	$814^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.472^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.5^{+5.1}_{-5.1}$	$\sigma_8(0.38)$	$0.661^{+0.016}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.62$	$n_{\mathrm{s},0.002}$	$0.975^{+0.061}_{-0.058}$	$f\sigma_8(0.51)$	$0.471^{+0.016}_{-0.015}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24534^{+0.00021}_{-0.00026}$	$\sigma_8(0.51)$	$0.619^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24667^{+0.00021}_{-0.00026}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.098}$	$\sigma_8(0.61)$	$0.589^{+0.014}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.801^{+0.076}_{-0.076}$	$f\sigma_8(2.33)$	$0.2971^{+0.0072}_{-0.0066}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.51}_{-0.53}$	$z_{*}$	$1089.98^{+0.80}_{-0.78}$	$\sigma_8(2.33)$	$0.3063^{+0.0076}_{-0.0068}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$r_{*}$	$144.80^{+0.82}_{-0.86}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_{*}$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.7^{+5.6}_{-6.0}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.44}_{-0.42}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.906^{+0.080}_{-0.083}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+1.2}_{-1.3}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 1.9)$
$c_{217}$	$1.0013^{+0.0039}_{-0.0039}$	$r_{\mathrm{drag}}$	$147.51^{+0.94}_{-0.95}$	$\chi_{\mathrm{lowl}}^2$	$22.6 (\nu: 1.6)$
$H_0$	$67.7^{+1.4}_{-1.4}$	$k_{\mathrm{D}}$	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.6 (\nu: 15.3)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.019}$	$100\theta_{\mathrm{D}}$	$0.16098^{+0.00074}_{-0.00071}$	$\chi_{6\mathrm{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.019}_{-0.018}$	$z_{\mathrm{eq}}$	$3374^{+76}_{-71}$	$\chi_{\mathrm{MGS}}^2$	$1.39 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1418^{+0.0032}_{-0.0030}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0012}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.013}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.2)$
$\sigma_8$	$0.807^{+0.020}_{-0.020}$	$100\theta_{\mathrm{s,eq}}$	$0.4520^{+0.0069}_{-0.0071}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.820^{+0.039}_{-0.037}$	$H(0.15)$	$72.9^{+1.2}_{-1.2}$	$\chi_{\mathrm{CMB}}^2$	$7484.3 (\nu: 15.1)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$641^{+12}_{-11}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7498.15; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.60; R - 1 = 0.01937$$



### 10.3 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02217^{+0.00056}_{-0.00059}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.457^{+0.023}_{-0.022}$	$H(0.15)$	$72.4^{+1.6}_{-1.6}$
$\Omega_{\mathrm{c}} h^2$	$0.1202^{+0.0041}_{-0.0040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.020}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$646^{+16}_{-16}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.990^{+0.027}_{-0.027}$	$H(0.38)$	$82.7^{+1.2}_{-1.2}$
$\tau$	$0.053^{+0.022}_{-0.022}$	$r_{\mathrm{drag}} h$	$98.8^{+3.2}_{-3.1}$	$D_{\mathrm{M}}(0.38)$	$1539^{+32}_{-32}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.044}_{-0.043}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.070}_{-0.068}$	$H(0.51)$	$89.43^{+0.97}_{-0.94}$
$n_{\mathrm{s}}$	$0.964^{+0.014}_{-0.013}$	$z_{\mathrm{re}}$	$7.6^{+2.1}_{-2.4}$	$D_{\mathrm{M}}(0.51)$	$1992^{+38}_{-38}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.002^{+0.019}_{-0.019}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.093}_{-0.088}$	$H(0.61)$	$95.10^{+0.81}_{-0.78}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881^{+0.032}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2317^{+41}_{-41}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{40}$	$1224^{+52}_{-51}$	$H(2.33)$	$236.5^{+2.5}_{-2.4}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5707^{+110}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5773^{+39}_{-39}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-14}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.66$	$D_{2000}$	$229.2^{+5.2}_{-5.0}$	$f\sigma_8(0.38)$	$0.478^{+0.016}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.971^{+0.060}_{-0.058}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00028}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00022}_{-0.00028}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.470^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.820^{+0.089}_{-0.089}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$z_{*}$	$1090.20^{+0.98}_{-0.91}$	$f\sigma_8(2.33)$	$0.2970^{+0.0065}_{-0.0063}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.28}$	$r_{*}$	$144.52^{+0.97}_{-0.97}$	$\sigma_8(2.33)$	$0.3060^{+0.0072}_{-0.0068}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$100\theta_{*}$	$1.0411^{+0.0011}_{-0.0012}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.882^{+0.092}_{-0.091}$	$f_{2000}^{217}$	$107.9^{+5.7}_{-5.7}$
$c_{217}$	$1.0013^{+0.0040}_{-0.0039}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.1^{+1.8}_{-1.8}$	$r_{\mathrm{drag}}$	$147.3^{+1.0}_{-1.0}$	$\chi_{\mathrm{lensing}}^2$	$9.61 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.682^{+0.025}_{-0.026}$	$k_{\mathrm{D}}$	$0.1405^{+0.0012}_{-0.0013}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.5)$
$\Omega_{\mathrm{m}}$	$0.318^{+0.026}_{-0.025}$	$100\theta_{\mathrm{D}}$	$0.16103^{+0.00078}_{-0.00071}$	$\chi_{\mathrm{lowl}}^2$	$23.2 (\nu: 2.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1431^{+0.0039}_{-0.0038}$	$z_{\mathrm{eq}}$	$3403^{+94}_{-91}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.5 (\nu: 14.6)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01039^{+0.00029}_{-0.00028}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.0)$
$\sigma_8$	$0.811^{+0.016}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.017}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	$7493.4 (\nu: 15.9)$
$S_8$	$0.834^{+0.043}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.4492^{+0.0089}_{-0.0087}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7501.08$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.83$ ;  $R - 1 = 0.01225$



#### 10.4 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02225^{+0.00054}_{-0.00056}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	$82.97^{+0.87}_{-0.85}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0029}_{-0.0028}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1530^{+23}_{-22}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$99.7^{+2.2}_{-2.2}$	$H(0.51)$	$89.67^{+0.73}_{-0.72}$
$\tau$	$0.056^{+0.021}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.059}_{-0.059}$	$D_{\mathrm{M}}(0.51)$	$1982^{+27}_{-27}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.042}_{-0.039}$	$z_{\mathrm{re}}$	$7.9^{+2.0}_{-2.1}$	$H(0.61)$	$95.28^{+0.64}_{-0.62}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.090}_{-0.081}$	$D_{\mathrm{M}}(0.61)$	$2306^{+29}_{-29}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.002^{+0.019}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.029}_{-0.029}$	$H(2.33)$	$235.9^{+1.9}_{-1.8}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0067}_{-0.0064}$	$D_{40}$	$1220^{+51}_{-51}$	$D_{\mathrm{M}}(2.33)$	$5765^{+32}_{-33}$
$A_{100}^{\mathrm{PS}}$	$243^{+60}_{-70}$	$D_{220}$	$5714^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$101^{+40}_{-30}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.7^{+5.0}_{-4.9}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.59$	$n_{\mathrm{s},0.002}$	$0.974^{+0.062}_{-0.059}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.24534^{+0.00021}_{-0.00026}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24667^{+0.00021}_{-0.00026}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.098}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803^{+0.075}_{-0.077}$	$f\sigma_8(2.33)$	$0.2977^{+0.0063}_{-0.0058}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.52}$	$z_{*}$	$1090.00^{+0.79}_{-0.74}$	$\sigma_8(2.33)$	$0.3069^{+0.0069}_{-0.0063}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.44}$	$r_{*}$	$144.75^{+0.75}_{-0.78}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_{*}$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.6^{+5.6}_{-6.1}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.44}_{-0.43}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.902^{+0.075}_{-0.074}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+1.2}_{-1.3}$	$\chi_{\mathrm{lensing}}^2$	$9.47 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0039}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.46^{+0.86}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 1.9)$
$H_0$	$67.6^{+1.3}_{-1.3}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{lowl}}^2$	$22.8 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.018}$	$100\theta_{\mathrm{D}}$	$0.16098^{+0.00074}_{-0.00070}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 (\nu: 14.3)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.018}_{-0.017}$	$z_{\mathrm{eq}}$	$3378^{+68}_{-65}$	$\chi_{6\mathrm{DF}}^2$	$0.057 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0028}_{-0.0027}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00021}_{-0.00020}$	$\chi_{\mathrm{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0012}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.2)$
$\sigma_8$	$0.809^{+0.017}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0062}_{-0.0063}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$S_8$	$0.824^{+0.031}_{-0.030}$	$H(0.15)$	$72.9^{+1.1}_{-1.1}$	$\chi_{\mathrm{CMB}}^2$	$7493.4 (\nu: 15.3)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	$641^{+11}_{-11}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.8)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7507.23; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.75; R - 1 = 0.02103$$



# 10.5 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02217^{+0.00060}_{-0.00060}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.459^{+0.034}_{-0.033}$	$H(0.15)$	$72.4^{+2.0}_{-2.0}$
$\Omega_{\mathrm{c}} h^2$	$0.1205^{+0.0055}_{-0.0053}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.611^{+0.030}_{-0.030}$	$D_{\mathrm{M}}(0.15)$	$646^{+21}_{-20}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.992^{+0.040}_{-0.041}$	$H(0.38)$	$82.6^{+1.5}_{-1.4}$
$\tau$	$0.055^{+0.020}_{-0.013}$	$r_{\mathrm{drag}} h$	$98.6^{+4.2}_{-4.1}$	$D_{\mathrm{M}}(0.38)$	$1540^{+41}_{-40}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.046}_{-0.033}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.098}_{-0.093}$	$H(0.51)$	$89.4^{+1.2}_{-1.1}$
$n_{\mathrm{s}}$	$0.963^{+0.016}_{-0.015}$	$z_{\mathrm{re}}$	$< 9.65$	$D_{\mathrm{M}}(0.51)$	$1994^{+47}_{-47}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.004^{+0.019}_{-0.020}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.098}_{-0.068}$	$H(0.61)$	$95.08^{+0.93}_{-0.88}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0065}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883^{+0.038}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2319^{+51}_{-50}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{40}$	$1222^{+54}_{-54}$	$H(2.33)$	$236.7^{+3.4}_{-3.2}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5704^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5774^{+43}_{-43}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$D_{810}$	$2535^{+37}_{-35}$	$f\sigma_8(0.15)$	$0.463^{+0.031}_{-0.031}$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.750^{+0.019}_{-0.018}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.64$	$D_{2000}$	$229.2^{+5.2}_{-5.1}$	$f\sigma_8(0.38)$	$0.480^{+0.024}_{-0.025}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.975^{+0.061}_{-0.058}$	$\sigma_8(0.38)$	$0.664^{+0.016}_{-0.013}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00028}$	$f\sigma_8(0.51)$	$0.477^{+0.020}_{-0.021}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00024}_{-0.00028}$	$\sigma_8(0.51)$	$0.621^{+0.014}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.12}_{-0.11}$	$f\sigma_8(0.61)$	$0.472^{+0.018}_{-0.019}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.52}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.821^{+0.098}_{-0.096}$	$\sigma_8(0.61)$	$0.591^{+0.014}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.46}$	$z_*$	$1090.2^{+1.1}_{-1.0}$	$f\sigma_8(2.33)$	$0.2975^{+0.0068}_{-0.0049}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.5^{+1.2}_{-1.3}$	$\sigma_8(2.33)$	$0.3064^{+0.0074}_{-0.0050}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$31^{+8}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.88^{+0.11}_{-0.12}$	$f_{2000}^{217}$	$108.0^{+5.6}_{-5.9}$
$c_{217}$	$1.0013^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.5^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$H_0$	$67.0^{+2.4}_{-2.3}$	$r_{\mathrm{drag}}$	$147.2^{+1.3}_{-1.3}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.681^{+0.032}_{-0.035}$	$k_{\mathrm{D}}$	$0.1406^{+0.0014}_{-0.0014}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 2.1)$
$\Omega_{\mathrm{m}}$	$0.319^{+0.035}_{-0.032}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00077}_{-0.00073}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.2 (\nu: 16.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1433^{+0.0053}_{-0.0051}$	$z_{\mathrm{eq}}$	$3409^{+130}_{-120}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0013}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00039}_{-0.00037}$	$\chi_{\mathrm{CMB}}^2$	$7484.1 (\nu: 15.5)$
$\sigma_8$	$0.812^{+0.023}_{-0.022}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.023}_{-0.023}$		
$S_8$	$0.838^{+0.063}_{-0.060}$	$100\theta_{\mathrm{s,eq}}$	$0.449^{+0.012}_{-0.012}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7491.87; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.61; R - 1 = 0.00915$					



## 10.6 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226^{+0.00054}_{-0.00054}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.021}_{-0.019}$	$H(0.38)$	$83.02^{+0.90}_{-0.90}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0032}_{-0.0030}$	$\sigma_8/h^{0.5}$	$0.982^{+0.030}_{-0.028}$	$D_{\mathrm{M}}(0.38)$	$1528^{+24}_{-23}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$99.9^{+2.3}_{-2.4}$	$H(0.51)$	$89.72^{+0.75}_{-0.74}$
$\tau$	$0.056^{+0.020}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.073}_{-0.068}$	$D_{\mathrm{M}}(0.51)$	$1980^{+29}_{-27}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.048}_{-0.033}$	$z_{\mathrm{re}}$	$< 9.70$	$H(0.61)$	$95.32^{+0.63}_{-0.64}$
$n_{\mathrm{s}}$	$0.967^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.096}_{-0.074}$	$D_{\mathrm{M}}(0.61)$	$2304^{+31}_{-30}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.003^{+0.019}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.032}_{-0.030}$	$H(2.33)$	$235.7^{+2.1}_{-1.9}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0069}_{-0.0064}$	$D_{40}$	$1216^{+53}_{-50}$	$D_{\mathrm{M}}(2.33)$	$5764^{+33}_{-33}$
$A_{100}^{\mathrm{PS}}$	$243^{+60}_{-70}$	$D_{220}$	$5710^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2533^{+37}_{-34}$	$\sigma_8(0.15)$	$0.747^{+0.018}_{-0.015}$
$A_{217}^{\mathrm{PS}}$	$100^{+40}_{-40}$	$D_{1420}$	$814^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.473^{+0.017}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.5^{+5.1}_{-5.1}$	$\sigma_8(0.38)$	$0.662^{+0.015}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.62$	$n_{\mathrm{s},0.002}$	$0.976^{+0.061}_{-0.058}$	$f\sigma_8(0.51)$	$0.472^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.24535^{+0.00021}_{-0.00025}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.011}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24667^{+0.00021}_{-0.00026}$	$f\sigma_8(0.61)$	$0.467^{+0.014}_{-0.013}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.10}_{-0.098}$	$\sigma_8(0.61)$	$0.590^{+0.014}_{-0.010}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.800^{+0.076}_{-0.076}$	$f\sigma_8(2.33)$	$0.2974^{+0.0070}_{-0.0051}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.51}_{-0.53}$	$z_{*}$	$1089.97^{+0.79}_{-0.79}$	$\sigma_8(2.33)$	$0.3067^{+0.0073}_{-0.0052}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$r_{*}$	$144.80^{+0.82}_{-0.86}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_{*}$	$1.0413^{+0.0010}_{-0.0011}$	$f_{2000}^{217}$	$107.7^{+5.6}_{-5.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.906^{+0.081}_{-0.083}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+1.2}_{-1.3}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.9)$
$c_{217}$	$1.0013^{+0.0039}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.51^{+0.94}_{-0.95}$	$\chi_{\mathrm{lowl}}^2$	$22.5 (\nu: 1.6)$
$H_0$	$67.7^{+1.4}_{-1.4}$	$k_{\mathrm{D}}$	$0.1403^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.5 (\nu: 15.2)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.019}$	$100\theta_{\mathrm{D}}$	$0.16097^{+0.00075}_{-0.00070}$	$\chi_{6\mathrm{DF}}^2$	$0.053 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.019}_{-0.018}$	$z_{\mathrm{eq}}$	$3374^{+76}_{-70}$	$\chi_{\mathrm{MGS}}^2$	$1.40 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1418^{+0.0032}_{-0.0029}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00023}_{-0.00021}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0012}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.013}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.2)$
$\sigma_8$	$0.808^{+0.020}_{-0.017}$	$100\theta_{\mathrm{s,eq}}$	$0.4521^{+0.0069}_{-0.0071}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.8)$
$S_8$	$0.821^{+0.039}_{-0.037}$	$H(0.15)$	$73.0^{+1.2}_{-1.2}$	$\chi_{\mathrm{CMB}}^2$	$7484.1 (\nu: 14.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$641^{+12}_{-11}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7497.95$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.64$ ;  $R - 1 = 0.02138$



## 10.7 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218^{+0.00056}_{-0.00058}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.457^{+0.023}_{-0.022}$	$H(0.15)$	$72.5^{+1.6}_{-1.5}$
$\Omega_{\mathrm{c}} h^2$	$0.1201^{+0.0040}_{-0.0039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.020}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$645^{+16}_{-15}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$0.990^{+0.027}_{-0.027}$	$H(0.38)$	$82.7^{+1.2}_{-1.1}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$r_{\mathrm{drag}} h$	$98.9^{+3.1}_{-3.0}$	$D_{\mathrm{M}}(0.38)$	$1537^{+31}_{-31}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.041}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.070}_{-0.068}$	$H(0.51)$	$89.46^{+0.95}_{-0.90}$
$n_{\mathrm{s}}$	$0.964^{+0.014}_{-0.013}$	$z_{\mathrm{re}}$	$< 9.53$	$D_{\mathrm{M}}(0.51)$	$1991^{+36}_{-37}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.003^{+0.019}_{-0.019}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.088}_{-0.061}$	$H(0.61)$	$95.12^{+0.80}_{-0.75}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0066}_{-0.0063}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881^{+0.032}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2316^{+39}_{-40}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{40}$	$1223^{+51}_{-50}$	$H(2.33)$	$236.4^{+2.5}_{-2.4}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{220}$	$5707^{+110}_{-100}$	$D_{\mathrm{M}}(2.33)$	$5772^{+37}_{-39}$
$A_{217}^{\mathrm{PS}}$	$100^{+40}_{-40}$	$D_{810}$	$2534^{+36}_{-34}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.020}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.64$	$D_{2000}$	$229.3^{+5.2}_{-5.1}$	$f\sigma_8(0.38)$	$0.478^{+0.016}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.972^{+0.059}_{-0.057}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00027}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00027}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0095}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.470^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.53}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.818^{+0.085}_{-0.087}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0090}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$z_{*}$	$1090.17^{+0.94}_{-0.90}$	$f\sigma_8(2.33)$	$0.2974^{+0.0062}_{-0.0046}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.28}$	$r_{*}$	$144.55^{+0.96}_{-0.95}$	$\sigma_8(2.33)$	$0.3064^{+0.0069}_{-0.0051}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$100\theta_{*}$	$1.0411^{+0.0011}_{-0.0012}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.884^{+0.091}_{-0.089}$	$f_{2000}^{217}$	$107.9^{+5.6}_{-5.7}$
$c_{217}$	$1.0013^{+0.0040}_{-0.0039}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.2^{+1.8}_{-1.8}$	$r_{\mathrm{drag}}$	$147.3^{+1.0}_{-0.99}$	$\chi_{\mathrm{lensing}}^2$	$9.59 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.683^{+0.024}_{-0.025}$	$k_{\mathrm{D}}$	$0.1405^{+0.0012}_{-0.0013}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.5)$
$\Omega_{\mathrm{m}}$	$0.317^{+0.025}_{-0.024}$	$100\theta_{\mathrm{D}}$	$0.16102^{+0.00076}_{-0.00071}$	$\chi_{\mathrm{lowl}}^2$	$23.1 (\nu: 2.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1429^{+0.0038}_{-0.0037}$	$z_{\mathrm{eq}}$	$3400^{+91}_{-89}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.5 (\nu: 14.7)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0012}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00028}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.0)$
$\sigma_8$	$0.811^{+0.016}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.017}_{-0.016}$	$\chi_{\mathrm{CMB}}^2$	$7493.1 (\nu: 15.5)$
$S_8$	$0.834^{+0.042}_{-0.040}$	$100\theta_{\mathrm{s,eq}}$	$0.4495^{+0.0088}_{-0.0085}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7500.82$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.81$ ;  $R - 1 = 0.01490$



# 10.8 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02225^{+0.00054}_{-0.00055}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$H(0.38)$	$82.98^{+0.87}_{-0.84}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0028}_{-0.0028}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1530^{+22}_{-22}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$99.7^{+2.2}_{-2.1}$	$H(0.51)$	$89.68^{+0.72}_{-0.71}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.059}_{-0.059}$	$D_{\mathrm{M}}(0.51)$	$1982^{+26}_{-26}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.043}_{-0.032}$	$z_{\mathrm{re}}$	$< 9.66$	$H(0.61)$	$95.29^{+0.63}_{-0.61}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.092}_{-0.066}$	$D_{\mathrm{M}}(0.61)$	$2306^{+28}_{-29}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.002^{+0.019}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.029}_{-0.029}$	$H(2.33)$	$235.9^{+1.8}_{-1.8}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0067}_{-0.0064}$	$D_{40}$	$1220^{+51}_{-51}$	$D_{\mathrm{M}}(2.33)$	$5765^{+32}_{-33}$
$A_{100}^{\mathrm{PS}}$	$243^{+60}_{-60}$	$D_{220}$	$5714^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$100^{+40}_{-30}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.7^{+5.0}_{-4.9}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.57$	$n_{\mathrm{s},0.002}$	$0.974^{+0.062}_{-0.059}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.24534^{+0.00021}_{-0.00026}$	$\sigma_8(0.51)$	$0.621^{+0.013}_{-0.0099}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24667^{+0.00021}_{-0.00026}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.098}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0094}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.802^{+0.075}_{-0.076}$	$f\sigma_8(2.33)$	$0.2978^{+0.0062}_{-0.0047}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.51}_{-0.53}$	$z_{*}$	$1090.00^{+0.78}_{-0.74}$	$\sigma_8(2.33)$	$0.3071^{+0.0067}_{-0.0050}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$r_{*}$	$144.76^{+0.75}_{-0.77}$	$f_{2000}^{143}$	$31^{+8}_{-9}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.28}$	$100\theta_{*}$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.7^{+5.6}_{-6.1}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.44}_{-0.43}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.902^{+0.075}_{-0.074}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.6^{+1.2}_{-1.3}$	$\chi_{\mathrm{lensing}}^2$	$9.43 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0039}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.47^{+0.86}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 2.0)$
$H_0$	$67.6^{+1.3}_{-1.3}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{lowl}}^2$	$22.8 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16098^{+0.00075}_{-0.00070}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 (\nu: 14.4)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.017}_{-0.017}$	$z_{\mathrm{eq}}$	$3378^{+67}_{-65}$	$\chi_{6\mathrm{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0028}_{-0.0027}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{MGS}}^2$	$1.31 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0960^{+0.0013}_{-0.0012}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.1)$
$\sigma_8$	$0.809^{+0.016}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4517^{+0.0062}_{-0.0063}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$S_8$	$0.824^{+0.031}_{-0.030}$	$H(0.15)$	$72.9^{+1.1}_{-1.1}$	$\chi_{\mathrm{CMB}}^2$	$7493.3 (\nu: 15.1)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	$641^{+11}_{-11}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7507.10; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.78; R - 1 = 0.02288$$



# 10.9 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022296	$0.02229^{+0.00041}_{-0.00041}$	$\sigma_8$	0.8086	$0.808^{+0.020}_{-0.020}$	$100\theta_{\text{eq}}$	0.8148	$0.815^{+0.015}_{-0.016}$
$\Omega_c h^2$	0.11967	$0.1196^{+0.0037}_{-0.0035}$	$S_8$	0.8272	$0.826^{+0.044}_{-0.041}$	$100\theta_{\text{s,eq}}$	0.4502	$0.4503^{+0.0077}_{-0.0080}$
$100\theta_{\text{MC}}$	1.04087	$1.04087^{+0.00081}_{-0.00082}$	$\sigma_8 \Omega_m^{0.5}$	0.4531	$0.453^{+0.024}_{-0.023}$	$H(0.15)$	72.70	$72.7^{+1.3}_{-1.3}$
$\tau$	0.0532	$0.053^{+0.022}_{-0.023}$	$\sigma_8 \Omega_m^{0.25}$	0.6053	$0.605^{+0.022}_{-0.022}$	$D_{\text{M}}(0.15)$	643.1	$643^{+14}_{-13}$
$\ln(10^{10} A_{\text{s}})$	3.0394	$3.039^{+0.046}_{-0.045}$	$\sigma_8/h^{0.5}$	0.9849	$0.984^{+0.031}_{-0.031}$	$H(0.38)$	82.86	$82.86^{+0.98}_{-0.97}$
$n_{\text{s}}$	0.9660	$0.966^{+0.012}_{-0.013}$	$r_{\text{drag}} h$	99.25	$99.3^{+2.7}_{-2.8}$	$D_{\text{M}}(0.38)$	1533.1	$1533^{+27}_{-26}$
$dn_{\text{s}}/d \ln k$	-0.0007	$-0.001^{+0.018}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	2.433	$2.432^{+0.074}_{-0.076}$	$H(0.51)$	89.60	$89.60^{+0.78}_{-0.74}$
$y_{\text{cal}}$	1.0003	$1.0004^{+0.0064}_{-0.0065}$	$z_{\text{re}}$	7.57	$7.5^{+2.2}_{-2.5}$	$D_{\text{M}}(0.51)$	1985.6	$1985^{+32}_{-31}$
$A_{100}^{\text{PS}}$	237	$241^{+60}_{-70}$	$10^9 A_{\text{s}}$	2.089	$2.088^{+0.098}_{-0.093}$	$H(0.61)$	95.24	$95.24^{+0.63}_{-0.60}$
$A_{143}^{\text{PS}}$	42.4	$40^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8786	$1.879^{+0.033}_{-0.032}$	$D_{\text{M}}(0.61)$	2310.2	$2310^{+34}_{-33}$
$A_{217}^{\text{PS}}$	102.5	$102^{+30}_{-40}$	$D_{40}$	1223.7	$1224^{+48}_{-44}$	$H(2.33)$	236.26	$236.2^{+2.2}_{-2.1}$
$A_{217}^{\text{CIB}}$	42.9	$40^{+20}_{-20}$	$D_{220}$	5715	$5716^{+100}_{-99}$	$D_{\text{M}}(2.33)$	5766.6	$5767^{+28}_{-29}$
$A_{143}^{\text{tSZ}}$	5.59	< 8.84	$D_{810}$	2534.9	$2535^{+35}_{-36}$	$f\sigma_8(0.15)$	0.4574	$0.457^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\text{PS}}$	0.627	$0.65^{+0.31}_{-0.33}$	$D_{1420}$	815.6	$815^{+13}_{-13}$	$\sigma_8(0.15)$	0.7469	$0.746^{+0.018}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	0.78	—	$D_{2000}$	230.18	$230.0^{+4.7}_{-4.8}$	$f\sigma_8(0.38)$	0.4752	$0.475^{+0.018}_{-0.018}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$n_{\text{s},0.002}$	0.968	$0.969^{+0.051}_{-0.053}$	$\sigma_8(0.38)$	0.6618	$0.661^{+0.015}_{-0.015}$
$A^{\text{kSZ}}$	1.5	—	$Y_{\text{P}}$	0.245366	$0.24536^{+0.00016}_{-0.00018}$	$f\sigma_8(0.51)$	0.4735	$0.473^{+0.016}_{-0.016}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.51}_{-0.49}$	$Y_{\text{P}}^{\text{BBN}}$	0.246692	$0.24669^{+0.00016}_{-0.00018}$	$\sigma_8(0.51)$	0.6192	$0.619^{+0.014}_{-0.014}$
$A_{143}^{\text{dust}}$	0.978	$0.97^{+0.46}_{-0.46}$	$10^5 D/\text{H}$	2.599	$2.601^{+0.078}_{-0.075}$	$f\sigma_8(0.61)$	0.4683	$0.468^{+0.014}_{-0.015}$
$A_{217}^{\text{dust}}$	0.971	$0.97^{+0.27}_{-0.27}$	Age/Gyr	13.805	$13.805^{+0.062}_{-0.063}$	$\sigma_8(0.61)$	0.5891	$0.589^{+0.013}_{-0.013}$
$A_{143 \times 217}^{\text{dust}}$	0.992	$1.03^{+0.42}_{-0.41}$	$z_*$	1089.99	$1089.99^{+0.74}_{-0.71}$	$f\sigma_8(2.33)$	0.2970	$0.2968^{+0.0068}_{-0.0066}$
$c_{100}$	0.99763	$0.9975^{+0.0028}_{-0.0027}$	$r_*$	144.57	$144.59^{+0.81}_{-0.84}$	$\sigma_8(2.33)$	0.3060	$0.3059^{+0.0071}_{-0.0070}$
$c_{217}$	1.00129	$1.0011^{+0.0040}_{-0.0040}$	$100\theta_*$	1.04107	$1.04106^{+0.00079}_{-0.00081}$	$f_{2000}^{143}$	30.2	$30^{+8}_{-8}$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.887	$13.889^{+0.076}_{-0.079}$	$f_{2000}^{217}$	106.9	$107.1^{+5.7}_{-5.5}$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1059.74	$1059.73^{+0.89}_{-0.86}$	$f_{2000}^{143 \times 217}$	32.2	$32^{+6}_{-6}$
$H_0$	67.40	$67.4^{+1.6}_{-1.6}$	$r_{\text{drag}}$	147.26	$147.28^{+0.84}_{-0.86}$	$\chi_{\text{simall}}^2$	395.88	$396.9 (\nu: 1.5)$
$\Omega_{\Lambda}$	0.6860	$0.686^{+0.021}_{-0.023}$	$k_{\text{D}}$	0.14063	$0.1406^{+0.0010}_{-0.00094}$	$\chi_{\text{lowl}}^2$	22.85	$23.1 (\nu: 1.7)$
$\Omega_{\text{m}}$	0.3140	$0.314^{+0.023}_{-0.021}$	$100\theta_{\text{D}}$	0.16086	$0.16087^{+0.00052}_{-0.00050}$	$\chi_{\text{CamSpec}}^2$	11499.9	$11515.5 (\nu: 17.5)$
$\Omega_{\text{m}} h^2$	0.14261	$0.1426^{+0.0035}_{-0.0033}$	$z_{\text{eq}}$	3392	$3391^{+84}_{-79}$	$\chi_{\text{prior}}^2$	2.2	$7.8 (\nu: 6.0)$
$\Omega_{\text{m}} h^3$	0.09611	$0.09609^{+0.00088}_{-0.00083}$	$k_{\text{eq}}$	0.010354	$0.01035^{+0.00026}_{-0.00024}$	$\chi_{\text{CMB}}^2$	11918.6	$11935.6 (\nu: 17.6)$

Best-fit  $\chi_{\text{eff}}^2 = 11920.76$ ;  $\Delta\chi_{\text{eff}}^2 = -0.00$ ;  $\bar{\chi}_{\text{eff}}^2 = 11943.38$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 0.92$ ;  $R - 1 = 0.00835$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 22.85 ( $\Delta$  -0.15) CamSpec like\_10.7HM\_1400\_unified: 11499.86 ( $\Delta$  0.21)



## 10.10 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.018}_{-0.018}$	$H(0.38)$	$83.04^{+0.76}_{-0.72}$
$\Omega_{\mathrm{c}}h^2$	$0.1189^{+0.0026}_{-0.0026}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.018}_{-0.019}$	$D_{\mathrm{M}}(0.38)$	$1528^{+20}_{-20}$
$100\theta_{\mathrm{MC}}$	$1.04095^{+0.00077}_{-0.00079}$	$\sigma_8/h^{0.5}$	$0.980^{+0.027}_{-0.027}$	$H(0.51)$	$89.74^{+0.62}_{-0.58}$
$\tau$	$0.054^{+0.022}_{-0.022}$	$r_{\mathrm{drag}}h$	$99.8^{+2.0}_{-2.0}$	$D_{\mathrm{M}}(0.51)$	$1980^{+23}_{-24}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039^{+0.046}_{-0.044}$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.066}_{-0.069}$	$H(0.61)$	$95.34^{+0.52}_{-0.49}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.010}$	$z_{\mathrm{re}}$	$7.6^{+2.1}_{-2.4}$	$D_{\mathrm{M}}(0.61)$	$2304^{+25}_{-26}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.000^{+0.017}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.088^{+0.097}_{-0.091}$	$H(2.33)$	$235.8^{+1.7}_{-1.6}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0061}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5762^{+24}_{-25}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-70}$	$D_{40}$	$1222^{+46}_{-43}$	$f\sigma_8(0.15)$	$0.453^{+0.017}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5720^{+100}_{-99}$	$\sigma_8(0.15)$	$0.745^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2534^{+35}_{-36}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.015}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.661^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.82$	$D_{2000}$	$230.3^{+4.5}_{-4.5}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.014}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.969^{+0.052}_{-0.054}$	$\sigma_8(0.51)$	$0.618^{+0.014}_{-0.014}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.466^{+0.013}_{-0.013}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.593^{+0.072}_{-0.071}$	$f\sigma_8(2.33)$	$0.2968^{+0.0067}_{-0.0065}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.53}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796^{+0.054}_{-0.055}$	$\sigma_8(2.33)$	$0.3061^{+0.0069}_{-0.0067}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_{*}$	$1089.88^{+0.61}_{-0.59}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_{*}$	$144.73^{+0.64}_{-0.66}$	$f_{2000}^{217}$	$106.9^{+5.4}_{-5.5}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_{*}$	$1.04114^{+0.00076}_{-0.00077}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.901^{+0.062}_{-0.063}$	$\chi_{\mathrm{simall}}^2$	$397.0\ (\nu: 1.5)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.77^{+0.88}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	$23.0\ (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.41^{+0.70}_{-0.70}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.4\ (\nu: 17.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14050^{+0.00088}_{-0.00087}$	$\chi_{6\mathrm{DF}}^2$	$0.045\ (\nu: 0.0)$
$H_0$	$67.7^{+1.2}_{-1.1}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00052}_{-0.00050}$	$\chi_{\mathrm{MGS}}^2$	$1.36\ (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.016}$	$z_{\mathrm{eq}}$	$3376^{+61}_{-59}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6\ (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00019}_{-0.00018}$	$\chi_{\mathrm{prior}}^2$	$7.8\ (\nu: 6.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1419^{+0.0026}_{-0.0025}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\mathrm{BAO}}^2$	$5.97\ (\nu: 0.5)$
$\Omega_{\mathrm{m}}h^3$	$0.09609^{+0.00088}_{-0.00082}$	$100\theta_{\mathrm{s,eq}}$	$0.4518^{+0.0059}_{-0.0058}$	$\chi_{\mathrm{CMB}}^2$	$11935.4\ (\nu: 17.7)$
$\sigma_8$	$0.806^{+0.020}_{-0.019}$	$H(0.15)$	$73.0^{+1.0}_{-0.98}$		
$S_8$	$0.819^{+0.032}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$640.4^{+9.8}_{-10}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.15; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.86; R - 1 = 0.01377$$



### 10.11 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02229^{+0.00041}_{-0.00040}$	$S_8$	$0.828^{+0.033}_{-0.032}$	$H(0.15)$	$72.7^{+1.2}_{-1.2}$
$\Omega_{\mathrm{c}} h^2$	$0.1197^{+0.0032}_{-0.0031}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.454^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$643^{+12}_{-12}$
$100\theta_{\mathrm{MC}}$	$1.04086^{+0.00082}_{-0.00080}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.016}_{-0.017}$	$H(0.38)$	$82.85^{+0.92}_{-0.86}$
$\tau$	$0.054^{+0.021}_{-0.021}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1533^{+24}_{-24}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.040}$	$r_{\mathrm{drag}} h$	$99.2^{+2.5}_{-2.4}$	$H(0.51)$	$89.59^{+0.74}_{-0.69}$
$n_{\mathrm{s}}$	$0.965^{+0.011}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.060}_{-0.058}$	$D_{\mathrm{M}}(0.51)$	$1986^{+28}_{-28}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.001^{+0.017}_{-0.017}$	$z_{\mathrm{re}}$	$7.6^{+2.0}_{-2.3}$	$H(0.61)$	$95.23^{+0.60}_{-0.56}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0062}_{-0.0065}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.088}_{-0.082}$	$D_{\mathrm{M}}(0.61)$	$2311^{+30}_{-31}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-70}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.030}_{-0.029}$	$H(2.33)$	$236.3^{+2.0}_{-1.8}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{40}$	$1226^{+47}_{-44}$	$D_{\mathrm{M}}(2.33)$	$5767^{+27}_{-28}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5719^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-35}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.86$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	$230.1^{+4.6}_{-4.7}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.967^{+0.053}_{-0.053}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24536^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00016}_{-0.00018}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.50}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.601^{+0.077}_{-0.074}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.806^{+0.060}_{-0.062}$	$f\sigma_8(2.33)$	$0.2971^{+0.0062}_{-0.0059}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1089.99^{+0.68}_{-0.68}$	$\sigma_8(2.33)$	$0.3062^{+0.0067}_{-0.0065}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$r_*$	$144.57^{+0.72}_{-0.75}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0028}$	$100\theta_*$	$1.04105^{+0.00081}_{-0.00079}$	$f_{2000}^{217}$	$107.0^{+5.5}_{-5.4}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887^{+0.068}_{-0.070}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.73^{+0.89}_{-0.86}$	$\chi_{\mathrm{lensing}}^2$	$9.33 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.26^{+0.74}_{-0.78}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$H_0$	$67.4^{+1.4}_{-1.4}$	$k_{\mathrm{D}}$	$0.14062^{+0.00093}_{-0.00089}$	$\chi_{\mathrm{lowl}}^2$	$23.4 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.686^{+0.019}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.16087^{+0.00052}_{-0.00051}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.9 (\nu: 17.0)$
$\Omega_{\mathrm{m}}$	$0.314^{+0.020}_{-0.019}$	$z_{\mathrm{eq}}$	$3393^{+74}_{-69}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1426^{+0.0031}_{-0.0029}$	$k_{\mathrm{eq}}$	$0.01036^{+0.00023}_{-0.00021}$	$\chi_{\mathrm{CMB}}^2$	$11944.5 (\nu: 18.0)$
$\Omega_{\mathrm{m}} h^3$	$0.09610^{+0.00088}_{-0.00082}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.013}_{-0.013}$		
$\sigma_8$	$0.809^{+0.016}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4502^{+0.0068}_{-0.0069}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.22; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.78; R - 1 = 0.01144$$



## 10.12 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.38)$	$83.01^{+0.74}_{-0.68}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0024}_{-0.0024}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1529^{+18}_{-19}$
$100\theta_{\mathrm{MC}}$	$1.04094^{+0.00079}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$H(0.51)$	$89.71^{+0.62}_{-0.56}$
$\tau$	$0.055^{+0.021}_{-0.019}$	$r_{\mathrm{drag}} h$	$99.7^{+1.9}_{-1.8}$	$D_{\mathrm{M}}(0.51)$	$1981^{+22}_{-23}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.041}_{-0.038}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.055}_{-0.056}$	$H(0.61)$	$95.33^{+0.51}_{-0.47}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.010}$	$z_{\mathrm{re}}$	$7.8^{+2.0}_{-2.1}$	$D_{\mathrm{M}}(0.61)$	$2305^{+23}_{-25}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.000^{+0.018}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.087}_{-0.079}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0061}_{-0.0063}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.029}_{-0.027}$	$D_{\mathrm{M}}(2.33)$	$5763^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-70}$	$D_{40}$	$1225^{+45}_{-44}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+100}_{-96}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.84$	$D_{2000}$	$230.4^{+4.5}_{-4.5}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.053}_{-0.053}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.011}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.594^{+0.073}_{-0.071}$	$f\sigma_8(2.33)$	$0.2974^{+0.0060}_{-0.0056}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.53}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797^{+0.054}_{-0.055}$	$\sigma_8(2.33)$	$0.3067^{+0.0063}_{-0.0060}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.89^{+0.60}_{-0.60}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$144.70^{+0.60}_{-0.61}$	$f_{2000}^{217}$	$106.9^{+5.4}_{-5.4}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	$1.04113^{+0.00077}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898^{+0.059}_{-0.059}$	$\chi_{\mathrm{lensing}}^2$	$9.32 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.78^{+0.88}_{-0.84}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.38^{+0.65}_{-0.65}$	$\chi_{\mathrm{lowl}}^2$	$23.2 (\nu: 1.8)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14053^{+0.00083}_{-0.00084}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 (\nu: 16.9)$
$H_0$	$67.6^{+1.1}_{-1.1}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00051}_{-0.00050}$	$\chi_{6\mathrm{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.015}_{-0.015}$	$z_{\mathrm{eq}}$	$3380^{+56}_{-55}$	$\chi_{\mathrm{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.015}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1421^{+0.0023}_{-0.0023}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.011}_{-0.010}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^3$	$0.09610^{+0.00087}_{-0.00083}$	$100\theta_{\mathrm{s,eq}}$	$0.4515^{+0.0055}_{-0.0053}$	$\chi_{\mathrm{CMB}}^2$	$11944.4 (\nu: 17.7)$
$\sigma_8$	$0.808^{+0.016}_{-0.015}$	$H(0.15)$	$72.92^{+0.98}_{-0.91}$	$\chi_{\mathrm{BAO}}^2$	$6.02 (\nu: 0.5)$
$S_8$	$0.822^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$641.0^{+9.2}_{-9.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.12; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.72; R - 1 = 0.01586$$



### 10.13 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242^{+0.00041}_{-0.00041}$	$S_8$	$0.810^{+0.039}_{-0.034}$	$H(0.15)$	$73.3^{+1.1}_{-1.2}$
$\Omega_{\mathrm{c}}h^2$	$0.1181^{+0.0034}_{-0.0032}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.021}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	$637^{+12}_{-11}$
$100\theta_{\mathrm{MC}}$	$1.04107^{+0.00074}_{-0.00079}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.597^{+0.021}_{-0.019}$	$H(0.38)$	$83.31^{+0.90}_{-0.91}$
$\tau$	$0.055^{+0.023}_{-0.022}$	$\sigma_8/h^{0.5}$	$0.974^{+0.030}_{-0.028}$	$D_{\mathrm{M}}(0.38)$	$1521^{+25}_{-22}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.048}_{-0.045}$	$r_{\mathrm{drag}}h$	$100.5^{+2.4}_{-2.6}$	$H(0.51)$	$89.95^{+0.70}_{-0.72}$
$n_{\mathrm{s}}$	$0.970^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.410^{+0.070}_{-0.064}$	$D_{\mathrm{M}}(0.51)$	$1971^{+29}_{-27}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.000^{+0.017}_{-0.018}$	$z_{\mathrm{re}}$	$7.7^{+2.2}_{-2.3}$	$H(0.61)$	$95.51^{+0.60}_{-0.59}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0062}_{-0.0064}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.10}_{-0.091}$	$D_{\mathrm{M}}(0.61)$	$2295^{+31}_{-29}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872^{+0.032}_{-0.031}$	$H(2.33)$	$235.3^{+2.1}_{-2.0}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1218^{+47}_{-48}$	$D_{\mathrm{M}}(2.33)$	$5755^{+27}_{-29}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5725^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.449^{+0.020}_{-0.018}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-35}$	$\sigma_8(0.15)$	$0.744^{+0.018}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.95$	$D_{1420}$	$817^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.468^{+0.017}_{-0.015}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.45}$	$D_{2000}$	$230.6^{+4.7}_{-4.6}$	$\sigma_8(0.38)$	$0.660^{+0.016}_{-0.015}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.971^{+0.052}_{-0.052}$	$f\sigma_8(0.51)$	$0.468^{+0.015}_{-0.014}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24541^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	$0.618^{+0.015}_{-0.014}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24674^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	$0.463^{+0.014}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.57}_{-0.50}$	$10^5\mathrm{D}/\mathrm{H}$	$2.578^{+0.077}_{-0.073}$	$\sigma_8(0.61)$	$0.588^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.44}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780^{+0.061}_{-0.064}$	$f\sigma_8(2.33)$	$0.2969^{+0.0069}_{-0.0064}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.26}_{-0.27}$	$z_*$	$1089.69^{+0.69}_{-0.67}$	$\sigma_8(2.33)$	$0.3064^{+0.0073}_{-0.0065}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.40}_{-0.41}$	$r_*$	$144.90^{+0.80}_{-0.80}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0029}_{-0.0027}$	$100\theta_*$	$1.04125^{+0.00075}_{-0.00077}$	$f_{2000}^{217}$	$106.6^{+5.4}_{-5.2}$
$c_{217}$	$1.0011^{+0.0039}_{-0.0041}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916^{+0.076}_{-0.075}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.90^{+0.91}_{-0.85}$	$\chi_{\mathrm{simall}}^2$	$397.1\ (\nu: 2.0)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.55^{+0.82}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$22.7\ (\nu: 1.5)$
$H_0$	$68.1^{+1.3}_{-1.5}$	$k_{\mathrm{D}}$	$0.14042^{+0.00093}_{-0.00090}$	$\chi_{\mathrm{CamSpec}}^2$	$11517.0\ (\nu: 20.4)$
$\Omega_{\Lambda}$	$0.696^{+0.018}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.16078^{+0.00050}_{-0.00052}$	$\chi_{\mathrm{H073p45}}^2$	$10.4\ (\nu: 2.4)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.020}_{-0.018}$	$z_{\mathrm{eq}}$	$3357^{+77}_{-72}$	$\chi_{\mathrm{prior}}^2$	$7.8\ (\nu: 6.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0032}_{-0.0030}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00024}_{-0.00022}$	$\chi_{\mathrm{CMB}}^2$	$11936.8\ (\nu: 19.8)$
$\Omega_{\mathrm{m}}h^3$	$0.09614^{+0.00085}_{-0.00082}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.014}_{-0.014}$		
$\sigma_8$	$0.804^{+0.021}_{-0.020}$	$100\theta_{\mathrm{s,eq}}$	$0.4537^{+0.0071}_{-0.0074}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11955.07; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.80; R - 1 = 0.04651$$



# 10.14 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00041}_{-0.00041}$	$\sigma_8$	$0.809^{+0.019}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.015}_{-0.016}$
$\Omega_{\mathrm{c}} h^2$	$0.1196^{+0.0037}_{-0.0035}$	$S_8$	$0.827^{+0.043}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.4504^{+0.0078}_{-0.0080}$
$100\theta_{\mathrm{MC}}$	$1.04088^{+0.00080}_{-0.00081}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.024}_{-0.022}$	$H(0.15)$	$72.7^{+1.3}_{-1.3}$
$\tau$	$0.054^{+0.020}_{-0.013}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.15)$	$643^{+14}_{-13}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.043}_{-0.031}$	$\sigma_8/h^{0.5}$	$0.985^{+0.030}_{-0.030}$	$H(0.38)$	$82.88^{+0.98}_{-0.96}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.013}$	$r_{\mathrm{drag}} h$	$99.3^{+2.7}_{-2.8}$	$D_{\mathrm{M}}(0.38)$	$1533^{+27}_{-26}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.001^{+0.018}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.073}_{-0.072}$	$H(0.51)$	$89.62^{+0.78}_{-0.75}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0063}_{-0.0065}$	$z_{\mathrm{re}}$	$< 9.52$	$D_{\mathrm{M}}(0.51)$	$1985^{+32}_{-30}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.093}_{-0.064}$	$H(0.61)$	$95.25^{+0.63}_{-0.59}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.033}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2310^{+34}_{-33}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{40}$	$1223^{+48}_{-44}$	$H(2.33)$	$236.2^{+2.2}_{-2.1}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{220}$	$5716^{+100}_{-98}$	$D_{\mathrm{M}}(2.33)$	$5766^{+28}_{-28}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.84$	$D_{810}$	$2535^{+35}_{-35}$	$f\sigma_8(0.15)$	$0.457^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.15)$	$0.747^{+0.017}_{-0.014}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$230.0^{+4.7}_{-4.8}$	$f\sigma_8(0.38)$	$0.475^{+0.018}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.970^{+0.051}_{-0.052}$	$\sigma_8(0.38)$	$0.662^{+0.015}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00018}$	$f\sigma_8(0.51)$	$0.474^{+0.015}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	$0.620^{+0.013}_{-0.010}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.46}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.599^{+0.078}_{-0.074}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.804^{+0.062}_{-0.063}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.0097}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_*$	$1089.97^{+0.72}_{-0.71}$	$f\sigma_8(2.33)$	$0.2972^{+0.0064}_{-0.0046}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$r_*$	$144.59^{+0.81}_{-0.83}$	$\sigma_8(2.33)$	$0.3063^{+0.0067}_{-0.0047}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$100\theta_*$	$1.04107^{+0.00078}_{-0.00079}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.076}_{-0.078}$	$f_{2000}^{217}$	$107.0^{+5.7}_{-5.5}$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.74^{+0.88}_{-0.88}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$H_0$	$67.4^{+1.5}_{-1.6}$	$r_{\mathrm{drag}}$	$147.28^{+0.83}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.4)$
$\Omega_{\Lambda}$	$0.686^{+0.021}_{-0.023}$	$k_{\mathrm{D}}$	$0.1406^{+0.0010}_{-0.00094}$	$\chi_{\mathrm{lowl}}^2$	$23.1 (\nu: 1.7)$
$\Omega_{\mathrm{m}}$	$0.314^{+0.023}_{-0.021}$	$100\theta_{\mathrm{D}}$	$0.16086^{+0.00052}_{-0.00050}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 (\nu: 17.4)$
$\Omega_{\mathrm{m}} h^2$	$0.1425^{+0.0035}_{-0.0033}$	$z_{\mathrm{eq}}$	$3391^{+84}_{-79}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^3$	$0.09610^{+0.00087}_{-0.00082}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00026}_{-0.00024}$	$\chi_{\mathrm{CMB}}^2$	$11935.2 (\nu: 17.1)$
$\bar{\chi}_{\mathrm{eff}}^2 = 11943.05; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.86; R - 1 = 0.00888$					



10.15 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02234^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.018}_{-0.018}$	$H(0.38)$	$83.05^{+0.77}_{-0.71}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0026}_{-0.0026}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.018}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1528^{+20}_{-20}$
$100\theta_{\mathrm{MC}}$	$1.04095^{+0.00075}_{-0.00077}$	$\sigma_8/h^{0.5}$	$0.981^{+0.026}_{-0.025}$	$H(0.51)$	$89.75^{+0.62}_{-0.58}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\mathrm{drag}} h$	$99.8^{+2.0}_{-2.0}$	$D_{\mathrm{M}}(0.51)$	$1979^{+23}_{-24}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.043}_{-0.031}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.064}_{-0.063}$	$H(0.61)$	$95.35^{+0.52}_{-0.48}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.010}$	$z_{\mathrm{re}}$	$< 9.51$	$D_{\mathrm{M}}(0.61)$	$2303^{+25}_{-26}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.001^{+0.017}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.092}_{-0.065}$	$H(2.33)$	$235.8^{+1.7}_{-1.6}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0061}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5762^{+24}_{-25}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-70}$	$D_{40}$	$1221^{+45}_{-43}$	$f\sigma_8(0.15)$	$0.454^{+0.016}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5719^{+100}_{-99}$	$\sigma_8(0.15)$	$0.746^{+0.017}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	$0.473^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.38)$	$0.662^{+0.015}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.86$	$D_{2000}$	$230.3^{+4.5}_{-4.5}$	$f\sigma_8(0.51)$	$0.471^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.970^{+0.052}_{-0.053}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.010}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.467^{+0.012}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.0095}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.073}_{-0.071}$	$f\sigma_8(2.33)$	$0.2972^{+0.0064}_{-0.0046}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.53}_{-0.49}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.795^{+0.054}_{-0.055}$	$\sigma_8(2.33)$	$0.3065^{+0.0066}_{-0.0047}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.44}$	$z_*$	$1089.87^{+0.61}_{-0.59}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$144.73^{+0.64}_{-0.66}$	$f_{2000}^{217}$	$106.9^{+5.4}_{-5.5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.40}_{-0.41}$	$100\theta_*$	$1.04114^{+0.00075}_{-0.00076}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901^{+0.060}_{-0.063}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.5)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.78^{+0.87}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.41^{+0.69}_{-0.71}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 (\nu: 17.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14050^{+0.00087}_{-0.00087}$	$\chi_{6\mathrm{DF}}^2$	$0.044 (\nu: 0.0)$
$H_0$	$67.7^{+1.2}_{-1.1}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00051}_{-0.00050}$	$\chi_{\mathrm{MGS}}^2$	$1.37 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.016}$	$z_{\mathrm{eq}}$	$3376^{+61}_{-59}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00019}_{-0.00018}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0026}_{-0.0025}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\mathrm{BAO}}^2$	$5.96 (\nu: 0.5)$
$\Omega_{\mathrm{m}} h^3$	$0.09610^{+0.00088}_{-0.00082}$	$100\theta_{\mathrm{s,eq}}$	$0.4519^{+0.0059}_{-0.0058}$	$\chi_{\mathrm{CMB}}^2$	$11935.1 (\nu: 17.2)$
$\sigma_8$	$0.807^{+0.019}_{-0.015}$	$H(0.15)$	$73.0^{+1.0}_{-0.97}$		
$S_8$	$0.820^{+0.032}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$640.4^{+9.7}_{-10}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.87; R - 1 = 0.01438$$



# 10.16 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00041}_{-0.00040}$	$S_8$	$0.828^{+0.033}_{-0.032}$	$H(0.15)$	$72.7^{+1.2}_{-1.2}$
$\Omega_{\mathrm{c}} h^2$	$0.1196^{+0.0031}_{-0.0030}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.454^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$643^{+12}_{-12}$
$100\theta_{\mathrm{MC}}$	$1.04087^{+0.00081}_{-0.00079}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.016}_{-0.016}$	$H(0.38)$	$82.87^{+0.91}_{-0.85}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1533^{+24}_{-24}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.040}_{-0.028}$	$r_{\mathrm{drag}} h$	$99.3^{+2.4}_{-2.3}$	$H(0.51)$	$89.61^{+0.74}_{-0.66}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.059}_{-0.057}$	$D_{\mathrm{M}}(0.51)$	$1985^{+28}_{-28}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.001^{+0.017}_{-0.017}$	$z_{\mathrm{re}}$	$< 9.44$	$H(0.61)$	$95.24^{+0.60}_{-0.55}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0061}_{-0.0064}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.084}_{-0.057}$	$D_{\mathrm{M}}(0.61)$	$2310^{+30}_{-31}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-70}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.029}_{-0.028}$	$H(2.33)$	$236.2^{+1.9}_{-1.8}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{40}$	$1226^{+47}_{-44}$	$D_{\mathrm{M}}(2.33)$	$5766^{+26}_{-27}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5719^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-35}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.86$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{2000}$	$230.1^{+4.6}_{-4.7}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.0099}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.968^{+0.052}_{-0.053}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24536^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0091}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00015}_{-0.00018}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.50}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.600^{+0.077}_{-0.073}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0086}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.44}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.805^{+0.057}_{-0.061}$	$f\sigma_8(2.33)$	$0.2974^{+0.0059}_{-0.0044}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1089.98^{+0.68}_{-0.67}$	$\sigma_8(2.33)$	$0.3065^{+0.0064}_{-0.0047}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$r_*$	$144.59^{+0.71}_{-0.74}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0028}$	$100\theta_*$	$1.04106^{+0.00079}_{-0.00078}$	$f_{2000}^{217}$	$107.0^{+5.5}_{-5.5}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888^{+0.068}_{-0.068}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.74^{+0.88}_{-0.87}$	$\chi_{\mathrm{lensing}}^2$	$9.28 (\nu: 0.2)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.27^{+0.74}_{-0.75}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$H_0$	$67.4^{+1.4}_{-1.4}$	$k_{\mathrm{D}}$	$0.14062^{+0.00090}_{-0.00089}$	$\chi_{\mathrm{lowl}}^2$	$23.3 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.686^{+0.018}_{-0.019}$	$100\theta_{\mathrm{D}}$	$0.16087^{+0.00053}_{-0.00050}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 (\nu: 16.9)$
$\Omega_{\mathrm{m}}$	$0.314^{+0.019}_{-0.018}$	$z_{\mathrm{eq}}$	$3391^{+70}_{-69}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1426^{+0.0029}_{-0.0029}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{CMB}}^2$	$11944.2 (\nu: 17.4)$
$\Omega_{\mathrm{m}} h^3$	$0.09610^{+0.00088}_{-0.00082}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.013}_{-0.013}$		
$\sigma_8$	$0.810^{+0.015}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4503^{+0.0067}_{-0.0067}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11951.93; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.68; R - 1 = 0.01119$$



# 10.17 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.014}_{-0.015}$	$H(0.38)$	$83.02^{+0.73}_{-0.67}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0024}_{-0.0024}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.014}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1529^{+18}_{-19}$
$100\theta_{\mathrm{MC}}$	$1.04094^{+0.00078}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.983^{+0.021}_{-0.021}$	$H(0.51)$	$89.72^{+0.61}_{-0.55}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$r_{\mathrm{drag}} h$	$99.7^{+1.9}_{-1.8}$	$D_{\mathrm{M}}(0.51)$	$1980^{+21}_{-23}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.040}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.054}_{-0.053}$	$H(0.61)$	$95.33^{+0.50}_{-0.47}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.0099}$	$z_{\mathrm{re}}$	$< 9.51$	$D_{\mathrm{M}}(0.61)$	$2305^{+23}_{-25}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$0.000^{+0.017}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.085}_{-0.061}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0060}_{-0.0064}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.028}_{-0.027}$	$D_{\mathrm{M}}(2.33)$	$5763^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-70}$	$D_{40}$	$1225^{+45}_{-43}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5723^{+100}_{-95}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-40}$	$D_{810}$	$2535^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.86$	$D_{2000}$	$230.4^{+4.5}_{-4.5}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.053}_{-0.053}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0094}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.4676^{+0.0099}_{-0.0096}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0089}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.593^{+0.073}_{-0.070}$	$f\sigma_8(2.33)$	$0.2976^{+0.0059}_{-0.0045}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.53}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797^{+0.053}_{-0.054}$	$\sigma_8(2.33)$	$0.3069^{+0.0062}_{-0.0047}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.44}$	$z_{*}$	$1089.89^{+0.59}_{-0.59}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_{*}$	$144.70^{+0.60}_{-0.60}$	$f_{2000}^{217}$	$106.9^{+5.4}_{-5.4}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_{*}$	$1.04113^{+0.00077}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0028}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.898^{+0.058}_{-0.058}$	$\chi_{\mathrm{lensing}}^2$	$9.27 (\nu: 0.2)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.78^{+0.88}_{-0.84}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.38^{+0.64}_{-0.65}$	$\chi_{\mathrm{lowl}}^2$	$23.2 (\nu: 1.8)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14053^{+0.00083}_{-0.00084}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 (\nu: 16.8)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00051}_{-0.00050}$	$\chi_{6\mathrm{DF}}^2$	$0.046 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.015}$	$z_{\mathrm{eq}}$	$3379^{+55}_{-55}$	$\chi_{\mathrm{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.015}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 0.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1421^{+0.0023}_{-0.0023}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.010}_{-0.010}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.09611^{+0.00087}_{-0.00083}$	$100\theta_{\mathrm{s,eq}}$	$0.4515^{+0.0054}_{-0.0052}$	$\chi_{\mathrm{CMB}}^2$	$11944.2 (\nu: 17.3)$
$\sigma_8$	$0.809^{+0.015}_{-0.013}$	$H(0.15)$	$72.93^{+0.98}_{-0.91}$	$\chi_{\mathrm{BAO}}^2$	$6.00 (\nu: 0.4)$
$S_8$	$0.823^{+0.026}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$640.9^{+9.1}_{-9.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.93; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.67; R - 1 = 0.01735$$



## 10.18 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242^{+0.00040}_{-0.00041}$	$S_8$	$0.810^{+0.039}_{-0.035}$	$H(0.15)$	$73.3^{+1.1}_{-1.2}$
$\Omega_{\mathrm{c}}h^2$	$0.1181^{+0.0034}_{-0.0031}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.021}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	$637^{+12}_{-11}$
$100\theta_{\mathrm{MC}}$	$1.04107^{+0.00074}_{-0.00077}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.598^{+0.020}_{-0.018}$	$H(0.38)$	$83.32^{+0.89}_{-0.90}$
$\tau$	$0.056^{+0.021}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.975^{+0.029}_{-0.026}$	$D_{\mathrm{M}}(0.38)$	$1521^{+25}_{-22}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.046}_{-0.032}$	$r_{\mathrm{drag}}h$	$100.5^{+2.4}_{-2.6}$	$H(0.51)$	$89.96^{+0.70}_{-0.71}$
$n_{\mathrm{s}}$	$0.970^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.412^{+0.069}_{-0.062}$	$D_{\mathrm{M}}(0.51)$	$1971^{+29}_{-26}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.001^{+0.017}_{-0.018}$	$z_{\mathrm{re}}$	$< 9.71$	$H(0.61)$	$95.52^{+0.60}_{-0.59}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0062}_{-0.0065}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.098}_{-0.066}$	$D_{\mathrm{M}}(0.61)$	$2294^{+31}_{-29}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872^{+0.031}_{-0.031}$	$H(2.33)$	$235.3^{+2.1}_{-2.0}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1217^{+46}_{-48}$	$D_{\mathrm{M}}(2.33)$	$5755^{+27}_{-28}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5725^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.449^{+0.020}_{-0.018}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2534^{+34}_{-35}$	$\sigma_8(0.15)$	$0.745^{+0.018}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.95$	$D_{1420}$	$817^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.469^{+0.017}_{-0.015}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.45}$	$D_{2000}$	$230.7^{+4.7}_{-4.6}$	$\sigma_8(0.38)$	$0.661^{+0.015}_{-0.011}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.971^{+0.052}_{-0.052}$	$f\sigma_8(0.51)$	$0.468^{+0.015}_{-0.014}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24541^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.010}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24674^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	$0.464^{+0.014}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.57}_{-0.50}$	$10^5\mathrm{D}/\mathrm{H}$	$2.577^{+0.077}_{-0.072}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.0097}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.44}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779^{+0.061}_{-0.063}$	$f\sigma_8(2.33)$	$0.2972^{+0.0067}_{-0.0049}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.26}_{-0.27}$	$z_*$	$1089.69^{+0.69}_{-0.66}$	$\sigma_8(2.33)$	$0.3068^{+0.0071}_{-0.0048}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.40}_{-0.41}$	$r_*$	$144.90^{+0.80}_{-0.79}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0029}_{-0.0027}$	$100\theta_*$	$1.04125^{+0.00075}_{-0.00076}$	$f_{2000}^{217}$	$106.6^{+5.4}_{-5.3}$
$c_{217}$	$1.0011^{+0.0039}_{-0.0041}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916^{+0.076}_{-0.075}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.91^{+0.93}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$397.1\ (\nu: 2.1)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$r_{\mathrm{drag}}$	$147.55^{+0.82}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$22.7\ (\nu: 1.5)$
$H_0$	$68.1^{+1.3}_{-1.5}$	$k_{\mathrm{D}}$	$0.14042^{+0.00093}_{-0.00090}$	$\chi_{\mathrm{CamSpec}}^2$	$11516.9\ (\nu: 20.7)$
$\Omega_{\Lambda}$	$0.696^{+0.018}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.16077^{+0.00050}_{-0.00052}$	$\chi_{\mathrm{H073p45}}^2$	$10.4\ (\nu: 2.4)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.020}_{-0.018}$	$z_{\mathrm{eq}}$	$3357^{+77}_{-71}$	$\chi_{\mathrm{prior}}^2$	$7.8\ (\nu: 6.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0032}_{-0.0030}$	$k_{\mathrm{eq}}$	$0.01025^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{CMB}}^2$	$11936.7\ (\nu: 19.8)$
$\Omega_{\mathrm{m}}h^3$	$0.09615^{+0.00082}_{-0.00083}$	$100\theta_{\mathrm{eq}}$	$0.822^{+0.014}_{-0.014}$		
$\sigma_8$	$0.805^{+0.020}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4538^{+0.0070}_{-0.0074}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11954.85; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.84; R - 1 = 0.05101$$



# 11 nrun+r

## 11.1 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02214	$0.02222^{+0.00064}_{-0.00061}$	$\sigma_8 \Omega_m^{0.25}$	0.6117	$0.608^{+0.030}_{-0.031}$	$D_M(0.38)$	1543.1	$1537^{+40}_{-43}$
$\Omega_c h^2$	0.1209	$0.1202^{+0.0054}_{-0.0055}$	$\sigma_8/h^{0.5}$	0.9937	$0.988^{+0.041}_{-0.042}$	$H(0.51)$	89.31	$89.5^{+1.3}_{-1.1}$
$100\theta_{MC}$	1.04081	$1.0409^{+0.0012}_{-0.0012}$	$r_{drag}h$	98.30	$98.9^{+4.4}_{-4.0}$	$D_M(0.51)$	1997.4	$1990^{+47}_{-50}$
$\tau$	0.0529	$0.053^{+0.023}_{-0.023}$	$\langle d^2 \rangle^{1/2}$	2.451	$2.432^{+0.099}_{-0.10}$	$H(0.61)$	95.00	$95.2^{+1.0}_{-0.90}$
$\ln(10^{10} A_s)$	3.0421	$3.042^{+0.048}_{-0.048}$	$z_{re}$	7.60	$7.6^{+2.2}_{-2.5}$	$D_M(0.61)$	2323	$2315^{+51}_{-54}$
$n_s$	0.9616	$0.964^{+0.016}_{-0.015}$	$10^9 A_s$	2.095	$2.10^{+0.10}_{-0.099}$	$H(2.33)$	236.90	$236.5^{+3.3}_{-3.3}$
$dn_s/d \ln k$	-0.0039	$-0.007^{+0.021}_{-0.023}$	$10^9 A_s e^{-2\tau}$	1.8847	$1.883^{+0.037}_{-0.036}$	$D_M(2.33)$	5777.0	$5771^{+44}_{-46}$
$r$	0.000	$< 0.218$	$D_{40}$	1224	$1232^{+60}_{-56}$	$f\sigma_8(0.15)$	0.4645	$0.460^{+0.031}_{-0.032}$
$y_{cal}$	1.0004	$1.0005^{+0.0064}_{-0.0064}$	$D_{220}$	5704	$5701^{+110}_{-110}$	$\sigma_8(0.15)$	0.7495	$0.748^{+0.020}_{-0.020}$
$A_{100}^{PS}$	248	$246^{+70}_{-70}$	$D_{810}$	2534.8	$2536^{+36}_{-36}$	$f\sigma_8(0.38)$	0.4805	$0.477^{+0.024}_{-0.025}$
$A_{143}^{PS}$	39.7	$43^{+20}_{-20}$	$D_{1420}$	812.8	$814^{+14}_{-14}$	$\sigma_8(0.38)$	0.6633	$0.662^{+0.016}_{-0.016}$
$A_{217}^{PS}$	98.2	$100^{+30}_{-40}$	$D_{2000}$	228.8	$229.0^{+5.2}_{-5.2}$	$f\sigma_8(0.51)$	0.4779	$0.475^{+0.021}_{-0.022}$
$A_{217}^{CIB}$	44.6	$42^{+20}_{-20}$	$n_{s,0.002}$	0.974	$0.986^{+0.075}_{-0.065}$	$\sigma_8(0.51)$	0.6203	$0.619^{+0.015}_{-0.015}$
$A_{143}^{tSZ}$	4.35	$< 8.67$	$Y_P$	0.245300	$0.24533^{+0.00025}_{-0.00029}$	$f\sigma_8(0.61)$	0.4721	$0.470^{+0.018}_{-0.020}$
$r_{143 \times 217}^{PS}$	0.548	$0.64^{+0.32}_{-0.32}$	$Y_P^{BBN}$	0.246626	$0.24666^{+0.00025}_{-0.00029}$	$\sigma_8(0.61)$	0.5899	$0.589^{+0.014}_{-0.014}$
$r_{143 \times 217}^{CIB}$	0.68	—	$10^5 D/H$	2.630	$2.61^{+0.12}_{-0.12}$	$f\sigma_8(2.33)$	0.2971	$0.2969^{+0.0069}_{-0.0068}$
$\xi^{tSZ \times CIB}$	0.00	—	Age/Gyr	13.828	$13.81^{+0.10}_{-0.10}$	$\sigma_8(2.33)$	0.3058	$0.3059^{+0.0074}_{-0.0073}$
$A^{kSZ}$	3.8	—	$z_*$	1090.30	$1090.1^{+1.1}_{-1.1}$	$r_{0.002}$	0.000	$< 0.234$
$A_{100}^{dust}$	1.02	$1.01^{+0.51}_{-0.51}$	$r_*$	144.38	$144.5^{+1.3}_{-1.2}$	$r_{0.01}$	0.000	$< 0.220$
$A_{143}^{dust}$	0.984	$0.98^{+0.46}_{-0.46}$	$100\theta_*$	1.04101	$1.0411^{+0.0012}_{-0.0012}$	$\ln(10^{10} A_t)$	-6.04	$-0.3^{+2.2}_{-4.0}$
$A_{217}^{dust}$	0.959	$0.97^{+0.26}_{-0.27}$	$D_M(z_*)/\text{Gpc}$	13.869	$13.88^{+0.12}_{-0.11}$	$r_{10}$	0.000	$< 0.125$
$A_{143 \times 217}^{dust}$	1.006	$1.03^{+0.42}_{-0.42}$	$z_{drag}$	1059.47	$1059.6^{+1.3}_{-1.3}$	$10^9 A_t$	0.000	$< 0.459$
$c_{100}$	0.99743	$0.9975^{+0.0027}_{-0.0027}$	$r_{drag}$	147.12	$147.2^{+1.3}_{-1.2}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.411$
$c_{217}$	1.00143	$1.0013^{+0.0041}_{-0.0041}$	$k_D$	0.14066	$0.1406^{+0.0014}_{-0.0015}$	$f_{2000}^{143}$	32.3	$32^{+9}_{-9}$
$H_0$	66.82	$67.2^{+2.5}_{-2.3}$	$100\theta_D$	0.16104	$0.16096^{+0.00078}_{-0.00075}$	$f_{2000}^{217}$	108.5	$108.2^{+5.7}_{-5.8}$
$\Omega_\Lambda$	0.6782	$0.683^{+0.033}_{-0.034}$	$z_{eq}$	3418	$3403^{+120}_{-130}$	$f_{2000}^{143 \times 217}$	33.9	$34^{+6}_{-6}$
$\Omega_m$	0.3218	$0.317^{+0.034}_{-0.033}$	$k_{eq}$	0.010431	$0.01039^{+0.00037}_{-0.00038}$	$\chi_{small}^2$	395.90	$397.3 (\nu: 1.5)$
$\Omega_m h^2$	0.1437	$0.1430^{+0.0051}_{-0.0053}$	$100\theta_{eq}$	0.8098	$0.813^{+0.024}_{-0.022}$	$\chi_{lowl}^2$	22.7	$23.7 (\nu: 2.6)$
$\Omega_m h^3$	0.09599	$0.0961^{+0.0013}_{-0.0013}$	$100\theta_{s,eq}$	0.4477	$0.449^{+0.012}_{-0.012}$	$\chi_{CamSpec}^2$	7050.5	$7065.1 (\nu: 16.5)$
$\sigma_8$	0.8122	$0.810^{+0.024}_{-0.024}$	$H(0.15)$	72.21	$72.5^{+2.2}_{-2.0}$	$\chi_{prior}^2$	2.4	$7.7 (\nu: 6.1)$
$S_8$	0.841	$0.833^{+0.062}_{-0.062}$	$D_M(0.15)$	648.1	$645^{+20}_{-21}$	$\chi_{CMB}^2$	7469.1	$7486.1 (\nu: 17.1)$
$\sigma_8 \Omega_m^{0.5}$	0.4607	$0.456^{+0.034}_{-0.034}$	$H(0.38)$	82.49	$82.7^{+1.6}_{-1.4}$			

Best-fit  $\chi_{eff}^2 = 7471.53$ ;  $\Delta\chi_{eff}^2 = -0.20$ ;  $\bar{\chi}_{eff}^2 = 7493.80$ ;  $\Delta\bar{\chi}_{eff}^2 = 2.26$ ;  $R - 1 = 0.00512$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 ( $\Delta$  0.07) commander\_dx12\_v3.2.29: 22.71 ( $\Delta$  -0.68) CamSpec like\_10.7HM: 7050.49 ( $\Delta$  0.15)



## 11.2 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00059}_{-0.00056}$	$\sigma_8/h^{0.5}$	$0.979^{+0.029}_{-0.031}$	$D_{\mathrm{M}}(0.51)$	$1979^{+29}_{-29}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0032}_{-0.0032}$	$r_{\mathrm{drag}} h$	$99.9^{+2.5}_{-2.4}$	$H(0.61)$	$95.35^{+0.68}_{-0.63}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0010}$	$\langle d^2 \rangle^{1/2}$	$2.412^{+0.076}_{-0.077}$	$D_{\mathrm{M}}(0.61)$	$2303^{+31}_{-32}$
$\tau$	$0.055^{+0.022}_{-0.022}$	$z_{\mathrm{re}}$	$7.7^{+2.1}_{-2.4}$	$H(2.33)$	$235.7^{+2.1}_{-2.0}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.048}_{-0.049}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.10}_{-0.10}$	$D_{\mathrm{M}}(2.33)$	$5762^{+32}_{-34}$
$n_{\mathrm{s}}$	$0.967^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.032}_{-0.031}$	$f\sigma_8(0.15)$	$0.453^{+0.020}_{-0.020}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.006^{+0.021}_{-0.024}$	$D_{40}$	$1228^{+61}_{-55}$	$\sigma_8(0.15)$	$0.745^{+0.018}_{-0.019}$
$r$	$< 0.225$	$D_{220}$	$5707^{+100}_{-110}$	$f\sigma_8(0.38)$	$0.472^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0066}_{-0.0064}$	$D_{810}$	$2535^{+37}_{-36}$	$\sigma_8(0.38)$	$0.661^{+0.016}_{-0.016}$
$A_{100}^{\mathrm{PS}}$	$245^{+70}_{-60}$	$D_{1420}$	$814^{+14}_{-13}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{2000}$	$229.3^{+5.2}_{-5.1}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$n_{\mathrm{s},0.002}$	$0.988^{+0.077}_{-0.064}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24536^{+0.00023}_{-0.00026}$	$\sigma_8(0.61)$	$0.589^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.74$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00023}_{-0.00026}$	$f\sigma_8(2.33)$	$0.2969^{+0.0069}_{-0.0068}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.31}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.60^{+0.11}_{-0.11}$	$\sigma_8(2.33)$	$0.3062^{+0.0073}_{-0.0070}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	Age/Gyr	$13.796^{+0.075}_{-0.078}$	$r_{0.002}$	$< 0.242$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1089.91^{+0.81}_{-0.83}$	$r_{0.01}$	$< 0.227$
$A^{\mathrm{kSZ}}$	—	$r_*$	$144.78^{+0.87}_{-0.86}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.2^{+2.1}_{-4.0}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0010}$	$r_{10}$	$< 0.129$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.46}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905^{+0.084}_{-0.084}$	$10^9 A_{\mathrm{t}}$	$< 0.475$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$z_{\mathrm{drag}}$	$1059.7^{+1.3}_{-1.3}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.422$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$r_{\mathrm{drag}}$	$147.48^{+0.95}_{-0.97}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$k_{\mathrm{D}}$	$0.1404^{+0.0013}_{-0.0013}$	$f_{2000}^{217}$	$108.0^{+5.8}_{-5.6}$
$c_{217}$	$1.0013^{+0.0041}_{-0.0041}$	$100\theta_{\mathrm{D}}$	$0.16092^{+0.00076}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.7^{+1.4}_{-1.4}$	$z_{\mathrm{eq}}$	$3373^{+75}_{-74}$	$\chi_{\mathrm{simall}}^2$	$397.4 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.691^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{lowl}}^2$	$23.3 (\nu: 2.2)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.019}_{-0.019}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.014}_{-0.013}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.3 (\nu: 15.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1418^{+0.0031}_{-0.0031}$	$100\theta_{\mathrm{s,eq}}$	$0.4521^{+0.0072}_{-0.0070}$	$\chi_{6\mathrm{DF}}^2$	$0.052 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0013}_{-0.0013}$	$H(0.15)$	$73.0^{+1.3}_{-1.2}$	$\chi_{\mathrm{MGS}}^2$	$1.43 (\nu: 0.1)$
$\sigma_8$	$0.806^{+0.020}_{-0.021}$	$D_{\mathrm{M}}(0.15)$	$640^{+12}_{-12}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.1)$
$S_8$	$0.818^{+0.039}_{-0.038}$	$H(0.38)$	$83.06^{+0.96}_{-0.90}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.1)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.021}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1527^{+24}_{-25}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.021}_{-0.021}$	$H(0.51)$	$89.75^{+0.80}_{-0.74}$	$\chi_{\mathrm{CMB}}^2$	$7486.0 (\nu: 16.4)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7499.85; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 2.30; R - 1 = 0.00974$$



### 11.3 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02223^{+0.00063}_{-0.00060}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.030}_{-0.031}$	$D_{\mathrm{M}}(0.38)$	$1537^{+40}_{-43}$
$\Omega_{\mathrm{c}} h^2$	$0.1201^{+0.0054}_{-0.0055}$	$\sigma_8/h^{0.5}$	$0.989^{+0.041}_{-0.042}$	$H(0.51)$	$89.5^{+1.3}_{-1.1}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}} h$	$98.9^{+4.4}_{-4.0}$	$D_{\mathrm{M}}(0.51)$	$1990^{+47}_{-50}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.098}_{-0.10}$	$H(0.61)$	$95.2^{+1.0}_{-0.89}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.046}_{-0.033}$	$z_{\mathrm{re}}$	$< 9.60$	$D_{\mathrm{M}}(0.61)$	$2314^{+50}_{-54}$
$n_{\mathrm{s}}$	$0.964^{+0.016}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.098}_{-0.069}$	$H(2.33)$	$236.5^{+3.3}_{-3.3}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.007^{+0.021}_{-0.023}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882^{+0.038}_{-0.036}$	$D_{\mathrm{M}}(2.33)$	$5770^{+43}_{-45}$
$r$	$< 0.220$	$D_{40}$	$1231^{+60}_{-56}$	$f\sigma_8(0.15)$	$0.460^{+0.031}_{-0.032}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0064}$	$D_{220}$	$5702^{+110}_{-110}$	$\sigma_8(0.15)$	$0.749^{+0.020}_{-0.018}$
$A_{100}^{\mathrm{PS}}$	$245^{+70}_{-70}$	$D_{810}$	$2536^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.478^{+0.024}_{-0.025}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-14}$	$\sigma_8(0.38)$	$0.663^{+0.016}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$D_{2000}$	$229.1^{+5.2}_{-5.2}$	$f\sigma_8(0.51)$	$0.476^{+0.021}_{-0.022}$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.987^{+0.075}_{-0.065}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.67$	$Y_{\mathrm{P}}$	$0.24534^{+0.00025}_{-0.00028}$	$f\sigma_8(0.61)$	$0.470^{+0.018}_{-0.019}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00025}_{-0.00028}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.011}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.12}_{-0.11}$	$f\sigma_8(2.33)$	$0.2973^{+0.0066}_{-0.0050}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.812^{+0.097}_{-0.10}$	$\sigma_8(2.33)$	$0.3063^{+0.0070}_{-0.0051}$
$A^{\mathrm{kSZ}}$	—	$z_{*}$	$1090.1^{+1.1}_{-1.1}$	$r_{0.002}$	$< 0.236$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$r_{*}$	$144.5^{+1.3}_{-1.2}$	$r_{0.01}$	$< 0.222$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.46}$	$100\theta_{*}$	$1.0411^{+0.0012}_{-0.0012}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.3^{+2.2}_{-4.0}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.88^{+0.12}_{-0.11}$	$r_{10}$	$< 0.126$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$z_{\mathrm{drag}}$	$1059.6^{+1.3}_{-1.3}$	$10^9 A_{\mathrm{t}}$	$< 0.464$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.2^{+1.3}_{-1.3}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.414$
$c_{217}$	$1.0013^{+0.0041}_{-0.0041}$	$k_{\mathrm{D}}$	$0.1406^{+0.0014}_{-0.0015}$	$f_{2000}^{143}$	$32^{+9}_{-9}$
$H_0$	$67.2^{+2.5}_{-2.3}$	$100\theta_{\mathrm{D}}$	$0.16095^{+0.00077}_{-0.00074}$	$f_{2000}^{217}$	$108.1^{+5.7}_{-5.8}$
$\Omega_{\Lambda}$	$0.683^{+0.033}_{-0.034}$	$z_{\mathrm{eq}}$	$3401^{+120}_{-130}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-6}$
$\Omega_{\mathrm{m}}$	$0.317^{+0.034}_{-0.033}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00037}_{-0.00038}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 1.5)$
$\Omega_{\mathrm{m}} h^2$	$0.1430^{+0.0051}_{-0.0052}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.024}_{-0.022}$	$\chi_{\mathrm{lowl}}^2$	$23.6 (\nu: 2.5)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0013}_{-0.0013}$	$100\theta_{\mathrm{s,eq}}$	$0.449^{+0.012}_{-0.011}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.0 (\nu: 16.4)$
$\sigma_8$	$0.811^{+0.023}_{-0.022}$	$H(0.15)$	$72.5^{+2.2}_{-2.0}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$S_8$	$0.833^{+0.062}_{-0.062}$	$D_{\mathrm{M}}(0.15)$	$645^{+20}_{-21}$	$\chi_{\mathrm{CMB}}^2$	$7485.8 (\nu: 16.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.456^{+0.034}_{-0.034}$	$H(0.38)$	$82.7^{+1.6}_{-1.4}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7493.58; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 2.32; R - 1 = 0.00549$$



## 11.4 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00058}_{-0.00056}$	$\sigma_8/h^{0.5}$	$0.980^{+0.029}_{-0.027}$	$D_{\mathrm{M}}(0.51)$	$1979^{+28}_{-29}$
$\Omega_{\mathrm{c}} h^2$	$0.1188^{+0.0032}_{-0.0032}$	$r_{\mathrm{drag}} h$	$99.9^{+2.5}_{-2.4}$	$H(0.61)$	$95.36^{+0.68}_{-0.64}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0010}$	$\langle d^2 \rangle^{1/2}$	$2.414^{+0.074}_{-0.073}$	$D_{\mathrm{M}}(0.61)$	$2303^{+31}_{-32}$
$\tau$	$0.056^{+0.020}_{-0.014}$	$z_{\mathrm{re}}$	$< 9.64$	$H(2.33)$	$235.7^{+2.1}_{-2.0}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.047}_{-0.034}$	$10^9 A_{\mathrm{s}}$	$2.10^{+0.10}_{-0.070}$	$D_{\mathrm{M}}(2.33)$	$5762^{+32}_{-34}$
$n_{\mathrm{s}}$	$0.967^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.032}_{-0.031}$	$f\sigma_8(0.15)$	$0.453^{+0.020}_{-0.019}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.007^{+0.020}_{-0.024}$	$D_{40}$	$1227^{+61}_{-55}$	$\sigma_8(0.15)$	$0.746^{+0.018}_{-0.015}$
$r$	$< 0.226$	$D_{220}$	$5706^{+100}_{-110}$	$f\sigma_8(0.38)$	$0.472^{+0.017}_{-0.016}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0066}_{-0.0064}$	$D_{810}$	$2535^{+37}_{-35}$	$\sigma_8(0.38)$	$0.662^{+0.015}_{-0.012}$
$A_{100}^{\mathrm{PS}}$	$245^{+70}_{-60}$	$D_{1420}$	$814^{+14}_{-13}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$D_{2000}$	$229.3^{+5.2}_{-5.1}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$n_{\mathrm{s},0.002}$	$0.989^{+0.077}_{-0.064}$	$f\sigma_8(0.61)$	$0.466^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24536^{+0.00023}_{-0.00026}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.010}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.73$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00023}_{-0.00026}$	$f\sigma_8(2.33)$	$0.2972^{+0.0067}_{-0.0052}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.31}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.60^{+0.11}_{-0.11}$	$\sigma_8(2.33)$	$0.3065^{+0.0070}_{-0.0053}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	Age/Gyr	$13.795^{+0.075}_{-0.078}$	$r_{0.002}$	$< 0.244$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1089.91^{+0.81}_{-0.83}$	$r_{0.01}$	$< 0.229$
$A^{\mathrm{kSZ}}$	—	$r_*$	$144.78^{+0.87}_{-0.86}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.2^{+2.1}_{-4.0}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0010}$	$r_{10}$	$< 0.131$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905^{+0.084}_{-0.084}$	$10^9 A_{\mathrm{t}}$	$< 0.478$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$z_{\mathrm{drag}}$	$1059.7^{+1.3}_{-1.3}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.425$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$r_{\mathrm{drag}}$	$147.48^{+0.96}_{-0.97}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$k_{\mathrm{D}}$	$0.1404^{+0.0013}_{-0.0013}$	$f_{2000}^{217}$	$107.9^{+5.9}_{-5.7}$
$c_{217}$	$1.0013^{+0.0041}_{-0.0041}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00076}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.8^{+1.5}_{-1.4}$	$z_{\mathrm{eq}}$	$3373^{+75}_{-74}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.691^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01029^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{lowl}}^2$	$23.3 (\nu: 2.2)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.019}_{-0.019}$	$100\theta_{\mathrm{eq}}$	$0.819^{+0.014}_{-0.013}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.3 (\nu: 15.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1418^{+0.0031}_{-0.0031}$	$100\theta_{\mathrm{s,eq}}$	$0.4522^{+0.0072}_{-0.0070}$	$\chi_{6\mathrm{DF}}^2$	$0.051 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0013}_{-0.0013}$	$H(0.15)$	$73.0^{+1.3}_{-1.2}$	$\chi_{\mathrm{MGS}}^2$	$1.44 (\nu: 0.1)$
$\sigma_8$	$0.807^{+0.020}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$640^{+12}_{-12}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.1)$
$S_8$	$0.819^{+0.039}_{-0.037}$	$H(0.38)$	$83.07^{+0.95}_{-0.90}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_{\mathrm{M}}(0.38)$	$1527^{+24}_{-25}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.020}_{-0.020}$	$H(0.51)$	$89.76^{+0.80}_{-0.74}$	$\chi_{\mathrm{CMB}}^2$	$7485.8 (\nu: 16.1)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7499.67; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 2.35; R - 1 = 0.00851$$



## 11.5 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022298	$0.02234^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_m^{0.5}$	0.4534	$0.453^{+0.018}_{-0.018}$	$D_M(0.38)$	1533.3	$1532^{+25}_{-25}$
$\Omega_c h^2$	0.11968	$0.1195^{+0.0032}_{-0.0033}$	$\sigma_8 \Omega_m^{0.25}$	0.6056	$0.605^{+0.017}_{-0.016}$	$H(0.51)$	89.59	$89.65^{+0.76}_{-0.73}$
$100\theta_{MC}$	1.04085	$1.04088^{+0.00080}_{-0.00079}$	$\sigma_8/h^{0.5}$	0.9855	$0.985^{+0.023}_{-0.023}$	$D_M(0.51)$	1985.9	$1984^{+30}_{-29}$
$\tau$	0.0534	$0.055^{+0.022}_{-0.020}$	$r_{drag}h$	99.23	$99.4^{+2.6}_{-2.5}$	$H(0.61)$	95.23	$95.28^{+0.62}_{-0.59}$
$\ln(10^{10} A_s)$	3.0405	$3.044^{+0.045}_{-0.040}$	$\langle d^2 \rangle^{1/2}$	2.435	$2.425^{+0.062}_{-0.064}$	$D_M(0.61)$	2310.5	$2308^{+32}_{-32}$
$n_s$	0.9659	$0.966^{+0.012}_{-0.012}$	$z_{re}$	7.60	$7.7^{+2.1}_{-2.1}$	$H(2.33)$	236.27	$236.2^{+2.0}_{-2.0}$
$dn_s/d \ln k$	-0.0008	$-0.005^{+0.018}_{-0.020}$	$10^9 A_s$	2.092	$2.099^{+0.096}_{-0.083}$	$D_M(2.33)$	5766.9	$5764^{+28}_{-29}$
$r$	0.020	$< 0.231$	$10^9 A_s e^{-2\tau}$	1.8798	$1.881^{+0.029}_{-0.029}$	$f\sigma_8(0.15)$	0.4578	$0.457^{+0.017}_{-0.017}$
$y_{cal}$	1.0005	$1.0006^{+0.0062}_{-0.0067}$	$D_{40}$	1231	$1239^{+58}_{-50}$	$\sigma_8(0.15)$	0.7473	$0.747^{+0.014}_{-0.014}$
$A_{100}^{PS}$	235	$242^{+60}_{-60}$	$D_{220}$	5718	$5714^{+100}_{-100}$	$f\sigma_8(0.38)$	0.4755	$0.475^{+0.014}_{-0.013}$
$A_{143}^{PS}$	40	$41^{+20}_{-20}$	$D_{810}$	2536.2	$2537^{+34}_{-36}$	$\sigma_8(0.38)$	0.6621	$0.662^{+0.013}_{-0.012}$
$A_{217}^{PS}$	101.9	$102^{+30}_{-30}$	$D_{1420}$	816.0	$815^{+13}_{-13}$	$f\sigma_8(0.51)$	0.4738	$0.473^{+0.012}_{-0.012}$
$A_{217}^{CIB}$	44.6	$40^{+20}_{-20}$	$D_{2000}$	230.28	$229.9^{+4.9}_{-4.8}$	$\sigma_8(0.51)$	0.6195	$0.620^{+0.012}_{-0.012}$
$A_{143}^{tSZ}$	6.54	$< 8.71$	$n_{s,0.002}$	0.968	$0.984^{+0.064}_{-0.058}$	$f\sigma_8(0.61)$	0.4686	$0.468^{+0.011}_{-0.011}$
$r_{143 \times 217}^{PS}$	0.586	$0.65^{+0.31}_{-0.32}$	$Y_P$	0.245367	$0.24538^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	0.5894	$0.590^{+0.012}_{-0.011}$
$r_{143 \times 217}^{CIB}$	0.78	—	$Y_P^{BBN}$	0.246693	$0.24671^{+0.00016}_{-0.00019}$	$f\sigma_8(2.33)$	0.2971	$0.2972^{+0.0062}_{-0.0059}$
$\xi^{tSZ \times CIB}$	0.07	—	$10^5 D/H$	2.599	$2.593^{+0.082}_{-0.077}$	$\sigma_8(2.33)$	0.3062	$0.3064^{+0.0068}_{-0.0063}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.805	$13.800^{+0.064}_{-0.064}$	$r_{0.002}$	0.018	$< 0.250$
$A_{100}^{dust}$	1.009	$1.01^{+0.49}_{-0.50}$	$z_*$	1089.98	$1089.92^{+0.73}_{-0.70}$	$r_{0.01}$	0.019	$< 0.235$
$A_{143}^{dust}$	0.969	$0.96^{+0.46}_{-0.46}$	$r_*$	144.57	$144.58^{+0.75}_{-0.74}$	$\ln(10^{10} A_t)$	-0.86	$0.1^{+1.8}_{-3.9}$
$A_{217}^{dust}$	0.969	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	1.04104	$1.04107^{+0.00079}_{-0.00079}$	$r_{10}$	0.009	$< 0.133$
$A_{143 \times 217}^{dust}$	1.003	$1.02^{+0.42}_{-0.40}$	$D_M(z_*)/\text{Gpc}$	13.887	$13.888^{+0.071}_{-0.070}$	$10^9 A_t$	0.042	$< 0.491$
$c_{100}$	0.99769	$0.9975^{+0.0027}_{-0.0028}$	$z_{drag}$	1059.74	$1059.82^{+0.88}_{-0.92}$	$10^9 A_t e^{-2\tau}$	0.038	$< 0.437$
$c_{217}$	1.00132	$1.0012^{+0.0040}_{-0.0040}$	$r_{drag}$	147.26	$147.26^{+0.77}_{-0.75}$	$f_{2000}^{143}$	30.1	$30^{+9}_{-8}$
$c_{TE}$	0.9966	$0.996^{+0.013}_{-0.012}$	$k_D$	0.14064	$0.14066^{+0.00086}_{-0.00090}$	$f_{2000}^{217}$	106.9	$107.4^{+5.6}_{-5.4}$
$c_{EE}$	0.9922	$0.992^{+0.013}_{-0.013}$	$100\theta_D$	0.16086	$0.16082^{+0.00054}_{-0.00051}$	$f_{2000}^{143 \times 217}$	32.1	$33^{+6}_{-6}$
$H_0$	67.38	$67.5^{+1.5}_{-1.4}$	$z_{eq}$	3393	$3390^{+73}_{-73}$	$\chi^2_{lensing}$	8.89	$9.56 (\nu: 0.3)$
$\Omega_\Lambda$	0.6859	$0.687^{+0.019}_{-0.020}$	$k_{eq}$	0.010355	$0.01035^{+0.00022}_{-0.00022}$	$\chi^2_{small}$	396.00	$397.4 (\nu: 1.5)$
$\Omega_m$	0.3141	$0.313^{+0.020}_{-0.019}$	$100\theta_{eq}$	0.8147	$0.815^{+0.014}_{-0.013}$	$\chi^2_{lowl}$	23.5	$24.3 (\nu: 2.5)$
$\Omega_m h^2$	0.14263	$0.1425^{+0.0030}_{-0.0031}$	$100\theta_{s,eq}$	0.4502	$0.4505^{+0.0072}_{-0.0069}$	$\chi^2_{CamSpec}$	11499.1	$11514.1 (\nu: 16.9)$
$\Omega_m h^3$	0.09611	$0.09616^{+0.00087}_{-0.00087}$	$H(0.15)$	72.69	$72.8^{+1.3}_{-1.2}$	$\chi^2_{prior}$	2.1	$7.8 (\nu: 5.9)$
$\sigma_8$	0.8090	$0.809^{+0.016}_{-0.016}$	$D_M(0.15)$	643.2	$642^{+13}_{-12}$	$\chi^2_{CMB}$	11927.5	$11945.3 (\nu: 18.1)$
$S_8$	0.8278	$0.826^{+0.034}_{-0.033}$	$H(0.38)$	82.85	$82.92^{+0.94}_{-0.91}$			

Best-fit  $\chi^2_{eff} = 11929.59$ ;  $\Delta\chi^2_{eff} = -0.06$ ;  $\bar{\chi}^2_{eff} = 11953.15$ ;  $\Delta\bar{\chi}^2_{eff} = 1.71$ ;  $R - 1 = 0.01351$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.89 ( $\Delta$  0.06) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.00 ( $\Delta$  0.13) commander\_dx12\_v3.2\_29: 23.48 ( $\Delta$  0.26) CamSpec like\_10.7HM\_1400\_unified: 11499.08 ( $\Delta$  -0.58)



## 11.6 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02237^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.015}_{-0.014}$	$D_M(0.51)$	$1979^{+22}_{-23}$
$\Omega_c h^2$	$0.1190^{+0.0025}_{-0.0025}$	$\sigma_8/h^{0.5}$	$0.982^{+0.021}_{-0.021}$	$H(0.61)$	$95.37^{+0.51}_{-0.49}$
$100\theta_{MC}$	$1.04095^{+0.00075}_{-0.00076}$	$r_{\text{drag}} h$	$99.8^{+2.0}_{-1.9}$	$D_M(0.61)$	$2303^{+24}_{-25}$
$\tau$	$0.056^{+0.021}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	$2.419^{+0.059}_{-0.060}$	$H(2.33)$	$235.9^{+1.5}_{-1.6}$
$\ln(10^{10} A_s)$	$3.046^{+0.046}_{-0.039}$	$z_{\text{re}}$	$7.9^{+2.0}_{-2.0}$	$D_M(2.33)$	$5761^{+24}_{-25}$
$n_s$	$0.968^{+0.011}_{-0.011}$	$10^9 A_s$	$2.104^{+0.098}_{-0.081}$	$f\sigma_8(0.15)$	$0.454^{+0.014}_{-0.014}$
$dn_s/d \ln k$	$-0.005^{+0.018}_{-0.020}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.028}_{-0.029}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$r$	$< 0.239$	$D_{40}$	$1238^{+58}_{-50}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0068}$	$D_{220}$	$5718^{+100}_{-100}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.013}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-70}$	$D_{810}$	$2538^{+34}_{-36}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.010}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.012}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{2000}$	$230.1^{+4.9}_{-4.8}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0098}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$n_{s,0.002}$	$0.985^{+0.064}_{-0.058}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$< 8.76$	$Y_P$	$0.24539^{+0.00015}_{-0.00017}$	$f\sigma_8(2.33)$	$0.2976^{+0.0061}_{-0.0058}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_P^{\text{BBN}}$	$0.24672^{+0.00015}_{-0.00017}$	$\sigma_8(2.33)$	$0.3069^{+0.0067}_{-0.0061}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 D/H$	$2.586^{+0.077}_{-0.073}$	$r_{0.002}$	$< 0.260$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	Age/Gyr	$13.792^{+0.055}_{-0.056}$	$r_{0.01}$	$< 0.245$
$A^{\text{kSZ}}$	—	$z_*$	$1089.83^{+0.62}_{-0.61}$	$\ln(10^{10} A_t)$	$0.1^{+1.8}_{-3.9}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.70^{+0.62}_{-0.59}$	$r_{10}$	$< 0.138$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.45}$	$100\theta_*$	$1.04114^{+0.00075}_{-0.00075}$	$10^9 A_t$	$< 0.506$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	$13.898^{+0.060}_{-0.057}$	$10^9 A_t e^{-2\tau}$	$< 0.450$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$z_{\text{drag}}$	$1059.87^{+0.90}_{-0.85}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$r_{\text{drag}}$	$147.36^{+0.66}_{-0.63}$	$f_{2000}^{217}$	$107.3^{+5.6}_{-5.4}$
$c_{217}$	$1.0012^{+0.0038}_{-0.0039}$	$k_D$	$0.14058^{+0.00081}_{-0.00083}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$100\theta_D$	$0.16079^{+0.00051}_{-0.00051}$	$\chi_{\text{lensing}}^2$	$9.56 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3378^{+56}_{-57}$	$\chi_{\text{simall}}^2$	$397.6 (\nu: 1.8)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$k_{\text{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 2.4)$
$\Omega_\Lambda$	$0.690^{+0.015}_{-0.015}$	$100\theta_{\text{eq}}$	$0.818^{+0.011}_{-0.010}$	$\chi_{\text{CamSpec}}^2$	$11514.0 (\nu: 16.5)$
$\Omega_m$	$0.310^{+0.015}_{-0.015}$	$100\theta_{s,\text{eq}}$	$0.4517^{+0.0056}_{-0.0054}$	$\chi_{6\text{DF}}^2$	$0.042 (\nu: 0.0)$
$\Omega_m h^2$	$0.1420^{+0.0023}_{-0.0024}$	$H(0.15)$	$72.99^{+0.98}_{-0.95}$	$\chi_{\text{MGS}}^2$	$1.36 (\nu: 0.1)$
$\Omega_m h^3$	$0.09617^{+0.00086}_{-0.00088}$	$D_M(0.15)$	$640.2^{+9.5}_{-9.5}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.7)$
$\sigma_8$	$0.808^{+0.016}_{-0.015}$	$H(0.38)$	$83.07^{+0.74}_{-0.71}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 5.9)$
$S_8$	$0.821^{+0.027}_{-0.027}$	$D_M(0.38)$	$1527^{+19}_{-19}$	$\chi_{\text{CMB}}^2$	$11945.2 (\nu: 17.4)$
$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.51)$	$89.77^{+0.61}_{-0.58}$	$\chi_{\text{BAO}}^2$	$5.93 (\nu: 0.4)$

$$\bar{\chi}_{\text{eff}}^2 = 11958.98; \Delta\bar{\chi}_{\text{eff}}^2 = 1.58; R - 1 = 0.01470$$



## 11.7 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02234^{+0.00042}_{-0.00042}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1531^{+25}_{-25}$
$\Omega_{\mathrm{c}} h^2$	$0.1195^{+0.0032}_{-0.0032}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.017}_{-0.016}$	$H(0.51)$	$89.66^{+0.75}_{-0.72}$
$100\theta_{\mathrm{MC}}$	$1.04089^{+0.00080}_{-0.00080}$	$\sigma_8/h^{0.5}$	$0.985^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.51)$	$1983^{+29}_{-29}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$r_{\mathrm{drag}} h$	$99.4^{+2.5}_{-2.5}$	$H(0.61)$	$95.29^{+0.62}_{-0.58}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.044}_{-0.030}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.062}_{-0.065}$	$D_{\mathrm{M}}(0.61)$	$2308^{+31}_{-31}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.012}$	$z_{\mathrm{re}}$	$< 9.57$	$H(2.33)$	$236.2^{+1.9}_{-1.9}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.006^{+0.019}_{-0.020}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.094}_{-0.062}$	$D_{\mathrm{M}}(2.33)$	$5764^{+28}_{-28}$
$r$	$< 0.232$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880^{+0.029}_{-0.029}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0062}_{-0.0067}$	$D_{40}$	$1239^{+58}_{-50}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.012}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5714^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.475^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2537^{+34}_{-36}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.9}_{-4.8}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0094}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.71$	$n_{\mathrm{s},0.002}$	$0.985^{+0.064}_{-0.059}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00016}_{-0.00018}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0089}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00016}_{-0.00018}$	$f\sigma_8(2.33)$	$0.2975^{+0.0060}_{-0.0046}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.080}_{-0.076}$	$\sigma_8(2.33)$	$0.3066^{+0.0066}_{-0.0050}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.799^{+0.063}_{-0.064}$	$r_{0.002}$	$< 0.251$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.50}$	$z_*$	$1089.91^{+0.72}_{-0.70}$	$r_{0.01}$	$< 0.235$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.46}$	$r_*$	$144.59^{+0.75}_{-0.73}$	$\ln(10^{10} A_{\mathrm{t}})$	$0.1^{+1.8}_{-3.9}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	$1.04108^{+0.00079}_{-0.00079}$	$r_{10}$	$< 0.133$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.40}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.071}_{-0.069}$	$10^9 A_{\mathrm{t}}$	$< 0.493$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.83^{+0.91}_{-0.93}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.438$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.27^{+0.77}_{-0.76}$	$f_{2000}^{143}$	$30^{+9}_{-8}$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14066^{+0.00086}_{-0.00089}$	$f_{2000}^{217}$	$107.4^{+5.6}_{-5.4}$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16081^{+0.00054}_{-0.00051}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.5^{+1.5}_{-1.4}$	$z_{\mathrm{eq}}$	$3389^{+72}_{-72}$	$\chi_{\mathrm{lensing}}^2$	$9.53 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.687^{+0.019}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00022}_{-0.00022}$	$\chi_{\mathrm{simall}}^2$	$397.4 (\nu: 1.6)$
$\Omega_{\mathrm{m}}$	$0.313^{+0.020}_{-0.019}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.014}_{-0.013}$	$\chi_{\mathrm{lowl}}^2$	$24.2 (\nu: 2.5)$
$\Omega_{\mathrm{m}} h^2$	$0.1424^{+0.0030}_{-0.0030}$	$100\theta_{\mathrm{s,eq}}$	$0.4506^{+0.0072}_{-0.0068}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 (\nu: 16.9)$
$\Omega_{\mathrm{m}} h^3$	$0.09616^{+0.00087}_{-0.00087}$	$H(0.15)$	$72.8^{+1.3}_{-1.2}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$\sigma_8$	$0.809^{+0.016}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$642^{+12}_{-12}$	$\chi_{\mathrm{CMB}}^2$	$11945.1 (\nu: 17.9)$
$S_8$	$0.826^{+0.034}_{-0.033}$	$H(0.38)$	$82.94^{+0.93}_{-0.90}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11953.00; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.75; R - 1 = 0.01489$$



# 11.8 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02238^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.014}_{-0.014}$	$D_{\mathrm{M}}(0.51)$	$1979^{+22}_{-23}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0024}_{-0.0025}$	$\sigma_8/h^{0.5}$	$0.982^{+0.021}_{-0.020}$	$H(0.61)$	$95.38^{+0.51}_{-0.49}$
$100\theta_{\mathrm{MC}}$	$1.04096^{+0.00075}_{-0.00076}$	$r_{\mathrm{drag}} h$	$99.8^{+2.0}_{-1.9}$	$D_{\mathrm{M}}(0.61)$	$2303^{+24}_{-25}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.420^{+0.059}_{-0.060}$	$H(2.33)$	$235.9^{+1.5}_{-1.6}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.045}_{-0.032}$	$z_{\mathrm{re}}$	$< 9.67$	$D_{\mathrm{M}}(2.33)$	$5760^{+24}_{-25}$
$n_{\mathrm{s}}$	$0.968^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.096}_{-0.066}$	$f\sigma_8(0.15)$	$0.454^{+0.014}_{-0.014}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.006^{+0.018}_{-0.020}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.028}_{-0.029}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.012}$
$r$	$< 0.239$	$D_{40}$	$1238^{+58}_{-50}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.011}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0061}_{-0.0068}$	$D_{220}$	$5718^{+100}_{-100}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.011}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$D_{810}$	$2538^{+34}_{-36}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0099}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{2000}$	$230.1^{+4.9}_{-4.8}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0094}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.985^{+0.064}_{-0.058}$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0094}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.73$	$Y_{\mathrm{P}}$	$0.24540^{+0.00015}_{-0.00017}$	$f\sigma_8(2.33)$	$0.2977^{+0.0061}_{-0.0048}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24672^{+0.00015}_{-0.00017}$	$\sigma_8(2.33)$	$0.3070^{+0.0065}_{-0.0050}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.585^{+0.076}_{-0.073}$	$r_{0.002}$	$< 0.260$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.791^{+0.055}_{-0.056}$	$r_{0.01}$	$< 0.245$
$A^{\mathrm{kSZ}}$	—	$z_{*}$	$1089.82^{+0.62}_{-0.61}$	$\ln(10^{10} A_{\mathrm{t}})$	$0.1^{+1.8}_{-3.9}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_{*}$	$144.70^{+0.62}_{-0.59}$	$r_{10}$	$< 0.138$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$100\theta_{*}$	$1.04114^{+0.00075}_{-0.00075}$	$10^9 A_{\mathrm{t}}$	$< 0.507$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.898^{+0.060}_{-0.057}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.450$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.40}$	$z_{\mathrm{drag}}$	$1059.87^{+0.90}_{-0.86}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.37^{+0.66}_{-0.64}$	$f_{2000}^{217}$	$107.3^{+5.6}_{-5.4}$
$c_{217}$	$1.0012^{+0.0038}_{-0.0040}$	$k_{\mathrm{D}}$	$0.14058^{+0.00082}_{-0.00082}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16079^{+0.00051}_{-0.00051}$	$\chi_{\mathrm{lensing}}^2$	$9.52 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{\mathrm{eq}}$	$3377^{+56}_{-57}$	$\chi_{\mathrm{simall}}^2$	$397.6 (\nu: 1.8)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{lowl}}^2$	$24.1 (\nu: 2.4)$
$\Omega_{\Lambda}$	$0.691^{+0.015}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.010}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 (\nu: 16.5)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.015}_{-0.015}$	$100\theta_{\mathrm{s,eq}}$	$0.4518^{+0.0056}_{-0.0053}$	$\chi_{6\mathrm{DF}}^2$	$0.040 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0023}_{-0.0024}$	$H(0.15)$	$73.00^{+0.97}_{-0.94}$	$\chi_{\mathrm{MGS}}^2$	$1.37 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^3$	$0.09617^{+0.00086}_{-0.00088}$	$D_{\mathrm{M}}(0.15)$	$640.1^{+9.4}_{-9.5}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 (\nu: 0.7)$
$\sigma_8$	$0.809^{+0.016}_{-0.014}$	$H(0.38)$	$83.08^{+0.74}_{-0.70}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 5.9)$
$S_8$	$0.821^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.38)$	$1527^{+19}_{-19}$	$\chi_{\mathrm{CMB}}^2$	$11945.1 (\nu: 17.3)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.51)$	$89.77^{+0.61}_{-0.57}$	$\chi_{\mathrm{BAO}}^2$	$5.90 (\nu: 0.4)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.60; R - 1 = 0.01525$$



## 11.9 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02213	$0.02215^{+0.00061}_{-0.00060}$	$\Omega_m h^3$	0.09605	$0.0961^{+0.0013}_{-0.0013}$	$H(0.38)$	82.39	$82.5^{+1.5}_{-1.4}$
$\Omega_c h^2$	0.1214	$0.1211^{+0.0054}_{-0.0053}$	$\sigma_8$	0.8144	$0.814^{+0.023}_{-0.023}$	$D_M(0.38)$	1546.2	$1544^{+40}_{-41}$
$100\theta_{MC}$	1.04079	$1.0408^{+0.0012}_{-0.0012}$	$S_8$	0.847	$0.845^{+0.062}_{-0.060}$	$H(0.51)$	89.24	$89.3^{+1.2}_{-1.1}$
$\tau$	0.0534	$0.054^{+0.025}_{-0.022}$	$\sigma_8 \Omega_m^{0.5}$	0.4640	$0.463^{+0.034}_{-0.033}$	$D_M(0.51)$	2000.9	$1999^{+47}_{-48}$
$\ln(10^{10} A_s)$	3.0451	$3.046^{+0.050}_{-0.046}$	$\sigma_8 \Omega_m^{0.25}$	0.6147	$0.614^{+0.030}_{-0.030}$	$H(0.61)$	94.96	$95.00^{+0.97}_{-0.85}$
$n_s$	0.9605	$0.962^{+0.016}_{-0.015}$	$\sigma_8/h^{0.5}$	0.9977	$0.997^{+0.041}_{-0.041}$	$D_M(0.61)$	2327	$2324^{+50}_{-52}$
$dn_s/d \ln k$	-0.0056	$-0.005^{+0.019}_{-0.019}$	$r_{drag} h$	97.95	$98.1^{+4.2}_{-4.0}$	$H(2.33)$	237.21	$237.1^{+3.2}_{-3.2}$
$r$	0.0137	$< 0.0838$	$\langle d^2 \rangle^{1/2}$	2.457	$2.454^{+0.098}_{-0.099}$	$D_M(2.33)$	5778.8	$5777^{+41}_{-44}$
$y_{cal}$	1.0007	$1.0007^{+0.0064}_{-0.0065}$	$z_{re}$	7.66	$7.7^{+2.3}_{-2.4}$	$f\sigma_8(0.15)$	0.4675	$0.467^{+0.031}_{-0.031}$
$A_{B,dust}$	4.62	$4.9^{+3.2}_{-2.1}$	$10^9 A_s$	2.101	$2.10^{+0.11}_{-0.095}$	$\sigma_8(0.15)$	0.7512	$0.751^{+0.020}_{-0.019}$
$A_{B,sync}$	1.48	$< 4.94$	$10^9 A_s e^{-2\tau}$	1.8884	$1.887^{+0.037}_{-0.037}$	$f\sigma_8(0.38)$	0.4830	$0.482^{+0.024}_{-0.024}$
$\alpha_{B,dust}$	-0.53	—	$D_{40}$	1228	$1231^{+56}_{-54}$	$\sigma_8(0.38)$	0.6645	$0.665^{+0.017}_{-0.016}$
$\beta_{B,dust}$	1.579	$1.60^{+0.25}_{-0.25}$	$D_{220}$	5704	$5703^{+110}_{-110}$	$f\sigma_8(0.51)$	0.4800	$0.479^{+0.020}_{-0.021}$
$\alpha_{B,sync}$	-0.25	—	$D_{810}$	2536.8	$2537^{+36}_{-37}$	$\sigma_8(0.51)$	0.6213	$0.621^{+0.015}_{-0.014}$
$\beta_{B,sync}$	-3.04	$-3.10^{+0.68}_{-0.74}$	$D_{1420}$	812.8	$814^{+14}_{-14}$	$f\sigma_8(0.61)$	0.4740	$0.473^{+0.018}_{-0.019}$
$\epsilon_{dust,sync}$	-0.34	$< 0.350$	$D_{2000}$	228.7	$229.0^{+5.1}_{-5.2}$	$\sigma_8(0.61)$	0.5908	$0.591^{+0.014}_{-0.013}$
$A_{100}^{PS}$	250	$246^{+60}_{-60}$	$n_{s,0.002}$	0.979	$0.979^{+0.061}_{-0.060}$	$f\sigma_8(2.33)$	0.2974	$0.2975^{+0.0072}_{-0.0067}$
$A_{143}^{PS}$	39	$43^{+20}_{-20}$	$Y_P$	0.245296	$0.24530^{+0.00024}_{-0.00028}$	$\sigma_8(2.33)$	0.3060	$0.3063^{+0.0078}_{-0.0071}$
$A_{217}^{PS}$	97.9	$100^{+30}_{-40}$	$Y_P^{BBN}$	0.246622	$0.24663^{+0.00024}_{-0.00028}$	$r_{0.002}$	0.0125	$< 0.0812$
$A_{217}^{CIB}$	44.0	$42^{+20}_{-20}$	$10^5 D/H$	2.632	$2.63^{+0.12}_{-0.11}$	$r_{0.01}$	0.0130	$< 0.0815$
$A_{143}^{tSZ}$	3.85	$< 8.68$	Age/Gyr	13.831	$13.827^{+0.094}_{-0.098}$	$\ln(10^{10} A_t)$	-1.25	$-0.9^{+1.7}_{-3.6}$
$r_{143 \times 217}^{PS}$	0.542	$0.64^{+0.31}_{-0.31}$	$z_*$	1090.35	$1090.3^{+1.1}_{-1.1}$	$r_{10}$	0.0065	$< 0.0424$
$r_{143 \times 217}^{CIB}$	0.66	—	$r_*$	144.26	$144.3^{+1.2}_{-1.2}$	$10^9 A_t$	0.029	$< 0.176$
$\xi^{tSZ \times CIB}$	0.00	—	$100\theta_*$	1.04099	$1.0410^{+0.0012}_{-0.0012}$	$10^9 A_t e^{-2\tau}$	0.026	$< 0.158$
$A^{kSZ}$	4.7	—	$D_M(z_*)/\text{Gpc}$	13.858	$13.86^{+0.12}_{-0.11}$	$f_{2000}^{143}$	32.5	$32^{+9}_{-9}$
$A_{100}^{dust}$	1.02	$1.01^{+0.51}_{-0.50}$	$z_{drag}$	1059.47	$1059.5^{+1.3}_{-1.3}$	$f_{2000}^{217}$	108.7	$108.3^{+5.7}_{-5.6}$
$A_{143}^{dust}$	0.984	$0.98^{+0.46}_{-0.45}$	$r_{drag}$	147.00	$147.0^{+1.3}_{-1.2}$	$f_{2000}^{143 \times 217}$	34.1	$34^{+6}_{-6}$
$A_{217}^{dust}$	0.962	$0.97^{+0.27}_{-0.27}$	$k_D$	0.14078	$0.1408^{+0.0014}_{-0.0015}$	$\chi_{BKPLANCK}^2$	734.9	$739.2 (\nu: 3.7)$
$A_{143 \times 217}^{dust}$	1.007	$1.03^{+0.42}_{-0.41}$	$100\theta_D$	0.16103	$0.16101^{+0.00076}_{-0.00073}$	$\chi_{small}^2$	396.0	$397.3 (\nu: 1.9)$
$c_{100}$	0.99739	$0.9975^{+0.0027}_{-0.0027}$	$z_{eq}$	3429	$3424^{+120}_{-120}$	$\chi_{lowl}^2$	22.9	$23.6 (\nu: 2.4)$
$c_{217}$	1.00143	$1.0013^{+0.0040}_{-0.0040}$	$k_{eq}$	0.010466	$0.01045^{+0.00037}_{-0.00037}$	$\chi_{CamSpec}^2$	7050.6	$7064.4 (\nu: 15.8)$
$H_0$	66.63	$66.7^{+2.4}_{-2.3}$	$100\theta_{eq}$	0.8078	$0.809^{+0.023}_{-0.022}$	$\chi_{prior}^2$	2.6	$9.3 (\nu: 7.4)$
$\Omega_\Lambda$	0.6753	$0.677^{+0.032}_{-0.035}$	$100\theta_{s,eq}$	0.4467	$0.447^{+0.012}_{-0.011}$	$\chi_{CMB}^2$	8204.4	$8224.5 (\nu: 20.0)$
$\Omega_m$	0.3247	$0.323^{+0.035}_{-0.032}$	$H(0.15)$	72.05	$72.2^{+2.1}_{-1.9}$			
$\Omega_m h^2$	0.1441	$0.1439^{+0.0051}_{-0.0050}$	$D_M(0.15)$	649.7	$649^{+20}_{-20}$			

Best-fit  $\chi_{eff}^2 = 8206.96$ ;  $\bar{\chi}_{eff}^2 = 8233.85$ ;  $R - 1 = 0.00340$

$\chi_{eff}^2$ : CMB - BK15\_dust: 734.86 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 commander\_dx12\_v3\_2\_29: 22.86 CamSpec like\_10.7HM: 7050.61



# 11.10 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02224	$0.02226^{+0.00058}_{-0.00055}$	$\sigma_8$	0.8082	$0.809^{+0.022}_{-0.020}$	$H(0.51)$	89.66	$89.68^{+0.80}_{-0.74}$
$\Omega_c h^2$	0.11917	$0.1192^{+0.0032}_{-0.0031}$	$S_8$	0.8229	$0.824^{+0.039}_{-0.038}$	$D_M(0.51)$	1982.2	$1982^{+28}_{-30}$
$100\theta_{MC}$	1.04104	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.451^{+0.021}_{-0.021}$	$H(0.61)$	95.28	$95.29^{+0.69}_{-0.63}$
$\tau$	0.0553	$0.056^{+0.025}_{-0.022}$	$\sigma_8 \Omega_m^{0.25}$	0.6035	$0.604^{+0.021}_{-0.021}$	$D_M(0.61)$	2306.6	$2306^{+31}_{-32}$
$\ln(10^{10} A_s)$	3.0438	$3.046^{+0.052}_{-0.047}$	$\sigma_8/h^{0.5}$	0.9831	$0.984^{+0.031}_{-0.030}$	$H(2.33)$	235.89	$235.9^{+2.1}_{-2.0}$
$n_s$	0.9657	$0.966^{+0.012}_{-0.011}$	$r_{\text{drag}} h$	99.65	$99.6^{+2.5}_{-2.4}$	$D_M(2.33)$	5765.6	$5765^{+32}_{-34}$
$dn_s/d \ln k$	-0.0048	$-0.005^{+0.019}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	2.424	$2.426^{+0.075}_{-0.074}$	$f\sigma_8(0.15)$	0.4553	$0.456^{+0.020}_{-0.020}$
$r$	0.0170	$< 0.0856$	$z_{\text{re}}$	7.80	$7.8^{+2.4}_{-2.3}$	$\sigma_8(0.15)$	0.7468	$0.748^{+0.020}_{-0.018}$
$y_{\text{cal}}$	1.0008	$1.0008^{+0.0065}_{-0.0066}$	$10^9 A_s$	2.098	$2.10^{+0.11}_{-0.097}$	$f\sigma_8(0.38)$	0.4737	$0.474^{+0.017}_{-0.017}$
$A_{B,\text{dust}}$	4.60	$4.9^{+3.1}_{-2.1}$	$10^9 A_s e^{-2\tau}$	1.8789	$1.879^{+0.032}_{-0.032}$	$\sigma_8(0.38)$	0.6621	$0.663^{+0.017}_{-0.015}$
$A_{B,\text{sync}}$	1.45	$< 4.84$	$D_{40}$	1220	$1224^{+53}_{-51}$	$f\sigma_8(0.51)$	0.4724	$0.473^{+0.015}_{-0.015}$
$\alpha_{B,\text{dust}}$	-0.50	—	$D_{220}$	5713	$5712^{+100}_{-100}$	$\sigma_8(0.51)$	0.6196	$0.620^{+0.016}_{-0.014}$
$\beta_{B,\text{dust}}$	1.575	$1.60^{+0.25}_{-0.25}$	$D_{810}$	2535.7	$2537^{+36}_{-37}$	$f\sigma_8(0.61)$	0.4675	$0.468^{+0.014}_{-0.014}$
$\alpha_{B,\text{sync}}$	-0.38	—	$D_{1420}$	814.3	$815^{+13}_{-14}$	$\sigma_8(0.61)$	0.5896	$0.590^{+0.015}_{-0.013}$
$\beta_{B,\text{sync}}$	-3.05	$-3.10^{+0.70}_{-0.76}$	$D_{2000}$	229.3	$229.6^{+5.1}_{-5.1}$	$f\sigma_8(2.33)$	0.2973	$0.2976^{+0.0076}_{-0.0066}$
$\epsilon_{\text{dust,sync}}$	-0.34	$< 0.357$	$n_{s,0.002}$	0.981	$0.982^{+0.060}_{-0.059}$	$\sigma_8(2.33)$	0.3065	$0.3068^{+0.0079}_{-0.0070}$
$A_{100}^{\text{PS}}$	249	$245^{+60}_{-70}$	$Y_P$	0.245343	$0.24535^{+0.00022}_{-0.00026}$	$r_{0.002}$	0.0157	$< 0.0843$
$A_{143}^{\text{PS}}$	41.7	$42^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.246670	$0.24667^{+0.00023}_{-0.00026}$	$r_{0.01}$	0.0162	$< 0.0834$
$A_{217}^{\text{PS}}$	98.5	$100^{+30}_{-30}$	$10^5 D/H$	2.610	$2.61^{+0.11}_{-0.10}$	$\ln(10^{10} A_t)$	-1.03	$-0.8^{+1.7}_{-3.5}$
$A_{217}^{\text{CIB}}$	42.9	$42^{+20}_{-20}$	Age/Gyr	13.803	$13.801^{+0.075}_{-0.078}$	$r_{10}$	0.0081	$< 0.0437$
$A_{143}^{\text{tSZ}}$	3.55	$< 8.71$	$z_*$	1090.01	$1089.99^{+0.80}_{-0.83}$	$10^9 A_t$	0.036	$< 0.179$
$r_{143 \times 217}^{\text{PS}}$	0.583	$0.64^{+0.32}_{-0.32}$	$r_*$	144.74	$144.72^{+0.85}_{-0.85}$	$10^9 A_t e^{-2\tau}$	0.032	$< 0.161$
$r_{143 \times 217}^{\text{CIB}}$	0.68	—	$100\theta_*$	1.04124	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	32.0	$31^{+9}_{-9}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.29	—	$D_M(z_*)/\text{Gpc}$	13.901	$13.899^{+0.082}_{-0.083}$	$f_{2000}^{217}$	108.3	$108.0^{+5.7}_{-5.6}$
$A^{\text{kSZ}}$	5.1	—	$z_{\text{drag}}$	1059.59	$1059.6^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	33.6	$33^{+6}_{-6}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.50}_{-0.50}$	$r_{\text{drag}}$	147.45	$147.43^{+0.93}_{-0.94}$	$\chi_{\text{BKPLANCK}}^2$	735.6	$740.0 (\nu: 3.6)$
$A_{143}^{\text{dust}}$	0.988	$0.97^{+0.46}_{-0.46}$	$k_D$	0.14039	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{\text{simall}}^2$	396.2	$397.5 (\nu: 2.5)$
$A_{217}^{\text{dust}}$	0.966	$0.97^{+0.26}_{-0.27}$	$100\theta_D$	0.16098	$0.16096^{+0.00076}_{-0.00073}$	$\chi_{\text{lowl}}^2$	22.26	$23.0 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dust}}$	0.996	$1.03^{+0.42}_{-0.41}$	$z_{\text{eq}}$	3379	$3380^{+75}_{-72}$	$\chi_{\text{CamSpec}}^2$	7051.6	$7064.6 (\nu: 15.3)$
$c_{100}$	0.99743	$0.9975^{+0.0027}_{-0.0027}$	$k_{\text{eq}}$	0.010314	$0.01032^{+0.00023}_{-0.00022}$	$\chi_{6\text{DF}}^2$	0.029	$0.066 (\nu: 0.0)$
$c_{217}$	1.00144	$1.0013^{+0.0040}_{-0.0040}$	$100\theta_{\text{eq}}$	0.8172	$0.817^{+0.014}_{-0.013}$	$\chi_{\text{MGS}}^2$	1.22	$1.29 (\nu: 0.1)$
$H_0$	67.58	$67.6^{+1.4}_{-1.4}$	$100\theta_{s,\text{eq}}$	0.4515	$0.4514^{+0.0071}_{-0.0070}$	$\chi_{\text{DR12BAO}}^2$	4.37	$5.0 (\nu: 1.5)$
$\Omega_\Lambda$	0.6890	$0.689^{+0.019}_{-0.019}$	$H(0.15)$	72.85	$72.9^{+1.3}_{-1.2}$	$\chi_{\text{prior}}^2$	2.5	$9.4 (\nu: 7.4)$
$\Omega_m$	0.3110	$0.311^{+0.019}_{-0.019}$	$D_M(0.15)$	641.5	$641^{+12}_{-12}$	$\chi_{\text{BAO}}^2$	5.61	$6.3 (\nu: 1.1)$
$\Omega_m h^2$	0.14205	$0.1421^{+0.0031}_{-0.0030}$	$H(0.38)$	82.95	$82.97^{+0.97}_{-0.89}$	$\chi_{\text{CMB}}^2$	8205.7	$8225.0 (\nu: 19.8)$
$\Omega_m h^3$	0.09600	$0.0960^{+0.0013}_{-0.0013}$	$D_M(0.38)$	1530.1	$1530^{+24}_{-25}$			

Best-fit  $\chi_{\text{eff}}^2 = 8213.81$ ;  $\bar{\chi}_{\text{eff}}^2 = 8240.71$ ;  $R - 1 = 0.00691$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - BK15\_dust: 735.64 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3\_2\_29: 22.25 CamSpec like\_10.7HM: 7051.59



### 11.11 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02214	$0.02217^{+0.00060}_{-0.00057}$	$\Omega_m h^3$	0.09596	$0.0960^{+0.0012}_{-0.0012}$	$H(0.38)$	82.54	$82.6^{+1.3}_{-1.1}$
$\Omega_c h^2$	0.12063	$0.1205^{+0.0040}_{-0.0041}$	$\sigma_8$	0.8119	$0.812^{+0.016}_{-0.016}$	$D_M(0.38)$	1541.6	$1540^{+32}_{-34}$
$100\theta_{MC}$	1.04082	$1.0409^{+0.0012}_{-0.0011}$	$S_8$	0.8389	$0.838^{+0.042}_{-0.041}$	$H(0.51)$	89.34	$89.4^{+1.0}_{-0.92}$
$\tau$	0.0535	$0.054^{+0.025}_{-0.022}$	$\sigma_8 \Omega_m^{0.5}$	0.4595	$0.459^{+0.023}_{-0.023}$	$D_M(0.51)$	1995.6	$1994^{+38}_{-40}$
$\ln(10^{10} A_s)$	3.0430	$3.043^{+0.046}_{-0.041}$	$\sigma_8 \Omega_m^{0.25}$	0.6108	$0.610^{+0.020}_{-0.020}$	$H(0.61)$	95.03	$95.08^{+0.85}_{-0.76}$
$n_s$	0.9620	$0.963^{+0.014}_{-0.013}$	$\sigma_8/h^{0.5}$	0.9925	$0.992^{+0.027}_{-0.027}$	$D_M(0.61)$	2321.0	$2319^{+40}_{-43}$
$dn_s/d \ln k$	-0.0041	$-0.004^{+0.019}_{-0.019}$	$r_{drag} h$	98.48	$98.6^{+3.3}_{-3.1}$	$H(2.33)$	236.74	$236.7^{+2.5}_{-2.5}$
$r$	0.0130	$< 0.0827$	$\langle d^2 \rangle^{1/2}$	2.448	$2.445^{+0.069}_{-0.068}$	$D_M(2.33)$	5776.2	$5774^{+38}_{-40}$
$y_{cal}$	1.0006	$1.0007^{+0.0065}_{-0.0064}$	$z_{re}$	7.66	$7.7^{+2.3}_{-2.3}$	$f\sigma_8(0.15)$	0.4634	$0.463^{+0.021}_{-0.021}$
$A_{B,dust}$	4.63	$4.9^{+3.2}_{-2.2}$	$10^9 A_s$	2.097	$2.098^{+0.098}_{-0.085}$	$\sigma_8(0.15)$	0.7493	$0.749^{+0.015}_{-0.014}$
$A_{B,sync}$	1.47	$< 4.92$	$10^9 A_s e^{-2\tau}$	1.8842	$1.884^{+0.031}_{-0.031}$	$f\sigma_8(0.38)$	0.4797	$0.479^{+0.016}_{-0.016}$
$\alpha_{B,dust}$	-0.52	—	$D_{40}$	1228	$1231^{+53}_{-52}$	$\sigma_8(0.38)$	0.6633	$0.663^{+0.013}_{-0.013}$
$\beta_{B,dust}$	1.577	$1.60^{+0.25}_{-0.25}$	$D_{220}$	5706	$5706^{+110}_{-110}$	$f\sigma_8(0.51)$	0.4773	$0.477^{+0.014}_{-0.014}$
$\alpha_{B,sync}$	-0.26	—	$D_{810}$	2535.1	$2536^{+36}_{-35}$	$\sigma_8(0.51)$	0.6203	$0.621^{+0.013}_{-0.012}$
$\beta_{B,sync}$	-3.04	$-3.10^{+0.67}_{-0.74}$	$D_{1420}$	812.9	$814^{+14}_{-14}$	$f\sigma_8(0.61)$	0.4716	$0.471^{+0.012}_{-0.012}$
$\epsilon_{dust,sync}$	-0.33	$< 0.346$	$D_{2000}$	228.8	$229.2^{+5.1}_{-5.2}$	$\sigma_8(0.61)$	0.5900	$0.590^{+0.012}_{-0.012}$
$A_{100}^{PS}$	249	$245^{+60}_{-60}$	$n_{s,0.002}$	0.975	$0.976^{+0.061}_{-0.061}$	$f\sigma_8(2.33)$	0.2971	$0.2973^{+0.0067}_{-0.0061}$
$A_{143}^{PS}$	39	$42^{+20}_{-20}$	$Y_P$	0.245301	$0.24531^{+0.00023}_{-0.00027}$	$\sigma_8(2.33)$	0.3060	$0.3062^{+0.0076}_{-0.0067}$
$A_{217}^{PS}$	97.7	$100^{+30}_{-30}$	$Y_P^{BBN}$	0.246627	$0.24664^{+0.00023}_{-0.00027}$	$r_{0.002}$	0.0118	$< 0.0802$
$A_{217}^{CIB}$	44.5	$42^{+20}_{-20}$	$10^5 D/H$	2.629	$2.62^{+0.11}_{-0.11}$	$r_{0.01}$	0.0124	$< 0.0805$
$A_{143}^{tSZ}$	4.11	$< 8.71$	Age/Gyr	13.826	$13.821^{+0.086}_{-0.090}$	$\ln(10^{10} A_t)$	-1.30	$-0.9^{+1.7}_{-3.5}$
$r_{143 \times 217}^{PS}$	0.544	$0.64^{+0.32}_{-0.31}$	$z_*$	1090.27	$1090.21^{+0.95}_{-0.97}$	$r_{10}$	0.0061	$< 0.0417$
$r_{143 \times 217}^{CIB}$	0.67	—	$r_*$	144.44	$144.45^{+0.97}_{-0.95}$	$10^9 A_t$	0.027	$< 0.174$
$\xi^{tSZ \times CIB}$	0.00	—	$100\theta_*$	1.04102	$1.0411^{+0.0012}_{-0.0011}$	$10^9 A_t e^{-2\tau}$	0.025	$< 0.156$
$A^{kSZ}$	4.2	—	$D_M(z_*)/\text{Gpc}$	13.875	$13.876^{+0.092}_{-0.090}$	$f_{2000}^{143}$	32.4	$32^{+9}_{-9}$
$A_{100}^{dust}$	1.02	$1.01^{+0.51}_{-0.50}$	$z_{drag}$	1059.44	$1059.5^{+1.3}_{-1.3}$	$f_{2000}^{217}$	108.5	$108.1^{+5.7}_{-5.6}$
$A_{143}^{dust}$	0.979	$0.98^{+0.45}_{-0.45}$	$r_{drag}$	147.18	$147.2^{+1.0}_{-1.0}$	$f_{2000}^{143 \times 217}$	33.9	$34^{+6}_{-6}$
$A_{217}^{dust}$	0.959	$0.97^{+0.26}_{-0.27}$	$k_D$	0.14059	$0.1406^{+0.0012}_{-0.0013}$	$\chi^2_{lensing}$	9.11	$9.71 (\nu: 0.5)$
$A_{143 \times 217}^{dust}$	1.005	$1.03^{+0.42}_{-0.41}$	$100\theta_D$	0.16104	$0.16101^{+0.00074}_{-0.00072}$	$\chi^2_{BKPLANCK}$	735.2	$739.5 (\nu: 3.5)$
$c_{100}$	0.99744	$0.9975^{+0.0027}_{-0.0027}$	$z_{eq}$	3412	$3409^{+92}_{-92}$	$\chi^2_{small}$	396.02	$397.1 (\nu: 1.6)$
$c_{217}$	1.00145	$1.0013^{+0.0041}_{-0.0041}$	$k_{eq}$	0.010413	$0.01041^{+0.00028}_{-0.00028}$	$\chi^2_{lowl}$	22.9	$23.7 (\nu: 2.5)$
$H_0$	66.91	$67.0^{+2.0}_{-1.8}$	$100\theta_{eq}$	0.8109	$0.811^{+0.018}_{-0.017}$	$\chi^2_{CamSpec}$	7050.4	$7063.8 (\nu: 14.7)$
$\Omega_\Lambda$	0.6797	$0.681^{+0.026}_{-0.026}$	$100\theta_{s,eq}$	0.4483	$0.4486^{+0.0091}_{-0.0087}$	$\chi^2_{prior}$	2.5	$9.3 (\nu: 7.3)$
$\Omega_m$	0.3203	$0.319^{+0.026}_{-0.026}$	$H(0.15)$	72.28	$72.4^{+1.7}_{-1.6}$	$\chi^2_{CMB}$	8213.7	$8233.8 (\nu: 19.8)$
$\Omega_m h^2$	0.14341	$0.1433^{+0.0039}_{-0.0038}$	$D_M(0.15)$	647.3	$647^{+16}_{-17}$			

Best-fit  $\chi^2_{eff} = 8216.23$ ;  $\bar{\chi}^2_{eff} = 8243.12$ ;  $R - 1 = 0.00347$

$\chi^2_{eff}$ : CMB - smicadx12.Dec5.ftl\_mv2.ndclpp.p.teb.consext8: 9.11 BK15.dust: 735.18 small.100x143\_offlike5.EE.Aplanck\_B: 396.02 commander\_dx12\_v3.2.29: 22.95 CamSpec like\_10.7HM: 7050.44



### 11.12 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02226	$0.02226^{+0.00058}_{-0.00055}$	$\sigma_8$	0.8095	$0.810^{+0.017}_{-0.016}$	$H(0.51)$	89.65	$89.66^{+0.78}_{-0.71}$
$\Omega_c h^2$	0.11935	$0.1193^{+0.0028}_{-0.0028}$	$S_8$	0.8255	$0.826^{+0.031}_{-0.030}$	$D_M(0.51)$	1983.1	$1983^{+26}_{-29}$
$100\theta_{MC}$	1.04105	$1.0410^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.5}$	0.4521	$0.452^{+0.017}_{-0.017}$	$H(0.61)$	95.27	$95.28^{+0.67}_{-0.62}$
$\tau$	0.0563	$0.057^{+0.023}_{-0.019}$	$\sigma_8 \Omega_m^{0.25}$	0.6050	$0.605^{+0.016}_{-0.016}$	$D_M(0.61)$	2307.5	$2307^{+29}_{-31}$
$\ln(10^{10} A_s)$	3.0461	$3.048^{+0.046}_{-0.039}$	$\sigma_8/h^{0.5}$	0.9851	$0.986^{+0.023}_{-0.023}$	$H(2.33)$	236.03	$236.0^{+1.8}_{-1.8}$
$n_s$	0.9652	$0.966^{+0.011}_{-0.011}$	$r_{\text{drag}} h$	99.53	$99.6^{+2.3}_{-2.2}$	$D_M(2.33)$	5765.4	$5765^{+32}_{-33}$
$dn_s/d \ln k$	-0.0045	$-0.004^{+0.019}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	2.431	$2.431^{+0.060}_{-0.060}$	$f\sigma_8(0.15)$	0.4567	$0.457^{+0.016}_{-0.015}$
$r$	0.0155	$< 0.0832$	$z_{\text{re}}$	7.89	$7.9^{+2.1}_{-2.0}$	$\sigma_8(0.15)$	0.7480	$0.749^{+0.015}_{-0.014}$
$y_{\text{cal}}$	1.0007	$1.0010^{+0.0064}_{-0.0064}$	$10^9 A_s$	2.103	$2.107^{+0.099}_{-0.081}$	$f\sigma_8(0.38)$	0.4749	$0.475^{+0.013}_{-0.013}$
$A_{B,\text{dust}}$	4.62	$4.9^{+3.1}_{-2.2}$	$10^9 A_s e^{-2\tau}$	1.8796	$1.880^{+0.030}_{-0.028}$	$\sigma_8(0.38)$	0.6630	$0.664^{+0.014}_{-0.012}$
$A_{B,\text{sync}}$	1.42	$< 4.97$	$D_{40}$	1222	$1227^{+51}_{-51}$	$f\sigma_8(0.51)$	0.4734	$0.474^{+0.012}_{-0.012}$
$\alpha_{B,\text{dust}}$	-0.51	—	$D_{220}$	5716	$5716^{+110}_{-100}$	$\sigma_8(0.51)$	0.6204	$0.621^{+0.013}_{-0.012}$
$\beta_{B,\text{dust}}$	1.574	$1.60^{+0.25}_{-0.25}$	$D_{810}$	2535.7	$2537^{+36}_{-36}$	$f\sigma_8(0.61)$	0.4684	$0.469^{+0.011}_{-0.011}$
$\alpha_{B,\text{sync}}$	-0.48	—	$D_{1420}$	814.2	$815^{+13}_{-14}$	$\sigma_8(0.61)$	0.5903	$0.591^{+0.012}_{-0.011}$
$\beta_{B,\text{sync}}$	-3.04	$-3.10^{+0.68}_{-0.74}$	$D_{2000}$	229.4	$229.7^{+5.0}_{-5.1}$	$f\sigma_8(2.33)$	0.2976	$0.2980^{+0.0066}_{-0.0057}$
$\epsilon_{\text{dust,sync}}$	-0.34	$< 0.359$	$n_{s,0.002}$	0.980	$0.980^{+0.061}_{-0.059}$	$\sigma_8(2.33)$	0.3068	$0.3072^{+0.0072}_{-0.0061}$
$A_{100}^{\text{PS}}$	248	$245^{+60}_{-70}$	$Y_P$	0.245349	$0.24535^{+0.00022}_{-0.00026}$	$r_{0.002}$	0.0143	$< 0.0813$
$A_{143}^{\text{PS}}$	40	$42^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.246676	$0.24667^{+0.00023}_{-0.00026}$	$r_{0.01}$	0.0148	$< 0.0814$
$A_{217}^{\text{PS}}$	98.1	$101^{+30}_{-30}$	$10^5 D/H$	2.607	$2.61^{+0.11}_{-0.10}$	$\ln(10^{10} A_t)$	-1.12	$-0.8^{+1.7}_{-3.4}$
$A_{217}^{\text{CIB}}$	43.7	$41^{+20}_{-20}$	Age/Gyr	13.803	$13.802^{+0.074}_{-0.076}$	$r_{10}$	0.0073	$< 0.0424$
$A_{143}^{\text{tSZ}}$	3.97	$< 8.71$	$z_*$	1090.01	$1090.00^{+0.80}_{-0.82}$	$10^9 A_t$	0.033	$< 0.176$
$r_{143 \times 217}^{\text{PS}}$	0.561	$0.64^{+0.32}_{-0.32}$	$r_*$	144.69	$144.71^{+0.76}_{-0.76}$	$10^9 A_t e^{-2\tau}$	0.029	$< 0.156$
$r_{143 \times 217}^{\text{CIB}}$	0.66	—	$100\theta_*$	1.04124	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	31.9	$31^{+9}_{-9}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	$D_M(z_*)/\text{Gpc}$	13.896	$13.898^{+0.075}_{-0.074}$	$f_{2000}^{217}$	108.2	$107.9^{+5.7}_{-5.5}$
$A^{\text{kSZ}}$	4.5	—	$z_{\text{drag}}$	1059.63	$1059.6^{+1.3}_{-1.2}$	$f_{2000}^{143 \times 217}$	33.6	$33^{+6}_{-6}$
$A_{100}^{\text{dust}}$	1.02	$1.01^{+0.51}_{-0.50}$	$r_{\text{drag}}$	147.39	$147.41^{+0.88}_{-0.86}$	$\chi_{\text{lensing}}^2$	9.03	$9.45 (\nu: 0.3)$
$A_{143}^{\text{dust}}$	0.984	$0.97^{+0.46}_{-0.46}$	$k_D$	0.14047	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{\text{BKPLANCK}}^2$	735.6	$739.8 (\nu: 3.5)$
$A_{217}^{\text{dust}}$	0.960	$0.97^{+0.26}_{-0.27}$	$100\theta_D$	0.16095	$0.16096^{+0.00074}_{-0.00071}$	$\chi_{\text{simall}}^2$	396.4	$397.5 (\nu: 2.4)$
$A_{143 \times 217}^{\text{dust}}$	1.006	$1.03^{+0.42}_{-0.41}$	$z_{\text{eq}}$	3384	$3382^{+66}_{-65}$	$\chi_{\text{lowl}}^2$	22.43	$23.2 (\nu: 2.1)$
$c_{100}$	0.99745	$0.9975^{+0.0027}_{-0.0027}$	$k_{\text{eq}}$	0.010328	$0.01032^{+0.00020}_{-0.00020}$	$\chi_{\text{CamSpec}}^2$	7051.2	$7064.1 (\nu: 14.7)$
$c_{217}$	1.00137	$1.0013^{+0.0040}_{-0.0041}$	$100\theta_{\text{eq}}$	0.8164	$0.817^{+0.012}_{-0.012}$	$\chi_{6\text{DF}}^2$	0.038	$0.064 (\nu: 0.0)$
$H_0$	67.53	$67.6^{+1.4}_{-1.3}$	$100\theta_{s,\text{eq}}$	0.4511	$0.4512^{+0.0064}_{-0.0062}$	$\chi_{\text{MGS}}^2$	1.16	$1.25 (\nu: 0.1)$
$\Omega_\Lambda$	0.6881	$0.688^{+0.017}_{-0.017}$	$H(0.15)$	72.81	$72.8^{+1.2}_{-1.1}$	$\chi_{\text{DR12BAO}}^2$	4.57	$5.0 (\nu: 1.3)$
$\Omega_m$	0.3119	$0.312^{+0.017}_{-0.017}$	$D_M(0.15)$	641.9	$642^{+11}_{-12}$	$\chi_{\text{prior}}^2$	2.5	$9.3 (\nu: 7.4)$
$\Omega_m h^2$	0.14225	$0.1422^{+0.0028}_{-0.0027}$	$H(0.38)$	82.93	$82.95^{+0.92}_{-0.84}$	$\chi_{\text{CMB}}^2$	8214.6	$8234.1 (\nu: 19.7)$
$\Omega_m h^3$	0.09606	$0.0960^{+0.0012}_{-0.0012}$	$D_M(0.38)$	1530.9	$1531^{+22}_{-24}$	$\chi_{\text{BAO}}^2$	5.77	$6.3 (\nu: 0.9)$

Best-fit  $\chi_{\text{eff}}^2 = 8222.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 8249.75$ ;  $R - 1 = 0.00778$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 1.16 DR12BAO: 4.57 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.03 BK15\_dust: 735.56 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.42 commander\_dx12\_v3.2.29: 22.43 CamSpec like\_10.7HM: 7051.18



### 11.13 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216^{+0.00061}_{-0.00059}$	$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0013}_{-0.0013}$	$H(0.38)$	$82.5^{+1.5}_{-1.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1211^{+0.0054}_{-0.0053}$	$\sigma_8$	$0.815^{+0.023}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1544^{+40}_{-41}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0012}_{-0.0012}$	$S_8$	$0.846^{+0.062}_{-0.060}$	$H(0.51)$	$89.3^{+1.2}_{-1.1}$
$\tau$	$0.055^{+0.022}_{-0.014}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.463^{+0.034}_{-0.033}$	$D_{\mathrm{M}}(0.51)$	$1998^{+46}_{-48}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.048^{+0.048}_{-0.033}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614^{+0.029}_{-0.029}$	$H(0.61)$	$95.02^{+0.97}_{-0.85}$
$n_{\mathrm{s}}$	$0.962^{+0.016}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.997^{+0.040}_{-0.040}$	$D_{\mathrm{M}}(0.61)$	$2324^{+50}_{-52}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.006^{+0.019}_{-0.019}$	$r_{\mathrm{drag}}h$	$98.2^{+4.2}_{-4.0}$	$H(2.33)$	$237.1^{+3.2}_{-3.2}$
$r$	$< 0.0839$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.097}_{-0.098}$	$D_{\mathrm{M}}(2.33)$	$5776^{+41}_{-44}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0064}_{-0.0066}$	$z_{\mathrm{re}}$	$< 9.80$	$f\sigma_8(0.15)$	$0.467^{+0.031}_{-0.030}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.2}_{-2.1}$	$10^9 A_{\mathrm{s}}$	$2.11^{+0.10}_{-0.070}$	$\sigma_8(0.15)$	$0.752^{+0.020}_{-0.017}$
$A_{B,\mathrm{sync}}$	$< 4.95$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887^{+0.037}_{-0.037}$	$f\sigma_8(0.38)$	$0.483^{+0.024}_{-0.024}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{40}$	$1230^{+56}_{-53}$	$\sigma_8(0.38)$	$0.665^{+0.016}_{-0.013}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{220}$	$5703^{+110}_{-110}$	$f\sigma_8(0.51)$	$0.480^{+0.020}_{-0.021}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2537^{+36}_{-37}$	$\sigma_8(0.51)$	$0.622^{+0.015}_{-0.012}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.68}_{-0.74}$	$D_{1420}$	$814^{+14}_{-14}$	$f\sigma_8(0.61)$	$0.474^{+0.018}_{-0.018}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.351$	$D_{2000}$	$229.1^{+5.1}_{-5.2}$	$\sigma_8(0.61)$	$0.592^{+0.014}_{-0.011}$
$A_{100}^{\mathrm{PS}}$	$246^{+60}_{-60}$	$n_{\mathrm{s},0.002}$	$0.980^{+0.060}_{-0.060}$	$f\sigma_8(2.33)$	$0.2979^{+0.0070}_{-0.0051}$
$A_{143}^{\mathrm{PS}}$	$43^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00024}_{-0.00028}$	$\sigma_8(2.33)$	$0.3066^{+0.0075}_{-0.0052}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-40}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00024}_{-0.00028}$	$r_{0.002}$	$< 0.0813$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$10^5\mathrm{D}/\mathrm{H}$	$2.63^{+0.12}_{-0.11}$	$r_{0.01}$	$< 0.0816$
$A_{143}^{\mathrm{tSZ}}$	$< 8.68$	$\mathrm{Age}/\mathrm{Gyr}$	$13.826^{+0.093}_{-0.097}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.9^{+1.7}_{-3.5}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.31}$	$z_*$	$1090.3^{+1.1}_{-1.1}$	$r_{10}$	$< 0.0424$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$r_*$	$144.3^{+1.2}_{-1.2}$	$10^9 A_{\mathrm{t}}$	$< 0.177$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$100\theta_*$	$1.0410^{+0.0012}_{-0.0012}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.158$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.86^{+0.11}_{-0.11}$	$f_{2000}^{143}$	$32^{+9}_{-9}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$z_{\mathrm{drag}}$	$1059.5^{+1.3}_{-1.3}$	$f_{2000}^{217}$	$108.3^{+5.7}_{-5.6}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$r_{\mathrm{drag}}$	$147.0^{+1.3}_{-1.2}$	$f_{2000}^{143\times 217}$	$34^{+6}_{-6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$k_{\mathrm{D}}$	$0.1408^{+0.0014}_{-0.0015}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.2 (\nu: 3.7)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00076}_{-0.00073}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 2.0)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{eq}}$	$3423^{+120}_{-120}$	$\chi_{\mathrm{lowl}}^2$	$23.5 (\nu: 2.4)$
$c_{217}$	$1.0013^{+0.0040}_{-0.0040}$	$k_{\mathrm{eq}}$	$0.01045^{+0.00037}_{-0.00037}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.3 (\nu: 15.7)$
$H_0$	$66.8^{+2.4}_{-2.3}$	$100\theta_{\mathrm{eq}}$	$0.809^{+0.023}_{-0.022}$	$\chi_{\mathrm{prior}}^2$	$9.3 (\nu: 7.4)$
$\Omega_{\Lambda}$	$0.677^{+0.032}_{-0.035}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.447^{+0.012}_{-0.011}$	$\chi_{\mathrm{CMB}}^2$	$8224.3 (\nu: 19.6)$
$\Omega_{\mathrm{m}}$	$0.323^{+0.035}_{-0.032}$	$H(0.15)$	$72.2^{+2.1}_{-1.9}$		
$\Omega_{\mathrm{m}}h^2$	$0.1439^{+0.0051}_{-0.0050}$	$D_{\mathrm{M}}(0.15)$	$649^{+20}_{-20}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8233.63; R - 1 = 0.00394$$



## 11.14 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226^{+0.00057}_{-0.00054}$	$\sigma_8$	$0.810^{+0.021}_{-0.017}$	$H(0.51)$	$89.68^{+0.80}_{-0.73}$
$\Omega_{\mathrm{c}}h^2$	$0.1192^{+0.0032}_{-0.0031}$	$S_8$	$0.824^{+0.039}_{-0.036}$	$D_{\mathrm{M}}(0.51)$	$1982^{+28}_{-29}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.021}_{-0.020}$	$H(0.61)$	$95.30^{+0.69}_{-0.63}$
$\tau$	$0.057^{+0.023}_{-0.015}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.021}_{-0.019}$	$D_{\mathrm{M}}(0.61)$	$2306^{+31}_{-32}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.051}_{-0.034}$	$\sigma_8/h^{0.5}$	$0.985^{+0.030}_{-0.027}$	$H(2.33)$	$235.9^{+2.1}_{-2.0}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.011}$	$r_{\mathrm{drag}}h$	$99.7^{+2.5}_{-2.4}$	$D_{\mathrm{M}}(2.33)$	$5764^{+32}_{-34}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.005^{+0.019}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.074}_{-0.071}$	$f\sigma_8(0.15)$	$0.456^{+0.020}_{-0.019}$
$r$	$< 0.0856$	$z_{\mathrm{re}}$	$< 9.99$	$\sigma_8(0.15)$	$0.748^{+0.019}_{-0.015}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0065}_{-0.0066}$	$10^9 A_{\mathrm{s}}$	$2.11^{+0.11}_{-0.071}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.015}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.2}_{-2.1}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.032}_{-0.032}$	$\sigma_8(0.38)$	$0.663^{+0.017}_{-0.013}$
$A_{B,\mathrm{sync}}$	$< 4.84$	$D_{40}$	$1223^{+53}_{-51}$	$f\sigma_8(0.51)$	$0.473^{+0.015}_{-0.014}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{220}$	$5712^{+100}_{-100}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.012}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{810}$	$2537^{+36}_{-37}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.013}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{1420}$	$815^{+13}_{-14}$	$\sigma_8(0.61)$	$0.591^{+0.015}_{-0.011}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.70}_{-0.75}$	$D_{2000}$	$229.5^{+5.1}_{-5.1}$	$f\sigma_8(2.33)$	$0.2979^{+0.0074}_{-0.0053}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.360$	$n_{\mathrm{s},0.002}$	$0.983^{+0.060}_{-0.060}$	$\sigma_8(2.33)$	$0.3071^{+0.0077}_{-0.0055}$
$A_{100}^{\mathrm{PS}}$	$245^{+60}_{-70}$	$Y_{\mathrm{P}}$	$0.24535^{+0.00022}_{-0.00025}$	$r_{0.002}$	$< 0.0841$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24667^{+0.00022}_{-0.00025}$	$r_{0.01}$	$< 0.0833$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-30}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.10}_{-0.10}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.8^{+1.7}_{-3.4}$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.801^{+0.074}_{-0.078}$	$r_{10}$	$< 0.0437$
$A_{143}^{\mathrm{tSZ}}$	$< 8.72$	$z_*$	$1089.99^{+0.80}_{-0.82}$	$10^9 A_{\mathrm{t}}$	$< 0.180$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.32}$	$r_*$	$144.72^{+0.84}_{-0.85}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.161$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.899^{+0.082}_{-0.083}$	$f_{2000}^{217}$	$108.0^{+5.8}_{-5.6}$
$A^{\mathrm{kSZ}}$	—	$z_{\mathrm{drag}}$	$1059.6^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$r_{\mathrm{drag}}$	$147.43^{+0.93}_{-0.94}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 (\nu: 3.6)$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$k_{\mathrm{D}}$	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{simall}}^2$	$397.5 (\nu: 2.6)$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_{\mathrm{D}}$	$0.16096^{+0.00074}_{-0.00075}$	$\chi_{\mathrm{lowl}}^2$	$22.9 (\nu: 1.8)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\mathrm{eq}}$	$3380^{+75}_{-72}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.5 (\nu: 15.1)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00023}_{-0.00022}$	$\chi_{6\mathrm{DF}}^2$	$0.065 (\nu: 0.0)$
$c_{217}$	$1.0013^{+0.0040}_{-0.0041}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.014}_{-0.013}$	$\chi_{\mathrm{MGS}}^2$	$1.29 (\nu: 0.1)$
$H_0$	$67.6^{+1.4}_{-1.4}$	$100\theta_{\mathrm{s,eq}}$	$0.4514^{+0.0070}_{-0.0070}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 (\nu: 1.5)$
$\Omega_{\Lambda}$	$0.689^{+0.018}_{-0.019}$	$H(0.15)$	$72.9^{+1.3}_{-1.2}$	$\chi_{\mathrm{prior}}^2$	$9.4 (\nu: 7.4)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$641^{+12}_{-12}$	$\chi_{\mathrm{BAO}}^2$	$6.3 (\nu: 1.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1421^{+0.0031}_{-0.0030}$	$H(0.38)$	$82.97^{+0.97}_{-0.89}$	$\chi_{\mathrm{CMB}}^2$	$8224.8 (\nu: 19.4)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0013}_{-0.0013}$	$D_{\mathrm{M}}(0.38)$	$1530^{+24}_{-25}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8240.52; R - 1 = 0.00672$$



# 11.15 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218^{+0.00059}_{-0.00056}$	$\Omega_{\mathrm{m}}h^3$	$0.0960^{+0.0012}_{-0.0012}$	$H(0.38)$	$82.6^{+1.3}_{-1.1}$
$\Omega_{\mathrm{c}}h^2$	$0.1204^{+0.0039}_{-0.0040}$	$\sigma_8$	$0.812^{+0.016}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1539^{+30}_{-34}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0011}$	$S_8$	$0.837^{+0.042}_{-0.041}$	$H(0.51)$	$89.4^{+1.0}_{-0.88}$
$\tau$	$0.055^{+0.021}_{-0.014}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.459^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.51)$	$1993^{+36}_{-39}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.044}_{-0.030}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.020}_{-0.020}$	$H(0.61)$	$95.10^{+0.85}_{-0.73}$
$n_{\mathrm{s}}$	$0.963^{+0.013}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.992^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.61)$	$2318^{+38}_{-43}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.004^{+0.019}_{-0.019}$	$r_{\mathrm{drag}}h$	$98.7^{+3.3}_{-2.9}$	$H(2.33)$	$236.6^{+2.4}_{-2.4}$
$r$	$< 0.0828$	$\langle d^2 \rangle^{1/2}$	$2.445^{+0.069}_{-0.068}$	$D_{\mathrm{M}}(2.33)$	$5773^{+36}_{-40}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0064}$	$z_{\mathrm{re}}$	$< 9.68$	$f\sigma_8(0.15)$	$0.463^{+0.021}_{-0.021}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.2}_{-2.2}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.095}_{-0.062}$	$\sigma_8(0.15)$	$0.750^{+0.014}_{-0.013}$
$A_{B,\mathrm{sync}}$	$< 4.95$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884^{+0.031}_{-0.030}$	$f\sigma_8(0.38)$	$0.479^{+0.016}_{-0.016}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{40}$	$1230^{+53}_{-52}$	$\sigma_8(0.38)$	$0.664^{+0.013}_{-0.010}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{220}$	$5706^{+110}_{-110}$	$f\sigma_8(0.51)$	$0.477^{+0.014}_{-0.014}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2536^{+35}_{-35}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0096}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.68}_{-0.74}$	$D_{1420}$	$814^{+14}_{-14}$	$f\sigma_8(0.61)$	$0.471^{+0.012}_{-0.012}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.348$	$D_{2000}$	$229.2^{+5.1}_{-5.2}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0091}$
$A_{100}^{\mathrm{PS}}$	$245^{+60}_{-60}$	$n_{\mathrm{s},0.002}$	$0.977^{+0.061}_{-0.059}$	$f\sigma_8(2.33)$	$0.2976^{+0.0065}_{-0.0046}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00027}$	$\sigma_8(2.33)$	$0.3065^{+0.0073}_{-0.0051}$
$A_{217}^{\mathrm{PS}}$	$100^{+30}_{-30}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00027}$	$r_{0.002}$	$< 0.0805$
$A_{217}^{\mathrm{CIB}}$	$42^{+20}_{-20}$	$10^5\mathrm{D}/\mathrm{H}$	$2.62^{+0.11}_{-0.11}$	$r_{0.01}$	$< 0.0806$
$A_{143}^{\mathrm{tSZ}}$	$< 8.71$	$\mathrm{Age}/\mathrm{Gyr}$	$13.819^{+0.084}_{-0.089}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.9^{+1.7}_{-3.5}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.31}$	$z_{*}$	$1090.19^{+0.91}_{-0.96}$	$r_{10}$	$< 0.0418$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$r_{*}$	$144.47^{+0.96}_{-0.92}$	$10^9 A_{\mathrm{t}}$	$< 0.175$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$100\theta_{*}$	$1.0411^{+0.0012}_{-0.0011}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.156$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.877^{+0.091}_{-0.088}$	$f_{2000}^{143}$	$32^{+9}_{-9}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$z_{\mathrm{drag}}$	$1059.5^{+1.3}_{-1.2}$	$f_{2000}^{217}$	$108.1^{+5.8}_{-5.5}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$r_{\mathrm{drag}}$	$147.2^{+1.0}_{-0.98}$	$f_{2000}^{143\times 217}$	$34^{+6}_{-6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$k_{\mathrm{D}}$	$0.1406^{+0.0012}_{-0.0013}$	$\chi_{\mathrm{lensing}}^2$	$9.70\ (\nu: 0.5)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_{\mathrm{D}}$	$0.16100^{+0.00074}_{-0.00072}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.5\ (\nu: 3.5)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{eq}}$	$3407^{+89}_{-91}$	$\chi_{\mathrm{simall}}^2$	$397.1\ (\nu: 1.7)$
$c_{217}$	$1.0013^{+0.0041}_{-0.0041}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00027}_{-0.00028}$	$\chi_{\mathrm{lowl}}^2$	$23.6\ (\nu: 2.4)$
$H_0$	$67.1^{+2.0}_{-1.7}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.017}_{-0.016}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8\ (\nu: 14.7)$
$\Omega_{\Lambda}$	$0.681^{+0.025}_{-0.025}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4488^{+0.0089}_{-0.0083}$	$\chi_{\mathrm{prior}}^2$	$9.3\ (\nu: 7.3)$
$\Omega_{\mathrm{m}}$	$0.319^{+0.025}_{-0.025}$	$H(0.15)$	$72.4^{+1.7}_{-1.5}$	$\chi_{\mathrm{CMB}}^2$	$8233.6\ (\nu: 19.5)$
$\Omega_{\mathrm{m}}h^2$	$0.1432^{+0.0037}_{-0.0038}$	$D_{\mathrm{M}}(0.15)$	$646^{+15}_{-17}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8242.90; R - 1 = 0.00417$$



## 11.16 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226^{+0.00057}_{-0.00054}$	$\sigma_8$	$0.811^{+0.016}_{-0.015}$	$H(0.51)$	$89.67^{+0.78}_{-0.70}$
$\Omega_{\mathrm{c}}h^2$	$0.1193^{+0.0028}_{-0.0028}$	$S_8$	$0.826^{+0.031}_{-0.030}$	$D_{\mathrm{M}}(0.51)$	$1982^{+26}_{-28}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.017}_{-0.017}$	$H(0.61)$	$95.28^{+0.67}_{-0.62}$
$\tau$	$0.057^{+0.021}_{-0.015}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.61)$	$2307^{+28}_{-31}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.049^{+0.045}_{-0.033}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.022}$	$H(2.33)$	$236.0^{+1.8}_{-1.8}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$r_{\mathrm{drag}}h$	$99.6^{+2.3}_{-2.1}$	$D_{\mathrm{M}}(2.33)$	$5765^{+32}_{-33}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.004^{+0.019}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.060}_{-0.059}$	$f\sigma_8(0.15)$	$0.457^{+0.016}_{-0.015}$
$r$	$< 0.0832$	$z_{\mathrm{re}}$	$< 9.91$	$\sigma_8(0.15)$	$0.749^{+0.015}_{-0.013}$
$y_{\mathrm{cal}}$	$1.0010^{+0.0064}_{-0.0064}$	$10^9 A_{\mathrm{s}}$	$2.109^{+0.097}_{-0.068}$	$f\sigma_8(0.38)$	$0.475^{+0.013}_{-0.013}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.1}_{-2.2}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880^{+0.029}_{-0.028}$	$\sigma_8(0.38)$	$0.664^{+0.013}_{-0.011}$
$A_{B,\mathrm{sync}}$	$< 4.96$	$D_{40}$	$1226^{+51}_{-51}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.011}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{220}$	$5716^{+100}_{-100}$	$\sigma_8(0.51)$	$0.621^{+0.013}_{-0.010}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{810}$	$2537^{+36}_{-35}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.010}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{1420}$	$815^{+13}_{-14}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0098}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.68}_{-0.74}$	$D_{2000}$	$229.7^{+5.0}_{-5.1}$	$f\sigma_8(2.33)$	$0.2981^{+0.0065}_{-0.0049}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.360$	$n_{\mathrm{s},0.002}$	$0.980^{+0.060}_{-0.059}$	$\sigma_8(2.33)$	$0.3074^{+0.0071}_{-0.0053}$
$A_{100}^{\mathrm{PS}}$	$245^{+60}_{-70}$	$Y_{\mathrm{P}}$	$0.24535^{+0.00022}_{-0.00025}$	$r_{0.002}$	$< 0.0814$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24667^{+0.00022}_{-0.00025}$	$r_{0.01}$	$< 0.0814$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$10^5\mathrm{D}/\mathrm{H}$	$2.61^{+0.10}_{-0.10}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.8^{+1.7}_{-3.4}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.802^{+0.074}_{-0.076}$	$r_{10}$	$< 0.0424$
$A_{143}^{\mathrm{tSZ}}$	$< 8.71$	$z_*$	$1090.00^{+0.79}_{-0.82}$	$10^9 A_{\mathrm{t}}$	$< 0.176$
$r_{143\times 217}^{\mathrm{PS}}$	$0.64^{+0.32}_{-0.32}$	$r_*$	$144.71^{+0.76}_{-0.76}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.156$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$31^{+9}_{-9}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898^{+0.075}_{-0.074}$	$f_{2000}^{217}$	$107.9^{+5.7}_{-5.5}$
$A^{\mathrm{kSZ}}$	—	$z_{\mathrm{drag}}$	$1059.6^{+1.3}_{-1.2}$	$f_{2000}^{143\times 217}$	$33^{+6}_{-6}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$r_{\mathrm{drag}}$	$147.41^{+0.88}_{-0.86}$	$\chi_{\mathrm{lensing}}^2$	$9.42 (\nu: 0.2)$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.46}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 (\nu: 3.5)$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_{\mathrm{D}}$	$0.16096^{+0.00073}_{-0.00072}$	$\chi_{\mathrm{simall}}^2$	$397.5 (\nu: 2.4)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_{\mathrm{eq}}$	$3382^{+66}_{-65}$	$\chi_{\mathrm{lowl}}^2$	$23.2 (\nu: 2.0)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.1 (\nu: 14.7)$
$c_{217}$	$1.0013^{+0.0040}_{-0.0041}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{6\mathrm{DF}}^2$	$0.062 (\nu: 0.0)$
$H_0$	$67.6^{+1.4}_{-1.3}$	$100\theta_{\mathrm{s,eq}}$	$0.4513^{+0.0063}_{-0.0062}$	$\chi_{\mathrm{MGS}}^2$	$1.26 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.689^{+0.017}_{-0.017}$	$H(0.15)$	$72.8^{+1.2}_{-1.1}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.017}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$642^{+11}_{-12}$	$\chi_{\mathrm{prior}}^2$	$9.3 (\nu: 7.4)$
$\Omega_{\mathrm{m}}h^2$	$0.1422^{+0.0027}_{-0.0027}$	$H(0.38)$	$82.95^{+0.92}_{-0.83}$	$\chi_{\mathrm{CMB}}^2$	$8234.0 (\nu: 19.6)$
$\Omega_{\mathrm{m}}h^3$	$0.0960^{+0.0013}_{-0.0012}$	$D_{\mathrm{M}}(0.38)$	$1530^{+22}_{-24}$	$\chi_{\mathrm{BAO}}^2$	$6.3 (\nu: 0.8)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8249.63; R - 1 = 0.00812$$



# 11.17 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022290	$0.02230^{+0.00043}_{-0.00041}$	$\Omega_m$	0.3158	$0.315^{+0.022}_{-0.022}$	$H(0.15)$	72.60	$72.6^{+1.4}_{-1.3}$
$\Omega_c h^2$	0.11998	$0.1198^{+0.0035}_{-0.0036}$	$\Omega_m h^2$	0.14292	$0.1428^{+0.0034}_{-0.0034}$	$D_M(0.15)$	644.2	$644^{+13}_{-14}$
$100\theta_{MC}$	1.04085	$1.04085^{+0.00079}_{-0.00079}$	$\Omega_m h^3$	0.09614	$0.09613^{+0.00086}_{-0.00085}$	$H(0.38)$	82.78	$82.8^{+1.0}_{-0.94}$
$\tau$	0.0542	$0.054^{+0.024}_{-0.021}$	$\sigma_8$	0.8105	$0.810^{+0.020}_{-0.020}$	$D_M(0.38)$	1535.2	$1534^{+27}_{-27}$
$\ln(10^{10} A_s)$	3.0437	$3.043^{+0.048}_{-0.044}$	$S_8$	0.8316	$0.830^{+0.042}_{-0.042}$	$H(0.51)$	89.55	$89.57^{+0.79}_{-0.73}$
$n_s$	0.9649	$0.965^{+0.012}_{-0.012}$	$\sigma_8 \Omega_m^{0.5}$	0.4555	$0.455^{+0.023}_{-0.023}$	$D_M(0.51)$	1988.1	$1987^{+31}_{-32}$
$dn_s/d \ln k$	-0.0032	$-0.004^{+0.018}_{-0.018}$	$\sigma_8 \Omega_m^{0.25}$	0.6076	$0.607^{+0.021}_{-0.022}$	$H(0.61)$	95.20	$95.22^{+0.64}_{-0.59}$
$r$	0.0243	$< 0.0936$	$\sigma_8/h^{0.5}$	0.9882	$0.987^{+0.031}_{-0.031}$	$D_M(0.61)$	2312.9	$2312^{+33}_{-34}$
$y_{cal}$	1.0007	$1.0007^{+0.0064}_{-0.0063}$	$r_{drag} h$	99.01	$99.1^{+2.8}_{-2.7}$	$H(2.33)$	236.46	$236.4^{+2.2}_{-2.2}$
$A_{B,dust}$	4.60	$4.9^{+3.2}_{-2.2}$	$\langle d^2 \rangle^{1/2}$	2.438	$2.434^{+0.075}_{-0.075}$	$D_M(2.33)$	5768.0	$5767^{+28}_{-29}$
$A_{B,sync}$	1.38	$< 4.95$	$z_{re}$	7.69	$7.7^{+2.2}_{-2.3}$	$f\sigma_8(0.15)$	0.4597	$0.459^{+0.021}_{-0.022}$
$\alpha_{B,dust}$	-0.52	—	$10^9 A_s$	2.098	$2.10^{+0.10}_{-0.090}$	$\sigma_8(0.15)$	0.7485	$0.748^{+0.018}_{-0.017}$
$\beta_{B,dust}$	1.584	$1.60^{+0.25}_{-0.25}$	$10^9 A_s e^{-2\tau}$	1.8826	$1.882^{+0.032}_{-0.031}$	$f\sigma_8(0.38)$	0.4771	$0.476^{+0.017}_{-0.018}$
$\alpha_{B,sync}$	-0.42	—	$D_{40}$	1229.4	$1230^{+50}_{-48}$	$\sigma_8(0.38)$	0.6630	$0.663^{+0.015}_{-0.015}$
$\beta_{B,sync}$	-3.04	$-3.10^{+0.67}_{-0.73}$	$D_{220}$	5717	$5715^{+100}_{-98}$	$f\sigma_8(0.51)$	0.4752	$0.474^{+0.015}_{-0.016}$
$\epsilon_{dust,sync}$	-0.37	$< 0.341$	$D_{810}$	2537.8	$2537^{+35}_{-34}$	$\sigma_8(0.51)$	0.6203	$0.620^{+0.014}_{-0.013}$
$A_{100}^{PS}$	237	$242^{+60}_{-70}$	$D_{1420}$	815.6	$815^{+13}_{-13}$	$f\sigma_8(0.61)$	0.4699	$0.469^{+0.014}_{-0.014}$
$A_{143}^{PS}$	40.4	$41^{+20}_{-20}$	$D_{2000}$	230.00	$229.9^{+4.8}_{-4.7}$	$\sigma_8(0.61)$	0.5901	$0.590^{+0.014}_{-0.013}$
$A_{217}^{PS}$	100.9	$102^{+30}_{-40}$	$n_{s,0.002}$	0.975	$0.977^{+0.055}_{-0.054}$	$f\sigma_8(2.33)$	0.2974	$0.2972^{+0.0069}_{-0.0064}$
$A_{217}^{CIB}$	45.6	$40^{+20}_{-20}$	$Y_P$	0.245363	$0.24536^{+0.00016}_{-0.00018}$	$\sigma_8(2.33)$	0.3064	$0.3063^{+0.0074}_{-0.0067}$
$A_{143}^{tSZ}$	6.54	$< 8.72$	$Y_P^{BBN}$	0.246689	$0.24669^{+0.00016}_{-0.00018}$	$r_{0.002}$	0.0222	$< 0.0907$
$r_{143 \times 217}^{PS}$	0.578	$0.65^{+0.31}_{-0.33}$	$10^5 D/H$	2.601	$2.599^{+0.079}_{-0.077}$	$r_{0.01}$	0.0231	$< 0.0912$
$r_{143 \times 217}^{CIB}$	0.79	—	Age/Gyr	13.808	$13.806^{+0.063}_{-0.064}$	$\ln(10^{10} A_t)$	-0.68	$-0.6^{+1.6}_{-3.3}$
$\xi^{tSZ \times CIB}$	0.05	—	$z_*$	1090.02	$1090.00^{+0.73}_{-0.74}$	$r_{10}$	0.0114	$< 0.0472$
$A^{kSZ}$	0.1	—	$r_*$	144.50	$144.53^{+0.83}_{-0.83}$	$10^9 A_t$	0.051	$< 0.196$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.50}$	$100\theta_*$	1.04104	$1.04104^{+0.00078}_{-0.00077}$	$10^9 A_t e^{-2\tau}$	0.046	$< 0.176$
$A_{143}^{dust}$	0.974	$0.96^{+0.45}_{-0.46}$	$D_M(z_*)/\text{Gpc}$	13.880	$13.883^{+0.077}_{-0.078}$	$f_{2000}^{143}$	30.8	$30^{+8}_{-8}$
$A_{217}^{dust}$	0.966	$0.97^{+0.26}_{-0.26}$	$z_{drag}$	1059.74	$1059.76^{+0.90}_{-0.89}$	$f_{2000}^{217}$	107.4	$107.4^{+5.6}_{-5.5}$
$A_{143 \times 217}^{dust}$	1.000	$1.03^{+0.41}_{-0.41}$	$r_{drag}$	147.19	$147.21^{+0.84}_{-0.85}$	$f_{2000}^{143 \times 217}$	32.7	$33^{+6}_{-6}$
$c_{100}$	0.99764	$0.9975^{+0.0027}_{-0.0027}$	$k_D$	0.14071	$0.14068^{+0.00099}_{-0.00097}$	$\chi_{BKPLANCK}^2$	735.3	$740.0 (\nu: 3.8)$
$c_{217}$	1.00138	$1.0012^{+0.0041}_{-0.0041}$	$100\theta_D$	0.16086	$0.16085^{+0.00053}_{-0.00052}$	$\chi_{small}^2$	396.13	$397.2 (\nu: 1.8)$
$c_{TE}$	0.9962	$0.996^{+0.013}_{-0.013}$	$z_{eq}$	3400	$3397^{+81}_{-82}$	$\chi_{lowl}^2$	23.09	$23.5 (\nu: 1.9)$
$c_{EE}$	0.9919	$0.992^{+0.013}_{-0.013}$	$k_{eq}$	0.010377	$0.01037^{+0.00025}_{-0.00025}$	$\chi_{CamSpec}^2$	11499.2	$11514.7 (\nu: 17.3)$
$H_0$	67.27	$67.3^{+1.6}_{-1.5}$	$100\theta_{eq}$	0.8134	$0.814^{+0.016}_{-0.015}$	$\chi_{prior}^2$	2.4	$9.5 (\nu: 7.2)$
$\Omega_\Lambda$	0.6842	$0.685^{+0.022}_{-0.022}$	$100\theta_{s,eq}$	0.4495	$0.4498^{+0.0080}_{-0.0076}$	$\chi_{CMB}^2$	12653.8	$12675.4 (\nu: 21.3)$

Best-fit  $\chi_{eff}^2 = 12656.13$ ;  $\bar{\chi}_{eff}^2 = 12684.91$ ;  $R - 1 = 0.00385$

$\chi_{eff}^2$ : CMB - BK15\_dust: 735.31 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.13 commander\_dx12\_v3\_2\_29: 23.09 CamSpec like\_10.7HM\_1400\_unified: 11499.22



# 11.18 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}} h^2$	0.022346	$0.02234^{+0.00039}_{-0.00039}$	$\Omega_{\mathrm{m}} h^3$	0.09617	$0.09612^{+0.00085}_{-0.00086}$	$H(0.51)$	89.72	$89.73^{+0.59}_{-0.59}$
$\Omega_{\mathrm{c}} h^2$	0.11919	$0.1191^{+0.0027}_{-0.0026}$	$\sigma_8$	0.8078	$0.808^{+0.020}_{-0.019}$	$D_{\mathrm{M}}(0.51)$	1980.7	$1980^{+23}_{-23}$
$100\theta_{\mathrm{MC}}$	1.04099	$1.04094^{+0.00074}_{-0.00075}$	$S_8$	0.8221	$0.821^{+0.033}_{-0.033}$	$H(0.61)$	95.338	$95.34^{+0.50}_{-0.49}$
$\tau$	0.0546	$0.055^{+0.023}_{-0.021}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4503	$0.450^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.61)$	2304.9	$2304^{+25}_{-25}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0419	$3.043^{+0.049}_{-0.043}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6031	$0.603^{+0.019}_{-0.018}$	$H(2.33)$	236.01	$235.9^{+1.7}_{-1.6}$
$n_{\mathrm{s}}$	0.9669	$0.967^{+0.011}_{-0.011}$	$\sigma_8/h^{0.5}$	0.9822	$0.982^{+0.028}_{-0.027}$	$D_{\mathrm{M}}(2.33)$	5762.0	$5762^{+24}_{-24}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	-0.0028	$-0.003^{+0.018}_{-0.018}$	$r_{\mathrm{drag}} h$	99.65	$99.7^{+2.0}_{-2.0}$	$f\sigma_8(0.15)$	0.4549	$0.455^{+0.017}_{-0.017}$
$r$	0.0247	$< 0.0950$	$\langle d^2 \rangle^{1/2}$	2.424	$2.423^{+0.069}_{-0.066}$	$\sigma_8(0.15)$	0.7465	$0.747^{+0.018}_{-0.017}$
$y_{\mathrm{cal}}$	1.0005	$1.0007^{+0.0065}_{-0.0063}$	$z_{\mathrm{re}}$	7.70	$7.7^{+2.2}_{-2.2}$	$f\sigma_8(0.38)$	0.4734	$0.473^{+0.015}_{-0.015}$
$A_{B,\mathrm{dust}}$	4.62	$4.9^{+3.1}_{-2.2}$	$10^9 A_{\mathrm{s}}$	2.095	$2.10^{+0.10}_{-0.089}$	$\sigma_8(0.38)$	0.6618	$0.662^{+0.016}_{-0.014}$
$A_{B,\mathrm{sync}}$	1.37	$< 5.01$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8780	$1.878^{+0.029}_{-0.029}$	$f\sigma_8(0.51)$	0.4721	$0.472^{+0.014}_{-0.014}$
$\alpha_{B,\mathrm{dust}}$	-0.50	—	$D_{40}$	1225.4	$1228^{+49}_{-47}$	$\sigma_8(0.51)$	0.6193	$0.619^{+0.015}_{-0.013}$
$\beta_{B,\mathrm{dust}}$	1.583	$1.60^{+0.25}_{-0.26}$	$D_{220}$	5717	$5719^{+100}_{-98}$	$f\sigma_8(0.61)$	0.4672	$0.467^{+0.013}_{-0.013}$
$\alpha_{B,\mathrm{sync}}$	-0.48	—	$D_{810}$	2535.9	$2536^{+35}_{-34}$	$\sigma_8(0.61)$	0.5893	$0.589^{+0.014}_{-0.013}$
$\beta_{B,\mathrm{sync}}$	-3.05	$-3.10^{+0.67}_{-0.73}$	$D_{1420}$	815.8	$816^{+13}_{-13}$	$f\sigma_8(2.33)$	0.2972	$0.2973^{+0.0070}_{-0.0064}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.38	$< 0.338$	$D_{2000}$	230.16	$230.1^{+4.8}_{-4.7}$	$\sigma_8(2.33)$	0.3064	$0.3065^{+0.0074}_{-0.0066}$
$A_{100}^{\mathrm{PS}}$	236	$241^{+60}_{-60}$	$n_{\mathrm{s},0.002}$	0.976	$0.978^{+0.055}_{-0.054}$	$r_{0.002}$	0.0228	$< 0.0929$
$A_{143}^{\mathrm{PS}}$	40.8	$40^{+20}_{-20}$	$Y_{\mathrm{P}}$	0.245386	$0.24538^{+0.00015}_{-0.00017}$	$r_{0.01}$	0.0236	$< 0.0928$
$A_{217}^{\mathrm{PS}}$	101.3	$102^{+30}_{-40}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246712	$0.24671^{+0.00015}_{-0.00017}$	$\ln(10^{10} A_{\mathrm{t}})$	-0.66	$-0.6^{+1.5}_{-3.3}$
$A_{217}^{\mathrm{CIB}}$	44.9	$40^{+20}_{-20}$	$10^5 \mathrm{D}/\mathrm{H}$	2.590	$2.591^{+0.075}_{-0.070}$	$r_{10}$	0.0117	$< 0.0482$
$A_{143}^{\mathrm{tSZ}}$	6.46	$< 8.76$	$\mathrm{Age}/\mathrm{Gyr}$	13.795	$13.795^{+0.054}_{-0.054}$	$10^9 A_{\mathrm{t}}$	0.052	$< 0.200$
$r_{143 \times 217}^{\mathrm{PS}}$	0.592	$0.65^{+0.32}_{-0.34}$	$z_{*}$	1089.88	$1089.87^{+0.61}_{-0.60}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	0.046	$< 0.179$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.80	—	$r_{*}$	144.66	$144.70^{+0.64}_{-0.66}$	$f_{2000}^{143}$	30.6	$30^{+8}_{-8}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.12	—	$100\theta_{*}$	1.04117	$1.04113^{+0.00074}_{-0.00074}$	$f_{2000}^{217}$	107.2	$107.2^{+5.6}_{-5.5}$
$A^{\mathrm{kSZ}}$	0.3	—	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.894	$13.898^{+0.062}_{-0.063}$	$f_{2000}^{143 \times 217}$	32.5	$32^{+6}_{-6}$
$A_{100}^{\mathrm{dust}}$	1.01	$1.01^{+0.52}_{-0.50}$	$z_{\mathrm{drag}}$	1059.82	$1059.81^{+0.85}_{-0.86}$	$\chi_{\mathrm{BKPLANCK}}^2$	735.7	$740.2 (\nu: 3.7)$
$A_{143}^{\mathrm{dust}}$	0.977	$0.96^{+0.45}_{-0.46}$	$r_{\mathrm{drag}}$	147.33	$147.37^{+0.68}_{-0.70}$	$\chi_{\mathrm{simall}}^2$	396.1	$397.3 (\nu: 2.0)$
$A_{217}^{\mathrm{dust}}$	0.968	$0.97^{+0.26}_{-0.26}$	$k_{\mathrm{D}}$	0.14059	$0.14055^{+0.00089}_{-0.00088}$	$\chi_{\mathrm{lowl}}^2$	22.83	$23.3 (\nu: 1.8)$
$A_{143 \times 217}^{\mathrm{dust}}$	0.998	$1.02^{+0.41}_{-0.42}$	$100\theta_{\mathrm{D}}$	0.16083	$0.16083^{+0.00051}_{-0.00051}$	$\chi_{\mathrm{CamSpec}}^2$	11499.5	$11514.5 (\nu: 16.9)$
$c_{100}$	0.99760	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{eq}}$	3382	$3379^{+61}_{-60}$	$\chi_{6\mathrm{DF}}^2$	0.029	$0.050 (\nu: 0.0)$
$c_{217}$	1.00137	$1.0012^{+0.0041}_{-0.0041}$	$k_{\mathrm{eq}}$	0.010323	$0.01031^{+0.00019}_{-0.00018}$	$\chi_{\mathrm{MGS}}^2$	1.22	$1.32 (\nu: 0.1)$
$c_{TE}$	0.9965	$0.996^{+0.013}_{-0.013}$	$100\theta_{\mathrm{eq}}$	0.8168	$0.817^{+0.011}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	4.40	$4.7 (\nu: 0.9)$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.012}$	$100\theta_{\mathrm{s,eq}}$	0.4513	$0.4516^{+0.0058}_{-0.0058}$	$\chi_{\mathrm{prior}}^2$	2.4	$9.5 (\nu: 7.2)$
$H_0$	67.64	$67.7^{+1.1}_{-1.2}$	$H(0.15)$	72.91	$72.94^{+0.99}_{-0.99}$	$\chi_{\mathrm{BAO}}^2$	5.64	$6.1 (\nu: 0.6)$
$\Omega_{\Lambda}$	0.6892	$0.690^{+0.015}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	641.0	$641^{+10}_{-9.6}$	$\chi_{\mathrm{CMB}}^2$	12654.2	$12675.4 (\nu: 20.8)$
$\Omega_{\mathrm{m}}$	0.3108	$0.310^{+0.016}_{-0.015}$	$H(0.38)$	83.01	$83.03^{+0.73}_{-0.73}$			
$\Omega_{\mathrm{m}} h^2$	0.14218	$0.1420^{+0.0026}_{-0.0025}$	$D_{\mathrm{M}}(0.38)$	1528.9	$1528^{+20}_{-20}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12662.16$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12690.95$ ;  $R - 1 = 0.00720$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.40 CMB - BK15\_dust: 735.68 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.13 commander\_dx12\_v3\_2\_29: 22.83 CamSpec like\_10.7HM\_1400\_unified: 11499.52



# 11.19 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}}h^2$	0.022287	$0.02230^{+0.00042}_{-0.00041}$	$\Omega_{\mathrm{m}}h^2$	0.14282	$0.1428^{+0.0030}_{-0.0030}$	$H(0.38)$	82.80	$82.83^{+0.90}_{-0.86}$
$\Omega_{\mathrm{c}}h^2$	0.11988	$0.1198^{+0.0031}_{-0.0031}$	$\Omega_{\mathrm{m}}h^3$	0.09611	$0.09613^{+0.00085}_{-0.00085}$	$D_{\mathrm{M}}(0.38)$	1534.8	$1534^{+24}_{-24}$
$100\theta_{\mathrm{MC}}$	1.04084	$1.04085^{+0.00077}_{-0.00077}$	$\sigma_8$	0.8099	$0.810^{+0.016}_{-0.015}$	$H(0.51)$	89.55	$89.58^{+0.72}_{-0.68}$
$\tau$	0.0536	$0.055^{+0.022}_{-0.019}$	$S_8$	0.8303	$0.830^{+0.033}_{-0.033}$	$D_{\mathrm{M}}(0.51)$	1987.5	$1987^{+28}_{-28}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0420	$3.044^{+0.042}_{-0.038}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4548	$0.455^{+0.018}_{-0.018}$	$H(0.61)$	95.20	$95.22^{+0.59}_{-0.56}$
$n_{\mathrm{s}}$	0.9652	$0.965^{+0.012}_{-0.012}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6069	$0.607^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.61)$	2312.3	$2311^{+30}_{-30}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	-0.0018	$-0.003^{+0.017}_{-0.018}$	$\sigma_8/h^{0.5}$	0.9872	$0.987^{+0.023}_{-0.023}$	$H(2.33)$	236.39	$236.4^{+1.9}_{-1.9}$
$r$	0.0215	$< 0.0917$	$r_{\mathrm{drag}}h$	99.07	$99.1^{+2.5}_{-2.4}$	$D_{\mathrm{M}}(2.33)$	5768.0	$5767^{+27}_{-27}$
$y_{\mathrm{cal}}$	1.0008	$1.0007^{+0.0064}_{-0.0062}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.436^{+0.060}_{-0.060}$	$f\sigma_8(0.15)$	0.4591	$0.459^{+0.017}_{-0.017}$
$A_{B,\mathrm{dust}}$	4.62	$4.9^{+3.1}_{-2.2}$	$z_{\mathrm{re}}$	7.62	$7.7^{+2.0}_{-2.1}$	$\sigma_8(0.15)$	0.7480	$0.748^{+0.014}_{-0.014}$
$A_{B,\mathrm{sync}}$	1.42	$< 4.99$	$10^9A_{\mathrm{s}}$	2.095	$2.099^{+0.089}_{-0.079}$	$f\sigma_8(0.38)$	0.4765	$0.476^{+0.013}_{-0.014}$
$\alpha_{B,\mathrm{dust}}$	-0.51	—	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8820	$1.882^{+0.029}_{-0.028}$	$\sigma_8(0.38)$	0.6626	$0.663^{+0.013}_{-0.012}$
$\beta_{B,\mathrm{dust}}$	1.583	$1.60^{+0.25}_{-0.26}$	$D_{40}$	1231.2	$1233^{+49}_{-47}$	$f\sigma_8(0.51)$	0.4747	$0.475^{+0.012}_{-0.012}$
$\alpha_{B,\mathrm{sync}}$	-0.38	—	$D_{220}$	5720	$5718^{+100}_{-98}$	$\sigma_8(0.51)$	0.6199	$0.620^{+0.012}_{-0.011}$
$\beta_{B,\mathrm{sync}}$	-3.04	$-3.10^{+0.67}_{-0.72}$	$D_{810}$	2537.8	$2537^{+35}_{-33}$	$f\sigma_8(0.61)$	0.4694	$0.469^{+0.011}_{-0.011}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.36	$< 0.333$	$D_{1420}$	816.0	$815^{+13}_{-13}$	$\sigma_8(0.61)$	0.5898	$0.590^{+0.012}_{-0.011}$
$A_{100}^{\mathrm{PS}}$	237	$242^{+60}_{-60}$	$D_{2000}$	230.20	$230.0^{+4.9}_{-4.7}$	$f\sigma_8(2.33)$	0.2972	$0.2974^{+0.0062}_{-0.0057}$
$A_{143}^{\mathrm{PS}}$	42.9	$40^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	0.971	$0.975^{+0.055}_{-0.053}$	$\sigma_8(2.33)$	0.3063	$0.3065^{+0.0068}_{-0.0061}$
$A_{217}^{\mathrm{PS}}$	102.2	$102^{+30}_{-40}$	$Y_{\mathrm{P}}$	0.245362	$0.24536^{+0.00016}_{-0.00018}$	$r_{0.002}$	0.0196	$< 0.0884$
$A_{217}^{\mathrm{CIB}}$	43.6	$40^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246688	$0.24669^{+0.00016}_{-0.00018}$	$r_{0.01}$	0.0205	$< 0.0895$
$A_{143}^{\mathrm{tSZ}}$	5.77	$< 8.74$	$10^5\mathrm{D}/\mathrm{H}$	2.601	$2.599^{+0.079}_{-0.075}$	$\ln(10^{10}A_{\mathrm{t}})$	-0.80	$-0.7^{+1.6}_{-3.4}$
$r_{143\times 217}^{\mathrm{PS}}$	0.630	$0.65^{+0.31}_{-0.33}$	$\mathrm{Age}/\mathrm{Gyr}$	13.808	$13.806^{+0.061}_{-0.062}$	$r_{10}$	0.0100	$< 0.0460$
$r_{143\times 217}^{\mathrm{CIB}}$	0.77	—	$z_*$	1090.02	$1089.99^{+0.69}_{-0.69}$	$10^9A_{\mathrm{t}}$	0.045	$< 0.193$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	0.31	—	$r_*$	144.52	$144.53^{+0.73}_{-0.74}$	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.040	$< 0.173$
$A^{\mathrm{kSZ}}$	1.3	—	$100\theta_*$	1.04103	$1.04104^{+0.00076}_{-0.00076}$	$f_{2000}^{143}$	30.5	$30^{+9}_{-8}$
$A_{100}^{\mathrm{dust}}$	1.01	$1.01^{+0.51}_{-0.50}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.883	$13.884^{+0.069}_{-0.069}$	$f_{2000}^{217}$	107.2	$107.3^{+5.6}_{-5.6}$
$A_{143}^{\mathrm{dust}}$	0.973	$0.96^{+0.45}_{-0.46}$	$z_{\mathrm{drag}}$	1059.74	$1059.76^{+0.90}_{-0.89}$	$f_{2000}^{143\times 217}$	32.5	$33^{+6}_{-6}$
$A_{217}^{\mathrm{dust}}$	0.970	$0.97^{+0.26}_{-0.26}$	$r_{\mathrm{drag}}$	147.21	$147.22^{+0.76}_{-0.76}$	$\chi_{\mathrm{lensing}}^2$	8.90	$9.39 (\nu: 0.2)$
$A_{143\times 217}^{\mathrm{dust}}$	1.004	$1.02^{+0.41}_{-0.42}$	$k_{\mathrm{D}}$	0.14067	$0.14068^{+0.00092}_{-0.00091}$	$\chi_{\mathrm{BKPLANCK}}^2$	735.4	$739.9 (\nu: 3.7)$
$c_{100}$	0.99766	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_{\mathrm{D}}$	0.16086	$0.16085^{+0.00053}_{-0.00051}$	$\chi_{\mathrm{small}}^2$	396.03	$397.2 (\nu: 1.5)$
$c_{217}$	1.00131	$1.0012^{+0.0041}_{-0.0041}$	$z_{\mathrm{eq}}$	3397	$3396^{+71}_{-71}$	$\chi_{\mathrm{lowl}}^2$	23.34	$23.7 (\nu: 2.0)$
$c_{TE}$	0.9964	$0.996^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	0.010369	$0.01037^{+0.00022}_{-0.00022}$	$\chi_{\mathrm{CamSpec}}^2$	11499.2	$11514.2 (\nu: 16.4)$
$c_{EE}$	0.9920	$0.992^{+0.013}_{-0.012}$	$100\theta_{\mathrm{eq}}$	0.8139	$0.814^{+0.014}_{-0.013}$	$\chi_{\mathrm{prior}}^2$	2.3	$9.5 (\nu: 7.2)$
$H_0$	67.30	$67.3^{+1.4}_{-1.4}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	0.4497	$0.4499^{+0.0070}_{-0.0068}$	$\chi_{\mathrm{CMB}}^2$	12662.8	$12684.4 (\nu: 21.2)$
$\Omega_{\Lambda}$	0.6847	$0.685^{+0.019}_{-0.020}$	$H(0.15)$	72.62	$72.7^{+1.2}_{-1.2}$			
$\Omega_{\mathrm{m}}$	0.3153	$0.315^{+0.020}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	643.9	$644^{+12}_{-12}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12665.09$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12693.83$ ;  $R - 1 = 0.00535$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12.Dec5.ftl\_mv2.ndclpp-p.teb\_consext8: 8.90 BK15\_dust: 735.38 small.100x143\_offlike5.EE\_Aplanck\_B: 396.03 commander\_dx12.v3.2.29: 23.34  
CamSpec like\_10.7HM.1400\_unified: 11499.17



## 11.20 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022335	$0.02234^{+0.00039}_{-0.00039}$	$\Omega_m h^3$	0.09612	$0.09613^{+0.00085}_{-0.00086}$	$H(0.51)$	89.70	$89.71^{+0.58}_{-0.57}$
$\Omega_c h^2$	0.11917	$0.1191^{+0.0025}_{-0.0024}$	$\sigma_8$	0.8088	$0.809^{+0.016}_{-0.015}$	$D_M(0.51)$	1981.2	$1981^{+22}_{-22}$
$100\theta_{MC}$	1.04092	$1.04093^{+0.00073}_{-0.00075}$	$S_8$	0.8234	$0.824^{+0.027}_{-0.027}$	$H(0.61)$	95.317	$95.33^{+0.49}_{-0.48}$
$\tau$	0.0558	$0.056^{+0.021}_{-0.018}$	$\sigma_8 \Omega_m^{0.5}$	0.4510	$0.451^{+0.015}_{-0.015}$	$D_M(0.61)$	2305.5	$2305^{+24}_{-24}$
$\ln(10^{10} A_s)$	3.0452	$3.046^{+0.042}_{-0.038}$	$\sigma_8 \Omega_m^{0.25}$	0.6040	$0.604^{+0.015}_{-0.015}$	$H(2.33)$	235.98	$236.0^{+1.5}_{-1.5}$
$n_s$	0.9667	$0.967^{+0.010}_{-0.010}$	$\sigma_8/h^{0.5}$	0.9836	$0.984^{+0.022}_{-0.022}$	$D_M(2.33)$	5763.2	$5763^{+24}_{-24}$
$dn_s/d \ln k$	-0.0031	$-0.003^{+0.017}_{-0.018}$	$r_{drag} h$	99.64	$99.7^{+1.9}_{-1.9}$	$f\sigma_8(0.15)$	0.4556	$0.456^{+0.014}_{-0.014}$
$r$	0.0248	$< 0.0926$	$\langle d^2 \rangle^{1/2}$	2.428	$2.429^{+0.057}_{-0.056}$	$\sigma_8(0.15)$	0.7475	$0.748^{+0.015}_{-0.014}$
$y_{cal}$	1.0008	$1.0009^{+0.0064}_{-0.0062}$	$z_{re}$	7.83	$7.9^{+2.0}_{-1.9}$	$f\sigma_8(0.38)$	0.4741	$0.474^{+0.012}_{-0.012}$
$A_{B,dust}$	4.62	$4.9^{+3.1}_{-2.2}$	$10^9 A_s$	2.102	$2.104^{+0.090}_{-0.078}$	$\sigma_8(0.38)$	0.6626	$0.663^{+0.013}_{-0.012}$
$A_{B,sync}$	1.40	$< 5.01$	$10^9 A_s e^{-2\tau}$	1.8795	$1.879^{+0.028}_{-0.027}$	$f\sigma_8(0.51)$	0.4727	$0.473^{+0.011}_{-0.011}$
$\alpha_{B,dust}$	-0.52	—	$D_{40}$	1226.4	$1231^{+48}_{-47}$	$\sigma_8(0.51)$	0.6201	$0.621^{+0.012}_{-0.011}$
$\beta_{B,dust}$	1.584	$1.60^{+0.25}_{-0.26}$	$D_{220}$	5722	$5723^{+100}_{-97}$	$f\sigma_8(0.61)$	0.4678	$0.468^{+0.010}_{-0.010}$
$\alpha_{B,sync}$	-0.35	—	$D_{810}$	2537.6	$2538^{+35}_{-33}$	$\sigma_8(0.61)$	0.5901	$0.590^{+0.012}_{-0.011}$
$\beta_{B,sync}$	-3.04	$-3.10^{+0.67}_{-0.73}$	$D_{1420}$	816.1	$816^{+13}_{-13}$	$f\sigma_8(2.33)$	0.2976	$0.2977^{+0.0061}_{-0.0056}$
$\epsilon_{dust,sync}$	-0.37	$< 0.331$	$D_{2000}$	230.19	$230.3^{+4.8}_{-4.7}$	$\sigma_8(2.33)$	0.3068	$0.3070^{+0.0065}_{-0.0059}$
$A_{100}^{PS}$	236	$241^{+60}_{-70}$	$n_{s,0.002}$	0.977	$0.976^{+0.055}_{-0.054}$	$r_{0.002}$	0.0229	$< 0.0897$
$A_{143}^{PS}$	39.2	$40^{+20}_{-20}$	$Y_P$	0.245382	$0.24538^{+0.00015}_{-0.00017}$	$r_{0.01}$	0.0238	$< 0.0903$
$A_{217}^{PS}$	101.7	$102^{+30}_{-40}$	$Y_P^{BBN}$	0.246708	$0.24671^{+0.00015}_{-0.00017}$	$\ln(10^{10} A_t)$	-0.65	$-0.6^{+1.6}_{-3.4}$
$A_{217}^{CIB}$	45.2	$40^{+20}_{-20}$	$10^5 D/H$	2.592	$2.591^{+0.074}_{-0.070}$	$r_{10}$	0.0117	$< 0.0468$
$A_{143}^{tSZ}$	6.65	$< 8.74$	Age/Gyr	13.797	$13.796^{+0.054}_{-0.054}$	$10^9 A_t$	0.052	$< 0.195$
$r_{143 \times 217}^{PS}$	0.577	$0.65^{+0.31}_{-0.34}$	$z_*$	1089.89	$1089.88^{+0.60}_{-0.60}$	$10^9 A_t e^{-2\tau}$	0.047	$< 0.174$
$r_{143 \times 217}^{CIB}$	0.77	—	$r_*$	144.67	$144.67^{+0.61}_{-0.61}$	$f_{2000}^{143}$	30.5	$30^{+8}_{-8}$
$\xi^{tSZ \times CIB}$	0.02	—	$100\theta_*$	1.04111	$1.04112^{+0.00072}_{-0.00074}$	$f_{2000}^{217}$	107.2	$107.1^{+5.6}_{-5.5}$
$A^{kSZ}$	0.0	—	$D_M(z_*)/\text{Gpc}$	13.896	$13.896^{+0.058}_{-0.058}$	$f_{2000}^{143 \times 217}$	32.5	$32^{+6}_{-6}$
$A_{100}^{dust}$	1.01	$1.01^{+0.52}_{-0.50}$	$z_{drag}$	1059.78	$1059.81^{+0.85}_{-0.87}$	$\chi_{lensing}^2$	8.97	$9.34 (\nu: 0.2)$
$A_{143}^{dust}$	0.967	$0.96^{+0.45}_{-0.46}$	$r_{drag}$	147.35	$147.35^{+0.65}_{-0.66}$	$\chi_{BKPLANCK}^2$	735.6	$740.1 (\nu: 3.6)$
$A_{217}^{dust}$	0.967	$0.97^{+0.26}_{-0.26}$	$k_D$	0.14057	$0.14057^{+0.00086}_{-0.00085}$	$\chi_{simall}^2$	396.36	$397.4 (\nu: 1.9)$
$A_{143 \times 217}^{dust}$	1.004	$1.02^{+0.41}_{-0.42}$	$100\theta_D$	0.16083	$0.16083^{+0.00051}_{-0.00050}$	$\chi_{lowl}^2$	22.82	$23.5 (\nu: 1.9)$
$c_{100}$	0.99771	$0.9976^{+0.0027}_{-0.0027}$	$z_{eq}$	3382	$3381^{+57}_{-56}$	$\chi_{CamSpec}^2$	11499.5	$11514.0 (\nu: 16.3)$
$c_{217}$	1.00132	$1.0012^{+0.0041}_{-0.0041}$	$k_{eq}$	0.010321	$0.01032^{+0.00017}_{-0.00017}$	$\chi_{6DF}^2$	0.030	$0.051 (\nu: 0.0)$
$c_{TE}$	0.9964	$0.996^{+0.012}_{-0.013}$	$100\theta_{eq}$	0.8169	$0.817^{+0.011}_{-0.010}$	$\chi_{MGS}^2$	1.22	$1.27 (\nu: 0.1)$
$c_{EE}$	0.9925	$0.992^{+0.013}_{-0.012}$	$100\theta_{s,eq}$	0.4513	$0.4513^{+0.0054}_{-0.0054}$	$\chi_{DR12BAO}^2$	4.43	$4.8 (\nu: 0.9)$
$H_0$	67.62	$67.6^{+1.1}_{-1.1}$	$H(0.15)$	72.89	$72.91^{+0.94}_{-0.94}$	$\chi_{prior}^2$	2.2	$9.4 (\nu: 7.3)$
$\Omega_\Lambda$	0.6891	$0.689^{+0.014}_{-0.015}$	$D_M(0.15)$	641.2	$641.1^{+9.4}_{-9.2}$	$\chi_{CMB}^2$	12663.2	$12684.4 (\nu: 20.9)$
$\Omega_m$	0.3109	$0.311^{+0.015}_{-0.014}$	$H(0.38)$	82.99	$83.01^{+0.71}_{-0.69}$	$\chi_{BAO}^2$	5.68	$6.1 (\nu: 0.5)$
$\Omega_m h^2$	0.14215	$0.1421^{+0.0024}_{-0.0023}$	$D_M(0.38)$	1529.3	$1529^{+19}_{-19}$			

Best-fit  $\chi_{eff}^2 = 12671.14$ ;  $\bar{\chi}_{eff}^2 = 12699.90$ ;  $R - 1 = 0.00769$

$\chi_{eff}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.96 BK15\_dust: 735.57 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.36 commander\_dx12\_v3.2.29: 22.82 CamSpec like\_10.7HM.1400\_unified: 11499.49



# 11.21 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230^{+0.00042}_{-0.00041}$	$\Omega_{\mathrm{m}}$	$0.315^{+0.022}_{-0.022}$	$H(0.15)$	$72.7^{+1.4}_{-1.3}$
$\Omega_{\mathrm{c}}h^2$	$0.1198^{+0.0035}_{-0.0036}$	$\Omega_{\mathrm{m}}h^2$	$0.1428^{+0.0034}_{-0.0034}$	$D_{\mathrm{M}}(0.15)$	$644^{+13}_{-14}$
$100\theta_{\mathrm{MC}}$	$1.04085^{+0.00079}_{-0.00079}$	$\Omega_{\mathrm{m}}h^3$	$0.09614^{+0.00086}_{-0.00085}$	$H(0.38)$	$82.8^{+1.0}_{-0.93}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$\sigma_8$	$0.811^{+0.019}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1534^{+26}_{-27}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.047}_{-0.032}$	$S_8$	$0.830^{+0.042}_{-0.042}$	$H(0.51)$	$89.58^{+0.79}_{-0.73}$
$n_{\mathrm{s}}$	$0.965^{+0.012}_{-0.012}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.455^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.51)$	$1987^{+31}_{-32}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.004^{+0.018}_{-0.018}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.021}_{-0.021}$	$H(0.61)$	$95.23^{+0.64}_{-0.59}$
$r$	$< 0.0934$	$\sigma_8/h^{0.5}$	$0.988^{+0.030}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2311^{+33}_{-34}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0064}_{-0.0063}$	$r_{\mathrm{drag}}h$	$99.1^{+2.8}_{-2.7}$	$H(2.33)$	$236.4^{+2.2}_{-2.2}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.2}_{-2.2}$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.074}_{-0.073}$	$D_{\mathrm{M}}(2.33)$	$5767^{+28}_{-29}$
$A_{B,\mathrm{sync}}$	$< 4.95$	$z_{\mathrm{re}}$	$< 9.66$	$f\sigma_8(0.15)$	$0.459^{+0.021}_{-0.021}$
$\alpha_{B,\mathrm{dust}}$	—	$10^9 A_{\mathrm{s}}$	$2.10^{+0.10}_{-0.066}$	$\sigma_8(0.15)$	$0.749^{+0.017}_{-0.015}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882^{+0.032}_{-0.031}$	$f\sigma_8(0.38)$	$0.477^{+0.017}_{-0.017}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{40}$	$1230^{+50}_{-47}$	$\sigma_8(0.38)$	$0.663^{+0.015}_{-0.012}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.67}_{-0.74}$	$D_{220}$	$5715^{+100}_{-98}$	$f\sigma_8(0.51)$	$0.475^{+0.015}_{-0.015}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.340$	$D_{810}$	$2537^{+35}_{-34}$	$\sigma_8(0.51)$	$0.621^{+0.014}_{-0.011}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-70}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.61)$	$0.470^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.8}_{-4.7}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.0098}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$n_{\mathrm{s},0.002}$	$0.978^{+0.055}_{-0.054}$	$f\sigma_8(2.33)$	$0.2975^{+0.0067}_{-0.0047}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00016}_{-0.00018}$	$\sigma_8(2.33)$	$0.3066^{+0.0071}_{-0.0049}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.72$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00016}_{-0.00018}$	$r_{0.002}$	$< 0.0907$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.599^{+0.079}_{-0.077}$	$r_{0.01}$	$< 0.0911$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.805^{+0.062}_{-0.064}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.6^{+1.6}_{-3.3}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{*}$	$1089.99^{+0.72}_{-0.74}$	$r_{10}$	$< 0.0472$
$A^{\mathrm{kSZ}}$	—	$r_{*}$	$144.53^{+0.83}_{-0.83}$	$10^9 A_{\mathrm{t}}$	$< 0.196$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$100\theta_{*}$	$1.04104^{+0.00078}_{-0.00078}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.176$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.883^{+0.077}_{-0.078}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$z_{\mathrm{drag}}$	$1059.77^{+0.89}_{-0.87}$	$f_{2000}^{217}$	$107.4^{+5.5}_{-5.5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$r_{\mathrm{drag}}$	$147.21^{+0.84}_{-0.85}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$k_{\mathrm{D}}$	$0.14069^{+0.00099}_{-0.00097}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 (\nu: 3.8)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00052}_{-0.00052}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 1.8)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{\mathrm{eq}}$	$3396^{+81}_{-82}$	$\chi_{\mathrm{lowl}}^2$	$23.5 (\nu: 1.9)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00025}_{-0.00025}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.6 (\nu: 17.2)$
$H_0$	$67.3^{+1.6}_{-1.5}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.016}_{-0.015}$	$\chi_{\mathrm{prior}}^2$	$9.5 (\nu: 7.2)$
$\Omega_{\Lambda}$	$0.685^{+0.022}_{-0.022}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4499^{+0.0080}_{-0.0077}$	$\chi_{\mathrm{CMB}}^2$	$12675.2 (\nu: 20.9)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12684.69; R - 1 = 0.00378$$



## 11.22 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235^{+0.00039}_{-0.00038}$	$\Omega_{\mathrm{m}}h^3$	$0.09613^{+0.00085}_{-0.00086}$	$H(0.51)$	$89.74^{+0.59}_{-0.59}$
$\Omega_{\mathrm{c}}h^2$	$0.1190^{+0.0027}_{-0.0026}$	$\sigma_8$	$0.808^{+0.019}_{-0.016}$	$D_{\mathrm{M}}(0.51)$	$1980^{+23}_{-23}$
$100\theta_{\mathrm{MC}}$	$1.04095^{+0.00074}_{-0.00075}$	$S_8$	$0.822^{+0.033}_{-0.032}$	$H(0.61)$	$95.34^{+0.49}_{-0.49}$
$\tau$	$0.056^{+0.021}_{-0.014}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.61)$	$2304^{+25}_{-25}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.047}_{-0.032}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.018}_{-0.017}$	$H(2.33)$	$235.9^{+1.7}_{-1.6}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8/h^{0.5}$	$0.983^{+0.027}_{-0.025}$	$D_{\mathrm{M}}(2.33)$	$5762^{+24}_{-24}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.003^{+0.017}_{-0.018}$	$r_{\mathrm{drag}}h$	$99.7^{+2.0}_{-2.0}$	$f\sigma_8(0.15)$	$0.455^{+0.017}_{-0.017}$
$r$	$< 0.0946$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.067}_{-0.063}$	$\sigma_8(0.15)$	$0.747^{+0.018}_{-0.014}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0065}_{-0.0063}$	$z_{\mathrm{re}}$	$< 9.75$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.014}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.1}_{-2.2}$	$10^9 A_{\mathrm{s}}$	$2.10^{+0.10}_{-0.067}$	$\sigma_8(0.38)$	$0.662^{+0.015}_{-0.012}$
$A_{B,\mathrm{sync}}$	$< 5.03$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.029}_{-0.029}$	$f\sigma_8(0.51)$	$0.472^{+0.014}_{-0.013}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{40}$	$1228^{+49}_{-48}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.011}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.26}$	$D_{220}$	$5719^{+100}_{-98}$	$f\sigma_8(0.61)$	$0.467^{+0.013}_{-0.012}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2536^{+35}_{-34}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.0099}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.67}_{-0.73}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(2.33)$	$0.2976^{+0.0068}_{-0.0048}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.333$	$D_{2000}$	$230.1^{+4.9}_{-4.7}$	$\sigma_8(2.33)$	$0.3068^{+0.0071}_{-0.0049}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$n_{\mathrm{s},0.002}$	$0.978^{+0.055}_{-0.054}$	$r_{0.002}$	$< 0.0929$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$r_{0.01}$	$< 0.0926$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.6^{+1.5}_{-3.3}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$10^5\mathrm{D}/\mathrm{H}$	$2.591^{+0.073}_{-0.070}$	$r_{10}$	$< 0.0480$
$A_{143}^{\mathrm{tSZ}}$	$< 8.74$	$\mathrm{Age}/\mathrm{Gyr}$	$13.795^{+0.054}_{-0.054}$	$10^9 A_{\mathrm{t}}$	$< 0.200$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.34}$	$z_*$	$1089.87^{+0.60}_{-0.60}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.178$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$r_*$	$144.70^{+0.64}_{-0.66}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$100\theta_*$	$1.04113^{+0.00074}_{-0.00074}$	$f_{2000}^{217}$	$107.2^{+5.6}_{-5.5}$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898^{+0.062}_{-0.063}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.50}$	$z_{\mathrm{drag}}$	$1059.81^{+0.85}_{-0.87}$	$\chi_{\mathrm{BKPLANCK}}^2$	$740.2 (\nu: 3.7)$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$r_{\mathrm{drag}}$	$147.37^{+0.68}_{-0.70}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 2.1)$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$k_{\mathrm{D}}$	$0.14055^{+0.00089}_{-0.00089}$	$\chi_{\mathrm{lowl}}^2$	$23.3 (\nu: 1.7)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.42}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00051}_{-0.00051}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4 (\nu: 16.9)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{eq}}$	$3379^{+61}_{-60}$	$\chi_{6\mathrm{DF}}^2$	$0.049 (\nu: 0.0)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00019}_{-0.00018}$	$\chi_{\mathrm{MGS}}^2$	$1.32 (\nu: 0.1)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.011}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.9)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4516^{+0.0058}_{-0.0058}$	$\chi_{\mathrm{prior}}^2$	$9.5 (\nu: 7.3)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$H(0.15)$	$72.95^{+0.99}_{-0.99}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	$640.7^{+9.9}_{-9.7}$	$\chi_{\mathrm{CMB}}^2$	$12675.2 (\nu: 20.5)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.015}$	$H(0.38)$	$83.03^{+0.73}_{-0.73}$		
$\Omega_{\mathrm{m}}h^2$	$0.1420^{+0.0026}_{-0.0025}$	$D_{\mathrm{M}}(0.38)$	$1528^{+20}_{-19}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12690.74; R - 1 = 0.00701$$



### 11.23 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230^{+0.00041}_{-0.00041}$	$\Omega_{\mathrm{m}}h^2$	$0.1427^{+0.0029}_{-0.0030}$	$H(0.38)$	$82.84^{+0.89}_{-0.84}$
$\Omega_{\mathrm{c}}h^2$	$0.1198^{+0.0030}_{-0.0031}$	$\Omega_{\mathrm{m}}h^3$	$0.09613^{+0.00085}_{-0.00085}$	$D_{\mathrm{M}}(0.38)$	$1534^{+23}_{-24}$
$100\theta_{\mathrm{MC}}$	$1.04085^{+0.00076}_{-0.00077}$	$\sigma_8$	$0.811^{+0.015}_{-0.014}$	$H(0.51)$	$89.59^{+0.71}_{-0.67}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$S_8$	$0.830^{+0.033}_{-0.033}$	$D_{\mathrm{M}}(0.51)$	$1986^{+27}_{-28}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.040}_{-0.030}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.455^{+0.018}_{-0.018}$	$H(0.61)$	$95.23^{+0.58}_{-0.55}$
$n_{\mathrm{s}}$	$0.965^{+0.011}_{-0.011}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.61)$	$2311^{+29}_{-30}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.003^{+0.017}_{-0.018}$	$\sigma_8/h^{0.5}$	$0.988^{+0.023}_{-0.023}$	$H(2.33)$	$236.3^{+1.9}_{-1.9}$
$r$	$< 0.0917$	$r_{\mathrm{drag}}h$	$99.2^{+2.4}_{-2.3}$	$D_{\mathrm{M}}(2.33)$	$5767^{+27}_{-27}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0064}_{-0.0062}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.060}_{-0.059}$	$f\sigma_8(0.15)$	$0.459^{+0.016}_{-0.017}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.1}_{-2.2}$	$z_{\mathrm{re}}$	$< 9.55$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.012}$
$A_{B,\mathrm{sync}}$	$< 4.99$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.086}_{-0.062}$	$f\sigma_8(0.38)$	$0.477^{+0.013}_{-0.013}$
$\alpha_{B,\mathrm{dust}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881^{+0.029}_{-0.028}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.010}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.26}$	$D_{40}$	$1232^{+49}_{-47}$	$f\sigma_8(0.51)$	$0.475^{+0.012}_{-0.012}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{220}$	$5718^{+100}_{-98}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0093}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.67}_{-0.72}$	$D_{810}$	$2537^{+34}_{-33}$	$f\sigma_8(0.61)$	$0.470^{+0.011}_{-0.011}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.332$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0089}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$D_{2000}$	$230.0^{+4.9}_{-4.7}$	$f\sigma_8(2.33)$	$0.2976^{+0.0060}_{-0.0045}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.975^{+0.055}_{-0.054}$	$\sigma_8(2.33)$	$0.3067^{+0.0066}_{-0.0048}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00016}_{-0.00018}$	$r_{0.002}$	$< 0.0884$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00016}_{-0.00018}$	$r_{0.01}$	$< 0.0893$
$A_{143}^{\mathrm{tSZ}}$	$< 8.74$	$10^5 \mathrm{D}/\mathrm{H}$	$2.599^{+0.078}_{-0.075}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.6^{+1.6}_{-3.4}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.805^{+0.060}_{-0.061}$	$r_{10}$	$< 0.0459$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$z_*$	$1089.98^{+0.68}_{-0.68}$	$10^9 A_{\mathrm{t}}$	$< 0.193$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$r_*$	$144.54^{+0.73}_{-0.72}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.173$
$A^{\mathrm{kSZ}}$	—	$100\theta_*$	$1.04104^{+0.00076}_{-0.00076}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.885^{+0.068}_{-0.068}$	$f_{2000}^{217}$	$107.3^{+5.6}_{-5.6}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$z_{\mathrm{drag}}$	$1059.76^{+0.89}_{-0.90}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_{\mathrm{drag}}$	$147.23^{+0.75}_{-0.76}$	$\chi_{\mathrm{lensing}}^2$	$9.37 (\nu: 0.2)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.42}$	$k_{\mathrm{D}}$	$0.14067^{+0.00092}_{-0.00091}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 (\nu: 3.7)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00053}_{-0.00051}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$z_{\mathrm{eq}}$	$3395^{+70}_{-71}$	$\chi_{\mathrm{lowl}}^2$	$23.7 (\nu: 2.0)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01036^{+0.00021}_{-0.00022}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 (\nu: 16.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.013}_{-0.013}$	$\chi_{\mathrm{prior}}^2$	$9.5 (\nu: 7.2)$
$H_0$	$67.4^{+1.4}_{-1.3}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4500^{+0.0069}_{-0.0066}$	$\chi_{\mathrm{CMB}}^2$	$12684.2 (\nu: 20.9)$
$\Omega_{\Lambda}$	$0.685^{+0.019}_{-0.019}$	$H(0.15)$	$72.7^{+1.2}_{-1.1}$		
$\Omega_{\mathrm{m}}$	$0.315^{+0.019}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	$643^{+12}_{-12}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12693.65; R - 1 = 0.00582$$



# 11.24 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234^{+0.00039}_{-0.00038}$	$\Omega_{\mathrm{m}}h^3$	$0.09613^{+0.00085}_{-0.00086}$	$H(0.51)$	$89.72^{+0.58}_{-0.56}$
$\Omega_{\mathrm{c}}h^2$	$0.1191^{+0.0024}_{-0.0024}$	$\sigma_8$	$0.810^{+0.016}_{-0.014}$	$D_{\mathrm{M}}(0.51)$	$1981^{+22}_{-22}$
$100\theta_{\mathrm{MC}}$	$1.04093^{+0.00073}_{-0.00075}$	$S_8$	$0.824^{+0.027}_{-0.027}$	$H(0.61)$	$95.33^{+0.48}_{-0.47}$
$\tau$	$0.057^{+0.019}_{-0.015}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.61)$	$2305^{+24}_{-24}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.041}_{-0.031}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.015}_{-0.014}$	$H(2.33)$	$236.0^{+1.5}_{-1.5}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.010}$	$\sigma_8/h^{0.5}$	$0.984^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(2.33)$	$5763^{+23}_{-24}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.003^{+0.017}_{-0.018}$	$r_{\mathrm{drag}}h$	$99.7^{+1.9}_{-1.8}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.014}$
$r$	$< 0.0926$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.056}_{-0.055}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.012}$
$y_{\mathrm{cal}}$	$1.0009^{+0.0064}_{-0.0062}$	$z_{\mathrm{re}}$	$< 9.68$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.1}_{-2.2}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.088}_{-0.065}$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.010}$
$A_{B,\mathrm{sync}}$	$< 5.02$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.028}_{-0.027}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.010}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{40}$	$1230^{+49}_{-47}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0097}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.26}$	$D_{220}$	$5723^{+100}_{-97}$	$f\sigma_8(0.61)$	$0.468^{+0.010}_{-0.0096}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2537^{+34}_{-33}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0092}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.67}_{-0.72}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(2.33)$	$0.2979^{+0.0060}_{-0.0047}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.331$	$D_{2000}$	$230.3^{+4.9}_{-4.7}$	$\sigma_8(2.33)$	$0.3071^{+0.0065}_{-0.0049}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$n_{\mathrm{s},0.002}$	$0.976^{+0.055}_{-0.054}$	$r_{0.002}$	$< 0.0896$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$r_{0.01}$	$< 0.0901$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.6^{+1.6}_{-3.4}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$10^5\mathrm{D}/\mathrm{H}$	$2.591^{+0.073}_{-0.070}$	$r_{10}$	$< 0.0467$
$A_{143}^{\mathrm{tSZ}}$	$< 8.74$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796^{+0.054}_{-0.053}$	$10^9 A_{\mathrm{t}}$	$< 0.195$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.34}$	$z_{*}$	$1089.88^{+0.59}_{-0.59}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.174$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$r_{*}$	$144.68^{+0.60}_{-0.60}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$100\theta_{*}$	$1.04112^{+0.00072}_{-0.00074}$	$f_{2000}^{217}$	$107.1^{+5.6}_{-5.4}$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.896^{+0.058}_{-0.058}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-6}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.50}$	$z_{\mathrm{drag}}$	$1059.81^{+0.85}_{-0.87}$	$\chi_{\mathrm{lensing}}^2$	$9.31 (\nu: 0.2)$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$r_{\mathrm{drag}}$	$147.35^{+0.65}_{-0.66}$	$\chi_{\mathrm{BKPLANCK}}^2$	$740.1 (\nu: 3.6)$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$k_{\mathrm{D}}$	$0.14057^{+0.00086}_{-0.00085}$	$\chi_{\mathrm{simall}}^2$	$397.4 (\nu: 2.0)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.42}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00051}_{-0.00051}$	$\chi_{\mathrm{lowl}}^2$	$23.5 (\nu: 1.9)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$z_{\mathrm{eq}}$	$3381^{+56}_{-55}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 (\nu: 16.3)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00017}_{-0.00017}$	$\chi_{6\mathrm{DF}}^2$	$0.050 (\nu: 0.0)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.011}_{-0.010}$	$\chi_{\mathrm{MGS}}^2$	$1.28 (\nu: 0.1)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$100\theta_{\mathrm{s,eq}}$	$0.4514^{+0.0054}_{-0.0053}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$H_0$	$67.6^{+1.1}_{-1.1}$	$H(0.15)$	$72.91^{+0.94}_{-0.92}$	$\chi_{\mathrm{prior}}^2$	$9.4 (\nu: 7.3)$
$\Omega_{\Lambda}$	$0.689^{+0.014}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	$641.0^{+9.3}_{-9.2}$	$\chi_{\mathrm{CMB}}^2$	$12684.3 (\nu: 20.7)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.015}_{-0.014}$	$H(0.38)$	$83.01^{+0.71}_{-0.69}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.5)$
$\Omega_{\mathrm{m}}h^2$	$0.1421^{+0.0023}_{-0.0023}$	$D_{\mathrm{M}}(0.38)$	$1529^{+19}_{-19}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12699.77; R - 1 = 0.00794$$



## 12 omegak

### 12.1 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02258	$0.02258^{+0.00077}_{-0.00071}$	$\sigma_8 \Omega_m^{0.5}$	0.555	$0.554^{+0.087}_{-0.087}$	$H(0.15)$	58.1	$58^{+10}_{-10}$
$\Omega_c h^2$	0.1175	$0.1173^{+0.0058}_{-0.0057}$	$\sigma_8 \Omega_m^{0.25}$	0.6521	$0.650^{+0.035}_{-0.043}$	$D_M(0.15)$	820	$823^{+200}_{-200}$
$100\theta_{MC}$	1.04131	$1.0414^{+0.0013}_{-0.0013}$	$\sigma_8/h^{0.5}$	1.065	$1.062^{+0.054}_{-0.069}$	$H(0.38)$	69.6	$70^{+10}_{-9}$
$\tau$	0.0492	$0.049^{+0.020}_{-0.025}$	$r_{drag} h$	76.5	$77^{+20}_{-20}$	$D_M(0.38)$	1904	$1909^{+400}_{-300}$
$\Omega_K$	-0.055	$-0.058^{+0.052}_{-0.082}$	$\langle d^2 \rangle^{1/2}$	2.682	$2.68^{+0.21}_{-0.22}$	$H(0.51)$	77.1	$77^{+10}_{-8}$
$\ln(10^{10} A_s)$	3.0265	$3.026^{+0.042}_{-0.052}$	$z_{re}$	6.91	$6.9^{+2.0}_{-2.9}$	$D_M(0.51)$	2435	$2439^{+400}_{-400}$
$n_s$	0.9738	$0.973^{+0.018}_{-0.016}$	$10^9 A_s$	2.063	$2.062^{+0.088}_{-0.10}$	$H(0.61)$	83.2	$83^{+10}_{-8}$
$y_{cal}$	0.9998	$1.0000^{+0.0063}_{-0.0061}$	$10^9 A_s e^{-2\tau}$	1.8692	$1.869^{+0.035}_{-0.033}$	$D_M(0.61)$	2807	$2811^{+500}_{-400}$
$A_{100}^{PS}$	220	$229^{+70}_{-60}$	$D_{40}$	1196.9	$1199^{+43}_{-46}$	$H(2.33)$	227.6	$227.5^{+8.2}_{-7.6}$
$A_{143}^{PS}$	40	$33^{+20}_{-20}$	$D_{220}$	5727	$5735^{+110}_{-110}$	$D_M(2.33)$	6470	$6473^{+590}_{-590}$
$A_{217}^{PS}$	107.4	$104^{+30}_{-40}$	$D_{810}$	2528.2	$2527^{+36}_{-33}$	$f\sigma_8(0.15)$	0.540	$0.539^{+0.057}_{-0.069}$
$A_{217}^{CIB}$	38.2	$37^{+20}_{-20}$	$D_{1420}$	814.4	$814^{+14}_{-12}$	$\sigma_8(0.15)$	0.691	$0.689^{+0.054}_{-0.067}$
$A_{143}^{tSZ}$	6.27	$< 8.82$	$D_{2000}$	232.9	$232.5^{+5.9}_{-5.1}$	$f\sigma_8(0.38)$	0.5149	$0.512^{+0.021}_{-0.033}$
$r_{143 \times 217}^{PS}$	0.742	$> 0.359$	$n_{s,0.002}$	0.9738	$0.973^{+0.018}_{-0.016}$	$\sigma_8(0.38)$	0.595	$0.594^{+0.061}_{-0.070}$
$r_{143 \times 217}^{CIB}$	0.69	—	$Y_P$	0.245473	$0.24547^{+0.00033}_{-0.00030}$	$f\sigma_8(0.51)$	0.4935	$0.491^{+0.016}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.65	—	$Y_P^{BBN}$	0.246800	$0.24680^{+0.00033}_{-0.00030}$	$\sigma_8(0.51)$	0.550	$0.549^{+0.061}_{-0.070}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.548	$2.55^{+0.13}_{-0.14}$	$f\sigma_8(0.61)$	0.4758	$0.474^{+0.016}_{-0.022}$
$A_{100}^{dust}$	0.999	$1.01^{+0.51}_{-0.50}$	Age/Gyr	15.64	$15.7^{+1.6}_{-1.5}$	$\sigma_8(0.61)$	0.519	$0.518^{+0.062}_{-0.069}$
$A_{143}^{dust}$	0.955	$0.95^{+0.46}_{-0.44}$	$z_*$	1089.44	$1089.4^{+1.3}_{-1.3}$	$f\sigma_8(2.33)$	0.2571	$0.257^{+0.034}_{-0.037}$
$A_{217}^{dust}$	0.980	$0.98^{+0.26}_{-0.26}$	$r_*$	144.92	$145.0^{+1.3}_{-1.2}$	$\sigma_8(2.33)$	0.2560	$0.256^{+0.042}_{-0.042}$
$A_{143 \times 217}^{dust}$	1.019	$1.02^{+0.44}_{-0.41}$	$100\theta_*$	1.04147	$1.0415^{+0.0013}_{-0.0013}$	$f_{2000}^{143}$	25.5	$26^{+9}_{-9}$
$c_{100}$	0.99778	$0.9976^{+0.0027}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	13.915	$13.92^{+0.12}_{-0.11}$	$f_{2000}^{217}$	103.5	$104.1^{+6.2}_{-6.1}$
$c_{217}$	1.00072	$1.0008^{+0.0041}_{-0.0040}$	$z_{drag}$	1060.24	$1060.2^{+1.5}_{-1.4}$	$f_{2000}^{143 \times 217}$	28.7	$29^{+7}_{-7}$
$H_0$	51.8	$52^{+10}_{-10}$	$r_{drag}$	147.53	$147.6^{+1.3}_{-1.2}$	$\chi_{simall}^2$	395.53	$396.7 (\nu: 1.1)$
$\Omega_\Lambda$	0.532	$0.53^{+0.14}_{-0.19}$	$k_D$	0.14056	$0.1405^{+0.0013}_{-0.0014}$	$\chi_{lowl}^2$	20.98	$21.28 (\nu: 0.2)$
$\Omega_m$	0.523	$0.53^{+0.27}_{-0.19}$	$100\theta_D$	0.16061	$0.16064^{+0.00078}_{-0.00076}$	$\chi_{CamSpec}^2$	7045.3	$7059.5 (\nu: 14.0)$
$\Omega_m h^2$	0.1407	$0.1405^{+0.0054}_{-0.0053}$	$z_{eq}$	3347	$3343^{+130}_{-130}$	$\chi_{prior}^2$	1.5	$7.1 (\nu: 5.5)$
$\Omega_m h^3$	0.0730	$0.073^{+0.019}_{-0.016}$	$k_{eq}$	0.010216	$0.01020^{+0.00039}_{-0.00039}$	$\chi_{CMB}^2$	7461.8	$7477.5 (\nu: 15.3)$
$\sigma_8$	0.767	$0.765^{+0.045}_{-0.058}$	$100\theta_{eq}$	0.8241	$0.825^{+0.026}_{-0.024}$			
$S_8$	1.013	$1.01^{+0.16}_{-0.16}$	$100\theta_{s,eq}$	0.4549	$0.455^{+0.013}_{-0.012}$			

Best-fit  $\chi_{eff}^2 = 7463.28$ ;  $\Delta\chi_{eff}^2 = -8.46$ ;  $\bar{\chi}_{eff}^2 = 7484.59$ ;  $\Delta\bar{\chi}_{eff}^2 = -6.95$ ;  $R - 1 = 0.03021$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.53 ( $\Delta$  -0.30) commander\_dx12.v3.2.29: 20.98 ( $\Delta$  -2.42) CamSpec like\_10.7HM: 7045.30 ( $\Delta$  -5.04)



## 12.2 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02258^{+0.00076}_{-0.00069}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.551^{+0.085}_{-0.084}$	$H(0.15)$	$59^{+10}_{-9}$
$\Omega_{\mathrm{c}} h^2$	$0.1173^{+0.0059}_{-0.0058}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.651^{+0.036}_{-0.043}$	$D_{\mathrm{M}}(0.15)$	$814^{+200}_{-100}$
$100\theta_{\mathrm{MC}}$	$1.0414^{+0.0014}_{-0.0014}$	$\sigma_8/h^{0.5}$	$1.063^{+0.055}_{-0.070}$	$H(0.38)$	$70^{+10}_{-8}$
$\tau$	$0.0532^{+0.015}_{-0.0099}$	$r_{\mathrm{drag}} h$	$78^{+20}_{-10}$	$D_{\mathrm{M}}(0.38)$	$1891^{+300}_{-300}$
$\Omega_K$	$-0.054^{+0.048}_{-0.076}$	$\langle d^2 \rangle^{1/2}$	$2.68^{+0.21}_{-0.22}$	$H(0.51)$	$78^{+9}_{-8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.034^{+0.037}_{-0.026}$	$z_{\mathrm{re}}$	$< 8.79$	$D_{\mathrm{M}}(0.51)$	$2418^{+400}_{-400}$
$n_{\mathrm{s}}$	$0.973^{+0.018}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.078^{+0.078}_{-0.053}$	$H(0.61)$	$83.7^{+9.1}_{-7.6}$
$y_{\mathrm{cal}}$	$1.0000^{+0.0063}_{-0.0061}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.868^{+0.035}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2788^{+400}_{-400}$
$A_{100}^{\mathrm{PS}}$	$229^{+70}_{-60}$	$D_{40}$	$1200^{+44}_{-45}$	$H(2.33)$	$227.7^{+8.0}_{-7.6}$
$A_{143}^{\mathrm{PS}}$	$33^{+20}_{-20}$	$D_{220}$	$5734^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$6444^{+570}_{-550}$
$A_{217}^{\mathrm{PS}}$	$104^{+30}_{-40}$	$D_{810}$	$2527^{+36}_{-33}$	$f\sigma_8(0.15)$	$0.537^{+0.057}_{-0.068}$
$A_{217}^{\mathrm{CIB}}$	$37^{+20}_{-20}$	$D_{1420}$	$814^{+14}_{-12}$	$\sigma_8(0.15)$	$0.695^{+0.050}_{-0.060}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$232.5^{+5.8}_{-4.9}$	$f\sigma_8(0.38)$	$0.513^{+0.022}_{-0.034}$
$r_{143 \times 217}^{\mathrm{PS}}$	$> 0.357$	$n_{\mathrm{s},0.002}$	$0.973^{+0.018}_{-0.016}$	$\sigma_8(0.38)$	$0.599^{+0.057}_{-0.064}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24548^{+0.00033}_{-0.00029}$	$f\sigma_8(0.51)$	$0.493^{+0.015}_{-0.019}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24680^{+0.00033}_{-0.00029}$	$\sigma_8(0.51)$	$0.554^{+0.058}_{-0.064}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.55^{+0.13}_{-0.13}$	$f\sigma_8(0.61)$	$0.476^{+0.015}_{-0.017}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$15.6^{+1.6}_{-1.5}$	$\sigma_8(0.61)$	$0.523^{+0.058}_{-0.063}$
$A_{143}^{\mathrm{dust}}$	$0.95^{+0.46}_{-0.44}$	$z_*$	$1089.4^{+1.3}_{-1.3}$	$f\sigma_8(2.33)$	$0.259^{+0.032}_{-0.034}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.25}_{-0.26}$	$r_*$	$145.0^{+1.2}_{-1.2}$	$\sigma_8(2.33)$	$0.259^{+0.039}_{-0.039}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.44}_{-0.42}$	$100\theta_*$	$1.0415^{+0.0014}_{-0.0014}$	$f_{2000}^{143}$	$26^{+9}_{-9}$
$c_{100}$	$0.9976^{+0.0026}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.92^{+0.12}_{-0.11}$	$f_{2000}^{217}$	$104.1^{+6.0}_{-5.9}$
$c_{217}$	$1.0008^{+0.0042}_{-0.0039}$	$z_{\mathrm{drag}}$	$1060.2^{+1.5}_{-1.3}$	$f_{2000}^{143 \times 217}$	$29^{+6}_{-7}$
$H_0$	$53^{+10}_{-10}$	$r_{\mathrm{drag}}$	$147.6^{+1.3}_{-1.2}$	$\chi_{\mathrm{simall}}^2$	$396.4 (\nu: 0.8)$
$\Omega_{\Lambda}$	$0.54^{+0.13}_{-0.18}$	$k_{\mathrm{D}}$	$0.1405^{+0.0013}_{-0.0014}$	$\chi_{\mathrm{lowl}}^2$	$21.27 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.52^{+0.25}_{-0.17}$	$100\theta_{\mathrm{D}}$	$0.16064^{+0.00073}_{-0.00075}$	$\chi_{\mathrm{CamSpec}}^2$	$7059.4 (\nu: 13.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1405^{+0.0055}_{-0.0053}$	$z_{\mathrm{eq}}$	$3342^{+130}_{-130}$	$\chi_{\mathrm{prior}}^2$	$7.1 (\nu: 5.4)$
$\Omega_{\mathrm{m}} h^3$	$0.074^{+0.018}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01020^{+0.00040}_{-0.00039}$	$\chi_{\mathrm{CMB}}^2$	$7477.1 (\nu: 14.7)$
$\sigma_8$	$0.769^{+0.042}_{-0.050}$	$100\theta_{\mathrm{eq}}$	$0.825^{+0.026}_{-0.025}$		
$S_8$	$1.01^{+0.16}_{-0.15}$	$100\theta_{\mathrm{s,eq}}$	$0.456^{+0.013}_{-0.013}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7484.13; \Delta \bar{\chi}_{\mathrm{eff}}^2 = -7.13; R - 1 = 0.03650$$



### 12.3 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022535	$0.02254^{+0.00047}_{-0.00045}$	$\sigma_8$	0.7817	$0.777^{+0.036}_{-0.044}$	$100\theta_{\text{eq}}$	0.8226	$0.822^{+0.017}_{-0.017}$
$\Omega_c h^2$	0.11783	$0.1179^{+0.0041}_{-0.0038}$	$S_8$	0.943	$0.95^{+0.13}_{-0.14}$	$100\theta_{\text{s,eq}}$	0.4541	$0.4540^{+0.0086}_{-0.0087}$
$100\theta_{\text{MC}}$	1.04110	$1.04111^{+0.00083}_{-0.00082}$	$\sigma_8 \Omega_m^{0.5}$	0.516	$0.522^{+0.073}_{-0.075}$	$H(0.15)$	62.7	$62^{+10}_{-9}$
$\tau$	0.0509	$0.048^{+0.021}_{-0.029}$	$\sigma_8 \Omega_m^{0.25}$	0.6353	$0.637^{+0.031}_{-0.038}$	$D_{\text{M}}(0.15)$	754	$766^{+100}_{-100}$
$\Omega_K$	-0.0320	$-0.037^{+0.037}_{-0.053}$	$\sigma_8/h^{0.5}$	1.037	$1.039^{+0.049}_{-0.063}$	$H(0.38)$	73.7	$73^{+10}_{-8}$
$\ln(10^{10} A_s)$	3.030	$3.025^{+0.043}_{-0.059}$	$r_{\text{drag}} h$	83.8	$83^{+20}_{-10}$	$D_{\text{M}}(0.38)$	1769	$1793^{+300}_{-300}$
$n_s$	0.9719	$0.971^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	2.591	$2.60^{+0.18}_{-0.19}$	$H(0.51)$	80.9	$80^{+9}_{-7}$
$y_{\text{cal}}$	0.9997	$1.0000^{+0.0063}_{-0.0064}$	$z_{\text{re}}$	7.15	$6.8^{+2.1}_{-3.4}$	$D_{\text{M}}(0.51)$	2272	$2301^{+300}_{-300}$
$A_{100}^{\text{PS}}$	225	$230^{+60}_{-60}$	$10^9 A_s$	2.070	$2.060^{+0.091}_{-0.12}$	$H(0.61)$	86.9	$86.4^{+9.1}_{-7.0}$
$A_{143}^{\text{PS}}$	42.6	$34^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8700	$1.871^{+0.029}_{-0.031}$	$D_{\text{M}}(0.61)$	2629	$2660^{+400}_{-400}$
$A_{217}^{\text{PS}}$	106.3	$104^{+30}_{-30}$	$D_{40}$	1204.1	$1205^{+37}_{-36}$	$H(2.33)$	230.0	$229.8^{+6.9}_{-5.8}$
$A_{217}^{\text{CIB}}$	38.8	$37^{+20}_{-20}$	$D_{220}$	5727	$5733^{+99}_{-100}$	$D_{\text{M}}(2.33)$	6232	$6269^{+480}_{-510}$
$A_{143}^{\text{tSZ}}$	5.71	$< 8.94$	$D_{810}$	2529.7	$2529^{+35}_{-34}$	$f\sigma_8(0.15)$	0.511	$0.515^{+0.053}_{-0.063}$
$r_{143 \times 217}^{\text{PS}}$	0.718	$> 0.354$	$D_{1420}$	814.9	$815^{+13}_{-13}$	$\sigma_8(0.15)$	0.7114	$0.706^{+0.043}_{-0.052}$
$r_{143 \times 217}^{\text{CIB}}$	0.74	—	$D_{2000}$	232.05	$231.9^{+4.5}_{-4.5}$	$f\sigma_8(0.38)$	0.5031	$0.503^{+0.022}_{-0.033}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.73	—	$n_{\text{s},0.002}$	0.9719	$0.971^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	0.619	$0.613^{+0.049}_{-0.057}$
$A^{\text{kSZ}}$	0.9	—	$Y_{\text{P}}$	0.245457	$0.24546^{+0.00020}_{-0.00018}$	$f\sigma_8(0.51)$	0.4890	$0.488^{+0.015}_{-0.020}$
$A_{100}^{\text{dust}}$	1.01	$1.02^{+0.52}_{-0.49}$	$Y_{\text{P}}^{\text{BBN}}$	0.246784	$0.24678^{+0.00020}_{-0.00018}$	$\sigma_8(0.51)$	0.574	$0.569^{+0.051}_{-0.058}$
$A_{143}^{\text{dust}}$	0.959	$0.95^{+0.45}_{-0.44}$	$10^5 D/H$	2.556	$2.556^{+0.084}_{-0.085}$	$f\sigma_8(0.61)$	0.4757	$0.474^{+0.013}_{-0.015}$
$A_{217}^{\text{dust}}$	0.981	$0.98^{+0.27}_{-0.26}$	Age/Gyr	15.00	$15.1^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	0.543	$0.538^{+0.052}_{-0.057}$
$A_{143 \times 217}^{\text{dust}}$	1.002	$1.01^{+0.40}_{-0.41}$	$z_*$	1089.53	$1089.53^{+0.84}_{-0.79}$	$f\sigma_8(2.33)$	0.2710	$0.268^{+0.029}_{-0.031}$
$c_{100}$	0.99779	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	144.87	$144.85^{+0.82}_{-0.87}$	$\sigma_8(2.33)$	0.2727	$0.269^{+0.037}_{-0.036}$
$c_{217}$	1.00089	$1.0008^{+0.0042}_{-0.0039}$	$100\theta_*$	1.04127	$1.04127^{+0.00082}_{-0.00080}$	$f_{2000}^{143}$	26.9	$27^{+8}_{-8}$
$c_{TE}$	0.9927	$0.992^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.913	$13.911^{+0.076}_{-0.082}$	$f_{2000}^{217}$	104.3	$104.6^{+5.2}_{-5.2}$
$c_{EE}$	0.9899	$0.990^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1060.16	$1060.17^{+0.95}_{-0.92}$	$f_{2000}^{143 \times 217}$	29.5	$30^{+6}_{-6}$
$H_0$	56.9	$56^{+10}_{-10}$	$r_{\text{drag}}$	147.49	$147.47^{+0.82}_{-0.86}$	$\chi_{\text{small}}^2$	395.63	$396.7 (\nu: 1.4)$
$\Omega_{\Lambda}$	0.596	$0.58^{+0.11}_{-0.14}$	$k_{\text{D}}$	0.14058	$0.14059^{+0.00089}_{-0.00090}$	$\chi_{\text{lowl}}^2$	21.16	$21.40 (\nu: 0.2)$
$\Omega_{\text{m}}$	0.436	$0.45^{+0.20}_{-0.15}$	$100\theta_{\text{D}}$	0.16063	$0.16063^{+0.00052}_{-0.00054}$	$\chi_{\text{CamSpec}}^2$	11495.3	$11511.3 (\nu: 15.1)$
$\Omega_{\text{m}} h^2$	0.14101	$0.1411^{+0.0038}_{-0.0035}$	$z_{\text{eq}}$	3354	$3356^{+90}_{-85}$	$\chi_{\text{prior}}^2$	1.9	$7.7 (\nu: 5.4)$
$\Omega_{\text{m}} h^3$	0.0802	$0.079^{+0.017}_{-0.014}$	$k_{\text{eq}}$	0.010238	$0.01024^{+0.00027}_{-0.00026}$	$\chi_{\text{CMB}}^2$	11912.1	$11929.5 (\nu: 16.8)$

Best-fit  $\chi_{\text{eff}}^2 = 11914.02$ ;  $\Delta\chi_{\text{eff}}^2 = -6.75$ ;  $\bar{\chi}_{\text{eff}}^2 = 11937.16$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -5.30$ ;  $R - 1 = 0.03285$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.63 ( $\Delta$  -0.27) commander\_dx12\_v3\_2\_29: 21.16 ( $\Delta$  -1.84) CamSpec like\_10.7HM\_1400\_unified: 11495.33 ( $\Delta$  -4.32)



## 12.4 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02253^{+0.00047}_{-0.00046}$	$\sigma_8$	$0.782^{+0.033}_{-0.037}$	$100\theta_{\text{eq}}$	$0.822^{+0.016}_{-0.017}$
$\Omega_c h^2$	$0.1179^{+0.0040}_{-0.0037}$	$S_8$	$0.95^{+0.13}_{-0.14}$	$100\theta_{\text{s,eq}}$	$0.4540^{+0.0084}_{-0.0087}$
$100\theta_{\text{MC}}$	$1.04111^{+0.00081}_{-0.00082}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.518^{+0.070}_{-0.074}$	$H(0.15)$	$63^{+10}_{-9}$
$\tau$	$0.0524^{+0.016}_{-0.0093}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.636^{+0.031}_{-0.038}$	$D_{\text{M}}(0.15)$	$757^{+100}_{-100}$
$\Omega_K$	$-0.034^{+0.035}_{-0.049}$	$\sigma_8/h^{0.5}$	$1.038^{+0.051}_{-0.063}$	$H(0.38)$	$74^{+10}_{-8}$
$\ln(10^{10} A_{\text{s}})$	$3.034^{+0.036}_{-0.024}$	$r_{\text{drag}} h$	$84^{+20}_{-10}$	$D_{\text{M}}(0.38)$	$1773^{+300}_{-300}$
$n_{\text{s}}$	$0.971^{+0.012}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.60^{+0.17}_{-0.19}$	$H(0.51)$	$81^{+9}_{-7}$
$y_{\text{cal}}$	$1.0000^{+0.0064}_{-0.0064}$	$z_{\text{re}}$	$< 8.82$	$D_{\text{M}}(0.51)$	$2277^{+300}_{-300}$
$A_{100}^{\text{PS}}$	$230^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.077^{+0.077}_{-0.049}$	$H(0.61)$	$86.9^{+8.9}_{-6.9}$
$A_{143}^{\text{PS}}$	$34^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.871^{+0.030}_{-0.031}$	$D_{\text{M}}(0.61)$	$2634^{+300}_{-300}$
$A_{217}^{\text{PS}}$	$104^{+30}_{-30}$	$D_{40}$	$1206^{+36}_{-36}$	$H(2.33)$	$230.1^{+6.8}_{-5.8}$
$A_{217}^{\text{CIB}}$	$37^{+20}_{-20}$	$D_{220}$	$5731^{+97}_{-100}$	$D_{\text{M}}(2.33)$	$6236^{+470}_{-500}$
$A_{143}^{\text{tSZ}}$	$< 8.95$	$D_{810}$	$2529^{+36}_{-34}$	$f\sigma_8(0.15)$	$0.512^{+0.052}_{-0.063}$
$r_{143 \times 217}^{\text{PS}}$	$> 0.357$	$D_{1420}$	$815^{+13}_{-12}$	$\sigma_8(0.15)$	$0.712^{+0.039}_{-0.045}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$231.9^{+4.6}_{-4.6}$	$f\sigma_8(0.38)$	$0.503^{+0.022}_{-0.034}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.971^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	$0.619^{+0.046}_{-0.050}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.24546^{+0.00019}_{-0.00018}$	$f\sigma_8(0.51)$	$0.489^{+0.014}_{-0.020}$
$A_{100}^{\text{dust}}$	$1.02^{+0.53}_{-0.49}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24678^{+0.00020}_{-0.00018}$	$\sigma_8(0.51)$	$0.574^{+0.048}_{-0.051}$
$A_{143}^{\text{dust}}$	$0.94^{+0.44}_{-0.44}$	$10^5 \text{D}/\text{H}$	$2.556^{+0.086}_{-0.084}$	$f\sigma_8(0.61)$	$0.475^{+0.012}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$\text{Age}/\text{Gyr}$	$15.0^{+1.3}_{-1.3}$	$\sigma_8(0.61)$	$0.544^{+0.048}_{-0.051}$
$A_{143 \times 217}^{\text{dust}}$	$1.01^{+0.39}_{-0.42}$	$z_*$	$1089.53^{+0.86}_{-0.77}$	$f\sigma_8(2.33)$	$0.271^{+0.027}_{-0.028}$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$r_*$	$144.86^{+0.81}_{-0.87}$	$\sigma_8(2.33)$	$0.273^{+0.035}_{-0.033}$
$c_{217}$	$1.0008^{+0.0043}_{-0.0039}$	$100\theta_*$	$1.04128^{+0.00079}_{-0.00079}$	$f_{2000}^{143}$	$27^{+8}_{-8}$
$c_{TE}$	$0.992^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.912^{+0.075}_{-0.082}$	$f_{2000}^{217}$	$104.6^{+5.3}_{-5.1}$
$c_{EE}$	$0.990^{+0.012}_{-0.012}$	$z_{\text{drag}}$	$1060.16^{+0.92}_{-0.91}$	$f_{2000}^{143 \times 217}$	$30^{+6}_{-6}$
$H_0$	$57^{+10}_{-9}$	$r_{\text{drag}}$	$147.48^{+0.81}_{-0.87}$	$\chi_{\text{simall}}^2$	$396.2 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.59^{+0.10}_{-0.12}$	$k_{\text{D}}$	$0.14058^{+0.00091}_{-0.00090}$	$\chi_{\text{lowl}}^2$	$21.43 (\nu: 0.2)$
$\Omega_{\text{m}}$	$0.44^{+0.17}_{-0.14}$	$100\theta_{\text{D}}$	$0.16064^{+0.00052}_{-0.00052}$	$\chi_{\text{CamSpec}}^2$	$11511.3 (\nu: 15.3)$
$\Omega_{\text{m}} h^2$	$0.1410^{+0.0038}_{-0.0035}$	$z_{\text{eq}}$	$3355^{+90}_{-83}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.5)$
$\Omega_{\text{m}} h^3$	$0.080^{+0.017}_{-0.014}$	$k_{\text{eq}}$	$0.01024^{+0.00027}_{-0.00025}$	$\chi_{\text{CMB}}^2$	$11929.0 (\nu: 16.2)$

$$\bar{\chi}_{\text{eff}}^2 = 11936.68; \Delta\bar{\chi}_{\text{eff}}^2 = -5.50; R - 1 = 0.03528$$



## 12.5 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02218	$0.02217^{+0.00060}_{-0.00058}$	$\sigma_8 \Omega_m^{0.25}$	0.6036	$0.604^{+0.027}_{-0.024}$	$H(0.38)$	83.23	$83.3^{+1.7}_{-1.7}$
$\Omega_c h^2$	0.1197	$0.1197^{+0.0059}_{-0.0055}$	$\sigma_8/h^{0.5}$	0.9824	$0.982^{+0.036}_{-0.033}$	$D_M(0.38)$	1524.9	$1524^{+35}_{-34}$
$100\theta_{MC}$	1.04093	$1.0409^{+0.0013}_{-0.0013}$	$r_{drag}h$	99.96	$100.0^{+2.6}_{-2.6}$	$H(0.51)$	89.95	$90.0^{+1.8}_{-1.7}$
$\tau$	0.0528	$0.053^{+0.024}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	2.428	$2.425^{+0.082}_{-0.073}$	$D_M(0.51)$	1975.5	$1975^{+43}_{-42}$
$\Omega_K$	0.0011	$0.0011^{+0.0065}_{-0.0064}$	$z_{re}$	7.57	$7.5^{+2.3}_{-2.3}$	$H(0.61)$	95.57	$95.6^{+1.8}_{-1.8}$
$\ln(10^{10} A_s)$	3.0378	$3.038^{+0.047}_{-0.043}$	$10^9 A_s$	2.086	$2.09^{+0.10}_{-0.088}$	$D_M(0.61)$	2299.0	$2298^{+49}_{-48}$
$n_s$	0.9652	$0.966^{+0.015}_{-0.015}$	$10^9 A_s e^{-2\tau}$	1.8769	$1.877^{+0.035}_{-0.035}$	$H(2.33)$	236.44	$236.4^{+4.8}_{-4.5}$
$y_{cal}$	1.0003	$1.0004^{+0.0061}_{-0.0065}$	$D_{40}$	1225.3	$1224^{+41}_{-39}$	$D_M(2.33)$	5750	$5749^{+96}_{-94}$
$A_{100}^{PS}$	243	$242^{+60}_{-60}$	$D_{220}$	5703	$5703^{+100}_{-100}$	$f\sigma_8(0.15)$	0.4550	$0.455^{+0.024}_{-0.021}$
$A_{143}^{PS}$	38	$41^{+20}_{-20}$	$D_{810}$	2532.5	$2533^{+35}_{-35}$	$\sigma_8(0.15)$	0.7478	$0.748^{+0.026}_{-0.024}$
$A_{217}^{PS}$	100.4	$101^{+30}_{-30}$	$D_{1420}$	814.0	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4736	$0.474^{+0.021}_{-0.019}$
$A_{217}^{CIB}$	43.3	$41^{+20}_{-20}$	$D_{2000}$	229.53	$229.6^{+4.8}_{-4.8}$	$\sigma_8(0.38)$	0.6631	$0.663^{+0.023}_{-0.021}$
$A_{143}^{tSZ}$	4.78	$< 8.73$	$n_{s,0.002}$	0.9652	$0.966^{+0.015}_{-0.015}$	$f\sigma_8(0.51)$	0.4724	$0.472^{+0.019}_{-0.017}$
$r_{143 \times 217}^{PS}$	0.594	$0.65^{+0.32}_{-0.33}$	$Y_P$	0.245317	$0.24531^{+0.00023}_{-0.00027}$	$\sigma_8(0.51)$	0.6206	$0.621^{+0.021}_{-0.020}$
$r_{143 \times 217}^{CIB}$	0.60	—	$Y_P^{BBN}$	0.246643	$0.24664^{+0.00023}_{-0.00027}$	$f\sigma_8(0.61)$	0.4675	$0.468^{+0.018}_{-0.016}$
$\xi^{tSZ \times CIB}$	0.01	—	$10^5 D/H$	2.622	$2.62^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	0.5906	$0.591^{+0.020}_{-0.019}$
$A^{kSZ}$	3.1	—	Age/Gyr	13.764	$13.76^{+0.25}_{-0.24}$	$f\sigma_8(2.33)$	0.2978	$0.298^{+0.010}_{-0.0093}$
$A_{100}^{dust}$	1.006	$1.01^{+0.48}_{-0.50}$	$z_*$	1090.14	$1090.1^{+1.1}_{-1.1}$	$\sigma_8(2.33)$	0.3072	$0.307^{+0.011}_{-0.010}$
$A_{143}^{dust}$	0.971	$0.98^{+0.44}_{-0.44}$	$r_*$	144.65	$144.7^{+1.2}_{-1.3}$	$f_{2000}^{143}$	30.9	$31^{+8}_{-8}$
$A_{217}^{dust}$	0.961	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	1.04114	$1.0411^{+0.0013}_{-0.0013}$	$f_{2000}^{217}$	107.6	$107.5^{+5.2}_{-5.3}$
$A_{143 \times 217}^{dust}$	1.040	$1.03^{+0.41}_{-0.40}$	$D_M(z_*)/\text{Gpc}$	13.893	$13.89^{+0.11}_{-0.12}$	$f_{2000}^{143 \times 217}$	33.2	$33^{+6}_{-6}$
$c_{100}$	0.99748	$0.9975^{+0.0028}_{-0.0026}$	$z_{drag}$	1059.47	$1059.5^{+1.2}_{-1.2}$	$\chi_{simall}^2$	395.87	$397.0 (\nu: 1.6)$
$c_{217}$	1.00125	$1.0012^{+0.0040}_{-0.0040}$	$r_{drag}$	147.38	$147.4^{+1.2}_{-1.3}$	$\chi_{lowl}^2$	23.19	$23.2 (\nu: 1.0)$
$H_0$	67.82	$67.9^{+1.8}_{-1.7}$	$k_D$	0.14042	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{CamSpec}^2$	7051.1	$7064.3 (\nu: 14.7)$
$\Omega_\Lambda$	0.6890	$0.689^{+0.020}_{-0.021}$	$100\theta_D$	0.16104	$0.16105^{+0.00070}_{-0.00066}$	$\chi_{6DF}^2$	0.011	$0.053 (\nu: 0.0)$
$\Omega_m$	0.3099	$0.310^{+0.020}_{-0.018}$	$z_{eq}$	3391	$3390^{+130}_{-120}$	$\chi_{MGS}^2$	1.41	$1.52 (\nu: 0.2)$
$\Omega_m h^2$	0.1425	$0.1425^{+0.0056}_{-0.0051}$	$k_{eq}$	0.010350	$0.01035^{+0.00041}_{-0.00037}$	$\chi_{DR12BAO}^2$	3.68	$4.5 (\nu: 1.6)$
$\Omega_m h^3$	0.09668	$0.0967^{+0.0046}_{-0.0044}$	$100\theta_{eq}$	0.8148	$0.815^{+0.024}_{-0.025}$	$\chi_{prior}^2$	2.3	$7.5 (\nu: 5.6)$
$\sigma_8$	0.8091	$0.809^{+0.029}_{-0.026}$	$100\theta_{s,eq}$	0.4503	$0.450^{+0.012}_{-0.013}$	$\chi_{BAO}^2$	5.10	$6.1 (\nu: 1.2)$
$S_8$	0.8223	$0.822^{+0.046}_{-0.041}$	$H(0.15)$	73.11	$73.1^{+1.7}_{-1.7}$	$\chi_{CMB}^2$	7470.1	$7484.5 (\nu: 15.1)$
$\sigma_8 \Omega_m^{0.5}$	0.4504	$0.450^{+0.025}_{-0.023}$	$D_M(0.15)$	639.3	$639^{+16}_{-15}$			

Best-fit  $\chi_{eff}^2 = 7477.49$ ;  $\bar{\chi}_{eff}^2 = 7498.13$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.57$ ;  $R - 1 = 0.00836$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.69 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.19 CamSpec like\_10.7HM: 7051.07



## 12.6 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02218^{+0.00060}_{-0.00059}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.020}_{-0.019}$	$H(0.38)$	$83.2^{+1.8}_{-1.7}$
$\Omega_{\text{c}} h^2$	$0.1199^{+0.0051}_{-0.0048}$	$\sigma_8/h^{0.5}$	$0.985^{+0.025}_{-0.024}$	$D_{\text{M}}(0.38)$	$1525^{+34}_{-35}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0013}_{-0.0012}$	$r_{\text{drag}} h$	$99.9^{+2.6}_{-2.3}$	$H(0.51)$	$89.9^{+1.8}_{-1.7}$
$\tau$	$0.054^{+0.024}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.058}_{-0.058}$	$D_{\text{M}}(0.51)$	$1976^{+43}_{-43}$
$\Omega_K$	$0.0011^{+0.0062}_{-0.0061}$	$z_{\text{re}}$	$7.7^{+2.2}_{-2.1}$	$H(0.61)$	$95.6^{+1.8}_{-1.8}$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.042}_{-0.037}$	$10^9 A_{\text{s}}$	$2.095^{+0.091}_{-0.076}$	$D_{\text{M}}(0.61)$	$2300^{+49}_{-49}$
$n_{\text{s}}$	$0.965^{+0.015}_{-0.014}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.879^{+0.032}_{-0.031}$	$H(2.33)$	$236.6^{+4.3}_{-4.1}$
$y_{\text{cal}}$	$1.0006^{+0.0061}_{-0.0066}$	$D_{40}$	$1227^{+35}_{-36}$	$D_{\text{M}}(2.33)$	$5750^{+95}_{-93}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5708^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+35}_{-34}$	$\sigma_8(0.15)$	$0.750^{+0.021}_{-0.020}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.475^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.7^{+4.8}_{-4.7}$	$\sigma_8(0.38)$	$0.665^{+0.019}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$n_{\text{s},0.002}$	$0.965^{+0.015}_{-0.014}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.013}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\text{P}}$	$0.24531^{+0.00024}_{-0.00028}$	$\sigma_8(0.51)$	$0.622^{+0.018}_{-0.017}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00024}_{-0.00028}$	$f\sigma_8(0.61)$	$0.469^{+0.013}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.62^{+0.12}_{-0.11}$	$\sigma_8(0.61)$	$0.592^{+0.017}_{-0.016}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.76^{+0.24}_{-0.24}$	$f\sigma_8(2.33)$	$0.2985^{+0.0088}_{-0.0080}$
$A_{100}^{\text{dust}}$	$1.01^{+0.47}_{-0.52}$	$z_*$	$1090.2^{+1.1}_{-1.0}$	$\sigma_8(2.33)$	$0.308^{+0.010}_{-0.0091}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.43}$	$r_*$	$144.6^{+1.1}_{-1.1}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.25}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	$107.5^{+5.3}_{-5.2}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.39}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.89^{+0.10}_{-0.10}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0026}$	$z_{\text{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\text{lensing}}^2$	$9.49 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0043}$	$r_{\text{drag}}$	$147.3^{+1.1}_{-1.1}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.8)$
$H_0$	$67.8^{+1.8}_{-1.7}$	$k_{\text{D}}$	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{\text{lowl}}^2$	$23.4 (\nu: 0.8)$
$\Omega_{\Lambda}$	$0.688^{+0.016}_{-0.018}$	$100\theta_{\text{D}}$	$0.16104^{+0.00071}_{-0.00068}$	$\chi_{\text{CamSpec}}^2$	$7063.5 (\nu: 13.3)$
$\Omega_{\text{m}}$	$0.311^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3395^{+110}_{-110}$	$\chi_{6\text{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1427^{+0.0048}_{-0.0046}$	$k_{\text{eq}}$	$0.01036^{+0.00035}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.44 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	$0.0967^{+0.0045}_{-0.0043}$	$100\theta_{\text{eq}}$	$0.814^{+0.021}_{-0.021}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.7)$
$\sigma_8$	$0.811^{+0.023}_{-0.021}$	$100\theta_{\text{s,eq}}$	$0.450^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.6)$
$S_8$	$0.826^{+0.034}_{-0.032}$	$H(0.15)$	$73.1^{+1.7}_{-1.6}$	$\chi_{\text{CMB}}^2$	$7493.5 (\nu: 14.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.019}_{-0.018}$	$D_{\text{M}}(0.15)$	$640^{+15}_{-16}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 1.3)$

$$\bar{\chi}_{\text{eff}}^2 = 7507.17; \Delta \bar{\chi}_{\text{eff}}^2 = 0.69; R - 1 = 0.01378$$



## 12.7 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02219^{+0.00061}_{-0.00058}$	$\sigma_8/h^{0.5}$	$0.985^{+0.025}_{-0.024}$	$H(0.51)$	$90.0^{+1.8}_{-1.7}$
$\Omega_c h^2$	$0.1197^{+0.0051}_{-0.0048}$	$r_{\text{drag}} h$	$100.0^{+2.5}_{-2.4}$	$D_M(0.51)$	$1975^{+41}_{-43}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0013}_{-0.0012}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.057}_{-0.056}$	$H(0.61)$	$95.6^{+1.8}_{-1.8}$
$\tau$	$0.055^{+0.023}_{-0.020}$	$z_{\text{re}}$	$7.7^{+2.1}_{-2.1}$	$D_M(0.61)$	$2298^{+47}_{-49}$
$\Omega_K$	$0.0011^{+0.0062}_{-0.0061}$	$10^9 A_s$	$2.096^{+0.092}_{-0.077}$	$H(2.33)$	$236.4^{+4.3}_{-4.1}$
$\ln(10^{10} A_s)$	$3.043^{+0.043}_{-0.037}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.032}_{-0.031}$	$D_M(2.33)$	$5749^{+95}_{-93}$
$n_s$	$0.966^{+0.014}_{-0.014}$	$D_{40}$	$1226^{+35}_{-36}$	$f\sigma_8(0.15)$	$0.456^{+0.017}_{-0.016}$
$y_{\text{cal}}$	$1.0006^{+0.0061}_{-0.0066}$	$D_{220}$	$5710^{+110}_{-110}$	$\sigma_8(0.15)$	$0.750^{+0.021}_{-0.019}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.475^{+0.015}_{-0.014}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.38)$	$0.665^{+0.019}_{-0.017}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{2000}$	$229.8^{+4.8}_{-4.7}$	$f\sigma_8(0.51)$	$0.473^{+0.014}_{-0.013}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$n_{s,0.002}$	$0.966^{+0.014}_{-0.014}$	$\sigma_8(0.51)$	$0.622^{+0.018}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$Y_P$	$0.24532^{+0.00024}_{-0.00028}$	$f\sigma_8(0.61)$	$0.469^{+0.013}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_P^{\text{BBN}}$	$0.24664^{+0.00024}_{-0.00028}$	$\sigma_8(0.61)$	$0.592^{+0.017}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 D/H$	$2.62^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2986^{+0.0089}_{-0.0080}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	Age/Gyr	$13.76^{+0.24}_{-0.24}$	$\sigma_8(2.33)$	$0.308^{+0.010}_{-0.0091}$
$A^{\text{kSZ}}$	—	$z_*$	$1090.1^{+1.1}_{-1.0}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\text{dust}}$	$1.01^{+0.47}_{-0.53}$	$r_*$	$144.6^{+1.1}_{-1.1}$	$f_{2000}^{217}$	$107.5^{+5.1}_{-5.2}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.43}$	$100\theta_*$	$1.0411^{+0.0013}_{-0.0012}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.25}$	$D_M(z_*)/\text{Gpc}$	$13.89^{+0.10}_{-0.10}$	$\chi_{\text{lensing}}^2$	$9.50 (\nu: 0.4)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.39}$	$z_{\text{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.9)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\text{drag}}$	$147.4^{+1.1}_{-1.1}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.8)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0043}$	$k_D$	$0.1404^{+0.0012}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	$7063.6 (\nu: 13.3)$
$H_0$	$67.9^{+1.8}_{-1.7}$	$100\theta_D$	$0.16103^{+0.00070}_{-0.00070}$	$\chi_{\text{JLA}}^2$	$1035.07 (\nu: 0.0)$
$\Omega_\Lambda$	$0.689^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3391^{+110}_{-110}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_m$	$0.310^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01035^{+0.00035}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.51 (\nu: 0.2)$
$\Omega_m h^2$	$0.1425^{+0.0048}_{-0.0045}$	$100\theta_{\text{eq}}$	$0.815^{+0.021}_{-0.021}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 1.4)$
$\Omega_m h^3$	$0.0967^{+0.0045}_{-0.0043}$	$100\theta_{s,\text{eq}}$	$0.450^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.6)$
$\sigma_8$	$0.811^{+0.023}_{-0.021}$	$H(0.15)$	$73.1^{+1.7}_{-1.6}$	$\chi_{\text{CMB}}^2$	$7493.6 (\nu: 14.8)$
$S_8$	$0.824^{+0.033}_{-0.032}$	$D_M(0.15)$	$639^{+15}_{-15}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 1.0)$
$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.018}_{-0.017}$	$H(0.38)$	$83.3^{+1.7}_{-1.7}$		
$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.019}_{-0.018}$	$D_M(0.38)$	$1524^{+33}_{-34}$		

$$\bar{\chi}_{\text{eff}}^2 = 8542.21; \Delta\bar{\chi}_{\text{eff}}^2 = 0.71; R - 1 = 0.01384$$



## 12.8 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02218^{+0.00060}_{-0.00058}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.026}_{-0.023}$	$H(0.38)$	$83.3^{+1.7}_{-1.7}$
$\Omega_c h^2$	$0.1196^{+0.0059}_{-0.0054}$	$\sigma_8/h^{0.5}$	$0.984^{+0.035}_{-0.031}$	$D_M(0.38)$	$1524^{+35}_{-34}$
$100\theta_{MC}$	$1.0409^{+0.0013}_{-0.0013}$	$r_{\text{drag}} h$	$100.0^{+2.6}_{-2.6}$	$H(0.51)$	$90.0^{+1.8}_{-1.7}$
$\tau$	$0.054^{+0.021}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.080}_{-0.071}$	$D_M(0.51)$	$1975^{+43}_{-42}$
$\Omega_K$	$0.0011^{+0.0065}_{-0.0064}$	$z_{\text{re}}$	$< 9.59$	$H(0.61)$	$95.6^{+1.8}_{-1.8}$
$\ln(10^{10} A_s)$	$3.041^{+0.045}_{-0.030}$	$10^9 A_s$	$2.093^{+0.095}_{-0.062}$	$D_M(0.61)$	$2298^{+49}_{-48}$
$n_s$	$0.966^{+0.015}_{-0.015}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.035}_{-0.035}$	$H(2.33)$	$236.4^{+4.8}_{-4.5}$
$y_{\text{cal}}$	$1.0003^{+0.0062}_{-0.0066}$	$D_{40}$	$1224^{+42}_{-40}$	$D_M(2.33)$	$5750^{+96}_{-94}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5703^{+100}_{-100}$	$f\sigma_8(0.15)$	$0.455^{+0.024}_{-0.021}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2533^{+35}_{-35}$	$\sigma_8(0.15)$	$0.749^{+0.025}_{-0.022}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$814^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.474^{+0.020}_{-0.018}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.6^{+4.7}_{-4.8}$	$\sigma_8(0.38)$	$0.664^{+0.022}_{-0.019}$
$A_{143}^{\text{tSZ}}$	$< 8.70$	$n_{s,0.002}$	$0.966^{+0.015}_{-0.015}$	$f\sigma_8(0.51)$	$0.473^{+0.019}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.33}$	$Y_P$	$0.24531^{+0.00023}_{-0.00027}$	$\sigma_8(0.51)$	$0.622^{+0.021}_{-0.018}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24664^{+0.00023}_{-0.00027}$	$f\sigma_8(0.61)$	$0.468^{+0.018}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 D/H$	$2.62^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	$0.592^{+0.020}_{-0.017}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.76^{+0.25}_{-0.24}$	$f\sigma_8(2.33)$	$0.2983^{+0.0098}_{-0.0084}$
$A_{100}^{\text{dust}}$	$1.01^{+0.47}_{-0.50}$	$z_*$	$1090.1^{+1.1}_{-1.1}$	$\sigma_8(2.33)$	$0.308^{+0.011}_{-0.0095}$
$A_{143}^{\text{dust}}$	$0.98^{+0.44}_{-0.44}$	$r_*$	$144.7^{+1.2}_{-1.3}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.25}$	$100\theta_*$	$1.0411^{+0.0013}_{-0.0013}$	$f_{2000}^{217}$	$107.5^{+5.3}_{-5.3}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	$13.90^{+0.11}_{-0.12}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0026}$	$z_{\text{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.7)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$r_{\text{drag}}$	$147.4^{+1.2}_{-1.3}$	$\chi_{\text{lowl}}^2$	$23.2 (\nu: 1.0)$
$H_0$	$67.9^{+1.8}_{-1.7}$	$k_D$	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	$7064.1 (\nu: 14.5)$
$\Omega_\Lambda$	$0.689^{+0.020}_{-0.021}$	$100\theta_D$	$0.16104^{+0.00071}_{-0.00067}$	$\chi_{6\text{DF}}^2$	$0.052 (\nu: 0.0)$
$\Omega_m$	$0.309^{+0.020}_{-0.018}$	$z_{\text{eq}}$	$3389^{+140}_{-120}$	$\chi_{\text{MGS}}^2$	$1.53 (\nu: 0.2)$
$\Omega_m h^2$	$0.1425^{+0.0057}_{-0.0051}$	$k_{\text{eq}}$	$0.01034^{+0.00041}_{-0.00037}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 1.5)$
$\Omega_m h^3$	$0.0967^{+0.0046}_{-0.0044}$	$100\theta_{\text{eq}}$	$0.815^{+0.024}_{-0.025}$	$\chi_{\text{prior}}^2$	$7.5 (\nu: 5.6)$
$\sigma_8$	$0.810^{+0.028}_{-0.025}$	$100\theta_{s,\text{eq}}$	$0.451^{+0.012}_{-0.013}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 1.2)$
$S_8$	$0.823^{+0.046}_{-0.041}$	$H(0.15)$	$73.1^{+1.7}_{-1.7}$	$\chi_{\text{CMB}}^2$	$7484.3 (\nu: 14.7)$
$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.025}_{-0.022}$	$D_M(0.15)$	$639^{+16}_{-15}$		

$$\bar{\chi}_{\text{eff}}^2 = 7497.90; \Delta \bar{\chi}_{\text{eff}}^2 = 0.58; R - 1 = 0.01053$$



## 12.9 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02218^{+0.00061}_{-0.00059}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.019}_{-0.019}$	$H(0.38)$	$83.2^{+1.8}_{-1.7}$
$\Omega_{\text{c}} h^2$	$0.1198^{+0.0051}_{-0.0048}$	$\sigma_8/h^{0.5}$	$0.986^{+0.025}_{-0.024}$	$D_{\text{M}}(0.38)$	$1525^{+34}_{-35}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0013}_{-0.0012}$	$r_{\text{drag}} h$	$99.9^{+2.6}_{-2.3}$	$H(0.51)$	$89.9^{+1.8}_{-1.7}$
$\tau$	$0.055^{+0.021}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.057}_{-0.056}$	$D_{\text{M}}(0.51)$	$1976^{+43}_{-44}$
$\Omega_K$	$0.0011^{+0.0062}_{-0.0061}$	$z_{\text{re}}$	$< 9.72$	$H(0.61)$	$95.6^{+1.8}_{-1.8}$
$\ln(10^{10} A_{\text{s}})$	$3.044^{+0.042}_{-0.029}$	$10^9 A_{\text{s}}$	$2.099^{+0.089}_{-0.061}$	$D_{\text{M}}(0.61)$	$2300^{+49}_{-50}$
$n_{\text{s}}$	$0.965^{+0.015}_{-0.014}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.879^{+0.032}_{-0.030}$	$H(2.33)$	$236.5^{+4.3}_{-4.1}$
$y_{\text{cal}}$	$1.0005^{+0.0062}_{-0.0067}$	$D_{40}$	$1227^{+35}_{-36}$	$D_{\text{M}}(2.33)$	$5751^{+94}_{-94}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5708^{+110}_{-110}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$A_{143}^{\text{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+34}_{-34}$	$\sigma_8(0.15)$	$0.750^{+0.021}_{-0.019}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+13}_{-14}$	$f\sigma_8(0.38)$	$0.475^{+0.015}_{-0.014}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.7^{+4.7}_{-4.8}$	$\sigma_8(0.38)$	$0.665^{+0.019}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$< 8.76$	$n_{\text{s},0.002}$	$0.965^{+0.015}_{-0.014}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.013}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\text{P}}$	$0.24531^{+0.00024}_{-0.00028}$	$\sigma_8(0.51)$	$0.623^{+0.018}_{-0.016}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00024}_{-0.00028}$	$f\sigma_8(0.61)$	$0.469^{+0.013}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.62^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	$0.592^{+0.017}_{-0.015}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.77^{+0.24}_{-0.24}$	$f\sigma_8(2.33)$	$0.2987^{+0.0088}_{-0.0076}$
$A_{100}^{\text{dust}}$	$1.01^{+0.47}_{-0.51}$	$z_*$	$1090.1^{+1.1}_{-1.0}$	$\sigma_8(2.33)$	$0.308^{+0.010}_{-0.0089}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.43}$	$r_*$	$144.6^{+1.1}_{-1.1}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.25}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	$107.5^{+5.3}_{-5.2}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.39}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.89^{+0.10}_{-0.10}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0026}$	$z_{\text{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\text{lensing}}^2$	$9.43 (\nu: 0.3)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0043}$	$r_{\text{drag}}$	$147.4^{+1.1}_{-1.1}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.9)$
$H_0$	$67.8^{+1.8}_{-1.6}$	$k_{\text{D}}$	$0.1404^{+0.0012}_{-0.0013}$	$\chi_{\text{lowl}}^2$	$23.4 (\nu: 0.8)$
$\Omega_{\Lambda}$	$0.689^{+0.016}_{-0.018}$	$100\theta_{\text{D}}$	$0.16103^{+0.00071}_{-0.00070}$	$\chi_{\text{CamSpec}}^2$	$7063.4 (\nu: 13.2)$
$\Omega_{\text{m}}$	$0.310^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3393^{+110}_{-110}$	$\chi_{6\text{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1426^{+0.0048}_{-0.0046}$	$k_{\text{eq}}$	$0.01035^{+0.00035}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.45 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	$0.0967^{+0.0045}_{-0.0043}$	$100\theta_{\text{eq}}$	$0.815^{+0.021}_{-0.021}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.7)$
$\sigma_8$	$0.812^{+0.022}_{-0.021}$	$100\theta_{\text{s,eq}}$	$0.450^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.6)$
$S_8$	$0.826^{+0.034}_{-0.033}$	$H(0.15)$	$73.1^{+1.8}_{-1.6}$	$\chi_{\text{CMB}}^2$	$7493.3 (\nu: 14.5)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.452^{+0.019}_{-0.018}$	$D_{\text{M}}(0.15)$	$640^{+15}_{-16}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 1.2)$

$$\bar{\chi}_{\text{eff}}^2 = 7506.97; \Delta \bar{\chi}_{\text{eff}}^2 = 0.65; R - 1 = 0.01641$$



12.10 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02219^{+0.00062}_{-0.00058}$	$\sigma_8/h^{0.5}$	$0.985^{+0.025}_{-0.024}$	$H(0.51)$	$90.0^{+1.8}_{-1.7}$
$\Omega_c h^2$	$0.1196^{+0.0051}_{-0.0048}$	$r_{\text{drag}} h$	$100.0^{+2.5}_{-2.4}$	$D_M(0.51)$	$1975^{+41}_{-44}$
$100\theta_{\text{MC}}$	$1.0409^{+0.0013}_{-0.0012}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.057}_{-0.055}$	$H(0.61)$	$95.6^{+1.8}_{-1.8}$
$\tau$	$0.056^{+0.021}_{-0.015}$	$z_{\text{re}}$	$< 9.72$	$D_M(0.61)$	$2298^{+47}_{-49}$
$\Omega_K$	$0.0010^{+0.0062}_{-0.0061}$	$10^9 A_s$	$2.100^{+0.088}_{-0.061}$	$H(2.33)$	$236.4^{+4.3}_{-4.0}$
$\ln(10^{10} A_s)$	$3.044^{+0.041}_{-0.029}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.032}_{-0.030}$	$D_M(2.33)$	$5750^{+95}_{-93}$
$n_s$	$0.966^{+0.014}_{-0.014}$	$D_{40}$	$1226^{+35}_{-36}$	$f\sigma_8(0.15)$	$0.456^{+0.017}_{-0.016}$
$y_{\text{cal}}$	$1.0006^{+0.0062}_{-0.0067}$	$D_{220}$	$5710^{+110}_{-110}$	$\sigma_8(0.15)$	$0.750^{+0.021}_{-0.019}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2534^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.475^{+0.015}_{-0.014}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.38)$	$0.665^{+0.019}_{-0.017}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{2000}$	$229.8^{+4.8}_{-4.7}$	$f\sigma_8(0.51)$	$0.474^{+0.014}_{-0.013}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$n_{s,0.002}$	$0.966^{+0.014}_{-0.014}$	$\sigma_8(0.51)$	$0.623^{+0.018}_{-0.016}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$Y_P$	$0.24532^{+0.00024}_{-0.00027}$	$f\sigma_8(0.61)$	$0.469^{+0.013}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_P^{\text{BBN}}$	$0.24665^{+0.00024}_{-0.00027}$	$\sigma_8(0.61)$	$0.592^{+0.017}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 D/H$	$2.62^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2988^{+0.0088}_{-0.0077}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	Age/Gyr	$13.76^{+0.24}_{-0.24}$	$\sigma_8(2.33)$	$0.308^{+0.010}_{-0.0089}$
$A^{\text{kSZ}}$	—	$z_*$	$1090.1^{+1.1}_{-1.0}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\text{dust}}$	$1.01^{+0.47}_{-0.51}$	$r_*$	$144.7^{+1.1}_{-1.1}$	$f_{2000}^{217}$	$107.5^{+5.2}_{-5.2}$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.43}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.25}$	$D_M(z_*)/\text{Gpc}$	$13.89^{+0.10}_{-0.10}$	$\chi_{\text{lensing}}^2$	$9.44 (\nu: 0.3)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.39}$	$z_{\text{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 2.0)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\text{drag}}$	$147.4^{+1.1}_{-1.1}$	$\chi_{\text{lowl}}^2$	$23.3 (\nu: 0.8)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0042}$	$k_D$	$0.1404^{+0.0012}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	$7063.5 (\nu: 13.3)$
$H_0$	$67.9^{+1.8}_{-1.7}$	$100\theta_D$	$0.16102^{+0.00070}_{-0.00070}$	$\chi_{\text{JLA}}^2$	$1035.06 (\nu: 0.0)$
$\Omega_\Lambda$	$0.690^{+0.016}_{-0.017}$	$z_{\text{eq}}$	$3389^{+110}_{-110}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_m$	$0.309^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01034^{+0.00035}_{-0.00033}$	$\chi_{\text{MGS}}^2$	$1.51 (\nu: 0.2)$
$\Omega_m h^2$	$0.1425^{+0.0047}_{-0.0045}$	$100\theta_{\text{eq}}$	$0.815^{+0.021}_{-0.021}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 1.4)$
$\Omega_m h^3$	$0.0967^{+0.0045}_{-0.0042}$	$100\theta_{s,\text{eq}}$	$0.451^{+0.011}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.6)$
$\sigma_8$	$0.811^{+0.022}_{-0.021}$	$H(0.15)$	$73.1^{+1.7}_{-1.6}$	$\chi_{\text{CMB}}^2$	$7493.4 (\nu: 14.4)$
$S_8$	$0.824^{+0.033}_{-0.032}$	$D_M(0.15)$	$639^{+15}_{-15}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 1.0)$
$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.018}_{-0.017}$	$H(0.38)$	$83.2^{+1.7}_{-1.7}$		
$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.019}_{-0.018}$	$D_M(0.38)$	$1524^{+33}_{-35}$		

$$\bar{\chi}_{\text{eff}}^2 = 8542.02; \Delta\bar{\chi}_{\text{eff}}^2 = 0.67; R - 1 = 0.01706$$



## 12.11 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022328	$0.02232^{+0.00042}_{-0.00044}$	$\sigma_8 \Omega_m^{0.5}$	0.4488	$0.449^{+0.019}_{-0.019}$	$H(0.38)$	83.29	$83.2^{+1.6}_{-1.5}$
$\Omega_c h^2$	0.11934	$0.1192^{+0.0041}_{-0.0037}$	$\sigma_8 \Omega_m^{0.25}$	0.6022	$0.602^{+0.020}_{-0.019}$	$D_M(0.38)$	1523.0	$1525^{+32}_{-33}$
$100\theta_{MC}$	1.04093	$1.04092^{+0.00080}_{-0.00081}$	$\sigma_8/h^{0.5}$	0.9805	$0.980^{+0.028}_{-0.028}$	$H(0.51)$	89.99	$89.9^{+1.6}_{-1.5}$
$\tau$	0.0531	$0.053^{+0.021}_{-0.022}$	$r_{drag}h$	100.08	$100.0^{+2.5}_{-2.4}$	$D_M(0.51)$	1973.4	$1975^{+39}_{-41}$
$\Omega_K$	0.0008	$0.0005^{+0.0051}_{-0.0051}$	$\langle d^2 \rangle^{1/2}$	2.423	$2.423^{+0.068}_{-0.063}$	$H(0.61)$	95.60	$95.5^{+1.6}_{-1.5}$
$\ln(10^{10} A_s)$	3.0392	$3.038^{+0.043}_{-0.043}$	$z_{re}$	7.56	$7.5^{+2.0}_{-2.4}$	$D_M(0.61)$	2296.7	$2299^{+44}_{-46}$
$n_s$	0.9672	$0.967^{+0.011}_{-0.012}$	$10^9 A_s$	2.089	$2.088^{+0.092}_{-0.087}$	$H(2.33)$	236.27	$236.1^{+3.4}_{-3.2}$
$y_{cal}$	1.0005	$1.0004^{+0.0064}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	1.8784	$1.877^{+0.032}_{-0.028}$	$D_M(2.33)$	5749	$5753^{+78}_{-81}$
$A_{100}^{PS}$	235	$240^{+60}_{-60}$	$D_{40}$	1223.3	$1223^{+36}_{-32}$	$f\sigma_8(0.15)$	0.4535	$0.453^{+0.018}_{-0.018}$
$A_{143}^{PS}$	49.2	$39^{+20}_{-20}$	$D_{220}$	5719	$5720^{+100}_{-98}$	$\sigma_8(0.15)$	0.7471	$0.746^{+0.020}_{-0.020}$
$A_{217}^{PS}$	105.6	$102^{+30}_{-30}$	$D_{810}$	2537.3	$2534^{+36}_{-33}$	$f\sigma_8(0.38)$	0.4725	$0.472^{+0.016}_{-0.016}$
$A_{217}^{CIB}$	39.9	$40^{+20}_{-20}$	$D_{1420}$	816.9	$816^{+13}_{-12}$	$\sigma_8(0.38)$	0.6626	$0.662^{+0.018}_{-0.018}$
$A_{143}^{tSZ}$	5.0	—	$D_{2000}$	230.71	$230.3^{+4.2}_{-4.2}$	$f\sigma_8(0.51)$	0.4714	$0.471^{+0.015}_{-0.014}$
$r_{143 \times 217}^{PS}$	0.758	$0.66^{+0.31}_{-0.35}$	$n_{s,0.002}$	0.9672	$0.967^{+0.011}_{-0.012}$	$\sigma_8(0.51)$	0.6203	$0.619^{+0.017}_{-0.017}$
$r_{143 \times 217}^{CIB}$	0.71	—	$Y_P$	0.245378	$0.24538^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	0.4667	$0.466^{+0.014}_{-0.013}$
$\xi^{tSZ \times CIB}$	0.95	—	$Y_P^{BBN}$	0.246705	$0.24670^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	0.5903	$0.590^{+0.016}_{-0.016}$
$A^{kSZ}$	2.5	—	$10^5 D/H$	2.593	$2.595^{+0.084}_{-0.076}$	$f\sigma_8(2.33)$	0.2977	$0.2973^{+0.0081}_{-0.0081}$
$A_{100}^{dust}$	1.008	$1.01^{+0.50}_{-0.50}$	Age/Gyr	13.761	$13.77^{+0.20}_{-0.21}$	$\sigma_8(2.33)$	0.3072	$0.3067^{+0.0091}_{-0.0089}$
$A_{143}^{dust}$	0.952	$0.97^{+0.44}_{-0.45}$	$z_*$	1089.92	$1089.91^{+0.84}_{-0.75}$	$f_{2000}^{143}$	29.7	$30^{+7}_{-7}$
$A_{217}^{dust}$	0.966	$0.97^{+0.28}_{-0.28}$	$r_*$	144.63	$144.67^{+0.82}_{-0.89}$	$f_{2000}^{217}$	106.35	$106.8^{+5.0}_{-4.9}$
$A_{143 \times 217}^{dust}$	1.019	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	1.04111	$1.04111^{+0.00079}_{-0.00080}$	$f_{2000}^{143 \times 217}$	32.1	$32^{+5}_{-5}$
$c_{100}$	0.99785	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.892	$13.896^{+0.077}_{-0.082}$	$\chi_{simall}^2$	395.85	$396.9 (\nu: 1.4)$
$c_{217}$	1.00095	$1.0011^{+0.0040}_{-0.0042}$	$z_{drag}$	1059.78	$1059.77^{+0.85}_{-0.87}$	$\chi_{lowl}^2$	22.88	$23.0 (\nu: 0.5)$
$c_{TE}$	0.9969	$0.997^{+0.013}_{-0.013}$	$r_{drag}$	147.31	$147.35^{+0.80}_{-0.86}$	$\chi_{CamSpec}^2$	11500.8	$11514.9 (\nu: 15.9)$
$c_{EE}$	0.9922	$0.992^{+0.013}_{-0.013}$	$k_D$	0.14060	$0.14056^{+0.00088}_{-0.00085}$	$\chi_{6DF}^2$	0.006	$0.052 (\nu: 0.0)$
$H_0$	67.94	$67.9^{+1.7}_{-1.6}$	$100\theta_D$	0.16084	$0.16085^{+0.00052}_{-0.00049}$	$\chi_{MGS}^2$	1.47	$1.50 (\nu: 0.2)$
$\Omega_\Lambda$	0.6909	$0.691^{+0.016}_{-0.017}$	$z_{eq}$	3385	$3382^{+93}_{-82}$	$\chi_{DR12BAO}^2$	3.65	$4.6 (\nu: 1.7)$
$\Omega_m$	0.3083	$0.309^{+0.017}_{-0.016}$	$k_{eq}$	0.010333	$0.01032^{+0.00028}_{-0.00025}$	$\chi_{prior}^2$	1.8	$7.8 (\nu: 5.9)$
$\Omega_m h^2$	0.14231	$0.1422^{+0.0039}_{-0.0035}$	$100\theta_{eq}$	0.8162	$0.817^{+0.016}_{-0.017}$	$\chi_{BAO}^2$	5.13	$6.2 (\nu: 1.2)$
$\Omega_m h^3$	0.09668	$0.0965^{+0.0037}_{-0.0034}$	$100\theta_{s,eq}$	0.4509	$0.4512^{+0.0082}_{-0.0088}$	$\chi_{CMB}^2$	11919.5	$11934.9 (\nu: 16.6)$
$\sigma_8$	0.8082	$0.807^{+0.022}_{-0.021}$	$H(0.15)$	73.20	$73.1^{+1.6}_{-1.5}$			
$S_8$	0.8193	$0.819^{+0.035}_{-0.034}$	$D_M(0.15)$	638.3	$639^{+14}_{-15}$			

Best-fit  $\chi_{\text{eff}}^2 = 11926.45$ ;  $\bar{\chi}_{\text{eff}}^2 = 11948.83$ ;  $\Delta\chi_{\text{eff}}^2 = 0.54$ ;  $R - 1 = 0.01869$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.65 CMB - simall-100x143.offlike5\_EE\_Aplanck.B: 395.85 commander\_dx12\_v3\_2\_29: 22.88 CamSpec like\_10.7HM\_1400\_unified: 11500.78



## 12.12 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233^{+0.00042}_{-0.00043}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.016}_{-0.015}$	$H(0.38)$	$83.2^{+1.6}_{-1.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1193^{+0.0039}_{-0.0035}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1526^{+31}_{-32}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00078}_{-0.00079}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.022}$	$H(0.51)$	$89.9^{+1.6}_{-1.5}$
$\tau$	$0.055^{+0.020}_{-0.020}$	$r_{\mathrm{drag}}h$	$99.9^{+2.4}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1977^{+39}_{-40}$
$\Omega_K$	$0.0005^{+0.0050}_{-0.0053}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.050}_{-0.052}$	$H(0.61)$	$95.5^{+1.6}_{-1.5}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.038}_{-0.037}$	$z_{\mathrm{re}}$	$7.7^{+1.9}_{-2.1}$	$D_{\mathrm{M}}(0.61)$	$2301^{+43}_{-45}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.081}_{-0.077}$	$H(2.33)$	$236.2^{+3.4}_{-3.2}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0066}_{-0.0062}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.030}_{-0.027}$	$D_{\mathrm{M}}(2.33)$	$5755^{+79}_{-81}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-60}$	$D_{40}$	$1225^{+34}_{-31}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+97}_{-98}$	$\sigma_8(0.15)$	$0.748^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-32}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{tSZ}}$	—	$D_{2000}$	$230.4^{+4.3}_{-4.1}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.012}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.015}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	$0.591^{+0.015}_{-0.014}$
$A^{\mathrm{kSZ}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.594^{+0.082}_{-0.076}$	$f\sigma_8(2.33)$	$0.2979^{+0.0075}_{-0.0072}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.78^{+0.21}_{-0.21}$	$\sigma_8(2.33)$	$0.3073^{+0.0085}_{-0.0081}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.44}$	$z_*$	$1089.92^{+0.81}_{-0.74}$	$f_{2000}^{143}$	$30^{+7}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.64^{+0.79}_{-0.84}$	$f_{2000}^{217}$	$106.8^{+5.4}_{-4.9}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.40}_{-0.42}$	$100\theta_*$	$1.04110^{+0.00078}_{-0.00076}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893^{+0.074}_{-0.079}$	$\chi_{\mathrm{lensing}}^2$	$9.31\ (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0042}$	$z_{\mathrm{drag}}$	$1059.79^{+0.87}_{-0.85}$	$\chi_{\mathrm{simall}}^2$	$397.1\ (\nu: 1.5)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$r_{\mathrm{drag}}$	$147.32^{+0.80}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$23.1\ (\nu: 0.5)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14059^{+0.00088}_{-0.00086}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4\ (\nu: 15.7)$
$H_0$	$67.8^{+1.7}_{-1.6}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00051}_{-0.00047}$	$\chi_{6\mathrm{DF}}^2$	$0.056\ (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.016}$	$z_{\mathrm{eq}}$	$3385^{+88}_{-78}$	$\chi_{\mathrm{MGS}}^2$	$1.42\ (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00027}_{-0.00024}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8\ (\nu: 1.9)$
$\Omega_{\mathrm{m}}h^2$	$0.1423^{+0.0037}_{-0.0033}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.015}_{-0.017}$	$\chi_{\mathrm{prior}}^2$	$7.8\ (\nu: 6.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0965^{+0.0036}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	$0.4510^{+0.0078}_{-0.0085}$	$\chi_{\mathrm{CMB}}^2$	$11943.9\ (\nu: 17.2)$
$\sigma_8$	$0.809^{+0.019}_{-0.019}$	$H(0.15)$	$73.1^{+1.6}_{-1.5}$	$\chi_{\mathrm{BAO}}^2$	$6.2\ (\nu: 1.3)$
$S_8$	$0.822^{+0.029}_{-0.028}$	$D_{\mathrm{M}}(0.15)$	$640^{+14}_{-15}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.96; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.56; R - 1 = 0.03026$$



### 12.13 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02233^{+0.00044}_{-0.00042}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.38)$	$83.2^{+1.6}_{-1.5}$
$\Omega_{\text{c}}h^2$	$0.1192^{+0.0039}_{-0.0035}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.603^{+0.016}_{-0.016}$	$D_{\text{M}}(0.38)$	$1525^{+31}_{-32}$
$100\theta_{\text{MC}}$	$1.04092^{+0.00077}_{-0.00080}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.022}$	$H(0.51)$	$89.9^{+1.6}_{-1.5}$
$\tau$	$0.055^{+0.020}_{-0.020}$	$r_{\text{drag}}h$	$99.97^{+2.3}_{-2.3}$	$D_{\text{M}}(0.51)$	$1976^{+38}_{-40}$
$\Omega_K$	$0.0005^{+0.0050}_{-0.0052}$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.051}_{-0.052}$	$H(0.61)$	$95.5^{+1.6}_{-1.5}$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.038}_{-0.037}$	$z_{\text{re}}$	$7.8^{+1.9}_{-2.1}$	$D_{\text{M}}(0.61)$	$2299^{+44}_{-44}$
$n_{\text{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\text{s}}$	$2.098^{+0.081}_{-0.077}$	$H(2.33)$	$236.2^{+3.3}_{-3.2}$
$y_{\text{cal}}$	$1.0006^{+0.0066}_{-0.0062}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878^{+0.030}_{-0.027}$	$D_{\text{M}}(2.33)$	$5753^{+80}_{-80}$
$A_{100}^{\text{PS}}$	$240^{+70}_{-60}$	$D_{40}$	$1225^{+34}_{-31}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5725^{+98}_{-97}$	$\sigma_8(0.15)$	$0.748^{+0.018}_{-0.018}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-32}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.016}_{-0.016}$
$A_{143}^{\text{tSZ}}$	—	$D_{2000}$	$230.4^{+4.3}_{-4.1}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\text{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24538^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00017}_{-0.00018}$	$\sigma_8(0.61)$	$0.591^{+0.015}_{-0.014}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.593^{+0.079}_{-0.080}$	$f\sigma_8(2.33)$	$0.2980^{+0.0074}_{-0.0073}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$\text{Age}/\text{Gyr}$	$13.77^{+0.21}_{-0.21}$	$\sigma_8(2.33)$	$0.3075^{+0.0084}_{-0.0082}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.44}$	$z_*$	$1089.90^{+0.80}_{-0.74}$	$f_{2000}^{143}$	$30^{+7}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.28}$	$r_*$	$144.66^{+0.78}_{-0.84}$	$f_{2000}^{217}$	$106.8^{+5.3}_{-4.9}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.40}_{-0.42}$	$100\theta_*$	$1.04110^{+0.00077}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.894^{+0.072}_{-0.078}$	$\chi_{\text{lensing}}^2$	$9.33 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0042}$	$z_{\text{drag}}$	$1059.80^{+0.90}_{-0.86}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$147.33^{+0.79}_{-0.82}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 0.5)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\text{D}}$	$0.14058^{+0.00088}_{-0.00086}$	$\chi_{\text{CamSpec}}^2$	$11514.4 (\nu: 15.6)$
$H_0$	$67.9^{+1.6}_{-1.6}$	$100\theta_{\text{D}}$	$0.16083^{+0.00052}_{-0.00048}$	$\chi_{\text{JLA}}^2$	$1035.02 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.691^{+0.014}_{-0.015}$	$z_{\text{eq}}$	$3383^{+88}_{-77}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.309^{+0.016}_{-0.015}$	$k_{\text{eq}}$	$0.01033^{+0.00027}_{-0.00024}$	$\chi_{\text{MGS}}^2$	$1.48 (\nu: 0.2)$
$\Omega_{\text{m}}h^2$	$0.1422^{+0.0037}_{-0.0032}$	$100\theta_{\text{eq}}$	$0.817^{+0.015}_{-0.016}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.5)$
$\Omega_{\text{m}}h^3$	$0.0965^{+0.0036}_{-0.0036}$	$100\theta_{\text{s,eq}}$	$0.4511^{+0.0077}_{-0.0085}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.1)$
$\sigma_8$	$0.809^{+0.019}_{-0.019}$	$H(0.15)$	$73.1^{+1.6}_{-1.5}$	$\chi_{\text{CMB}}^2$	$11944.0 (\nu: 17.0)$
$S_8$	$0.821^{+0.028}_{-0.027}$	$D_{\text{M}}(0.15)$	$639^{+14}_{-14}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 1.1)$

$$\bar{\chi}_{\text{eff}}^2 = 12992.90; \Delta\bar{\chi}_{\text{eff}}^2 = 0.51; R - 1 = 0.03012$$



## 12.14 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00042}_{-0.00044}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.019}_{-0.018}$	$H(0.38)$	$83.2^{+1.6}_{-1.5}$
$\Omega_{\mathrm{c}} h^2$	$0.1192^{+0.0041}_{-0.0037}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.020}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1524^{+32}_{-33}$
$100\theta_{\mathrm{MC}}$	$1.04092^{+0.00080}_{-0.00081}$	$\sigma_8/h^{0.5}$	$0.981^{+0.027}_{-0.025}$	$H(0.51)$	$89.9^{+1.6}_{-1.5}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\mathrm{drag}} h$	$100.0^{+2.5}_{-2.4}$	$D_{\mathrm{M}}(0.51)$	$1975^{+39}_{-41}$
$\Omega_K$	$0.0005^{+0.0052}_{-0.0052}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.066}_{-0.057}$	$H(0.61)$	$95.5^{+1.6}_{-1.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.029}$	$z_{\mathrm{re}}$	$< 9.45$	$D_{\mathrm{M}}(0.61)$	$2299^{+44}_{-46}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.086}_{-0.061}$	$H(2.33)$	$236.1^{+3.5}_{-3.2}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0064}_{-0.0062}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.032}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5753^{+79}_{-82}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1223^{+36}_{-32}$	$f\sigma_8(0.15)$	$0.454^{+0.018}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5719^{+100}_{-98}$	$\sigma_8(0.15)$	$0.747^{+0.019}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2534^{+35}_{-33}$	$f\sigma_8(0.38)$	$0.473^{+0.016}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.663^{+0.017}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	—	$D_{2000}$	$230.3^{+4.2}_{-4.2}$	$f\sigma_8(0.51)$	$0.472^{+0.014}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.012}$	$\sigma_8(0.51)$	$0.620^{+0.016}_{-0.014}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	$0.467^{+0.013}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	$0.590^{+0.015}_{-0.014}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.594^{+0.084}_{-0.076}$	$f\sigma_8(2.33)$	$0.2977^{+0.0078}_{-0.0069}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.77^{+0.20}_{-0.21}$	$\sigma_8(2.33)$	$0.3072^{+0.0087}_{-0.0078}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.44}_{-0.45}$	$z_*$	$1089.90^{+0.84}_{-0.75}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.28}_{-0.28}$	$r_*$	$144.68^{+0.82}_{-0.89}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-4.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.42}$	$100\theta_*$	$1.04111^{+0.00079}_{-0.00080}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896^{+0.077}_{-0.082}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0042}$	$z_{\mathrm{drag}}$	$1059.78^{+0.84}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$23.0 (\nu: 0.5)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.36^{+0.81}_{-0.86}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 (\nu: 15.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14056^{+0.00089}_{-0.00085}$	$\chi_{6\mathrm{DF}}^2$	$0.052 (\nu: 0.0)$
$H_0$	$67.9^{+1.7}_{-1.6}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00052}_{-0.00049}$	$\chi_{\mathrm{MGS}}^2$	$1.51 (\nu: 0.2)$
$\Omega_{\Lambda}$	$0.691^{+0.016}_{-0.017}$	$z_{\mathrm{eq}}$	$3382^{+92}_{-83}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.7)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.017}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00028}_{-0.00025}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1422^{+0.0039}_{-0.0035}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.016}_{-0.017}$	$\chi_{\mathrm{BAO}}^2$	$6.2 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0965^{+0.0037}_{-0.0035}$	$100\theta_{\mathrm{s,eq}}$	$0.4513^{+0.0082}_{-0.0088}$	$\chi_{\mathrm{CMB}}^2$	$11934.6 (\nu: 16.2)$
$\sigma_8$	$0.808^{+0.021}_{-0.019}$	$H(0.15)$	$73.1^{+1.7}_{-1.5}$		
$S_8$	$0.820^{+0.035}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$639^{+14}_{-15}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.57; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.58; R - 1 = 0.01907$$



# 12.15 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.016}_{-0.015}$	$H(0.38)$	$83.2^{+1.6}_{-1.4}$
$\Omega_{\mathrm{c}} h^2$	$0.1193^{+0.0039}_{-0.0035}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1526^{+31}_{-32}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00078}_{-0.00080}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$H(0.51)$	$89.9^{+1.6}_{-1.5}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$r_{\mathrm{drag}} h$	$99.9^{+2.4}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1977^{+39}_{-40}$
$\Omega_K$	$0.0005^{+0.0051}_{-0.0053}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.050}_{-0.051}$	$H(0.61)$	$95.5^{+1.6}_{-1.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.037}_{-0.029}$	$z_{\mathrm{re}}$	$< 9.52$	$D_{\mathrm{M}}(0.61)$	$2301^{+43}_{-45}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.079}_{-0.061}$	$H(2.33)$	$236.2^{+3.4}_{-3.2}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0066}_{-0.0062}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.030}_{-0.026}$	$D_{\mathrm{M}}(2.33)$	$5755^{+79}_{-81}$
$A_{100}^{\mathrm{PS}}$	$240^{+70}_{-60}$	$D_{40}$	$1225^{+34}_{-31}$	$f\sigma_8(0.15)$	$0.455^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+98}_{-97}$	$\sigma_8(0.15)$	$0.748^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+34}_{-32}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.664^{+0.016}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	—	$D_{2000}$	$230.4^{+4.3}_{-4.1}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	$0.591^{+0.014}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.594^{+0.082}_{-0.078}$	$f\sigma_8(2.33)$	$0.2981^{+0.0073}_{-0.0068}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.78^{+0.21}_{-0.21}$	$\sigma_8(2.33)$	$0.3075^{+0.0083}_{-0.0080}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.43}_{-0.44}$	$z_*$	$1089.91^{+0.80}_{-0.74}$	$f_{2000}^{143}$	$30^{+7}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.28}$	$r_*$	$144.65^{+0.78}_{-0.85}$	$f_{2000}^{217}$	$106.8^{+5.3}_{-4.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.40}_{-0.42}$	$100\theta_*$	$1.04110^{+0.00077}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894^{+0.073}_{-0.079}$	$\chi_{\mathrm{lensing}}^2$	$9.26 (\nu: 0.2)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0042}$	$z_{\mathrm{drag}}$	$1059.79^{+0.87}_{-0.85}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$r_{\mathrm{drag}}$	$147.32^{+0.79}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	$23.1 (\nu: 0.5)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14059^{+0.00088}_{-0.00086}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.3 (\nu: 15.6)$
$H_0$	$67.8^{+1.7}_{-1.6}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00051}_{-0.00048}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.014}_{-0.016}$	$z_{\mathrm{eq}}$	$3384^{+88}_{-78}$	$\chi_{\mathrm{MGS}}^2$	$1.43 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00027}_{-0.00024}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1423^{+0.0037}_{-0.0033}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.015}_{-0.017}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0965^{+0.0037}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	$0.4510^{+0.0078}_{-0.0085}$	$\chi_{\mathrm{CMB}}^2$	$11943.7 (\nu: 16.8)$
$\sigma_8$	$0.810^{+0.018}_{-0.018}$	$H(0.15)$	$73.1^{+1.6}_{-1.5}$	$\chi_{\mathrm{BAO}}^2$	$6.2 (\nu: 1.3)$
$S_8$	$0.823^{+0.030}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$640^{+14}_{-15}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.78; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.52; R - 1 = 0.03337$$



## 12.16 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00044}_{-0.00041}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.38)$	$83.2^{+1.6}_{-1.5}$
$\Omega_c h^2$	$0.1192^{+0.0039}_{-0.0034}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.016}_{-0.015}$	$D_M(0.38)$	$1525^{+31}_{-32}$
$100\theta_{MC}$	$1.04092^{+0.00077}_{-0.00080}$	$\sigma_8/h^{0.5}$	$0.983^{+0.021}_{-0.021}$	$H(0.51)$	$89.9^{+1.6}_{-1.5}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$r_{\text{drag}} h$	$99.99^{+2.3}_{-2.3}$	$D_M(0.51)$	$1975^{+39}_{-40}$
$\Omega_K$	$0.0005^{+0.0050}_{-0.0053}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.050}_{-0.051}$	$H(0.61)$	$95.5^{+1.6}_{-1.5}$
$\ln(10^{10} A_s)$	$3.045^{+0.037}_{-0.030}$	$z_{\text{re}}$	$< 9.54$	$D_M(0.61)$	$2299^{+44}_{-45}$
$n_s$	$0.967^{+0.011}_{-0.011}$	$10^9 A_s$	$2.101^{+0.078}_{-0.061}$	$H(2.33)$	$236.1^{+3.3}_{-3.2}$
$y_{\text{cal}}$	$1.0006^{+0.0066}_{-0.0062}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.031}_{-0.026}$	$D_M(2.33)$	$5753^{+80}_{-83}$
$A_{100}^{\text{PS}}$	$240^{+70}_{-60}$	$D_{40}$	$1225^{+34}_{-31}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+99}_{-96}$	$\sigma_8(0.15)$	$0.748^{+0.017}_{-0.017}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+35}_{-32}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.664^{+0.016}_{-0.015}$
$A_{143}^{\text{tSZ}}$	—	$D_{2000}$	$230.4^{+4.4}_{-4.1}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.35}$	$n_{s,0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P$	$0.24538^{+0.00017}_{-0.00018}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00017}_{-0.00018}$	$\sigma_8(0.61)$	$0.591^{+0.014}_{-0.014}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.592^{+0.079}_{-0.080}$	$f\sigma_8(2.33)$	$0.2982^{+0.0073}_{-0.0068}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$\text{Age/Gyr}$	$13.77^{+0.21}_{-0.21}$	$\sigma_8(2.33)$	$0.3077^{+0.0082}_{-0.0081}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.44}$	$z_*$	$1089.90^{+0.79}_{-0.73}$	$f_{2000}^{143}$	$30^{+7}_{-8}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.28}$	$r_*$	$144.66^{+0.77}_{-0.84}$	$f_{2000}^{217}$	$106.7^{+5.2}_{-4.9}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.40}_{-0.42}$	$100\theta_*$	$1.04111^{+0.00077}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	$13.895^{+0.072}_{-0.078}$	$\chi_{\text{lensing}}^2$	$9.27 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0042}$	$z_{\text{drag}}$	$1059.80^{+0.90}_{-0.82}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.7)$
$c_{TE}$	$0.996^{+0.012}_{-0.013}$	$r_{\text{drag}}$	$147.34^{+0.79}_{-0.83}$	$\chi_{\text{lowl}}^2$	$23.1 (\nu: 0.5)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$k_D$	$0.14058^{+0.00088}_{-0.00086}$	$\chi_{\text{CamSpec}}^2$	$11514.3 (\nu: 15.5)$
$H_0$	$67.9^{+1.6}_{-1.6}$	$100\theta_D$	$0.16083^{+0.00051}_{-0.00048}$	$\chi_{\text{JLA}}^2$	$1035.01 (\nu: 0.0)$
$\Omega_\Lambda$	$0.691^{+0.014}_{-0.014}$	$z_{\text{eq}}$	$3383^{+88}_{-77}$	$\chi_{6\text{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_m$	$0.309^{+0.016}_{-0.015}$	$k_{\text{eq}}$	$0.01032^{+0.00027}_{-0.00023}$	$\chi_{\text{MGS}}^2$	$1.48 (\nu: 0.2)$
$\Omega_m h^2$	$0.1422^{+0.0037}_{-0.0032}$	$100\theta_{\text{eq}}$	$0.817^{+0.015}_{-0.016}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.5)$
$\Omega_m h^3$	$0.0965^{+0.0037}_{-0.0036}$	$100\theta_{s,\text{eq}}$	$0.4512^{+0.0076}_{-0.0084}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.2)$
$\sigma_8$	$0.810^{+0.018}_{-0.018}$	$H(0.15)$	$73.1^{+1.6}_{-1.5}$	$\chi_{\text{CMB}}^2$	$11943.8 (\nu: 16.6)$
$S_8$	$0.821^{+0.028}_{-0.027}$	$D_M(0.15)$	$639^{+14}_{-14}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 1.1)$

$$\bar{\chi}_{\text{eff}}^2 = 12992.73; \Delta\bar{\chi}_{\text{eff}}^2 = 0.47; R - 1 = 0.03308$$



## 12.17 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02229	$0.02235^{+0.00065}_{-0.00061}$	$\sigma_8 \Omega_m^{0.5}$	0.4678	$0.470^{+0.031}_{-0.032}$	$H(0.15)$	69.3	$68.7^{+6.2}_{-5.8}$
$\Omega_c h^2$	0.1182	$0.1177^{+0.0057}_{-0.0056}$	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.610^{+0.019}_{-0.019}$	$D_M(0.15)$	677	$684^{+67}_{-61}$
$100\theta_{MC}$	1.04103	$1.0412^{+0.0013}_{-0.0013}$	$\sigma_8/h^{0.5}$	0.9950	$0.996^{+0.028}_{-0.028}$	$H(0.38)$	79.7	$79.0^{+5.8}_{-5.5}$
$\tau$	0.0498	$0.049^{+0.023}_{-0.026}$	$r_{\text{drag}} h$	94.3	$93.4^{+9.3}_{-8.7}$	$D_M(0.38)$	1606	$1623^{+140}_{-130}$
$\Omega_K$	-0.0093	$-0.012^{+0.017}_{-0.023}$	$\langle d^2 \rangle^{1/2}$	2.469	$2.472^{+0.077}_{-0.077}$	$H(0.51)$	86.5	$85.9^{+5.6}_{-5.4}$
$\ln(10^{10} A_s)$	3.0282	$3.026^{+0.044}_{-0.051}$	$z_{\text{re}}$	7.17	$7.1^{+2.2}_{-3.0}$	$D_M(0.51)$	2076	$2096^{+180}_{-160}$
$n_s$	0.9685	$0.970^{+0.016}_{-0.016}$	$10^9 A_s$	2.066	$2.062^{+0.093}_{-0.10}$	$H(0.61)$	92.2	$91.6^{+5.5}_{-5.3}$
$y_{\text{cal}}$	1.0003	$1.0001^{+0.0062}_{-0.0064}$	$10^9 A_s e^{-2\tau}$	1.8701	$1.868^{+0.035}_{-0.034}$	$D_M(0.61)$	2411	$2434^{+200}_{-180}$
$A_{100}^{\text{PS}}$	242	$240^{+60}_{-70}$	$D_{40}$	1213.8	$1209^{+44}_{-41}$	$H(2.33)$	233.4	$232.6^{+6.4}_{-6.6}$
$A_{143}^{\text{PS}}$	36	$38^{+20}_{-20}$	$D_{220}$	5711	$5715^{+110}_{-110}$	$D_M(2.33)$	5926	$5962^{+310}_{-290}$
$A_{217}^{\text{PS}}$	98.4	$101^{+30}_{-40}$	$D_{810}$	2529.2	$2529^{+34}_{-34}$	$f\sigma_8(0.15)$	0.4702	$0.472^{+0.026}_{-0.028}$
$A_{217}^{\text{CIB}}$	42.9	$40^{+20}_{-20}$	$D_{1420}$	813.6	$814^{+13}_{-13}$	$\sigma_8(0.15)$	0.7315	$0.727^{+0.034}_{-0.038}$
$A_{143}^{\text{tSZ}}$	4.37	$< 8.71$	$D_{2000}$	230.02	$230.3^{+4.7}_{-4.8}$	$f\sigma_8(0.38)$	0.4811	$0.481^{+0.016}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	0.565	$0.65^{+0.32}_{-0.34}$	$n_{s,0.002}$	0.9685	$0.970^{+0.016}_{-0.016}$	$\sigma_8(0.38)$	0.6446	$0.640^{+0.035}_{-0.039}$
$r_{143 \times 217}^{\text{CIB}}$	0.65	—	$Y_P$	0.245363	$0.24538^{+0.00027}_{-0.00028}$	$f\sigma_8(0.51)$	0.4759	$0.475^{+0.013}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.07	—	$Y_P^{\text{BBN}}$	0.246689	$0.24671^{+0.00027}_{-0.00028}$	$\sigma_8(0.51)$	0.6017	$0.598^{+0.035}_{-0.039}$
$A^{\text{kSZ}}$	3.8	—	$10^5 D/H$	2.601	$2.59^{+0.12}_{-0.12}$	$f\sigma_8(0.61)$	0.4684	$0.468^{+0.013}_{-0.013}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.51}_{-0.50}$	Age/Gyr	14.21	$14.30^{+0.80}_{-0.73}$	$\sigma_8(0.61)$	0.5715	$0.567^{+0.035}_{-0.039}$
$A_{143}^{\text{dust}}$	0.989	$0.98^{+0.45}_{-0.46}$	$z_*$	1089.87	$1089.7^{+1.2}_{-1.2}$	$f\sigma_8(2.33)$	0.2872	$0.285^{+0.019}_{-0.021}$
$A_{217}^{\text{dust}}$	0.960	$0.97^{+0.28}_{-0.27}$	$r_*$	144.95	$145.1^{+1.2}_{-1.2}$	$\sigma_8(2.33)$	0.2936	$0.291^{+0.024}_{-0.025}$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.02^{+0.42}_{-0.42}$	$100\theta_*$	1.04123	$1.0414^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	30.3	$30^{+8}_{-8}$
$c_{100}$	0.99735	$0.9975^{+0.0026}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.921	$13.93^{+0.11}_{-0.12}$	$f_{2000}^{217}$	107.0	$106.5^{+5.3}_{-5.7}$
$c_{217}$	1.00124	$1.0011^{+0.0041}_{-0.0039}$	$z_{\text{drag}}$	1059.63	$1059.7^{+1.3}_{-1.2}$	$f_{2000}^{143 \times 217}$	32.3	$32^{+6}_{-6}$
$H_0$	63.9	$63.2^{+6.5}_{-6.1}$	$r_{\text{drag}}$	147.65	$147.7^{+1.2}_{-1.2}$	$\chi^2_{\text{lensing}}$	9.2	$10.3 (\nu: 2.3)$
$\Omega_\Lambda$	0.6631	$0.659^{+0.046}_{-0.050}$	$k_D$	0.14022	$0.1402^{+0.0013}_{-0.0012}$	$\chi^2_{\text{small}}$	395.64	$396.8 (\nu: 1.2)$
$\Omega_m$	0.346	$0.353^{+0.071}_{-0.061}$	$100\theta_D$	0.16094	$0.16091^{+0.00069}_{-0.00070}$	$\chi^2_{\text{lowl}}$	21.85	$21.8 (\nu: 0.6)$
$\Omega_m h^2$	0.1412	$0.1407^{+0.0053}_{-0.0052}$	$z_{\text{eq}}$	3358	$3346^{+130}_{-130}$	$\chi^2_{\text{CamSpec}}$	7049.2	$7062.9 (\nu: 15.3)$
$\Omega_m h^3$	0.0902	$0.089^{+0.011}_{-0.011}$	$k_{\text{eq}}$	0.010250	$0.01021^{+0.00038}_{-0.00038}$	$\chi^2_{\text{prior}}$	2.4	$7.5 (\nu: 5.9)$
$\sigma_8$	0.7952	$0.791^{+0.032}_{-0.036}$	$100\theta_{\text{eq}}$	0.8211	$0.824^{+0.025}_{-0.024}$	$\chi^2_{\text{CMB}}$	7475.9	$7491.7 (\nu: 15.9)$
$S_8$	0.854	$0.858^{+0.056}_{-0.058}$	$100\theta_{s,\text{eq}}$	0.4535	$0.455^{+0.013}_{-0.012}$			

Best-fit  $\chi^2_{\text{eff}} = 7478.30$ ;  $\Delta\chi^2_{\text{eff}} = -2.38$ ;  $\bar{\chi}^2_{\text{eff}} = 7499.29$ ;  $\Delta\bar{\chi}^2_{\text{eff}} = -0.96$ ;  $R - 1 = 0.01550$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.19 ( $\Delta$  0.27) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.64 ( $\Delta$  -0.23) commander\_dx12\_v3.2\_29: 21.85 ( $\Delta$  -1.57) CamSpec like\_10.7HM: 7049.24 ( $\Delta$  -0.94)



## 12.18 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02236^{+0.00065}_{-0.00060}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.469^{+0.031}_{-0.031}$	$H(0.15)$	$69.0^{+6.0}_{-5.6}$
$\Omega_{\mathrm{c}} h^2$	$0.1176^{+0.0058}_{-0.0055}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.020}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	$680^{+64}_{-59}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0013}_{-0.0013}$	$\sigma_8/h^{0.5}$	$0.996^{+0.028}_{-0.029}$	$H(0.38)$	$79.4^{+5.7}_{-5.4}$
$\tau$	$0.053^{+0.018}_{-0.011}$	$r_{\mathrm{drag}} h$	$94.0^{+9.0}_{-8.2}$	$D_{\mathrm{M}}(0.38)$	$1614^{+140}_{-130}$
$\Omega_K$	$-0.011^{+0.017}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	$2.472^{+0.080}_{-0.078}$	$H(0.51)$	$86.2^{+5.5}_{-5.3}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.033^{+0.040}_{-0.026}$	$z_{\mathrm{re}}$	$< 9.13$	$D_{\mathrm{M}}(0.51)$	$2085^{+170}_{-160}$
$n_{\mathrm{s}}$	$0.971^{+0.016}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.075^{+0.085}_{-0.053}$	$H(0.61)$	$91.9^{+5.4}_{-5.2}$
$y_{\mathrm{cal}}$	$1.0000^{+0.0062}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.867^{+0.035}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2422^{+190}_{-180}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-70}$	$D_{40}$	$1209^{+43}_{-42}$	$H(2.33)$	$232.7^{+6.3}_{-6.6}$
$A_{143}^{\mathrm{PS}}$	$38^{+20}_{-20}$	$D_{220}$	$5714^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5946^{+300}_{-280}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{810}$	$2528^{+34}_{-35}$	$f\sigma_8(0.15)$	$0.471^{+0.026}_{-0.028}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.15)$	$0.730^{+0.032}_{-0.033}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.69$	$D_{2000}$	$230.4^{+4.8}_{-4.9}$	$f\sigma_8(0.38)$	$0.481^{+0.016}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.971^{+0.016}_{-0.016}$	$\sigma_8(0.38)$	$0.644^{+0.033}_{-0.035}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24539^{+0.00027}_{-0.00027}$	$f\sigma_8(0.51)$	$0.476^{+0.013}_{-0.013}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00027}_{-0.00028}$	$\sigma_8(0.51)$	$0.601^{+0.033}_{-0.034}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.59^{+0.12}_{-0.12}$	$f\sigma_8(0.61)$	$0.468^{+0.013}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$14.26^{+0.78}_{-0.71}$	$\sigma_8(0.61)$	$0.570^{+0.033}_{-0.034}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.46}$	$z_*$	$1089.7^{+1.2}_{-1.2}$	$f\sigma_8(2.33)$	$0.287^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$145.1^{+1.2}_{-1.3}$	$\sigma_8(2.33)$	$0.293^{+0.022}_{-0.022}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.42}$	$100\theta_*$	$1.0414^{+0.0012}_{-0.0013}$	$f_{2000}^{143}$	$29^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.93^{+0.11}_{-0.12}$	$f_{2000}^{217}$	$106.5^{+5.3}_{-5.7}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0039}$	$z_{\mathrm{drag}}$	$1059.7^{+1.3}_{-1.2}$	$f_{2000}^{143 \times 217}$	$32^{+6}_{-6}$
$H_0$	$63.6^{+6.2}_{-5.8}$	$r_{\mathrm{drag}}$	$147.8^{+1.2}_{-1.3}$	$\chi_{\mathrm{lensing}}^2$	$10.3 (\nu: 2.4)$
$\Omega_{\Lambda}$	$0.662^{+0.043}_{-0.046}$	$k_{\mathrm{D}}$	$0.1402^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{simall}}^2$	$396.4 (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.349^{+0.064}_{-0.058}$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00068}_{-0.00069}$	$\chi_{\mathrm{lowl}}^2$	$21.8 (\nu: 0.6)$
$\Omega_{\mathrm{m}} h^2$	$0.1406^{+0.0054}_{-0.0052}$	$z_{\mathrm{eq}}$	$3344^{+130}_{-120}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.0 (\nu: 15.3)$
$\Omega_{\mathrm{m}} h^3$	$0.089^{+0.011}_{-0.010}$	$k_{\mathrm{eq}}$	$0.01021^{+0.00039}_{-0.00038}$	$\chi_{\mathrm{prior}}^2$	$7.5 (\nu: 5.9)$
$\sigma_8$	$0.794^{+0.030}_{-0.031}$	$100\theta_{\mathrm{eq}}$	$0.824^{+0.025}_{-0.025}$	$\chi_{\mathrm{CMB}}^2$	$7491.5 (\nu: 15.6)$
$S_8$	$0.856^{+0.057}_{-0.057}$	$100\theta_{\mathrm{s,eq}}$	$0.455^{+0.013}_{-0.012}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7498.95; \Delta \bar{\chi}_{\mathrm{eff}}^2 = -1.06; R - 1 = 0.01796$$



## 12.19 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022422	$0.02242^{+0.00045}_{-0.00042}$	$S_8$	0.854	$0.857^{+0.055}_{-0.051}$	$H(0.15)$	69.4	$69.0^{+5.4}_{-5.3}$
$\Omega_c h^2$	0.11833	$0.1182^{+0.0038}_{-0.0037}$	$\sigma_8 \Omega_m^{0.5}$	0.4678	$0.469^{+0.030}_{-0.028}$	$D_M(0.15)$	676	$680^{+60}_{-53}$
$100\theta_{MC}$	1.04100	$1.04101^{+0.00081}_{-0.00087}$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.610^{+0.016}_{-0.017}$	$H(0.38)$	79.74	$79.4^{+5.1}_{-4.8}$
$\tau$	0.0500	$0.049^{+0.021}_{-0.023}$	$\sigma_8/h^{0.5}$	0.9949	$0.995^{+0.024}_{-0.026}$	$D_M(0.38)$	1604	$1614^{+130}_{-120}$
$\Omega_K$	-0.0092	$-0.011^{+0.015}_{-0.018}$	$r_{\text{drag}} h$	94.3	$93.8^{+8.2}_{-8.2}$	$H(0.51)$	86.59	$86.3^{+4.9}_{-4.6}$
$\ln(10^{10} A_s)$	3.0294	$3.027^{+0.044}_{-0.049}$	$\langle d^2 \rangle^{1/2}$	2.468	$2.470^{+0.071}_{-0.070}$	$D_M(0.51)$	2073	$2085^{+150}_{-140}$
$n_s$	0.9693	$0.969^{+0.012}_{-0.013}$	$z_{\text{re}}$	7.16	$7.0^{+2.1}_{-2.7}$	$H(0.61)$	92.30	$92.0^{+4.7}_{-4.4}$
$y_{\text{cal}}$	0.9999	$1.0001^{+0.0061}_{-0.0065}$	$10^9 A_s$	2.069	$2.063^{+0.092}_{-0.10}$	$D_M(0.61)$	2408	$2421^{+170}_{-160}$
$A_{100}^{\text{PS}}$	233	$238^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	1.8717	$1.871^{+0.028}_{-0.029}$	$H(2.33)$	233.57	$233.3^{+4.7}_{-4.7}$
$A_{143}^{\text{PS}}$	46.5	$37^{+20}_{-20}$	$D_{40}$	1213.6	$1212^{+37}_{-36}$	$D_M(2.33)$	5920	$5939^{+250}_{-240}$
$A_{217}^{\text{PS}}$	104.8	$102^{+30}_{-40}$	$D_{220}$	5721	$5722^{+99}_{-100}$	$f\sigma_8(0.15)$	0.4702	$0.471^{+0.025}_{-0.025}$
$A_{217}^{\text{CIB}}$	39.1	$39^{+20}_{-20}$	$D_{810}$	2531.9	$2530^{+33}_{-35}$	$\sigma_8(0.15)$	0.7319	$0.729^{+0.030}_{-0.031}$
$A_{143}^{\text{tSZ}}$	4.82	< 8.83	$D_{1420}$	815.4	$815^{+12}_{-13}$	$f\sigma_8(0.38)$	0.4812	$0.481^{+0.014}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	0.753	$0.66^{+0.31}_{-0.34}$	$D_{2000}$	230.86	$230.6^{+4.1}_{-4.2}$	$\sigma_8(0.38)$	0.6451	$0.642^{+0.031}_{-0.033}$
$r_{143 \times 217}^{\text{CIB}}$	0.68	—	$n_{s,0.002}$	0.9693	$0.969^{+0.012}_{-0.013}$	$f\sigma_8(0.51)$	0.4761	$0.476^{+0.011}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.94	—	$Y_{\text{P}}$	0.245416	$0.24541^{+0.00017}_{-0.00018}$	$\sigma_8(0.51)$	0.6021	$0.599^{+0.031}_{-0.033}$
$A^{\text{kSZ}}$	3.0	—	$Y_{\text{P}}^{\text{BBN}}$	0.246743	$0.24674^{+0.00018}_{-0.00018}$	$f\sigma_8(0.61)$	0.4686	$0.468^{+0.010}_{-0.010}$
$A_{100}^{\text{dust}}$	1.009	$1.01^{+0.50}_{-0.49}$	$10^5 \text{D}/\text{H}$	2.576	$2.578^{+0.080}_{-0.081}$	$\sigma_8(0.61)$	0.5719	$0.569^{+0.031}_{-0.033}$
$A_{143}^{\text{dust}}$	0.950	$0.97^{+0.45}_{-0.46}$	$\text{Age}/\text{Gyr}$	14.19	$14.24^{+0.65}_{-0.62}$	$f\sigma_8(2.33)$	0.2874	$0.286^{+0.017}_{-0.018}$
$A_{217}^{\text{dust}}$	0.981	$0.97^{+0.27}_{-0.25}$	$z_*$	1089.71	$1089.71^{+0.77}_{-0.77}$	$\sigma_8(2.33)$	0.2938	$0.292^{+0.021}_{-0.022}$
$A_{143 \times 217}^{\text{dust}}$	1.033	$1.02^{+0.41}_{-0.42}$	$r_*$	144.82	$144.87^{+0.83}_{-0.85}$	$f_{2000}^{143}$	28.9	$29^{+8}_{-7}$
$c_{100}$	0.99785	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04119	$1.04119^{+0.00080}_{-0.00086}$	$f_{2000}^{217}$	105.9	$106.1^{+5.1}_{-5.2}$
$c_{217}$	1.00113	$1.0010^{+0.0041}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	13.910	$13.914^{+0.075}_{-0.080}$	$f_{2000}^{143 \times 217}$	31.5	$31^{+6}_{-5}$
$c_{TE}$	0.9957	$0.996^{+0.013}_{-0.013}$	$z_{\text{drag}}$	1059.93	$1059.91^{+0.90}_{-0.86}$	$\chi_{\text{lensing}}^2$	9.39	$10.2 (\nu: 1.8)$
$c_{EE}$	0.9917	$0.991^{+0.013}_{-0.012}$	$r_{\text{drag}}$	147.48	$147.52^{+0.81}_{-0.85}$	$\chi_{\text{small}}^2$	395.63	$396.8 (\nu: 1.1)$
$H_0$	64.0	$63.6^{+5.7}_{-5.6}$	$k_{\text{D}}$	0.14050	$0.14045^{+0.00089}_{-0.00089}$	$\chi_{\text{lowl}}^2$	21.83	$21.93 (\nu: 0.4)$
$\Omega_\Lambda$	0.6635	$0.660^{+0.040}_{-0.049}$	$100\theta_{\text{D}}$	0.16075	$0.16077^{+0.00051}_{-0.00052}$	$\chi_{\text{CamSpec}}^2$	11498.3	$11513.1 (\nu: 16.0)$
$\Omega_{\text{m}}$	0.346	$0.351^{+0.067}_{-0.054}$	$z_{\text{eq}}$	3364	$3360^{+86}_{-83}$	$\chi_{\text{prior}}^2$	2.0	$7.7 (\nu: 5.6)$
$\Omega_{\text{m}} h^2$	0.14140	$0.1413^{+0.0036}_{-0.0035}$	$k_{\text{eq}}$	0.010266	$0.01026^{+0.00026}_{-0.00025}$	$\chi_{\text{CMB}}^2$	11925.1	$11942.0 (\nu: 17.3)$
$\Omega_{\text{m}} h^3$	0.0904	$0.0898^{+0.0091}_{-0.0086}$	$100\theta_{\text{eq}}$	0.8205	$0.821^{+0.016}_{-0.016}$			
$\sigma_8$	0.7956	$0.793^{+0.028}_{-0.029}$	$100\theta_{\text{s,eq}}$	0.4531	$0.4535^{+0.0084}_{-0.0083}$			

Best-fit  $\chi_{\text{eff}}^2 = 11927.06$ ;  $\Delta\chi_{\text{eff}}^2 = -2.59$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.70$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -1.75$ ;  $R - 1 = 0.01965$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.39 ( $\Delta$  0.56) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.63 ( $\Delta$  -0.24) commander\_dx12.v3.2.29: 21.83 ( $\Delta$  -1.39) CamSpec like\_10.7HM\_1400\_unified: 11498.26 ( $\Delta$  -1.40)



## 12.20 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02242^{+0.00046}_{-0.00042}$	$S_8$	$0.854^{+0.051}_{-0.049}$	$H(0.15)$	$69.5^{+5.2}_{-4.8}$
$\Omega_c h^2$	$0.1181^{+0.0038}_{-0.0037}$	$\sigma_8 \Omega_m^{0.5}$	$0.468^{+0.028}_{-0.027}$	$D_M(0.15)$	$675^{+53}_{-50}$
$100\theta_{MC}$	$1.04102^{+0.00080}_{-0.00083}$	$\sigma_8 \Omega_m^{0.25}$	$0.610^{+0.016}_{-0.017}$	$H(0.38)$	$79.8^{+4.8}_{-4.5}$
$\tau$	$0.0523^{+0.017}_{-0.0098}$	$\sigma_8/h^{0.5}$	$0.996^{+0.024}_{-0.026}$	$D_M(0.38)$	$1603^{+110}_{-110}$
$\Omega_K$	$-0.009^{+0.014}_{-0.016}$	$r_{\text{drag}} h$	$94.5^{+7.8}_{-7.2}$	$H(0.51)$	$86.7^{+4.7}_{-4.4}$
$\ln(10^{10} A_s)$	$3.033^{+0.039}_{-0.026}$	$\langle d^2 \rangle^{1/2}$	$2.470^{+0.069}_{-0.069}$	$D_M(0.51)$	$2072^{+140}_{-130}$
$n_s$	$0.970^{+0.012}_{-0.013}$	$z_{\text{re}}$	$< 9.02$	$H(0.61)$	$92.4^{+4.6}_{-4.3}$
$y_{\text{cal}}$	$1.0001^{+0.0062}_{-0.0065}$	$10^9 A_s$	$2.077^{+0.083}_{-0.053}$	$D_M(0.61)$	$2407^{+160}_{-150}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.870^{+0.029}_{-0.030}$	$H(2.33)$	$233.5^{+4.6}_{-4.6}$
$A_{143}^{\text{PS}}$	$37^{+20}_{-20}$	$D_{40}$	$1213^{+37}_{-37}$	$D_M(2.33)$	$5919^{+240}_{-240}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5721^{+97}_{-110}$	$f\sigma_8(0.15)$	$0.470^{+0.024}_{-0.024}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2530^{+33}_{-35}$	$\sigma_8(0.15)$	$0.733^{+0.027}_{-0.024}$
$A_{143}^{\text{tSZ}}$	$< 8.80$	$D_{1420}$	$815^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.481^{+0.013}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.35}$	$D_{2000}$	$230.7^{+4.0}_{-4.2}$	$\sigma_8(0.38)$	$0.646^{+0.029}_{-0.026}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.970^{+0.012}_{-0.013}$	$f\sigma_8(0.51)$	$0.476^{+0.010}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24541^{+0.00018}_{-0.00017}$	$\sigma_8(0.51)$	$0.603^{+0.029}_{-0.027}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24674^{+0.00018}_{-0.00018}$	$f\sigma_8(0.61)$	$0.4688^{+0.0097}_{-0.0096}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.48}$	$10^5 D/H$	$2.577^{+0.080}_{-0.083}$	$\sigma_8(0.61)$	$0.573^{+0.028}_{-0.026}$
$A_{143}^{\text{dust}}$	$0.97^{+0.46}_{-0.46}$	Age/Gyr	$14.19^{+0.61}_{-0.60}$	$f\sigma_8(2.33)$	$0.288^{+0.015}_{-0.014}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.25}$	$z_*$	$1089.70^{+0.77}_{-0.78}$	$\sigma_8(2.33)$	$0.295^{+0.019}_{-0.018}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.42}$	$r_*$	$144.88^{+0.83}_{-0.86}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04120^{+0.00079}_{-0.00082}$	$f_{2000}^{217}$	$106.1^{+5.1}_{-5.3}$
$c_{217}$	$1.0010^{+0.0042}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	$13.914^{+0.075}_{-0.082}$	$f_{2000}^{143 \times 217}$	$31^{+6}_{-5}$
$c_{TE}$	$0.995^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.91^{+0.94}_{-0.86}$	$\chi_{\text{lensing}}^2$	$10.1 (\nu: 1.7)$
$c_{EE}$	$0.991^{+0.013}_{-0.012}$	$r_{\text{drag}}$	$147.53^{+0.80}_{-0.86}$	$\chi_{\text{simall}}^2$	$396.3 (\nu: 0.6)$
$H_0$	$64.1^{+5.4}_{-5.1}$	$k_D$	$0.14044^{+0.00091}_{-0.00089}$	$\chi_{\text{lowl}}^2$	$21.99 (\nu: 0.5)$
$\Omega_\Lambda$	$0.664^{+0.037}_{-0.042}$	$100\theta_D$	$0.16077^{+0.00050}_{-0.00052}$	$\chi_{\text{CamSpec}}^2$	$11513.1 (\nu: 16.0)$
$\Omega_m$	$0.345^{+0.056}_{-0.050}$	$z_{\text{eq}}$	$3359^{+86}_{-83}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.7)$
$\Omega_m h^2$	$0.1412^{+0.0036}_{-0.0035}$	$k_{\text{eq}}$	$0.01025^{+0.00026}_{-0.00025}$	$\chi_{\text{CMB}}^2$	$11941.6 (\nu: 16.8)$
$\Omega_m h^3$	$0.0905^{+0.0088}_{-0.0082}$	$100\theta_{\text{eq}}$	$0.821^{+0.017}_{-0.016}$		
$\sigma_8$	$0.797^{+0.026}_{-0.023}$	$100\theta_{s,\text{eq}}$	$0.4535^{+0.0084}_{-0.0083}$		

$$\bar{\chi}_{\text{eff}}^2 = 11949.31; \Delta\bar{\chi}_{\text{eff}}^2 = -1.94; R - 1 = 0.03090$$



## 13 r

### 13.1 base\_r\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02215	$0.02214^{+0.00059}_{-0.00056}$	$\sigma_8/h^{0.5}$	0.9893	$0.989^{+0.042}_{-0.042}$	$H(0.51)$	89.44	$89.4^{+1.3}_{-1.1}$
$\Omega_c h^2$	0.1201	$0.1201^{+0.0056}_{-0.0055}$	$r_{\text{drag}} h$	98.89	$98.9^{+4.4}_{-4.2}$	$D_M(0.51)$	1991.4	$1992^{+49}_{-50}$
$100\theta_{\text{MC}}$	1.04090	$1.0409^{+0.0012}_{-0.0012}$	$\langle d^2 \rangle^{1/2}$	2.443	$2.44^{+0.10}_{-0.099}$	$H(0.61)$	95.09	$95.1^{+1.0}_{-0.88}$
$\tau$	0.0527	$0.052^{+0.022}_{-0.022}$	$z_{\text{re}}$	7.56	$7.5^{+2.1}_{-2.4}$	$D_M(0.61)$	2317	$2317^{+52}_{-54}$
$\ln(10^{10} A_s)$	3.0397	$3.038^{+0.043}_{-0.045}$	$10^9 A_s$	2.090	$2.086^{+0.092}_{-0.092}$	$H(2.33)$	236.40	$236.4^{+3.4}_{-3.3}$
$n_s$	0.9648	$0.965^{+0.015}_{-0.015}$	$10^9 A_s e^{-2\tau}$	1.8810	$1.880^{+0.037}_{-0.035}$	$D_M(2.33)$	5773.7	$5774^{+42}_{-45}$
$r$	0.000	$< 0.156$	$D_{40}$	1227.6	$1240^{+52}_{-44}$	$f\sigma_8(0.15)$	0.4606	$0.460^{+0.032}_{-0.031}$
$y_{\text{cal}}$	1.0007	$1.0005^{+0.0065}_{-0.0064}$	$D_{220}$	5706	$5700^{+110}_{-110}$	$\sigma_8(0.15)$	0.7484	$0.748^{+0.019}_{-0.020}$
$A_{100}^{\text{PS}}$	240	$242^{+60}_{-60}$	$D_{810}$	2535.5	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	0.4776	$0.477^{+0.025}_{-0.025}$
$A_{143}^{\text{PS}}$	44.7	$41^{+20}_{-20}$	$D_{1420}$	815.0	$815^{+13}_{-13}$	$\sigma_8(0.38)$	0.6628	$0.662^{+0.016}_{-0.016}$
$A_{217}^{\text{PS}}$	101.0	$102^{+30}_{-30}$	$D_{2000}$	229.80	$229.7^{+4.8}_{-4.6}$	$f\sigma_8(0.51)$	0.4756	$0.475^{+0.021}_{-0.022}$
$A_{217}^{\text{CIB}}$	43.6	$41^{+20}_{-20}$	$n_{s,0.002}$	0.9648	$0.965^{+0.015}_{-0.015}$	$\sigma_8(0.51)$	0.6200	$0.619^{+0.014}_{-0.015}$
$A_{143}^{\text{tSZ}}$	5.20	$< 8.79$	$Y_P$	0.245304	$0.24530^{+0.00023}_{-0.00026}$	$f\sigma_8(0.61)$	0.4702	$0.470^{+0.019}_{-0.019}$
$r_{143 \times 217}^{\text{PS}}$	0.633	$0.65^{+0.31}_{-0.33}$	$Y_P^{\text{BBN}}$	0.246630	$0.24662^{+0.00023}_{-0.00027}$	$\sigma_8(0.61)$	0.5898	$0.589^{+0.013}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	0.79	—	$10^5 \text{D}/\text{H}$	2.628	$2.63^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	0.2972	$0.2968^{+0.0068}_{-0.0067}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.41	—	Age/Gyr	13.821	$13.822^{+0.094}_{-0.098}$	$\sigma_8(2.33)$	0.3061	$0.3058^{+0.0073}_{-0.0070}$
$A^{\text{kSZ}}$	2.2	—	$z_*$	1090.21	$1090.2^{+1.1}_{-1.1}$	$r_{0.002}$	0.000	$< 0.150$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.51}_{-0.50}$	$r_*$	144.57	$144.6^{+1.2}_{-1.3}$	$r_{0.01}$	0.000	$< 0.153$
$A_{143}^{\text{dust}}$	0.987	$0.98^{+0.45}_{-0.45}$	$100\theta_*$	1.04110	$1.0411^{+0.0012}_{-0.0012}$	$\ln(10^{10} A_t)$	-7.90	$-0.7^{+2.2}_{-4.0}$
$A_{217}^{\text{dust}}$	0.969	$0.97^{+0.26}_{-0.27}$	$D_M(z_*)/\text{Gpc}$	13.887	$13.89^{+0.11}_{-0.12}$	$r_{10}$	0.0000	$< 0.0777$
$A_{143 \times 217}^{\text{dust}}$	0.998	$1.03^{+0.42}_{-0.41}$	$z_{\text{drag}}$	1059.44	$1059.4^{+1.2}_{-1.2}$	$10^9 A_t$	0.000	$< 0.323$
$c_{100}$	0.99756	$0.9974^{+0.0027}_{-0.0027}$	$r_{\text{drag}}$	147.31	$147.3^{+1.2}_{-1.3}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.291$
$c_{217}$	1.00143	$1.0012^{+0.0041}_{-0.0040}$	$k_D$	0.14046	$0.1405^{+0.0014}_{-0.0014}$	$f_{2000}^{143}$	31.1	$31^{+8}_{-8}$
$H_0$	67.13	$67.1^{+2.5}_{-2.4}$	$100\theta_D$	0.16106	$0.16107^{+0.00068}_{-0.00067}$	$f_{2000}^{217}$	107.6	$107.5^{+5.2}_{-5.2}$
$\Omega_\Lambda$	0.6829	$0.682^{+0.033}_{-0.036}$	$z_{\text{eq}}$	3399	$3400^{+130}_{-120}$	$f_{2000}^{143 \times 217}$	33.0	$33^{+6}_{-5}$
$\Omega_m$	0.3171	$0.318^{+0.036}_{-0.033}$	$k_{\text{eq}}$	0.010375	$0.01038^{+0.00039}_{-0.00038}$	$\chi_{\text{simall}}^2$	395.88	$397.1 (\nu: 1.3)$
$\Omega_m h^2$	0.1429	$0.1429^{+0.0053}_{-0.0052}$	$100\theta_{\text{eq}}$	0.8132	$0.813^{+0.024}_{-0.023}$	$\chi_{\text{lowl}}^2$	23.22	$24.7 (\nu: 1.6)$
$\Omega_m h^3$	0.09592	$0.0959^{+0.0012}_{-0.0012}$	$100\theta_{s,\text{eq}}$	0.4495	$0.449^{+0.012}_{-0.012}$	$\chi_{\text{CamSpec}}^2$	7050.5	$7063.7 (\nu: 15.1)$
$\sigma_8$	0.8105	$0.810^{+0.023}_{-0.024}$	$H(0.15)$	72.46	$72.5^{+2.2}_{-2.0}$	$\chi_{\text{prior}}^2$	2.2	$7.6 (\nu: 6.0)$
$S_8$	0.833	$0.833^{+0.065}_{-0.062}$	$D_M(0.15)$	645.4	$646^{+21}_{-21}$	$\chi_{\text{CMB}}^2$	7469.6	$7485.5 (\nu: 16.4)$
$\sigma_8 \Omega_m^{0.5}$	0.4564	$0.456^{+0.035}_{-0.034}$	$H(0.38)$	82.67	$82.7^{+1.6}_{-1.4}$			
$\sigma_8 \Omega_m^{0.25}$	0.6082	$0.608^{+0.031}_{-0.030}$	$D_M(0.38)$	1538.0	$1538^{+42}_{-43}$			

Best-fit  $\chi_{\text{eff}}^2 = 7471.85$ ;  $\Delta\chi_{\text{eff}}^2 = 0.12$ ;  $\bar{\chi}_{\text{eff}}^2 = 7493.09$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1.55$ ;  $R - 1 = 0.00732$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  0.05) commander\_dx12\_v3.2.29: 23.22 ( $\Delta$  -0.18) CamSpec like\_10.7HM: 7050.52 ( $\Delta$  0.19)



### 13.2 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02222^{+0.00051}_{-0.00050}$	$r_{\text{drag}} h$	$99.9^{+2.5}_{-2.4}$	$H(0.61)$	$95.30^{+0.65}_{-0.62}$
$\Omega_c h^2$	$0.1188^{+0.0032}_{-0.0032}$	$\langle d^2 \rangle^{1/2}$	$2.419^{+0.072}_{-0.074}$	$D_{\text{M}}(0.61)$	$2304^{+31}_{-31}$
$100\theta_{\text{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$z_{\text{re}}$	$7.6^{+2.1}_{-2.4}$	$H(2.33)$	$235.6^{+2.0}_{-2.0}$
$\tau$	$0.053^{+0.021}_{-0.022}$	$10^9 A_{\text{s}}$	$2.085^{+0.095}_{-0.092}$	$D_{\text{M}}(2.33)$	$5766^{+31}_{-32}$
$\ln(10^{10} A_{\text{s}})$	$3.037^{+0.045}_{-0.045}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874^{+0.031}_{-0.029}$	$f\sigma_8(0.15)$	$0.453^{+0.020}_{-0.020}$
$n_{\text{s}}$	$0.968^{+0.011}_{-0.011}$	$D_{40}$	$1235^{+51}_{-39}$	$\sigma_8(0.15)$	$0.745^{+0.019}_{-0.018}$
$r$	$< 0.165$	$D_{220}$	$5704^{+110}_{-100}$	$f\sigma_8(0.38)$	$0.472^{+0.017}_{-0.017}$
$y_{\text{cal}}$	$1.0005^{+0.0066}_{-0.0064}$	$D_{810}$	$2533^{+36}_{-34}$	$\sigma_8(0.38)$	$0.661^{+0.016}_{-0.016}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-60}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.015}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{2000}$	$229.9^{+4.7}_{-4.7}$	$\sigma_8(0.51)$	$0.618^{+0.015}_{-0.014}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-40}$	$n_{\text{s},0.002}$	$0.968^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$A_{217}^{\text{CIB}}$	$41^{+20}_{-20}$	$Y_{\text{P}}$	$0.24533^{+0.00020}_{-0.00024}$	$\sigma_8(0.61)$	$0.588^{+0.014}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.80$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00020}_{-0.00024}$	$f\sigma_8(2.33)$	$0.2968^{+0.0071}_{-0.0069}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.33}$	$10^5 \text{D/H}$	$2.615^{+0.096}_{-0.094}$	$\sigma_8(2.33)$	$0.3061^{+0.0074}_{-0.0071}$
$r_{143 \times 217}^{\text{CIB}}$	—	Age/Gyr	$13.804^{+0.072}_{-0.072}$	$r_{0.002}$	$< 0.161$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_*$	$1090.01^{+0.76}_{-0.75}$	$r_{0.01}$	$< 0.162$
$A^{\text{kSZ}}$	—	$r_*$	$144.86^{+0.83}_{-0.82}$	$\ln(10^{10} A_{\text{t}})$	$-0.6^{+2.2}_{-4.1}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.49}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$r_{10}$	$< 0.0833$
$A_{143}^{\text{dust}}$	$0.98^{+0.44}_{-0.45}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.912^{+0.080}_{-0.080}$	$10^9 A_{\text{t}}$	$< 0.343$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_{\text{drag}}$	$1059.5^{+1.1}_{-1.1}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.309$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$r_{\text{drag}}$	$147.58^{+0.89}_{-0.89}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$k_{\text{D}}$	$0.1402^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	$107.3^{+5.2}_{-5.1}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$100\theta_{\text{D}}$	$0.16103^{+0.00066}_{-0.00064}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.7^{+1.4}_{-1.4}$	$z_{\text{eq}}$	$3370^{+74}_{-74}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.5)$
$\Omega_{\Lambda}$	$0.691^{+0.018}_{-0.019}$	$k_{\text{eq}}$	$0.01028^{+0.00023}_{-0.00022}$	$\chi_{\text{lowl}}^2$	$24.1 (\nu: 1.3)$
$\Omega_{\text{m}}$	$0.309^{+0.019}_{-0.018}$	$100\theta_{\text{eq}}$	$0.819^{+0.014}_{-0.014}$	$\chi_{\text{CamSpec}}^2$	$7064.2 (\nu: 14.8)$
$\Omega_{\text{m}} h^2$	$0.1417^{+0.0031}_{-0.0031}$	$100\theta_{\text{s,eq}}$	$0.4524^{+0.0072}_{-0.0070}$	$\chi_{6\text{DF}}^2$	$0.051 (\nu: 0.0)$
$\Omega_{\text{m}} h^3$	$0.0959^{+0.0012}_{-0.0012}$	$H(0.15)$	$73.0^{+1.2}_{-1.2}$	$\chi_{\text{MGS}}^2$	$1.44 (\nu: 0.1)$
$\sigma_8$	$0.806^{+0.021}_{-0.020}$	$D_{\text{M}}(0.15)$	$641^{+12}_{-12}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 1.1)$
$S_8$	$0.818^{+0.038}_{-0.038}$	$H(0.38)$	$83.01^{+0.92}_{-0.89}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 6.0)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.448^{+0.021}_{-0.021}$	$D_{\text{M}}(0.38)$	$1528^{+24}_{-24}$	$\chi_{\text{BAO}}^2$	$6.1 (\nu: 0.7)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.601^{+0.021}_{-0.021}$	$H(0.51)$	$89.70^{+0.77}_{-0.73}$	$\chi_{\text{CMB}}^2$	$7485.4 (\nu: 15.8)$
$\sigma_8/h^{0.5}$	$0.980^{+0.030}_{-0.030}$	$D_{\text{M}}(0.51)$	$1980^{+28}_{-28}$		

$$\bar{\chi}_{\text{eff}}^2 = 7499.09; \Delta \bar{\chi}_{\text{eff}}^2 = 1.54; R - 1 = 0.01122$$



### 13.3 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215^{+0.00059}_{-0.00055}$	$\sigma_8/h^{0.5}$	$0.989^{+0.041}_{-0.041}$	$H(0.51)$	$89.5^{+1.3}_{-1.1}$
$\Omega_{\mathrm{c}}h^2$	$0.1200^{+0.0056}_{-0.0055}$	$r_{\mathrm{drag}}h$	$98.9^{+4.4}_{-4.2}$	$D_{\mathrm{M}}(0.51)$	$1991^{+48}_{-50}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$\langle d^2 \rangle^{1/2}$	$2.442^{+0.099}_{-0.097}$	$H(0.61)$	$95.1^{+1.0}_{-0.87}$
$\tau$	$0.054^{+0.019}_{-0.012}$	$z_{\mathrm{re}}$	$< 9.39$	$D_{\mathrm{M}}(0.61)$	$2316^{+52}_{-53}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.030}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.087}_{-0.062}$	$H(2.33)$	$236.4^{+3.4}_{-3.2}$
$n_{\mathrm{s}}$	$0.965^{+0.015}_{-0.015}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.036}_{-0.035}$	$D_{\mathrm{M}}(2.33)$	$5773^{+41}_{-45}$
$r$	$< 0.154$	$D_{40}$	$1240^{+52}_{-44}$	$f\sigma_8(0.15)$	$0.461^{+0.032}_{-0.032}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0066}_{-0.0064}$	$D_{220}$	$5700^{+110}_{-100}$	$\sigma_8(0.15)$	$0.749^{+0.019}_{-0.018}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2533^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.478^{+0.025}_{-0.025}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{2000}$	$229.7^{+4.8}_{-4.7}$	$f\sigma_8(0.51)$	$0.476^{+0.021}_{-0.022}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.015}_{-0.015}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.79$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00026}$	$f\sigma_8(0.61)$	$0.470^{+0.019}_{-0.019}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00026}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.011}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.63^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2973^{+0.0065}_{-0.0048}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.821^{+0.093}_{-0.099}$	$\sigma_8(2.33)$	$0.3063^{+0.0069}_{-0.0048}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.2^{+1.1}_{-1.1}$	$r_{0.002}$	$< 0.149$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.50}_{-0.49}$	$r_*$	$144.6^{+1.2}_{-1.3}$	$r_{0.01}$	$< 0.151$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.7^{+2.2}_{-4.0}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.89^{+0.11}_{-0.11}$	$r_{10}$	$< 0.0768$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.4^{+1.2}_{-1.1}$	$10^9 A_{\mathrm{t}}$	$< 0.321$
$c_{100}$	$0.9974^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.3^{+1.2}_{-1.3}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.288$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1404^{+0.0013}_{-0.0014}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$H_0$	$67.2^{+2.5}_{-2.4}$	$100\theta_{\mathrm{D}}$	$0.16106^{+0.00067}_{-0.00067}$	$f_{2000}^{217}$	$107.4^{+5.2}_{-5.2}$
$\Omega_{\Lambda}$	$0.683^{+0.033}_{-0.036}$	$z_{\mathrm{eq}}$	$3398^{+130}_{-120}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$\Omega_{\mathrm{m}}$	$0.317^{+0.036}_{-0.033}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00039}_{-0.00038}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.3)$
$\Omega_{\mathrm{m}}h^2$	$0.1428^{+0.0053}_{-0.0051}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.024}_{-0.023}$	$\chi_{\mathrm{lowl}}^2$	$24.6 (\nu: 1.6)$
$\Omega_{\mathrm{m}}h^3$	$0.0959^{+0.0012}_{-0.0012}$	$100\theta_{\mathrm{s,eq}}$	$0.450^{+0.012}_{-0.012}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.6 (\nu: 15.0)$
$\sigma_8$	$0.811^{+0.023}_{-0.022}$	$H(0.15)$	$72.5^{+2.2}_{-2.0}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$S_8$	$0.833^{+0.064}_{-0.062}$	$D_{\mathrm{M}}(0.15)$	$645^{+21}_{-21}$	$\chi_{\mathrm{CMB}}^2$	$7485.2 (\nu: 15.8)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.456^{+0.035}_{-0.034}$	$H(0.38)$	$82.7^{+1.6}_{-1.4}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.031}_{-0.030}$	$D_{\mathrm{M}}(0.38)$	$1538^{+41}_{-42}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7492.76; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.50; R - 1 = 0.00713$$



### 13.4 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222^{+0.00051}_{-0.00050}$	$r_{\mathrm{drag}} h$	$99.9^{+2.5}_{-2.4}$	$H(0.61)$	$95.30^{+0.65}_{-0.62}$
$\Omega_{\mathrm{c}} h^2$	$0.1188^{+0.0032}_{-0.0032}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.070}_{-0.068}$	$D_{\mathrm{M}}(0.61)$	$2304^{+31}_{-31}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0011}_{-0.0011}$	$z_{\mathrm{re}}$	$< 9.47$	$H(2.33)$	$235.6^{+2.0}_{-2.0}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$10^9 A_{\mathrm{s}}$	$2.090^{+0.091}_{-0.062}$	$D_{\mathrm{M}}(2.33)$	$5765^{+31}_{-32}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040^{+0.043}_{-0.030}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.873^{+0.030}_{-0.029}$	$f\sigma_8(0.15)$	$0.453^{+0.020}_{-0.019}$
$n_{\mathrm{s}}$	$0.968^{+0.011}_{-0.011}$	$D_{40}$	$1234^{+51}_{-39}$	$\sigma_8(0.15)$	$0.746^{+0.018}_{-0.015}$
$r$	$< 0.165$	$D_{220}$	$5704^{+110}_{-100}$	$f\sigma_8(0.38)$	$0.472^{+0.016}_{-0.016}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0066}_{-0.0064}$	$D_{810}$	$2533^{+35}_{-34}$	$\sigma_8(0.38)$	$0.661^{+0.016}_{-0.012}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.51)$	$0.471^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.0^{+4.8}_{-4.7}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24533^{+0.00020}_{-0.00023}$	$\sigma_8(0.61)$	$0.589^{+0.014}_{-0.0099}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.80$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00020}_{-0.00024}$	$f\sigma_8(2.33)$	$0.2972^{+0.0068}_{-0.0048}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.614^{+0.096}_{-0.093}$	$\sigma_8(2.33)$	$0.3065^{+0.0070}_{-0.0050}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	Age/Gyr	$13.803^{+0.072}_{-0.072}$	$r_{0.002}$	$< 0.159$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1090.00^{+0.75}_{-0.75}$	$r_{0.01}$	$< 0.162$
$A^{\mathrm{kSZ}}$	—	$r_*$	$144.86^{+0.83}_{-0.82}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.6^{+2.2}_{-4.1}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.48}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$r_{10}$	$< 0.0828$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.44}_{-0.46}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.912^{+0.080}_{-0.080}$	$10^9 A_{\mathrm{t}}$	$< 0.343$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$z_{\mathrm{drag}}$	$1059.5^{+1.1}_{-1.1}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.309$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$r_{\mathrm{drag}}$	$147.58^{+0.89}_{-0.89}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$k_{\mathrm{D}}$	$0.1402^{+0.0012}_{-0.0012}$	$f_{2000}^{217}$	$107.2^{+5.2}_{-5.1}$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$100\theta_{\mathrm{D}}$	$0.16103^{+0.00065}_{-0.00064}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$67.7^{+1.4}_{-1.4}$	$z_{\mathrm{eq}}$	$3369^{+74}_{-74}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.5)$
$\Omega_{\Lambda}$	$0.691^{+0.018}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01028^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{lowl}}^2$	$24.1 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.019}_{-0.018}$	$100\theta_{\mathrm{eq}}$	$0.819^{+0.014}_{-0.014}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.0 (\nu: 14.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1416^{+0.0031}_{-0.0031}$	$100\theta_{\mathrm{s,eq}}$	$0.4524^{+0.0072}_{-0.0070}$	$\chi_{6\mathrm{DF}}^2$	$0.050 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0959^{+0.0012}_{-0.0012}$	$H(0.15)$	$73.0^{+1.2}_{-1.2}$	$\chi_{\mathrm{MGS}}^2$	$1.44 (\nu: 0.1)$
$\sigma_8$	$0.807^{+0.020}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$640^{+12}_{-12}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 (\nu: 1.1)$
$S_8$	$0.819^{+0.038}_{-0.037}$	$H(0.38)$	$83.02^{+0.93}_{-0.89}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.021}_{-0.020}$	$D_{\mathrm{M}}(0.38)$	$1528^{+24}_{-24}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.7)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.020}_{-0.020}$	$H(0.51)$	$89.71^{+0.77}_{-0.73}$	$\chi_{\mathrm{CMB}}^2$	$7485.2 (\nu: 15.5)$
$\sigma_8/h^{0.5}$	$0.981^{+0.029}_{-0.028}$	$D_{\mathrm{M}}(0.51)$	$1980^{+28}_{-28}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7498.81; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 1.50; R - 1 = 0.01239$$



### 13.5 base\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022286	$0.02230^{+0.00043}_{-0.00042}$	$\sigma_8 \Omega_m^{0.5}$	0.4524	$0.451^{+0.024}_{-0.023}$	$H(0.38)$	82.86	$82.9^{+1.0}_{-1.0}$
$\Omega_c h^2$	0.11958	$0.1193^{+0.0036}_{-0.0037}$	$\sigma_8 \Omega_m^{0.25}$	0.6046	$0.603^{+0.022}_{-0.022}$	$D_M(0.38)$	1532.8	$1531^{+28}_{-27}$
$100\theta_{MC}$	1.04088	$1.04090^{+0.00081}_{-0.00086}$	$\sigma_8/h^{0.5}$	0.9839	$0.982^{+0.031}_{-0.031}$	$H(0.51)$	89.60	$89.65^{+0.82}_{-0.79}$
$\tau$	0.0524	$0.052^{+0.021}_{-0.021}$	$r_{drag}h$	99.30	$99.5^{+2.9}_{-2.8}$	$D_M(0.51)$	1985.3	$1983^{+33}_{-32}$
$\ln(10^{10} A_s)$	3.0375	$3.037^{+0.042}_{-0.042}$	$\langle d^2 \rangle^{1/2}$	2.431	$2.426^{+0.074}_{-0.074}$	$H(0.61)$	95.23	$95.28^{+0.67}_{-0.63}$
$n_s$	0.9666	$0.967^{+0.013}_{-0.012}$	$z_{re}$	7.49	$7.5^{+2.0}_{-2.3}$	$D_M(0.61)$	2309.9	$2308^{+35}_{-35}$
$r$	0.010	$< 0.187$	$10^9 A_s$	2.085	$2.084^{+0.089}_{-0.087}$	$H(2.33)$	236.20	$236.1^{+2.2}_{-2.2}$
$y_{cal}$	1.0004	$1.0005^{+0.0062}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8780	$1.877^{+0.030}_{-0.031}$	$D_M(2.33)$	5766.9	$5765^{+29}_{-30}$
$A_{100}^{PS}$	234	$239^{+60}_{-70}$	$D_{40}$	1227.1	$1243^{+55}_{-42}$	$f\sigma_8(0.15)$	0.4568	$0.455^{+0.022}_{-0.022}$
$A_{143}^{PS}$	39.9	$39^{+20}_{-20}$	$D_{220}$	5712	$5713^{+100}_{-100}$	$\sigma_8(0.15)$	0.7463	$0.746^{+0.017}_{-0.017}$
$A_{217}^{PS}$	102.1	$103^{+30}_{-30}$	$D_{810}$	2534.9	$2535^{+35}_{-36}$	$f\sigma_8(0.38)$	0.4746	$0.473^{+0.018}_{-0.018}$
$A_{217}^{CIB}$	44.4	$39^{+20}_{-20}$	$D_{1420}$	816.0	$816^{+13}_{-13}$	$\sigma_8(0.38)$	0.6613	$0.661^{+0.015}_{-0.015}$
$A_{143}^{tSZ}$	6.41	$< 8.86$	$D_{2000}$	230.33	$230.4^{+4.4}_{-4.2}$	$f\sigma_8(0.51)$	0.4730	$0.472^{+0.016}_{-0.016}$
$r_{143 \times 217}^{PS}$	0.599	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	0.9666	$0.967^{+0.013}_{-0.012}$	$\sigma_8(0.51)$	0.6188	$0.618^{+0.013}_{-0.013}$
$r_{143 \times 217}^{CIB}$	0.77	—	$Y_P$	0.245362	$0.24536^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	0.4679	$0.467^{+0.014}_{-0.014}$
$\xi^{tSZ \times CIB}$	0.11	—	$Y_P^{BBN}$	0.246688	$0.24669^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	0.5887	$0.588^{+0.013}_{-0.013}$
$A^{kSZ}$	0.1	—	$10^5 D/H$	2.601	$2.599^{+0.081}_{-0.077}$	$f\sigma_8(2.33)$	0.2968	$0.2967^{+0.0065}_{-0.0064}$
$A_{100}^{dust}$	1.01	$1.00^{+0.50}_{-0.50}$	Age/Gyr	13.806	$13.802^{+0.065}_{-0.067}$	$\sigma_8(2.33)$	0.3059	$0.3058^{+0.0068}_{-0.0067}$
$A_{143}^{dust}$	0.973	$0.96^{+0.45}_{-0.45}$	$z_*$	1089.99	$1089.95^{+0.76}_{-0.74}$	$r_{0.002}$	0.009	$< 0.184$
$A_{217}^{dust}$	0.971	$0.97^{+0.27}_{-0.27}$	$r_*$	144.60	$144.66^{+0.84}_{-0.81}$	$r_{0.01}$	0.0098	$< 0.186$
$A_{143 \times 217}^{dust}$	1.008	$1.03^{+0.43}_{-0.42}$	$100\theta_*$	1.04106	$1.04109^{+0.00080}_{-0.00085}$	$\ln(10^{10} A_t)$	-1.54	$-0.2^{+1.8}_{-4.0}$
$c_{100}$	0.99764	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.890	$13.895^{+0.078}_{-0.076}$	$r_{10}$	0.0048	$< 0.0957$
$c_{217}$	1.00129	$1.0011^{+0.0041}_{-0.0040}$	$z_{drag}$	1059.70	$1059.72^{+0.86}_{-0.90}$	$10^9 A_t$	0.022	$< 0.391$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.012}$	$r_{drag}$	147.30	$147.34^{+0.85}_{-0.81}$	$10^9 A_t e^{-2\tau}$	0.019	$< 0.352$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.013}$	$k_D$	0.14059	$0.14055^{+0.00089}_{-0.00092}$	$f_{2000}^{143}$	29.9	$29^{+8}_{-7}$
$H_0$	67.41	$67.5^{+1.6}_{-1.6}$	$100\theta_D$	0.16088	$0.16088^{+0.00053}_{-0.00050}$	$f_{2000}^{217}$	106.83	$106.7^{+5.0}_{-5.0}$
$\Omega_\Lambda$	0.6864	$0.688^{+0.022}_{-0.023}$	$z_{eq}$	3390	$3385^{+82}_{-84}$	$f_{2000}^{143 \times 217}$	32.1	$32^{+5}_{-5}$
$\Omega_m$	0.3136	$0.312^{+0.023}_{-0.022}$	$k_{eq}$	0.010347	$0.01033^{+0.00025}_{-0.00026}$	$\chi_{small}^2$	395.84	$397.1 (\nu: 1.2)$
$\Omega_m h^2$	0.14252	$0.1423^{+0.0034}_{-0.0035}$	$100\theta_{eq}$	0.8152	$0.816^{+0.016}_{-0.015}$	$\chi_{lowl}^2$	23.2	$24.9 (\nu: 1.8)$
$\Omega_m h^3$	0.09608	$0.09607^{+0.00082}_{-0.00082}$	$100\theta_{s,eq}$	0.4504	$0.4510^{+0.00082}_{-0.00078}$	$\chi_{CamSpec}^2$	11499.5	$11513.6 (\nu: 16.6)$
$\sigma_8$	0.8079	$0.807^{+0.020}_{-0.020}$	$H(0.15)$	72.72	$72.8^{+1.4}_{-1.4}$	$\chi_{prior}^2$	2.2	$7.8 (\nu: 5.8)$
$S_8$	0.8260	$0.823^{+0.043}_{-0.043}$	$D_M(0.15)$	642.9	$642^{+14}_{-14}$	$\chi_{CMB}^2$	11918.6	$11935.7 (\nu: 17.7)$

Best-fit  $\chi_{eff}^2 = 11920.72$ ;  $\Delta\chi_{eff}^2 = -0.04$ ;  $\bar{\chi}_{eff}^2 = 11943.49$ ;  $\Delta\bar{\chi}_{eff}^2 = 1.03$ ;  $R - 1 = 0.01020$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 ( $\Delta$  -0.06) commander\_dx12\_v3.2.29: 23.20 ( $\Delta$  0.19) CamSpec like\_10.7HM\_1400\_unified: 11499.52 ( $\Delta$  -0.12)



### 13.6 base\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00039}_{-0.00038}$	$\sigma_8/h^{0.5}$	$0.978^{+0.027}_{-0.027}$	$H(0.61)$	$95.37^{+0.52}_{-0.51}$
$\Omega_c h^2$	$0.1188^{+0.0027}_{-0.0027}$	$r_{\text{drag}} h$	$99.9^{+2.1}_{-2.0}$	$D_M(0.61)$	$2302^{+26}_{-26}$
$100\theta_{\text{MC}}$	$1.04097^{+0.00074}_{-0.00079}$	$\langle d^2 \rangle^{1/2}$	$2.418^{+0.066}_{-0.064}$	$H(2.33)$	$235.7^{+1.7}_{-1.7}$
$\tau$	$0.053^{+0.020}_{-0.021}$	$z_{\text{re}}$	$7.5^{+2.0}_{-2.3}$	$D_M(2.33)$	$5761^{+24}_{-24}$
$\ln(10^{10} A_s)$	$3.037^{+0.042}_{-0.042}$	$10^9 A_s$	$2.085^{+0.089}_{-0.087}$	$f\sigma_8(0.15)$	$0.452^{+0.018}_{-0.017}$
$n_s$	$0.969^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.028}_{-0.029}$	$\sigma_8(0.15)$	$0.745^{+0.017}_{-0.016}$
$r$	$< 0.190$	$D_{40}$	$1241^{+55}_{-41}$	$f\sigma_8(0.38)$	$0.471^{+0.015}_{-0.015}$
$y_{\text{cal}}$	$1.0005^{+0.0064}_{-0.0066}$	$D_{220}$	$5716^{+99}_{-98}$	$\sigma_8(0.38)$	$0.660^{+0.015}_{-0.014}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$D_{810}$	$2534^{+34}_{-36}$	$f\sigma_8(0.51)$	$0.470^{+0.014}_{-0.013}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-12}$	$\sigma_8(0.51)$	$0.618^{+0.014}_{-0.013}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{2000}$	$230.5^{+4.3}_{-4.1}$	$f\sigma_8(0.61)$	$0.465^{+0.013}_{-0.013}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$n_{\text{s},0.002}$	$0.969^{+0.011}_{-0.011}$	$\sigma_8(0.61)$	$0.588^{+0.013}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$< 8.87$	$Y_{\text{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.2967^{+0.0065}_{-0.0064}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(2.33)$	$0.3060^{+0.0069}_{-0.0067}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.592^{+0.073}_{-0.071}$	$r_{0.002}$	$< 0.188$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\text{Age}/\text{Gyr}$	$13.794^{+0.056}_{-0.055}$	$r_{0.01}$	$< 0.188$
$A^{\text{ksZ}}$	—	$z_*$	$1089.86^{+0.62}_{-0.61}$	$\ln(10^{10} A_{\text{t}})$	$-0.1^{+1.8}_{-4.3}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.50}$	$r_*$	$144.77^{+0.66}_{-0.65}$	$r_{10}$	$< 0.0973$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.44}$	$100\theta_*$	$1.04116^{+0.00074}_{-0.00078}$	$10^9 A_{\text{t}}$	$< 0.395$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.063}_{-0.062}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.355$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$z_{\text{drag}}$	$1059.77^{+0.85}_{-0.83}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_{\text{drag}}$	$147.45^{+0.69}_{-0.68}$	$f_{2000}^{217}$	$106.6^{+4.9}_{-4.9}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$k_{\text{D}}$	$0.14046^{+0.00084}_{-0.00081}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16085^{+0.00050}_{-0.00050}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3372^{+62}_{-62}$	$\chi_{\text{lowl}}^2$	$24.7 (\nu: 1.7)$
$H_0$	$67.8^{+1.2}_{-1.2}$	$k_{\text{eq}}$	$0.01029^{+0.00019}_{-0.00019}$	$\chi_{\text{CamSpec}}^2$	$11513.5 (\nu: 16.1)$
$\Omega_{\Lambda}$	$0.691^{+0.016}_{-0.016}$	$100\theta_{\text{eq}}$	$0.819^{+0.012}_{-0.011}$	$\chi_{6\text{DF}}^2$	$0.040 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.309^{+0.016}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4522^{+0.0061}_{-0.0059}$	$\chi_{\text{MGS}}^2$	$1.44 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1418^{+0.0026}_{-0.0026}$	$H(0.15)$	$73.0^{+1.0}_{-1.0}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.7)$
$\Omega_{\text{m}} h^3$	$0.09608^{+0.00080}_{-0.00080}$	$D_M(0.15)$	$640^{+10}_{-10}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.7)$
$\sigma_8$	$0.805^{+0.019}_{-0.018}$	$H(0.38)$	$83.09^{+0.78}_{-0.76}$	$\chi_{\text{BAO}}^2$	$5.89 (\nu: 0.4)$
$S_8$	$0.817^{+0.034}_{-0.033}$	$D_M(0.38)$	$1527^{+21}_{-21}$	$\chi_{\text{CMB}}^2$	$11935.4 (\nu: 16.9)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.447^{+0.019}_{-0.018}$	$H(0.51)$	$89.77^{+0.63}_{-0.61}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.600^{+0.019}_{-0.018}$	$D_M(0.51)$	$1978^{+24}_{-24}$		

$$\bar{\chi}_{\text{eff}}^2 = 11949.07; \Delta\bar{\chi}_{\text{eff}}^2 = 0.79; R - 1 = 0.01061$$



### 13.7 base\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00043}_{-0.00043}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.024}_{-0.023}$	$H(0.38)$	$82.9^{+1.0}_{-1.0}$
$\Omega_{\mathrm{c}} h^2$	$0.1193^{+0.0036}_{-0.0036}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1531^{+28}_{-27}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00081}_{-0.00087}$	$\sigma_8/h^{0.5}$	$0.983^{+0.030}_{-0.030}$	$H(0.51)$	$89.66^{+0.82}_{-0.79}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$r_{\mathrm{drag}} h$	$99.5^{+2.8}_{-2.8}$	$D_{\mathrm{M}}(0.51)$	$1983^{+33}_{-32}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040^{+0.039}_{-0.028}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.073}_{-0.072}$	$H(0.61)$	$95.28^{+0.67}_{-0.63}$
$n_{\mathrm{s}}$	$0.967^{+0.012}_{-0.012}$	$z_{\mathrm{re}}$	$< 9.30$	$D_{\mathrm{M}}(0.61)$	$2307^{+35}_{-35}$
$r$	$< 0.188$	$10^9 A_{\mathrm{s}}$	$2.091^{+0.084}_{-0.058}$	$H(2.33)$	$236.0^{+2.2}_{-2.2}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0063}_{-0.0066}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.030}_{-0.031}$	$D_{\mathrm{M}}(2.33)$	$5765^{+29}_{-30}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-70}$	$D_{40}$	$1243^{+55}_{-42}$	$f\sigma_8(0.15)$	$0.456^{+0.022}_{-0.022}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5713^{+100}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.016}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{810}$	$2534^{+35}_{-36}$	$f\sigma_8(0.38)$	$0.474^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$D_{2000}$	$230.4^{+4.4}_{-4.1}$	$f\sigma_8(0.51)$	$0.473^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.012}_{-0.012}$	$\sigma_8(0.51)$	$0.619^{+0.013}_{-0.010}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00016}_{-0.00019}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00016}_{-0.00019}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.0094}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.598^{+0.082}_{-0.077}$	$f\sigma_8(2.33)$	$0.2971^{+0.0062}_{-0.0044}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.801^{+0.066}_{-0.066}$	$\sigma_8(2.33)$	$0.3063^{+0.0064}_{-0.0045}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$z_*$	$1089.94^{+0.76}_{-0.74}$	$r_{0.002}$	$< 0.185$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_*$	$144.66^{+0.83}_{-0.81}$	$r_{0.01}$	$< 0.186$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$100\theta_*$	$1.04110^{+0.00080}_{-0.00085}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.2^{+1.8}_{-3.9}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895^{+0.078}_{-0.076}$	$r_{10}$	$< 0.0958$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.73^{+0.89}_{-0.87}$	$10^9 A_{\mathrm{t}}$	$< 0.392$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.35^{+0.84}_{-0.81}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.352$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14054^{+0.00089}_{-0.00091}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$H_0$	$67.5^{+1.6}_{-1.6}$	$100\theta_{\mathrm{D}}$	$0.16087^{+0.00053}_{-0.00050}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.0}$
$\Omega_{\Lambda}$	$0.688^{+0.021}_{-0.023}$	$z_{\mathrm{eq}}$	$3384^{+82}_{-83}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$\Omega_{\mathrm{m}}$	$0.312^{+0.023}_{-0.021}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00025}_{-0.00025}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1422^{+0.0034}_{-0.0035}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.016}_{-0.015}$	$\chi_{\mathrm{lowl}}^2$	$24.9 (\nu: 1.8)$
$\Omega_{\mathrm{m}} h^3$	$0.09607^{+0.00082}_{-0.00082}$	$100\theta_{\mathrm{s,eq}}$	$0.4511^{+0.0082}_{-0.0078}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.5 (\nu: 16.6)$
$\sigma_8$	$0.808^{+0.019}_{-0.017}$	$H(0.15)$	$72.8^{+1.4}_{-1.4}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$S_8$	$0.824^{+0.043}_{-0.042}$	$D_{\mathrm{M}}(0.15)$	$642^{+14}_{-14}$	$\chi_{\mathrm{CMB}}^2$	$11935.4 (\nu: 17.4)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11943.24; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.05; R - 1 = 0.00947$$



### 13.8 base\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00039}_{-0.00039}$	$\sigma_8/h^{0.5}$	$0.980^{+0.026}_{-0.025}$	$H(0.61)$	$95.37^{+0.52}_{-0.51}$
$\Omega_c h^2$	$0.1187^{+0.0027}_{-0.0027}$	$r_{\text{drag}} h$	$99.96^{+2.1}_{-2.0}$	$D_M(0.61)$	$2302^{+26}_{-26}$
$100\theta_{\text{MC}}$	$1.04098^{+0.00075}_{-0.00080}$	$\langle d^2 \rangle^{1/2}$	$2.420^{+0.065}_{-0.061}$	$H(2.33)$	$235.7^{+1.7}_{-1.7}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$z_{\text{re}}$	$< 9.31$	$D_M(2.33)$	$5761^{+24}_{-24}$
$\ln(10^{10} A_s)$	$3.040^{+0.040}_{-0.029}$	$10^9 A_s$	$2.091^{+0.085}_{-0.059}$	$f\sigma_8(0.15)$	$0.453^{+0.017}_{-0.017}$
$n_s$	$0.969^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	$1.874^{+0.028}_{-0.030}$	$\sigma_8(0.15)$	$0.746^{+0.016}_{-0.013}$
$r$	$< 0.190$	$D_{40}$	$1241^{+54}_{-41}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0066}$	$D_{220}$	$5715^{+99}_{-98}$	$\sigma_8(0.38)$	$0.661^{+0.014}_{-0.011}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$D_{810}$	$2534^{+34}_{-36}$	$f\sigma_8(0.51)$	$0.471^{+0.013}_{-0.013}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.51)$	$0.619^{+0.013}_{-0.0098}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{2000}$	$230.6^{+4.3}_{-4.1}$	$f\sigma_8(0.61)$	$0.466^{+0.012}_{-0.011}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$n_{s,0.002}$	$0.969^{+0.011}_{-0.011}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.0091}$
$A_{143}^{\text{tSZ}}$	$< 8.92$	$Y_{\text{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.2971^{+0.0062}_{-0.0044}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(2.33)$	$0.3065^{+0.0065}_{-0.0046}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.592^{+0.073}_{-0.071}$	$r_{0.002}$	$< 0.188$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\text{Age}/\text{Gyr}$	$13.794^{+0.056}_{-0.055}$	$r_{0.01}$	$< 0.189$
$A^{\text{kSZ}}$	—	$z_*$	$1089.85^{+0.62}_{-0.60}$	$\ln(10^{10} A_t)$	$-0.1^{+1.8}_{-4.3}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.78^{+0.66}_{-0.65}$	$r_{10}$	$< 0.0973$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$100\theta_*$	$1.04116^{+0.00074}_{-0.00078}$	$10^9 A_t$	$< 0.395$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	$13.905^{+0.063}_{-0.062}$	$10^9 A_t e^{-2\tau}$	$< 0.356$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.42}$	$z_{\text{drag}}$	$1059.78^{+0.84}_{-0.83}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_{\text{drag}}$	$147.46^{+0.69}_{-0.68}$	$f_{2000}^{217}$	$106.6^{+4.9}_{-4.9}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$k_{\text{D}}$	$0.14046^{+0.00084}_{-0.00081}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16085^{+0.00050}_{-0.00050}$	$\chi_{\text{simall}}^2$	$397.1 (\nu: 1.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3372^{+62}_{-61}$	$\chi_{\text{lowl}}^2$	$24.7 (\nu: 1.7)$
$H_0$	$67.8^{+1.2}_{-1.2}$	$k_{\text{eq}}$	$0.01029^{+0.00019}_{-0.00019}$	$\chi_{\text{CamSpec}}^2$	$11513.4 (\nu: 16.1)$
$\Omega_{\Lambda}$	$0.692^{+0.016}_{-0.016}$	$100\theta_{\text{eq}}$	$0.819^{+0.012}_{-0.011}$	$\chi_{6\text{DF}}^2$	$0.039 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.308^{+0.016}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4523^{+0.0060}_{-0.0059}$	$\chi_{\text{MGS}}^2$	$1.45 (\nu: 0.1)$
$\Omega_{\text{m}} h^2$	$0.1417^{+0.0026}_{-0.0026}$	$H(0.15)$	$73.0^{+1.0}_{-1.0}$	$\chi_{\text{DR12BAO}}^2$	$4.4 (\nu: 0.7)$
$\Omega_{\text{m}} h^3$	$0.09608^{+0.00080}_{-0.00079}$	$D_M(0.15)$	$640^{+10}_{-10}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.7)$
$\sigma_8$	$0.807^{+0.018}_{-0.016}$	$H(0.38)$	$83.09^{+0.78}_{-0.76}$	$\chi_{\text{BAO}}^2$	$5.88 (\nu: 0.4)$
$S_8$	$0.818^{+0.033}_{-0.033}$	$D_M(0.38)$	$1527^{+21}_{-21}$	$\chi_{\text{CMB}}^2$	$11935.2 (\nu: 16.7)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.448^{+0.018}_{-0.018}$	$H(0.51)$	$89.78^{+0.63}_{-0.61}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.601^{+0.018}_{-0.017}$	$D_M(0.51)$	$1978^{+24}_{-24}$		

$$\bar{\chi}_{\text{eff}}^2 = 11948.86; \Delta\bar{\chi}_{\text{eff}}^2 = 0.87; R - 1 = 0.01058$$



### 13.9 base\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022281	$0.02230^{+0.00041}_{-0.00040}$	$\sigma_8 \Omega_m^{0.25}$	0.6059	$0.605^{+0.017}_{-0.017}$	$H(0.51)$	89.57	$89.62^{+0.73}_{-0.70}$
$\Omega_c h^2$	0.11978	$0.1195^{+0.0031}_{-0.0032}$	$\sigma_8/h^{0.5}$	0.9858	$0.985^{+0.024}_{-0.024}$	$D_M(0.51)$	1986.9	$1985^{+28}_{-28}$
$100\theta_{MC}$	1.04085	$1.04088^{+0.00078}_{-0.00079}$	$r_{drag}h$	99.15	$99.4^{+2.5}_{-2.4}$	$H(0.61)$	95.21	$95.25^{+0.60}_{-0.56}$
$\tau$	0.0528	$0.054^{+0.019}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.433^{+0.055}_{-0.057}$	$D_M(0.61)$	2311.6	$2309^{+30}_{-31}$
$\ln(10^{10} A_s)$	3.0394	$3.041^{+0.037}_{-0.038}$	$z_{re}$	7.54	$7.6^{+1.8}_{-2.2}$	$H(2.33)$	236.32	$236.2^{+1.8}_{-1.9}$
$n_s$	0.9654	$0.967^{+0.011}_{-0.011}$	$10^9 A_s$	2.089	$2.092^{+0.078}_{-0.078}$	$D_M(2.33)$	5767.8	$5766^{+27}_{-27}$
$r$	0.002	$< 0.184$	$10^9 A_s e^{-2\tau}$	1.8800	$1.878^{+0.028}_{-0.028}$	$f\sigma_8(0.15)$	0.4581	$0.457^{+0.017}_{-0.017}$
$y_{cal}$	1.0005	$1.0006^{+0.0062}_{-0.0063}$	$D_{40}$	1228.2	$1244^{+54}_{-41}$	$\sigma_8(0.15)$	0.7472	$0.747^{+0.014}_{-0.014}$
$A_{100}^{PS}$	234	$238^{+60}_{-60}$	$D_{220}$	5720	$5715^{+100}_{-100}$	$f\sigma_8(0.38)$	0.4757	$0.475^{+0.014}_{-0.014}$
$A_{143}^{PS}$	39.8	$39^{+20}_{-20}$	$D_{810}$	2535.9	$2535^{+34}_{-34}$	$\sigma_8(0.38)$	0.6620	$0.662^{+0.012}_{-0.012}$
$A_{217}^{PS}$	101.8	$103^{+30}_{-30}$	$D_{1420}$	815.8	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	0.4739	$0.473^{+0.012}_{-0.012}$
$A_{217}^{CIB}$	44.7	$39^{+20}_{-20}$	$D_{2000}$	230.25	$230.5^{+4.3}_{-4.1}$	$\sigma_8(0.51)$	0.6193	$0.620^{+0.011}_{-0.012}$
$A_{143}^{tSZ}$	6.62	$< 8.90$	$n_{s,0.002}$	0.9654	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	0.4687	$0.468^{+0.011}_{-0.011}$
$r_{143 \times 217}^{PS}$	0.597	$0.66^{+0.31}_{-0.34}$	$Y_P$	0.245359	$0.24537^{+0.00015}_{-0.00018}$	$\sigma_8(0.61)$	0.5892	$0.590^{+0.011}_{-0.011}$
$r_{143 \times 217}^{CIB}$	0.78	—	$Y_P^{BBN}$	0.246686	$0.24669^{+0.00015}_{-0.00018}$	$f\sigma_8(2.33)$	0.2970	$0.2972^{+0.0056}_{-0.0058}$
$\xi^{tSZ \times CIB}$	0.09	—	$10^5 D/H$	2.602	$2.599^{+0.076}_{-0.074}$	$\sigma_8(2.33)$	0.3060	$0.3063^{+0.0061}_{-0.0063}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.807	$13.804^{+0.060}_{-0.060}$	$r_{0.002}$	0.002	$< 0.181$
$A_{100}^{dust}$	1.01	$1.01^{+0.49}_{-0.51}$	$z_*$	1090.02	$1089.97^{+0.67}_{-0.68}$	$r_{0.01}$	0.002	$< 0.183$
$A_{143}^{dust}$	0.973	$0.96^{+0.45}_{-0.45}$	$r_*$	144.56	$144.61^{+0.74}_{-0.70}$	$\ln(10^{10} A_t)$	-3.19	$-0.2^{+1.9}_{-3.9}$
$A_{217}^{dust}$	0.969	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	1.04105	$1.04107^{+0.00077}_{-0.00077}$	$r_{10}$	0.0009	$< 0.0937$
$A_{143 \times 217}^{dust}$	1.007	$1.03^{+0.42}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	13.886	$13.891^{+0.069}_{-0.065}$	$10^9 A_t$	0.004	$< 0.386$
$c_{100}$	0.99766	$0.9975^{+0.0027}_{-0.0027}$	$z_{drag}$	1059.70	$1059.74^{+0.84}_{-0.83}$	$10^9 A_t e^{-2\tau}$	0.004	$< 0.346$
$c_{217}$	1.00131	$1.0011^{+0.0042}_{-0.0040}$	$r_{drag}$	147.25	$147.30^{+0.74}_{-0.72}$	$f_{2000}^{143}$	30.2	$29^{+7}_{-7}$
$c_{TE}$	0.9965	$0.997^{+0.013}_{-0.012}$	$k_D$	0.14063	$0.14059^{+0.00083}_{-0.00084}$	$f_{2000}^{217}$	106.93	$106.7^{+4.9}_{-4.9}$
$c_{EE}$	0.9923	$0.992^{+0.013}_{-0.013}$	$100\theta_D$	0.16088	$0.16087^{+0.00050}_{-0.00050}$	$f_{2000}^{143 \times 217}$	32.3	$32^{+5}_{-5}$
$H_0$	67.34	$67.5^{+1.4}_{-1.4}$	$z_{eq}$	3395	$3389^{+69}_{-73}$	$\chi_{lensing}^2$	8.86	$9.38 (\nu: 0.3)$
$\Omega_\Lambda$	0.6853	$0.687^{+0.019}_{-0.019}$	$k_{eq}$	0.010361	$0.01034^{+0.00021}_{-0.00022}$	$\chi_{small}^2$	395.87	$397.2 (\nu: 1.3)$
$\Omega_m$	0.3147	$0.313^{+0.019}_{-0.019}$	$100\theta_{eq}$	0.8143	$0.815^{+0.014}_{-0.013}$	$\chi_{lowl}^2$	23.23	$25.0 (\nu: 1.7)$
$\Omega_m h^2$	0.14271	$0.1425^{+0.0029}_{-0.0030}$	$100\theta_{s,eq}$	0.4500	$0.4506^{+0.0071}_{-0.0066}$	$\chi_{CamSpec}^2$	11499.4	$11512.9 (\nu: 15.1)$
$\Omega_m h^3$	0.09609	$0.09609^{+0.00081}_{-0.00079}$	$H(0.15)$	72.65	$72.8^{+1.2}_{-1.2}$	$\chi_{prior}^2$	2.2	$7.8 (\nu: 5.8)$
$\sigma_8$	0.8089	$0.809^{+0.015}_{-0.016}$	$D_M(0.15)$	643.6	$643^{+12}_{-12}$	$\chi_{CMB}^2$	11927.4	$11944.5 (\nu: 17.2)$
$S_8$	0.8286	$0.826^{+0.033}_{-0.033}$	$H(0.38)$	82.82	$82.89^{+0.90}_{-0.87}$			
$\sigma_8 \Omega_m^{0.5}$	0.4538	$0.453^{+0.018}_{-0.018}$	$D_M(0.38)$	1534.2	$1532^{+24}_{-24}$			

Best-fit  $\chi_{eff}^2 = 11929.59$ ;  $\Delta\chi_{eff}^2 = -0.06$ ;  $\bar{\chi}_{eff}^2 = 11952.27$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.82$ ;  $R - 1 = 0.00977$

$\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.86 ( $\Delta$  0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  0.00) commander\_dx12\_v3.2\_29: 23.23 ( $\Delta$  0.02) CamSpec like\_10.7HM\_1400.unified: 11499.43 ( $\Delta$  -0.22)



### 13.10 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00039}_{-0.00037}$	$\sigma_8/h^{0.5}$	$0.982^{+0.021}_{-0.021}$	$H(0.61)$	$95.34^{+0.49}_{-0.47}$
$\Omega_c h^2$	$0.1190^{+0.0024}_{-0.0025}$	$r_{\text{drag}} h$	$99.8^{+1.9}_{-1.9}$	$D_M(0.61)$	$2304^{+24}_{-24}$
$100\theta_{\text{MC}}$	$1.04094^{+0.00073}_{-0.00075}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.053}_{-0.054}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$\tau$	$0.055^{+0.019}_{-0.019}$	$z_{\text{re}}$	$7.7^{+1.8}_{-2.0}$	$D_M(2.33)$	$5762^{+23}_{-23}$
$\ln(10^{10} A_s)$	$3.042^{+0.037}_{-0.037}$	$10^9 A_s$	$2.096^{+0.078}_{-0.077}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$n_s$	$0.968^{+0.010}_{-0.0099}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.027}_{-0.028}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.014}$
$r$	$< 0.191$	$D_{40}$	$1243^{+55}_{-41}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$y_{\text{cal}}$	$1.0007^{+0.0062}_{-0.0061}$	$D_{220}$	$5719^{+98}_{-99}$	$\sigma_8(0.38)$	$0.662^{+0.012}_{-0.012}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$D_{810}$	$2536^{+34}_{-34}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-12}$	$\sigma_8(0.51)$	$0.620^{+0.011}_{-0.012}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{2000}$	$230.7^{+4.1}_{-4.1}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.010}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$n_{\text{s},0.002}$	$0.968^{+0.010}_{-0.0099}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$< 8.88$	$Y_{\text{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.2975^{+0.0056}_{-0.0057}$
$r_{143 \times 217}^{\text{PS}}$	$0.67^{+0.31}_{-0.34}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(2.33)$	$0.3068^{+0.0060}_{-0.0062}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.592^{+0.071}_{-0.070}$	$r_{0.002}$	$< 0.187$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\text{Age}/\text{Gyr}$	$13.796^{+0.053}_{-0.053}$	$r_{0.01}$	$< 0.188$
$A^{\text{kSZ}}$	—	$z_*$	$1089.88^{+0.59}_{-0.59}$	$\ln(10^{10} A_{\text{t}})$	$-0.2^{+1.9}_{-3.9}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.51}$	$r_*$	$144.72^{+0.61}_{-0.58}$	$r_{10}$	$< 0.0967$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.44}$	$100\theta_*$	$1.04113^{+0.00073}_{-0.00075}$	$10^9 A_{\text{t}}$	$< 0.399$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.28}$	$D_M(z_*)/\text{Gpc}$	$13.900^{+0.059}_{-0.056}$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.358$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.41}$	$z_{\text{drag}}$	$1059.78^{+0.84}_{-0.80}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$r_{\text{drag}}$	$147.40^{+0.64}_{-0.62}$	$f_{2000}^{217}$	$106.6^{+4.8}_{-4.8}$
$c_{217}$	$1.0011^{+0.0043}_{-0.0040}$	$k_{\text{D}}$	$0.14052^{+0.00079}_{-0.00079}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$100\theta_{\text{D}}$	$0.16084^{+0.00048}_{-0.00049}$	$\chi_{\text{lensing}}^2$	$9.40 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$z_{\text{eq}}$	$3377^{+55}_{-56}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 1.5)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$k_{\text{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\text{lowl}}^2$	$24.8 (\nu: 1.7)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.015}$	$100\theta_{\text{eq}}$	$0.818^{+0.011}_{-0.010}$	$\chi_{\text{CamSpec}}^2$	$11512.9 (\nu: 15.0)$
$\Omega_{\text{m}}$	$0.310^{+0.015}_{-0.015}$	$100\theta_{\text{s,eq}}$	$0.4517^{+0.0056}_{-0.0053}$	$\chi_{6\text{DF}}^2$	$0.043 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1420^{+0.0023}_{-0.0024}$	$H(0.15)$	$72.95^{+0.98}_{-0.93}$	$\chi_{\text{MGS}}^2$	$1.34 (\nu: 0.1)$
$\Omega_{\text{m}} h^3$	$0.09610^{+0.00082}_{-0.00080}$	$D_M(0.15)$	$640.6^{+9.3}_{-9.5}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.7)$
$\sigma_8$	$0.808^{+0.015}_{-0.015}$	$H(0.38)$	$83.04^{+0.73}_{-0.69}$	$\chi_{\text{prior}}^2$	$7.7 (\nu: 5.9)$
$S_8$	$0.821^{+0.027}_{-0.027}$	$D_M(0.38)$	$1528^{+19}_{-19}$	$\chi_{\text{CMB}}^2$	$11944.4 (\nu: 16.8)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.51)$	$89.74^{+0.59}_{-0.56}$	$\chi_{\text{BAO}}^2$	$5.95 (\nu: 0.4)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.015}_{-0.015}$	$D_M(0.51)$	$1980^{+22}_{-23}$		

$$\bar{\chi}_{\text{eff}}^2 = 11958.11; \Delta\bar{\chi}_{\text{eff}}^2 = 0.70; R - 1 = 0.01271$$



### 13.11 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230^{+0.00040}_{-0.00040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.016}_{-0.017}$	$H(0.51)$	$89.64^{+0.72}_{-0.67}$
$\Omega_{\mathrm{c}} h^2$	$0.1195^{+0.0030}_{-0.0032}$	$\sigma_8/h^{0.5}$	$0.985^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.51)$	$1984^{+27}_{-28}$
$100\theta_{\mathrm{MC}}$	$1.04088^{+0.00078}_{-0.00079}$	$r_{\mathrm{drag}} h$	$99.4^{+2.5}_{-2.3}$	$H(0.61)$	$95.26^{+0.59}_{-0.55}$
$\tau$	$0.055^{+0.017}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.054}_{-0.057}$	$D_{\mathrm{M}}(0.61)$	$2309^{+29}_{-30}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.035}_{-0.028}$	$z_{\mathrm{re}}$	$< 9.31$	$H(2.33)$	$236.1^{+1.8}_{-1.9}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.075}_{-0.057}$	$D_{\mathrm{M}}(2.33)$	$5766^{+27}_{-27}$
$r$	$< 0.184$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.028}_{-0.028}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0062}_{-0.0063}$	$D_{40}$	$1244^{+54}_{-41}$	$\sigma_8(0.15)$	$0.748^{+0.013}_{-0.012}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-60}$	$D_{220}$	$5715^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.475^{+0.013}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-34}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.0098}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{2000}$	$230.5^{+4.2}_{-4.1}$	$\sigma_8(0.51)$	$0.620^{+0.011}_{-0.0090}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.91$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.30}_{-0.34}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00018}$	$\sigma_8(0.61)$	$0.590^{+0.010}_{-0.0085}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00015}_{-0.00018}$	$f\sigma_8(2.33)$	$0.2975^{+0.0054}_{-0.0043}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.599^{+0.076}_{-0.073}$	$\sigma_8(2.33)$	$0.3066^{+0.0059}_{-0.0046}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803^{+0.060}_{-0.060}$	$r_{0.002}$	$< 0.181$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.51}$	$z_{*}$	$1089.96^{+0.67}_{-0.67}$	$r_{0.01}$	$< 0.183$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$r_{*}$	$144.62^{+0.73}_{-0.69}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.2^{+1.9}_{-3.9}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$100\theta_{*}$	$1.04107^{+0.00076}_{-0.00078}$	$r_{10}$	$< 0.0936$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.892^{+0.069}_{-0.065}$	$10^9 A_{\mathrm{t}}$	$< 0.386$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.74^{+0.84}_{-0.84}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.346$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.31^{+0.74}_{-0.71}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14058^{+0.00082}_{-0.00084}$	$f_{2000}^{217}$	$106.7^{+4.8}_{-4.9}$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16086^{+0.00049}_{-0.00050}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$H_0$	$67.5^{+1.4}_{-1.3}$	$z_{\mathrm{eq}}$	$3388^{+69}_{-72}$	$\chi_{\mathrm{lensing}}^2$	$9.32 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.687^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00021}_{-0.00022}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.3)$
$\Omega_{\mathrm{m}}$	$0.313^{+0.019}_{-0.019}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.014}_{-0.013}$	$\chi_{\mathrm{lowl}}^2$	$25.0 (\nu: 1.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1424^{+0.0029}_{-0.0030}$	$100\theta_{\mathrm{s,eq}}$	$0.4507^{+0.0071}_{-0.0065}$	$\chi_{\mathrm{CamSpec}}^2$	$11512.8 (\nu: 15.0)$
$\Omega_{\mathrm{m}} h^3$	$0.09609^{+0.00081}_{-0.00080}$	$H(0.15)$	$72.8^{+1.2}_{-1.2}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.7)$
$\sigma_8$	$0.809^{+0.015}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$642^{+12}_{-12}$	$\chi_{\mathrm{CMB}}^2$	$11944.3 (\nu: 16.8)$
$S_8$	$0.827^{+0.033}_{-0.033}$	$H(0.38)$	$82.91^{+0.90}_{-0.84}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1532^{+23}_{-24}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.03; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.78; R - 1 = 0.00998$$



### 13.12 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02234^{+0.00039}_{-0.00038}$	$\sigma_8/h^{0.5}$	$0.983^{+0.021}_{-0.021}$	$H(0.61)$	$95.34^{+0.49}_{-0.47}$
$\Omega_{\mathrm{c}} h^2$	$0.1190^{+0.0024}_{-0.0025}$	$r_{\mathrm{drag}} h$	$99.8^{+1.9}_{-1.8}$	$D_{\mathrm{M}}(0.61)$	$2304^{+23}_{-24}$
$100\theta_{\mathrm{MC}}$	$1.04095^{+0.00073}_{-0.00076}$	$\langle d^2 \rangle^{1/2}$	$2.428^{+0.053}_{-0.051}$	$H(2.33)$	$235.8^{+1.5}_{-1.6}$
$\tau$	$0.056^{+0.017}_{-0.014}$	$z_{\mathrm{re}}$	$< 9.38$	$D_{\mathrm{M}}(2.33)$	$5762^{+23}_{-23}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.036}_{-0.029}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.076}_{-0.059}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$n_{\mathrm{s}}$	$0.9683^{+0.0099}_{-0.0099}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.027}_{-0.027}$	$\sigma_8(0.15)$	$0.747^{+0.013}_{-0.012}$
$r$	$< 0.192$	$D_{40}$	$1243^{+54}_{-41}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0061}_{-0.0061}$	$D_{220}$	$5719^{+98}_{-100}$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.010}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-60}$	$D_{810}$	$2536^{+33}_{-34}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{1420}$	$817^{+13}_{-12}$	$\sigma_8(0.51)$	$0.620^{+0.011}_{-0.0093}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{2000}$	$230.7^{+4.1}_{-4.1}$	$f\sigma_8(0.61)$	$0.4674^{+0.0098}_{-0.0097}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.9683^{+0.0099}_{-0.0099}$	$\sigma_8(0.61)$	$0.590^{+0.010}_{-0.0088}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.88$	$Y_{\mathrm{P}}$	$0.24538^{+0.00014}_{-0.00016}$	$f\sigma_8(2.33)$	$0.2977^{+0.0054}_{-0.0045}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67^{+0.30}_{-0.34}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00014}_{-0.00016}$	$\sigma_8(2.33)$	$0.3070^{+0.0058}_{-0.0047}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.072}_{-0.069}$	$r_{0.002}$	$< 0.188$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.795^{+0.053}_{-0.053}$	$r_{0.01}$	$< 0.190$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1089.87^{+0.59}_{-0.58}$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.2^{+1.9}_{-3.9}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.51}$	$r_*$	$144.73^{+0.61}_{-0.57}$	$r_{10}$	$< 0.0967$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.44}$	$100\theta_*$	$1.04114^{+0.00073}_{-0.00075}$	$10^9 A_{\mathrm{t}}$	$< 0.399$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.28}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901^{+0.059}_{-0.056}$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.359$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.40}$	$z_{\mathrm{drag}}$	$1059.79^{+0.83}_{-0.81}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$r_{\mathrm{drag}}$	$147.40^{+0.64}_{-0.61}$	$f_{2000}^{217}$	$106.5^{+4.8}_{-4.8}$
$c_{217}$	$1.0011^{+0.0043}_{-0.0040}$	$k_{\mathrm{D}}$	$0.14051^{+0.00079}_{-0.00078}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00047}_{-0.00048}$	$\chi_{\mathrm{lensing}}^2$	$9.34 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.012}_{-0.013}$	$z_{\mathrm{eq}}$	$3377^{+55}_{-58}$	$\chi_{\mathrm{simall}}^2$	$397.3 (\nu: 1.5)$
$H_0$	$67.7^{+1.1}_{-1.1}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00018}$	$\chi_{\mathrm{lowl}}^2$	$24.8 (\nu: 1.7)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.010}$	$\chi_{\mathrm{CamSpec}}^2$	$11512.8 (\nu: 14.9)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.015}_{-0.015}$	$100\theta_{\mathrm{s,eq}}$	$0.4518^{+0.0056}_{-0.0053}$	$\chi_{6\mathrm{DF}}^2$	$0.042 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0023}_{-0.0024}$	$H(0.15)$	$72.97^{+0.97}_{-0.92}$	$\chi_{\mathrm{MGS}}^2$	$1.35 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^3$	$0.09610^{+0.00081}_{-0.00080}$	$D_{\mathrm{M}}(0.15)$	$640.5^{+9.2}_{-9.4}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 (\nu: 0.7)$
$\sigma_8$	$0.809^{+0.015}_{-0.014}$	$H(0.38)$	$83.04^{+0.73}_{-0.68}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.9)$
$S_8$	$0.822^{+0.027}_{-0.028}$	$D_{\mathrm{M}}(0.38)$	$1528^{+18}_{-19}$	$\chi_{\mathrm{CMB}}^2$	$11944.3 (\nu: 16.5)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.51)$	$89.74^{+0.59}_{-0.55}$	$\chi_{\mathrm{BAO}}^2$	$5.92 (\nu: 0.4)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.014}_{-0.015}$	$D_{\mathrm{M}}(0.51)$	$1980^{+22}_{-22}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.91; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.65; R - 1 = 0.01331$$



### 13.13 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}}h^2$	0.02208	$0.02209^{+0.00057}_{-0.00056}$	$\Omega_{\mathrm{m}}h^3$	0.09590	$0.0959^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(0.15)$	649.4	$649^{+21}_{-20}$
$\Omega_{\mathrm{c}}h^2$	0.1211	$0.1210^{+0.0055}_{-0.0052}$	$\sigma_8$	0.8143	$0.814^{+0.023}_{-0.023}$	$H(0.38)$	82.39	$82.4^{+1.5}_{-1.4}$
$100\theta_{\mathrm{MC}}$	1.04075	$1.0408^{+0.0012}_{-0.0012}$	$S_8$	0.846	$0.844^{+0.064}_{-0.060}$	$D_{\mathrm{M}}(0.38)$	1545.8	$1545^{+41}_{-41}$
$\tau$	0.0528	$0.053^{+0.022}_{-0.022}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4632	$0.463^{+0.035}_{-0.033}$	$H(0.51)$	89.22	$89.3^{+1.2}_{-1.1}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0420	$3.042^{+0.043}_{-0.044}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6142	$0.613^{+0.031}_{-0.029}$	$D_{\mathrm{M}}(0.51)$	2000.6	$1999^{+48}_{-48}$
$n_{\mathrm{s}}$	0.9626	$0.963^{+0.015}_{-0.015}$	$\sigma_8/h^{0.5}$	0.9973	$0.996^{+0.042}_{-0.040}$	$H(0.61)$	94.93	$94.96^{+0.95}_{-0.86}$
$r$	0.0132	$< 0.0775$	$r_{\mathrm{drag}}h$	98.08	$98.2^{+4.1}_{-4.2}$	$D_{\mathrm{M}}(0.61)$	2326	$2325^{+52}_{-51}$
$y_{\mathrm{cal}}$	1.0006	$1.0007^{+0.0064}_{-0.0064}$	$\langle d^2 \rangle^{1/2}$	2.461	$2.46^{+0.10}_{-0.095}$	$H(2.33)$	237.00	$236.9^{+3.4}_{-3.2}$
$A_{B,\mathrm{dust}}$	4.60	$4.9^{+3.2}_{-2.1}$	$z_{\mathrm{re}}$	7.60	$7.6^{+2.1}_{-2.4}$	$D_{\mathrm{M}}(2.33)$	5780.7	$5779^{+41}_{-43}$
$A_{B,\mathrm{sync}}$	1.48	$< 4.95$	$10^9 A_{\mathrm{s}}$	2.095	$2.094^{+0.093}_{-0.090}$	$f\sigma_8(0.15)$	0.4668	$0.466^{+0.032}_{-0.030}$
$\alpha_{B,\mathrm{dust}}$	-0.52	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8849	$1.885^{+0.036}_{-0.034}$	$\sigma_8(0.15)$	0.7512	$0.751^{+0.020}_{-0.019}$
$\beta_{B,\mathrm{dust}}$	1.573	$1.60^{+0.25}_{-0.25}$	$D_{40}$	1237.0	$1241^{+42}_{-40}$	$f\sigma_8(0.38)$	0.4825	$0.482^{+0.025}_{-0.024}$
$\alpha_{B,\mathrm{sync}}$	-0.31	—	$D_{220}$	5700	$5702^{+110}_{-110}$	$\sigma_8(0.38)$	0.6646	$0.664^{+0.016}_{-0.016}$
$\beta_{B,\mathrm{sync}}$	-3.03	$-3.10^{+0.68}_{-0.74}$	$D_{810}$	2535.5	$2536^{+36}_{-35}$	$f\sigma_8(0.51)$	0.4797	$0.479^{+0.021}_{-0.021}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.34	$< 0.366$	$D_{1420}$	814.2	$814^{+14}_{-13}$	$\sigma_8(0.51)$	0.6214	$0.621^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{PS}}$	237	$242^{+60}_{-60}$	$D_{2000}$	229.52	$229.6^{+4.8}_{-4.7}$	$f\sigma_8(0.61)$	0.4737	$0.473^{+0.019}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	40.8	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	0.9626	$0.963^{+0.015}_{-0.015}$	$\sigma_8(0.61)$	0.5910	$0.591^{+0.014}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	100.4	$102^{+30}_{-30}$	$Y_{\mathrm{P}}$	0.245274	$0.24527^{+0.00023}_{-0.00026}$	$f\sigma_8(2.33)$	0.2975	$0.2974^{+0.0068}_{-0.0066}$
$A_{217}^{\mathrm{CIB}}$	46.1	$41^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246601	$0.24660^{+0.00023}_{-0.00027}$	$\sigma_8(2.33)$	0.3062	$0.3061^{+0.0072}_{-0.0070}$
$A_{143}^{\mathrm{tSZ}}$	6.47	$< 8.77$	$10^5 \mathrm{D}/\mathrm{H}$	2.641	$2.64^{+0.11}_{-0.11}$	$r_{0.002}$	0.0117	$< 0.0716$
$r_{143 \times 217}^{\mathrm{PS}}$	0.565	$0.65^{+0.31}_{-0.33}$	Age/Gyr	13.836	$13.834^{+0.093}_{-0.096}$	$r_{0.01}$	0.0124	$< 0.0745$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.81	—	$z_*$	1090.39	$1090.4^{+1.1}_{-1.1}$	$\ln(10^{10}A_{\mathrm{t}})$	-1.29	$-0.97^{+1.7}_{-3.7}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.02	—	$r_*$	144.36	$144.4^{+1.2}_{-1.2}$	$r_{10}$	0.0060	$< 0.0369$
$A^{\mathrm{kSZ}}$	0.2	—	$100\theta_*$	1.04097	$1.0410^{+0.0012}_{-0.0012}$	$10^9 A_{\mathrm{t}}$	0.028	$< 0.162$
$A_{100}^{\mathrm{dust}}$	1.01	$1.01^{+0.50}_{-0.50}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.868	$13.87^{+0.11}_{-0.12}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	0.025	$< 0.146$
$A_{143}^{\mathrm{dust}}$	0.985	$0.97^{+0.45}_{-0.46}$	$z_{\mathrm{drag}}$	1059.32	$1059.4^{+1.2}_{-1.2}$	$f_{2000}^{143}$	31.3	$31^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	0.963	$0.97^{+0.27}_{-0.27}$	$r_{\mathrm{drag}}$	147.12	$147.1^{+1.2}_{-1.3}$	$f_{2000}^{217}$	107.7	$107.7^{+5.2}_{-5.2}$
$A_{143 \times 217}^{\mathrm{dust}}$	0.996	$1.03^{+0.42}_{-0.41}$	$k_{\mathrm{D}}$	0.14061	$0.1406^{+0.0014}_{-0.0013}$	$f_{2000}^{143 \times 217}$	33.1	$33^{+6}_{-6}$
$c_{100}$	0.99756	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_{\mathrm{D}}$	0.16111	$0.16110^{+0.00070}_{-0.00068}$	$\chi_{\mathrm{BKPLANCK}}^2$	734.9	$739.3 (\nu: 3.7)$
$c_{217}$	1.00141	$1.0012^{+0.0041}_{-0.0040}$	$z_{\mathrm{eq}}$	3422	$3420^{+130}_{-120}$	$\chi_{\mathrm{simall}}^2$	396.01	$397.1 (\nu: 1.5)$
$H_0$	66.67	$66.7^{+2.4}_{-2.4}$	$k_{\mathrm{eq}}$	0.010445	$0.01044^{+0.00038}_{-0.00036}$	$\chi_{\mathrm{lowl}}^2$	24.16	$24.7 (\nu: 1.1)$
$\Omega_{\Lambda}$	0.6763	$0.677^{+0.032}_{-0.036}$	$100\theta_{\mathrm{eq}}$	0.8088	$0.809^{+0.023}_{-0.023}$	$\chi_{\mathrm{CamSpec}}^2$	7049.9	$7063.0 (\nu: 14.1)$
$\Omega_{\mathrm{m}}$	0.3237	$0.323^{+0.036}_{-0.032}$	$100\theta_{\mathrm{s,eq}}$	0.4473	$0.448^{+0.012}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	2.3	$9.2 (\nu: 7.3)$
$\Omega_{\mathrm{m}}h^2$	0.1439	$0.1438^{+0.0052}_{-0.0049}$	$H(0.15)$	72.07	$72.1^{+2.0}_{-2.0}$	$\chi_{\mathrm{CMB}}^2$	8205.0	$8224.0 (\nu: 18.8)$

Best-fit  $\chi_{\mathrm{eff}}^2 = 8207.30$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8233.28$ ;  $R - 1 = 0.00244$

$\chi_{\mathrm{eff}}^2$ : CMB - BK15\_dust: 734.95 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.00 commander\_dx12\_v3\_2\_29: 24.16 CamSpec like\_10.7HM: 7049.91



### 13.14 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02220	$0.02220^{+0.00051}_{-0.00050}$	$S_8$	0.8233	$0.823^{+0.039}_{-0.038}$	$D_M(0.51)$	1983.0	$1983^{+28}_{-28}$
$\Omega_c h^2$	0.11915	$0.1191^{+0.0032}_{-0.0031}$	$\sigma_8 \Omega_m^{0.5}$	0.4510	$0.451^{+0.021}_{-0.021}$	$H(0.61)$	95.25	$95.25^{+0.66}_{-0.62}$
$100\theta_{MC}$	1.04103	$1.0410^{+0.0010}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	0.6038	$0.604^{+0.021}_{-0.020}$	$D_M(0.61)$	2307.5	$2307^{+31}_{-31}$
$\tau$	0.0547	$0.055^{+0.021}_{-0.020}$	$\sigma_8/h^{0.5}$	0.9836	$0.984^{+0.030}_{-0.029}$	$H(2.33)$	235.85	$235.8^{+2.0}_{-2.0}$
$\ln(10^{10} A_s)$	3.0410	$3.041^{+0.043}_{-0.043}$	$r_{\text{drag}} h$	99.64	$99.7^{+2.4}_{-2.4}$	$D_M(2.33)$	5767.4	$5767^{+31}_{-32}$
$n_s$	0.9668	$0.967^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	2.431	$2.430^{+0.071}_{-0.071}$	$f\sigma_8(0.15)$	0.4556	$0.455^{+0.020}_{-0.020}$
$r$	0.0188	$< 0.0824$	$z_{\text{re}}$	7.74	$7.7^{+2.1}_{-2.2}$	$\sigma_8(0.15)$	0.7470	$0.747^{+0.018}_{-0.017}$
$y_{\text{cal}}$	1.0005	$1.0008^{+0.0065}_{-0.0063}$	$10^9 A_s$	2.093	$2.094^{+0.092}_{-0.088}$	$f\sigma_8(0.38)$	0.4739	$0.474^{+0.017}_{-0.017}$
$A_{B,\text{dust}}$	4.62	$4.9^{+3.2}_{-2.1}$	$10^9 A_s e^{-2\tau}$	1.8758	$1.877^{+0.030}_{-0.029}$	$\sigma_8(0.38)$	0.6622	$0.662^{+0.015}_{-0.015}$
$A_{B,\text{sync}}$	1.44	$< 4.97$	$D_{40}$	1229.8	$1233^{+37}_{-35}$	$f\sigma_8(0.51)$	0.4726	$0.473^{+0.015}_{-0.015}$
$\alpha_{B,\text{dust}}$	-0.50	—	$D_{220}$	5709	$5710^{+110}_{-100}$	$\sigma_8(0.51)$	0.6197	$0.620^{+0.014}_{-0.014}$
$\beta_{B,\text{dust}}$	1.578	$1.59^{+0.25}_{-0.24}$	$D_{810}$	2533.2	$2535^{+36}_{-35}$	$f\sigma_8(0.61)$	0.4676	$0.468^{+0.014}_{-0.014}$
$\alpha_{B,\text{sync}}$	-0.29	—	$D_{1420}$	814.9	$816^{+13}_{-13}$	$\sigma_8(0.61)$	0.5897	$0.590^{+0.014}_{-0.013}$
$\beta_{B,\text{sync}}$	-3.04	$-3.10^{+0.67}_{-0.75}$	$D_{2000}$	229.82	$230.0^{+4.7}_{-4.6}$	$f\sigma_8(2.33)$	0.2973	$0.2974^{+0.0068}_{-0.0065}$
$\epsilon_{\text{dust,sync}}$	-0.34	$< 0.370$	$n_{s,0.002}$	0.9668	$0.967^{+0.011}_{-0.011}$	$\sigma_8(2.33)$	0.3066	$0.3067^{+0.0070}_{-0.0068}$
$A_{100}^{\text{PS}}$	240	$242^{+60}_{-60}$	$Y_{\text{P}}$	0.245328	$0.24532^{+0.00020}_{-0.00024}$	$r_{0.002}$	0.0171	$< 0.0768$
$A_{143}^{\text{PS}}$	39.2	$40^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246654	$0.24665^{+0.00020}_{-0.00024}$	$r_{0.01}$	0.0179	$< 0.0795$
$A_{217}^{\text{PS}}$	99.8	$102^{+30}_{-40}$	$10^5 \text{D/H}$	2.617	$2.618^{+0.097}_{-0.094}$	$\ln(10^{10} A_t)$	-0.93	$-0.9^{+1.7}_{-3.6}$
$A_{217}^{\text{CIB}}$	44.8	$40^{+20}_{-20}$	Age/Gyr	13.807	$13.807^{+0.072}_{-0.073}$	$r_{10}$	0.0087	$< 0.0394$
$A_{143}^{\text{tSZ}}$	5.62	$< 8.90$	$z_*$	1090.06	$1090.05^{+0.76}_{-0.75}$	$10^9 A_t$	0.039	$< 0.173$
$r_{143 \times 217}^{\text{PS}}$	0.569	$0.65^{+0.31}_{-0.33}$	$r_*$	144.78	$144.79^{+0.80}_{-0.81}$	$10^9 A_t e^{-2\tau}$	0.035	$< 0.154$
$r_{143 \times 217}^{\text{CIB}}$	0.74	—	$100\theta_*$	1.04123	$1.0412^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	31.0	$30^{+8}_{-8}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$D_M(z_*)/\text{Gpc}$	13.904	$13.906^{+0.077}_{-0.079}$	$f_{2000}^{217}$	107.5	$107.4^{+5.1}_{-5.2}$
$A^{\text{kSZ}}$	1.6	—	$z_{\text{drag}}$	1059.47	$1059.5^{+1.1}_{-1.2}$	$f_{2000}^{143 \times 217}$	32.9	$33^{+5}_{-6}$
$A_{100}^{\text{dust}}$	1.005	$1.01^{+0.49}_{-0.50}$	$r_{\text{drag}}$	147.50	$147.52^{+0.88}_{-0.88}$	$\chi_{\text{BKPLANCK}}^2$	735.6	$740.0 (\nu: 3.6)$
$A_{143}^{\text{dust}}$	0.992	$0.97^{+0.44}_{-0.46}$	$k_{\text{D}}$	0.14031	$0.1403^{+0.0011}_{-0.0011}$	$\chi_{\text{simall}}^2$	396.19	$397.3 (\nu: 1.8)$
$A_{217}^{\text{dust}}$	0.966	$0.97^{+0.27}_{-0.27}$	$100\theta_{\text{D}}$	0.16103	$0.16104^{+0.00068}_{-0.00066}$	$\chi_{\text{lowl}}^2$	23.47	$23.7 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03^{+0.42}_{-0.40}$	$z_{\text{eq}}$	3378	$3377^{+74}_{-72}$	$\chi_{\text{CamSpec}}^2$	7050.8	$7063.3 (\nu: 13.8)$
$c_{100}$	0.99750	$0.9975^{+0.0028}_{-0.0027}$	$k_{\text{eq}}$	0.010310	$0.01031^{+0.00023}_{-0.00022}$	$\chi_{6\text{DF}}^2$	0.030	$0.064 (\nu: 0.0)$
$c_{217}$	1.00140	$1.0012^{+0.0040}_{-0.0039}$	$100\theta_{\text{eq}}$	0.8173	$0.818^{+0.014}_{-0.013}$	$\chi_{\text{MGS}}^2$	1.22	$1.30 (\nu: 0.1)$
$H_0$	67.55	$67.6^{+1.4}_{-1.4}$	$100\theta_{s,\text{eq}}$	0.4516	$0.4517^{+0.0070}_{-0.0069}$	$\chi_{\text{DR12BAO}}^2$	4.37	$4.9 (\nu: 1.5)$
$\Omega_{\Lambda}$	0.6888	$0.689^{+0.018}_{-0.019}$	$H(0.15)$	72.82	$72.8^{+1.2}_{-1.2}$	$\chi_{\text{prior}}^2$	2.3	$9.2 (\nu: 7.3)$
$\Omega_{\text{m}}$	0.3112	$0.311^{+0.019}_{-0.018}$	$D_M(0.15)$	641.8	$642^{+12}_{-12}$	$\chi_{\text{BAO}}^2$	5.62	$6.3 (\nu: 1.0)$
$\Omega_{\text{m}} h^2$	0.14200	$0.1420^{+0.0031}_{-0.0030}$	$H(0.38)$	82.92	$82.94^{+0.93}_{-0.89}$	$\chi_{\text{CMB}}^2$	8206.1	$8224.3 (\nu: 18.1)$
$\Omega_{\text{m}} h^3$	0.09592	$0.0959^{+0.0012}_{-0.0012}$	$D_M(0.38)$	1530.7	$1530^{+24}_{-24}$			
$\sigma_8$	0.8084	$0.809^{+0.020}_{-0.019}$	$H(0.51)$	89.63	$89.64^{+0.78}_{-0.73}$			

Best-fit  $\chi_{\text{eff}}^2 = 8214.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 8239.80$ ;  $R - 1 = 0.00717$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - BK15\_dust: 735.63 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.19 commander\_dx12\_v3\_2\_29: 23.46 CamSpec like\_10.7HM: 7050.82



### 13.15 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02211	$0.02212^{+0.00055}_{-0.00054}$	$\sigma_8$	0.8124	$0.812^{+0.016}_{-0.016}$	$D_M(0.38)$	1542.3	$1541^{+32}_{-32}$
$\Omega_c h^2$	0.12065	$0.1205^{+0.0041}_{-0.0040}$	$S_8$	0.8399	$0.838^{+0.042}_{-0.041}$	$H(0.51)$	89.32	$89.36^{+0.97}_{-0.91}$
$100\theta_{MC}$	1.04081	$1.0408^{+0.0012}_{-0.0012}$	$\sigma_8 \Omega_m^{0.5}$	0.4601	$0.459^{+0.023}_{-0.023}$	$D_M(0.51)$	1996.5	$1995^{+37}_{-38}$
$\tau$	0.0529	$0.053^{+0.021}_{-0.021}$	$\sigma_8 \Omega_m^{0.25}$	0.6114	$0.610^{+0.020}_{-0.020}$	$H(0.61)$	95.00	$95.04^{+0.80}_{-0.75}$
$\ln(10^{10} A_s)$	3.0410	$3.041^{+0.039}_{-0.039}$	$\sigma_8/h^{0.5}$	0.9935	$0.992^{+0.027}_{-0.027}$	$D_M(0.61)$	2322.0	$2320^{+40}_{-41}$
$n_s$	0.9632	$0.964^{+0.013}_{-0.013}$	$r_{drag} h$	98.44	$98.6^{+3.2}_{-3.1}$	$H(2.33)$	236.72	$236.6^{+2.5}_{-2.4}$
$r$	0.0132	$< 0.0789$	$\langle d^2 \rangle^{1/2}$	2.453	$2.450^{+0.064}_{-0.064}$	$D_M(2.33)$	5777.7	$5776^{+37}_{-38}$
$y_{cal}$	1.0006	$1.0007^{+0.0064}_{-0.0064}$	$z_{re}$	7.61	$7.6^{+2.0}_{-2.3}$	$f\sigma_8(0.15)$	0.4639	$0.463^{+0.021}_{-0.021}$
$A_{B,dust}$	4.61	$4.9^{+3.1}_{-2.1}$	$10^9 A_s$	2.093	$2.092^{+0.083}_{-0.080}$	$\sigma_8(0.15)$	0.7498	$0.749^{+0.014}_{-0.014}$
$A_{B,sync}$	1.47	$< 4.95$	$10^9 A_s e^{-2\tau}$	1.8824	$1.882^{+0.029}_{-0.029}$	$f\sigma_8(0.38)$	0.4802	$0.479^{+0.016}_{-0.016}$
$\alpha_{B,dust}$	-0.52	—	$D_{40}$	1235.3	$1239^{+37}_{-35}$	$\sigma_8(0.38)$	0.6637	$0.663^{+0.013}_{-0.013}$
$\beta_{B,dust}$	1.576	$1.60^{+0.24}_{-0.24}$	$D_{220}$	5703	$5705^{+110}_{-100}$	$f\sigma_8(0.51)$	0.4777	$0.477^{+0.013}_{-0.014}$
$\alpha_{B,sync}$	-0.27	—	$D_{810}$	2534.3	$2535^{+35}_{-34}$	$\sigma_8(0.51)$	0.6207	$0.620^{+0.012}_{-0.012}$
$\beta_{B,sync}$	-3.04	$-3.10^{+0.68}_{-0.74}$	$D_{1420}$	814.0	$815^{+14}_{-13}$	$f\sigma_8(0.61)$	0.4720	$0.471^{+0.012}_{-0.012}$
$\epsilon_{dust,sync}$	-0.34	$< 0.364$	$D_{2000}$	229.47	$229.6^{+4.8}_{-4.6}$	$\sigma_8(0.61)$	0.5903	$0.590^{+0.012}_{-0.011}$
$A_{100}^{PS}$	241	$242^{+60}_{-70}$	$n_{s,0.002}$	0.9632	$0.964^{+0.013}_{-0.013}$	$f\sigma_8(2.33)$	0.2973	$0.2972^{+0.0061}_{-0.0060}$
$A_{143}^{PS}$	39.3	$41^{+20}_{-20}$	$Y_P$	0.245289	$0.24529^{+0.00022}_{-0.00026}$	$\sigma_8(2.33)$	0.3061	$0.3061^{+0.0068}_{-0.0067}$
$A_{217}^{PS}$	99.6	$102^{+30}_{-30}$	$Y_P^{BBN}$	0.246615	$0.24661^{+0.00022}_{-0.00026}$	$r_{0.002}$	0.0118	$< 0.0729$
$A_{217}^{CIB}$	45.3	$41^{+20}_{-20}$	$10^5 D/H$	2.635	$2.63^{+0.11}_{-0.10}$	$r_{0.01}$	0.0125	$< 0.0759$
$A_{143}^{tSZ}$	5.64	$< 8.85$	Age/Gyr	13.830	$13.827^{+0.084}_{-0.086}$	$\ln(10^{10} A_t)$	-1.29	$-0.9^{+1.7}_{-3.6}$
$r_{143 \times 217}^{PS}$	0.562	$0.65^{+0.31}_{-0.33}$	$z_*$	1090.31	$1090.28^{+0.92}_{-0.91}$	$r_{10}$	0.0060	$< 0.0376$
$r_{143 \times 217}^{CIB}$	0.75	—	$r_*$	144.46	$144.50^{+0.94}_{-0.95}$	$10^9 A_t$	0.028	$< 0.165$
$\xi^{tSZ \times CIB}$	0.01	—	$100\theta_*$	1.04101	$1.0410^{+0.0011}_{-0.0012}$	$10^9 A_t e^{-2\tau}$	0.025	$< 0.148$
$A^{kSZ}$	1.6	—	$D_M(z_*)/\text{Gpc}$	13.877	$13.880^{+0.088}_{-0.089}$	$f_{2000}^{143}$	31.3	$31^{+8}_{-8}$
$A_{100}^{dust}$	1.00	$1.01^{+0.50}_{-0.50}$	$z_{drag}$	1059.40	$1059.4^{+1.2}_{-1.2}$	$f_{2000}^{217}$	107.8	$107.7^{+5.1}_{-5.2}$
$A_{143}^{dust}$	0.986	$0.97^{+0.45}_{-0.46}$	$r_{drag}$	147.21	$147.25^{+0.96}_{-0.97}$	$f_{2000}^{143 \times 217}$	33.2	$33^{+5}_{-6}$
$A_{217}^{dust}$	0.961	$0.97^{+0.27}_{-0.27}$	$k_D$	0.14054	$0.1405^{+0.0012}_{-0.0011}$	$\chi^2_{lensing}$	9.00	$9.56 (\nu: 0.4)$
$A_{143 \times 217}^{dust}$	0.999	$1.03^{+0.42}_{-0.40}$	$100\theta_D$	0.16108	$0.16108^{+0.00069}_{-0.00067}$	$\chi^2_{BKPLANCK}$	735.2	$739.4 (\nu: 3.5)$
$c_{100}$	0.99746	$0.9975^{+0.0028}_{-0.0027}$	$z_{eq}$	3412	$3408^{+93}_{-91}$	$\chi^2_{small}$	396.01	$397.0 (\nu: 1.3)$
$c_{217}$	1.00143	$1.0012^{+0.0041}_{-0.0040}$	$k_{eq}$	0.010412	$0.01040^{+0.00028}_{-0.00028}$	$\chi^2_{lowl}$	23.99	$24.4 (\nu: 0.8)$
$H_0$	66.87	$67.0^{+1.9}_{-1.8}$	$100\theta_{eq}$	0.8108	$0.812^{+0.017}_{-0.017}$	$\chi^2_{CamSpec}$	7049.8	$7062.6 (\nu: 13.2)$
$\Omega_\Lambda$	0.6793	$0.680^{+0.025}_{-0.027}$	$100\theta_{s,eq}$	0.4483	$0.4487^{+0.0089}_{-0.0087}$	$\chi^2_{prior}$	2.4	$9.2 (\nu: 7.3)$
$\Omega_m$	0.3207	$0.320^{+0.027}_{-0.025}$	$H(0.15)$	72.25	$72.3^{+1.6}_{-1.6}$	$\chi^2_{CMB}$	8214.0	$8233.0 (\nu: 18.7)$
$\Omega_m h^2$	0.14341	$0.1432^{+0.0039}_{-0.0038}$	$D_M(0.15)$	647.6	$647^{+16}_{-16}$			
$\Omega_m h^3$	0.09590	$0.0959^{+0.0012}_{-0.0012}$	$H(0.38)$	82.51	$82.6^{+1.2}_{-1.1}$			

Best-fit  $\chi^2_{eff} = 8216.43$ ;  $\bar{\chi}^2_{eff} = 8242.24$ ;  $R - 1 = 0.00337$

$\chi^2_{eff}$ : CMB - smicadx12.Dec5.ftl\_mv2.ndclpp\_p.teb\_consext8: 9.00 BK15.dust: 735.17 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.01 commander\_dx12\_v3\_2.29: 23.99 CamSpec like\_10.7HM: 7049.83



### 13.16 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02219	$0.02221^{+0.00051}_{-0.00050}$	$S_8$	0.8268	$0.826^{+0.031}_{-0.030}$	$D_M(0.51)$	1985.4	$1984^{+26}_{-26}$
$\Omega_c h^2$	0.11942	$0.1193^{+0.0028}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	0.4529	$0.452^{+0.017}_{-0.017}$	$H(0.61)$	95.20	$95.24^{+0.62}_{-0.60}$
$100\theta_{MC}$	1.04098	$1.0410^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	0.6055	$0.605^{+0.016}_{-0.016}$	$D_M(0.61)$	2310.1	$2308^{+28}_{-29}$
$\tau$	0.0546	$0.056^{+0.020}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9860	$0.986^{+0.023}_{-0.022}$	$H(2.33)$	236.00	$235.9^{+1.8}_{-1.8}$
$\ln(10^{10} A_s)$	3.0425	$3.045^{+0.038}_{-0.037}$	$r_{drag} h$	99.42	$99.6^{+2.2}_{-2.1}$	$D_M(2.33)$	5769.3	$5768^{+31}_{-31}$
$n_s$	0.9658	$0.967^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	2.437	$2.436^{+0.055}_{-0.055}$	$f\sigma_8(0.15)$	0.4573	$0.457^{+0.016}_{-0.016}$
$r$	0.0130	$< 0.0822$	$z_{re}$	7.74	$7.9^{+1.9}_{-2.0}$	$\sigma_8(0.15)$	0.7480	$0.749^{+0.015}_{-0.014}$
$y_{cal}$	1.0008	$1.0009^{+0.0063}_{-0.0062}$	$10^9 A_s$	2.096	$2.101^{+0.082}_{-0.077}$	$f\sigma_8(0.38)$	0.4754	$0.475^{+0.013}_{-0.013}$
$A_{B,dust}$	4.59	$4.9^{+3.2}_{-2.1}$	$10^9 A_s e^{-2\tau}$	1.8789	$1.878^{+0.028}_{-0.027}$	$\sigma_8(0.38)$	0.6629	$0.664^{+0.013}_{-0.012}$
$A_{B,sync}$	1.46	$< 4.95$	$D_{40}$	1231.2	$1235^{+36}_{-34}$	$f\sigma_8(0.51)$	0.4738	$0.474^{+0.012}_{-0.011}$
$\alpha_{B,dust}$	-0.50	—	$D_{220}$	5715	$5714^{+110}_{-100}$	$\sigma_8(0.51)$	0.6203	$0.621^{+0.012}_{-0.012}$
$\beta_{B,dust}$	1.573	$1.59^{+0.25}_{-0.24}$	$D_{810}$	2535.6	$2536^{+34}_{-34}$	$f\sigma_8(0.61)$	0.4687	$0.469^{+0.011}_{-0.011}$
$\alpha_{B,sync}$	-0.41	—	$D_{1420}$	815.3	$816^{+13}_{-13}$	$\sigma_8(0.61)$	0.5902	$0.591^{+0.012}_{-0.011}$
$\beta_{B,sync}$	-3.03	$-3.10^{+0.67}_{-0.75}$	$D_{2000}$	229.91	$230.1^{+4.6}_{-4.5}$	$f\sigma_8(2.33)$	0.2975	$0.2979^{+0.0060}_{-0.0057}$
$\epsilon_{dust,sync}$	-0.32	$< 0.356$	$n_{s,0.002}$	0.9658	$0.967^{+0.011}_{-0.011}$	$\sigma_8(2.33)$	0.3067	$0.3071^{+0.0064}_{-0.0061}$
$A_{100}^{PS}$	240	$242^{+60}_{-70}$	$Y_P$	0.245321	$0.24533^{+0.00020}_{-0.00024}$	$r_{0.002}$	0.0117	$< 0.0764$
$A_{143}^{PS}$	40.7	$41^{+20}_{-20}$	$Y_P^{BBN}$	0.246648	$0.24665^{+0.00020}_{-0.00024}$	$r_{0.01}$	0.0123	$< 0.0793$
$A_{217}^{PS}$	100.5	$102^{+30}_{-30}$	$10^5 D/H$	2.620	$2.617^{+0.096}_{-0.093}$	$\ln(10^{10} A_t)$	-1.30	$-0.9^{+1.7}_{-3.6}$
$A_{217}^{CIB}$	44.9	$40^{+20}_{-20}$	Age/Gyr	13.812	$13.808^{+0.070}_{-0.072}$	$r_{10}$	0.0060	$< 0.0392$
$A_{143}^{tSZ}$	5.78	$< 8.90$	$z_*$	1090.10	$1090.06^{+0.75}_{-0.74}$	$10^9 A_t$	0.027	$< 0.173$
$r_{143 \times 217}^{PS}$	0.583	$0.65^{+0.31}_{-0.33}$	$r_*$	144.72	$144.75^{+0.73}_{-0.73}$	$10^9 A_t e^{-2\tau}$	0.024	$< 0.154$
$r_{143 \times 217}^{CIB}$	0.76	—	$100\theta_*$	1.04118	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	31.0	$30^{+8}_{-8}$
$\xi^{tSZ \times CIB}$	0.10	—	$D_M(z_*)/\text{Gpc}$	13.899	$13.902^{+0.072}_{-0.073}$	$f_{2000}^{217}$	107.6	$107.4^{+5.1}_{-5.2}$
$A^{kSZ}$	1.3	—	$z_{drag}$	1059.47	$1059.5^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	32.9	$33^{+5}_{-6}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.50}$	$r_{drag}$	147.45	$147.47^{+0.80}_{-0.81}$	$\chi_{lensing}^2$	8.90	$9.33 (\nu: 0.3)$
$A_{143}^{dust}$	0.977	$0.97^{+0.45}_{-0.46}$	$k_D$	0.14035	$0.1403^{+0.0011}_{-0.0011}$	$\chi_{BKPLANCK}^2$	735.6	$739.8 (\nu: 3.4)$
$A_{217}^{dust}$	0.966	$0.97^{+0.27}_{-0.27}$	$100\theta_D$	0.16104	$0.16103^{+0.00068}_{-0.00066}$	$\chi_{simall}^2$	396.19	$397.4 (\nu: 1.8)$
$A_{143 \times 217}^{dust}$	1.002	$1.03^{+0.42}_{-0.40}$	$z_{eq}$	3384	$3380^{+65}_{-65}$	$\chi_{lowl}^2$	23.50	$23.9 (\nu: 0.6)$
$c_{100}$	0.99759	$0.9975^{+0.0028}_{-0.0027}$	$k_{eq}$	0.010329	$0.01032^{+0.00020}_{-0.00020}$	$\chi_{CamSpec}^2$	7050.6	$7062.9 (\nu: 13.1)$
$c_{217}$	1.00142	$1.0012^{+0.0040}_{-0.0039}$	$100\theta_{eq}$	0.8161	$0.817^{+0.012}_{-0.012}$	$\chi_{6DF}^2$	0.047	$0.064 (\nu: 0.0)$
$H_0$	67.43	$67.5^{+1.3}_{-1.3}$	$100\theta_{s,eq}$	0.4510	$0.4514^{+0.0062}_{-0.0061}$	$\chi_{MGS}^2$	1.10	$1.24 (\nu: 0.1)$
$\Omega_\Lambda$	0.6871	$0.688^{+0.017}_{-0.017}$	$H(0.15)$	72.72	$72.8^{+1.1}_{-1.1}$	$\chi_{DR12BAO}^2$	4.77	$5.0 (\nu: 1.3)$
$\Omega_m$	0.3129	$0.312^{+0.017}_{-0.017}$	$D_M(0.15)$	642.9	$642^{+11}_{-11}$	$\chi_{prior}^2$	2.3	$9.2 (\nu: 7.3)$
$\Omega_m h^2$	0.14226	$0.1421^{+0.0027}_{-0.0027}$	$H(0.38)$	82.85	$82.91^{+0.86}_{-0.83}$	$\chi_{CMB}^2$	8214.8	$8233.2 (\nu: 18.3)$
$\Omega_m h^3$	0.09592	$0.0959^{+0.0012}_{-0.0011}$	$D_M(0.38)$	1532.8	$1531^{+22}_{-22}$	$\chi_{BAO}^2$	5.92	$6.3 (\nu: 0.9)$
$\sigma_8$	0.8096	$0.810^{+0.016}_{-0.016}$	$H(0.51)$	89.57	$89.62^{+0.73}_{-0.69}$			

Best-fit  $\chi_{eff}^2 = 8223.00$ ;  $\bar{\chi}_{eff}^2 = 8248.72$ ;  $R - 1 = 0.00847$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.05 MGS: 1.10 DR12BAO: 4.77 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.90 BK15\_dust: 735.61 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.19 commander\_dx12\_v3.2.29: 23.50 CamSpec like\_10.7HM: 7050.59



### 13.17 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02210^{+0.00057}_{-0.00055}$	$\Omega_{\mathrm{m}}h^3$	$0.0959^{+0.0012}_{-0.0012}$	$D_{\mathrm{M}}(0.15)$	$649^{+21}_{-20}$
$\Omega_{\mathrm{c}}h^2$	$0.1209^{+0.0055}_{-0.0052}$	$\sigma_8$	$0.815^{+0.023}_{-0.021}$	$H(0.38)$	$82.5^{+1.5}_{-1.4}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0012}_{-0.0012}$	$S_8$	$0.845^{+0.064}_{-0.060}$	$D_{\mathrm{M}}(0.38)$	$1544^{+41}_{-40}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.463^{+0.035}_{-0.033}$	$H(0.51)$	$89.3^{+1.2}_{-1.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.041}_{-0.030}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614^{+0.031}_{-0.029}$	$D_{\mathrm{M}}(0.51)$	$1999^{+48}_{-48}$
$n_{\mathrm{s}}$	$0.963^{+0.015}_{-0.015}$	$\sigma_8/h^{0.5}$	$0.997^{+0.042}_{-0.040}$	$H(0.61)$	$94.98^{+0.95}_{-0.85}$
$r$	$< 0.0777$	$r_{\mathrm{drag}}h$	$98.2^{+4.1}_{-4.2}$	$D_{\mathrm{M}}(0.61)$	$2324^{+51}_{-51}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0064}_{-0.0064}$	$\langle d^2 \rangle^{1/2}$	$2.461^{+0.099}_{-0.094}$	$H(2.33)$	$236.9^{+3.4}_{-3.1}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.2}_{-2.1}$	$z_{\mathrm{re}}$	$< 9.47$	$D_{\mathrm{M}}(2.33)$	$5779^{+41}_{-43}$
$A_{B,\mathrm{sync}}$	$< 4.96$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.088}_{-0.063}$	$f\sigma_8(0.15)$	$0.466^{+0.032}_{-0.030}$
$\alpha_{B,\mathrm{dust}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884^{+0.036}_{-0.034}$	$\sigma_8(0.15)$	$0.752^{+0.019}_{-0.017}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{40}$	$1241^{+42}_{-40}$	$f\sigma_8(0.38)$	$0.482^{+0.025}_{-0.024}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{220}$	$5702^{+110}_{-110}$	$\sigma_8(0.38)$	$0.665^{+0.015}_{-0.013}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.68}_{-0.74}$	$D_{810}$	$2536^{+36}_{-35}$	$f\sigma_8(0.51)$	$0.479^{+0.021}_{-0.021}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.364$	$D_{1420}$	$814^{+14}_{-13}$	$\sigma_8(0.51)$	$0.622^{+0.014}_{-0.012}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{2000}$	$229.6^{+4.8}_{-4.7}$	$f\sigma_8(0.61)$	$0.474^{+0.018}_{-0.018}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.963^{+0.015}_{-0.015}$	$\sigma_8(0.61)$	$0.591^{+0.013}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$Y_{\mathrm{P}}$	$0.24528^{+0.00023}_{-0.00026}$	$f\sigma_8(2.33)$	$0.2978^{+0.0065}_{-0.0048}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24660^{+0.00023}_{-0.00026}$	$\sigma_8(2.33)$	$0.3066^{+0.0068}_{-0.0049}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.77$	$10^5\mathrm{D}/\mathrm{H}$	$2.64^{+0.11}_{-0.11}$	$r_{0.002}$	$< 0.0719$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.832^{+0.092}_{-0.096}$	$r_{0.01}$	$< 0.0747$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$z_*$	$1090.4^{+1.0}_{-1.0}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.97^{+1.7}_{-3.7}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$r_*$	$144.4^{+1.2}_{-1.3}$	$r_{10}$	$< 0.0369$
$A^{\mathrm{kSZ}}$	—	$100\theta_*$	$1.0410^{+0.0012}_{-0.0012}$	$10^9 A_{\mathrm{t}}$	$< 0.163$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.87^{+0.11}_{-0.12}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.146$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.46}$	$z_{\mathrm{drag}}$	$1059.4^{+1.2}_{-1.2}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_{\mathrm{drag}}$	$147.1^{+1.2}_{-1.3}$	$f_{2000}^{217}$	$107.6^{+5.1}_{-5.2}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$k_{\mathrm{D}}$	$0.1406^{+0.0014}_{-0.0013}$	$f_{2000}^{143\times 217}$	$33^{+5}_{-6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_{\mathrm{D}}$	$0.16110^{+0.00069}_{-0.00068}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.2 (\nu: 3.6)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$z_{\mathrm{eq}}$	$3418^{+130}_{-120}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.5)$
$H_0$	$66.8^{+2.4}_{-2.4}$	$k_{\mathrm{eq}}$	$0.01043^{+0.00039}_{-0.00036}$	$\chi_{\mathrm{lowl}}^2$	$24.7 (\nu: 1.1)$
$\Omega_{\Lambda}$	$0.677^{+0.032}_{-0.036}$	$100\theta_{\mathrm{eq}}$	$0.810^{+0.023}_{-0.023}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.9 (\nu: 13.9)$
$\Omega_{\mathrm{m}}$	$0.323^{+0.036}_{-0.032}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.448^{+0.012}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$9.2 (\nu: 7.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1437^{+0.0053}_{-0.0049}$	$H(0.15)$	$72.2^{+2.0}_{-2.0}$	$\chi_{\mathrm{CMB}}^2$	$8223.8 (\nu: 18.4)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8233.01; R - 1 = 0.00318$$



### 13.18 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02221^{+0.00051}_{-0.00050}$	$S_8$	$0.824^{+0.039}_{-0.037}$	$D_M(0.51)$	$1982^{+28}_{-28}$
$\Omega_c h^2$	$0.1191^{+0.0032}_{-0.0031}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.021}_{-0.020}$	$H(0.61)$	$95.26^{+0.66}_{-0.62}$
$100\theta_{MC}$	$1.0410^{+0.0010}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	$0.604^{+0.020}_{-0.019}$	$D_M(0.61)$	$2307^{+31}_{-31}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.984^{+0.029}_{-0.028}$	$H(2.33)$	$235.8^{+2.0}_{-2.0}$
$\ln(10^{10} A_s)$	$3.043^{+0.042}_{-0.032}$	$r_{\text{drag}} h$	$99.7^{+2.4}_{-2.4}$	$D_M(2.33)$	$5767^{+31}_{-32}$
$n_s$	$0.967^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.070}_{-0.066}$	$f\sigma_8(0.15)$	$0.456^{+0.020}_{-0.019}$
$r$	$< 0.0827$	$z_{\text{re}}$	$< 9.57$	$\sigma_8(0.15)$	$0.748^{+0.018}_{-0.015}$
$y_{\text{cal}}$	$1.0008^{+0.0064}_{-0.0063}$	$10^9 A_s$	$2.098^{+0.089}_{-0.067}$	$f\sigma_8(0.38)$	$0.474^{+0.017}_{-0.016}$
$A_{B,\text{dust}}$	$4.9^{+3.2}_{-2.1}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.030}_{-0.029}$	$\sigma_8(0.38)$	$0.663^{+0.015}_{-0.012}$
$A_{B,\text{sync}}$	$< 4.97$	$D_{40}$	$1233^{+37}_{-35}$	$f\sigma_8(0.51)$	$0.473^{+0.015}_{-0.014}$
$\alpha_{B,\text{dust}}$	—	$D_{220}$	$5710^{+110}_{-100}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.011}$
$\beta_{B,\text{dust}}$	$1.59^{+0.25}_{-0.24}$	$D_{810}$	$2535^{+35}_{-35}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.013}$
$\alpha_{B,\text{sync}}$	—	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.010}$
$\beta_{B,\text{sync}}$	$-3.10^{+0.67}_{-0.75}$	$D_{2000}$	$230.1^{+4.7}_{-4.6}$	$f\sigma_8(2.33)$	$0.2977^{+0.0067}_{-0.0051}$
$\epsilon_{\text{dust,sync}}$	$< 0.361$	$n_{s,0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(2.33)$	$0.3070^{+0.0068}_{-0.0051}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$Y_P$	$0.24533^{+0.00020}_{-0.00024}$	$r_{0.002}$	$< 0.0774$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24665^{+0.00020}_{-0.00024}$	$r_{0.01}$	$< 0.0802$
$A_{217}^{\text{PS}}$	$102^{+30}_{-40}$	$10^5 \text{D/H}$	$2.617^{+0.096}_{-0.094}$	$\ln(10^{10} A_t)$	$-0.9^{+1.7}_{-3.6}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$\text{Age/Gyr}$	$13.807^{+0.071}_{-0.073}$	$r_{10}$	$< 0.0397$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$z_*$	$1090.05^{+0.76}_{-0.76}$	$10^9 A_t$	$< 0.174$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$r_*$	$144.79^{+0.80}_{-0.80}$	$10^9 A_t e^{-2\tau}$	$< 0.155$
$r_{143 \times 217}^{\text{CIB}}$	—	$100\theta_*$	$1.0412^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_M(z_*)/\text{Gpc}$	$13.906^{+0.077}_{-0.079}$	$f_{2000}^{217}$	$107.4^{+5.1}_{-5.2}$
$A^{\text{kSZ}}$	—	$z_{\text{drag}}$	$1059.5^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.49}$	$r_{\text{drag}}$	$147.52^{+0.87}_{-0.88}$	$\chi_{\text{BKPLANCK}}^2$	$739.9 (\nu: 3.5)$
$A_{143}^{\text{dust}}$	$0.97^{+0.44}_{-0.46}$	$k_D$	$0.1403^{+0.0011}_{-0.0011}$	$\chi_{\text{simall}}^2$	$397.2 (\nu: 1.9)$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_D$	$0.16104^{+0.00068}_{-0.00066}$	$\chi_{\text{lowl}}^2$	$23.8 (\nu: 0.6)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.40}$	$z_{\text{eq}}$	$3376^{+74}_{-72}$	$\chi_{\text{CamSpec}}^2$	$7063.2 (\nu: 13.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$k_{\text{eq}}$	$0.01031^{+0.00023}_{-0.00022}$	$\chi_{6\text{DF}}^2$	$0.062 (\nu: 0.0)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$100\theta_{\text{eq}}$	$0.818^{+0.013}_{-0.013}$	$\chi_{\text{MGS}}^2$	$1.31 (\nu: 0.1)$
$H_0$	$67.6^{+1.4}_{-1.4}$	$100\theta_{s,\text{eq}}$	$0.4517^{+0.0070}_{-0.0069}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.4)$
$\Omega_\Lambda$	$0.689^{+0.018}_{-0.019}$	$H(0.15)$	$72.9^{+1.2}_{-1.2}$	$\chi_{\text{prior}}^2$	$9.2 (\nu: 7.3)$
$\Omega_m$	$0.311^{+0.019}_{-0.018}$	$D_M(0.15)$	$642^{+12}_{-12}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 1.0)$
$\Omega_m h^2$	$0.1419^{+0.0031}_{-0.0030}$	$H(0.38)$	$82.94^{+0.93}_{-0.88}$	$\chi_{\text{CMB}}^2$	$8224.1 (\nu: 17.7)$
$\Omega_m h^3$	$0.0959^{+0.0012}_{-0.0011}$	$D_M(0.38)$	$1530^{+24}_{-24}$		
$\sigma_8$	$0.809^{+0.020}_{-0.017}$	$H(0.51)$	$89.65^{+0.78}_{-0.72}$		

$$\bar{\chi}_{\text{eff}}^2 = 8239.57; R - 1 = 0.00860$$



### 13.19 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213^{+0.00054}_{-0.00053}$	$\sigma_8$	$0.812^{+0.016}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1540^{+31}_{-31}$
$\Omega_{\mathrm{c}}h^2$	$0.1203^{+0.0039}_{-0.0039}$	$S_8$	$0.837^{+0.042}_{-0.041}$	$H(0.51)$	$89.39^{+0.95}_{-0.89}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0011}_{-0.0012}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.459^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.51)$	$1994^{+36}_{-37}$
$\tau$	$0.054^{+0.018}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.020}_{-0.020}$	$H(0.61)$	$95.06^{+0.79}_{-0.74}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.037}_{-0.028}$	$\sigma_8/h^{0.5}$	$0.992^{+0.026}_{-0.027}$	$D_{\mathrm{M}}(0.61)$	$2319^{+39}_{-40}$
$n_{\mathrm{s}}$	$0.964^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}h$	$98.7^{+3.1}_{-3.0}$	$H(2.33)$	$236.5^{+2.4}_{-2.4}$
$r$	$< 0.0796$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.064}_{-0.064}$	$D_{\mathrm{M}}(2.33)$	$5775^{+37}_{-38}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0064}_{-0.0064}$	$z_{\mathrm{re}}$	$< 9.38$	$f\sigma_8(0.15)$	$0.463^{+0.021}_{-0.021}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.1}_{-2.1}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.080}_{-0.057}$	$\sigma_8(0.15)$	$0.750^{+0.014}_{-0.013}$
$A_{B,\mathrm{sync}}$	$< 4.95$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882^{+0.029}_{-0.028}$	$f\sigma_8(0.38)$	$0.479^{+0.016}_{-0.016}$
$\alpha_{B,\mathrm{dust}}$	—	$D_{40}$	$1239^{+37}_{-35}$	$\sigma_8(0.38)$	$0.664^{+0.012}_{-0.010}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.24}_{-0.24}$	$D_{220}$	$5705^{+110}_{-100}$	$f\sigma_8(0.51)$	$0.477^{+0.013}_{-0.014}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2535^{+35}_{-34}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0092}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.68}_{-0.75}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.61)$	$0.472^{+0.012}_{-0.012}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.364$	$D_{2000}$	$229.7^{+4.8}_{-4.6}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0087}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-70}$	$n_{\mathrm{s},0.002}$	$0.964^{+0.013}_{-0.012}$	$f\sigma_8(2.33)$	$0.2976^{+0.0059}_{-0.0044}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24529^{+0.00021}_{-0.00025}$	$\sigma_8(2.33)$	$0.3065^{+0.0065}_{-0.0048}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24662^{+0.00021}_{-0.00026}$	$r_{0.002}$	$< 0.0740$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$10^5\mathrm{D}/\mathrm{H}$	$2.63^{+0.10}_{-0.099}$	$r_{0.01}$	$< 0.0767$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$\mathrm{Age}/\mathrm{Gyr}$	$13.825^{+0.083}_{-0.085}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.9^{+1.7}_{-3.6}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$z_*$	$1090.25^{+0.90}_{-0.90}$	$r_{10}$	$< 0.0379$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$r_*$	$144.53^{+0.92}_{-0.92}$	$10^9 A_{\mathrm{t}}$	$< 0.167$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$100\theta_*$	$1.0411^{+0.0011}_{-0.0012}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.150$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.883^{+0.087}_{-0.087}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.51}$	$z_{\mathrm{drag}}$	$1059.4^{+1.2}_{-1.2}$	$f_{2000}^{217}$	$107.6^{+5.1}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.46}$	$r_{\mathrm{drag}}$	$147.27^{+0.94}_{-0.95}$	$f_{2000}^{143\times 217}$	$33^{+5}_{-6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$k_{\mathrm{D}}$	$0.1405^{+0.0012}_{-0.0011}$	$\chi_{\mathrm{lensing}}^2$	$9.54 (\nu: 0.4)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.40}$	$100\theta_{\mathrm{D}}$	$0.16107^{+0.00068}_{-0.00067}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.4 (\nu: 3.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{eq}}$	$3405^{+89}_{-89}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.3)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$k_{\mathrm{eq}}$	$0.01039^{+0.00027}_{-0.00027}$	$\chi_{\mathrm{lowl}}^2$	$24.4 (\nu: 0.7)$
$H_0$	$67.0^{+1.8}_{-1.7}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.017}_{-0.016}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.5 (\nu: 13.0)$
$\Omega_{\Lambda}$	$0.681^{+0.024}_{-0.025}$	$100\theta_{\mathrm{s,eq}}$	$0.4490^{+0.0087}_{-0.0084}$	$\chi_{\mathrm{prior}}^2$	$9.2 (\nu: 7.3)$
$\Omega_{\mathrm{m}}$	$0.319^{+0.025}_{-0.024}$	$H(0.15)$	$72.4^{+1.6}_{-1.5}$	$\chi_{\mathrm{CMB}}^2$	$8232.8 (\nu: 18.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1431^{+0.0037}_{-0.0037}$	$D_{\mathrm{M}}(0.15)$	$646^{+15}_{-16}$		
$\Omega_{\mathrm{m}}h^3$	$0.0959^{+0.0012}_{-0.0011}$	$H(0.38)$	$82.6^{+1.2}_{-1.1}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8241.99; R - 1 = 0.00437$$



### 13.20 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02221^{+0.00051}_{-0.00049}$	$S_8$	$0.826^{+0.031}_{-0.030}$	$D_M(0.51)$	$1983^{+26}_{-26}$
$\Omega_c h^2$	$0.1192^{+0.0028}_{-0.0027}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.017}_{-0.017}$	$H(0.61)$	$95.25^{+0.62}_{-0.59}$
$100\theta_{MC}$	$1.0410^{+0.0011}_{-0.0011}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.016}_{-0.015}$	$D_M(0.61)$	$2308^{+28}_{-29}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.022}$	$H(2.33)$	$235.9^{+1.8}_{-1.8}$
$\ln(10^{10} A_s)$	$3.046^{+0.037}_{-0.030}$	$r_{\text{drag}} h$	$99.6^{+2.2}_{-2.1}$	$D_M(2.33)$	$5767^{+30}_{-31}$
$n_s$	$0.967^{+0.011}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.054}_{-0.054}$	$f\sigma_8(0.15)$	$0.457^{+0.016}_{-0.016}$
$r$	$< 0.0824$	$z_{\text{re}}$	$< 9.52$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.013}$
$y_{\text{cal}}$	$1.0009^{+0.0063}_{-0.0062}$	$10^9 A_s$	$2.103^{+0.080}_{-0.062}$	$f\sigma_8(0.38)$	$0.475^{+0.013}_{-0.013}$
$A_{B,\text{dust}}$	$4.9^{+3.2}_{-2.1}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.028}_{-0.027}$	$\sigma_8(0.38)$	$0.664^{+0.013}_{-0.011}$
$A_{B,\text{sync}}$	$< 4.95$	$D_{40}$	$1235^{+36}_{-34}$	$f\sigma_8(0.51)$	$0.474^{+0.011}_{-0.011}$
$\alpha_{B,\text{dust}}$	—	$D_{220}$	$5714^{+110}_{-100}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0099}$
$\beta_{B,\text{dust}}$	$1.60^{+0.25}_{-0.24}$	$D_{810}$	$2536^{+34}_{-34}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.010}$
$\alpha_{B,\text{sync}}$	—	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0094}$
$\beta_{B,\text{sync}}$	$-3.10^{+0.67}_{-0.75}$	$D_{2000}$	$230.1^{+4.6}_{-4.5}$	$f\sigma_8(2.33)$	$0.2981^{+0.0059}_{-0.0048}$
$\epsilon_{\text{dust,sync}}$	$< 0.351$	$n_{s,0.002}$	$0.967^{+0.011}_{-0.010}$	$\sigma_8(2.33)$	$0.3073^{+0.0063}_{-0.0050}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$Y_P$	$0.24533^{+0.00020}_{-0.00023}$	$r_{0.002}$	$< 0.0768$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$Y_P^{\text{BBN}}$	$0.24665^{+0.00020}_{-0.00024}$	$r_{0.01}$	$< 0.0795$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$10^5 \text{D/H}$	$2.616^{+0.096}_{-0.093}$	$\ln(10^{10} A_t)$	$-0.9^{+1.7}_{-3.6}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$\text{Age/Gyr}$	$13.807^{+0.070}_{-0.072}$	$r_{10}$	$< 0.0393$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$z_*$	$1090.06^{+0.74}_{-0.74}$	$10^9 A_t$	$< 0.174$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.33}$	$r_*$	$144.76^{+0.73}_{-0.73}$	$10^9 A_t e^{-2\tau}$	$< 0.154$
$r_{143 \times 217}^{\text{CIB}}$	—	$100\theta_*$	$1.0412^{+0.0010}_{-0.0011}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_M(z_*)/\text{Gpc}$	$13.902^{+0.071}_{-0.072}$	$f_{2000}^{217}$	$107.4^{+5.0}_{-5.2}$
$A^{\text{kSZ}}$	—	$z_{\text{drag}}$	$1059.5^{+1.1}_{-1.1}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-6}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_{\text{drag}}$	$147.48^{+0.80}_{-0.80}$	$\chi_{\text{lensing}}^2$	$9.30 (\nu: 0.2)$
$A_{143}^{\text{dust}}$	$0.97^{+0.45}_{-0.46}$	$k_D$	$0.1403^{+0.0011}_{-0.0011}$	$\chi_{\text{BKPLANCK}}^2$	$739.8 (\nu: 3.4)$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_D$	$0.16103^{+0.00067}_{-0.00065}$	$\chi_{\text{simall}}^2$	$397.4 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$z_{\text{eq}}$	$3380^{+64}_{-64}$	$\chi_{\text{lowl}}^2$	$23.9 (\nu: 0.6)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$k_{\text{eq}}$	$0.01032^{+0.00020}_{-0.00020}$	$\chi_{\text{CamSpec}}^2$	$7062.8 (\nu: 13.0)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0039}$	$100\theta_{\text{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{6\text{DF}}^2$	$0.062 (\nu: 0.0)$
$H_0$	$67.5^{+1.3}_{-1.3}$	$100\theta_{s,\text{eq}}$	$0.4514^{+0.0062}_{-0.0061}$	$\chi_{\text{MGS}}^2$	$1.25 (\nu: 0.1)$
$\Omega_\Lambda$	$0.688^{+0.017}_{-0.017}$	$H(0.15)$	$72.8^{+1.1}_{-1.1}$	$\chi_{\text{DR12BAO}}^2$	$4.9 (\nu: 1.2)$
$\Omega_m$	$0.312^{+0.017}_{-0.017}$	$D_M(0.15)$	$642^{+11}_{-11}$	$\chi_{\text{prior}}^2$	$9.2 (\nu: 7.3)$
$\Omega_m h^2$	$0.1421^{+0.0027}_{-0.0027}$	$H(0.38)$	$82.92^{+0.86}_{-0.82}$	$\chi_{\text{CMB}}^2$	$8233.1 (\nu: 18.1)$
$\Omega_m h^3$	$0.0959^{+0.0012}_{-0.0011}$	$D_M(0.38)$	$1531^{+22}_{-22}$	$\chi_{\text{BAO}}^2$	$6.2 (\nu: 0.8)$
$\sigma_8$	$0.810^{+0.016}_{-0.014}$	$H(0.51)$	$89.63^{+0.72}_{-0.69}$		

$$\bar{\chi}_{\text{eff}}^2 = 8248.57; R - 1 = 0.00954$$



### 13.21 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}}h^2$	0.022276	$0.02228^{+0.00042}_{-0.00041}$	$\Omega_{\mathrm{m}}h^2$	0.14281	$0.1427^{+0.0034}_{-0.0033}$	$D_{\mathrm{M}}(0.15)$	644.0	$644^{+14}_{-13}$
$\Omega_{\mathrm{c}}h^2$	0.11989	$0.1198^{+0.0036}_{-0.0035}$	$\Omega_{\mathrm{m}}h^3$	0.09610	$0.09608^{+0.00083}_{-0.00081}$	$H(0.38)$	82.79	$82.82^{+0.98}_{-0.97}$
$100\theta_{\mathrm{MC}}$	1.04085	$1.04086^{+0.00081}_{-0.00080}$	$\sigma_8$	0.8095	$0.810^{+0.020}_{-0.020}$	$D_{\mathrm{M}}(0.38)$	1534.9	$1534^{+27}_{-27}$
$\tau$	0.0530	$0.054^{+0.022}_{-0.021}$	$S_8$	0.8300	$0.829^{+0.042}_{-0.041}$	$H(0.51)$	89.55	$89.57^{+0.78}_{-0.75}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0398	$3.041^{+0.045}_{-0.043}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4546	$0.454^{+0.023}_{-0.022}$	$D_{\mathrm{M}}(0.51)$	1987.7	$1987^{+32}_{-31}$
$n_{\mathrm{s}}$	0.9656	$0.966^{+0.012}_{-0.012}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6066	$0.606^{+0.021}_{-0.021}$	$H(0.61)$	95.20	$95.21^{+0.64}_{-0.61}$
$r$	0.0194	$< 0.0887$	$\sigma_8/h^{0.5}$	0.9868	$0.987^{+0.030}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	2312.5	$2311^{+34}_{-34}$
$y_{\mathrm{cal}}$	1.0005	$1.0007^{+0.0064}_{-0.0065}$	$r_{\mathrm{drag}}h$	99.07	$99.2^{+2.7}_{-2.8}$	$H(2.33)$	236.38	$236.3^{+2.2}_{-2.2}$
$A_{B,\mathrm{dust}}$	4.60	$4.9^{+3.2}_{-2.1}$	$\langle d^2 \rangle^{1/2}$	2.439	$2.438^{+0.073}_{-0.074}$	$D_{\mathrm{M}}(2.33)$	5768.3	$5768^{+29}_{-29}$
$A_{B,\mathrm{sync}}$	1.49	$< 4.92$	$z_{\mathrm{re}}$	7.56	$7.6^{+2.1}_{-2.3}$	$f\sigma_8(0.15)$	0.4589	$0.458^{+0.021}_{-0.021}$
$\alpha_{B,\mathrm{dust}}$	-0.50	—	$10^9A_{\mathrm{s}}$	2.090	$2.092^{+0.095}_{-0.088}$	$\sigma_8(0.15)$	0.7477	$0.748^{+0.018}_{-0.018}$
$\beta_{B,\mathrm{dust}}$	1.580	$1.60^{+0.25}_{-0.25}$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8801	$1.880^{+0.030}_{-0.030}$	$f\sigma_8(0.38)$	0.4763	$0.476^{+0.017}_{-0.017}$
$\alpha_{B,\mathrm{sync}}$	-0.23	—	$D_{40}$	1233.5	$1237^{+38}_{-36}$	$\sigma_8(0.38)$	0.6623	$0.663^{+0.016}_{-0.015}$
$\beta_{B,\mathrm{sync}}$	-3.04	$-3.10^{+0.67}_{-0.73}$	$D_{220}$	5716	$5716^{+100}_{-100}$	$f\sigma_8(0.51)$	0.4745	$0.474^{+0.015}_{-0.016}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.35	$< 0.346$	$D_{810}$	2535.9	$2536^{+36}_{-35}$	$\sigma_8(0.51)$	0.6196	$0.620^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{PS}}$	235	$239^{+60}_{-60}$	$D_{1420}$	815.9	$816^{+13}_{-13}$	$f\sigma_8(0.61)$	0.4692	$0.469^{+0.014}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	39.6	$39^{+20}_{-20}$	$D_{2000}$	230.31	$230.4^{+4.3}_{-4.3}$	$\sigma_8(0.61)$	0.5895	$0.590^{+0.014}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	102.6	$103^{+30}_{-40}$	$n_{\mathrm{s},0.002}$	0.9656	$0.966^{+0.012}_{-0.012}$	$f\sigma_8(2.33)$	0.2971	$0.2972^{+0.0069}_{-0.0066}$
$A_{217}^{\mathrm{CIB}}$	44.2	$40^{+20}_{-20}$	$Y_{\mathrm{P}}$	0.245357	$0.24536^{+0.00016}_{-0.00019}$	$\sigma_8(2.33)$	0.3061	$0.3063^{+0.0072}_{-0.0068}$
$A_{143}^{\mathrm{tSZ}}$	6.51	$< 8.81$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246684	$0.24668^{+0.00016}_{-0.00019}$	$r_{0.002}$	0.0175	$< 0.0829$
$r_{143 \times 217}^{\mathrm{PS}}$	0.601	$0.66^{+0.31}_{-0.33}$	$10^5\mathrm{D}/\mathrm{H}$	2.603	$2.604^{+0.079}_{-0.076}$	$r_{0.01}$	0.0184	$< 0.0857$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.76	—	$\mathrm{Age}/\mathrm{Gyr}$	13.809	$13.808^{+0.064}_{-0.064}$	$\ln(10^{10}A_{\mathrm{t}})$	-0.90	$-0.7^{+1.6}_{-3.3}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.09	—	$z_*$	1090.03	$1090.02^{+0.74}_{-0.72}$	$r_{10}$	0.0089	$< 0.0427$
$A^{\mathrm{kSZ}}$	0.1	—	$r_*$	144.53	$144.57^{+0.82}_{-0.81}$	$10^9A_{\mathrm{t}}$	0.040	$< 0.185$
$A_{100}^{\mathrm{dust}}$	1.00	$1.00^{+0.50}_{-0.50}$	$100\theta_*$	1.04104	$1.04105^{+0.00080}_{-0.00079}$	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.036	$< 0.167$
$A_{143}^{\mathrm{dust}}$	0.972	$0.96^{+0.45}_{-0.45}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.883	$13.887^{+0.077}_{-0.075}$	$f_{2000}^{143}$	30.1	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	0.971	$0.98^{+0.27}_{-0.26}$	$z_{\mathrm{drag}}$	1059.70	$1059.70^{+0.88}_{-0.88}$	$f_{2000}^{217}$	106.92	$106.9^{+5.0}_{-5.0}$
$A_{143 \times 217}^{\mathrm{dust}}$	1.009	$1.03^{+0.42}_{-0.41}$	$r_{\mathrm{drag}}$	147.23	$147.26^{+0.83}_{-0.82}$	$f_{2000}^{143 \times 217}$	32.3	$32^{+5}_{-5}$
$c_{100}$	0.99764	$0.9975^{+0.0027}_{-0.0027}$	$k_{\mathrm{D}}$	0.14065	$0.14062^{+0.00093}_{-0.00092}$	$\chi_{\mathrm{BKPLANCK}}^2$	735.5	$739.9 (\nu: 3.7)$
$c_{217}$	1.00126	$1.0011^{+0.0040}_{-0.0040}$	$100\theta_{\mathrm{D}}$	0.16088	$0.16089^{+0.00052}_{-0.00050}$	$\chi_{\mathrm{small}}^2$	395.96	$397.2 (\nu: 1.7)$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.013}$	$z_{\mathrm{eq}}$	3397	$3394^{+82}_{-80}$	$\chi_{\mathrm{lowl}}^2$	23.74	$24.2 (\nu: 0.7)$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	0.010369	$0.01036^{+0.00025}_{-0.00024}$	$\chi_{\mathrm{CamSpec}}^2$	11498.9	$11513.5 (\nu: 15.6)$
$H_0$	67.29	$67.3^{+1.6}_{-1.6}$	$100\theta_{\mathrm{eq}}$	0.8139	$0.814^{+0.015}_{-0.015}$	$\chi_{\mathrm{prior}}^2$	2.2	$9.5 (\nu: 7.1)$
$\Omega_{\Lambda}$	0.6846	$0.685^{+0.021}_{-0.023}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	0.4498	$0.4501^{+0.0078}_{-0.0077}$	$\chi_{\mathrm{CMB}}^2$	12654.1	$12674.8 (\nu: 20.2)$
$\Omega_{\mathrm{m}}$	0.3154	$0.315^{+0.023}_{-0.021}$	$H(0.15)$	72.61	$72.7^{+1.3}_{-1.3}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12656.30$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12684.27$ ;  $R - 1 = 0.00430$

$\chi_{\mathrm{eff}}^2$ : CMB - BK15\_dust: 735.45 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.96 commander\_dx12\_v3\_2\_29: 23.74 CamSpec like\_10.7HM\_1400\_unified: 11498.91



### 13.22 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022330	$0.02233^{+0.00039}_{-0.00038}$	$\Omega_m h^3$	0.09609	$0.09608^{+0.00084}_{-0.00080}$	$D_M(0.38)$	1528.3	$1528^{+20}_{-20}$
$\Omega_c h^2$	0.11901	$0.1190^{+0.0026}_{-0.0026}$	$\sigma_8$	0.8079	$0.808^{+0.020}_{-0.019}$	$H(0.51)$	89.73	$89.73^{+0.62}_{-0.59}$
$100\theta_{MC}$	1.04095	$1.04095^{+0.00076}_{-0.00075}$	$S_8$	0.8213	$0.821^{+0.033}_{-0.032}$	$D_M(0.51)$	1980.1	$1980^{+23}_{-23}$
$\tau$	0.0548	$0.055^{+0.022}_{-0.021}$	$\sigma_8 \Omega_m^{0.5}$	0.4498	$0.450^{+0.018}_{-0.018}$	$H(0.61)$	95.33	$95.33^{+0.51}_{-0.49}$
$\ln(10^{10} A_s)$	3.0415	$3.041^{+0.046}_{-0.043}$	$\sigma_8 \Omega_m^{0.25}$	0.6028	$0.603^{+0.019}_{-0.018}$	$D_M(0.61)$	2304.3	$2304^{+25}_{-25}$
$n_s$	0.9681	$0.968^{+0.010}_{-0.010}$	$\sigma_8/h^{0.5}$	0.9821	$0.982^{+0.027}_{-0.027}$	$H(2.33)$	235.87	$235.9^{+1.6}_{-1.6}$
$r$	0.0213	$< 0.0899$	$r_{\text{drag}} h$	99.76	$99.8^{+2.0}_{-2.0}$	$D_M(2.33)$	5762.7	$5763^{+24}_{-24}$
$y_{\text{cal}}$	1.0007	$1.0008^{+0.0062}_{-0.0065}$	$\langle d^2 \rangle^{1/2}$	2.426	$2.427^{+0.066}_{-0.066}$	$f\sigma_8(0.15)$	0.4545	$0.454^{+0.017}_{-0.017}$
$A_{B,\text{dust}}$	4.57	$4.9^{+3.2}_{-2.2}$	$z_{\text{re}}$	7.72	$7.7^{+2.1}_{-2.2}$	$\sigma_8(0.15)$	0.7467	$0.747^{+0.018}_{-0.017}$
$A_{B,\text{sync}}$	1.40	$< 4.92$	$10^9 A_s$	2.094	$2.094^{+0.097}_{-0.088}$	$f\sigma_8(0.38)$	0.4731	$0.473^{+0.015}_{-0.015}$
$\alpha_{B,\text{dust}}$	-0.49	—	$10^9 A_s e^{-2\tau}$	1.8765	$1.877^{+0.029}_{-0.028}$	$\sigma_8(0.38)$	0.6621	$0.662^{+0.016}_{-0.015}$
$\beta_{B,\text{dust}}$	1.580	$1.60^{+0.25}_{-0.25}$	$D_{40}$	1229.1	$1234^{+36}_{-34}$	$f\sigma_8(0.51)$	0.4719	$0.472^{+0.014}_{-0.013}$
$\alpha_{B,\text{sync}}$	-0.35	—	$D_{220}$	5718	$5720^{+100}_{-99}$	$\sigma_8(0.51)$	0.6197	$0.620^{+0.015}_{-0.014}$
$\beta_{B,\text{sync}}$	-3.04	$-3.10^{+0.69}_{-0.73}$	$D_{810}$	2535.9	$2536^{+35}_{-35}$	$f\sigma_8(0.61)$	0.4671	$0.467^{+0.013}_{-0.013}$
$\epsilon_{\text{dust,sync}}$	-0.35	$< 0.352$	$D_{1420}$	816.8	$817^{+12}_{-13}$	$\sigma_8(0.61)$	0.5897	$0.590^{+0.014}_{-0.013}$
$A_{100}^{\text{PS}}$	233	$239^{+60}_{-60}$	$D_{2000}$	230.66	$230.6^{+4.2}_{-4.2}$	$f\sigma_8(2.33)$	0.2974	$0.2973^{+0.0070}_{-0.0066}$
$A_{143}^{\text{PS}}$	38.7	$39^{+20}_{-20}$	$n_{s,0.002}$	0.9681	$0.968^{+0.010}_{-0.010}$	$\sigma_8(2.33)$	0.3066	$0.3066^{+0.0073}_{-0.0068}$
$A_{217}^{\text{PS}}$	102.6	$103^{+30}_{-40}$	$Y_P$	0.245379	$0.24538^{+0.00015}_{-0.00016}$	$r_{0.002}$	0.0194	$< 0.0843$
$A_{217}^{\text{CIB}}$	44.1	$39^{+20}_{-20}$	$Y_P^{\text{BBN}}$	0.246706	$0.24670^{+0.00015}_{-0.00016}$	$r_{0.01}$	0.0204	$< 0.0870$
$A_{143}^{\text{tSZ}}$	6.61	$< 8.78$	$10^5 D/H$	2.593	$2.594^{+0.073}_{-0.071}$	$\ln(10^{10} A_t)$	-0.81	$-0.6^{+1.5}_{-3.3}$
$r_{143 \times 217}^{\text{PS}}$	0.594	$0.66^{+0.31}_{-0.34}$	Age/Gyr	13.796	$13.797^{+0.054}_{-0.055}$	$r_{10}$	0.0099	$< 0.0433$
$r_{143 \times 217}^{\text{CIB}}$	0.77	—	$z_*$	1089.88	$1089.89^{+0.61}_{-0.60}$	$10^9 A_t$	0.045	$< 0.188$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.08	—	$r_*$	144.72	$144.72^{+0.65}_{-0.63}$	$10^9 A_t e^{-2\tau}$	0.040	$< 0.168$
$A^{\text{kSZ}}$	0.0	—	$100\theta_*$	1.04114	$1.04114^{+0.00075}_{-0.00074}$	$f_{2000}^{143}$	29.7	$29^{+7}_{-7}$
$A_{100}^{\text{dust}}$	1.01	$1.00^{+0.51}_{-0.50}$	$D_M(z_*)/\text{Gpc}$	13.900	$13.900^{+0.062}_{-0.060}$	$f_{2000}^{217}$	106.7	$106.8^{+5.1}_{-4.9}$
$A_{143}^{\text{dust}}$	0.968	$0.96^{+0.46}_{-0.44}$	$z_{\text{drag}}$	1059.78	$1059.76^{+0.86}_{-0.86}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$A_{217}^{\text{dust}}$	0.972	$0.98^{+0.27}_{-0.27}$	$r_{\text{drag}}$	147.40	$147.40^{+0.68}_{-0.67}$	$\chi_{\text{BKPLANCK}}^2$	735.7	$740.2 (\nu: 3.6)$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03^{+0.42}_{-0.40}$	$k_D$	0.14051	$0.14050^{+0.00085}_{-0.00084}$	$\chi_{\text{small}}^2$	396.16	$397.3 (\nu: 1.9)$
$c_{100}$	0.99763	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_D$	0.160851	$0.16086^{+0.00049}_{-0.00049}$	$\chi_{\text{lowl}}^2$	23.32	$23.8 (\nu: 0.6)$
$c_{217}$	1.00128	$1.0011^{+0.0039}_{-0.0040}$	$z_{\text{eq}}$	3378	$3378^{+60}_{-60}$	$\chi_{\text{CamSpec}}^2$	11499.2	$11513.4 (\nu: 15.5)$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.013}$	$k_{\text{eq}}$	0.010309	$0.01031^{+0.00018}_{-0.00018}$	$\chi_{6\text{DF}}^2$	0.022	$0.048 (\nu: 0.0)$
$c_{EE}$	0.9923	$0.992^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	0.8176	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{MGS}}^2$	1.28	$1.33 (\nu: 0.1)$
$H_0$	67.68	$67.7^{+1.2}_{-1.2}$	$100\theta_{s,\text{eq}}$	0.4517	$0.4517^{+0.0059}_{-0.0057}$	$\chi_{\text{DR12BAO}}^2$	4.23	$4.6 (\nu: 0.9)$
$\Omega_\Lambda$	0.6900	$0.690^{+0.015}_{-0.016}$	$H(0.15)$	72.94	$72.9^{+1.0}_{-0.99}$	$\chi_{\text{prior}}^2$	2.3	$9.5 (\nu: 7.2)$
$\Omega_m$	0.3100	$0.310^{+0.016}_{-0.015}$	$D_M(0.15)$	640.7	$641^{+10}_{-9.8}$	$\chi_{\text{BAO}}^2$	5.54	$6.0 (\nu: 0.5)$
$\Omega_m h^2$	0.14199	$0.1420^{+0.0025}_{-0.0025}$	$H(0.38)$	83.03	$83.02^{+0.75}_{-0.73}$	$\chi_{\text{CMB}}^2$	12654.4	$12674.7 (\nu: 19.9)$

Best-fit  $\chi_{\text{eff}}^2 = 12662.21$ ;  $\bar{\chi}_{\text{eff}}^2 = 12690.24$ ;  $R - 1 = 0.00669$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.24 CMB - BK15\_dust: 735.72 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.17 commander\_dx12\_v3\_2\_29: 23.32 CamSpec like\_10.7HM\_1400\_unified: 11499.19



### 13.23 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022288	$0.02228^{+0.00042}_{-0.00041}$	$\Omega_m h^2$	0.14281	$0.1427^{+0.0029}_{-0.0030}$	$D_M(0.15)$	643.8	$644^{+12}_{-12}$
$\Omega_c h^2$	0.11988	$0.1198^{+0.0031}_{-0.0031}$	$\Omega_m h^3$	0.09613	$0.09608^{+0.00083}_{-0.00079}$	$H(0.38)$	82.81	$82.82^{+0.90}_{-0.86}$
$100\theta_{MC}$	1.04086	$1.04085^{+0.00080}_{-0.00077}$	$\sigma_8$	0.8100	$0.810^{+0.016}_{-0.015}$	$D_M(0.38)$	1534.5	$1534^{+24}_{-24}$
$\tau$	0.0534	$0.054^{+0.021}_{-0.019}$	$S_8$	0.8303	$0.830^{+0.033}_{-0.033}$	$H(0.51)$	89.56	$89.57^{+0.72}_{-0.68}$
$\ln(10^{10} A_s)$	3.0412	$3.042^{+0.040}_{-0.037}$	$\sigma_8 \Omega_m^{0.5}$	0.4548	$0.455^{+0.018}_{-0.018}$	$D_M(0.51)$	1987.3	$1987^{+28}_{-29}$
$n_s$	0.9657	$0.966^{+0.011}_{-0.011}$	$\sigma_8 \Omega_m^{0.25}$	0.6070	$0.607^{+0.017}_{-0.017}$	$H(0.61)$	95.21	$95.21^{+0.60}_{-0.56}$
$r$	0.0192	$< 0.0878$	$\sigma_8/h^{0.5}$	0.9873	$0.987^{+0.023}_{-0.023}$	$D_M(0.61)$	2312.0	$2312^{+30}_{-31}$
$y_{cal}$	1.0007	$1.0008^{+0.0063}_{-0.0065}$	$r_{drag} h$	99.09	$99.2^{+2.5}_{-2.4}$	$H(2.33)$	236.39	$236.3^{+1.9}_{-1.9}$
$A_{B,dust}$	4.62	$4.9^{+3.2}_{-2.1}$	$\langle d^2 \rangle^{1/2}$	2.440	$2.440^{+0.057}_{-0.057}$	$D_M(2.33)$	5767.6	$5768^{+27}_{-28}$
$A_{B,sync}$	1.43	$< 4.94$	$z_{re}$	7.60	$7.7^{+1.9}_{-2.1}$	$f\sigma_8(0.15)$	0.4591	$0.459^{+0.017}_{-0.017}$
$\alpha_{B,dust}$	-0.51	—	$10^9 A_s$	2.093	$2.096^{+0.085}_{-0.077}$	$\sigma_8(0.15)$	0.7482	$0.748^{+0.014}_{-0.014}$
$\beta_{B,dust}$	1.580	$1.60^{+0.25}_{-0.25}$	$10^9 A_s e^{-2\tau}$	1.8811	$1.880^{+0.028}_{-0.028}$	$f\sigma_8(0.38)$	0.4766	$0.476^{+0.013}_{-0.014}$
$\alpha_{B,sync}$	-0.35	—	$D_{40}$	1234.0	$1238^{+36}_{-33}$	$\sigma_8(0.38)$	0.6628	$0.663^{+0.013}_{-0.012}$
$\beta_{B,sync}$	-3.04	$-3.10^{+0.67}_{-0.73}$	$D_{220}$	5720	$5719^{+100}_{-100}$	$f\sigma_8(0.51)$	0.4747	$0.475^{+0.012}_{-0.012}$
$\epsilon_{dust,sync}$	-0.36	$< 0.341$	$D_{810}$	2537.4	$2537^{+35}_{-35}$	$\sigma_8(0.51)$	0.6201	$0.620^{+0.012}_{-0.011}$
$A_{100}^{PS}$	234	$240^{+60}_{-60}$	$D_{1420}$	816.5	$816^{+12}_{-13}$	$f\sigma_8(0.61)$	0.4695	$0.469^{+0.011}_{-0.011}$
$A_{143}^{PS}$	42.9	$40^{+20}_{-20}$	$D_{2000}$	230.52	$230.4^{+4.3}_{-4.2}$	$\sigma_8(0.61)$	0.5899	$0.590^{+0.012}_{-0.011}$
$A_{217}^{PS}$	102.9	$103^{+30}_{-30}$	$n_{s,0.002}$	0.9657	$0.966^{+0.011}_{-0.011}$	$f\sigma_8(2.33)$	0.2973	$0.2974^{+0.0062}_{-0.0057}$
$A_{217}^{CIB}$	44.0	$40^{+20}_{-20}$	$Y_P$	0.245362	$0.24536^{+0.00016}_{-0.00018}$	$\sigma_8(2.33)$	0.3063	$0.3065^{+0.0068}_{-0.0061}$
$A_{143}^{tSZ}$	6.56	$< 8.76$	$Y_P^{BBN}$	0.246689	$0.24668^{+0.00016}_{-0.00018}$	$r_{0.002}$	0.0173	$< 0.0821$
$r_{143 \times 217}^{PS}$	0.632	$0.66^{+0.31}_{-0.33}$	$10^5 D/H$	2.601	$2.603^{+0.078}_{-0.076}$	$r_{0.01}$	0.0182	$< 0.0850$
$r_{143 \times 217}^{CIB}$	0.82	—	Age/Gyr	13.807	$13.808^{+0.061}_{-0.062}$	$\ln(10^{10} A_t)$	-0.91	$-0.7^{+1.6}_{-3.3}$
$\xi^{tSZ \times CIB}$	0.29	—	$z_*$	1090.01	$1090.02^{+0.69}_{-0.68}$	$r_{10}$	0.0088	$< 0.0421$
$A^{kSZ}$	0.0	—	$r_*$	144.53	$144.56^{+0.72}_{-0.71}$	$10^9 A_t$	0.040	$< 0.184$
$A_{100}^{dust}$	1.00	$1.00^{+0.51}_{-0.49}$	$100\theta_*$	1.04105	$1.04104^{+0.00079}_{-0.00076}$	$10^9 A_t e^{-2\tau}$	0.036	$< 0.165$
$A_{143}^{dust}$	0.981	$0.96^{+0.46}_{-0.44}$	$D_M(z_*)/\text{Gpc}$	13.883	$13.886^{+0.068}_{-0.067}$	$f_{2000}^{143}$	30.0	$30^{+7}_{-7}$
$A_{217}^{dust}$	0.973	$0.98^{+0.27}_{-0.27}$	$z_{drag}$	1059.74	$1059.71^{+0.87}_{-0.84}$	$f_{2000}^{217}$	106.8	$106.9^{+5.1}_{-4.9}$
$A_{143 \times 217}^{dust}$	1.001	$1.03^{+0.42}_{-0.41}$	$r_{drag}$	147.21	$147.25^{+0.75}_{-0.73}$	$f_{2000}^{143 \times 217}$	32.1	$32^{+5}_{-5}$
$c_{100}$	0.99768	$0.9975^{+0.0027}_{-0.0027}$	$k_D$	0.14067	$0.14062^{+0.00087}_{-0.00087}$	$\chi_{lensing}^2$	8.85	$9.29 (\nu: 0.2)$
$c_{217}$	1.00130	$1.0011^{+0.0039}_{-0.0039}$	$100\theta_D$	0.16087	$0.16088^{+0.00052}_{-0.00051}$	$\chi_{BKPLANCK}^2$	735.4	$739.9 (\nu: 3.5)$
$c_{TE}$	0.9964	$0.997^{+0.012}_{-0.013}$	$z_{eq}$	3397	$3394^{+70}_{-71}$	$\chi_{small}^2$	396.01	$397.2 (\nu: 1.5)$
$c_{EE}$	0.9919	$0.992^{+0.013}_{-0.013}$	$k_{eq}$	0.010369	$0.01036^{+0.00021}_{-0.00022}$	$\chi_{lowl}^2$	23.74	$24.2 (\nu: 0.7)$
$H_0$	67.31	$67.3^{+1.4}_{-1.4}$	$100\theta_{eq}$	0.8139	$0.814^{+0.014}_{-0.013}$	$\chi_{CamSpec}^2$	11498.9	$11513.1 (\nu: 15.1)$
$\Omega_\Lambda$	0.6848	$0.685^{+0.019}_{-0.020}$	$100\theta_{s,eq}$	0.4498	$0.4500^{+0.0069}_{-0.0066}$	$\chi_{prior}^2$	2.3	$9.4 (\nu: 7.1)$
$\Omega_m$	0.3152	$0.315^{+0.020}_{-0.019}$	$H(0.15)$	72.63	$72.7^{+1.2}_{-1.2}$	$\chi_{CMB}^2$	12662.9	$12683.6 (\nu: 20.2)$

Best-fit  $\chi_{eff}^2 = 12665.14$ ;  $\bar{\chi}_{eff}^2 = 12693.08$ ;  $R - 1 = 0.00549$

$\chi_{eff}^2$ : CMB - smicadx12.Dec5.ftl.mv2.ndclpp.p.teb.consext8: 8.85 BK15.dust: 735.41 simall.100x143\_offlike5.EE.Aplanck\_B: 396.01 commander\_dx12.v3.2.29: 23.74 CamSpec like\_10.7HM.1400.unified: 11498.88



### 13.24 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022314	$0.02233^{+0.00040}_{-0.00038}$	$\sigma_8$	0.8091	$0.809^{+0.016}_{-0.015}$	$D_M(0.51)$	1982.5	$1981^{+22}_{-22}$
$\Omega_c h^2$	0.11928	$0.1191^{+0.0024}_{-0.0024}$	$S_8$	0.8247	$0.824^{+0.027}_{-0.027}$	$H(0.61)$	95.288	$95.32^{+0.51}_{-0.48}$
$100\theta_{MC}$	1.04091	$1.04094^{+0.00076}_{-0.00075}$	$\sigma_8 \Omega_m^{0.5}$	0.4517	$0.451^{+0.015}_{-0.015}$	$D_M(0.61)$	2306.9	$2305^{+24}_{-24}$
$\tau$	0.0547	$0.056^{+0.020}_{-0.019}$	$\sigma_8 \Omega_m^{0.25}$	0.6046	$0.604^{+0.015}_{-0.015}$	$H(2.33)$	236.03	$235.9^{+1.5}_{-1.5}$
$\ln(10^{10} A_s)$	3.0431	$3.045^{+0.040}_{-0.037}$	$\sigma_8/h^{0.5}$	0.9845	$0.984^{+0.022}_{-0.022}$	$D_M(2.33)$	5764.5	$5763^{+23}_{-24}$
$n_s$	0.9670	$0.967^{+0.010}_{-0.0099}$	$r_{\text{drag}} h$	99.54	$99.7^{+1.9}_{-1.9}$	$f\sigma_8(0.15)$	0.4563	$0.456^{+0.014}_{-0.014}$
$r$	0.0197	$< 0.0890$	$\langle d^2 \rangle^{1/2}$	2.433	$2.433^{+0.052}_{-0.053}$	$\sigma_8(0.15)$	0.7477	$0.748^{+0.015}_{-0.014}$
$y_{\text{cal}}$	1.0010	$1.0009^{+0.0062}_{-0.0065}$	$z_{\text{re}}$	7.72	$7.8^{+1.9}_{-2.0}$	$f\sigma_8(0.38)$	0.4746	$0.474^{+0.012}_{-0.012}$
$A_{B,\text{dust}}$	4.62	$4.9^{+3.2}_{-2.2}$	$10^9 A_s$	2.097	$2.101^{+0.085}_{-0.076}$	$\sigma_8(0.38)$	0.6627	$0.663^{+0.013}_{-0.012}$
$A_{B,\text{sync}}$	1.48	$< 4.93$	$10^9 A_s e^{-2\tau}$	1.8796	$1.878^{+0.027}_{-0.027}$	$f\sigma_8(0.51)$	0.4731	$0.473^{+0.011}_{-0.011}$
$\alpha_{B,\text{dust}}$	-0.50	—	$D_{40}$	1232.4	$1236^{+35}_{-33}$	$\sigma_8(0.51)$	0.6202	$0.621^{+0.013}_{-0.012}$
$\beta_{B,\text{dust}}$	1.579	$1.60^{+0.25}_{-0.25}$	$D_{220}$	5725	$5724^{+100}_{-99}$	$f\sigma_8(0.61)$	0.4682	$0.468^{+0.010}_{-0.010}$
$\alpha_{B,\text{sync}}$	-0.22	—	$D_{810}$	2538.2	$2537^{+34}_{-34}$	$\sigma_8(0.61)$	0.5901	$0.591^{+0.012}_{-0.011}$
$\beta_{B,\text{sync}}$	-3.04	$-3.10^{+0.68}_{-0.72}$	$D_{1420}$	817.1	$817^{+12}_{-13}$	$f\sigma_8(2.33)$	0.2975	$0.2978^{+0.0061}_{-0.0057}$
$\epsilon_{\text{dust},\text{sync}}$	-0.34	$< 0.346$	$D_{2000}$	230.72	$230.7^{+4.1}_{-4.1}$	$\sigma_8(2.33)$	0.3067	$0.3071^{+0.0065}_{-0.0061}$
$A_{100}^{\text{PS}}$	234	$239^{+60}_{-60}$	$n_{s,0.002}$	0.9670	$0.967^{+0.010}_{-0.0099}$	$r_{0.002}$	0.0179	$< 0.0833$
$A_{143}^{\text{PS}}$	40.5	$39^{+20}_{-20}$	$Y_P$	0.245373	$0.24538^{+0.00015}_{-0.00016}$	$r_{0.01}$	0.0188	$< 0.0861$
$A_{217}^{\text{PS}}$	103.0	$103^{+30}_{-30}$	$Y_P^{\text{BBN}}$	0.246699	$0.24670^{+0.00015}_{-0.00016}$	$\ln(10^{10} A_t)$	-0.88	$-0.7^{+1.6}_{-3.2}$
$A_{217}^{\text{CIB}}$	44.1	$39^{+20}_{-20}$	$10^5 D/H$	2.596	$2.594^{+0.072}_{-0.071}$	$r_{10}$	0.0091	$< 0.0427$
$A_{143}^{\text{tSZ}}$	6.54	$< 8.79$	Age/Gyr	13.800	$13.798^{+0.054}_{-0.054}$	$10^9 A_t$	0.041	$< 0.187$
$r_{143 \times 217}^{\text{PS}}$	0.609	$0.66^{+0.31}_{-0.34}$	$z_*$	1089.93	$1089.90^{+0.60}_{-0.59}$	$10^9 A_t e^{-2\tau}$	0.037	$< 0.167$
$r_{143 \times 217}^{\text{CIB}}$	0.79	—	$r_*$	144.66	$144.69^{+0.60}_{-0.59}$	$f_{2000}^{143}$	29.9	$29^{+7}_{-7}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.16	—	$100\theta_*$	1.04110	$1.04113^{+0.00074}_{-0.00074}$	$f_{2000}^{217}$	106.9	$106.8^{+5.1}_{-4.9}$
$A^{\text{kSZ}}$	0.0	—	$D_M(z_*)/\text{Gpc}$	13.895	$13.898^{+0.058}_{-0.056}$	$f_{2000}^{143 \times 217}$	32.0	$32^{+5}_{-5}$
$A_{100}^{\text{dust}}$	1.01	$1.00^{+0.51}_{-0.49}$	$z_{\text{drag}}$	1059.74	$1059.77^{+0.85}_{-0.83}$	$\chi_{\text{lensing}}^2$	8.87	$9.25 (\nu: 0.2)$
$A_{143}^{\text{dust}}$	0.972	$0.96^{+0.46}_{-0.44}$	$r_{\text{drag}}$	147.34	$147.37^{+0.65}_{-0.63}$	$\chi_{\text{BKPLANCK}}^2$	735.6	$740.0 (\nu: 3.5)$
$A_{217}^{\text{dust}}$	0.973	$0.98^{+0.27}_{-0.27}$	$k_D$	0.14056	$0.14053^{+0.00082}_{-0.00083}$	$\chi_{\text{simall}}^2$	396.18	$397.4 (\nu: 1.9)$
$A_{143 \times 217}^{\text{dust}}$	1.003	$1.03^{+0.42}_{-0.40}$	$100\theta_D$	0.160857	$0.16085^{+0.00049}_{-0.00050}$	$\chi_{\text{lowl}}^2$	23.52	$24.0 (\nu: 0.6)$
$c_{100}$	0.99766	$0.9975^{+0.0027}_{-0.0027}$	$z_{\text{eq}}$	3384	$3380^{+55}_{-56}$	$\chi_{\text{CamSpec}}^2$	11498.9	$11512.9 (\nu: 15.0)$
$c_{217}$	1.00128	$1.0011^{+0.0039}_{-0.0040}$	$k_{\text{eq}}$	0.010327	$0.01032^{+0.00017}_{-0.00017}$	$\chi_{6\text{DF}}^2$	0.037	$0.050 (\nu: 0.0)$
$c_{TE}$	0.9966	$0.997^{+0.013}_{-0.013}$	$100\theta_{\text{eq}}$	0.8165	$0.817^{+0.011}_{-0.010}$	$\chi_{\text{MGS}}^2$	1.16	$1.28 (\nu: 0.1)$
$c_{EE}$	0.9925	$0.992^{+0.013}_{-0.012}$	$100\theta_{s,\text{eq}}$	0.4511	$0.4514^{+0.0054}_{-0.0053}$	$\chi_{\text{DR12BAO}}^2$	4.60	$4.7 (\nu: 0.8)$
$H_0$	67.56	$67.6^{+1.1}_{-1.1}$	$H(0.15)$	72.84	$72.90^{+0.97}_{-0.94}$	$\chi_{\text{prior}}^2$	2.3	$9.4 (\nu: 7.2)$
$\Omega_\Lambda$	0.6883	$0.689^{+0.015}_{-0.015}$	$D_M(0.15)$	641.7	$641.1^{+9.4}_{-9.5}$	$\chi_{\text{CMB}}^2$	12663.0	$12683.6 (\nu: 20.2)$
$\Omega_m$	0.3117	$0.311^{+0.015}_{-0.015}$	$H(0.38)$	82.95	$83.00^{+0.72}_{-0.70}$	$\chi_{\text{BAO}}^2$	5.79	$6.1 (\nu: 0.5)$
$\Omega_m h^2$	0.14224	$0.1421^{+0.0023}_{-0.0024}$	$D_M(0.38)$	1530.4	$1529^{+19}_{-19}$			
$\Omega_m h^3$	0.09609	$0.09610^{+0.00084}_{-0.00080}$	$H(0.51)$	89.67	$89.71^{+0.59}_{-0.57}$			

Best-fit  $\chi_{\text{eff}}^2 = 12671.15$ ;  $\bar{\chi}_{\text{eff}}^2 = 12699.13$ ;  $R - 1 = 0.00878$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 1.16 DR12BAO: 4.59 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.87 BK15\_dust: 735.58 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.18 commander\_dx12\_v3.2.29: 23.52 CamSpec like\_10.7HM\_1400\_unified: 11498.90



### 13.25 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00042}_{-0.00041}$	$\Omega_m h^2$	$0.1426^{+0.0034}_{-0.0033}$	$D_M(0.15)$	$643^{+14}_{-13}$
$\Omega_c h^2$	$0.1197^{+0.0036}_{-0.0035}$	$\Omega_m h^3$	$0.09608^{+0.00083}_{-0.00081}$	$H(0.38)$	$82.84^{+0.98}_{-0.97}$
$100\theta_{MC}$	$1.04086^{+0.00081}_{-0.00081}$	$\sigma_8$	$0.811^{+0.019}_{-0.017}$	$D_M(0.38)$	$1534^{+27}_{-26}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$S_8$	$0.830^{+0.042}_{-0.041}$	$H(0.51)$	$89.58^{+0.78}_{-0.76}$
$\ln(10^{10} A_s)$	$3.043^{+0.043}_{-0.030}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.023}_{-0.022}$	$D_M(0.51)$	$1986^{+32}_{-31}$
$n_s$	$0.966^{+0.012}_{-0.012}$	$\sigma_8 \Omega_m^{0.25}$	$0.607^{+0.021}_{-0.021}$	$H(0.61)$	$95.22^{+0.64}_{-0.61}$
$r$	$< 0.0885$	$\sigma_8/h^{0.5}$	$0.988^{+0.030}_{-0.029}$	$D_M(0.61)$	$2311^{+34}_{-33}$
$y_{cal}$	$1.0007^{+0.0064}_{-0.0065}$	$r_{drag} h$	$99.2^{+2.7}_{-2.8}$	$H(2.33)$	$236.3^{+2.2}_{-2.2}$
$A_{B,dust}$	$4.9^{+3.2}_{-2.1}$	$\langle d^2 \rangle^{1/2}$	$2.440^{+0.071}_{-0.070}$	$D_M(2.33)$	$5767^{+28}_{-29}$
$A_{B,sync}$	$< 4.93$	$z_{re}$	$< 9.50$	$f\sigma_8(0.15)$	$0.459^{+0.021}_{-0.021}$
$\alpha_{B,dust}$	—	$10^9 A_s$	$2.098^{+0.091}_{-0.062}$	$\sigma_8(0.15)$	$0.749^{+0.017}_{-0.014}$
$\beta_{B,dust}$	$1.60^{+0.25}_{-0.25}$	$10^9 A_s e^{-2\tau}$	$1.880^{+0.031}_{-0.030}$	$f\sigma_8(0.38)$	$0.476^{+0.017}_{-0.017}$
$\alpha_{B,sync}$	—	$D_{40}$	$1237^{+37}_{-36}$	$\sigma_8(0.38)$	$0.663^{+0.015}_{-0.012}$
$\beta_{B,sync}$	$-3.10^{+0.67}_{-0.73}$	$D_{220}$	$5716^{+100}_{-100}$	$f\sigma_8(0.51)$	$0.475^{+0.015}_{-0.015}$
$\epsilon_{dust,sync}$	$< 0.342$	$D_{810}$	$2536^{+36}_{-35}$	$\sigma_8(0.51)$	$0.621^{+0.014}_{-0.010}$
$A_{100}^{PS}$	$239^{+60}_{-60}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.61)$	$0.470^{+0.014}_{-0.013}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$D_{2000}$	$230.4^{+4.3}_{-4.2}$	$\sigma_8(0.61)$	$0.590^{+0.013}_{-0.0097}$
$A_{217}^{PS}$	$103^{+30}_{-40}$	$n_{s,0.002}$	$0.966^{+0.012}_{-0.012}$	$f\sigma_8(2.33)$	$0.2976^{+0.0066}_{-0.0046}$
$A_{217}^{CIB}$	$39^{+20}_{-20}$	$Y_P$	$0.24536^{+0.00016}_{-0.00018}$	$\sigma_8(2.33)$	$0.3067^{+0.0070}_{-0.0048}$
$A_{143}^{tSZ}$	$< 8.83$	$Y_P^{BBN}$	$0.24668^{+0.00016}_{-0.00018}$	$r_{0.002}$	$< 0.0828$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.33}$	$10^5 D/H$	$2.603^{+0.078}_{-0.076}$	$r_{0.01}$	$< 0.0856$
$r_{143 \times 217}^{CIB}$	—	Age/Gyr	$13.807^{+0.064}_{-0.064}$	$\ln(10^{10} A_t)$	$-0.7^{+1.6}_{-3.3}$
$\xi^{tSZ \times CIB}$	—	$z_*$	$1090.01^{+0.74}_{-0.72}$	$r_{10}$	$< 0.0424$
$A^{kSZ}$	—	$r_*$	$144.57^{+0.82}_{-0.81}$	$10^9 A_t$	$< 0.186$
$A_{100}^{dust}$	$1.00^{+0.50}_{-0.50}$	$100\theta_*$	$1.04105^{+0.00080}_{-0.00080}$	$10^9 A_t e^{-2\tau}$	$< 0.166$
$A_{143}^{dust}$	$0.96^{+0.45}_{-0.45}$	$D_M(z_*)/\text{Gpc}$	$13.887^{+0.077}_{-0.075}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{dust}$	$0.98^{+0.27}_{-0.26}$	$z_{drag}$	$1059.71^{+0.87}_{-0.84}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-4.9}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.41}$	$r_{drag}$	$147.27^{+0.82}_{-0.82}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$k_D$	$0.14061^{+0.00093}_{-0.00093}$	$\chi_{BKPLANCK}^2$	$739.9 (\nu: 3.7)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$100\theta_D$	$0.16088^{+0.00051}_{-0.00050}$	$\chi_{simall}^2$	$397.1 (\nu: 1.7)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$z_{eq}$	$3393^{+81}_{-80}$	$\chi_{lowl}^2$	$24.2 (\nu: 0.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{eq}$	$0.01036^{+0.00025}_{-0.00024}$	$\chi_{CamSpec}^2$	$11513.4 (\nu: 15.5)$
$H_0$	$67.4^{+1.6}_{-1.6}$	$100\theta_{eq}$	$0.815^{+0.015}_{-0.015}$	$\chi_{prior}^2$	$9.5 (\nu: 7.1)$
$\Omega_\Lambda$	$0.686^{+0.021}_{-0.023}$	$100\theta_{s,eq}$	$0.4501^{+0.0078}_{-0.0077}$	$\chi_{CMB}^2$	$12674.6 (\nu: 19.8)$
$\Omega_m$	$0.314^{+0.023}_{-0.021}$	$H(0.15)$	$72.7^{+1.3}_{-1.4}$		

$$\bar{\chi}_{\text{eff}}^2 = 12684.04; R - 1 = 0.00482$$



### 13.26 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\Omega_m h^3$	$0.09609^{+0.00085}_{-0.00081}$	$D_M(0.38)$	$1528^{+20}_{-20}$
$\Omega_c h^2$	$0.1190^{+0.0026}_{-0.0027}$	$\sigma_8$	$0.809^{+0.019}_{-0.015}$	$H(0.51)$	$89.73^{+0.62}_{-0.59}$
$100\theta_{MC}$	$1.04095^{+0.00076}_{-0.00075}$	$S_8$	$0.822^{+0.033}_{-0.032}$	$D_M(0.51)$	$1980^{+23}_{-23}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	$0.450^{+0.018}_{-0.017}$	$H(0.61)$	$95.34^{+0.52}_{-0.49}$
$\ln(10^{10} A_s)$	$3.044^{+0.044}_{-0.030}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.018}_{-0.017}$	$D_M(0.61)$	$2304^{+25}_{-25}$
$n_s$	$0.968^{+0.010}_{-0.010}$	$\sigma_8/h^{0.5}$	$0.983^{+0.026}_{-0.024}$	$H(2.33)$	$235.9^{+1.6}_{-1.6}$
$r$	$< 0.0900$	$r_{\text{drag}} h$	$99.8^{+2.0}_{-2.0}$	$D_M(2.33)$	$5763^{+24}_{-24}$
$y_{\text{cal}}$	$1.0008^{+0.0062}_{-0.0065}$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.064}_{-0.059}$	$f\sigma_8(0.15)$	$0.455^{+0.017}_{-0.016}$
$A_{B,\text{dust}}$	$4.9^{+3.3}_{-2.1}$	$z_{\text{re}}$	$< 9.58$	$\sigma_8(0.15)$	$0.747^{+0.017}_{-0.013}$
$A_{B,\text{sync}}$	$< 4.92$	$10^9 A_s$	$2.098^{+0.093}_{-0.063}$	$f\sigma_8(0.38)$	$0.474^{+0.015}_{-0.014}$
$\alpha_{B,\text{dust}}$	—	$10^9 A_s e^{-2\tau}$	$1.877^{+0.029}_{-0.028}$	$\sigma_8(0.38)$	$0.663^{+0.015}_{-0.011}$
$\beta_{B,\text{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{40}$	$1234^{+36}_{-34}$	$f\sigma_8(0.51)$	$0.472^{+0.013}_{-0.012}$
$\alpha_{B,\text{sync}}$	—	$D_{220}$	$5720^{+100}_{-99}$	$\sigma_8(0.51)$	$0.620^{+0.014}_{-0.010}$
$\beta_{B,\text{sync}}$	$-3.10^{+0.69}_{-0.72}$	$D_{810}$	$2536^{+34}_{-35}$	$f\sigma_8(0.61)$	$0.467^{+0.012}_{-0.011}$
$\epsilon_{\text{dust,sync}}$	$< 0.350$	$D_{1420}$	$817^{+12}_{-13}$	$\sigma_8(0.61)$	$0.590^{+0.014}_{-0.0096}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$D_{2000}$	$230.6^{+4.2}_{-4.2}$	$f\sigma_8(2.33)$	$0.2976^{+0.0069}_{-0.0047}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$n_{s,0.002}$	$0.968^{+0.010}_{-0.010}$	$\sigma_8(2.33)$	$0.3069^{+0.0071}_{-0.0049}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-40}$	$Y_P$	$0.24538^{+0.00015}_{-0.00016}$	$r_{0.002}$	$< 0.0845$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24670^{+0.00015}_{-0.00016}$	$r_{0.01}$	$< 0.0871$
$A_{143}^{\text{tSZ}}$	$< 8.80$	$10^5 \text{D}/\text{H}$	$2.594^{+0.072}_{-0.071}$	$\ln(10^{10} A_t)$	$-0.6^{+1.5}_{-3.3}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$\text{Age}/\text{Gyr}$	$13.797^{+0.054}_{-0.055}$	$r_{10}$	$< 0.0434$
$r_{143 \times 217}^{\text{CIB}}$	—	$z_*$	$1089.89^{+0.61}_{-0.60}$	$10^9 A_t$	$< 0.189$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$r_*$	$144.72^{+0.65}_{-0.63}$	$10^9 A_t e^{-2\tau}$	$< 0.169$
$A^{\text{kSZ}}$	—	$100\theta_*$	$1.04114^{+0.00075}_{-0.00074}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{100}^{\text{dust}}$	$1.00^{+0.50}_{-0.50}$	$D_M(z_*)/\text{Gpc}$	$13.901^{+0.062}_{-0.060}$	$f_{2000}^{217}$	$106.7^{+5.1}_{-4.9}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_{\text{drag}}$	$1059.76^{+0.85}_{-0.82}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$r_{\text{drag}}$	$147.41^{+0.68}_{-0.68}$	$\chi_{\text{BKPLANCK}}^2$	$740.1 (\nu: 3.5)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$k_D$	$0.14050^{+0.00085}_{-0.00084}$	$\chi_{\text{simall}}^2$	$397.3 (\nu: 2.0)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_D$	$0.16086^{+0.00049}_{-0.00049}$	$\chi_{\text{lowl}}^2$	$23.9 (\nu: 0.6)$
$c_{217}$	$1.0011^{+0.0039}_{-0.0040}$	$z_{\text{eq}}$	$3377^{+60}_{-61}$	$\chi_{\text{CamSpec}}^2$	$11513.3 (\nu: 15.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$k_{\text{eq}}$	$0.01031^{+0.00018}_{-0.00019}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{MGS}}^2$	$1.34 (\nu: 0.1)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$100\theta_{s,\text{eq}}$	$0.4517^{+0.0059}_{-0.0057}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.9)$
$\Omega_\Lambda$	$0.690^{+0.015}_{-0.016}$	$H(0.15)$	$72.9^{+1.0}_{-0.99}$	$\chi_{\text{prior}}^2$	$9.5 (\nu: 7.2)$
$\Omega_m$	$0.310^{+0.016}_{-0.015}$	$D_M(0.15)$	$641^{+10}_{-9.7}$	$\chi_{\text{BAO}}^2$	$6.0 (\nu: 0.5)$
$\Omega_m h^2$	$0.1420^{+0.0025}_{-0.0025}$	$H(0.38)$	$83.03^{+0.75}_{-0.73}$	$\chi_{\text{CMB}}^2$	$12674.5 (\nu: 19.6)$

$$\bar{\chi}_{\text{eff}}^2 = 12690.02; R - 1 = 0.00713$$



### 13.27 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228^{+0.00042}_{-0.00040}$	$\Omega_{\mathrm{m}}h^2$	$0.1426^{+0.0029}_{-0.0029}$	$D_{\mathrm{M}}(0.15)$	$643^{+12}_{-12}$
$\Omega_{\mathrm{c}}h^2$	$0.1197^{+0.0031}_{-0.0031}$	$\Omega_{\mathrm{m}}h^3$	$0.09608^{+0.00083}_{-0.00080}$	$H(0.38)$	$82.84^{+0.89}_{-0.86}$
$100\theta_{\mathrm{MC}}$	$1.04086^{+0.00079}_{-0.00078}$	$\sigma_8$	$0.811^{+0.015}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1534^{+24}_{-24}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$S_8$	$0.830^{+0.033}_{-0.033}$	$H(0.51)$	$89.58^{+0.72}_{-0.68}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.038}_{-0.028}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.455^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.51)$	$1986^{+28}_{-28}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.017}_{-0.016}$	$H(0.61)$	$95.22^{+0.59}_{-0.56}$
$r$	$< 0.0878$	$\sigma_8/h^{0.5}$	$0.988^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.61)$	$2311^{+30}_{-30}$
$y_{\mathrm{cal}}$	$1.0008^{+0.0063}_{-0.0065}$	$r_{\mathrm{drag}}h$	$99.2^{+2.4}_{-2.4}$	$H(2.33)$	$236.3^{+1.8}_{-1.9}$
$A_{B,\mathrm{dust}}$	$4.9^{+3.2}_{-2.1}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.056}_{-0.055}$	$D_{\mathrm{M}}(2.33)$	$5767^{+27}_{-28}$
$A_{B,\mathrm{sync}}$	$< 4.94$	$z_{\mathrm{re}}$	$< 9.45$	$f\sigma_8(0.15)$	$0.459^{+0.017}_{-0.017}$
$\alpha_{B,\mathrm{dust}}$	—	$10^9 A_{\mathrm{s}}$	$2.100^{+0.082}_{-0.058}$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.012}$
$\beta_{B,\mathrm{dust}}$	$1.60^{+0.25}_{-0.25}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880^{+0.027}_{-0.027}$	$f\sigma_8(0.38)$	$0.477^{+0.013}_{-0.013}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{40}$	$1238^{+35}_{-33}$	$\sigma_8(0.38)$	$0.664^{+0.012}_{-0.010}$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.67}_{-0.73}$	$D_{220}$	$5719^{+100}_{-100}$	$f\sigma_8(0.51)$	$0.475^{+0.012}_{-0.012}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$< 0.336$	$D_{810}$	$2536^{+34}_{-35}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0092}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{1420}$	$816^{+12}_{-13}$	$f\sigma_8(0.61)$	$0.470^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{2000}$	$230.4^{+4.3}_{-4.2}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0087}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-40}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$f\sigma_8(2.33)$	$0.2977^{+0.0060}_{-0.0044}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$Y_{\mathrm{P}}$	$0.24536^{+0.00016}_{-0.00018}$	$\sigma_8(2.33)$	$0.3068^{+0.0066}_{-0.0047}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.77$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00016}_{-0.00018}$	$r_{0.002}$	$< 0.0820$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.602^{+0.077}_{-0.076}$	$r_{0.01}$	$< 0.0850$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.807^{+0.061}_{-0.062}$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.7^{+1.6}_{-3.3}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1090.00^{+0.69}_{-0.67}$	$r_{10}$	$< 0.0421$
$A^{\mathrm{kSZ}}$	—	$r_*$	$144.57^{+0.72}_{-0.70}$	$10^9 A_{\mathrm{t}}$	$< 0.184$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.51}_{-0.49}$	$100\theta_*$	$1.04105^{+0.00079}_{-0.00077}$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.165$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887^{+0.067}_{-0.066}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_{\mathrm{drag}}$	$1059.71^{+0.87}_{-0.85}$	$f_{2000}^{217}$	$106.9^{+5.0}_{-4.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.40}$	$r_{\mathrm{drag}}$	$147.27^{+0.74}_{-0.73}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$k_{\mathrm{D}}$	$0.14062^{+0.00086}_{-0.00087}$	$\chi_{\mathrm{lensing}}^2$	$9.25 (\nu: 0.2)$
$c_{217}$	$1.0011^{+0.0039}_{-0.0039}$	$100\theta_{\mathrm{D}}$	$0.16088^{+0.00052}_{-0.00051}$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 (\nu: 3.5)$
$c_{TE}$	$0.997^{+0.012}_{-0.012}$	$z_{\mathrm{eq}}$	$3393^{+69}_{-70}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{eq}}$	$0.01036^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{lowl}}^2$	$24.2 (\nu: 0.7)$
$H_0$	$67.4^{+1.4}_{-1.4}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.013}_{-0.013}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.0 (\nu: 15.0)$
$\Omega_{\Lambda}$	$0.686^{+0.019}_{-0.019}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4502^{+0.0069}_{-0.0066}$	$\chi_{\mathrm{prior}}^2$	$9.4 (\nu: 7.1)$
$\Omega_{\mathrm{m}}$	$0.314^{+0.019}_{-0.019}$	$H(0.15)$	$72.7^{+1.2}_{-1.2}$	$\chi_{\mathrm{CMB}}^2$	$12683.5 (\nu: 20.0)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12692.90; R - 1 = 0.00651$$



### 13.28 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\sigma_8$	$0.810^{+0.016}_{-0.014}$	$D_M(0.51)$	$1981^{+22}_{-22}$
$\Omega_c h^2$	$0.1191^{+0.0024}_{-0.0024}$	$S_8$	$0.824^{+0.027}_{-0.027}$	$H(0.61)$	$95.32^{+0.50}_{-0.47}$
$100\theta_{MC}$	$1.04094^{+0.00076}_{-0.00075}$	$\sigma_8 \Omega_m^{0.5}$	$0.451^{+0.015}_{-0.015}$	$D_M(0.61)$	$2305^{+24}_{-24}$
$\tau$	$0.057^{+0.018}_{-0.014}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.014}_{-0.014}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$\ln(10^{10} A_s)$	$3.046^{+0.039}_{-0.029}$	$\sigma_8/h^{0.5}$	$0.985^{+0.021}_{-0.021}$	$D_M(2.33)$	$5763^{+23}_{-24}$
$n_s$	$0.967^{+0.010}_{-0.0098}$	$r_{\text{drag}} h$	$99.7^{+1.9}_{-1.8}$	$f\sigma_8(0.15)$	$0.456^{+0.014}_{-0.014}$
$r$	$< 0.0892$	$\langle d^2 \rangle^{1/2}$	$2.434^{+0.052}_{-0.051}$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.012}$
$y_{\text{cal}}$	$1.0009^{+0.0062}_{-0.0065}$	$z_{\text{re}}$	$< 9.55$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{B,\text{dust}}$	$4.9^{+3.2}_{-2.2}$	$10^9 A_s$	$2.103^{+0.083}_{-0.061}$	$\sigma_8(0.38)$	$0.664^{+0.013}_{-0.010}$
$A_{B,\text{sync}}$	$< 4.93$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.027}_{-0.026}$	$f\sigma_8(0.51)$	$0.473^{+0.011}_{-0.010}$
$\alpha_{B,\text{dust}}$	—	$D_{40}$	$1236^{+35}_{-33}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0096}$
$\beta_{B,\text{dust}}$	$1.60^{+0.25}_{-0.25}$	$D_{220}$	$5724^{+100}_{-99}$	$f\sigma_8(0.61)$	$0.468^{+0.010}_{-0.0096}$
$\alpha_{B,\text{sync}}$	—	$D_{810}$	$2537^{+34}_{-35}$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0091}$
$\beta_{B,\text{sync}}$	$-3.10^{+0.68}_{-0.72}$	$D_{1420}$	$817^{+12}_{-13}$	$f\sigma_8(2.33)$	$0.2980^{+0.0060}_{-0.0047}$
$\epsilon_{\text{dust,sync}}$	$< 0.342$	$D_{2000}$	$230.7^{+4.1}_{-4.1}$	$\sigma_8(2.33)$	$0.3073^{+0.0065}_{-0.0049}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$n_{s,0.002}$	$0.967^{+0.010}_{-0.0098}$	$r_{0.002}$	$< 0.0834$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$Y_P$	$0.24538^{+0.00015}_{-0.00016}$	$r_{0.01}$	$< 0.0862$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$Y_P^{\text{BBN}}$	$0.24670^{+0.00015}_{-0.00016}$	$\ln(10^{10} A_t)$	$-0.7^{+1.6}_{-3.2}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$10^5 D/H$	$2.594^{+0.072}_{-0.071}$	$r_{10}$	$< 0.0427$
$A_{143}^{\text{tSZ}}$	$< 8.80$	Age/Gyr	$13.797^{+0.054}_{-0.055}$	$10^9 A_t$	$< 0.188$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.34}$	$z_*$	$1089.90^{+0.59}_{-0.58}$	$10^9 A_t e^{-2\tau}$	$< 0.167$
$r_{143 \times 217}^{\text{CIB}}$	—	$r_*$	$144.70^{+0.60}_{-0.59}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$100\theta_*$	$1.04113^{+0.00074}_{-0.00074}$	$f_{2000}^{217}$	$106.8^{+5.1}_{-4.9}$
$A^{\text{ksSZ}}$	—	$D_M(z_*)/\text{Gpc}$	$13.898^{+0.057}_{-0.056}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{100}^{\text{dust}}$	$1.00^{+0.51}_{-0.49}$	$z_{\text{drag}}$	$1059.77^{+0.85}_{-0.83}$	$\chi_{\text{lensing}}^2$	$9.21 (\nu: 0.2)$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.44}$	$r_{\text{drag}}$	$147.38^{+0.65}_{-0.64}$	$\chi_{\text{BKPLANCK}}^2$	$740.0 (\nu: 3.5)$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$k_D$	$0.14053^{+0.00082}_{-0.00082}$	$\chi_{\text{simall}}^2$	$397.4 (\nu: 2.0)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.40}$	$100\theta_D$	$0.16085^{+0.00049}_{-0.00050}$	$\chi_{\text{lowl}}^2$	$24.0 (\nu: 0.6)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\text{eq}}$	$3380^{+55}_{-56}$	$\chi_{\text{CamSpec}}^2$	$11512.9 (\nu: 15.0)$
$c_{217}$	$1.0011^{+0.0039}_{-0.0040}$	$k_{\text{eq}}$	$0.01032^{+0.00017}_{-0.00017}$	$\chi_{6\text{DF}}^2$	$0.049 (\nu: 0.0)$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$100\theta_{\text{eq}}$	$0.817^{+0.011}_{-0.010}$	$\chi_{\text{MGS}}^2$	$1.29 (\nu: 0.1)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$100\theta_{s,\text{eq}}$	$0.4515^{+0.0054}_{-0.0052}$	$\chi_{\text{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$H_0$	$67.6^{+1.1}_{-1.1}$	$H(0.15)$	$72.91^{+0.97}_{-0.93}$	$\chi_{\text{prior}}^2$	$9.4 (\nu: 7.2)$
$\Omega_\Lambda$	$0.689^{+0.015}_{-0.015}$	$D_M(0.15)$	$641.0^{+9.4}_{-9.4}$	$\chi_{\text{CMB}}^2$	$12683.5 (\nu: 20.0)$
$\Omega_m$	$0.311^{+0.015}_{-0.015}$	$H(0.38)$	$83.01^{+0.72}_{-0.69}$	$\chi_{\text{BAO}}^2$	$6.03 (\nu: 0.5)$
$\Omega_m h^2$	$0.1421^{+0.0023}_{-0.0023}$	$D_M(0.38)$	$1529^{+19}_{-19}$		
$\Omega_m h^3$	$0.09610^{+0.00084}_{-0.00081}$	$H(0.51)$	$89.71^{+0.59}_{-0.56}$		

$$\bar{\chi}_{\text{eff}}^2 = 12699.00; R - 1 = 0.00924$$



# 14 w

## 14.1 base\_w\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02222	$0.02217^{+0.00058}_{-0.00055}$	$\sigma_8 \Omega_m^{0.5}$	0.4063	$0.430^{+0.054}_{-0.040}$	$H(0.15)$	88.7	$81.6^{+8.5}_{-14}$
$\Omega_c h^2$	0.1200	$0.1202^{+0.0052}_{-0.0051}$	$\sigma_8 \Omega_m^{0.25}$	0.660	$0.641^{+0.047}_{-0.059}$	$D_M(0.15)$	481	$548^{+200}_{-70}$
$100\theta_{MC}$	1.04096	$1.0409^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	1.073	$1.042^{+0.070}_{-0.095}$	$H(0.38)$	84.46	$84.1^{+2.5}_{-3.8}$
$\tau$	0.0524	$0.052^{+0.022}_{-0.023}$	$r_{drag} h$	146.8	$125^{+20}_{-40}$	$D_M(0.38)$	1288	$1388^{+200}_{-100}$
$w_0$	-1.96	$-1.54^{+0.78}_{-0.54}$	$\langle d^2 \rangle^{1/2}$	2.520	$2.50^{+0.11}_{-0.13}$	$H(0.51)$	86.77	$88.2^{+2.1}_{-3.0}$
$\ln(10^{10} A_s)$	3.0381	$3.039^{+0.043}_{-0.045}$	$z_{re}$	7.45	$7.5^{+2.1}_{-2.5}$	$D_M(0.51)$	1744	$1841^{+300}_{-100}$
$n_s$	0.9653	$0.964^{+0.014}_{-0.014}$	$10^9 A_s$	2.087	$2.088^{+0.092}_{-0.093}$	$H(0.61)$	90.19	$92.5^{+3.2}_{-3.4}$
$y_{cal}$	1.0001	$1.0004^{+0.0062}_{-0.0063}$	$10^9 A_s e^{-2\tau}$	1.8790	$1.881^{+0.034}_{-0.034}$	$D_M(0.61)$	2083	$2173^{+200}_{-100}$
$A_{100}^{PS}$	235	$241^{+60}_{-70}$	$D_{40}$	1221.3	$1226^{+40}_{-38}$	$H(2.33)$	230.3	$232^{+10}_{-4.6}$
$A_{143}^{PS}$	42.9	$40^{+20}_{-20}$	$D_{220}$	5707	$5707^{+100}_{-110}$	$D_M(2.33)$	5736	$5748^{+85}_{-50}$
$A_{217}^{PS}$	101.3	$102^{+30}_{-40}$	$D_{810}$	2532.2	$2533^{+35}_{-35}$	$f\sigma_8(0.15)$	0.508	$0.489^{+0.055}_{-0.050}$
$A_{217}^{CIB}$	45.1	$40^{+20}_{-20}$	$D_{1420}$	814.0	$814^{+13}_{-13}$	$\sigma_8(0.15)$	1.010	$0.90^{+0.15}_{-0.22}$
$A_{143}^{tSZ}$	6.50	$< 8.78$	$D_{2000}$	229.96	$229.7^{+4.6}_{-4.7}$	$f\sigma_8(0.38)$	0.644	$0.57^{+0.11}_{-0.13}$
$r_{143 \times 217}^{PS}$	0.610	$0.65^{+0.31}_{-0.33}$	$n_{s,0.002}$	0.9653	$0.964^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	0.904	$0.80^{+0.13}_{-0.20}$
$r_{143 \times 217}^{CIB}$	0.84	—	$Y_P$	0.245335	$0.24531^{+0.00023}_{-0.00026}$	$f\sigma_8(0.51)$	0.675	$0.59^{+0.12}_{-0.16}$
$\xi^{tSZ \times CIB}$	0.24	—	$Y_P^{BBN}$	0.246661	$0.24664^{+0.00023}_{-0.00026}$	$\sigma_8(0.51)$	0.845	$0.75^{+0.12}_{-0.19}$
$A^{kSZ}$	0.1	—	$10^5 D/H$	2.614	$2.62^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	0.681	$0.59^{+0.12}_{-0.17}$
$A_{100}^{dust}$	1.01	$1.01^{+0.49}_{-0.51}$	Age/Gyr	13.449	$13.59^{+0.42}_{-0.21}$	$\sigma_8(0.61)$	0.802	$0.71^{+0.11}_{-0.18}$
$A_{143}^{dust}$	0.991	$0.97^{+0.45}_{-0.45}$	$z_*$	1090.11	$1090.2^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	0.399	$0.356^{+0.053}_{-0.088}$
$A_{217}^{dust}$	0.967	$0.97^{+0.27}_{-0.26}$	$r_*$	144.55	$144.5^{+1.2}_{-1.2}$	$\sigma_8(2.33)$	0.400	$0.359^{+0.049}_{-0.078}$
$A_{143 \times 217}^{dust}$	0.993	$1.03^{+0.43}_{-0.41}$	$100\theta_*$	1.04116	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	30.5	$30^{+8}_{-8}$
$c_{100}$	0.99763	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.884	$13.88^{+0.11}_{-0.11}$	$f_{2000}^{217}$	107.0	$107.3^{+5.2}_{-5.1}$
$c_{217}$	1.00138	$1.0011^{+0.0041}_{-0.0040}$	$z_{drag}$	1059.59	$1059.5^{+1.2}_{-1.2}$	$f_{2000}^{143 \times 217}$	32.4	$33^{+6}_{-6}$
$H_0$	99.7	$> 60.7$	$r_{drag}$	147.26	$147.3^{+1.2}_{-1.2}$	$\chi_{simall}^2$	395.72	$396.9 (\nu: 1.4)$
$\Omega_\Lambda$	0.856	$0.790^{+0.073}_{-0.18}$	$k_D$	0.14057	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{lowl}^2$	22.46	$23.0 (\nu: 0.6)$
$\Omega_m$	0.144	$0.210^{+0.18}_{-0.073}$	$100\theta_D$	0.16097	$0.16103^{+0.00069}_{-0.00067}$	$\chi_{CamSpec}^2$	7048.6	$7062.0 (\nu: 14.0)$
$\Omega_m h^2$	0.14284	$0.1431^{+0.0050}_{-0.0049}$	$z_{eq}$	3398	$3403^{+120}_{-120}$	$\chi_{prior}^2$	2.0	$7.6 (\nu: 5.8)$
$\Omega_m h^3$	0.1424	$0.121^{+0.025}_{-0.035}$	$k_{eq}$	0.010371	$0.01039^{+0.00036}_{-0.00035}$	$\chi_{CMB}^2$	7466.8	$7481.8 (\nu: 15.0)$
$\sigma_8$	1.072	$0.96^{+0.15}_{-0.22}$	$100\theta_{eq}$	0.8137	$0.813^{+0.022}_{-0.022}$			
$S_8$	0.742	$0.786^{+0.098}_{-0.073}$	$100\theta_{s,eq}$	0.4497	$0.449^{+0.011}_{-0.011}$			

Best-fit  $\chi_{eff}^2 = 7468.79$ ;  $\Delta\chi_{eff}^2 = -2.94$ ;  $\bar{\chi}_{eff}^2 = 7489.40$ ;  $\Delta\bar{\chi}_{eff}^2 = -2.14$ ;  $R - 1 = 0.00889$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.72 ( $\Delta$  -0.11) commander\_dx12\_v3\_2\_29: 22.46 ( $\Delta$  -0.94) CamSpec like\_10.7HM: 7048.57 ( $\Delta$  -1.76)



## 14.2 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222^{+0.00055}_{-0.00055}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.424^{+0.051}_{-0.035}$	$H(0.15)$	$82.2^{+8.2}_{-13}$
$\Omega_{\mathrm{c}} h^2$	$0.1193^{+0.0043}_{-0.0040}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.635^{+0.034}_{-0.043}$	$D_{\mathrm{M}}(0.15)$	$544^{+100}_{-70}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0012}$	$\sigma_8/h^{0.5}$	$1.034^{+0.051}_{-0.070}$	$H(0.38)$	$84.5^{+2.1}_{-3.6}$
$\tau$	$0.052^{+0.022}_{-0.022}$	$r_{\mathrm{drag}} h$	$126^{+20}_{-30}$	$D_{\mathrm{M}}(0.38)$	$1378^{+200}_{-100}$
$w_0$	$-1.53^{+0.71}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	$2.481^{+0.072}_{-0.081}$	$H(0.51)$	$88.5^{+1.8}_{-2.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.035^{+0.041}_{-0.043}$	$z_{\mathrm{re}}$	$7.4^{+2.1}_{-2.5}$	$D_{\mathrm{M}}(0.51)$	$1829^{+200}_{-100}$
$n_{\mathrm{s}}$	$0.966^{+0.013}_{-0.013}$	$10^9 A_{\mathrm{s}}$	$2.081^{+0.086}_{-0.087}$	$H(0.61)$	$92.7^{+2.9}_{-3.1}$
$y_{\mathrm{cal}}$	$1.0003^{+0.0061}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.030}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2161^{+230}_{-120}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{40}$	$1221^{+35}_{-33}$	$H(2.33)$	$231.5^{+9.1}_{-4.0}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5709^{+100}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5742^{+77}_{-46}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{810}$	$2531^{+34}_{-35}$	$f\sigma_8(0.15)$	$0.482^{+0.039}_{-0.035}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.15)$	$0.89^{+0.13}_{-0.19}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.84$	$D_{2000}$	$229.7^{+4.7}_{-4.8}$	$f\sigma_8(0.38)$	$0.563^{+0.090}_{-0.11}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.013}_{-0.013}$	$\sigma_8(0.38)$	$0.80^{+0.12}_{-0.18}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24533^{+0.00021}_{-0.00026}$	$f\sigma_8(0.51)$	$0.58^{+0.11}_{-0.14}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00021}_{-0.00026}$	$\sigma_8(0.51)$	$0.75^{+0.11}_{-0.17}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.58^{+0.11}_{-0.15}$
$A_{100}^{\mathrm{dust}}$	$1.02^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.57^{+0.38}_{-0.20}$	$\sigma_8(0.61)$	$0.71^{+0.10}_{-0.16}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.45}$	$z_*$	$1090.05^{+0.94}_{-0.91}$	$f\sigma_8(2.33)$	$0.356^{+0.049}_{-0.079}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.73^{+0.94}_{-0.96}$	$\sigma_8(2.33)$	$0.359^{+0.046}_{-0.070}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0012}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900^{+0.089}_{-0.089}$	$f_{2000}^{217}$	$107.3^{+5.5}_{-5.3}$
$c_{217}$	$1.0012^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.5^{+1.1}_{-1.2}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$> 62.6$	$r_{\mathrm{drag}}$	$147.45^{+0.99}_{-0.98}$	$\chi_{\mathrm{lensing}}^2$	$9.0 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.796^{+0.069}_{-0.16}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0011}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.1)$
$\Omega_{\mathrm{m}}$	$0.204^{+0.16}_{-0.069}$	$100\theta_{\mathrm{D}}$	$0.16100^{+0.00069}_{-0.00066}$	$\chi_{\mathrm{lowl}}^2$	$22.56 (\nu: 0.4)$
$\Omega_{\mathrm{m}} h^2$	$0.1422^{+0.0040}_{-0.0037}$	$z_{\mathrm{eq}}$	$3382^{+97}_{-89}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.1 (\nu: 13.2)$
$\Omega_{\mathrm{m}} h^3$	$0.121^{+0.023}_{-0.032}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00029}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.95^{+0.13}_{-0.19}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.017}_{-0.018}$	$\chi_{\mathrm{CMB}}^2$	$7490.4 (\nu: 14.9)$
$S_8$	$0.774^{+0.094}_{-0.063}$	$100\theta_{\mathrm{s,eq}}$	$0.4512^{+0.0089}_{-0.0092}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7497.94; \Delta \bar{\chi}_{\mathrm{eff}}^2 = -2.30; R - 1 = 0.01572$					



### 14.3 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218^{+0.00058}_{-0.00055}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.431^{+0.054}_{-0.040}$	$H(0.15)$	$81.6^{+8.6}_{-14}$
$\Omega_{\mathrm{c}} h^2$	$0.1201^{+0.0052}_{-0.0051}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.641^{+0.047}_{-0.060}$	$D_{\mathrm{M}}(0.15)$	$548^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$\sigma_8/h^{0.5}$	$1.043^{+0.069}_{-0.095}$	$H(0.38)$	$84.1^{+2.5}_{-3.9}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$r_{\mathrm{drag}} h$	$124^{+20}_{-40}$	$D_{\mathrm{M}}(0.38)$	$1388^{+200}_{-100}$
$w_0$	$-1.53^{+0.78}_{-0.54}$	$\langle d^2 \rangle^{1/2}$	$2.50^{+0.11}_{-0.13}$	$H(0.51)$	$88.3^{+2.1}_{-2.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.040}_{-0.030}$	$z_{\mathrm{re}}$	$< 9.39$	$D_{\mathrm{M}}(0.51)$	$1841^{+300}_{-100}$
$n_{\mathrm{s}}$	$0.965^{+0.014}_{-0.014}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.086}_{-0.063}$	$H(0.61)$	$92.6^{+3.2}_{-3.4}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0062}_{-0.0063}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880^{+0.033}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2173^{+200}_{-100}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$D_{40}$	$1225^{+39}_{-38}$	$H(2.33)$	$232^{+10}_{-4.6}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5707^{+100}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5748^{+86}_{-50}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2533^{+34}_{-35}$	$f\sigma_8(0.15)$	$0.489^{+0.055}_{-0.050}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.15)$	$0.90^{+0.15}_{-0.22}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.78$	$D_{2000}$	$229.8^{+4.6}_{-4.7}$	$f\sigma_8(0.38)$	$0.57^{+0.11}_{-0.13}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.014}_{-0.014}$	$\sigma_8(0.38)$	$0.80^{+0.13}_{-0.20}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00026}$	$f\sigma_8(0.51)$	$0.59^{+0.12}_{-0.16}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00026}$	$\sigma_8(0.51)$	$0.75^{+0.12}_{-0.19}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.11}_{-0.11}$	$f\sigma_8(0.61)$	$0.59^{+0.12}_{-0.17}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.59^{+0.42}_{-0.21}$	$\sigma_8(0.61)$	$0.71^{+0.11}_{-0.18}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.45}$	$z_*$	$1090.2^{+1.0}_{-1.0}$	$f\sigma_8(2.33)$	$0.356^{+0.053}_{-0.088}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$144.5^{+1.2}_{-1.2}$	$\sigma_8(2.33)$	$0.359^{+0.050}_{-0.078}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.43}_{-0.41}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.88^{+0.11}_{-0.11}$	$f_{2000}^{217}$	$107.3^{+5.3}_{-5.2}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.2}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$> 60.7$	$r_{\mathrm{drag}}$	$147.3^{+1.2}_{-1.2}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$\Omega_{\Lambda}$	$0.790^{+0.074}_{-0.18}$	$k_{\mathrm{D}}$	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{lowl}}^2$	$22.9 (\nu: 0.6)$
$\Omega_{\mathrm{m}}$	$0.210^{+0.18}_{-0.074}$	$100\theta_{\mathrm{D}}$	$0.16102^{+0.00069}_{-0.00067}$	$\chi_{\mathrm{CamSpec}}^2$	$7061.9 (\nu: 14.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1430^{+0.0049}_{-0.0048}$	$z_{\mathrm{eq}}$	$3401^{+120}_{-110}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.7)$
$\Omega_{\mathrm{m}} h^3$	$0.121^{+0.025}_{-0.035}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00036}_{-0.00035}$	$\chi_{\mathrm{CMB}}^2$	$7481.6 (\nu: 14.7)$
$\sigma_8$	$0.96^{+0.15}_{-0.22}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.022}_{-0.021}$		
$S_8$	$0.787^{+0.099}_{-0.073}$	$100\theta_{\mathrm{s,eq}}$	$0.449^{+0.011}_{-0.011}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7489.13; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.13; R - 1 = 0.01149$$



#### 14.4 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02223^{+0.00055}_{-0.00055}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.424^{+0.051}_{-0.035}$	$H(0.15)$	$82.2^{+8.3}_{-13}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0042}_{-0.0038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.635^{+0.034}_{-0.043}$	$D_{\mathrm{M}}(0.15)$	$544^{+100}_{-70}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0012}$	$\sigma_8/h^{0.5}$	$1.034^{+0.052}_{-0.071}$	$H(0.38)$	$84.5^{+2.1}_{-3.7}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$r_{\mathrm{drag}} h$	$125^{+20}_{-30}$	$D_{\mathrm{M}}(0.38)$	$1379^{+200}_{-100}$
$w_0$	$-1.52^{+0.70}_{-0.49}$	$\langle d^2 \rangle^{1/2}$	$2.482^{+0.071}_{-0.081}$	$H(0.51)$	$88.6^{+1.7}_{-2.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.039^{+0.038}_{-0.026}$	$z_{\mathrm{re}}$	$< 9.28$	$D_{\mathrm{M}}(0.51)$	$1830^{+200}_{-100}$
$n_{\mathrm{s}}$	$0.967^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}}$	$2.088^{+0.081}_{-0.055}$	$H(0.61)$	$92.8^{+2.9}_{-3.0}$
$y_{\mathrm{cal}}$	$1.0003^{+0.0060}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875^{+0.029}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2161^{+230}_{-120}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{40}$	$1220^{+34}_{-32}$	$H(2.33)$	$231.5^{+9.2}_{-3.9}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5709^{+100}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5740^{+79}_{-45}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{810}$	$2531^{+33}_{-35}$	$f\sigma_8(0.15)$	$0.481^{+0.038}_{-0.035}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.15)$	$0.89^{+0.13}_{-0.19}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$229.8^{+4.7}_{-4.7}$	$f\sigma_8(0.38)$	$0.562^{+0.090}_{-0.11}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.012}_{-0.012}$	$\sigma_8(0.38)$	$0.80^{+0.12}_{-0.18}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24534^{+0.00021}_{-0.00026}$	$f\sigma_8(0.51)$	$0.58^{+0.11}_{-0.14}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00022}_{-0.00026}$	$\sigma_8(0.51)$	$0.75^{+0.11}_{-0.17}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.61^{+0.11}_{-0.10}$	$f\sigma_8(0.61)$	$0.58^{+0.11}_{-0.14}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.57^{+0.38}_{-0.20}$	$\sigma_8(0.61)$	$0.71^{+0.10}_{-0.16}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.47}_{-0.45}$	$z_*$	$1090.02^{+0.93}_{-0.89}$	$f\sigma_8(2.33)$	$0.355^{+0.049}_{-0.079}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$144.76^{+0.92}_{-0.93}$	$\sigma_8(2.33)$	$0.359^{+0.046}_{-0.070}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.40}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904^{+0.087}_{-0.087}$	$f_{2000}^{217}$	$107.2^{+5.5}_{-5.3}$
$c_{217}$	$1.0012^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.6^{+1.1}_{-1.2}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-6}$
$H_0$	$> 62.5$	$r_{\mathrm{drag}}$	$147.48^{+0.98}_{-0.96}$	$\chi_{\mathrm{lensing}}^2$	$9.0 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.795^{+0.070}_{-0.16}$	$k_{\mathrm{D}}$	$0.1404^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{simall}}^2$	$396.6 (\nu: 1.0)$
$\Omega_{\mathrm{m}}$	$0.205^{+0.16}_{-0.070}$	$100\theta_{\mathrm{D}}$	$0.16099^{+0.00068}_{-0.00066}$	$\chi_{\mathrm{lowl}}^2$	$22.52 (\nu: 0.4)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0039}_{-0.0036}$	$z_{\mathrm{eq}}$	$3378^{+93}_{-87}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.0 (\nu: 13.3)$
$\Omega_{\mathrm{m}} h^3$	$0.121^{+0.024}_{-0.032}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00028}_{-0.00027}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.95^{+0.13}_{-0.19}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.017}_{-0.018}$	$\chi_{\mathrm{CMB}}^2$	$7490.1 (\nu: 14.6)$
$S_8$	$0.775^{+0.094}_{-0.064}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0087}_{-0.0090}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7497.68; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.33; R - 1 = 0.02078$$



# 14.5 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022361	$0.02233^{+0.00040}_{-0.00040}$	$\sigma_8$	1.060	$0.95^{+0.14}_{-0.21}$	$100\theta_{\text{eq}}$	0.8166	$0.816^{+0.015}_{-0.014}$
$\Omega_c h^2$	0.11924	$0.1194^{+0.0034}_{-0.0035}$	$S_8$	0.737	$0.776^{+0.081}_{-0.062}$	$100\theta_{\text{s,eq}}$	0.4511	$0.4508^{+0.0079}_{-0.0074}$
$100\theta_{\text{MC}}$	1.04093	$1.04091^{+0.00079}_{-0.00080}$	$\sigma_8 \Omega_m^{0.5}$	0.4035	$0.425^{+0.044}_{-0.034}$	$H(0.15)$	88.8	$82.1^{+8.2}_{-13}$
$\tau$	0.0528	$0.052^{+0.020}_{-0.022}$	$\sigma_8 \Omega_m^{0.25}$	0.6540	$0.635^{+0.037}_{-0.056}$	$D_{\text{M}}(0.15)$	482	$546^{+100}_{-70}$
$w_0$	-1.92	$-1.52^{+0.74}_{-0.49}$	$\sigma_8/h^{0.5}$	1.065	$1.034^{+0.057}_{-0.089}$	$H(0.38)$	84.89	$84.5^{+1.9}_{-3.7}$
$\ln(10^{10} A_s)$	3.0380	$3.037^{+0.040}_{-0.047}$	$r_{\text{drag}} h$	146.0	$125^{+20}_{-30}$	$D_{\text{M}}(0.38)$	1286	$1381^{+200}_{-100}$
$n_s$	0.9676	$0.967^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	2.507	$2.481^{+0.087}_{-0.12}$	$H(0.51)$	87.21	$88.6^{+1.7}_{-2.3}$
$y_{\text{cal}}$	1.0002	$1.0003^{+0.0064}_{-0.0062}$	$z_{\text{re}}$	7.45	$7.4^{+2.0}_{-2.5}$	$D_{\text{M}}(0.51)$	1740	$1832^{+200}_{-100}$
$A_{100}^{\text{PS}}$	230	$238^{+60}_{-60}$	$10^9 A_s$	2.086	$2.085^{+0.085}_{-0.095}$	$H(0.61)$	90.60	$92.8^{+3.0}_{-2.9}$
$A_{143}^{\text{PS}}$	43.8	$39^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8772	$1.877^{+0.030}_{-0.030}$	$D_{\text{M}}(0.61)$	2078	$2163^{+240}_{-120}$
$A_{217}^{\text{PS}}$	105.9	$103^{+30}_{-30}$	$D_{40}$	1217.6	$1221^{+33}_{-33}$	$H(2.33)$	230.0	$231.8^{+9.9}_{-3.7}$
$A_{217}^{\text{CIB}}$	40.9	$39^{+20}_{-20}$	$D_{220}$	5719	$5719^{+99}_{-98}$	$D_{\text{M}}(2.33)$	5728	$5739^{+76}_{-38}$
$A_{143}^{\text{tSZ}}$	6.01	$< 8.91$	$D_{810}$	2534.2	$2534^{+35}_{-34}$	$f\sigma_8(0.15)$	0.5003	$0.482^{+0.039}_{-0.044}$
$r_{143 \times 217}^{\text{PS}}$	0.718	$0.66^{+0.30}_{-0.33}$	$D_{1420}$	815.9	$815^{+12}_{-12}$	$\sigma_8(0.15)$	0.999	$0.89^{+0.14}_{-0.21}$
$r_{143 \times 217}^{\text{CIB}}$	0.69	—	$D_{2000}$	230.76	$230.4^{+4.1}_{-4.0}$	$f\sigma_8(0.38)$	0.632	$0.562^{+0.093}_{-0.13}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.53	—	$n_{\text{s},0.002}$	0.9676	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.38)$	0.895	$0.80^{+0.13}_{-0.19}$
$A^{\text{kSZ}}$	0.8	—	$Y_{\text{P}}$	0.245392	$0.24538^{+0.00015}_{-0.00017}$	$f\sigma_8(0.51)$	0.663	$0.58^{+0.11}_{-0.15}$
$A_{100}^{\text{dust}}$	1.00	$1.01^{+0.50}_{-0.51}$	$Y_{\text{P}}^{\text{BBN}}$	0.246719	$0.24670^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	0.837	$0.74^{+0.12}_{-0.18}$
$A_{143}^{\text{dust}}$	0.943	$0.96^{+0.46}_{-0.45}$	$10^5 D/H$	2.587	$2.593^{+0.076}_{-0.073}$	$f\sigma_8(0.61)$	0.670	$0.58^{+0.12}_{-0.16}$
$A_{217}^{\text{dust}}$	0.977	$0.98^{+0.27}_{-0.27}$	Age/Gyr	13.437	$13.57^{+0.39}_{-0.19}$	$\sigma_8(0.61)$	0.794	$0.71^{+0.11}_{-0.17}$
$A_{143 \times 217}^{\text{dust}}$	1.037	$1.03^{+0.42}_{-0.41}$	$z_*$	1089.86	$1089.92^{+0.70}_{-0.71}$	$f\sigma_8(2.33)$	0.396	$0.355^{+0.051}_{-0.085}$
$c_{100}$	0.99782	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	144.63	$144.62^{+0.81}_{-0.77}$	$\sigma_8(2.33)$	0.397	$0.358^{+0.048}_{-0.075}$
$c_{217}$	1.00110	$1.0011^{+0.0042}_{-0.0040}$	$100\theta_*$	1.04111	$1.04110^{+0.00079}_{-0.00078}$	$f_{2000}^{143}$	28.9	$29^{+8}_{-7}$
$c_{TE}$	0.9959	$0.996^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.892	$13.891^{+0.076}_{-0.072}$	$f_{2000}^{217}$	105.98	$106.6^{+5.0}_{-4.9}$
$c_{EE}$	0.9919	$0.992^{+0.013}_{-0.012}$	$z_{\text{drag}}$	1059.86	$1059.81^{+0.81}_{-0.90}$	$f_{2000}^{143 \times 217}$	31.5	$32^{+5}_{-5}$
$H_0$	99.1	$> 61.8$	$r_{\text{drag}}$	147.30	$147.29^{+0.81}_{-0.78}$	$\chi_{\text{small}}^2$	395.73	$396.7 (\nu: 1.1)$
$\Omega_{\Lambda}$	0.855	$0.793^{+0.071}_{-0.17}$	$k_{\text{D}}$	0.14064	$0.14062^{+0.00088}_{-0.00091}$	$\chi_{\text{lowl}}^2$	22.18	$22.57 (\nu: 0.3)$
$\Omega_{\text{m}}$	0.145	$0.207^{+0.17}_{-0.071}$	$100\theta_{\text{D}}$	0.160796	$0.16083^{+0.00052}_{-0.00048}$	$\chi_{\text{CamSpec}}^2$	11498.2	$11513.3 (\nu: 15.6)$
$\Omega_{\text{m}} h^2$	0.14224	$0.1424^{+0.0033}_{-0.0034}$	$z_{\text{eq}}$	3384	$3387^{+79}_{-80}$	$\chi_{\text{prior}}^2$	1.9	$7.8 (\nu: 5.8)$
$\Omega_{\text{m}} h^3$	0.1409	$0.121^{+0.024}_{-0.034}$	$k_{\text{eq}}$	0.010328	$0.01034^{+0.00024}_{-0.00024}$	$\chi_{\text{CMB}}^2$	11916.1	$11932.6 (\nu: 16.5)$

Best-fit  $\chi_{\text{eff}}^2 = 11918.08$ ;  $\Delta\chi_{\text{eff}}^2 = -2.68$ ;  $\bar{\chi}_{\text{eff}}^2 = 11940.42$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = -2.04$ ;  $R - 1 = 0.01476$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.73 ( $\Delta$  -0.16) commander\_dx12\_v3\_2\_29: 22.18 ( $\Delta$  -0.83) CamSpec like\_10.7HM\_1400\_unified: 11498.24 ( $\Delta$  -1.41)



## 14.6 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02235^{+0.00040}_{-0.00041}$	$S_8$	$0.770^{+0.079}_{-0.059}$	$H(0.15)$	$82.6^{+7.7}_{-12}$
$\Omega_c h^2$	$0.1191^{+0.0031}_{-0.0030}$	$\sigma_8 \Omega_m^{0.5}$	$0.422^{+0.043}_{-0.032}$	$D_M(0.15)$	$541^{+100}_{-70}$
$100\theta_{MC}$	$1.04093^{+0.00076}_{-0.00077}$	$\sigma_8 \Omega_m^{0.25}$	$0.634^{+0.031}_{-0.042}$	$H(0.38)$	$84.7^{+1.7}_{-3.0}$
$\tau$	$0.052^{+0.019}_{-0.022}$	$\sigma_8/h^{0.5}$	$1.032^{+0.047}_{-0.068}$	$D_M(0.38)$	$1372^{+200}_{-100}$
$w_0$	$-1.54^{+0.67}_{-0.45}$	$r_{\text{drag}} h$	$126^{+20}_{-30}$	$H(0.51)$	$88.7^{+1.6}_{-2.1}$
$\ln(10^{10} A_s)$	$3.035^{+0.036}_{-0.041}$	$\langle d^2 \rangle^{1/2}$	$2.476^{+0.066}_{-0.080}$	$D_M(0.51)$	$1823^{+200}_{-100}$
$n_s$	$0.967^{+0.011}_{-0.011}$	$z_{\text{re}}$	$7.3^{+1.9}_{-2.4}$	$H(0.61)$	$92.8^{+2.9}_{-2.8}$
$y_{\text{cal}}$	$1.0002^{+0.0062}_{-0.0060}$	$10^9 A_s$	$2.080^{+0.076}_{-0.084}$	$D_M(0.61)$	$2154^{+210}_{-110}$
$A_{100}^{\text{PS}}$	$239^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.875^{+0.028}_{-0.028}$	$H(2.33)$	$231.4^{+7.2}_{-3.7}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1219^{+32}_{-30}$	$D_M(2.33)$	$5735^{+57}_{-35}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5719^{+92}_{-96}$	$f\sigma_8(0.15)$	$0.480^{+0.032}_{-0.034}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2532^{+34}_{-33}$	$\sigma_8(0.15)$	$0.89^{+0.12}_{-0.18}$
$A_{143}^{\text{tSZ}}$	$< 8.95$	$D_{1420}$	$815^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.563^{+0.086}_{-0.11}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.30}_{-0.32}$	$D_{2000}$	$230.3^{+4.1}_{-3.9}$	$\sigma_8(0.38)$	$0.80^{+0.11}_{-0.17}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.58^{+0.10}_{-0.13}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24538^{+0.00015}_{-0.00018}$	$\sigma_8(0.51)$	$0.75^{+0.11}_{-0.16}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00018}$	$f\sigma_8(0.61)$	$0.58^{+0.10}_{-0.14}$
$A_{100}^{\text{dust}}$	$1.01^{+0.48}_{-0.51}$	$10^5 D/H$	$2.590^{+0.079}_{-0.071}$	$\sigma_8(0.61)$	$0.710^{+0.099}_{-0.15}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.44}$	Age/Gyr	$13.56^{+0.33}_{-0.17}$	$f\sigma_8(2.33)$	$0.356^{+0.047}_{-0.075}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.87^{+0.68}_{-0.68}$	$\sigma_8(2.33)$	$0.359^{+0.044}_{-0.066}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.40}$	$r_*$	$144.68^{+0.71}_{-0.71}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04112^{+0.00077}_{-0.00077}$	$f_{2000}^{217}$	$106.6^{+5.1}_{-4.9}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0041}$	$D_M(z_*)/\text{Gpc}$	$13.897^{+0.067}_{-0.066}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{\text{drag}}$	$1059.82^{+0.84}_{-0.92}$	$\chi_{\text{lensing}}^2$	$8.75 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.012}_{-0.012}$	$r_{\text{drag}}$	$147.36^{+0.73}_{-0.73}$	$\chi_{\text{simall}}^2$	$396.6 (\nu: 0.8)$
$H_0$	$> 64.2$	$k_D$	$0.14057^{+0.00083}_{-0.00089}$	$\chi_{\text{lowl}}^2$	$22.42 (\nu: 0.3)$
$\Omega_\Lambda$	$0.799^{+0.066}_{-0.15}$	$100\theta_D$	$0.16082^{+0.00053}_{-0.00048}$	$\chi_{\text{CamSpec}}^2$	$11513.1 (\nu: 14.8)$
$\Omega_m$	$0.201^{+0.15}_{-0.066}$	$z_{\text{eq}}$	$3380^{+72}_{-68}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_m h^2$	$0.1421^{+0.0030}_{-0.0028}$	$k_{\text{eq}}$	$0.01032^{+0.00022}_{-0.00021}$	$\chi_{\text{CMB}}^2$	$11940.9 (\nu: 16.6)$
$\Omega_m h^3$	$0.122^{+0.022}_{-0.031}$	$100\theta_{\text{eq}}$	$0.817^{+0.013}_{-0.013}$		
$\sigma_8$	$0.95^{+0.12}_{-0.18}$	$100\theta_{s,\text{eq}}$	$0.4515^{+0.0067}_{-0.0068}$		

$$\bar{\chi}_{\text{eff}}^2 = 11948.65; \Delta\bar{\chi}_{\text{eff}}^2 = -2.80; R - 1 = 0.02333$$



## 14.7 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232^{+0.00035}_{-0.00041}$	$S_8$	$0.809^{+0.039}_{-0.039}$	$H(0.15)$	$76.4^{+2.5}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1196^{+0.0034}_{-0.0035}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.021}_{-0.021}$	$D_{\mathrm{M}}(0.15)$	$601^{+27}_{-26}$
$100\theta_{\mathrm{MC}}$	$1.04089^{+0.00089}_{-0.00083}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.619^{+0.026}_{-0.027}$	$H(0.38)$	$83.8^{+1.0}_{-1.0}$
$\tau$	$0.052^{+0.018}_{-0.024}$	$\sigma_8/h^{0.5}$	$1.007^{+0.038}_{-0.041}$	$D_{\mathrm{M}}(0.38)$	$1466^{+44}_{-42}$
$w_0$	$-1.20^{+0.15}_{-0.14}$	$r_{\mathrm{drag}}h$	$108.3^{+6.4}_{-6.1}$	$H(0.51)$	$89.56^{+0.90}_{-1.0}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.035}_{-0.042}$	$\langle d^2 \rangle^{1/2}$	$2.460^{+0.075}_{-0.085}$	$D_{\mathrm{M}}(0.51)$	$1916^{+47}_{-45}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$z_{\mathrm{re}}$	$7.4^{+1.8}_{-2.6}$	$H(0.61)$	$94.59^{+0.97}_{-1.1}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0068}_{-0.0060}$	$10^9 A_{\mathrm{s}}$	$2.086^{+0.074}_{-0.086}$	$D_{\mathrm{M}}(0.61)$	$2242^{+46}_{-45}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.030}_{-0.034}$	$H(2.33)$	$233.8^{+2.2}_{-2.2}$
$A_{143}^{\mathrm{PS}}$	$39^{+30}_{-20}$	$D_{40}$	$1225^{+29}_{-31}$	$D_{\mathrm{M}}(2.33)$	$5749^{+29}_{-24}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5721^{+90}_{-96}$	$f\sigma_8(0.15)$	$0.467^{+0.025}_{-0.026}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+33}_{-32}$	$\sigma_8(0.15)$	$0.802^{+0.046}_{-0.045}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.69$	$D_{1420}$	$816^{+12}_{-11}$	$f\sigma_8(0.38)$	$0.507^{+0.036}_{-0.034}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.30}_{-0.32}$	$D_{2000}$	$230.4^{+4.0}_{-3.8}$	$\sigma_8(0.38)$	$0.713^{+0.040}_{-0.040}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.512^{+0.037}_{-0.036}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00013}_{-0.00018}$	$\sigma_8(0.51)$	$0.667^{+0.037}_{-0.037}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00013}_{-0.00018}$	$f\sigma_8(0.61)$	$0.509^{+0.038}_{-0.036}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.43}_{-0.49}$	$10^5\mathrm{D}/\mathrm{H}$	$2.596^{+0.079}_{-0.064}$	$\sigma_8(0.61)$	$0.634^{+0.035}_{-0.034}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.40}_{-0.43}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.693^{+0.087}_{-0.080}$	$f\sigma_8(2.33)$	$0.320^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.28}_{-0.29}$	$z_*$	$1089.96^{+0.73}_{-0.61}$	$\sigma_8(2.33)$	$0.326^{+0.015}_{-0.015}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.43}$	$r_*$	$144.57^{+0.85}_{-0.83}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0025}_{-0.0026}$	$100\theta_*$	$1.04108^{+0.00087}_{-0.00082}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-5.2}$
$c_{217}$	$1.0011^{+0.0038}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887^{+0.081}_{-0.078}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.996^{+0.014}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.78^{+0.72}_{-0.84}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 0.9)$
$c_{EE}$	$0.992^{+0.011}_{-0.012}$	$r_{\mathrm{drag}}$	$147.25^{+0.81}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$22.85 (\nu: 0.4)$
$H_0$	$73.5^{+4.3}_{-4.1}$	$k_{\mathrm{D}}$	$0.14066^{+0.00098}_{-0.00099}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.7 (\nu: 14.2)$
$\Omega_{\Lambda}$	$0.736^{+0.030}_{-0.032}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00046}_{-0.00044}$	$\chi_{\mathrm{H073p45}}^2$	$1.0 (\nu: 1.0)$
$\Omega_{\mathrm{m}}$	$0.264^{+0.032}_{-0.030}$	$z_{\mathrm{eq}}$	$3392^{+81}_{-81}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.9)$
$\Omega_{\mathrm{m}}h^2$	$0.1426^{+0.0034}_{-0.0034}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00025}_{-0.00025}$	$\chi_{\mathrm{CMB}}^2$	$11933.2 (\nu: 15.1)$
$\Omega_{\mathrm{m}}h^3$	$0.1049^{+0.0064}_{-0.0065}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.016}_{-0.015}$		
$\sigma_8$	$0.863^{+0.048}_{-0.048}$	$100\theta_{\mathrm{s,eq}}$	$0.4503^{+0.0080}_{-0.0076}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11941.94; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -12.32; R - 1 = 0.08175$$



# 14.8 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02234^{+0.00040}_{-0.00040}$	$\sigma_8$	$0.95^{+0.14}_{-0.21}$	$100\theta_{\text{eq}}$	$0.816^{+0.015}_{-0.014}$
$\Omega_c h^2$	$0.1194^{+0.0034}_{-0.0035}$	$S_8$	$0.777^{+0.081}_{-0.061}$	$100\theta_{\text{s,eq}}$	$0.4509^{+0.0079}_{-0.0073}$
$100\theta_{\text{MC}}$	$1.04092^{+0.00078}_{-0.00080}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.426^{+0.044}_{-0.034}$	$H(0.15)$	$82.0^{+8.3}_{-14}$
$\tau$	$0.054^{+0.017}_{-0.012}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.636^{+0.037}_{-0.056}$	$D_{\text{M}}(0.15)$	$546^{+100}_{-70}$
$w_0$	$-1.52^{+0.74}_{-0.49}$	$\sigma_8/h^{0.5}$	$1.035^{+0.056}_{-0.090}$	$H(0.38)$	$84.5^{+1.9}_{-3.8}$
$\ln(10^{10} A_{\text{s}})$	$3.040^{+0.038}_{-0.028}$	$r_{\text{drag}} h$	$125^{+20}_{-40}$	$D_{\text{M}}(0.38)$	$1381^{+200}_{-100}$
$n_{\text{s}}$	$0.967^{+0.011}_{-0.011}$	$\langle d^2 \rangle^{1/2}$	$2.484^{+0.086}_{-0.12}$	$H(0.51)$	$88.6^{+1.7}_{-2.3}$
$y_{\text{cal}}$	$1.0003^{+0.0064}_{-0.0062}$	$z_{\text{re}}$	$< 9.22$	$D_{\text{M}}(0.51)$	$1833^{+200}_{-100}$
$A_{100}^{\text{PS}}$	$238^{+60}_{-60}$	$10^9 A_{\text{s}}$	$2.092^{+0.080}_{-0.057}$	$H(0.61)$	$92.8^{+3.0}_{-2.9}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.877^{+0.030}_{-0.030}$	$D_{\text{M}}(0.61)$	$2164^{+240}_{-120}$
$A_{217}^{\text{PS}}$	$103^{+30}_{-30}$	$D_{40}$	$1221^{+33}_{-32}$	$H(2.33)$	$231.8^{+8.4}_{-4.2}$
$A_{217}^{\text{CIB}}$	$39^{+20}_{-20}$	$D_{220}$	$5719^{+97}_{-99}$	$D_{\text{M}}(2.33)$	$5738^{+78}_{-37}$
$A_{143}^{\text{tSZ}}$	$< 8.90$	$D_{810}$	$2533^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.482^{+0.039}_{-0.045}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.30}_{-0.33}$	$D_{1420}$	$815^{+12}_{-12}$	$\sigma_8(0.15)$	$0.89^{+0.14}_{-0.21}$
$r_{143 \times 217}^{\text{CIB}}$	—	$D_{2000}$	$230.4^{+4.1}_{-4.0}$	$f\sigma_8(0.38)$	$0.563^{+0.094}_{-0.13}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.38)$	$0.80^{+0.13}_{-0.19}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.24538^{+0.00015}_{-0.00017}$	$f\sigma_8(0.51)$	$0.58^{+0.11}_{-0.15}$
$A_{100}^{\text{dust}}$	$1.01^{+0.50}_{-0.52}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24671^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	$0.74^{+0.12}_{-0.18}$
$A_{143}^{\text{dust}}$	$0.96^{+0.46}_{-0.45}$	$10^5 \text{D}/\text{H}$	$2.592^{+0.076}_{-0.072}$	$f\sigma_8(0.61)$	$0.58^{+0.12}_{-0.16}$
$A_{217}^{\text{dust}}$	$0.98^{+0.27}_{-0.27}$	$\text{Age}/\text{Gyr}$	$13.57^{+0.39}_{-0.19}$	$\sigma_8(0.61)$	$0.71^{+0.11}_{-0.17}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_*$	$1089.91^{+0.68}_{-0.71}$	$f\sigma_8(2.33)$	$0.355^{+0.052}_{-0.085}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_*$	$144.62^{+0.82}_{-0.76}$	$\sigma_8(2.33)$	$0.358^{+0.048}_{-0.076}$
$c_{217}$	$1.0010^{+0.0042}_{-0.0040}$	$100\theta_*$	$1.04111^{+0.00078}_{-0.00078}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.891^{+0.076}_{-0.072}$	$f_{2000}^{217}$	$106.5^{+5.0}_{-4.8}$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$z_{\text{drag}}$	$1059.82^{+0.80}_{-0.87}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$H_0$	$> 61.7$	$r_{\text{drag}}$	$147.30^{+0.82}_{-0.78}$	$\chi_{\text{simall}}^2$	$396.6 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.793^{+0.072}_{-0.17}$	$k_{\text{D}}$	$0.14063^{+0.00089}_{-0.00093}$	$\chi_{\text{lowl}}^2$	$22.57 (\nu: 0.3)$
$\Omega_{\text{m}}$	$0.207^{+0.17}_{-0.072}$	$100\theta_{\text{D}}$	$0.16082^{+0.00051}_{-0.00047}$	$\chi_{\text{CamSpec}}^2$	$11513.1 (\nu: 15.4)$
$\Omega_{\text{m}} h^2$	$0.1423^{+0.0032}_{-0.0034}$	$z_{\text{eq}}$	$3386^{+77}_{-80}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\text{m}} h^3$	$0.121^{+0.024}_{-0.034}$	$k_{\text{eq}}$	$0.01034^{+0.00024}_{-0.00024}$	$\chi_{\text{CMB}}^2$	$11932.3 (\nu: 16.0)$
$\bar{\chi}_{\text{eff}}^2 = 11940.09; \Delta\bar{\chi}_{\text{eff}}^2 = -2.09; R - 1 = 0.01385$					



# 14.9 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02236^{+0.00039}_{-0.00041}$	$S_8$	$0.771^{+0.079}_{-0.060}$	$H(0.15)$	$82.5^{+7.9}_{-12}$
$\Omega_{\mathrm{c}} h^2$	$0.1190^{+0.0030}_{-0.0030}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.422^{+0.043}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$542^{+100}_{-70}$
$100\theta_{\mathrm{MC}}$	$1.04095^{+0.00078}_{-0.00077}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.634^{+0.030}_{-0.042}$	$H(0.38)$	$84.7^{+1.7}_{-3.0}$
$\tau$	$0.053^{+0.016}_{-0.011}$	$\sigma_8/h^{0.5}$	$1.032^{+0.047}_{-0.069}$	$D_{\mathrm{M}}(0.38)$	$1374^{+200}_{-100}$
$w_0$	$-1.53^{+0.66}_{-0.45}$	$r_{\mathrm{drag}} h$	$126^{+20}_{-30}$	$H(0.51)$	$88.7^{+1.5}_{-2.1}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.038^{+0.034}_{-0.025}$	$\langle d^2 \rangle^{1/2}$	$2.478^{+0.065}_{-0.080}$	$D_{\mathrm{M}}(0.51)$	$1824^{+200}_{-100}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$z_{\mathrm{re}}$	$< 9.01$	$H(0.61)$	$92.9^{+2.9}_{-2.8}$
$y_{\mathrm{cal}}$	$1.0002^{+0.0063}_{-0.0060}$	$10^9 A_{\mathrm{s}}$	$2.086^{+0.071}_{-0.052}$	$D_{\mathrm{M}}(0.61)$	$2155^{+210}_{-110}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-60}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875^{+0.028}_{-0.028}$	$H(2.33)$	$231.4^{+7.3}_{-3.7}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1219^{+31}_{-30}$	$D_{\mathrm{M}}(2.33)$	$5735^{+58}_{-35}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5719^{+91}_{-98}$	$f\sigma_8(0.15)$	$0.480^{+0.032}_{-0.034}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2532^{+35}_{-34}$	$\sigma_8(0.15)$	$0.89^{+0.13}_{-0.18}$
$A_{143}^{\mathrm{tSZ}}$	$< 9.00$	$D_{1420}$	$815^{+13}_{-12}$	$f\sigma_8(0.38)$	$0.562^{+0.086}_{-0.11}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.30}_{-0.32}$	$D_{2000}$	$230.3^{+4.2}_{-3.9}$	$\sigma_8(0.38)$	$0.80^{+0.12}_{-0.17}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.51)$	$0.58^{+0.10}_{-0.13}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24539^{+0.00015}_{-0.00017}$	$\sigma_8(0.51)$	$0.75^{+0.11}_{-0.16}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	$0.58^{+0.11}_{-0.14}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.47}_{-0.51}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.588^{+0.078}_{-0.070}$	$\sigma_8(0.61)$	$0.71^{+0.10}_{-0.15}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.45}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.56^{+0.33}_{-0.17}$	$f\sigma_8(2.33)$	$0.356^{+0.048}_{-0.075}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1089.85^{+0.67}_{-0.68}$	$\sigma_8(2.33)$	$0.359^{+0.045}_{-0.067}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.40}$	$r_*$	$144.70^{+0.71}_{-0.69}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04113^{+0.00077}_{-0.00077}$	$f_{2000}^{217}$	$106.5^{+5.1}_{-4.9}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0041}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898^{+0.066}_{-0.066}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.83^{+0.82}_{-0.89}$	$\chi_{\mathrm{lensing}}^2$	$8.76 (\nu: 0.4)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.37^{+0.74}_{-0.72}$	$\chi_{\mathrm{simall}}^2$	$396.4 (\nu: 0.7)$
$H_0$	$> 64.1$	$k_{\mathrm{D}}$	$0.14056^{+0.00083}_{-0.00088}$	$\chi_{\mathrm{lowl}}^2$	$22.41 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.797^{+0.067}_{-0.15}$	$100\theta_{\mathrm{D}}$	$0.16081^{+0.00053}_{-0.00048}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.0 (\nu: 14.8)$
$\Omega_{\mathrm{m}}$	$0.203^{+0.15}_{-0.067}$	$z_{\mathrm{eq}}$	$3378^{+67}_{-67}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0028}_{-0.0028}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{CMB}}^2$	$11940.6 (\nu: 16.2)$
$\Omega_{\mathrm{m}} h^3$	$0.121^{+0.022}_{-0.031}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.013}_{-0.013}$		
$\sigma_8$	$0.95^{+0.13}_{-0.18}$	$100\theta_{\mathrm{s,eq}}$	$0.4517^{+0.0066}_{-0.0064}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.34; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.91; R - 1 = 0.02464$$



## 14.10 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232^{+0.00035}_{-0.00039}$	$S_8$	$0.810^{+0.038}_{-0.040}$	$H(0.15)$	$76.3^{+2.5}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1196^{+0.0034}_{-0.0037}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.021}_{-0.022}$	$D_{\mathrm{M}}(0.15)$	$602^{+27}_{-26}$
$100\theta_{\mathrm{MC}}$	$1.04090^{+0.00089}_{-0.00086}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.619^{+0.026}_{-0.026}$	$H(0.38)$	$83.9^{+1.0}_{-0.93}$
$\tau$	$0.054^{+0.016}_{-0.013}$	$\sigma_8/h^{0.5}$	$1.008^{+0.038}_{-0.036}$	$D_{\mathrm{M}}(0.38)$	$1466^{+44}_{-43}$
$w_0$	$-1.20^{+0.15}_{-0.15}$	$r_{\mathrm{drag}}h$	$108.3^{+6.5}_{-6.0}$	$H(0.51)$	$89.58^{+0.90}_{-0.92}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.032}_{-0.028}$	$\langle d^2 \rangle^{1/2}$	$2.462^{+0.075}_{-0.079}$	$D_{\mathrm{M}}(0.51)$	$1916^{+46}_{-46}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.0097}$	$z_{\mathrm{re}}$	$< 9.15$	$H(0.61)$	$94.60^{+0.96}_{-1.1}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0067}_{-0.0060}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.068}_{-0.058}$	$D_{\mathrm{M}}(0.61)$	$2242^{+45}_{-46}$
$A_{100}^{\mathrm{PS}}$	$238^{+60}_{-60}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.030}_{-0.034}$	$H(2.33)$	$233.8^{+2.1}_{-2.3}$
$A_{143}^{\mathrm{PS}}$	$39^{+30}_{-20}$	$D_{40}$	$1225^{+29}_{-30}$	$D_{\mathrm{M}}(2.33)$	$5749^{+26}_{-24}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{220}$	$5722^{+85}_{-98}$	$f\sigma_8(0.15)$	$0.468^{+0.026}_{-0.026}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-32}$	$\sigma_8(0.15)$	$0.802^{+0.045}_{-0.043}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.65$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.507^{+0.036}_{-0.031}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.30}_{-0.33}$	$D_{2000}$	$230.4^{+4.0}_{-3.8}$	$\sigma_8(0.38)$	$0.713^{+0.040}_{-0.038}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.0097}$	$f\sigma_8(0.51)$	$0.512^{+0.037}_{-0.034}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00013}_{-0.00017}$	$\sigma_8(0.51)$	$0.668^{+0.037}_{-0.035}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00013}_{-0.00017}$	$f\sigma_8(0.61)$	$0.509^{+0.038}_{-0.035}$
$A_{100}^{\mathrm{dust}}$	$0.995^{+0.43}_{-0.48}$	$10^5\mathrm{D}/\mathrm{H}$	$2.595^{+0.074}_{-0.063}$	$\sigma_8(0.61)$	$0.635^{+0.035}_{-0.033}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.47}_{-0.44}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.693^{+0.085}_{-0.081}$	$f\sigma_8(2.33)$	$0.320^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.28}_{-0.29}$	$z_*$	$1089.95^{+0.61}_{-0.61}$	$\sigma_8(2.33)$	$0.326^{+0.015}_{-0.014}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$r_*$	$144.58^{+0.84}_{-0.83}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$c_{100}$	$0.9975^{+0.0025}_{-0.0025}$	$100\theta_*$	$1.04109^{+0.00086}_{-0.00085}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-5.4}$
$c_{217}$	$1.0011^{+0.0037}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887^{+0.080}_{-0.075}$	$f_{2000}^{143\times 217}$	$32^{+6}_{-5}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{\mathrm{drag}}$	$1059.79^{+0.72}_{-0.85}$	$\chi_{\mathrm{simall}}^2$	$396.6 (\nu: 0.8)$
$c_{EE}$	$0.992^{+0.011}_{-0.012}$	$r_{\mathrm{drag}}$	$147.26^{+0.80}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$22.86 (\nu: 0.3)$
$H_0$	$73.5^{+4.4}_{-4.1}$	$k_{\mathrm{D}}$	$0.14065^{+0.00098}_{-0.00098}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.4 (\nu: 14.3)$
$\Omega_{\Lambda}$	$0.736^{+0.030}_{-0.032}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00046}_{-0.00046}$	$\chi_{\mathrm{H073p45}}^2$	$1.0 (\nu: 1.0)$
$\Omega_{\mathrm{m}}$	$0.264^{+0.032}_{-0.030}$	$z_{\mathrm{eq}}$	$3391^{+77}_{-84}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1425^{+0.0032}_{-0.0035}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00024}_{-0.00026}$	$\chi_{\mathrm{CMB}}^2$	$11932.9 (\nu: 14.7)$
$\Omega_{\mathrm{m}}h^3$	$0.1048^{+0.0065}_{-0.0064}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.016}_{-0.015}$		
$\sigma_8$	$0.864^{+0.048}_{-0.045}$	$100\theta_{\mathrm{s,eq}}$	$0.4504^{+0.0082}_{-0.0075}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11941.58; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -12.43; R - 1 = 0.09840$$



### 14.11 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022331	$0.02232^{+0.00039}_{-0.00040}$	$\sigma_8 \Omega_m^{0.5}$	0.4490	$0.449^{+0.019}_{-0.018}$	$H(0.38)$	83.11	$83.08^{+0.83}_{-0.80}$
$\Omega_c h^2$	0.11915	$0.1193^{+0.0033}_{-0.0033}$	$\sigma_8 \Omega_m^{0.25}$	0.6039	$0.605^{+0.028}_{-0.027}$	$D_M(0.38)$	1522.4	$1522^{+42}_{-46}$
$100\theta_{MC}$	1.04092	$1.04092^{+0.00079}_{-0.00079}$	$\sigma_8/h^{0.5}$	0.9835	$0.984^{+0.042}_{-0.040}$	$H(0.51)$	89.72	$89.68^{+0.66}_{-0.74}$
$\tau$	0.0534	$0.053^{+0.022}_{-0.021}$	$r_{drag}h$	100.5	$100.6^{+6.2}_{-4.9}$	$D_M(0.51)$	1973.9	$1974^{+44}_{-47}$
$w_0$	-1.019	$-1.02^{+0.13}_{-0.17}$	$\langle d^2 \rangle^{1/2}$	2.430	$2.431^{+0.085}_{-0.083}$	$H(0.61)$	95.27	$95.22^{+0.77}_{-0.99}$
$\ln(10^{10} A_s)$	3.0385	$3.038^{+0.044}_{-0.043}$	$z_{re}$	7.58	$7.5^{+2.1}_{-2.3}$	$D_M(0.61)$	2298.3	$2298^{+44}_{-47}$
$n_s$	0.9669	$0.967^{+0.011}_{-0.011}$	$10^9 A_s$	2.087	$2.087^{+0.094}_{-0.088}$	$H(2.33)$	235.67	$235.7^{+1.9}_{-1.9}$
$y_{cal}$	1.0003	$1.0005^{+0.0068}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8758	$1.877^{+0.031}_{-0.029}$	$D_M(2.33)$	5761.2	$5762^{+24}_{-24}$
$A_{100}^{PS}$	241	$240^{+60}_{-60}$	$D_{40}$	1223.2	$1224^{+33}_{-31}$	$f\sigma_8(0.15)$	0.4555	$0.456^{+0.027}_{-0.024}$
$A_{143}^{PS}$	42.1	$39^{+20}_{-20}$	$D_{220}$	5719	$5719^{+110}_{-99}$	$\sigma_8(0.15)$	0.7510	$0.752^{+0.053}_{-0.045}$
$A_{217}^{PS}$	102.2	$102^{+30}_{-30}$	$D_{810}$	2533.6	$2535^{+38}_{-36}$	$f\sigma_8(0.38)$	0.4759	$0.477^{+0.039}_{-0.032}$
$A_{217}^{CIB}$	39.1	$40^{+20}_{-20}$	$D_{1420}$	815.6	$816^{+13}_{-12}$	$\sigma_8(0.38)$	0.6660	$0.667^{+0.048}_{-0.041}$
$A_{143}^{tSZ}$	3.40	< 8.84	$D_{2000}$	230.26	$230.3^{+4.3}_{-4.2}$	$f\sigma_8(0.51)$	0.4752	$0.476^{+0.041}_{-0.035}$
$r_{143 \times 217}^{PS}$	0.669	$0.66^{+0.31}_{-0.33}$	$n_{s,0.002}$	0.9669	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	0.6233	$0.624^{+0.044}_{-0.038}$
$r_{143 \times 217}^{CIB}$	0.61	—	$Y_P$	0.245380	$0.24537^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	0.4705	$0.472^{+0.042}_{-0.035}$
$\xi^{tSZ \times CIB}$	0.69	—	$Y_P^{BBN}$	0.246706	$0.24670^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	0.5931	$0.594^{+0.041}_{-0.035}$
$A^{kSZ}$	5.2	—	$10^5 D/H$	2.593	$2.596^{+0.076}_{-0.071}$	$f\sigma_8(2.33)$	0.2992	$0.300^{+0.021}_{-0.018}$
$A_{100}^{dust}$	1.02	$1.01^{+0.52}_{-0.50}$	Age/Gyr	13.786	$13.786^{+0.084}_{-0.086}$	$\sigma_8(2.33)$	0.3080	$0.308^{+0.018}_{-0.015}$
$A_{143}^{dust}$	0.972	$0.96^{+0.45}_{-0.46}$	$z_*$	1089.89	$1089.92^{+0.68}_{-0.68}$	$f_{2000}^{143}$	29.9	$30^{+7}_{-7}$
$A_{217}^{dust}$	0.983	$0.97^{+0.27}_{-0.26}$	$r_*$	144.68	$144.66^{+0.78}_{-0.75}$	$f_{2000}^{217}$	106.82	$106.8^{+4.9}_{-4.9}$
$A_{143 \times 217}^{dust}$	1.024	$1.03^{+0.43}_{-0.41}$	$100\theta_*$	1.04111	$1.04111^{+0.00078}_{-0.00079}$	$f_{2000}^{143 \times 217}$	32.1	$32^{+5}_{-5}$
$c_{100}$	0.99750	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.897	$13.895^{+0.073}_{-0.070}$	$\chi_{simall}^2$	395.90	$396.9 (\nu: 1.4)$
$c_{217}$	1.00129	$1.0011^{+0.0039}_{-0.0041}$	$z_{drag}$	1059.78	$1059.76^{+0.86}_{-0.86}$	$\chi_{lowl}^2$	22.84	$22.91 (\nu: 0.4)$
$c_{TE}$	0.9965	$0.997^{+0.013}_{-0.012}$	$r_{drag}$	147.36	$147.35^{+0.79}_{-0.77}$	$\chi_{CamSpec}^2$	11499.9	$11514.7 (\nu: 16.5)$
$c_{EE}$	0.9920	$0.992^{+0.013}_{-0.013}$	$k_D$	0.14055	$0.14056^{+0.00090}_{-0.00088}$	$\chi_{6DF}^2$	0.001	$0.13 (\nu: 0.0)$
$H_0$	68.20	$68.3^{+4.3}_{-3.4}$	$100\theta_D$	0.16084	$0.16085^{+0.00051}_{-0.00049}$	$\chi_{MGS}^2$	1.61	$1.78 (\nu: 0.5)$
$\Omega_\Lambda$	0.6944	$0.695^{+0.034}_{-0.032}$	$z_{eq}$	3381	$3383^{+75}_{-74}$	$\chi_{DR12BAO}^2$	4.04	$4.9 (\nu: 1.0)$
$\Omega_m$	0.3056	$0.305^{+0.032}_{-0.034}$	$k_{eq}$	0.010319	$0.01033^{+0.00023}_{-0.00023}$	$\chi_{prior}^2$	2.4	$7.9 (\nu: 5.9)$
$\Omega_m h^2$	0.14213	$0.1422^{+0.0032}_{-0.0031}$	$100\theta_{eq}$	0.8170	$0.817^{+0.014}_{-0.014}$	$\chi_{BAO}^2$	5.65	$6.9 (\nu: 1.5)$
$\Omega_m h^3$	0.0969	$0.0971^{+0.0072}_{-0.0060}$	$100\theta_{s,eq}$	0.4513	$0.4512^{+0.0073}_{-0.0072}$	$\chi_{CMB}^2$	11918.6	$11934.5 (\nu: 16.6)$
$\sigma_8$	0.812	$0.814^{+0.055}_{-0.048}$	$H(0.15)$	73.25	$73.3^{+2.5}_{-2.1}$			
$S_8$	0.8198	$0.820^{+0.035}_{-0.033}$	$D_M(0.15)$	636.9	$637^{+26}_{-29}$			

Best-fit  $\chi_{\text{eff}}^2 = 11926.60$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.21$ ;  $\Delta\chi_{\text{eff}}^2 = 0.93$ ;  $R - 1 = 0.01464$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 4.04 CMB - simall-100x143.offlike5\_EE\_Aplanck.B: 395.90 commander\_dx12\_v3\_2\_29: 22.84 CamSpec like\_10.7HM\_1400\_unified: 11499.85



## 14.12 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232^{+0.00037}_{-0.00039}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$H(0.38)$	$83.09^{+0.82}_{-0.79}$
$\Omega_{\mathrm{c}}h^2$	$0.1194^{+0.0029}_{-0.0029}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1520^{+41}_{-45}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00079}_{-0.00082}$	$\sigma_8/h^{0.5}$	$0.988^{+0.032}_{-0.030}$	$H(0.51)$	$89.66^{+0.62}_{-0.65}$
$\tau$	$0.054^{+0.021}_{-0.019}$	$r_{\mathrm{drag}}h$	$100.8^{+6.1}_{-4.9}$	$D_{\mathrm{M}}(0.51)$	$1972^{+43}_{-47}$
$w_0$	$-1.03^{+0.13}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.062}_{-0.061}$	$H(0.61)$	$95.18^{+0.69}_{-0.84}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.042}_{-0.037}$	$z_{\mathrm{re}}$	$7.6^{+2.0}_{-2.1}$	$D_{\mathrm{M}}(0.61)$	$2297^{+43}_{-46}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.089}_{-0.076}$	$H(2.33)$	$235.7^{+2.0}_{-1.9}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0068}_{-0.0067}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.029}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5762^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1226^{+30}_{-28}$	$f\sigma_8(0.15)$	$0.458^{+0.020}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-98}$	$\sigma_8(0.15)$	$0.756^{+0.045}_{-0.038}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{810}$	$2536^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.480^{+0.031}_{-0.027}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.38)$	$0.670^{+0.040}_{-0.034}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.94$	$D_{2000}$	$230.4^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	$0.479^{+0.033}_{-0.029}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.627^{+0.038}_{-0.032}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00014}_{-0.00017}$	$f\sigma_8(0.61)$	$0.474^{+0.035}_{-0.030}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00014}_{-0.00017}$	$\sigma_8(0.61)$	$0.597^{+0.036}_{-0.030}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.596^{+0.075}_{-0.068}$	$f\sigma_8(2.33)$	$0.301^{+0.018}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.51}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783^{+0.081}_{-0.084}$	$\sigma_8(2.33)$	$0.310^{+0.015}_{-0.013}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$z_*$	$1089.94^{+0.64}_{-0.63}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$144.62^{+0.66}_{-0.66}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-4.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$100\theta_*$	$1.04110^{+0.00078}_{-0.00082}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892^{+0.064}_{-0.064}$	$\chi_{\mathrm{lensing}}^2$	$9.26 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0042}$	$z_{\mathrm{drag}}$	$1059.77^{+0.85}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{TE}$	$0.997^{+0.012}_{-0.012}$	$r_{\mathrm{drag}}$	$147.31^{+0.70}_{-0.69}$	$\chi_{\mathrm{lowl}}^2$	$23.05 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.014}_{-0.013}$	$k_{\mathrm{D}}$	$0.14060^{+0.00084}_{-0.00085}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 (\nu: 15.4)$
$H_0$	$68.5^{+4.2}_{-3.4}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00052}_{-0.00048}$	$\chi_{6\mathrm{DF}}^2$	$0.13 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.696^{+0.034}_{-0.032}$	$z_{\mathrm{eq}}$	$3387^{+65}_{-65}$	$\chi_{\mathrm{MGS}}^2$	$1.87 (\nu: 0.5)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.032}_{-0.034}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 (\nu: 0.9)$
$\Omega_{\mathrm{m}}h^2$	$0.1424^{+0.0027}_{-0.0027}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.012}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0975^{+0.0068}_{-0.0055}$	$100\theta_{\mathrm{s,eq}}$	$0.4508^{+0.0064}_{-0.0062}$	$\chi_{\mathrm{CMB}}^2$	$11943.2 (\nu: 16.8)$
$\sigma_8$	$0.817^{+0.046}_{-0.039}$	$H(0.15)$	$73.4^{+2.4}_{-2.1}$	$\chi_{\mathrm{BAO}}^2$	$7.0 (\nu: 1.5)$
$S_8$	$0.822^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$635^{+25}_{-29}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.08; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.68; R - 1 = 0.01812$$



### 14.13 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.019}_{-0.018}$	$H(0.38)$	$83.09^{+0.84}_{-0.79}$
$\Omega_{\mathrm{c}} h^2$	$0.1192^{+0.0033}_{-0.0033}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.028}_{-0.027}$	$D_{\mathrm{M}}(0.38)$	$1522^{+42}_{-46}$
$100\theta_{\mathrm{MC}}$	$1.04093^{+0.00078}_{-0.00081}$	$\sigma_8/h^{0.5}$	$0.986^{+0.042}_{-0.039}$	$H(0.51)$	$89.68^{+0.66}_{-0.72}$
$\tau$	$0.054^{+0.019}_{-0.012}$	$r_{\mathrm{drag}} h$	$100.6^{+6.3}_{-4.9}$	$D_{\mathrm{M}}(0.51)$	$1974^{+44}_{-48}$
$w_0$	$-1.02^{+0.14}_{-0.17}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.084}_{-0.078}$	$H(0.61)$	$95.23^{+0.76}_{-0.99}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.029}$	$z_{\mathrm{re}}$	$< 9.42$	$D_{\mathrm{M}}(0.61)$	$2298^{+44}_{-47}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.088}_{-0.061}$	$H(2.33)$	$235.7^{+1.9}_{-1.9}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0068}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.031}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5762^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1224^{+33}_{-31}$	$f\sigma_8(0.15)$	$0.457^{+0.026}_{-0.024}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5719^{+110}_{-98}$	$\sigma_8(0.15)$	$0.753^{+0.053}_{-0.045}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+38}_{-36}$	$f\sigma_8(0.38)$	$0.478^{+0.039}_{-0.033}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.38)$	$0.668^{+0.047}_{-0.040}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.89$	$D_{2000}$	$230.4^{+4.3}_{-4.2}$	$f\sigma_8(0.51)$	$0.477^{+0.042}_{-0.035}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.625^{+0.044}_{-0.037}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.472^{+0.043}_{-0.035}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	$0.595^{+0.041}_{-0.035}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.595^{+0.073}_{-0.070}$	$f\sigma_8(2.33)$	$0.300^{+0.021}_{-0.018}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.786^{+0.084}_{-0.087}$	$\sigma_8(2.33)$	$0.309^{+0.018}_{-0.015}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$z_*$	$1089.91^{+0.67}_{-0.67}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$144.67^{+0.78}_{-0.75}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-5.0}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$100\theta_*$	$1.04112^{+0.00078}_{-0.00080}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896^{+0.073}_{-0.069}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.4)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.77^{+0.85}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	$22.93 (\nu: 0.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.35^{+0.79}_{-0.76}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.5 (\nu: 16.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14056^{+0.00088}_{-0.00088}$	$\chi_{6\mathrm{DF}}^2$	$0.13 (\nu: 0.0)$
$H_0$	$68.3^{+4.4}_{-3.4}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00050}_{-0.00049}$	$\chi_{\mathrm{MGS}}^2$	$1.78 (\nu: 0.5)$
$\Omega_{\Lambda}$	$0.695^{+0.034}_{-0.032}$	$z_{\mathrm{eq}}$	$3382^{+75}_{-75}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 (\nu: 1.0)$
$\Omega_{\mathrm{m}}$	$0.305^{+0.032}_{-0.034}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1422^{+0.0031}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.014}_{-0.014}$	$\chi_{\mathrm{BAO}}^2$	$6.8 (\nu: 1.5)$
$\Omega_{\mathrm{m}} h^3$	$0.0971^{+0.0074}_{-0.0060}$	$100\theta_{\mathrm{s,eq}}$	$0.4512^{+0.0074}_{-0.0072}$	$\chi_{\mathrm{CMB}}^2$	$11934.2 (\nu: 16.2)$
$\sigma_8$	$0.815^{+0.055}_{-0.047}$	$H(0.15)$	$73.3^{+2.5}_{-2.1}$		
$S_8$	$0.821^{+0.034}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$637^{+26}_{-30}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.94; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.95; R - 1 = 0.01259$$



# 14.14 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00037}_{-0.00037}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.015}_{-0.015}$	$H(0.38)$	$83.10^{+0.82}_{-0.78}$
$\Omega_{\mathrm{c}} h^2$	$0.1194^{+0.0028}_{-0.0028}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1521^{+41}_{-45}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00078}_{-0.00083}$	$\sigma_8/h^{0.5}$	$0.988^{+0.032}_{-0.030}$	$H(0.51)$	$89.67^{+0.62}_{-0.65}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\mathrm{drag}} h$	$100.8^{+6.1}_{-4.9}$	$D_{\mathrm{M}}(0.51)$	$1972^{+44}_{-46}$
$w_0$	$-1.03^{+0.13}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.062}_{-0.060}$	$H(0.61)$	$95.20^{+0.68}_{-0.86}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.041}_{-0.028}$	$z_{\mathrm{re}}$	$< 9.45$	$D_{\mathrm{M}}(0.61)$	$2297^{+43}_{-46}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.087}_{-0.058}$	$H(2.33)$	$235.7^{+2.0}_{-1.9}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0068}_{-0.0067}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.029}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5762^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1226^{+30}_{-27}$	$f\sigma_8(0.15)$	$0.458^{+0.020}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5722^{+100}_{-98}$	$\sigma_8(0.15)$	$0.756^{+0.046}_{-0.038}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-30}$	$D_{810}$	$2535^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.479^{+0.031}_{-0.027}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$\sigma_8(0.38)$	$0.670^{+0.041}_{-0.034}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.95$	$D_{2000}$	$230.4^{+4.3}_{-4.3}$	$f\sigma_8(0.51)$	$0.479^{+0.034}_{-0.029}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.627^{+0.038}_{-0.032}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00014}_{-0.00016}$	$f\sigma_8(0.61)$	$0.474^{+0.035}_{-0.030}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00014}_{-0.00016}$	$\sigma_8(0.61)$	$0.597^{+0.036}_{-0.030}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.596^{+0.071}_{-0.067}$	$f\sigma_8(2.33)$	$0.301^{+0.018}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.51}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783^{+0.081}_{-0.084}$	$\sigma_8(2.33)$	$0.310^{+0.015}_{-0.013}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.46}$	$z_*$	$1089.93^{+0.62}_{-0.63}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.26}$	$r_*$	$144.63^{+0.65}_{-0.65}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-4.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$100\theta_*$	$1.04110^{+0.00078}_{-0.00082}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892^{+0.063}_{-0.062}$	$\chi_{\mathrm{lensing}}^2$	$9.22 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0042}$	$z_{\mathrm{drag}}$	$1059.77^{+0.81}_{-0.83}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{TE}$	$0.997^{+0.012}_{-0.012}$	$r_{\mathrm{drag}}$	$147.32^{+0.69}_{-0.68}$	$\chi_{\mathrm{lowl}}^2$	$23.04 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.014}_{-0.013}$	$k_{\mathrm{D}}$	$0.14059^{+0.00083}_{-0.00085}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 (\nu: 15.4)$
$H_0$	$68.4^{+4.2}_{-3.4}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00051}_{-0.00047}$	$\chi_{6\mathrm{DF}}^2$	$0.13 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.696^{+0.033}_{-0.032}$	$z_{\mathrm{eq}}$	$3386^{+64}_{-64}$	$\chi_{\mathrm{MGS}}^2$	$1.86 (\nu: 0.5)$
$\Omega_{\mathrm{m}}$	$0.304^{+0.032}_{-0.033}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00020}_{-0.00019}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 (\nu: 0.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1423^{+0.0027}_{-0.0027}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.012}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0974^{+0.0069}_{-0.0055}$	$100\theta_{\mathrm{s,eq}}$	$0.4509^{+0.0063}_{-0.0061}$	$\chi_{\mathrm{CMB}}^2$	$11943.0 (\nu: 16.6)$
$\sigma_8$	$0.817^{+0.047}_{-0.039}$	$H(0.15)$	$73.4^{+2.4}_{-2.1}$	$\chi_{\mathrm{BAO}}^2$	$6.9 (\nu: 1.5)$
$S_8$	$0.823^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$636^{+25}_{-28}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.60; R - 1 = 0.01772$$



# 14.15 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02215	$0.02219^{+0.00054}_{-0.00052}$	$\sigma_8 \Omega_m^{0.25}$	0.6135	$0.606^{+0.028}_{-0.029}$	$H(0.38)$	82.86	$82.98^{+0.89}_{-0.87}$
$\Omega_c h^2$	0.12025	$0.1194^{+0.0039}_{-0.0039}$	$\sigma_8/h^{0.5}$	0.9976	$0.987^{+0.040}_{-0.041}$	$D_M(0.38)$	1525.4	$1524^{+27}_{-27}$
$100\theta_{MC}$	1.04092	$1.0410^{+0.0011}_{-0.0011}$	$r_{drag} h$	100.43	$100.5^{+3.1}_{-3.0}$	$H(0.51)$	89.45	$89.59^{+0.85}_{-0.88}$
$\tau$	0.0540	$0.053^{+0.022}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	2.460	$2.436^{+0.087}_{-0.089}$	$D_M(0.51)$	1978.3	$1977^{+30}_{-30}$
$w_0$	-1.037	$-1.024^{+0.093}_{-0.097}$	$z_{re}$	7.69	$7.6^{+2.1}_{-2.3}$	$H(0.61)$	94.99	$95.14^{+0.89}_{-0.91}$
$\ln(10^{10} A_s)$	3.0460	$3.039^{+0.044}_{-0.044}$	$10^9 A_s$	2.103	$2.088^{+0.095}_{-0.090}$	$D_M(0.61)$	2303.6	$2301^{+31}_{-31}$
$n_s$	0.9637	$0.966^{+0.012}_{-0.012}$	$10^9 A_s e^{-2\tau}$	1.8880	$1.877^{+0.032}_{-0.032}$	$H(2.33)$	235.96	$235.7^{+1.9}_{-1.9}$
$y_{cal}$	1.0023	$1.0005^{+0.0065}_{-0.0065}$	$D_{40}$	1234.6	$1225^{+35}_{-34}$	$D_M(2.33)$	5769.7	$5767^{+31}_{-31}$
$A_{100}^{PS}$	245	$243^{+60}_{-70}$	$D_{220}$	5730	$5709^{+110}_{-100}$	$f\sigma_8(0.15)$	0.4646	$0.458^{+0.028}_{-0.027}$
$A_{143}^{PS}$	39	$41^{+20}_{-20}$	$D_{810}$	2543.3	$2533^{+36}_{-36}$	$\sigma_8(0.15)$	0.7614	$0.753^{+0.036}_{-0.037}$
$A_{217}^{PS}$	99.3	$101^{+30}_{-40}$	$D_{1420}$	817.0	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4855	$0.478^{+0.031}_{-0.030}$
$A_{217}^{CIB}$	45.0	$41^{+20}_{-20}$	$D_{2000}$	230.42	$229.7^{+4.7}_{-4.6}$	$\sigma_8(0.38)$	0.6747	$0.668^{+0.031}_{-0.032}$
$A_{143}^{tSZ}$	5.17	< 8.74	$n_{s,0.002}$	0.9637	$0.966^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	0.4845	$0.478^{+0.031}_{-0.031}$
$r_{143 \times 217}^{PS}$	0.560	$0.65^{+0.32}_{-0.32}$	$Y_P$	0.245306	$0.24532^{+0.00021}_{-0.00025}$	$\sigma_8(0.51)$	0.6311	$0.625^{+0.028}_{-0.029}$
$r_{143 \times 217}^{CIB}$	0.70	—	$Y_P^{BBN}$	0.246632	$0.24665^{+0.00021}_{-0.00025}$	$f\sigma_8(0.61)$	0.4796	$0.473^{+0.030}_{-0.030}$
$\xi^{tSZ \times CIB}$	0.00	—	$10^5 D/H$	2.627	$2.62^{+0.10}_{-0.098}$	$\sigma_8(0.61)$	0.6003	$0.595^{+0.026}_{-0.027}$
$A^{kSZ}$	2.3	—	Age/Gyr	13.798	$13.797^{+0.074}_{-0.072}$	$f\sigma_8(2.33)$	0.3026	$0.300^{+0.013}_{-0.013}$
$A_{100}^{dust}$	1.03	$1.01^{+0.51}_{-0.51}$	$z_*$	1090.22	$1090.10^{+0.86}_{-0.85}$	$\sigma_8(2.33)$	0.3109	$0.309^{+0.011}_{-0.012}$
$A_{143}^{dust}$	0.987	$0.98^{+0.45}_{-0.45}$	$r_*$	144.53	$144.72^{+0.95}_{-0.95}$	$f_{2000}^{143}$	31.3	$31^{+8}_{-8}$
$A_{217}^{dust}$	0.965	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	1.04113	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	108.1	$107.5^{+5.2}_{-5.2}$
$A_{143 \times 217}^{dust}$	1.017	$1.03^{+0.42}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	13.883	$13.899^{+0.091}_{-0.091}$	$f_{2000}^{143 \times 217}$	33.2	$33^{+6}_{-5}$
$c_{100}$	0.99756	$0.9975^{+0.0028}_{-0.0027}$	$z_{drag}$	1059.44	$1059.5^{+1.1}_{-1.2}$	$\chi_{simall}^2$	396.06	$396.9 (\nu: 1.5)$
$c_{217}$	1.00140	$1.0012^{+0.0041}_{-0.0040}$	$r_{drag}$	147.27	$147.4^{+1.0}_{-1.0}$	$\chi_{lowl}^2$	23.45	$23.05 (\nu: 0.5)$
$H_0$	68.19	$68.1^{+2.1}_{-2.1}$	$k_D$	0.14051	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{CamSpec}^2$	7049.7	$7063.4 (\nu: 14.7)$
$\Omega_\Lambda$	0.6924	$0.693^{+0.020}_{-0.020}$	$100\theta_D$	0.16106	$0.16104^{+0.00068}_{-0.00066}$	$\chi_{JLA}^2$	1034.75	$1035.42 (\nu: 0.5)$
$\Omega_m$	0.3076	$0.307^{+0.020}_{-0.020}$	$z_{eq}$	3403	$3384^{+91}_{-90}$	$\chi_{6DF}^2$	0.004	$0.049 (\nu: 0.0)$
$\Omega_m h^2$	0.14304	$0.1423^{+0.0038}_{-0.0038}$	$k_{eq}$	0.010386	$0.01033^{+0.00028}_{-0.00027}$	$\chi_{MGS}^2$	1.47	$1.64 (\nu: 0.2)$
$\Omega_m h^3$	0.09754	$0.0969^{+0.0041}_{-0.0042}$	$100\theta_{eq}$	0.8126	$0.816^{+0.017}_{-0.016}$	$\chi_{DR12BAO}^2$	4.86	$4.8 (\nu: 1.0)$
$\sigma_8$	0.8238	$0.815^{+0.039}_{-0.039}$	$100\theta_{s,eq}$	0.4492	$0.4510^{+0.0088}_{-0.0085}$	$\chi_{prior}^2$	3.0	$7.7 (\nu: 6.1)$
$S_8$	0.8342	$0.824^{+0.042}_{-0.042}$	$H(0.15)$	73.11	$73.2^{+1.4}_{-1.4}$	$\chi_{BAO}^2$	6.33	$6.5 (\nu: 0.8)$
$\sigma_8 \Omega_m^{0.5}$	0.4569	$0.451^{+0.023}_{-0.023}$	$D_M(0.15)$	637.6	$638^{+16}_{-15}$	$\chi_{CMB}^2$	7469.2	$7483.4 (\nu: 14.6)$

Best-fit  $\chi_{eff}^2 = 8513.28$ ;  $\bar{\chi}_{eff}^2 = 8532.92$ ;  $R - 1 = 0.00642$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.47 DR12BAO: 4.86 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3.2.29: 23.45 CamSpec like\_10.7HM: 7049.66  
SN - JLA Pantheon18: 1034.75



14.16 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219^{+0.00052}_{-0.00052}$	$\sigma_8/h^{0.5}$	$0.990^{+0.029}_{-0.030}$	$H(0.51)$	$89.56^{+0.76}_{-0.76}$
$\Omega_{\mathrm{c}}h^2$	$0.1196^{+0.0032}_{-0.0033}$	$r_{\mathrm{drag}}h$	$100.5^{+3.1}_{-3.0}$	$D_{\mathrm{M}}(0.51)$	$1976^{+29}_{-29}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.442^{+0.062}_{-0.063}$	$H(0.61)$	$95.11^{+0.78}_{-0.80}$
$\tau$	$0.054^{+0.021}_{-0.019}$	$z_{\mathrm{re}}$	$7.7^{+2.0}_{-2.0}$	$D_{\mathrm{M}}(0.61)$	$2301^{+30}_{-30}$
$w_0$	$-1.028^{+0.083}_{-0.088}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.086}_{-0.078}$	$H(2.33)$	$235.7^{+1.7}_{-1.8}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.040}_{-0.038}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5767^{+30}_{-30}$
$n_{\mathrm{s}}$	$0.965^{+0.011}_{-0.011}$	$D_{40}$	$1227^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.459^{+0.020}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0064}$	$D_{220}$	$5712^{+110}_{-100}$	$\sigma_8(0.15)$	$0.755^{+0.028}_{-0.028}$
$A_{100}^{\mathrm{PS}}$	$243^{+70}_{-70}$	$D_{810}$	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.480^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.38)$	$0.670^{+0.025}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$229.8^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	$0.479^{+0.024}_{-0.023}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.627^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.73$	$Y_{\mathrm{P}}$	$0.24532^{+0.00020}_{-0.00025}$	$f\sigma_8(0.61)$	$0.474^{+0.024}_{-0.023}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00020}_{-0.00025}$	$\sigma_8(0.61)$	$0.596^{+0.021}_{-0.022}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.10}_{-0.094}$	$f\sigma_8(2.33)$	$0.301^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.796^{+0.073}_{-0.071}$	$\sigma_8(2.33)$	$0.3092^{+0.0094}_{-0.0093}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.11^{+0.79}_{-0.79}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$r_*$	$144.68^{+0.80}_{-0.78}$	$f_{2000}^{217}$	$107.5^{+5.3}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.45}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.28}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896^{+0.077}_{-0.075}$	$\chi_{\mathrm{lensing}}^2$	$9.34 (\nu: 0.3)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$z_{\mathrm{drag}}$	$1059.5^{+1.1}_{-1.2}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.40^{+0.85}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$23.17 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1404^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 (\nu: 13.2)$
$H_0$	$68.2^{+2.1}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16103^{+0.00069}_{-0.00064}$	$\chi_{\mathrm{JLA}}^2$	$1035.38 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.694^{+0.019}_{-0.020}$	$z_{\mathrm{eq}}$	$3388^{+74}_{-75}$	$\chi_{6\mathrm{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.020}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{MGS}}^2$	$1.65 (\nu: 0.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1424^{+0.0031}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.014}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 0.7)$
$\Omega_{\mathrm{m}}h^3$	$0.0971^{+0.0038}_{-0.0037}$	$100\theta_{\mathrm{s,eq}}$	$0.4506^{+0.0073}_{-0.0070}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.1)$
$\sigma_8$	$0.817^{+0.030}_{-0.030}$	$H(0.15)$	$73.2^{+1.4}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$7492.3 (\nu: 14.3)$
$S_8$	$0.826^{+0.031}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$637^{+15}_{-15}$	$\chi_{\mathrm{BAO}}^2$	$6.5 (\nu: 0.6)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.017}_{-0.017}$	$H(0.38)$	$82.97^{+0.82}_{-0.79}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.020}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1524^{+26}_{-26}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8541.75; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.26; R - 1 = 0.00879$$



14.17 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220^{+0.00054}_{-0.00052}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.607^{+0.028}_{-0.028}$	$H(0.38)$	$82.99^{+0.89}_{-0.87}$
$\Omega_{\mathrm{c}} h^2$	$0.1194^{+0.0039}_{-0.0039}$	$\sigma_8/h^{0.5}$	$0.988^{+0.040}_{-0.040}$	$D_{\mathrm{M}}(0.38)$	$1524^{+27}_{-27}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$100.5^{+3.1}_{-3.0}$	$H(0.51)$	$89.59^{+0.85}_{-0.87}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.085}_{-0.086}$	$D_{\mathrm{M}}(0.51)$	$1977^{+29}_{-30}$
$w_0$	$-1.024^{+0.094}_{-0.096}$	$z_{\mathrm{re}}$	$< 9.48$	$H(0.61)$	$95.14^{+0.89}_{-0.90}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.042}_{-0.030}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.090}_{-0.063}$	$D_{\mathrm{M}}(0.61)$	$2301^{+31}_{-31}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.012}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.032}_{-0.031}$	$H(2.33)$	$235.7^{+1.9}_{-1.9}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0065}_{-0.0065}$	$D_{40}$	$1225^{+35}_{-34}$	$D_{\mathrm{M}}(2.33)$	$5767^{+31}_{-31}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{220}$	$5709^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.458^{+0.027}_{-0.027}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2533^{+35}_{-36}$	$\sigma_8(0.15)$	$0.754^{+0.035}_{-0.036}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.479^{+0.030}_{-0.030}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.7^{+4.8}_{-4.6}$	$\sigma_8(0.38)$	$0.669^{+0.030}_{-0.032}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.74$	$n_{\mathrm{s},0.002}$	$0.966^{+0.012}_{-0.012}$	$f\sigma_8(0.51)$	$0.478^{+0.030}_{-0.030}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24532^{+0.00021}_{-0.00025}$	$\sigma_8(0.51)$	$0.626^{+0.028}_{-0.029}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00021}_{-0.00025}$	$f\sigma_8(0.61)$	$0.473^{+0.030}_{-0.030}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.10}_{-0.098}$	$\sigma_8(0.61)$	$0.595^{+0.026}_{-0.027}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.797^{+0.073}_{-0.073}$	$f\sigma_8(2.33)$	$0.300^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$z_*$	$1090.09^{+0.86}_{-0.85}$	$\sigma_8(2.33)$	$0.309^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.45}$	$r_*$	$144.72^{+0.95}_{-0.94}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.4^{+5.2}_{-5.2}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900^{+0.090}_{-0.090}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.5)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.45^{+0.99}_{-0.99}$	$\chi_{\mathrm{lowl}}^2$	$23.07 (\nu: 0.5)$
$H_0$	$68.1^{+2.1}_{-2.1}$	$k_{\mathrm{D}}$	$0.1404^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.2 (\nu: 14.5)$
$\Omega_{\Lambda}$	$0.694^{+0.020}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.16103^{+0.00068}_{-0.00066}$	$\chi_{\mathrm{JLA}}^2$	$1035.42 (\nu: 0.5)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.020}_{-0.020}$	$z_{\mathrm{eq}}$	$3384^{+90}_{-90}$	$\chi_{6\mathrm{DF}}^2$	$0.049 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1422^{+0.0038}_{-0.0037}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00027}_{-0.00027}$	$\chi_{\mathrm{MGS}}^2$	$1.64 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0969^{+0.0041}_{-0.0042}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.017}_{-0.016}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 1.0)$
$\sigma_8$	$0.816^{+0.039}_{-0.039}$	$100\theta_{\mathrm{s,eq}}$	$0.4510^{+0.0088}_{-0.0084}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$S_8$	$0.824^{+0.042}_{-0.041}$	$H(0.15)$	$73.2^{+1.4}_{-1.3}$	$\chi_{\mathrm{BAO}}^2$	$6.5 (\nu: 0.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.15)$	$638^{+15}_{-15}$	$\chi_{\mathrm{CMB}}^2$	$7483.1 (\nu: 14.2)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8532.67; R - 1 = 0.00753$$



## 14.18 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220^{+0.00052}_{-0.00052}$	$\sigma_8/h^{0.5}$	$0.990^{+0.029}_{-0.029}$	$H(0.51)$	$89.57^{+0.75}_{-0.74}$
$\Omega_{\mathrm{c}}h^2$	$0.1195^{+0.0031}_{-0.0032}$	$r_{\mathrm{drag}}h$	$100.5^{+3.2}_{-3.0}$	$D_{\mathrm{M}}(0.51)$	$1976^{+28}_{-29}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.443^{+0.062}_{-0.063}$	$H(0.61)$	$95.12^{+0.78}_{-0.78}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$z_{\mathrm{re}}$	$< 9.43$	$D_{\mathrm{M}}(0.61)$	$2301^{+29}_{-30}$
$w_0$	$-1.027^{+0.083}_{-0.087}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.083}_{-0.058}$	$H(2.33)$	$235.7^{+1.7}_{-1.8}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.039}_{-0.028}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5767^{+30}_{-30}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$D_{40}$	$1226^{+31}_{-31}$	$f\sigma_8(0.15)$	$0.459^{+0.020}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0065}_{-0.0064}$	$D_{220}$	$5711^{+110}_{-100}$	$\sigma_8(0.15)$	$0.756^{+0.028}_{-0.028}$
$A_{100}^{\mathrm{PS}}$	$243^{+70}_{-70}$	$D_{810}$	$2534^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.480^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.38)$	$0.670^{+0.024}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$229.8^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	$0.479^{+0.024}_{-0.023}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.627^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.74$	$Y_{\mathrm{P}}$	$0.24532^{+0.00020}_{-0.00025}$	$f\sigma_8(0.61)$	$0.475^{+0.024}_{-0.023}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00020}_{-0.00025}$	$\sigma_8(0.61)$	$0.596^{+0.021}_{-0.021}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.62^{+0.10}_{-0.095}$	$f\sigma_8(2.33)$	$0.301^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.796^{+0.072}_{-0.072}$	$\sigma_8(2.33)$	$0.3094^{+0.0093}_{-0.0091}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.10^{+0.79}_{-0.79}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$r_*$	$144.69^{+0.80}_{-0.76}$	$f_{2000}^{217}$	$107.4^{+5.3}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.46}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897^{+0.077}_{-0.073}$	$\chi_{\mathrm{lensing}}^2$	$9.30 (\nu: 0.3)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.2}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.41^{+0.85}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$23.16 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1404^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 (\nu: 13.2)$
$H_0$	$68.2^{+2.1}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16103^{+0.00069}_{-0.00065}$	$\chi_{\mathrm{JLA}}^2$	$1035.37 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.694^{+0.019}_{-0.019}$	$z_{\mathrm{eq}}$	$3387^{+72}_{-74}$	$\chi_{6\mathrm{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00022}_{-0.00023}$	$\chi_{\mathrm{MGS}}^2$	$1.65 (\nu: 0.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1424^{+0.0030}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.014}_{-0.013}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 0.7)$
$\Omega_{\mathrm{m}}h^3$	$0.0971^{+0.0038}_{-0.0037}$	$100\theta_{\mathrm{s,eq}}$	$0.4507^{+0.0072}_{-0.0068}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.1)$
$\sigma_8$	$0.817^{+0.030}_{-0.030}$	$H(0.15)$	$73.2^{+1.4}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$7492.2 (\nu: 14.1)$
$S_8$	$0.826^{+0.031}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$637^{+15}_{-15}$	$\chi_{\mathrm{BAO}}^2$	$6.5 (\nu: 0.6)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.017}_{-0.017}$	$H(0.38)$	$82.98^{+0.82}_{-0.79}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.020}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1524^{+26}_{-26}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8541.57; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.22; R - 1 = 0.00916$					



# 14.19 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_{\mathrm{b}} h^2$	0.022333	$0.02232^{+0.00038}_{-0.00039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4496	$0.449^{+0.019}_{-0.019}$	$H(0.38)$	83.09	$83.09^{+0.75}_{-0.70}$
$\Omega_{\mathrm{c}} h^2$	0.11922	$0.1192^{+0.0030}_{-0.0030}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6042	$0.604^{+0.025}_{-0.024}$	$D_{\mathrm{M}}(0.38)$	1523.4	$1523^{+25}_{-25}$
$100\theta_{\mathrm{MC}}$	1.04096	$1.04093^{+0.00080}_{-0.00079}$	$\sigma_8/h^{0.5}$	0.9839	$0.984^{+0.035}_{-0.036}$	$H(0.51)$	89.72	$89.70^{+0.66}_{-0.66}$
$\tau$	0.0533	$0.053^{+0.021}_{-0.021}$	$r_{\mathrm{drag}} h$	100.36	$100.5^{+3.1}_{-3.0}$	$D_{\mathrm{M}}(0.51)$	1975.0	$1974^{+28}_{-28}$
$w_0$	-1.017	$-1.020^{+0.086}_{-0.087}$	$\langle d^2 \rangle^{1/2}$	2.430	$2.431^{+0.075}_{-0.077}$	$H(0.61)$	95.28	$95.25^{+0.69}_{-0.71}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0390	$3.039^{+0.044}_{-0.044}$	$z_{\mathrm{re}}$	7.57	$7.5^{+2.0}_{-2.3}$	$D_{\mathrm{M}}(0.61)$	2299.3	$2299^{+28}_{-29}$
$n_{\mathrm{s}}$	0.9672	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	2.088	$2.088^{+0.094}_{-0.090}$	$H(2.33)$	235.76	$235.7^{+1.5}_{-1.6}$
$y_{\mathrm{cal}}$	1.0005	$1.0005^{+0.0065}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8774	$1.877^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	5761.0	$5762^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	234	$239^{+60}_{-60}$	$D_{40}$	1223.3	$1224^{+31}_{-32}$	$f\sigma_8(0.15)$	0.4558	$0.456^{+0.023}_{-0.022}$
$A_{143}^{\mathrm{PS}}$	39.1	$39^{+20}_{-20}$	$D_{220}$	5720	$5721^{+100}_{-100}$	$\sigma_8(0.15)$	0.7508	$0.751^{+0.034}_{-0.034}$
$A_{217}^{\mathrm{PS}}$	102.1	$102^{+30}_{-30}$	$D_{810}$	2535.6	$2535^{+35}_{-35}$	$f\sigma_8(0.38)$	0.4759	$0.476^{+0.027}_{-0.026}$
$A_{217}^{\mathrm{CIB}}$	44.4	$40^{+20}_{-20}$	$D_{1420}$	816.4	$816^{+12}_{-13}$	$\sigma_8(0.38)$	0.6657	$0.666^{+0.030}_{-0.030}$
$A_{143}^{\mathrm{tSZ}}$	6.56	< 8.87	$D_{2000}$	230.53	$230.3^{+4.1}_{-4.3}$	$f\sigma_8(0.51)$	0.4751	$0.476^{+0.027}_{-0.027}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.597	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	0.9672	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	0.6231	$0.623^{+0.027}_{-0.027}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.76	—	$Y_{\mathrm{P}}$	0.245381	$0.24537^{+0.00014}_{-0.00017}$	$f\sigma_8(0.61)$	0.4704	$0.471^{+0.027}_{-0.027}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.08	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246707	$0.24670^{+0.00014}_{-0.00017}$	$\sigma_8(0.61)$	0.5929	$0.593^{+0.026}_{-0.026}$
$A^{\mathrm{kSZ}}$	0.1	—	$10^5 D/\mathrm{H}$	2.592	$2.595^{+0.074}_{-0.069}$	$f\sigma_8(2.33)$	0.2990	$0.299^{+0.013}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	1.01	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	13.786	$13.787^{+0.060}_{-0.060}$	$\sigma_8(2.33)$	0.3079	$0.308^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	0.966	$0.96^{+0.46}_{-0.45}$	$z_*$	1089.90	$1089.91^{+0.65}_{-0.65}$	$f_{2000}^{143}$	29.9	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	0.967	$0.97^{+0.27}_{-0.27}$	$r_*$	144.66	$144.67^{+0.72}_{-0.70}$	$f_{2000}^{217}$	106.72	$106.8^{+5.0}_{-4.8}$
$A_{143 \times 217}^{\mathrm{dust}}$	1.011	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	1.04115	$1.04112^{+0.00080}_{-0.00078}$	$f_{2000}^{143 \times 217}$	32.0	$32^{+5}_{-5}$
$c_{100}$	0.99766	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.894	$13.896^{+0.069}_{-0.067}$	$\chi_{\mathrm{simall}}^2$	395.88	$396.9 (\nu: 1.3)$
$c_{217}$	1.00123	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	1059.78	$1059.77^{+0.81}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	22.80	$22.94 (\nu: 0.4)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	147.34	$147.35^{+0.75}_{-0.73}$	$\chi_{\mathrm{CamSpec}}^2$	11499.9	$11514.5 (\nu: 16.0)$
$c_{EE}$	0.9922	$0.992^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	0.14058	$0.14055^{+0.00083}_{-0.00087}$	$\chi_{\mathrm{JLA}}^2$	1034.72	$1035.39 (\nu: 0.4)$
$H_0$	68.11	$68.2^{+2.1}_{-2.0}$	$100\theta_{\mathrm{D}}$	0.160841	$0.16085^{+0.00049}_{-0.00048}$	$\chi_{6\mathrm{DF}}^2$	0.002	$0.048 (\nu: 0.0)$
$\Omega_{\Lambda}$	0.6935	$0.694^{+0.019}_{-0.019}$	$z_{\mathrm{eq}}$	3383	$3382^{+69}_{-69}$	$\chi_{\mathrm{MGS}}^2$	1.54	$1.66 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	0.3065	$0.306^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	0.010324	$0.01032^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{DR12BAO}}^2$	4.10	$4.6 (\nu: 0.6)$
$\Omega_{\mathrm{m}} h^2$	0.14219	$0.1422^{+0.0029}_{-0.0029}$	$100\theta_{\mathrm{eq}}$	0.8167	$0.817^{+0.013}_{-0.013}$	$\chi_{\mathrm{prior}}^2$	2.2	$7.8 (\nu: 5.9)$
$\Omega_{\mathrm{m}} h^3$	0.09685	$0.0969^{+0.0039}_{-0.0038}$	$100\theta_{\mathrm{s,eq}}$	0.4512	$0.4512^{+0.0068}_{-0.0066}$	$\chi_{\mathrm{BAO}}^2$	5.64	$6.26 (\nu: 0.5)$
$\sigma_8$	0.8120	$0.813^{+0.036}_{-0.036}$	$H(0.15)$	73.20	$73.2^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	11918.5	$11934.4 (\nu: 16.2)$
$S_8$	0.8208	$0.820^{+0.035}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	637.5	$637^{+15}_{-15}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12961.06$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12983.86$ ;  $R - 1 = 0.00833$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 4.10 CMB - simall-100x143.offlike5\_EE\_Aplanck.B: 395.88 commander\_dx12\_v3\_2\_29: 22.80 CamSpec like\_10.7HM\_1400\_unified: 11499.86 SN - JLA Pantheon18: 1034.72



# 14.20 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00038}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.015}_{-0.015}$	$H(0.38)$	$83.07^{+0.72}_{-0.66}$
$\Omega_{\mathrm{c}} h^2$	$0.1194^{+0.0026}_{-0.0027}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.018}_{-0.019}$	$D_{\mathrm{M}}(0.38)$	$1522^{+25}_{-25}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00078}_{-0.00077}$	$\sigma_8/h^{0.5}$	$0.987^{+0.027}_{-0.027}$	$H(0.51)$	$89.68^{+0.62}_{-0.59}$
$\tau$	$0.054^{+0.020}_{-0.019}$	$r_{\mathrm{drag}} h$	$100.5^{+3.1}_{-2.9}$	$D_{\mathrm{M}}(0.51)$	$1974^{+27}_{-28}$
$w_0$	$-1.024^{+0.076}_{-0.081}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.058}_{-0.058}$	$H(0.61)$	$95.22^{+0.62}_{-0.65}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.040}_{-0.037}$	$z_{\mathrm{re}}$	$7.6^{+1.9}_{-2.0}$	$D_{\mathrm{M}}(0.61)$	$2299^{+28}_{-29}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.086}_{-0.077}$	$H(2.33)$	$235.7^{+1.4}_{-1.5}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(2.33)$	$5762^{+23}_{-23}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1226^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.457^{+0.017}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+100}_{-100}$	$\sigma_8(0.15)$	$0.754^{+0.027}_{-0.026}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.478^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-13}$	$\sigma_8(0.38)$	$0.668^{+0.024}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.79$	$D_{2000}$	$230.4^{+4.1}_{-4.3}$	$f\sigma_8(0.51)$	$0.477^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.32}_{-0.34}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.625^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24537^{+0.00014}_{-0.00016}$	$f\sigma_8(0.61)$	$0.473^{+0.022}_{-0.021}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00014}_{-0.00017}$	$\sigma_8(0.61)$	$0.595^{+0.021}_{-0.021}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.595^{+0.073}_{-0.069}$	$f\sigma_8(2.33)$	$0.300^{+0.010}_{-0.010}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.786^{+0.060}_{-0.059}$	$\sigma_8(2.33)$	$0.3089^{+0.0093}_{-0.0092}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.48}$	$z_*$	$1089.93^{+0.61}_{-0.61}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.63^{+0.66}_{-0.63}$	$f_{2000}^{217}$	$106.8^{+5.1}_{-4.8}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.42}_{-0.41}$	$100\theta_*$	$1.04110^{+0.00078}_{-0.00076}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892^{+0.063}_{-0.060}$	$\chi_{\mathrm{lensing}}^2$	$9.24 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.77^{+0.81}_{-0.83}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.2)$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.32^{+0.69}_{-0.66}$	$\chi_{\mathrm{lowl}}^2$	$23.07 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14059^{+0.00079}_{-0.00083}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 (\nu: 14.9)$
$H_0$	$68.2^{+2.2}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00050}_{-0.00047}$	$\chi_{\mathrm{JLA}}^2$	$1035.35 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.694^{+0.019}_{-0.019}$	$z_{\mathrm{eq}}$	$3386^{+60}_{-62}$	$\chi_{6\mathrm{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00018}_{-0.00019}$	$\chi_{\mathrm{MGS}}^2$	$1.67 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1423^{+0.0025}_{-0.0026}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.012}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.60 (\nu: 0.5)$
$\Omega_{\mathrm{m}} h^3$	$0.0971^{+0.0035}_{-0.0034}$	$100\theta_{\mathrm{s,eq}}$	$0.4509^{+0.0061}_{-0.0057}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.0)$
$\sigma_8$	$0.815^{+0.029}_{-0.028}$	$H(0.15)$	$73.3^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$11943.3 (\nu: 16.1)$
$S_8$	$0.823^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(0.15)$	$637^{+15}_{-15}$	$\chi_{\mathrm{BAO}}^2$	$6.32 (\nu: 0.4)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12992.76; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.37; R - 1 = 0.01319$$



**14.21 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.019}_{-0.018}$	$H(0.38)$	$83.09^{+0.75}_{-0.70}$
$\Omega_{\mathrm{c}}h^2$	$0.1192^{+0.0031}_{-0.0030}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.024}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1523^{+25}_{-25}$
$100\theta_{\mathrm{MC}}$	$1.04093^{+0.00081}_{-0.00079}$	$\sigma_8/h^{0.5}$	$0.985^{+0.035}_{-0.034}$	$H(0.51)$	$89.71^{+0.66}_{-0.66}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$r_{\mathrm{drag}}h$	$100.5^{+3.1}_{-3.0}$	$D_{\mathrm{M}}(0.51)$	$1974^{+28}_{-28}$
$w_0$	$-1.020^{+0.086}_{-0.087}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.073}_{-0.071}$	$H(0.61)$	$95.26^{+0.68}_{-0.71}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.042}_{-0.030}$	$z_{\mathrm{re}}$	$< 9.39$	$D_{\mathrm{M}}(0.61)$	$2299^{+28}_{-29}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.090}_{-0.061}$	$H(2.33)$	$235.7^{+1.5}_{-1.6}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0065}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5761^{+23}_{-24}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1224^{+31}_{-32}$	$f\sigma_8(0.15)$	$0.456^{+0.022}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5721^{+100}_{-100}$	$\sigma_8(0.15)$	$0.752^{+0.033}_{-0.033}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.477^{+0.027}_{-0.025}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-13}$	$\sigma_8(0.38)$	$0.667^{+0.029}_{-0.028}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.85$	$D_{2000}$	$230.4^{+4.1}_{-4.3}$	$f\sigma_8(0.51)$	$0.476^{+0.027}_{-0.026}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.010}_{-0.011}$	$\sigma_8(0.51)$	$0.624^{+0.027}_{-0.026}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.471^{+0.027}_{-0.026}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.594^{+0.025}_{-0.025}$
$A^{\mathrm{kSZ}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.594^{+0.072}_{-0.070}$	$f\sigma_8(2.33)$	$0.300^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.787^{+0.059}_{-0.060}$	$\sigma_8(2.33)$	$0.308^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_*$	$1089.90^{+0.65}_{-0.64}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.67^{+0.74}_{-0.70}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-4.8}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.42}$	$100\theta_*$	$1.04112^{+0.00080}_{-0.00078}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896^{+0.070}_{-0.066}$	$\chi_{\mathrm{simall}}^2$	$396.8\ (\nu: 1.3)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.78^{+0.80}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$22.96\ (\nu: 0.4)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\mathrm{drag}}$	$147.36^{+0.75}_{-0.73}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4\ (\nu: 15.9)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14056^{+0.00082}_{-0.00087}$	$\chi_{\mathrm{JLA}}^2$	$1035.39\ (\nu: 0.4)$
$H_0$	$68.2^{+2.1}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00048}_{-0.00048}$	$\chi_{6\mathrm{DF}}^2$	$0.048\ (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.694^{+0.019}_{-0.019}$	$z_{\mathrm{eq}}$	$3382^{+69}_{-69}$	$\chi_{\mathrm{MGS}}^2$	$1.67\ (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.019}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00021}_{-0.00021}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5\ (\nu: 0.5)$
$\Omega_{\mathrm{m}}h^2$	$0.1422^{+0.0029}_{-0.0029}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.013}_{-0.013}$	$\chi_{\mathrm{prior}}^2$	$7.8\ (\nu: 5.9)$
$\Omega_{\mathrm{m}}h^3$	$0.0969^{+0.0039}_{-0.0039}$	$100\theta_{\mathrm{s,eq}}$	$0.4513^{+0.0068}_{-0.0066}$	$\chi_{\mathrm{BAO}}^2$	$6.25\ (\nu: 0.5)$
$\sigma_8$	$0.814^{+0.035}_{-0.035}$	$H(0.15)$	$73.2^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$11934.1\ (\nu: 15.9)$
$S_8$	$0.821^{+0.035}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$637^{+15}_{-15}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12983.61; R - 1 = 0.00895$$



**14.22 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}} h^2$	$0.02232^{+0.00038}_{-0.00037}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.015}_{-0.015}$	$H(0.38)$	$83.08^{+0.72}_{-0.65}$
$\Omega_{\text{c}} h^2$	$0.1193^{+0.0026}_{-0.0027}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.606^{+0.018}_{-0.019}$	$D_{\text{M}}(0.38)$	$1522^{+25}_{-25}$
$100\theta_{\text{MC}}$	$1.04091^{+0.00078}_{-0.00077}$	$\sigma_8/h^{0.5}$	$0.987^{+0.027}_{-0.027}$	$H(0.51)$	$89.68^{+0.61}_{-0.59}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$r_{\text{drag}} h$	$100.5^{+3.1}_{-2.9}$	$D_{\text{M}}(0.51)$	$1974^{+27}_{-28}$
$w_0$	$-1.023^{+0.075}_{-0.079}$	$\langle d^2 \rangle^{1/2}$	$2.438^{+0.057}_{-0.057}$	$H(0.61)$	$95.23^{+0.62}_{-0.65}$
$\ln(10^{10} A_{\text{s}})$	$3.043^{+0.039}_{-0.028}$	$z_{\text{re}}$	$< 9.35$	$D_{\text{M}}(0.61)$	$2299^{+28}_{-29}$
$n_{\text{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\text{s}}$	$2.097^{+0.083}_{-0.058}$	$H(2.33)$	$235.7^{+1.5}_{-1.5}$
$y_{\text{cal}}$	$1.0006^{+0.0066}_{-0.0065}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.878^{+0.027}_{-0.027}$	$D_{\text{M}}(2.33)$	$5762^{+22}_{-23}$
$A_{100}^{\text{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1226^{+30}_{-29}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.018}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5724^{+100}_{-100}$	$\sigma_8(0.15)$	$0.754^{+0.027}_{-0.026}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.478^{+0.021}_{-0.020}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-13}$	$\sigma_8(0.38)$	$0.669^{+0.024}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$< 8.81$	$D_{2000}$	$230.4^{+4.1}_{-4.3}$	$f\sigma_8(0.51)$	$0.478^{+0.021}_{-0.021}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.32}_{-0.34}$	$n_{\text{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$\sigma_8(0.51)$	$0.626^{+0.022}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.24537^{+0.00014}_{-0.00016}$	$f\sigma_8(0.61)$	$0.473^{+0.021}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24670^{+0.00014}_{-0.00016}$	$\sigma_8(0.61)$	$0.595^{+0.021}_{-0.020}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.595^{+0.071}_{-0.069}$	$f\sigma_8(2.33)$	$0.300^{+0.010}_{-0.010}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.50}$	$\text{Age}/\text{Gyr}$	$13.786^{+0.059}_{-0.059}$	$\sigma_8(2.33)$	$0.3090^{+0.0092}_{-0.0089}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.48}$	$z_*$	$1089.92^{+0.60}_{-0.61}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.27}$	$r_*$	$144.64^{+0.66}_{-0.63}$	$f_{2000}^{217}$	$106.8^{+5.1}_{-4.8}$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.41}$	$100\theta_*$	$1.04110^{+0.00078}_{-0.00077}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9976^{+0.0028}_{-0.0027}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.893^{+0.063}_{-0.059}$	$\chi_{\text{lensing}}^2$	$9.20 (\nu: 0.2)$
$c_{217}$	$1.0011^{+0.0041}_{-0.0042}$	$z_{\text{drag}}$	$1059.78^{+0.80}_{-0.84}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.3)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$r_{\text{drag}}$	$147.32^{+0.69}_{-0.65}$	$\chi_{\text{lowl}}^2$	$23.07 (\nu: 0.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\text{D}}$	$0.14059^{+0.00078}_{-0.00083}$	$\chi_{\text{CamSpec}}^2$	$11514.0 (\nu: 14.9)$
$H_0$	$68.2^{+2.2}_{-2.0}$	$100\theta_{\text{D}}$	$0.16084^{+0.00048}_{-0.00047}$	$\chi_{\text{JLA}}^2$	$1035.35 (\nu: 0.4)$
$\Omega_{\Lambda}$	$0.694^{+0.019}_{-0.019}$	$z_{\text{eq}}$	$3385^{+60}_{-62}$	$\chi_{6\text{DF}}^2$	$0.047 (\nu: 0.0)$
$\Omega_{\text{m}}$	$0.306^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01033^{+0.00018}_{-0.00019}$	$\chi_{\text{MGS}}^2$	$1.68 (\nu: 0.2)$
$\Omega_{\text{m}} h^2$	$0.1423^{+0.0025}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.816^{+0.012}_{-0.011}$	$\chi_{\text{DR12BAO}}^2$	$4.58 (\nu: 0.5)$
$\Omega_{\text{m}} h^3$	$0.0971^{+0.0035}_{-0.0033}$	$100\theta_{\text{s,eq}}$	$0.4510^{+0.0061}_{-0.0056}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 6.0)$
$\sigma_8$	$0.816^{+0.028}_{-0.028}$	$H(0.15)$	$73.3^{+1.3}_{-1.3}$	$\chi_{\text{CMB}}^2$	$11943.1 (\nu: 15.9)$
$S_8$	$0.823^{+0.027}_{-0.027}$	$D_{\text{M}}(0.15)$	$637^{+15}_{-15}$	$\chi_{\text{BAO}}^2$	$6.30 (\nu: 0.4)$

$$\bar{\chi}_{\text{eff}}^2 = 12992.59; \Delta\bar{\chi}_{\text{eff}}^2 = 0.34; R - 1 = 0.01370$$



### 14.23 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02220	$0.02222^{+0.00052}_{-0.00050}$	$\sigma_8/h^{0.5}$	1.0025	$0.993^{+0.040}_{-0.042}$	$H(0.51)$	89.52	$89.62^{+0.90}_{-0.87}$
$\Omega_c h^2$	0.12017	$0.1196^{+0.0038}_{-0.0041}$	$r_{\text{drag}} h$	101.84	$102.1^{+2.8}_{-3.0}$	$D_M(0.51)$	1965.5	$1963^{+28}_{-26}$
$100\theta_{\text{MC}}$	1.04099	$1.0410^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	2.467	$2.444^{+0.085}_{-0.092}$	$H(0.61)$	94.97	$95.05^{+0.94}_{-0.89}$
$\tau$	0.0574	$0.054^{+0.023}_{-0.021}$	$z_{\text{re}}$	8.03	$7.6^{+2.2}_{-2.3}$	$D_M(0.61)$	2290.7	$2288^{+29}_{-28}$
$w_0$	-1.067	$-1.062^{+0.091}_{-0.091}$	$10^9 A_s$	2.112	$2.09^{+0.10}_{-0.092}$	$H(2.33)$	235.56	$235.3^{+1.9}_{-1.9}$
$\ln(10^{10} A_s)$	3.0502	$3.040^{+0.047}_{-0.045}$	$10^9 A_s e^{-2\tau}$	1.8828	$1.878^{+0.031}_{-0.032}$	$D_M(2.33)$	5763.6	$5762^{+30}_{-31}$
$n_s$	0.9645	$0.966^{+0.013}_{-0.012}$	$D_{40}$	1230.8	$1225^{+35}_{-35}$	$f\sigma_8(0.15)$	0.4665	$0.461^{+0.027}_{-0.028}$
$y_{\text{cal}}$	1.0010	$1.0005^{+0.0065}_{-0.0064}$	$D_{220}$	5717	$5711^{+110}_{-100}$	$\sigma_8(0.15)$	0.7713	$0.765^{+0.035}_{-0.036}$
$A_{100}^{\text{PS}}$	239	$241^{+60}_{-60}$	$D_{810}$	2536.9	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	0.4908	$0.485^{+0.030}_{-0.032}$
$A_{143}^{\text{PS}}$	42.8	$40^{+20}_{-20}$	$D_{1420}$	815.4	$815^{+13}_{-13}$	$\sigma_8(0.38)$	0.6839	$0.678^{+0.030}_{-0.031}$
$A_{217}^{\text{PS}}$	97.1	$101^{+30}_{-30}$	$D_{2000}$	230.16	$230.0^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	0.4909	$0.485^{+0.030}_{-0.032}$
$A_{217}^{\text{CIB}}$	46.2	$41^{+20}_{-20}$	$n_{s,0.002}$	0.9645	$0.966^{+0.013}_{-0.012}$	$\sigma_8(0.51)$	0.6398	$0.635^{+0.027}_{-0.029}$
$A_{143}^{\text{tSZ}}$	5.70	$< 8.83$	$Y_P$	0.245327	$0.24533^{+0.00020}_{-0.00023}$	$f\sigma_8(0.61)$	0.4864	$0.481^{+0.029}_{-0.031}$
$r_{143 \times 217}^{\text{PS}}$	0.566	$0.65^{+0.31}_{-0.33}$	$Y_P^{\text{BBN}}$	0.246653	$0.24666^{+0.00020}_{-0.00023}$	$\sigma_8(0.61)$	0.6086	$0.604^{+0.025}_{-0.027}$
$r_{143 \times 217}^{\text{CIB}}$	0.91	—	$10^5 \text{D}/\text{H}$	2.617	$2.614^{+0.096}_{-0.095}$	$f\sigma_8(2.33)$	0.3068	$0.305^{+0.012}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.29	—	Age/Gyr	13.773	$13.771^{+0.068}_{-0.069}$	$\sigma_8(2.33)$	0.3147	$0.313^{+0.011}_{-0.011}$
$A^{\text{kSZ}}$	1.7	—	$z_*$	1090.14	$1090.07^{+0.81}_{-0.86}$	$f_{2000}^{143}$	31.1	$30^{+8}_{-8}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.50}$	$r_*$	144.51	$144.65^{+0.99}_{-0.91}$	$f_{2000}^{217}$	107.4	$107.3^{+5.2}_{-5.2}$
$A_{143}^{\text{dust}}$	1.003	$0.98^{+0.45}_{-0.45}$	$100\theta_*$	1.04119	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	32.6	$33^{+6}_{-5}$
$A_{217}^{\text{dust}}$	0.954	$0.97^{+0.27}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	13.880	$13.893^{+0.094}_{-0.087}$	$\chi_{\text{simall}}^2$	396.83	$397.0 (\nu: 1.7)$
$A_{143 \times 217}^{\text{dust}}$	0.931	$1.03^{+0.42}_{-0.41}$	$z_{\text{drag}}$	1059.55	$1059.6^{+1.1}_{-1.1}$	$\chi_{\text{lowl}}^2$	23.38	$23.02 (\nu: 0.5)$
$c_{100}$	0.99751	$0.9975^{+0.0027}_{-0.0027}$	$r_{\text{drag}}$	147.23	$147.4^{+1.0}_{-0.96}$	$\chi_{\text{CamSpec}}^2$	7049.3	$7063.1 (\nu: 14.5)$
$c_{217}$	1.00152	$1.0012^{+0.0040}_{-0.0041}$	$k_D$	0.14059	$0.1405^{+0.0012}_{-0.0012}$	$\chi_{\text{H073p45}}^2$	6.6	$6.6 (\nu: 2.7)$
$H_0$	69.17	$69.3^{+1.9}_{-2.0}$	$100\theta_D$	0.16100	$0.16099^{+0.00067}_{-0.00063}$	$\chi_{\text{JLA}}^2$	1035.92	$1036.5 (\nu: 1.8)$
$\Omega_\Lambda$	0.7011	$0.703^{+0.017}_{-0.019}$	$z_{\text{eq}}$	3402	$3388^{+87}_{-94}$	$\chi_{\text{6DF}}^2$	0.036	$0.099 (\nu: 0.0)$
$\Omega_m$	0.2989	$0.297^{+0.019}_{-0.017}$	$k_{\text{eq}}$	0.010384	$0.01034^{+0.00027}_{-0.00029}$	$\chi_{\text{MGS}}^2$	2.19	$2.43 (\nu: 0.2)$
$\Omega_m h^2$	0.14302	$0.1424^{+0.0036}_{-0.0039}$	$100\theta_{\text{eq}}$	0.8129	$0.815^{+0.018}_{-0.016}$	$\chi_{\text{DR12BAO}}^2$	4.41	$4.71 (\nu: 0.4)$
$\Omega_m h^3$	0.09893	$0.0987^{+0.0040}_{-0.0041}$	$100\theta_{s,\text{eq}}$	0.4493	$0.4506^{+0.0094}_{-0.0082}$	$\chi_{\text{prior}}^2$	2.6	$7.6 (\nu: 6.0)$
$\sigma_8$	0.8338	$0.826^{+0.038}_{-0.040}$	$H(0.15)$	73.74	$73.8^{+1.2}_{-1.3}$	$\chi_{\text{BAO}}^2$	6.64	$7.2 (\nu: 0.7)$
$S_8$	0.8322	$0.822^{+0.041}_{-0.044}$	$D_M(0.15)$	630.5	$630^{+14}_{-13}$	$\chi_{\text{CMB}}^2$	7469.5	$7483.1 (\nu: 14.6)$
$\sigma_8 \Omega_m^{0.5}$	0.4558	$0.450^{+0.023}_{-0.024}$	$H(0.38)$	83.09	$83.20^{+0.89}_{-0.87}$			
$\sigma_8 \Omega_m^{0.25}$	0.6165	$0.610^{+0.028}_{-0.029}$	$D_M(0.38)$	1513.4	$1511^{+25}_{-23}$			

Best-fit  $\chi_{\text{eff}}^2 = 8521.38$ ;  $\bar{\chi}_{\text{eff}}^2 = 8541.10$ ;  $R - 1 = 0.00624$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 2.19 DR12BAO: 4.41 CMB - simall\_100x143\_offlike5.EE\_Aplanck\_B: 396.83 commander\_dx12\_v3.2.29: 23.38 CamSpec like\_10.7HM: 7049.34  
Hubble - H073p45: 6.64 SN - JLA Pantheon18: 1035.92



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02223^{+0.00051}_{-0.00049}$	$\sigma_8/h^{0.5}$	$0.994^{+0.028}_{-0.030}$	$H(0.51)$	$89.61^{+0.80}_{-0.77}$
$\Omega_{\mathrm{c}} h^2$	$0.1196^{+0.0032}_{-0.0033}$	$r_{\mathrm{drag}} h$	$102.1^{+2.9}_{-3.0}$	$D_{\mathrm{M}}(0.51)$	$1963^{+28}_{-27}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0012}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.447^{+0.061}_{-0.064}$	$H(0.61)$	$95.04^{+0.83}_{-0.79}$
$\tau$	$0.054^{+0.022}_{-0.020}$	$z_{\mathrm{re}}$	$7.7^{+2.1}_{-2.1}$	$D_{\mathrm{M}}(0.61)$	$2288^{+30}_{-28}$
$w_0$	$-1.063^{+0.082}_{-0.082}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.087}_{-0.077}$	$H(2.33)$	$235.3^{+1.7}_{-1.7}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.038}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.028}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5762^{+28}_{-30}$
$n_{\mathrm{s}}$	$0.966^{+0.012}_{-0.011}$	$D_{40}$	$1226^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.461^{+0.020}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0065}_{-0.0063}$	$D_{220}$	$5713^{+110}_{-99}$	$\sigma_8(0.15)$	$0.766^{+0.027}_{-0.028}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.486^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+14}_{-12}$	$\sigma_8(0.38)$	$0.679^{+0.023}_{-0.024}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$230.0^{+4.7}_{-4.3}$	$f\sigma_8(0.51)$	$0.486^{+0.023}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	$0.636^{+0.021}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.95$	$Y_{\mathrm{P}}$	$0.24533^{+0.00019}_{-0.00023}$	$f\sigma_8(0.61)$	$0.482^{+0.023}_{-0.023}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.31}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00020}_{-0.00023}$	$\sigma_8(0.61)$	$0.605^{+0.020}_{-0.021}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.613^{+0.094}_{-0.092}$	$f\sigma_8(2.33)$	$0.3049^{+0.0099}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.770^{+0.068}_{-0.069}$	$\sigma_8(2.33)$	$0.3130^{+0.0088}_{-0.0090}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.07^{+0.76}_{-0.77}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.50}$	$r_*$	$144.64^{+0.84}_{-0.78}$	$f_{2000}^{217}$	$107.3^{+5.1}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.43}_{-0.44}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892^{+0.082}_{-0.075}$	$\chi_{\mathrm{lensing}}^2$	$9.25 (\nu: 0.3)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.6^{+1.1}_{-1.1}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.35^{+0.88}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$23.08 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1405^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 (\nu: 13.7)$
$H_0$	$69.3^{+1.9}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16098^{+0.00066}_{-0.00064}$	$\chi_{\mathrm{H073p45}}^2$	$6.5 (\nu: 2.6)$
$\Omega_{\Lambda}$	$0.703^{+0.017}_{-0.019}$	$z_{\mathrm{eq}}$	$3390^{+71}_{-75}$	$\chi_{\mathrm{JLA}}^2$	$1036.6 (\nu: 1.7)$
$\Omega_{\mathrm{m}}$	$0.297^{+0.019}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00022}_{-0.00023}$	$\chi_{6\mathrm{DF}}^2$	$0.10 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1425^{+0.0030}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.013}$	$\chi_{\mathrm{MGS}}^2$	$2.45 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0987^{+0.0035}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	$0.4505^{+0.0073}_{-0.0068}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.64 (\nu: 0.3)$
$\sigma_8$	$0.827^{+0.029}_{-0.030}$	$H(0.15)$	$73.9^{+1.2}_{-1.3}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.8)$
$S_8$	$0.823^{+0.031}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$629^{+15}_{-13}$	$\chi_{\mathrm{CMB}}^2$	$7492.0 (\nu: 14.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$H(0.38)$	$83.20^{+0.83}_{-0.79}$	$\chi_{\mathrm{BAO}}^2$	$7.2 (\nu: 0.6)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.611^{+0.020}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1511^{+25}_{-23}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8549.81; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.99; R - 1 = 0.01112$$



14.25 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223^{+0.00052}_{-0.00050}$	$\sigma_8/h^{0.5}$	$0.994^{+0.039}_{-0.041}$	$H(0.51)$	$89.62^{+0.90}_{-0.86}$
$\Omega_{\mathrm{c}}h^2$	$0.1195^{+0.0038}_{-0.0041}$	$r_{\mathrm{drag}}h$	$102.1^{+2.8}_{-3.0}$	$D_{\mathrm{M}}(0.51)$	$1963^{+28}_{-26}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0011}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.083}_{-0.087}$	$H(0.61)$	$95.06^{+0.94}_{-0.88}$
$\tau$	$0.055^{+0.020}_{-0.013}$	$z_{\mathrm{re}}$	$< 9.60$	$D_{\mathrm{M}}(0.61)$	$2288^{+29}_{-28}$
$w_0$	$-1.061^{+0.091}_{-0.091}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.096}_{-0.063}$	$H(2.33)$	$235.3^{+1.9}_{-1.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.045}_{-0.031}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.031}_{-0.031}$	$D_{\mathrm{M}}(2.33)$	$5761^{+30}_{-31}$
$n_{\mathrm{s}}$	$0.966^{+0.013}_{-0.012}$	$D_{40}$	$1225^{+35}_{-34}$	$f\sigma_8(0.15)$	$0.461^{+0.027}_{-0.028}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0065}_{-0.0064}$	$D_{220}$	$5711^{+110}_{-100}$	$\sigma_8(0.15)$	$0.765^{+0.034}_{-0.036}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.485^{+0.030}_{-0.031}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+13}_{-13}$	$\sigma_8(0.38)$	$0.679^{+0.029}_{-0.031}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{2000}$	$230.0^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	$0.486^{+0.030}_{-0.032}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.013}_{-0.012}$	$\sigma_8(0.51)$	$0.635^{+0.027}_{-0.028}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.85$	$Y_{\mathrm{P}}$	$0.24533^{+0.00020}_{-0.00024}$	$f\sigma_8(0.61)$	$0.482^{+0.029}_{-0.031}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00020}_{-0.00024}$	$\sigma_8(0.61)$	$0.605^{+0.025}_{-0.026}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.613^{+0.097}_{-0.094}$	$f\sigma_8(2.33)$	$0.305^{+0.012}_{-0.013}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.771^{+0.069}_{-0.068}$	$\sigma_8(2.33)$	$0.313^{+0.011}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.06^{+0.81}_{-0.86}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.49}$	$r_*$	$144.66^{+0.98}_{-0.92}$	$f_{2000}^{217}$	$107.2^{+5.2}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.46}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893^{+0.093}_{-0.087}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.8)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.6^{+1.1}_{-1.1}$	$\chi_{\mathrm{lowl}}^2$	$23.03 (\nu: 0.5)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.4^{+1.0}_{-0.95}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.9 (\nu: 14.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0041}$	$k_{\mathrm{D}}$	$0.1405^{+0.0012}_{-0.0012}$	$\chi_{\mathrm{H073p45}}^2$	$6.6 (\nu: 2.7)$
$H_0$	$69.3^{+1.9}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16099^{+0.00067}_{-0.00062}$	$\chi_{\mathrm{JLA}}^2$	$1036.5 (\nu: 1.8)$
$\Omega_{\Lambda}$	$0.703^{+0.017}_{-0.019}$	$z_{\mathrm{eq}}$	$3388^{+87}_{-94}$	$\chi_{6\mathrm{DF}}^2$	$0.10 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.297^{+0.019}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00027}_{-0.00029}$	$\chi_{\mathrm{MGS}}^2$	$2.44 (\nu: 0.2)$
$\Omega_{\mathrm{m}}h^2$	$0.1424^{+0.0037}_{-0.0039}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.018}_{-0.016}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.70 (\nu: 0.4)$
$\Omega_{\mathrm{m}}h^3$	$0.0986^{+0.0040}_{-0.0041}$	$100\theta_{\mathrm{s,eq}}$	$0.4507^{+0.0093}_{-0.0082}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.827^{+0.038}_{-0.039}$	$H(0.15)$	$73.8^{+1.2}_{-1.3}$	$\chi_{\mathrm{BAO}}^2$	$7.2 (\nu: 0.7)$
$S_8$	$0.823^{+0.041}_{-0.042}$	$D_{\mathrm{M}}(0.15)$	$630^{+14}_{-13}$	$\chi_{\mathrm{CMB}}^2$	$7482.9 (\nu: 14.3)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.022}_{-0.023}$	$H(0.38)$	$83.20^{+0.90}_{-0.87}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611^{+0.028}_{-0.029}$	$D_{\mathrm{M}}(0.38)$	$1511^{+25}_{-23}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8540.87; R - 1 = 0.00534$$



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

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02223^{+0.00050}_{-0.00049}$	$\sigma_8/h^{0.5}$	$0.994^{+0.028}_{-0.029}$	$H(0.51)$	$89.62^{+0.79}_{-0.76}$
$\Omega_c h^2$	$0.1195^{+0.0031}_{-0.0032}$	$r_{\text{drag}} h$	$102.1^{+2.9}_{-3.0}$	$D_M(0.51)$	$1963^{+28}_{-27}$
$100\theta_{\text{MC}}$	$1.0410^{+0.0012}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.061}_{-0.063}$	$H(0.61)$	$95.06^{+0.82}_{-0.78}$
$\tau$	$0.055^{+0.019}_{-0.014}$	$z_{\text{re}}$	$< 9.53$	$D_M(0.61)$	$2287^{+30}_{-28}$
$w_0$	$-1.062^{+0.081}_{-0.081}$	$10^9 A_s$	$2.097^{+0.084}_{-0.059}$	$H(2.33)$	$235.3^{+1.7}_{-1.7}$
$\ln(10^{10} A_s)$	$3.043^{+0.039}_{-0.028}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.028}_{-0.029}$	$D_M(2.33)$	$5761^{+29}_{-30}$
$n_s$	$0.966^{+0.011}_{-0.011}$	$D_{40}$	$1226^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.461^{+0.020}_{-0.020}$
$y_{\text{cal}}$	$1.0005^{+0.0065}_{-0.0063}$	$D_{220}$	$5713^{+110}_{-100}$	$\sigma_8(0.15)$	$0.766^{+0.027}_{-0.028}$
$A_{100}^{\text{PS}}$	$241^{+60}_{-60}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.486^{+0.023}_{-0.023}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.679^{+0.023}_{-0.024}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$230.0^{+4.7}_{-4.3}$	$f\sigma_8(0.51)$	$0.486^{+0.023}_{-0.023}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$n_{s,0.002}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.636^{+0.021}_{-0.022}$
$A_{143}^{\text{tSZ}}$	$< 8.95$	$Y_{\text{P}}$	$0.24534^{+0.00019}_{-0.00023}$	$f\sigma_8(0.61)$	$0.482^{+0.023}_{-0.023}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.31}_{-0.31}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00019}_{-0.00023}$	$\sigma_8(0.61)$	$0.605^{+0.020}_{-0.021}$
$r_{143 \times 217}^{\text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.612^{+0.094}_{-0.091}$	$f\sigma_8(2.33)$	$0.3051^{+0.0098}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\text{Age}/\text{Gyr}$	$13.770^{+0.067}_{-0.069}$	$\sigma_8(2.33)$	$0.3131^{+0.0086}_{-0.0088}$
$A^{\text{kSZ}}$	—	$z_*$	$1090.06^{+0.76}_{-0.76}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{100}^{\text{dust}}$	$1.01^{+0.51}_{-0.49}$	$r_*$	$144.65^{+0.83}_{-0.77}$	$f_{2000}^{217}$	$107.3^{+5.1}_{-5.3}$
$A_{143}^{\text{dust}}$	$0.98^{+0.43}_{-0.44}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	$13.893^{+0.082}_{-0.074}$	$\chi_{\text{lensing}}^2$	$9.22 (\nu: 0.3)$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\text{drag}}$	$1059.6^{+1.1}_{-1.1}$	$\chi_{\text{simall}}^2$	$397.0 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$r_{\text{drag}}$	$147.37^{+0.88}_{-0.83}$	$\chi_{\text{lowl}}^2$	$23.06 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$k_{\text{D}}$	$0.1405^{+0.0011}_{-0.0011}$	$\chi_{\text{CamSpec}}^2$	$7062.6 (\nu: 13.6)$
$H_0$	$69.3^{+1.9}_{-2.0}$	$100\theta_{\text{D}}$	$0.16098^{+0.00066}_{-0.00063}$	$\chi_{\text{H073p45}}^2$	$6.5 (\nu: 2.6)$
$\Omega_{\Lambda}$	$0.703^{+0.017}_{-0.019}$	$z_{\text{eq}}$	$3388^{+71}_{-74}$	$\chi_{\text{JLA}}^2$	$1036.5 (\nu: 1.7)$
$\Omega_{\text{m}}$	$0.297^{+0.019}_{-0.017}$	$k_{\text{eq}}$	$0.01034^{+0.00022}_{-0.00022}$	$\chi_{6\text{DF}}^2$	$0.10 (\nu: 0.0)$
$\Omega_{\text{m}} h^2$	$0.1424^{+0.0030}_{-0.0031}$	$100\theta_{\text{eq}}$	$0.816^{+0.014}_{-0.013}$	$\chi_{\text{MGS}}^2$	$2.46 (\nu: 0.2)$
$\Omega_{\text{m}} h^3$	$0.0987^{+0.0035}_{-0.0035}$	$100\theta_{\text{s,eq}}$	$0.4507^{+0.0072}_{-0.0067}$	$\chi_{\text{DR12BAO}}^2$	$4.61 (\nu: 0.3)$
$\sigma_8$	$0.828^{+0.029}_{-0.030}$	$H(0.15)$	$73.9^{+1.2}_{-1.3}$	$\chi_{\text{prior}}^2$	$7.6 (\nu: 5.8)$
$S_8$	$0.823^{+0.031}_{-0.031}$	$D_M(0.15)$	$629^{+15}_{-13}$	$\chi_{\text{CMB}}^2$	$7491.8 (\nu: 14.5)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$H(0.38)$	$83.21^{+0.82}_{-0.79}$	$\chi_{\text{BAO}}^2$	$7.2 (\nu: 0.6)$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.611^{+0.020}_{-0.020}$	$D_M(0.38)$	$1511^{+26}_{-23}$		

$$\bar{\chi}_{\text{eff}}^2 = 8549.61; \Delta\bar{\chi}_{\text{eff}}^2 = -3.12; R - 1 = 0.01012$$



# 14.27 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022344	$0.02233^{+0.00040}_{-0.00038}$	$\sigma_8 \Omega_m^{0.5}$	0.4481	$0.448^{+0.019}_{-0.018}$	$H(0.38)$	83.30	$83.30^{+0.72}_{-0.72}$
$\Omega_c h^2$	0.11925	$0.1193^{+0.0030}_{-0.0030}$	$\sigma_8 \Omega_m^{0.25}$	0.6069	$0.607^{+0.023}_{-0.023}$	$D_M(0.38)$	1510.6	$1510^{+24}_{-24}$
$100\theta_{MC}$	1.04095	$1.04094^{+0.00079}_{-0.00076}$	$\sigma_8/h^{0.5}$	0.9883	$0.989^{+0.033}_{-0.033}$	$H(0.51)$	89.74	$89.72^{+0.68}_{-0.69}$
$\tau$	0.0531	$0.053^{+0.021}_{-0.021}$	$r_{drag}h$	101.96	$102.1^{+3.0}_{-2.9}$	$D_M(0.51)$	1961.6	$1961^{+26}_{-26}$
$w_0$	-1.053	$-1.056^{+0.079}_{-0.081}$	$\langle d^2 \rangle^{1/2}$	2.435	$2.436^{+0.072}_{-0.073}$	$H(0.61)$	95.19	$95.16^{+0.70}_{-0.72}$
$\ln(10^{10} A_s)$	3.0387	$3.038^{+0.044}_{-0.044}$	$z_{re}$	7.55	$7.5^{+2.0}_{-2.3}$	$D_M(0.61)$	2286.0	$2286^{+27}_{-27}$
$n_s$	0.9671	$0.967^{+0.011}_{-0.011}$	$10^9 A_s$	2.088	$2.087^{+0.093}_{-0.089}$	$H(2.33)$	235.27	$235.2^{+1.6}_{-1.5}$
$y_{cal}$	1.0005	$1.0005^{+0.0063}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8772	$1.877^{+0.029}_{-0.029}$	$D_M(2.33)$	5757.0	$5758^{+23}_{-23}$
$A_{100}^{PS}$	234	$240^{+60}_{-60}$	$D_{40}$	1222.9	$1224^{+32}_{-32}$	$f\sigma_8(0.15)$	0.4577	$0.458^{+0.021}_{-0.021}$
$A_{143}^{PS}$	39.3	$39^{+20}_{-20}$	$D_{220}$	5720	$5721^{+100}_{-100}$	$\sigma_8(0.15)$	0.7609	$0.762^{+0.029}_{-0.031}$
$A_{217}^{PS}$	102.2	$102^{+30}_{-30}$	$D_{810}$	2535.2	$2535^{+34}_{-35}$	$f\sigma_8(0.38)$	0.4816	$0.482^{+0.024}_{-0.024}$
$A_{217}^{CIB}$	44.2	$40^{+20}_{-20}$	$D_{1420}$	816.3	$816^{+12}_{-13}$	$\sigma_8(0.38)$	0.6751	$0.676^{+0.026}_{-0.027}$
$A_{143}^{tSZ}$	6.58	< 8.79	$D_{2000}$	230.55	$230.4^{+4.1}_{-4.2}$	$f\sigma_8(0.51)$	0.4820	$0.483^{+0.025}_{-0.025}$
$r_{143 \times 217}^{PS}$	0.600	$0.66^{+0.31}_{-0.34}$	$n_{s,0.002}$	0.9671	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	0.6319	$0.632^{+0.024}_{-0.025}$
$r_{143 \times 217}^{CIB}$	0.78	—	$Y_P$	0.245385	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	0.4778	$0.478^{+0.024}_{-0.024}$
$\xi^{tSZ \times CIB}$	0.11	—	$Y_P^{BBN}$	0.246712	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	0.6012	$0.602^{+0.022}_{-0.023}$
$A^{kSZ}$	0.0	—	$10^5 D/H$	2.590	$2.593^{+0.072}_{-0.073}$	$f\sigma_8(2.33)$	0.3033	$0.304^{+0.011}_{-0.012}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.51}$	Age/Gyr	13.764	$13.764^{+0.056}_{-0.057}$	$\sigma_8(2.33)$	0.3116	$0.3118^{+0.0098}_{-0.010}$
$A_{143}^{dust}$	0.977	$0.96^{+0.46}_{-0.45}$	$z_*$	1089.89	$1089.90^{+0.64}_{-0.65}$	$f_{2000}^{143}$	29.7	$30^{+7}_{-7}$
$A_{217}^{dust}$	0.971	$0.97^{+0.26}_{-0.27}$	$r_*$	144.65	$144.65^{+0.68}_{-0.69}$	$f_{2000}^{217}$	106.67	$106.7^{+4.9}_{-4.9}$
$A_{143 \times 217}^{dust}$	1.002	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	1.04114	$1.04113^{+0.00078}_{-0.00074}$	$f_{2000}^{143 \times 217}$	32.0	$32^{+5}_{-5}$
$c_{100}$	0.99765	$0.9975^{+0.0027}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	13.893	$13.894^{+0.065}_{-0.066}$	$\chi_{simall}^2$	395.86	$396.9 (\nu: 1.3)$
$c_{217}$	1.00129	$1.0011^{+0.0040}_{-0.0041}$	$z_{drag}$	1059.82	$1059.80^{+0.86}_{-0.82}$	$\chi_{lowl}^2$	22.75	$22.88 (\nu: 0.4)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.012}$	$r_{drag}$	147.32	$147.33^{+0.71}_{-0.72}$	$\chi_{CamSpec}^2$	11499.6	$11514.4 (\nu: 15.8)$
$c_{EE}$	0.9917	$0.992^{+0.013}_{-0.013}$	$k_D$	0.14061	$0.14059^{+0.00086}_{-0.00084}$	$\chi_{H073p45}^2$	6.5	$6.5 (\nu: 2.7)$
$H_0$	69.21	$69.3^{+2.1}_{-2.0}$	$100\theta_D$	0.160825	$0.16084^{+0.00049}_{-0.00049}$	$\chi_{JLA}^2$	1035.62	$1036.4 (\nu: 1.7)$
$\Omega_\Lambda$	0.7030	$0.704^{+0.018}_{-0.018}$	$z_{eq}$	3384	$3384^{+67}_{-66}$	$\chi_{6DF}^2$	0.054	$0.10 (\nu: 0.0)$
$\Omega_m$	0.2970	$0.296^{+0.018}_{-0.018}$	$k_{eq}$	0.010327	$0.01033^{+0.00021}_{-0.00020}$	$\chi_{MGS}^2$	2.35	$2.47 (\nu: 0.2)$
$\Omega_m h^2$	0.14224	$0.1422^{+0.0028}_{-0.0028}$	$100\theta_{eq}$	0.8166	$0.817^{+0.013}_{-0.013}$	$\chi_{DR12BAO}^2$	4.05	$4.51 (\nu: 0.3)$
$\Omega_m h^3$	0.09844	$0.0986^{+0.0035}_{-0.0035}$	$100\theta_{s,eq}$	0.4511	$0.4511^{+0.0065}_{-0.0064}$	$\chi_{prior}^2$	2.2	$7.8 (\nu: 5.8)$
$\sigma_8$	0.8222	$0.823^{+0.032}_{-0.033}$	$H(0.15)$	73.87	$73.9^{+1.3}_{-1.3}$	$\chi_{BAO}^2$	6.46	$7.1 (\nu: 0.7)$
$S_8$	0.8180	$0.818^{+0.034}_{-0.033}$	$D_M(0.15)$	629.7	$629^{+14}_{-14}$	$\chi_{CMB}^2$	11918.2	$11934.1 (\nu: 16.1)$

Best-fit  $\chi_{\text{eff}}^2 = 12969.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 12991.92$ ;  $R - 1 = 0.00648$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 MGS: 2.35 DR12BAO: 4.05 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 22.75 CamSpec like\_10.7HM\_1400\_unified: 11499.61 Hubble - H073p45: 6.54 SN - JLA Pantheon18: 1035.62



14.28 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.017}_{-0.018}$	$H(0.51)$	$89.71^{+0.64}_{-0.63}$
$\Omega_{\mathrm{c}} h^2$	$0.1193^{+0.0026}_{-0.0027}$	$\sigma_8/h^{0.5}$	$0.990^{+0.025}_{-0.026}$	$D_{\mathrm{M}}(0.51)$	$1961^{+26}_{-26}$
$100\theta_{\mathrm{MC}}$	$1.04093^{+0.00080}_{-0.00073}$	$r_{\mathrm{drag}} h$	$102.1^{+3.0}_{-2.9}$	$H(0.61)$	$95.14^{+0.67}_{-0.68}$
$\tau$	$0.054^{+0.020}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.056}_{-0.057}$	$D_{\mathrm{M}}(0.61)$	$2285^{+27}_{-27}$
$w_0$	$-1.059^{+0.075}_{-0.078}$	$z_{\mathrm{re}}$	$7.6^{+1.9}_{-2.0}$	$H(2.33)$	$235.3^{+1.5}_{-1.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.040}_{-0.037}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.085}_{-0.076}$	$D_{\mathrm{M}}(2.33)$	$5758^{+23}_{-23}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.011}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.026}_{-0.028}$	$f\sigma_8(0.15)$	$0.459^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0062}_{-0.0063}$	$D_{40}$	$1225^{+30}_{-31}$	$\sigma_8(0.15)$	$0.763^{+0.025}_{-0.026}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{220}$	$5724^{+99}_{-99}$	$f\sigma_8(0.38)$	$0.483^{+0.020}_{-0.020}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-35}$	$\sigma_8(0.38)$	$0.677^{+0.022}_{-0.023}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{1420}$	$816^{+12}_{-13}$	$f\sigma_8(0.51)$	$0.484^{+0.021}_{-0.020}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.4^{+4.0}_{-4.2}$	$\sigma_8(0.51)$	$0.634^{+0.021}_{-0.021}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.80$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.011}$	$f\sigma_8(0.61)$	$0.480^{+0.021}_{-0.021}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.603^{+0.020}_{-0.020}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.3042^{+0.0098}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.593^{+0.073}_{-0.070}$	$\sigma_8(2.33)$	$0.3123^{+0.0087}_{-0.0087}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.763^{+0.056}_{-0.058}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.51}$	$z_*$	$1089.91^{+0.61}_{-0.63}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.0}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$r_*$	$144.63^{+0.64}_{-0.63}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.26}_{-0.27}$	$100\theta_*$	$1.04111^{+0.00079}_{-0.00072}$	$\chi_{\mathrm{lensing}}^2$	$9.13 (\nu: 0.2)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892^{+0.059}_{-0.060}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.2)$
$c_{100}$	$0.9976^{+0.0026}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.80^{+0.86}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$22.98 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$r_{\mathrm{drag}}$	$147.31^{+0.66}_{-0.65}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 (\nu: 15.5)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14061^{+0.00081}_{-0.00081}$	$\chi_{\mathrm{H073p45}}^2$	$6.4 (\nu: 2.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00050}_{-0.00049}$	$\chi_{\mathrm{JLA}}^2$	$1036.5 (\nu: 1.8)$
$H_0$	$69.3^{+2.1}_{-2.0}$	$z_{\mathrm{eq}}$	$3386^{+60}_{-61}$	$\chi_{6\mathrm{DF}}^2$	$0.11 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.704^{+0.017}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00018}_{-0.00018}$	$\chi_{\mathrm{MGS}}^2$	$2.48 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.296^{+0.018}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.012}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.51 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1423^{+0.0025}_{-0.0025}$	$100\theta_{\mathrm{s,eq}}$	$0.4509^{+0.0059}_{-0.0058}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0987^{+0.0034}_{-0.0033}$	$H(0.15)$	$73.9^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$11942.9 (\nu: 16.7)$
$\sigma_8$	$0.825^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$629^{+14}_{-14}$	$\chi_{\mathrm{BAO}}^2$	$7.1 (\nu: 0.7)$
$S_8$	$0.819^{+0.028}_{-0.026}$	$H(0.38)$	$83.29^{+0.69}_{-0.68}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.015}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1510^{+24}_{-23}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 13000.66; \Delta \bar{\chi}_{\mathrm{eff}}^2 = -2.98; R - 1 = 0.00726$$



**14.29**    **base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02234^{+0.00040}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.018}_{-0.018}$	$H(0.38)$	$83.30^{+0.72}_{-0.72}$
$\Omega_{\mathrm{c}} h^2$	$0.1192^{+0.0030}_{-0.0030}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1510^{+24}_{-24}$
$100\theta_{\mathrm{MC}}$	$1.04094^{+0.00080}_{-0.00076}$	$\sigma_8/h^{0.5}$	$0.990^{+0.032}_{-0.032}$	$H(0.51)$	$89.73^{+0.68}_{-0.70}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$r_{\mathrm{drag}} h$	$102.1^{+3.0}_{-2.9}$	$D_{\mathrm{M}}(0.51)$	$1961^{+27}_{-26}$
$w_0$	$-1.056^{+0.078}_{-0.079}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.070}_{-0.071}$	$H(0.61)$	$95.17^{+0.71}_{-0.71}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.029}$	$z_{\mathrm{re}}$	$< 9.37$	$D_{\mathrm{M}}(0.61)$	$2286^{+27}_{-27}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.088}_{-0.060}$	$H(2.33)$	$235.2^{+1.6}_{-1.5}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.029}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5757^{+23}_{-23}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1224^{+32}_{-32}$	$f\sigma_8(0.15)$	$0.458^{+0.021}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5720^{+100}_{-100}$	$\sigma_8(0.15)$	$0.762^{+0.029}_{-0.030}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.483^{+0.024}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-13}$	$\sigma_8(0.38)$	$0.677^{+0.025}_{-0.026}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.78$	$D_{2000}$	$230.4^{+4.1}_{-4.2}$	$f\sigma_8(0.51)$	$0.483^{+0.024}_{-0.024}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.633^{+0.023}_{-0.024}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$f\sigma_8(0.61)$	$0.479^{+0.024}_{-0.024}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.602^{+0.022}_{-0.022}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.073}_{-0.073}$	$f\sigma_8(2.33)$	$0.304^{+0.011}_{-0.011}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.51}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.764^{+0.056}_{-0.057}$	$\sigma_8(2.33)$	$0.3122^{+0.0094}_{-0.0095}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_*$	$1089.90^{+0.65}_{-0.65}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.26}_{-0.27}$	$r_*$	$144.66^{+0.68}_{-0.69}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-4.9}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.04113^{+0.00078}_{-0.00075}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894^{+0.064}_{-0.066}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$z_{\mathrm{drag}}$	$1059.80^{+0.86}_{-0.82}$	$\chi_{\mathrm{lowl}}^2$	$22.89 (\nu: 0.4)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.33^{+0.70}_{-0.72}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.2 (\nu: 15.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14059^{+0.00087}_{-0.00084}$	$\chi_{\mathrm{H073p45}}^2$	$6.5 (\nu: 2.7)$
$H_0$	$69.3^{+2.0}_{-2.0}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00049}_{-0.00049}$	$\chi_{\mathrm{JLA}}^2$	$1036.4 (\nu: 1.6)$
$\Omega_{\Lambda}$	$0.704^{+0.018}_{-0.018}$	$z_{\mathrm{eq}}$	$3383^{+67}_{-66}$	$\chi_{6\mathrm{DF}}^2$	$0.10 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.296^{+0.018}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{MGS}}^2$	$2.47 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1422^{+0.0028}_{-0.0028}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.013}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.50 (\nu: 0.3)$
$\Omega_{\mathrm{m}} h^3$	$0.0985^{+0.0035}_{-0.0035}$	$100\theta_{\mathrm{s,eq}}$	$0.4512^{+0.0066}_{-0.0064}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\sigma_8$	$0.824^{+0.031}_{-0.032}$	$H(0.15)$	$73.9^{+1.3}_{-1.3}$	$\chi_{\mathrm{BAO}}^2$	$7.1 (\nu: 0.7)$
$S_8$	$0.819^{+0.034}_{-0.032}$	$D_{\mathrm{M}}(0.15)$	$629^{+14}_{-14}$	$\chi_{\mathrm{CMB}}^2$	$11933.9 (\nu: 15.8)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12991.69; R - 1 = 0.00727$$



## 14.30 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02234^{+0.00040}_{-0.00039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.017}_{-0.018}$	$H(0.51)$	$89.72^{+0.64}_{-0.64}$
$\Omega_{\mathrm{c}} h^2$	$0.1193^{+0.0026}_{-0.0026}$	$\sigma_8/h^{0.5}$	$0.991^{+0.025}_{-0.025}$	$D_{\mathrm{M}}(0.51)$	$1961^{+26}_{-26}$
$100\theta_{\mathrm{MC}}$	$1.04093^{+0.00080}_{-0.00073}$	$r_{\mathrm{drag}} h$	$102.1^{+3.0}_{-2.9}$	$H(0.61)$	$95.16^{+0.67}_{-0.67}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	$2.442^{+0.055}_{-0.055}$	$D_{\mathrm{M}}(0.61)$	$2285^{+27}_{-27}$
$w_0$	$-1.058^{+0.074}_{-0.076}$	$z_{\mathrm{re}}$	$< 9.33$	$H(2.33)$	$235.2^{+1.5}_{-1.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.038}_{-0.028}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.082}_{-0.057}$	$D_{\mathrm{M}}(2.33)$	$5757^{+23}_{-23}$
$n_{\mathrm{s}}$	$0.967^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.026}_{-0.027}$	$f\sigma_8(0.15)$	$0.459^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0063}_{-0.0063}$	$D_{40}$	$1225^{+29}_{-30}$	$\sigma_8(0.15)$	$0.764^{+0.025}_{-0.025}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{220}$	$5723^{+99}_{-100}$	$f\sigma_8(0.38)$	$0.483^{+0.020}_{-0.020}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+33}_{-35}$	$\sigma_8(0.38)$	$0.678^{+0.022}_{-0.023}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{1420}$	$816^{+12}_{-13}$	$f\sigma_8(0.51)$	$0.484^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.5^{+4.0}_{-4.2}$	$\sigma_8(0.51)$	$0.634^{+0.020}_{-0.021}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.79$	$n_{\mathrm{s},0.002}$	$0.967^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	$0.480^{+0.021}_{-0.020}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$Y_{\mathrm{P}}$	$0.24538^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.603^{+0.019}_{-0.020}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24671^{+0.00015}_{-0.00017}$	$f\sigma_8(2.33)$	$0.3044^{+0.0096}_{-0.0098}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.073}_{-0.071}$	$\sigma_8(2.33)$	$0.3126^{+0.0085}_{-0.0085}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.763^{+0.057}_{-0.057}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.52}$	$z_*$	$1089.90^{+0.62}_{-0.63}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.0}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.45}$	$r_*$	$144.64^{+0.63}_{-0.62}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.26}_{-0.27}$	$100\theta_*$	$1.04112^{+0.00079}_{-0.00072}$	$\chi_{\mathrm{lensing}}^2$	$9.09 (\nu: 0.2)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893^{+0.059}_{-0.059}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.81^{+0.85}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	$22.97 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0041}$	$r_{\mathrm{drag}}$	$147.32^{+0.66}_{-0.65}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 (\nu: 15.6)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14060^{+0.00081}_{-0.00081}$	$\chi_{\mathrm{H073p45}}^2$	$6.4 (\nu: 2.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00050}_{-0.00049}$	$\chi_{\mathrm{JLA}}^2$	$1036.4 (\nu: 1.7)$
$H_0$	$69.3^{+2.0}_{-2.0}$	$z_{\mathrm{eq}}$	$3385^{+59}_{-60}$	$\chi_{6\mathrm{DF}}^2$	$0.11 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.704^{+0.017}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01033^{+0.00018}_{-0.00018}$	$\chi_{\mathrm{MGS}}^2$	$2.48 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.296^{+0.018}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.816^{+0.011}_{-0.011}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.50 (\nu: 0.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1423^{+0.0025}_{-0.0025}$	$100\theta_{\mathrm{s,eq}}$	$0.4510^{+0.0059}_{-0.0057}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0986^{+0.0034}_{-0.0033}$	$H(0.15)$	$73.9^{+1.3}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$11942.8 (\nu: 16.5)$
$\sigma_8$	$0.825^{+0.026}_{-0.027}$	$D_{\mathrm{M}}(0.15)$	$629^{+15}_{-14}$	$\chi_{\mathrm{BAO}}^2$	$7.1 (\nu: 0.7)$
$S_8$	$0.820^{+0.028}_{-0.026}$	$H(0.38)$	$83.30^{+0.69}_{-0.68}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.015}_{-0.014}$	$D_{\mathrm{M}}(0.38)$	$1510^{+24}_{-23}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 13000.46; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -3.08; R - 1 = 0.00765$$



## 15 w+wa

### 15.1 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02219	$0.02214^{+0.00054}_{-0.00053}$	$\sigma_8 \Omega_m^{0.25}$	0.6134	$0.614^{+0.033}_{-0.035}$	$D_M(0.38)$	1518.3	$1516^{+35}_{-37}$
$\Omega_c h^2$	0.11995	$0.1204^{+0.0045}_{-0.0048}$	$\sigma_8/h^{0.5}$	0.9979	$0.998^{+0.047}_{-0.051}$	$H(0.51)$	89.84	$89.9^{+1.3}_{-1.3}$
$100\theta_{MC}$	1.04095	$1.0409^{+0.0012}_{-0.0012}$	$r_{drag} h$	100.48	$100.4^{+3.3}_{-3.2}$	$D_M(0.51)$	1968.9	$1966^{+42}_{-43}$
$\tau$	0.0590	$0.052^{+0.021}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	2.462	$2.46^{+0.10}_{-0.11}$	$H(0.61)$	95.32	$95.3^{+1.1}_{-1.1}$
$w_0$	-0.985	$-0.96^{+0.23}_{-0.21}$	$z_{re}$	8.18	$7.5^{+2.0}_{-2.5}$	$D_M(0.61)$	2292.9	$2290^{+45}_{-45}$
$w_a$	-0.18	$-0.34^{+0.81}_{-1.1}$	$10^9 A_s$	2.109	$2.088^{+0.091}_{-0.091}$	$H(2.33)$	235.28	$235.1^{+2.5}_{-2.5}$
$\ln(10^{10} A_s)$	3.0490	$3.039^{+0.043}_{-0.044}$	$10^9 A_s e^{-2\tau}$	1.8748	$1.881^{+0.033}_{-0.033}$	$D_M(2.33)$	5762.3	$5765^{+33}_{-34}$
$n_s$	0.9649	$0.964^{+0.014}_{-0.013}$	$D_{40}$	1225.7	$1228^{+35}_{-36}$	$f\sigma_8(0.15)$	0.4619	$0.461^{+0.028}_{-0.029}$
$y_{cal}$	0.9992	$1.0004^{+0.0063}_{-0.0063}$	$D_{220}$	5695	$5704^{+100}_{-100}$	$\sigma_8(0.15)$	0.7620	$0.762^{+0.041}_{-0.043}$
$A_{100}^{PS}$	237	$242^{+60}_{-60}$	$D_{810}$	2527.2	$2534^{+35}_{-34}$	$f\sigma_8(0.38)$	0.4830	$0.483^{+0.032}_{-0.033}$
$A_{143}^{PS}$	44.0	$41^{+20}_{-20}$	$D_{1420}$	812.3	$814^{+13}_{-13}$	$\sigma_8(0.38)$	0.6758	$0.676^{+0.036}_{-0.038}$
$A_{217}^{PS}$	97.5	$101^{+30}_{-30}$	$D_{2000}$	229.24	$229.6^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	0.4829	$0.483^{+0.034}_{-0.034}$
$A_{217}^{CIB}$	46.0	$41^{+20}_{-20}$	$n_{s,0.002}$	0.9649	$0.964^{+0.014}_{-0.013}$	$\sigma_8(0.51)$	0.6324	$0.632^{+0.033}_{-0.035}$
$A_{143}^{tSZ}$	5.97	$< 8.77$	$Y_P$	0.245322	$0.24529^{+0.00021}_{-0.00025}$	$f\sigma_8(0.61)$	0.4786	$0.479^{+0.035}_{-0.035}$
$r_{143 \times 217}^{PS}$	0.614	$0.65^{+0.31}_{-0.32}$	$Y_P^{BBN}$	0.246649	$0.24662^{+0.00021}_{-0.00025}$	$\sigma_8(0.61)$	0.6017	$0.601^{+0.031}_{-0.033}$
$r_{143 \times 217}^{CIB}$	0.87	—	$10^5 D/H$	2.619	$2.63^{+0.10}_{-0.099}$	$f\sigma_8(2.33)$	0.3039	$0.304^{+0.015}_{-0.017}$
$\xi^{tSZ \times CIB}$	0.35	—	Age/Gyr	13.779	$13.777^{+0.095}_{-0.088}$	$\sigma_8(2.33)$	0.3115	$0.311^{+0.012}_{-0.013}$
$A^{kSZ}$	1.2	—	$z_*$	1090.14	$1090.26^{+0.91}_{-0.95}$	$f_{2000}^{143}$	31.0	$31^{+8}_{-8}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.50}$	$r_*$	144.58	$144.5^{+1.1}_{-1.1}$	$f_{2000}^{217}$	107.1	$107.5^{+5.2}_{-5.2}$
$A_{143}^{dust}$	0.996	$0.98^{+0.45}_{-0.46}$	$100\theta_*$	1.04115	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143 \times 217}$	32.8	$33^{+5}_{-5}$
$A_{217}^{dust}$	0.954	$0.97^{+0.26}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	13.887	$13.88^{+0.11}_{-0.10}$	$\chi_{small}^2$	397.31	$396.9 (\nu: 1.3)$
$A_{143 \times 217}^{dust}$	0.973	$1.03^{+0.42}_{-0.41}$	$z_{drag}$	1059.51	$1059.4^{+1.2}_{-1.1}$	$\chi_{lowl}^2$	23.37	$23.4 (\nu: 0.6)$
$c_{100}$	0.99756	$0.9974^{+0.0027}_{-0.0027}$	$r_{drag}$	147.30	$147.2^{+1.2}_{-1.1}$	$\chi_{CamSpec}^2$	7049.3	$7062.7 (\nu: 14.5)$
$c_{217}$	1.00160	$1.0012^{+0.0040}_{-0.0040}$	$k_D$	0.14050	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{JLA}^2$	1034.74	$1035.9 (\nu: 1.2)$
$H_0$	68.21	$68.2^{+2.3}_{-2.1}$	$100\theta_D$	0.16101	$0.16107^{+0.00069}_{-0.00065}$	$\chi_{6DF}^2$	0.000	$0.056 (\nu: 0.0)$
$\Omega_\Lambda$	0.6931	$0.692^{+0.021}_{-0.022}$	$z_{eq}$	3397	$3406^{+100}_{-110}$	$\chi_{MGS}^2$	1.75	$1.92 (\nu: 0.3)$
$\Omega_m$	0.3069	$0.308^{+0.022}_{-0.021}$	$k_{eq}$	0.010367	$0.01040^{+0.00032}_{-0.00033}$	$\chi_{DR12BAO}^2$	3.97	$4.9 (\nu: 0.9)$
$\Omega_m h^2$	0.14278	$0.1432^{+0.0043}_{-0.0046}$	$100\theta_{eq}$	0.8138	$0.812^{+0.021}_{-0.019}$	$\chi_{prior}^2$	2.5	$7.6 (\nu: 5.8)$
$\Omega_m h^3$	0.09739	$0.0976^{+0.0045}_{-0.0045}$	$100\theta_{s,eq}$	0.4498	$0.449^{+0.011}_{-0.0097}$	$\chi_{BAO}^2$	5.72	$6.9 (\nu: 1.2)$
$\sigma_8$	0.8241	$0.824^{+0.044}_{-0.046}$	$H(0.15)$	73.49	$73.7^{+2.1}_{-1.9}$	$\chi_{CMB}^2$	7470.0	$7483.0 (\nu: 14.6)$
$S_8$	0.834	$0.835^{+0.049}_{-0.053}$	$D_M(0.15)$	635.6	$635^{+17}_{-18}$			
$\sigma_8 \Omega_m^{0.5}$	0.4565	$0.457^{+0.027}_{-0.029}$	$H(0.38)$	83.32	$83.5^{+1.7}_{-1.6}$			

Best-fit  $\chi_{eff}^2 = 8512.97$ ;  $\bar{\chi}_{eff}^2 = 8533.43$ ;  $R - 1 = 0.00675$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.97 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 397.31 commander\_dx12\_v3.2\_29: 23.37 CamSpec like\_10.7HM: 7049.34  
SN - JLA Pantheon18: 1034.74



## 15.2 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215^{+0.00052}_{-0.00051}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.612^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1516^{+34}_{-36}$
$\Omega_{\mathrm{c}}h^2$	$0.1201^{+0.0034}_{-0.0036}$	$\sigma_8/h^{0.5}$	$0.995^{+0.031}_{-0.032}$	$H(0.51)$	$89.9^{+1.3}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0011}_{-0.0012}$	$r_{\mathrm{drag}}h$	$100.5^{+3.2}_{-3.2}$	$D_{\mathrm{M}}(0.51)$	$1966^{+41}_{-43}$
$\tau$	$0.052^{+0.021}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	$2.454^{+0.067}_{-0.072}$	$H(0.61)$	$95.3^{+1.1}_{-1.1}$
$w_0$	$-0.96^{+0.21}_{-0.20}$	$z_{\mathrm{re}}$	$7.5^{+2.0}_{-2.4}$	$D_{\mathrm{M}}(0.61)$	$2289^{+44}_{-45}$
$w_{\mathrm{a}}$	$-0.30^{+0.72}_{-0.97}$	$10^9 A_{\mathrm{s}}$	$2.086^{+0.084}_{-0.085}$	$H(2.33)$	$235.0^{+2.5}_{-2.5}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.040}_{-0.041}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5764^{+32}_{-32}$
$n_{\mathrm{s}}$	$0.964^{+0.012}_{-0.011}$	$D_{40}$	$1227^{+30}_{-32}$	$f\sigma_8(0.15)$	$0.460^{+0.019}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0063}_{-0.0064}$	$D_{220}$	$5706^{+100}_{-100}$	$\sigma_8(0.15)$	$0.760^{+0.029}_{-0.030}$
$A_{100}^{\mathrm{PS}}$	$243^{+70}_{-60}$	$D_{810}$	$2533^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.481^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.38)$	$0.674^{+0.026}_{-0.027}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{2000}$	$229.5^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	$0.481^{+0.024}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.964^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	$0.631^{+0.024}_{-0.025}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.78$	$Y_{\mathrm{P}}$	$0.24530^{+0.00020}_{-0.00024}$	$f\sigma_8(0.61)$	$0.477^{+0.025}_{-0.024}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00020}_{-0.00024}$	$\sigma_8(0.61)$	$0.600^{+0.023}_{-0.024}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.627^{+0.099}_{-0.095}$	$f\sigma_8(2.33)$	$0.303^{+0.012}_{-0.013}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.777^{+0.089}_{-0.087}$	$\sigma_8(2.33)$	$0.3101^{+0.0094}_{-0.0098}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.21^{+0.84}_{-0.81}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.57^{+0.85}_{-0.83}$	$f_{2000}^{217}$	$107.6^{+5.3}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.46}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143\times 217}$	$33^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887^{+0.081}_{-0.079}$	$\chi_{\mathrm{lensing}}^2$	$9.40\ (\nu: 0.4)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.42}$	$z_{\mathrm{drag}}$	$1059.4^{+1.1}_{-1.1}$	$\chi_{\mathrm{simall}}^2$	$396.8\ (\nu: 1.2)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.30^{+0.92}_{-0.90}$	$\chi_{\mathrm{lowl}}^2$	$23.29\ (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0039}$	$k_{\mathrm{D}}$	$0.1405^{+0.0012}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.3\ (\nu: 13.6)$
$H_0$	$68.2^{+2.2}_{-2.1}$	$100\theta_{\mathrm{D}}$	$0.16105^{+0.00067}_{-0.00065}$	$\chi_{\mathrm{JLA}}^2$	$1035.9\ (\nu: 1.1)$
$\Omega_{\Lambda}$	$0.693^{+0.020}_{-0.021}$	$z_{\mathrm{eq}}$	$3400^{+79}_{-81}$	$\chi_{6\mathrm{DF}}^2$	$0.056\ (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.307^{+0.021}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00024}_{-0.00025}$	$\chi_{\mathrm{MGS}}^2$	$1.94\ (\nu: 0.3)$
$\Omega_{\mathrm{m}}h^2$	$0.1429^{+0.0033}_{-0.0034}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.016}_{-0.014}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8\ (\nu: 0.8)$
$\Omega_{\mathrm{m}}h^3$	$0.0975^{+0.0041}_{-0.0039}$	$100\theta_{\mathrm{s,eq}}$	$0.4495^{+0.0079}_{-0.0074}$	$\chi_{\mathrm{prior}}^2$	$7.6\ (\nu: 5.8)$
$\sigma_8$	$0.821^{+0.031}_{-0.032}$	$H(0.15)$	$73.6^{+2.0}_{-1.8}$	$\chi_{\mathrm{CMB}}^2$	$7491.9\ (\nu: 14.9)$
$S_8$	$0.831^{+0.034}_{-0.035}$	$D_{\mathrm{M}}(0.15)$	$635^{+17}_{-18}$	$\chi_{\mathrm{BAO}}^2$	$6.8\ (\nu: 1.2)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.455^{+0.018}_{-0.019}$	$H(0.38)$	$83.5^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8542.20; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.70; R - 1 = 0.00753$$



### 15.3 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02214^{+0.00054}_{-0.00052}$	$\sigma_8 \Omega_m^{0.25}$	$0.614^{+0.033}_{-0.036}$	$D_M(0.38)$	$1516^{+35}_{-37}$
$\Omega_c h^2$	$0.1203^{+0.0045}_{-0.0048}$	$\sigma_8/h^{0.5}$	$0.998^{+0.046}_{-0.051}$	$H(0.51)$	$89.9^{+1.3}_{-1.3}$
$100\theta_{MC}$	$1.0409^{+0.0012}_{-0.0012}$	$r_{drag}h$	$100.4^{+3.3}_{-3.2}$	$D_M(0.51)$	$1966^{+42}_{-42}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.46^{+0.10}_{-0.11}$	$H(0.61)$	$95.3^{+1.1}_{-1.1}$
$w_0$	$-0.96^{+0.22}_{-0.20}$	$z_{re}$	$< 9.36$	$D_M(0.61)$	$2290^{+45}_{-45}$
$w_a$	$-0.33^{+0.81}_{-1.1}$	$10^9 A_s$	$2.095^{+0.085}_{-0.061}$	$H(2.33)$	$235.1^{+2.5}_{-2.5}$
$\ln(10^{10} A_s)$	$3.042^{+0.040}_{-0.030}$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.033}_{-0.033}$	$D_M(2.33)$	$5764^{+33}_{-33}$
$n_s$	$0.964^{+0.014}_{-0.013}$	$D_{40}$	$1228^{+35}_{-36}$	$f\sigma_8(0.15)$	$0.462^{+0.028}_{-0.029}$
$y_{cal}$	$1.0004^{+0.0064}_{-0.0064}$	$D_{220}$	$5704^{+110}_{-100}$	$\sigma_8(0.15)$	$0.762^{+0.041}_{-0.043}$
$A_{100}^{PS}$	$242^{+60}_{-60}$	$D_{810}$	$2533^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.483^{+0.032}_{-0.033}$
$A_{143}^{PS}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.38)$	$0.676^{+0.036}_{-0.038}$
$A_{217}^{PS}$	$101^{+30}_{-30}$	$D_{2000}$	$229.6^{+4.7}_{-4.4}$	$f\sigma_8(0.51)$	$0.484^{+0.035}_{-0.034}$
$A_{217}^{CIB}$	$41^{+20}_{-20}$	$n_{s,0.002}$	$0.964^{+0.014}_{-0.013}$	$\sigma_8(0.51)$	$0.633^{+0.033}_{-0.035}$
$A_{143}^{tSZ}$	$< 8.81$	$Y_P$	$0.24530^{+0.00021}_{-0.00025}$	$f\sigma_8(0.61)$	$0.480^{+0.036}_{-0.035}$
$r_{143 \times 217}^{PS}$	$0.65^{+0.31}_{-0.32}$	$Y_P^{BBN}$	$0.24662^{+0.00021}_{-0.00025}$	$\sigma_8(0.61)$	$0.602^{+0.031}_{-0.033}$
$r_{143 \times 217}^{CIB}$	—	$10^5 D/H$	$2.63^{+0.10}_{-0.10}$	$f\sigma_8(2.33)$	$0.304^{+0.015}_{-0.018}$
$\xi^{tSZ \times CIB}$	—	Age/Gyr	$13.777^{+0.095}_{-0.088}$	$\sigma_8(2.33)$	$0.311^{+0.012}_{-0.013}$
$A^{kSZ}$	—	$z_*$	$1090.24^{+0.90}_{-0.94}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{dust}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.5^{+1.1}_{-1.1}$	$f_{2000}^{217}$	$107.5^{+5.2}_{-5.2}$
$A_{143}^{dust}$	$0.98^{+0.45}_{-0.46}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{217}^{dust}$	$0.97^{+0.26}_{-0.26}$	$D_M(z_*)/\text{Gpc}$	$13.88^{+0.11}_{-0.10}$	$\chi_{simall}^2$	$396.8 (\nu: 1.3)$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.42}$	$z_{drag}$	$1059.4^{+1.2}_{-1.1}$	$\chi_{lowl}^2$	$23.4 (\nu: 0.6)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$r_{drag}$	$147.3^{+1.2}_{-1.1}$	$\chi_{CamSpec}^2$	$7062.5 (\nu: 14.5)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0040}$	$k_D$	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{JLA}^2$	$1035.9 (\nu: 1.2)$
$H_0$	$68.2^{+2.3}_{-2.1}$	$100\theta_D$	$0.16106^{+0.00067}_{-0.00065}$	$\chi_{6DF}^2$	$0.055 (\nu: 0.0)$
$\Omega_\Lambda$	$0.692^{+0.021}_{-0.022}$	$z_{eq}$	$3404^{+100}_{-110}$	$\chi_{MGS}^2$	$1.91 (\nu: 0.3)$
$\Omega_m$	$0.308^{+0.022}_{-0.021}$	$k_{eq}$	$0.01039^{+0.00032}_{-0.00034}$	$\chi_{DR12BAO}^2$	$4.9 (\nu: 0.9)$
$\Omega_m h^2$	$0.1431^{+0.0044}_{-0.0046}$	$100\theta_{eq}$	$0.812^{+0.021}_{-0.019}$	$\chi_{prior}^2$	$7.6 (\nu: 5.8)$
$\Omega_m h^3$	$0.0976^{+0.0044}_{-0.0045}$	$100\theta_{s,eq}$	$0.449^{+0.011}_{-0.0097}$	$\chi_{BAO}^2$	$6.9 (\nu: 1.2)$
$\sigma_8$	$0.824^{+0.044}_{-0.047}$	$H(0.15)$	$73.6^{+2.1}_{-1.9}$	$\chi_{CMB}^2$	$7482.7 (\nu: 14.3)$
$S_8$	$0.835^{+0.049}_{-0.053}$	$D_M(0.15)$	$635^{+17}_{-18}$		
$\sigma_8 \Omega_m^{0.5}$	$0.457^{+0.027}_{-0.029}$	$H(0.38)$	$83.5^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\text{eff}}^2 = 8533.12; R - 1 = 0.00716$$



# 15.4 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02216^{+0.00052}_{-0.00050}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.612^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1516^{+35}_{-37}$
$\Omega_{\mathrm{c}} h^2$	$0.1200^{+0.0033}_{-0.0035}$	$\sigma_8/h^{0.5}$	$0.995^{+0.031}_{-0.032}$	$H(0.51)$	$89.9^{+1.3}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$100.5^{+3.2}_{-3.2}$	$D_{\mathrm{M}}(0.51)$	$1966^{+41}_{-42}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.455^{+0.067}_{-0.071}$	$H(0.61)$	$95.4^{+1.1}_{-1.1}$
$w_0$	$-0.96^{+0.21}_{-0.20}$	$z_{\mathrm{re}}$	$< 9.32$	$D_{\mathrm{M}}(0.61)$	$2290^{+44}_{-45}$
$w_{\mathrm{a}}$	$-0.29^{+0.71}_{-0.92}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.079}_{-0.057}$	$H(2.33)$	$235.0^{+2.5}_{-2.5}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.037}_{-0.028}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.028}_{-0.027}$	$D_{\mathrm{M}}(2.33)$	$5763^{+33}_{-32}$
$n_{\mathrm{s}}$	$0.965^{+0.012}_{-0.011}$	$D_{40}$	$1227^{+30}_{-32}$	$f\sigma_8(0.15)$	$0.460^{+0.020}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0064}_{-0.0064}$	$D_{220}$	$5706^{+100}_{-100}$	$\sigma_8(0.15)$	$0.760^{+0.029}_{-0.030}$
$A_{100}^{\mathrm{PS}}$	$242^{+70}_{-60}$	$D_{810}$	$2533^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.481^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.38)$	$0.674^{+0.026}_{-0.027}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{2000}$	$229.6^{+4.7}_{-4.5}$	$f\sigma_8(0.51)$	$0.481^{+0.024}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	$0.631^{+0.024}_{-0.025}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.85$	$Y_{\mathrm{P}}$	$0.24531^{+0.00020}_{-0.00024}$	$f\sigma_8(0.61)$	$0.477^{+0.025}_{-0.024}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00020}_{-0.00024}$	$\sigma_8(0.61)$	$0.600^{+0.023}_{-0.023}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.625^{+0.097}_{-0.095}$	$f\sigma_8(2.33)$	$0.303^{+0.012}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.777^{+0.091}_{-0.088}$	$\sigma_8(2.33)$	$0.3104^{+0.0093}_{-0.0095}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.18^{+0.78}_{-0.80}$	$f_{2000}^{143}$	$31^{+8}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.60^{+0.84}_{-0.81}$	$f_{2000}^{217}$	$107.5^{+5.3}_{-5.1}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.46}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.080}_{-0.078}$	$\chi_{\mathrm{lensing}}^2$	$9.39 (\nu: 0.4)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.42}$	$z_{\mathrm{drag}}$	$1059.5^{+1.1}_{-1.2}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.1)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$r_{\mathrm{drag}}$	$147.33^{+0.90}_{-0.88}$	$\chi_{\mathrm{lowl}}^2$	$23.26 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0041}_{-0.0039}$	$k_{\mathrm{D}}$	$0.1405^{+0.0012}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.2 (\nu: 13.6)$
$H_0$	$68.2^{+2.2}_{-2.1}$	$100\theta_{\mathrm{D}}$	$0.16104^{+0.00066}_{-0.00065}$	$\chi_{\mathrm{JLA}}^2$	$1035.9 (\nu: 1.1)$
$\Omega_{\Lambda}$	$0.693^{+0.020}_{-0.021}$	$z_{\mathrm{eq}}$	$3397^{+75}_{-80}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.307^{+0.021}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00023}_{-0.00024}$	$\chi_{\mathrm{MGS}}^2$	$1.94 (\nu: 0.3)$
$\Omega_{\mathrm{m}} h^2$	$0.1428^{+0.0031}_{-0.0033}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.015}_{-0.014}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 (\nu: 0.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0974^{+0.0040}_{-0.0038}$	$100\theta_{\mathrm{s,eq}}$	$0.4498^{+0.0077}_{-0.0071}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 5.9)$
$\sigma_8$	$0.822^{+0.031}_{-0.032}$	$H(0.15)$	$73.6^{+2.0}_{-1.8}$	$\chi_{\mathrm{CMB}}^2$	$7491.6 (\nu: 14.5)$
$S_8$	$0.831^{+0.034}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$635^{+17}_{-17}$	$\chi_{\mathrm{BAO}}^2$	$6.8 (\nu: 1.2)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.455^{+0.018}_{-0.019}$	$H(0.38)$	$83.5^{+1.7}_{-1.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8541.86; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.51; R - 1 = 0.00901$$



## 15.5 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022301	$0.02229^{+0.00040}_{-0.00038}$	$S_8$	0.8238	$0.825^{+0.038}_{-0.039}$	$D_M(0.15)$	635.1	$635^{+17}_{-17}$
$\Omega_c h^2$	0.11951	$0.1196^{+0.0033}_{-0.0034}$	$\sigma_8 \Omega_m^{0.5}$	0.4512	$0.452^{+0.021}_{-0.021}$	$H(0.38)$	83.49	$83.5^{+1.6}_{-1.6}$
$100\theta_{MC}$	1.04091	$1.04088^{+0.00081}_{-0.00080}$	$\sigma_8 \Omega_m^{0.25}$	0.6066	$0.607^{+0.025}_{-0.026}$	$D_M(0.38)$	1516.1	$1516^{+35}_{-34}$
$\tau$	0.0520	$0.052^{+0.021}_{-0.022}$	$\sigma_8/h^{0.5}$	0.9874	$0.989^{+0.037}_{-0.038}$	$H(0.51)$	90.02	$90.0^{+1.3}_{-1.4}$
$w_0$	-0.972	$-0.97^{+0.22}_{-0.20}$	$r_{\text{drag}} h$	100.48	$100.5^{+3.3}_{-3.1}$	$D_M(0.51)$	1965.8	$1966^{+41}_{-41}$
$w_a$	-0.20	$-0.24^{+0.73}_{-0.92}$	$\langle d^2 \rangle^{1/2}$	2.439	$2.442^{+0.084}_{-0.085}$	$H(0.61)$	95.49	$95.5^{+1.1}_{-1.1}$
$\ln(10^{10} A_s)$	3.0366	$3.038^{+0.044}_{-0.046}$	$z_{\text{re}}$	7.44	$7.5^{+2.0}_{-2.5}$	$D_M(0.61)$	2289.2	$2289^{+45}_{-43}$
$n_s$	0.9662	$0.966^{+0.011}_{-0.011}$	$10^9 A_s$	2.083	$2.086^{+0.093}_{-0.094}$	$H(2.33)$	235.13	$235.1^{+2.6}_{-2.4}$
$y_{\text{cal}}$	1.0003	$1.0005^{+0.0067}_{-0.0065}$	$10^9 A_s e^{-2\tau}$	1.8777	$1.878^{+0.030}_{-0.029}$	$D_M(2.33)$	5757.1	$5759^{+29}_{-28}$
$A_{100}^{\text{PS}}$	235	$240^{+60}_{-60}$	$D_{40}$	1224.2	$1225^{+33}_{-32}$	$f\sigma_8(0.15)$	0.4557	$0.456^{+0.022}_{-0.022}$
$A_{143}^{\text{PS}}$	38.1	$40^{+20}_{-20}$	$D_{220}$	5717	$5718^{+100}_{-99}$	$\sigma_8(0.15)$	0.7541	$0.755^{+0.034}_{-0.035}$
$A_{217}^{\text{PS}}$	101.6	$102^{+30}_{-40}$	$D_{810}$	2534.1	$2535^{+36}_{-35}$	$f\sigma_8(0.38)$	0.4765	$0.477^{+0.026}_{-0.025}$
$A_{217}^{\text{CIB}}$	44.8	$40^{+20}_{-20}$	$D_{1420}$	815.5	$816^{+13}_{-12}$	$\sigma_8(0.38)$	0.6691	$0.670^{+0.030}_{-0.031}$
$A_{143}^{\text{tSZ}}$	6.65	$< 8.74$	$D_{2000}$	230.22	$230.2^{+4.2}_{-4.1}$	$f\sigma_8(0.51)$	0.4766	$0.477^{+0.027}_{-0.027}$
$r_{143 \times 217}^{\text{PS}}$	0.573	$0.66^{+0.31}_{-0.32}$	$n_{s,0.002}$	0.9662	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	0.6263	$0.627^{+0.028}_{-0.029}$
$r_{143 \times 217}^{\text{CIB}}$	0.77	—	$Y_P$	0.245367	$0.24536^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	0.4725	$0.473^{+0.028}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.01	—	$Y_P^{\text{BBN}}$	0.246694	$0.24669^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	0.5960	$0.597^{+0.026}_{-0.027}$
$A^{\text{kSZ}}$	0.0	—	$10^5 D/H$	2.599	$2.600^{+0.073}_{-0.073}$	$f\sigma_8(2.33)$	0.3011	$0.301^{+0.013}_{-0.015}$
$A_{100}^{\text{dust}}$	1.01	$1.01^{+0.50}_{-0.50}$	$\text{Age/Gyr}$	13.770	$13.771^{+0.086}_{-0.079}$	$\sigma_8(2.33)$	0.3089	$0.309^{+0.011}_{-0.012}$
$A_{143}^{\text{dust}}$	0.978	$0.96^{+0.47}_{-0.45}$	$z_*$	1089.97	$1089.98^{+0.67}_{-0.69}$	$f_{2000}^{143}$	30.1	$30^{+7}_{-7}$
$A_{217}^{\text{dust}}$	0.968	$0.97^{+0.26}_{-0.27}$	$r_*$	144.61	$144.59^{+0.77}_{-0.77}$	$f_{2000}^{217}$	106.86	$106.9^{+5.0}_{-5.0}$
$A_{143 \times 217}^{\text{dust}}$	1.003	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	1.04110	$1.04107^{+0.00080}_{-0.00079}$	$f_{2000}^{143 \times 217}$	32.1	$32^{+5}_{-5}$
$c_{100}$	0.99760	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	13.890	$13.889^{+0.072}_{-0.072}$	$\chi_{\text{small}}^2$	395.76	$396.9 (\nu: 1.2)$
$c_{217}$	1.00127	$1.0011^{+0.0040}_{-0.0039}$	$z_{\text{drag}}$	1059.74	$1059.73^{+0.85}_{-0.83}$	$\chi_{\text{lowl}}^2$	22.92	$23.05 (\nu: 0.4)$
$c_{TE}$	0.9964	$0.997^{+0.013}_{-0.012}$	$r_{\text{drag}}$	147.30	$147.28^{+0.78}_{-0.78}$	$\chi_{\text{CamSpec}}^2$	11499.4	$11514.3 (\nu: 16.0)$
$c_{EE}$	0.9921	$0.992^{+0.013}_{-0.013}$	$k_D$	0.14060	$0.14060^{+0.00089}_{-0.00088}$	$\chi_{\text{JLA}}^2$	1034.83	$1035.9 (\nu: 1.2)$
$H_0$	68.22	$68.2^{+2.2}_{-2.1}$	$100\theta_D$	0.160868	$0.16087^{+0.00049}_{-0.00050}$	$\chi_{6\text{DF}}^2$	0.001	$0.055 (\nu: 0.0)$
$\Omega_\Lambda$	0.6939	$0.693^{+0.020}_{-0.020}$	$z_{\text{eq}}$	3389	$3391^{+76}_{-76}$	$\chi_{\text{MGS}}^2$	1.82	$1.91 (\nu: 0.2)$
$\Omega_m$	0.3061	$0.307^{+0.020}_{-0.020}$	$k_{\text{eq}}$	0.010343	$0.01035^{+0.00023}_{-0.00023}$	$\chi_{\text{DR12BAO}}^2$	3.77	$4.7 (\nu: 0.8)$
$\Omega_m h^2$	0.14246	$0.1425^{+0.0032}_{-0.0032}$	$100\theta_{\text{eq}}$	0.8155	$0.815^{+0.015}_{-0.014}$	$\chi_{\text{prior}}^2$	2.2	$7.8 (\nu: 5.9)$
$\Omega_m h^3$	0.09718	$0.0972^{+0.0039}_{-0.0039}$	$100\theta_{s,\text{eq}}$	0.4506	$0.4504^{+0.0075}_{-0.0072}$	$\chi_{\text{BAO}}^2$	5.59	$6.6 (\nu: 1.1)$
$\sigma_8$	0.8155	$0.816^{+0.036}_{-0.037}$	$H(0.15)$	73.60	$73.6^{+1.9}_{-1.8}$	$\chi_{\text{CMB}}^2$	11918.0	$11934.2 (\nu: 16.6)$

Best-fit  $\chi_{\text{eff}}^2 = 12960.67$ ;  $\bar{\chi}_{\text{eff}}^2 = 12984.58$ ;  $R - 1 = 0.00938$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.77 CMB - simall-100x143.offlike5\_EE\_Aplanck\_B: 395.76 commander\_dx12\_v3\_2\_29: 22.92 CamSpec like\_10.7HM\_1400\_unified: 11499.35 SN - JLA Pantheon18: 1034.83



## 15.6 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02229^{+0.00039}_{-0.00037}$	$\sigma_8 \Omega_m^{0.5}$	$0.452^{+0.016}_{-0.016}$	$D_M(0.38)$	$1515^{+34}_{-33}$
$\Omega_c h^2$	$0.1196^{+0.0028}_{-0.0027}$	$\sigma_8 \Omega_m^{0.25}$	$0.608^{+0.019}_{-0.019}$	$H(0.51)$	$90.0^{+1.3}_{-1.3}$
$100\theta_{MC}$	$1.04087^{+0.00080}_{-0.00078}$	$\sigma_8/h^{0.5}$	$0.989^{+0.028}_{-0.028}$	$D_M(0.51)$	$1965^{+40}_{-39}$
$\tau$	$0.053^{+0.020}_{-0.020}$	$r_{\text{drag}} h$	$100.5^{+3.3}_{-3.1}$	$H(0.61)$	$95.5^{+1.1}_{-1.1}$
$w_0$	$-0.96^{+0.21}_{-0.20}$	$\langle d^2 \rangle^{1/2}$	$2.444^{+0.061}_{-0.062}$	$D_M(0.61)$	$2288^{+44}_{-43}$
$w_a$	$-0.25^{+0.70}_{-0.86}$	$z_{\text{re}}$	$7.5^{+1.9}_{-2.2}$	$H(2.33)$	$235.1^{+2.5}_{-2.4}$
$\ln(10^{10} A_s)$	$3.039^{+0.039}_{-0.039}$	$10^9 A_s$	$2.088^{+0.083}_{-0.081}$	$D_M(2.33)$	$5758^{+28}_{-28}$
$n_s$	$0.966^{+0.010}_{-0.010}$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.028}_{-0.027}$	$f\sigma_8(0.15)$	$0.457^{+0.018}_{-0.017}$
$y_{\text{cal}}$	$1.0005^{+0.0069}_{-0.0065}$	$D_{40}$	$1226^{+30}_{-29}$	$\sigma_8(0.15)$	$0.756^{+0.028}_{-0.028}$
$A_{100}^{\text{PS}}$	$240^{+60}_{-60}$	$D_{220}$	$5720^{+100}_{-98}$	$f\sigma_8(0.38)$	$0.478^{+0.021}_{-0.021}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+35}_{-34}$	$\sigma_8(0.38)$	$0.671^{+0.025}_{-0.025}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.478^{+0.023}_{-0.022}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.2^{+4.1}_{-4.2}$	$\sigma_8(0.51)$	$0.628^{+0.023}_{-0.023}$
$A_{143}^{\text{tSZ}}$	$< 8.64$	$n_{s,0.002}$	$0.966^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	$0.474^{+0.023}_{-0.022}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_P$	$0.24536^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.597^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24669^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.302^{+0.011}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 D/H$	$2.600^{+0.071}_{-0.071}$	$\sigma_8(2.33)$	$0.3093^{+0.0093}_{-0.0093}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.770^{+0.081}_{-0.077}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.50}$	$z_*$	$1089.98^{+0.62}_{-0.63}$	$f_{2000}^{217}$	$106.9^{+5.0}_{-4.9}$
$A_{143}^{\text{dust}}$	$0.96^{+0.45}_{-0.45}$	$r_*$	$144.59^{+0.65}_{-0.65}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$100\theta_*$	$1.04106^{+0.00079}_{-0.00076}$	$\chi_{\text{lensing}}^2$	$9.19 (\nu: 0.3)$
$A_{143 \times 217}^{\text{dust}}$	$1.02^{+0.41}_{-0.42}$	$D_M(z_*)/\text{Gpc}$	$13.888^{+0.062}_{-0.061}$	$\chi_{\text{simall}}^2$	$396.8 (\nu: 1.1)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\text{drag}}$	$1059.73^{+0.81}_{-0.83}$	$\chi_{\text{lowl}}^2$	$23.10 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0038}$	$r_{\text{drag}}$	$147.28^{+0.69}_{-0.68}$	$\chi_{\text{CamSpec}}^2$	$11513.9 (\nu: 15.0)$
$c_{TE}$	$0.997^{+0.013}_{-0.012}$	$k_D$	$0.14061^{+0.00081}_{-0.00083}$	$\chi_{\text{JLA}}^2$	$1035.9 (\nu: 1.2)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_D$	$0.16087^{+0.00049}_{-0.00050}$	$\chi_{6\text{DF}}^2$	$0.055 (\nu: 0.0)$
$H_0$	$68.2^{+2.2}_{-2.1}$	$z_{\text{eq}}$	$3391^{+64}_{-62}$	$\chi_{\text{MGS}}^2$	$1.93 (\nu: 0.2)$
$\Omega_\Lambda$	$0.694^{+0.020}_{-0.020}$	$k_{\text{eq}}$	$0.01035^{+0.00020}_{-0.00019}$	$\chi_{\text{DR12BAO}}^2$	$4.6 (\nu: 0.7)$
$\Omega_m$	$0.306^{+0.020}_{-0.020}$	$100\theta_{\text{eq}}$	$0.815^{+0.012}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_m h^2$	$0.1426^{+0.0027}_{-0.0026}$	$100\theta_{s,\text{eq}}$	$0.4503^{+0.0061}_{-0.0060}$	$\chi_{\text{CMB}}^2$	$11942.9 (\nu: 16.5)$
$\Omega_m h^3$	$0.0973^{+0.0036}_{-0.0036}$	$H(0.15)$	$73.7^{+1.8}_{-1.8}$	$\chi_{\text{BAO}}^2$	$6.6 (\nu: 1.1)$
$\sigma_8$	$0.817^{+0.029}_{-0.029}$	$D_M(0.15)$	$635^{+16}_{-16}$		
$S_8$	$0.826^{+0.029}_{-0.028}$	$H(0.38)$	$83.5^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\text{eff}}^2 = 12993.26; \Delta\bar{\chi}_{\text{eff}}^2 = 0.87; R - 1 = 0.00901$$



# 15.7 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230^{+0.00040}_{-0.00038}$	$S_8$	$0.826^{+0.037}_{-0.038}$	$D_{\mathrm{M}}(0.15)$	$635^{+17}_{-17}$
$\Omega_{\mathrm{c}}h^2$	$0.1195^{+0.0033}_{-0.0033}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.021}_{-0.021}$	$H(0.38)$	$83.5^{+1.6}_{-1.6}$
$100\theta_{\mathrm{MC}}$	$1.04089^{+0.00081}_{-0.00080}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.025}_{-0.025}$	$D_{\mathrm{M}}(0.38)$	$1516^{+35}_{-34}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\sigma_8/h^{0.5}$	$0.990^{+0.036}_{-0.037}$	$H(0.51)$	$90.0^{+1.3}_{-1.4}$
$w_0$	$-0.97^{+0.21}_{-0.20}$	$r_{\mathrm{drag}}h$	$100.5^{+3.3}_{-3.1}$	$D_{\mathrm{M}}(0.51)$	$1966^{+41}_{-40}$
$w_{\mathrm{a}}$	$-0.23^{+0.72}_{-0.91}$	$\langle d^2 \rangle^{1/2}$	$2.445^{+0.082}_{-0.084}$	$H(0.61)$	$95.5^{+1.1}_{-1.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.029}$	$z_{\mathrm{re}}$	$< 9.31$	$D_{\mathrm{M}}(0.61)$	$2289^{+45}_{-43}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.088}_{-0.060}$	$H(2.33)$	$235.2^{+2.5}_{-2.4}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0067}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.029}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5759^{+29}_{-28}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{40}$	$1225^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.457^{+0.022}_{-0.022}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5718^{+100}_{-99}$	$\sigma_8(0.15)$	$0.756^{+0.033}_{-0.034}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{810}$	$2535^{+35}_{-35}$	$f\sigma_8(0.38)$	$0.478^{+0.026}_{-0.025}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-12}$	$\sigma_8(0.38)$	$0.671^{+0.030}_{-0.030}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.73$	$D_{2000}$	$230.3^{+4.2}_{-4.1}$	$f\sigma_8(0.51)$	$0.478^{+0.027}_{-0.027}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.628^{+0.027}_{-0.028}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24536^{+0.00015}_{-0.00017}$	$f\sigma_8(0.61)$	$0.474^{+0.027}_{-0.027}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	$0.597^{+0.026}_{-0.027}$
$A^{\mathrm{kSZ}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.599^{+0.073}_{-0.072}$	$f\sigma_8(2.33)$	$0.302^{+0.013}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.772^{+0.087}_{-0.078}$	$\sigma_8(2.33)$	$0.309^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	$z_*$	$1089.97^{+0.67}_{-0.69}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$r_*$	$144.60^{+0.77}_{-0.76}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-4.9}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$100\theta_*$	$1.04108^{+0.00080}_{-0.00079}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890^{+0.072}_{-0.070}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.2)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.74^{+0.84}_{-0.83}$	$\chi_{\mathrm{lowl}}^2$	$23.06 (\nu: 0.4)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.29^{+0.78}_{-0.76}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.2 (\nu: 15.9)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14060^{+0.00088}_{-0.00088}$	$\chi_{\mathrm{JLA}}^2$	$1035.9 (\nu: 1.2)$
$H_0$	$68.2^{+2.2}_{-2.1}$	$100\theta_{\mathrm{D}}$	$0.16087^{+0.00049}_{-0.00049}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.694^{+0.020}_{-0.020}$	$z_{\mathrm{eq}}$	$3390^{+75}_{-75}$	$\chi_{\mathrm{MGS}}^2$	$1.90 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.020}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00023}_{-0.00023}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.7)$
$\Omega_{\mathrm{m}}h^2$	$0.1425^{+0.0031}_{-0.0032}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.9)$
$\Omega_{\mathrm{m}}h^3$	$0.0972^{+0.0039}_{-0.0039}$	$100\theta_{\mathrm{s,eq}}$	$0.4505^{+0.0074}_{-0.0071}$	$\chi_{\mathrm{BAO}}^2$	$6.6 (\nu: 1.1)$
$\sigma_8$	$0.817^{+0.035}_{-0.037}$	$H(0.15)$	$73.6^{+1.9}_{-1.8}$	$\chi_{\mathrm{CMB}}^2$	$11933.9 (\nu: 16.1)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12984.26; R - 1 = 0.00880$$



15.8 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230^{+0.00039}_{-0.00037}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.016}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1516^{+34}_{-33}$
$\Omega_{\mathrm{c}}h^2$	$0.1195^{+0.0027}_{-0.0027}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608^{+0.019}_{-0.019}$	$H(0.51)$	$90.0^{+1.3}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.04088^{+0.00080}_{-0.00077}$	$\sigma_8/h^{0.5}$	$0.990^{+0.027}_{-0.028}$	$D_{\mathrm{M}}(0.51)$	$1965^{+40}_{-39}$
$\tau$	$0.054^{+0.017}_{-0.012}$	$r_{\mathrm{drag}}h$	$100.5^{+3.3}_{-3.1}$	$H(0.61)$	$95.5^{+1.1}_{-1.1}$
$w_0$	$-0.97^{+0.21}_{-0.20}$	$\langle d^2 \rangle^{1/2}$	$2.446^{+0.060}_{-0.061}$	$D_{\mathrm{M}}(0.61)$	$2289^{+44}_{-43}$
$w_a$	$-0.24^{+0.69}_{-0.86}$	$z_{\mathrm{re}}$	$< 9.25$	$H(2.33)$	$235.1^{+2.5}_{-2.4}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.037}_{-0.027}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.079}_{-0.056}$	$D_{\mathrm{M}}(2.33)$	$5758^{+28}_{-28}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.027}_{-0.027}$	$f\sigma_8(0.15)$	$0.457^{+0.018}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0068}_{-0.0065}$	$D_{40}$	$1226^{+30}_{-29}$	$\sigma_8(0.15)$	$0.756^{+0.028}_{-0.028}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{220}$	$5719^{+100}_{-99}$	$f\sigma_8(0.38)$	$0.478^{+0.021}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-34}$	$\sigma_8(0.38)$	$0.671^{+0.025}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.478^{+0.022}_{-0.022}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.3^{+4.1}_{-4.2}$	$\sigma_8(0.51)$	$0.628^{+0.023}_{-0.023}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.64$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	$0.474^{+0.023}_{-0.022}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.32}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.598^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.302^{+0.011}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.599^{+0.071}_{-0.070}$	$\sigma_8(2.33)$	$0.3096^{+0.0091}_{-0.0091}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.770^{+0.081}_{-0.077}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.49}$	$z_*$	$1089.97^{+0.61}_{-0.62}$	$f_{2000}^{217}$	$106.9^{+5.0}_{-4.8}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$r_*$	$144.60^{+0.64}_{-0.64}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$100\theta_*$	$1.04107^{+0.00079}_{-0.00076}$	$\chi_{\mathrm{lensing}}^2$	$9.16 (\nu: 0.2)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.43}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890^{+0.061}_{-0.061}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.1)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.74^{+0.80}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$23.09 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0038}$	$r_{\mathrm{drag}}$	$147.29^{+0.68}_{-0.67}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.8 (\nu: 14.9)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14060^{+0.00082}_{-0.00082}$	$\chi_{\mathrm{JLA}}^2$	$1035.9 (\nu: 1.2)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16086^{+0.00049}_{-0.00049}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$H_0$	$68.2^{+2.2}_{-2.1}$	$z_{\mathrm{eq}}$	$3390^{+62}_{-61}$	$\chi_{\mathrm{MGS}}^2$	$1.93 (\nu: 0.2)$
$\Omega_{\Lambda}$	$0.694^{+0.020}_{-0.020}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00019}_{-0.00019}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 0.7)$
$\Omega_{\mathrm{m}}$	$0.306^{+0.020}_{-0.020}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.012}_{-0.011}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_{\mathrm{m}}h^2$	$0.1425^{+0.0026}_{-0.0026}$	$100\theta_{\mathrm{s,eq}}$	$0.4505^{+0.0060}_{-0.0059}$	$\chi_{\mathrm{CMB}}^2$	$11942.7 (\nu: 16.1)$
$\Omega_{\mathrm{m}}h^3$	$0.0972^{+0.0036}_{-0.0035}$	$H(0.15)$	$73.6^{+1.8}_{-1.8}$	$\chi_{\mathrm{BAO}}^2$	$6.6 (\nu: 1.1)$
$\sigma_8$	$0.818^{+0.029}_{-0.029}$	$D_{\mathrm{M}}(0.15)$	$635^{+16}_{-17}$		
$S_8$	$0.826^{+0.029}_{-0.028}$	$H(0.38)$	$83.5^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12993.01; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.76; R - 1 = 0.00841$$



## 15.9 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02214	$0.02217^{+0.00055}_{-0.00051}$	$\sigma_8 \Omega_m^{0.25}$	0.6189	$0.617^{+0.034}_{-0.035}$	$D_M(0.38)$	1508.8	$1503^{+33}_{-34}$
$\Omega_c h^2$	0.12049	$0.1205^{+0.0046}_{-0.0046}$	$\sigma_8/h^{0.5}$	1.0059	$1.003^{+0.048}_{-0.050}$	$H(0.51)$	89.62	$89.9^{+1.3}_{-1.3}$
$100\theta_{MC}$	1.04093	$1.0409^{+0.0012}_{-0.0012}$	$r_{drag}h$	102.03	$101.9^{+2.9}_{-2.9}$	$D_M(0.51)$	1960.1	$1953^{+39}_{-41}$
$\tau$	0.0560	$0.052^{+0.021}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	2.476	$2.47^{+0.11}_{-0.11}$	$H(0.61)$	95.00	$95.2^{+1.1}_{-1.1}$
$w_0$	-1.045	$-0.99^{+0.24}_{-0.21}$	$z_{re}$	7.89	$7.5^{+2.1}_{-2.5}$	$D_M(0.61)$	2285.1	$2277^{+43}_{-43}$
$w_a$	-0.13	$-0.34^{+0.83}_{-1.2}$	$10^9 A_s$	2.107	$2.089^{+0.092}_{-0.093}$	$H(2.33)$	235.19	$234.8^{+2.5}_{-2.4}$
$\ln(10^{10} A_s)$	3.0480	$3.039^{+0.043}_{-0.045}$	$10^9 A_s e^{-2\tau}$	1.8841	$1.882^{+0.034}_{-0.033}$	$D_M(2.33)$	5763.7	$5761^{+32}_{-33}$
$n_s$	0.9629	$0.964^{+0.013}_{-0.013}$	$D_{40}$	1233.5	$1229^{+37}_{-37}$	$f\sigma_8(0.15)$	0.4675	$0.464^{+0.028}_{-0.028}$
$y_{cal}$	1.0011	$1.0004^{+0.0064}_{-0.0065}$	$D_{220}$	5716	$5706^{+100}_{-110}$	$\sigma_8(0.15)$	0.7748	$0.772^{+0.041}_{-0.042}$
$A_{100}^{PS}$	249	$242^{+60}_{-60}$	$D_{810}$	2536.4	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	0.4927	$0.489^{+0.033}_{-0.033}$
$A_{143}^{PS}$	40.3	$41^{+20}_{-20}$	$D_{1420}$	814.5	$814^{+13}_{-13}$	$\sigma_8(0.38)$	0.6872	$0.685^{+0.036}_{-0.037}$
$A_{217}^{PS}$	96.7	$101^{+30}_{-40}$	$D_{2000}$	229.74	$229.7^{+4.7}_{-4.6}$	$f\sigma_8(0.51)$	0.4934	$0.491^{+0.035}_{-0.034}$
$A_{217}^{CIB}$	42.7	$41^{+20}_{-20}$	$n_{s,0.002}$	0.9629	$0.964^{+0.013}_{-0.013}$	$\sigma_8(0.51)$	0.6429	$0.641^{+0.033}_{-0.034}$
$A_{143}^{tSZ}$	2.99	$< 8.82$	$Y_P$	0.245302	$0.24531^{+0.00021}_{-0.00024}$	$f\sigma_8(0.61)$	0.4893	$0.487^{+0.036}_{-0.034}$
$r_{143 \times 217}^{PS}$	0.577	$0.65^{+0.32}_{-0.32}$	$Y_P^{BBN}$	0.246628	$0.24663^{+0.00021}_{-0.00024}$	$\sigma_8(0.61)$	0.6115	$0.610^{+0.031}_{-0.032}$
$r_{143 \times 217}^{CIB}$	0.66	—	$10^5 D/H$	2.629	$2.625^{+0.099}_{-0.10}$	$f\sigma_8(2.33)$	0.3086	$0.308^{+0.015}_{-0.017}$
$\xi^{tSZ \times CIB}$	0.34	—	Age/Gyr	13.767	$13.754^{+0.089}_{-0.085}$	$\sigma_8(2.33)$	0.3156	$0.314^{+0.012}_{-0.012}$
$A^{kSZ}$	5.8	—	$z_*$	1090.25	$1090.23^{+0.91}_{-0.93}$	$f_{2000}^{143}$	31.4	$31^{+8}_{-8}$
$A_{100}^{dust}$	1.00	$1.01^{+0.50}_{-0.50}$	$r_*$	144.48	$144.5^{+1.1}_{-1.1}$	$f_{2000}^{217}$	107.9	$107.4^{+5.2}_{-5.1}$
$A_{143}^{dust}$	0.980	$0.98^{+0.45}_{-0.45}$	$100\theta_*$	1.04113	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	33.1	$33^{+5}_{-5}$
$A_{217}^{dust}$	0.958	$0.97^{+0.26}_{-0.27}$	$D_M(z_*)/\text{Gpc}$	13.877	$13.88^{+0.10}_{-0.10}$	$\chi_{\text{small}}^2$	396.52	$396.9 (\nu: 1.4)$
$A_{143 \times 217}^{dust}$	0.983	$1.03^{+0.42}_{-0.41}$	$z_{drag}$	1059.44	$1059.5^{+1.1}_{-1.1}$	$\chi_{\text{lowl}}^2$	23.60	$23.4 (\nu: 0.6)$
$c_{100}$	0.99737	$0.9975^{+0.0028}_{-0.0027}$	$r_{drag}$	147.22	$147.2^{+1.1}_{-1.1}$	$\chi_{\text{CamSpec}}^2$	7049.0	$7062.4 (\nu: 14.0)$
$c_{217}$	1.00146	$1.0012^{+0.0041}_{-0.0041}$	$k_D$	0.14056	$0.1406^{+0.0013}_{-0.0013}$	$\chi_{\text{H073p45}}^2$	6.2	$6.6 (\nu: 2.8)$
$H_0$	69.31	$69.3^{+2.0}_{-2.0}$	$100\theta_D$	0.16106	$0.16103^{+0.00066}_{-0.00066}$	$\chi_{\text{JLA}}^2$	1035.91	$1036.3 (\nu: 1.5)$
$\Omega_\Lambda$	0.7017	$0.701^{+0.018}_{-0.020}$	$z_{eq}$	3409	$3410^{+110}_{-110}$	$\chi_{\text{6DF}}^2$	0.065	$0.14 (\nu: 0.0)$
$\Omega_m$	0.2983	$0.299^{+0.020}_{-0.018}$	$k_{eq}$	0.010403	$0.01041^{+0.00032}_{-0.00032}$	$\chi_{\text{MGS}}^2$	2.43	$2.71 (\nu: 0.3)$
$\Omega_m h^2$	0.14328	$0.1433^{+0.0044}_{-0.0044}$	$100\theta_{eq}$	0.8115	$0.811^{+0.020}_{-0.019}$	$\chi_{\text{DR12BAO}}^2$	4.45	$5.4 (\nu: 1.0)$
$\Omega_m h^3$	0.09931	$0.0993^{+0.0042}_{-0.0043}$	$100\theta_{s,eq}$	0.4486	$0.449^{+0.010}_{-0.0098}$	$\chi_{\text{prior}}^2$	2.6	$7.6 (\nu: 5.9)$
$\sigma_8$	0.8374	$0.834^{+0.044}_{-0.045}$	$H(0.15)$	74.00	$74.3^{+2.0}_{-1.8}$	$\chi_{\text{BAO}}^2$	6.9	$8.3 (\nu: 2.2)$
$S_8$	0.835	$0.833^{+0.052}_{-0.051}$	$D_M(0.15)$	628.6	$627^{+16}_{-16}$	$\chi_{\text{CMB}}^2$	7469.2	$7482.7 (\nu: 14.4)$
$\sigma_8 \Omega_m^{0.5}$	0.4574	$0.456^{+0.028}_{-0.028}$	$H(0.38)$	83.28	$83.6^{+1.6}_{-1.6}$			

Best-fit  $\chi_{\text{eff}}^2 = 8520.89$ ;  $\bar{\chi}_{\text{eff}}^2 = 8541.50$ ;  $R - 1 = 0.00869$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 MGS: 2.43 DR12BAO: 4.45 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.52 commander\_dx12\_v3.2.29: 23.60 CamSpec like\_10.7HM: 7049.04  
Hubble - H073p45: 6.22 SN - JLA Pantheon18: 1035.91



## 15.10 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219^{+0.00054}_{-0.00049}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1504^{+32}_{-33}$
$\Omega_{\mathrm{c}}h^2$	$0.1201^{+0.0034}_{-0.0034}$	$\sigma_8/h^{0.5}$	$0.998^{+0.031}_{-0.031}$	$H(0.51)$	$89.9^{+1.3}_{-1.4}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}}h$	$102.0^{+2.8}_{-2.9}$	$D_{\mathrm{M}}(0.51)$	$1953^{+39}_{-39}$
$\tau$	$0.052^{+0.021}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	$2.457^{+0.068}_{-0.070}$	$H(0.61)$	$95.2^{+1.1}_{-1.1}$
$w_0$	$-0.999^{+0.22}_{-0.20}$	$z_{\mathrm{re}}$	$7.4^{+2.0}_{-2.4}$	$D_{\mathrm{M}}(0.61)$	$2277^{+42}_{-42}$
$w_{\mathrm{a}}$	$-0.29^{+0.75}_{-0.96}$	$10^9 A_{\mathrm{s}}$	$2.086^{+0.083}_{-0.085}$	$H(2.33)$	$234.7^{+2.6}_{-2.4}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.039}_{-0.041}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5759^{+32}_{-33}$
$n_{\mathrm{s}}$	$0.965^{+0.011}_{-0.011}$	$D_{40}$	$1227^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.461^{+0.020}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0063}_{-0.0065}$	$D_{220}$	$5708^{+100}_{-110}$	$\sigma_8(0.15)$	$0.769^{+0.029}_{-0.029}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2533^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.486^{+0.024}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.38)$	$0.682^{+0.026}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$229.7^{+4.5}_{-4.6}$	$f\sigma_8(0.51)$	$0.488^{+0.024}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.638^{+0.024}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$Y_{\mathrm{P}}$	$0.24532^{+0.00021}_{-0.00023}$	$f\sigma_8(0.61)$	$0.484^{+0.025}_{-0.024}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00021}_{-0.00024}$	$\sigma_8(0.61)$	$0.607^{+0.022}_{-0.022}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.620^{+0.095}_{-0.098}$	$f\sigma_8(2.33)$	$0.307^{+0.011}_{-0.012}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.755^{+0.088}_{-0.084}$	$\sigma_8(2.33)$	$0.3134^{+0.0090}_{-0.0093}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.16^{+0.79}_{-0.83}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.55^{+0.84}_{-0.82}$	$f_{2000}^{217}$	$107.4^{+5.1}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.46}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143\times 217}$	$33^{+6}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.884^{+0.081}_{-0.078}$	$\chi_{\mathrm{lensing}}^2$	$9.36\ (\nu: 0.4)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.5^{+1.1}_{-1.1}$	$\chi_{\mathrm{simall}}^2$	$396.8\ (\nu: 1.2)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.27^{+0.91}_{-0.87}$	$\chi_{\mathrm{lowl}}^2$	$23.21\ (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$k_{\mathrm{D}}$	$0.1405^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.3\ (\nu: 13.2)$
$H_0$	$69.3^{+1.9}_{-1.9}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00065}_{-0.00066}$	$\chi_{\mathrm{H073p45}}^2$	$6.6\ (\nu: 2.8)$
$\Omega_{\Lambda}$	$0.702^{+0.017}_{-0.019}$	$z_{\mathrm{eq}}$	$3400^{+78}_{-77}$	$\chi_{\mathrm{JLA}}^2$	$1036.2\ (\nu: 1.4)$
$\Omega_{\mathrm{m}}$	$0.298^{+0.019}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00024}_{-0.00024}$	$\chi_{6\mathrm{DF}}^2$	$0.14\ (\nu: 0.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1429^{+0.0032}_{-0.0032}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.015}_{-0.014}$	$\chi_{\mathrm{MGS}}^2$	$2.72\ (\nu: 0.3)$
$\Omega_{\mathrm{m}}h^3$	$0.0990^{+0.0037}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	$0.4495^{+0.0075}_{-0.0073}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3\ (\nu: 1.0)$
$\sigma_8$	$0.830^{+0.031}_{-0.031}$	$H(0.15)$	$74.3^{+1.8}_{-1.7}$	$\chi_{\mathrm{prior}}^2$	$7.6\ (\nu: 5.8)$
$S_8$	$0.828^{+0.033}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$627^{+16}_{-15}$	$\chi_{\mathrm{CMB}}^2$	$7491.6\ (\nu: 14.5)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.018}_{-0.019}$	$H(0.38)$	$83.6^{+1.6}_{-1.6}$	$\chi_{\mathrm{BAO}}^2$	$8.2\ (\nu: 2.2)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8550.26; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.54; R - 1 = 0.01140$$



## 15.11 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02217^{+0.00055}_{-0.00051}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.617^{+0.034}_{-0.034}$	$D_{\mathrm{M}}(0.38)$	$1503^{+33}_{-34}$
$\Omega_{\mathrm{c}} h^2$	$0.1205^{+0.0046}_{-0.0046}$	$\sigma_8/h^{0.5}$	$1.004^{+0.048}_{-0.049}$	$H(0.51)$	$89.9^{+1.3}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0012}_{-0.0012}$	$r_{\mathrm{drag}} h$	$102.0^{+2.8}_{-2.9}$	$D_{\mathrm{M}}(0.51)$	$1953^{+39}_{-41}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.47^{+0.11}_{-0.11}$	$H(0.61)$	$95.2^{+1.1}_{-1.1}$
$w_0$	$-0.99^{+0.24}_{-0.20}$	$z_{\mathrm{re}}$	$< 9.38$	$D_{\mathrm{M}}(0.61)$	$2277^{+42}_{-43}$
$w_a$	$-0.33^{+0.82}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.087}_{-0.061}$	$H(2.33)$	$234.8^{+2.5}_{-2.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.041}_{-0.029}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882^{+0.034}_{-0.033}$	$D_{\mathrm{M}}(2.33)$	$5760^{+33}_{-33}$
$n_{\mathrm{s}}$	$0.964^{+0.013}_{-0.013}$	$D_{40}$	$1229^{+37}_{-36}$	$f\sigma_8(0.15)$	$0.464^{+0.028}_{-0.029}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0064}_{-0.0065}$	$D_{220}$	$5706^{+100}_{-110}$	$\sigma_8(0.15)$	$0.773^{+0.041}_{-0.042}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-60}$	$D_{810}$	$2534^{+36}_{-36}$	$f\sigma_8(0.38)$	$0.490^{+0.033}_{-0.033}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.38)$	$0.686^{+0.036}_{-0.037}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$229.8^{+4.7}_{-4.6}$	$f\sigma_8(0.51)$	$0.491^{+0.035}_{-0.034}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.964^{+0.013}_{-0.013}$	$\sigma_8(0.51)$	$0.642^{+0.033}_{-0.034}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.81$	$Y_{\mathrm{P}}$	$0.24531^{+0.00021}_{-0.00024}$	$f\sigma_8(0.61)$	$0.488^{+0.036}_{-0.035}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00025}$	$\sigma_8(0.61)$	$0.611^{+0.030}_{-0.032}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.624^{+0.099}_{-0.10}$	$f\sigma_8(2.33)$	$0.308^{+0.015}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.754^{+0.089}_{-0.085}$	$\sigma_8(2.33)$	$0.315^{+0.011}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.21^{+0.91}_{-0.93}$	$f_{2000}^{143}$	$30^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.5^{+1.1}_{-1.1}$	$f_{2000}^{217}$	$107.3^{+5.2}_{-5.1}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.45}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0012}$	$f_{2000}^{143 \times 217}$	$33^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.88^{+0.10}_{-0.10}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.3)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.1}$	$\chi_{\mathrm{lowl}}^2$	$23.4 (\nu: 0.6)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.2^{+1.1}_{-1.1}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.3 (\nu: 13.9)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$k_{\mathrm{D}}$	$0.1406^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{H073p45}}^2$	$6.6 (\nu: 2.7)$
$H_0$	$69.3^{+2.0}_{-1.9}$	$100\theta_{\mathrm{D}}$	$0.16102^{+0.00066}_{-0.00066}$	$\chi_{\mathrm{JLA}}^2$	$1036.3 (\nu: 1.5)$
$\Omega_{\Lambda}$	$0.701^{+0.018}_{-0.019}$	$z_{\mathrm{eq}}$	$3408^{+110}_{-100}$	$\chi_{6\mathrm{DF}}^2$	$0.14 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.299^{+0.019}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00032}_{-0.00032}$	$\chi_{\mathrm{MGS}}^2$	$2.70 (\nu: 0.3)$
$\Omega_{\mathrm{m}} h^2$	$0.1433^{+0.0044}_{-0.0044}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.020}_{-0.019}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.4 (\nu: 1.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0992^{+0.0043}_{-0.0043}$	$100\theta_{\mathrm{s,eq}}$	$0.449^{+0.010}_{-0.0099}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.835^{+0.044}_{-0.045}$	$H(0.15)$	$74.3^{+2.0}_{-1.8}$	$\chi_{\mathrm{BAO}}^2$	$8.2 (\nu: 2.2)$
$S_8$	$0.833^{+0.052}_{-0.051}$	$D_{\mathrm{M}}(0.15)$	$627^{+16}_{-16}$	$\chi_{\mathrm{CMB}}^2$	$7482.5 (\nu: 14.0)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.456^{+0.028}_{-0.028}$	$H(0.38)$	$83.6^{+1.6}_{-1.6}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8541.22; R - 1 = 0.00801$					



15.12 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220^{+0.00053}_{-0.00050}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.614^{+0.022}_{-0.022}$	$D_{\mathrm{M}}(0.38)$	$1504^{+32}_{-33}$
$\Omega_{\mathrm{c}} h^2$	$0.1200^{+0.0033}_{-0.0033}$	$\sigma_8/h^{0.5}$	$0.998^{+0.031}_{-0.031}$	$H(0.51)$	$89.9^{+1.3}_{-1.4}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0011}_{-0.0011}$	$r_{\mathrm{drag}} h$	$102.0^{+2.8}_{-2.8}$	$D_{\mathrm{M}}(0.51)$	$1954^{+39}_{-39}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.458^{+0.068}_{-0.070}$	$H(0.61)$	$95.2^{+1.1}_{-1.1}$
$w_0$	$-1.00^{+0.22}_{-0.20}$	$z_{\mathrm{re}}$	$< 9.33$	$D_{\mathrm{M}}(0.61)$	$2278^{+42}_{-42}$
$w_a$	$-0.27^{+0.75}_{-0.93}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.078}_{-0.055}$	$H(2.33)$	$234.7^{+2.6}_{-2.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.037}_{-0.026}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5759^{+33}_{-32}$
$n_{\mathrm{s}}$	$0.965^{+0.011}_{-0.011}$	$D_{40}$	$1227^{+32}_{-31}$	$f\sigma_8(0.15)$	$0.461^{+0.020}_{-0.020}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0063}_{-0.0065}$	$D_{220}$	$5708^{+100}_{-110}$	$\sigma_8(0.15)$	$0.769^{+0.029}_{-0.029}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-60}$	$D_{810}$	$2533^{+34}_{-35}$	$f\sigma_8(0.38)$	$0.486^{+0.024}_{-0.023}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{1420}$	$814^{+13}_{-13}$	$\sigma_8(0.38)$	$0.682^{+0.025}_{-0.026}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-40}$	$D_{2000}$	$229.8^{+4.5}_{-4.6}$	$f\sigma_8(0.51)$	$0.488^{+0.025}_{-0.024}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$n_{\mathrm{s},0.002}$	$0.965^{+0.011}_{-0.011}$	$\sigma_8(0.51)$	$0.639^{+0.024}_{-0.024}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$Y_{\mathrm{P}}$	$0.24532^{+0.00021}_{-0.00024}$	$f\sigma_8(0.61)$	$0.484^{+0.025}_{-0.024}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00021}_{-0.00024}$	$\sigma_8(0.61)$	$0.608^{+0.022}_{-0.022}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.619^{+0.097}_{-0.098}$	$f\sigma_8(2.33)$	$0.307^{+0.011}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.756^{+0.088}_{-0.084}$	$\sigma_8(2.33)$	$0.3137^{+0.0088}_{-0.0090}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.14^{+0.79}_{-0.82}$	$f_{2000}^{143}$	$31^{+8}_{-8}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.50}$	$r_*$	$144.57^{+0.82}_{-0.80}$	$f_{2000}^{217}$	$107.3^{+5.2}_{-5.1}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.45}_{-0.46}$	$100\theta_*$	$1.0411^{+0.0011}_{-0.0011}$	$f_{2000}^{143 \times 217}$	$33^{+6}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886^{+0.080}_{-0.077}$	$\chi_{\mathrm{lensing}}^2$	$9.36 (\nu: 0.5)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.5^{+1.2}_{-1.1}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.1)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.30^{+0.89}_{-0.86}$	$\chi_{\mathrm{lowl}}^2$	$23.19 (\nu: 0.4)$
$c_{217}$	$1.0012^{+0.0040}_{-0.0041}$	$k_{\mathrm{D}}$	$0.1405^{+0.0011}_{-0.0011}$	$\chi_{\mathrm{CamSpec}}^2$	$7062.2 (\nu: 13.1)$
$H_0$	$69.3^{+1.9}_{-1.9}$	$100\theta_{\mathrm{D}}$	$0.16101^{+0.00067}_{-0.00067}$	$\chi_{\mathrm{H073p45}}^2$	$6.6 (\nu: 2.7)$
$\Omega_{\Lambda}$	$0.702^{+0.017}_{-0.018}$	$z_{\mathrm{eq}}$	$3397^{+76}_{-76}$	$\chi_{\mathrm{JLA}}^2$	$1036.2 (\nu: 1.4)$
$\Omega_{\mathrm{m}}$	$0.298^{+0.018}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01037^{+0.00023}_{-0.00023}$	$\chi_{6\mathrm{DF}}^2$	$0.14 (\nu: 0.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1428^{+0.0032}_{-0.0032}$	$100\theta_{\mathrm{eq}}$	$0.814^{+0.014}_{-0.014}$	$\chi_{\mathrm{MGS}}^2$	$2.71 (\nu: 0.3)$
$\Omega_{\mathrm{m}} h^3$	$0.0989^{+0.0037}_{-0.0035}$	$100\theta_{\mathrm{s,eq}}$	$0.4498^{+0.0074}_{-0.0071}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 (\nu: 1.0)$
$\sigma_8$	$0.831^{+0.031}_{-0.031}$	$H(0.15)$	$74.3^{+1.8}_{-1.7}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.8)$
$S_8$	$0.828^{+0.033}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$628^{+16}_{-15}$	$\chi_{\mathrm{CMB}}^2$	$7491.4 (\nu: 14.1)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.018}_{-0.019}$	$H(0.38)$	$83.6^{+1.6}_{-1.6}$	$\chi_{\mathrm{BAO}}^2$	$8.1 (\nu: 2.1)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8549.95; \Delta \bar{\chi}_{\mathrm{eff}}^2 = -2.78; R - 1 = 0.01139$$



### 15.13 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022321	$0.02231^{+0.00040}_{-0.00039}$	$\sigma_8 \Omega_m^{0.5}$	0.4501	$0.451^{+0.021}_{-0.021}$	$D_M(0.38)$	1503.4	$1504^{+33}_{-32}$
$\Omega_c h^2$	0.11954	$0.1197^{+0.0033}_{-0.0033}$	$\sigma_8 \Omega_m^{0.25}$	0.6100	$0.610^{+0.025}_{-0.025}$	$H(0.51)$	90.02	$90.0^{+1.2}_{-1.3}$
$100\theta_{MC}$	1.04091	$1.04089^{+0.00080}_{-0.00080}$	$\sigma_8/h^{0.5}$	0.9928	$0.993^{+0.037}_{-0.037}$	$D_M(0.51)$	1952.7	$1953^{+39}_{-38}$
$\tau$	0.0528	$0.052^{+0.021}_{-0.021}$	$r_{drag}h$	102.09	$102.0^{+2.9}_{-2.9}$	$H(0.61)$	95.37	$95.3^{+1.0}_{-1.1}$
$w_0$	-1.010	$-1.00^{+0.21}_{-0.19}$	$\langle d^2 \rangle^{1/2}$	2.446	$2.448^{+0.083}_{-0.083}$	$D_M(0.61)$	2276.3	$2277^{+43}_{-40}$
$w_a$	-0.20	$-0.24^{+0.72}_{-0.91}$	$z_{re}$	7.51	$7.5^{+2.0}_{-2.3}$	$H(2.33)$	234.70	$234.8^{+2.4}_{-2.3}$
$\ln(10^{10} A_s)$	3.0385	$3.038^{+0.043}_{-0.043}$	$10^9 A_s$	2.087	$2.087^{+0.090}_{-0.088}$	$D_M(2.33)$	5753.5	$5755^{+29}_{-27}$
$n_s$	0.9666	$0.966^{+0.011}_{-0.011}$	$10^9 A_s e^{-2\tau}$	1.8782	$1.879^{+0.030}_{-0.029}$	$f\sigma_8(0.15)$	0.4582	$0.458^{+0.022}_{-0.022}$
$y_{cal}$	1.0003	$1.0004^{+0.0067}_{-0.0062}$	$D_{40}$	1223.5	$1225^{+32}_{-32}$	$\sigma_8(0.15)$	0.7652	$0.765^{+0.032}_{-0.033}$
$A_{100}^{PS}$	232	$239^{+60}_{-60}$	$D_{220}$	5717	$5719^{+100}_{-99}$	$f\sigma_8(0.38)$	0.4829	$0.483^{+0.024}_{-0.025}$
$A_{143}^{PS}$	42.0	$39^{+20}_{-20}$	$D_{810}$	2535.0	$2535^{+36}_{-34}$	$\sigma_8(0.38)$	0.6793	$0.679^{+0.028}_{-0.030}$
$A_{217}^{PS}$	103.0	$103^{+30}_{-40}$	$D_{1420}$	816.0	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	0.4842	$0.484^{+0.025}_{-0.026}$
$A_{217}^{CIB}$	43.7	$40^{+20}_{-20}$	$D_{2000}$	230.48	$230.3^{+4.2}_{-4.2}$	$\sigma_8(0.51)$	0.6359	$0.636^{+0.026}_{-0.028}$
$A_{143}^{tSZ}$	6.62	$< 8.81$	$n_{s,0.002}$	0.9666	$0.966^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	0.4806	$0.481^{+0.026}_{-0.027}$
$r_{143 \times 217}^{PS}$	0.642	$0.66^{+0.31}_{-0.34}$	$Y_P$	0.245376	$0.24537^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	0.6051	$0.605^{+0.025}_{-0.026}$
$r_{143 \times 217}^{CIB}$	0.79	—	$Y_P^{BBN}$	0.246702	$0.24670^{+0.00015}_{-0.00017}$	$f\sigma_8(2.33)$	0.3057	$0.306^{+0.013}_{-0.014}$
$\xi^{tSZ \times CIB}$	0.28	—	$10^5 D/H$	2.595	$2.597^{+0.075}_{-0.073}$	$\sigma_8(2.33)$	0.3129	$0.313^{+0.010}_{-0.011}$
$A^{kSZ}$	0.0	—	Age/Gyr	13.748	$13.749^{+0.084}_{-0.072}$	$f_{2000}^{143}$	29.7	$30^{+7}_{-7}$
$A_{100}^{dust}$	1.01	$1.01^{+0.50}_{-0.51}$	$z_*$	1089.94	$1089.96^{+0.70}_{-0.70}$	$f_{2000}^{217}$	106.53	$106.8^{+4.9}_{-5.0}$
$A_{143}^{dust}$	0.972	$0.96^{+0.45}_{-0.45}$	$r_*$	144.59	$144.56^{+0.75}_{-0.77}$	$f_{2000}^{143 \times 217}$	31.9	$32^{+5}_{-5}$
$A_{217}^{dust}$	0.972	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	1.04109	$1.04108^{+0.00079}_{-0.00079}$	$\chi_{small}^2$	395.84	$396.8 (\nu: 1.2)$
$A_{143 \times 217}^{dust}$	1.011	$1.03^{+0.41}_{-0.41}$	$D_M(z_*)/\text{Gpc}$	13.888	$13.886^{+0.071}_{-0.073}$	$\chi_{lowl}^2$	22.83	$23.03 (\nu: 0.4)$
$c_{100}$	0.99770	$0.9975^{+0.0027}_{-0.0027}$	$z_{drag}$	1059.78	$1059.78^{+0.84}_{-0.84}$	$\chi_{CamSpec}^2$	11499.2	$11514.1 (\nu: 15.6)$
$c_{217}$	1.00127	$1.0011^{+0.0040}_{-0.0040}$	$r_{drag}$	147.27	$147.24^{+0.77}_{-0.78}$	$\chi_{H073p45}^2$	6.2	$6.6 (\nu: 2.7)$
$c_{TE}$	0.9962	$0.996^{+0.013}_{-0.013}$	$k_D$	0.14064	$0.14066^{+0.00089}_{-0.00087}$	$\chi_{JLA}^2$	1035.34	$1036.1 (\nu: 1.3)$
$c_{EE}$	0.9916	$0.992^{+0.013}_{-0.013}$	$100\theta_D$	0.160838	$0.16085^{+0.00049}_{-0.00049}$	$\chi_{6DF}^2$	0.098	$0.14 (\nu: 0.0)$
$H_0$	69.32	$69.3^{+2.0}_{-2.0}$	$z_{eq}$	3390	$3393^{+76}_{-74}$	$\chi_{MGS}^2$	2.67	$2.70 (\nu: 0.3)$
$\Omega_\Lambda$	0.7035	$0.703^{+0.017}_{-0.019}$	$k_{eq}$	0.010347	$0.01036^{+0.00023}_{-0.00023}$	$\chi_{DR12BAO}^2$	4.36	$5.2 (\nu: 0.9)$
$\Omega_m$	0.2965	$0.297^{+0.019}_{-0.017}$	$100\theta_{eq}$	0.8153	$0.815^{+0.014}_{-0.014}$	$\chi_{prior}^2$	2.1	$7.8 (\nu: 5.7)$
$\Omega_m h^2$	0.14251	$0.1426^{+0.0032}_{-0.0031}$	$100\theta_{s,eq}$	0.4505	$0.4502^{+0.0073}_{-0.0071}$	$\chi_{BAO}^2$	7.1	$8.0 (\nu: 2.1)$
$\Omega_m h^3$	0.09879	$0.0988^{+0.0035}_{-0.0037}$	$H(0.15)$	74.27	$74.3^{+1.8}_{-1.8}$	$\chi_{CMB}^2$	11917.9	$11933.9 (\nu: 16.1)$
$\sigma_8$	0.8266	$0.827^{+0.034}_{-0.036}$	$D_M(0.15)$	627.2	$628^{+16}_{-15}$			
$S_8$	0.8218	$0.823^{+0.039}_{-0.038}$	$H(0.38)$	83.69	$83.7^{+1.6}_{-1.6}$			

Best-fit  $\chi_{eff}^2 = 12968.70$ ;  $\bar{\chi}_{eff}^2 = 12992.43$ ;  $R - 1 = 0.01047$

$\chi_{eff}^2$ : BAO - 6DF: 0.10 MGS: 2.67 DR12BAO: 4.36 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 commander\_dx12\_v3\_2\_29: 22.83 CamSpec like\_10.7HM\_1400\_unified: 11499.24 Hubble - H073p45: 6.18 SN - JLA Pantheon18: 1035.34



## 15.14 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232^{+0.00039}_{-0.00038}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.016}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1503^{+32}_{-31}$
$\Omega_{\mathrm{c}}h^2$	$0.1196^{+0.0028}_{-0.0028}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.019}_{-0.019}$	$H(0.51)$	$90.0^{+1.2}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.04089^{+0.00078}_{-0.00078}$	$\sigma_8/h^{0.5}$	$0.993^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(0.51)$	$1952^{+39}_{-36}$
$\tau$	$0.053^{+0.020}_{-0.020}$	$r_{\mathrm{drag}}h$	$102.0^{+2.9}_{-2.9}$	$H(0.61)$	$95.4^{+1.0}_{-1.1}$
$w_0$	$-1.00^{+0.21}_{-0.19}$	$\langle d^2 \rangle^{1/2}$	$2.448^{+0.062}_{-0.062}$	$D_{\mathrm{M}}(0.61)$	$2276^{+42}_{-39}$
$w_{\mathrm{a}}$	$-0.24^{+0.69}_{-0.83}$	$z_{\mathrm{re}}$	$7.5^{+1.9}_{-2.1}$	$H(2.33)$	$234.7^{+2.4}_{-2.3}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.038}_{-0.038}$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.080}_{-0.079}$	$D_{\mathrm{M}}(2.33)$	$5754^{+28}_{-27}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.028}_{-0.027}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0066}_{-0.0061}$	$D_{40}$	$1226^{+30}_{-29}$	$\sigma_8(0.15)$	$0.765^{+0.026}_{-0.027}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$D_{220}$	$5721^{+100}_{-97}$	$f\sigma_8(0.38)$	$0.483^{+0.020}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-33}$	$\sigma_8(0.38)$	$0.679^{+0.024}_{-0.024}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-40}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.484^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.3^{+4.1}_{-4.1}$	$\sigma_8(0.51)$	$0.636^{+0.022}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.68$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	$0.481^{+0.021}_{-0.021}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	$0.605^{+0.021}_{-0.021}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00015}_{-0.00017}$	$f\sigma_8(2.33)$	$0.306^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.596^{+0.073}_{-0.071}$	$\sigma_8(2.33)$	$0.3127^{+0.0086}_{-0.0089}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.748^{+0.081}_{-0.071}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.48}$	$z_*$	$1089.96^{+0.63}_{-0.64}$	$f_{2000}^{217}$	$106.8^{+4.9}_{-5.1}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.45}$	$r_*$	$144.57^{+0.65}_{-0.65}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	$1.04108^{+0.00077}_{-0.00078}$	$\chi_{\mathrm{lensing}}^2$	$9.13\,(\nu: 0.2)$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886^{+0.061}_{-0.062}$	$\chi_{\mathrm{simall}}^2$	$396.7\,(\nu: 1.0)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.79^{+0.83}_{-0.84}$	$\chi_{\mathrm{lowl}}^2$	$23.05\,(\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.25^{+0.67}_{-0.68}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.7\,(\nu: 15.0)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14066^{+0.00084}_{-0.00081}$	$\chi_{\mathrm{H073p45}}^2$	$6.5\,(\nu: 2.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00049}_{-0.00048}$	$\chi_{\mathrm{JLA}}^2$	$1036.1\,(\nu: 1.3)$
$H_0$	$69.3^{+2.0}_{-1.9}$	$z_{\mathrm{eq}}$	$3392^{+63}_{-63}$	$\chi_{6\mathrm{DF}}^2$	$0.14\,(\nu: 0.0)$
$\Omega_{\Lambda}$	$0.703^{+0.017}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00019}_{-0.00019}$	$\chi_{\mathrm{MGS}}^2$	$2.73\,(\nu: 0.3)$
$\Omega_{\mathrm{m}}$	$0.297^{+0.018}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2\,(\nu: 1.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1426^{+0.0026}_{-0.0026}$	$100\theta_{\mathrm{s,eq}}$	$0.4503^{+0.0062}_{-0.0061}$	$\chi_{\mathrm{prior}}^2$	$7.8\,(\nu: 5.7)$
$\Omega_{\mathrm{m}}h^3$	$0.0988^{+0.0034}_{-0.0033}$	$H(0.15)$	$74.3^{+1.7}_{-1.7}$	$\chi_{\mathrm{CMB}}^2$	$11942.6\,(\nu: 16.3)$
$\sigma_8$	$0.827^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(0.15)$	$627^{+15}_{-14}$	$\chi_{\mathrm{BAO}}^2$	$8.1\,(\nu: 2.2)$
$S_8$	$0.823^{+0.029}_{-0.028}$	$H(0.38)$	$83.7^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 13001.06; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.57; R - 1 = 0.01205$$



## 15.15 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00041}_{-0.00039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.021}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1504^{+33}_{-32}$
$\Omega_{\mathrm{c}} h^2$	$0.1196^{+0.0033}_{-0.0033}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.611^{+0.025}_{-0.025}$	$H(0.51)$	$90.0^{+1.2}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.04090^{+0.00080}_{-0.00079}$	$\sigma_8/h^{0.5}$	$0.994^{+0.036}_{-0.036}$	$D_{\mathrm{M}}(0.51)$	$1953^{+39}_{-38}$
$\tau$	$0.054^{+0.018}_{-0.012}$	$r_{\mathrm{drag}} h$	$102.0^{+2.9}_{-2.9}$	$H(0.61)$	$95.3^{+1.0}_{-1.0}$
$w_0$	$-1.00^{+0.21}_{-0.19}$	$\langle d^2 \rangle^{1/2}$	$2.451^{+0.081}_{-0.082}$	$D_{\mathrm{M}}(0.61)$	$2277^{+42}_{-40}$
$w_{\mathrm{a}}$	$-0.23^{+0.71}_{-0.90}$	$z_{\mathrm{re}}$	$< 9.33$	$H(2.33)$	$234.8^{+2.4}_{-2.3}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.040}_{-0.029}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.086}_{-0.059}$	$D_{\mathrm{M}}(2.33)$	$5755^{+29}_{-26}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.030}_{-0.029}$	$f\sigma_8(0.15)$	$0.459^{+0.021}_{-0.021}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0066}_{-0.0062}$	$D_{40}$	$1226^{+32}_{-33}$	$\sigma_8(0.15)$	$0.766^{+0.032}_{-0.033}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{220}$	$5719^{+100}_{-98}$	$f\sigma_8(0.38)$	$0.484^{+0.024}_{-0.025}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$\sigma_8(0.38)$	$0.680^{+0.028}_{-0.029}$
$A_{217}^{\mathrm{PS}}$	$103^{+30}_{-40}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.485^{+0.025}_{-0.026}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{2000}$	$230.4^{+4.2}_{-4.2}$	$\sigma_8(0.51)$	$0.637^{+0.026}_{-0.027}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.81$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.481^{+0.026}_{-0.027}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.34}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00017}$	$\sigma_8(0.61)$	$0.606^{+0.024}_{-0.026}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00015}_{-0.00017}$	$f\sigma_8(2.33)$	$0.306^{+0.012}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.596^{+0.075}_{-0.073}$	$\sigma_8(2.33)$	$0.313^{+0.010}_{-0.010}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.749^{+0.085}_{-0.072}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.51}$	$z_*$	$1089.95^{+0.69}_{-0.70}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.0}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$r_*$	$144.57^{+0.75}_{-0.77}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$100\theta_*$	$1.04109^{+0.00079}_{-0.00078}$	$\chi_{\mathrm{simall}}^2$	$396.7 (\nu: 1.2)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886^{+0.071}_{-0.073}$	$\chi_{\mathrm{lowl}}^2$	$23.04 (\nu: 0.4)$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.79^{+0.83}_{-0.85}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 (\nu: 15.5)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.25^{+0.77}_{-0.78}$	$\chi_{\mathrm{H073p45}}^2$	$6.6 (\nu: 2.7)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14066^{+0.00089}_{-0.00087}$	$\chi_{\mathrm{JLA}}^2$	$1036.1 (\nu: 1.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.012}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00049}_{-0.00049}$	$\chi_{6\mathrm{DF}}^2$	$0.14 (\nu: 0.0)$
$H_0$	$69.3^{+2.0}_{-2.0}$	$z_{\mathrm{eq}}$	$3392^{+76}_{-74}$	$\chi_{\mathrm{MGS}}^2$	$2.70 (\nu: 0.3)$
$\Omega_{\Lambda}$	$0.703^{+0.017}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 (\nu: 0.9)$
$\Omega_{\mathrm{m}}$	$0.297^{+0.019}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1426^{+0.0032}_{-0.0031}$	$100\theta_{\mathrm{s,eq}}$	$0.4503^{+0.0073}_{-0.0071}$	$\chi_{\mathrm{BAO}}^2$	$8.0 (\nu: 2.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0988^{+0.0035}_{-0.0037}$	$H(0.15)$	$74.3^{+1.8}_{-1.8}$	$\chi_{\mathrm{CMB}}^2$	$11933.7 (\nu: 15.7)$
$\sigma_8$	$0.828^{+0.034}_{-0.035}$	$D_{\mathrm{M}}(0.15)$	$628^{+16}_{-15}$		
$S_8$	$0.824^{+0.039}_{-0.037}$	$H(0.38)$	$83.7^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12992.15; R - 1 = 0.01047$$



## 15.16 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00039}_{-0.00038}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.016}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1503^{+32}_{-31}$
$\Omega_{\mathrm{c}} h^2$	$0.1196^{+0.0028}_{-0.0028}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.611^{+0.019}_{-0.019}$	$H(0.51)$	$90.0^{+1.2}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.04090^{+0.00077}_{-0.00078}$	$\sigma_8/h^{0.5}$	$0.994^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.51)$	$1952^{+39}_{-37}$
$\tau$	$0.054^{+0.017}_{-0.012}$	$r_{\mathrm{drag}} h$	$102.0^{+2.9}_{-2.9}$	$H(0.61)$	$95.4^{+1.0}_{-1.1}$
$w_0$	$-1.00^{+0.21}_{-0.19}$	$\langle d^2 \rangle^{1/2}$	$2.450^{+0.061}_{-0.061}$	$D_{\mathrm{M}}(0.61)$	$2276^{+42}_{-39}$
$w_{\mathrm{a}}$	$-0.23^{+0.68}_{-0.83}$	$z_{\mathrm{re}}$	$< 9.21$	$H(2.33)$	$234.7^{+2.4}_{-2.3}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.036}_{-0.026}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.077}_{-0.054}$	$D_{\mathrm{M}}(2.33)$	$5754^{+29}_{-26}$
$n_{\mathrm{s}}$	$0.966^{+0.010}_{-0.010}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.027}_{-0.026}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0066}_{-0.0061}$	$D_{40}$	$1226^{+30}_{-30}$	$\sigma_8(0.15)$	$0.766^{+0.026}_{-0.027}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{220}$	$5721^{+100}_{-97}$	$f\sigma_8(0.38)$	$0.483^{+0.020}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{810}$	$2535^{+35}_{-33}$	$\sigma_8(0.38)$	$0.680^{+0.023}_{-0.024}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{1420}$	$816^{+13}_{-12}$	$f\sigma_8(0.51)$	$0.484^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{2000}$	$230.3^{+4.0}_{-4.1}$	$\sigma_8(0.51)$	$0.636^{+0.022}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.72$	$n_{\mathrm{s},0.002}$	$0.966^{+0.010}_{-0.010}$	$f\sigma_8(0.61)$	$0.481^{+0.021}_{-0.022}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$Y_{\mathrm{P}}$	$0.24537^{+0.00015}_{-0.00016}$	$\sigma_8(0.61)$	$0.605^{+0.021}_{-0.021}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24670^{+0.00015}_{-0.00016}$	$f\sigma_8(2.33)$	$0.306^{+0.011}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.595^{+0.072}_{-0.070}$	$\sigma_8(2.33)$	$0.3130^{+0.0084}_{-0.0086}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.748^{+0.081}_{-0.071}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.48}$	$z_*$	$1089.94^{+0.63}_{-0.63}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-5.2}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.44}_{-0.45}$	$r_*$	$144.58^{+0.64}_{-0.65}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.26}$	$100\theta_*$	$1.04109^{+0.00077}_{-0.00077}$	$\chi_{\mathrm{lensing}}^2$	$9.10 (\nu: 0.2)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.42}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888^{+0.061}_{-0.061}$	$\chi_{\mathrm{simall}}^2$	$396.6 (\nu: 1.0)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.79^{+0.82}_{-0.85}$	$\chi_{\mathrm{lowl}}^2$	$23.04 (\nu: 0.3)$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.26^{+0.67}_{-0.67}$	$\chi_{\mathrm{CamSpec}}^2$	$11513.6 (\nu: 14.9)$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14065^{+0.00084}_{-0.00081}$	$\chi_{\mathrm{H073p45}}^2$	$6.5 (\nu: 2.7)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16084^{+0.00049}_{-0.00048}$	$\chi_{\mathrm{JLA}}^2$	$1036.1 (\nu: 1.3)$
$H_0$	$69.3^{+2.0}_{-1.9}$	$z_{\mathrm{eq}}$	$3390^{+63}_{-63}$	$\chi_{6\mathrm{DF}}^2$	$0.14 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.703^{+0.017}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00019}_{-0.00019}$	$\chi_{\mathrm{MGS}}^2$	$2.73 (\nu: 0.3)$
$\Omega_{\mathrm{m}}$	$0.297^{+0.018}_{-0.017}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 (\nu: 1.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1425^{+0.0026}_{-0.0026}$	$100\theta_{\mathrm{s,eq}}$	$0.4505^{+0.0061}_{-0.0060}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0987^{+0.0033}_{-0.0032}$	$H(0.15)$	$74.3^{+1.7}_{-1.7}$	$\chi_{\mathrm{CMB}}^2$	$11942.3 (\nu: 15.9)$
$\sigma_8$	$0.827^{+0.027}_{-0.028}$	$D_{\mathrm{M}}(0.15)$	$627^{+15}_{-14}$	$\chi_{\mathrm{BAO}}^2$	$8.0 (\nu: 2.2)$
$S_8$	$0.823^{+0.029}_{-0.028}$	$H(0.38)$	$83.7^{+1.6}_{-1.6}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 13000.80; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -2.74; R - 1 = 0.01150$$



## 16 yhe

### 16.1 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02213	$0.02211^{+0.00077}_{-0.00076}$	$S_8$	0.837	$0.838^{+0.069}_{-0.065}$	$100\theta_{s,eq}$	0.4488	$0.449^{+0.013}_{-0.012}$
$\Omega_c h^2$	0.1204	$0.1205^{+0.0059}_{-0.0058}$	$\sigma_8 \Omega_m^{0.5}$	0.4583	$0.459^{+0.038}_{-0.036}$	$H(0.15)$	72.37	$72.3^{+2.6}_{-2.5}$
$100\theta_{MC}$	1.04094	$1.0407^{+0.0022}_{-0.0023}$	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.610^{+0.032}_{-0.031}$	$D_M(0.15)$	646.4	$648^{+27}_{-25}$
$\tau$	0.0525	$0.052^{+0.022}_{-0.022}$	$\sigma_8/h^{0.5}$	0.9914	$0.991^{+0.043}_{-0.042}$	$H(0.38)$	82.61	$82.5^{+2.0}_{-1.9}$
$Y_P$	0.248	$0.242^{+0.052}_{-0.056}$	$r_{drag} h$	98.67	$98.5^{+5.0}_{-4.8}$	$D_M(0.38)$	1540	$1542^{+53}_{-52}$
$\ln(10^{10} A_s)$	3.0397	$3.038^{+0.047}_{-0.047}$	$\langle d^2 \rangle^{1/2}$	2.447	$2.45^{+0.12}_{-0.11}$	$H(0.51)$	89.39	$89.3^{+1.6}_{-1.5}$
$n_s$	0.9644	$0.963^{+0.028}_{-0.029}$	$z_{re}$	7.57	$7.5^{+2.2}_{-2.4}$	$D_M(0.51)$	1994	$1996^{+62}_{-61}$
$y_{cal}$	1.0003	$1.0004^{+0.0064}_{-0.0062}$	$10^9 A_s$	2.090	$2.09^{+0.10}_{-0.096}$	$H(0.61)$	95.07	$95.0^{+1.4}_{-1.3}$
$A_{100}^{PS}$	247	$242^{+70}_{-70}$	$10^9 A_s e^{-2\tau}$	1.8815	$1.880^{+0.040}_{-0.039}$	$D_M(0.61)$	2319	$2322^{+67}_{-66}$
$A_{143}^{PS}$	38	$40^{+30}_{-20}$	$D_{40}$	1228	$1232^{+59}_{-56}$	$H(2.33)$	236.61	$236.6^{+3.5}_{-3.3}$
$A_{217}^{PS}$	99.1	$101^{+30}_{-30}$	$D_{220}$	5701	$5703^{+110}_{-110}$	$D_M(2.33)$	5775	$5778^{+65}_{-65}$
$A_{217}^{CIB}$	43.2	$41^{+20}_{-20}$	$D_{810}$	2532.9	$2534^{+36}_{-35}$	$f\sigma_8(0.15)$	0.4623	$0.463^{+0.034}_{-0.033}$
$A_{143}^{tSZ}$	3.96	$< 8.79$	$D_{1420}$	813.2	$814^{+14}_{-14}$	$\sigma_8(0.15)$	0.7492	$0.748^{+0.022}_{-0.022}$
$r_{143 \times 217}^{PS}$	0.554	$0.65^{+0.32}_{-0.33}$	$D_{2000}$	229.0	$229.8^{+6.5}_{-6.5}$	$f\sigma_8(0.38)$	0.4790	$0.479^{+0.026}_{-0.025}$
$r_{143 \times 217}^{CIB}$	0.63	—	$n_{s,0.002}$	0.9644	$0.963^{+0.028}_{-0.029}$	$\sigma_8(0.38)$	0.6633	$0.662^{+0.019}_{-0.019}$
$\xi^{tSZ \times CIB}$	0.00	—	$Y_P$	0.248	$0.242^{+0.052}_{-0.056}$	$f\sigma_8(0.51)$	0.4767	$0.477^{+0.022}_{-0.022}$
$A^{kSZ}$	4.3	—	$Y_P^{BBN}$	0.249	$0.244^{+0.052}_{-0.056}$	$\sigma_8(0.51)$	0.6204	$0.619^{+0.018}_{-0.018}$
$A_{100}^{dust}$	1.01	$1.01^{+0.52}_{-0.51}$	Age/Gyr	13.823	$13.83^{+0.15}_{-0.15}$	$f\sigma_8(0.61)$	0.4711	$0.471^{+0.019}_{-0.019}$
$A_{143}^{dust}$	0.979	$0.97^{+0.45}_{-0.44}$	$z_*$	1090.36	$1090.2^{+1.8}_{-1.7}$	$\sigma_8(0.61)$	0.5901	$0.589^{+0.018}_{-0.017}$
$A_{217}^{dust}$	0.962	$0.97^{+0.26}_{-0.27}$	$r_*$	144.49	$144.5^{+1.3}_{-1.3}$	$f\sigma_8(2.33)$	0.2973	$0.2967^{+0.0094}_{-0.0089}$
$A_{143 \times 217}^{dust}$	1.011	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	1.04108	$1.0410^{+0.0013}_{-0.0013}$	$\sigma_8(2.33)$	0.3061	$0.306^{+0.010}_{-0.0097}$
$c_{100}$	0.99736	$0.9975^{+0.0027}_{-0.0028}$	$D_M(z_*)/\text{Gpc}$	13.879	$13.88^{+0.12}_{-0.12}$	$f_{2000}^{143}$	31.7	$30^{+10}_{-10}$
$c_{217}$	1.00131	$1.0012^{+0.0041}_{-0.0040}$	$z_{drag}$	1059.51	$1059.3^{+3.1}_{-3.1}$	$f_{2000}^{217}$	108.1	$107.3^{+7.1}_{-7.1}$
$H_0$	67.01	$66.9^{+3.0}_{-2.9}$	$r_{drag}$	147.23	$147.3^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	33.5	$33^{+8}_{-8}$
$\Omega_\Lambda$	0.6811	$0.679^{+0.038}_{-0.042}$	$k_D$	0.14043	$0.1406^{+0.0021}_{-0.0020}$	$\chi_{simall}^2$	395.89	$397.0 (\nu: 1.4)$
$\Omega_m$	0.3189	$0.321^{+0.042}_{-0.038}$	$100\theta_D$	0.16118	$0.1610^{+0.0020}_{-0.0020}$	$\chi_{lowl}^2$	23.3	$23.9 (\nu: 2.2)$
$\Omega_m h^2$	0.1432	$0.1433^{+0.0055}_{-0.0054}$	$z_{eq}$	3407	$3409^{+130}_{-130}$	$\chi_{CamSpec}^2$	7050.2	$7063.9 (\nu: 15.9)$
$\Omega_m h^3$	0.09597	$0.0958^{+0.0020}_{-0.0019}$	$k_{eq}$	0.010398	$0.01040^{+0.00040}_{-0.00039}$	$\chi_{prior}^2$	2.4	$7.6 (\nu: 5.9)$
$\sigma_8$	0.8116	$0.811^{+0.025}_{-0.025}$	$100\theta_{eq}$	0.8118	$0.811^{+0.026}_{-0.024}$	$\chi_{CMB}^2$	7469.4	$7484.8 (\nu: 16.2)$

Best-fit  $\chi_{eff}^2 = 7471.80$ ;  $\Delta\chi_{eff}^2 = 0.06$ ;  $\bar{\chi}_{eff}^2 = 7492.39$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.85$ ;  $R - 1 = 0.00648$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 ( $\Delta$  0.05) commander\_dx12\_v3.2.29: 23.34 ( $\Delta$  -0.06) CamSpec like\_10.7HM: 7050.19 ( $\Delta$  -0.15)



## 16.2 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226^{+0.00064}_{-0.00065}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1527^{+29}_{-27}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0032}_{-0.0031}$	$\sigma_8 / h^{0.5}$	$0.982^{+0.031}_{-0.031}$	$H(0.51)$	$89.75^{+0.98}_{-0.98}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0018}_{-0.0019}$	$r_{\mathrm{drag}} h$	$99.9^{+2.5}_{-2.5}$	$D_{\mathrm{M}}(0.51)$	$1979^{+34}_{-33}$
$\tau$	$0.054^{+0.022}_{-0.022}$	$\langle d^2 \rangle^{1/2}$	$2.422^{+0.073}_{-0.073}$	$H(0.61)$	$95.35^{+0.90}_{-0.89}$
$Y_{\mathrm{P}}$	$0.250^{+0.046}_{-0.051}$	$z_{\mathrm{re}}$	$7.7^{+2.1}_{-2.4}$	$D_{\mathrm{M}}(0.61)$	$2303^{+37}_{-36}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.045}_{-0.047}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.097}_{-0.097}$	$H(2.33)$	$235.8^{+2.1}_{-2.1}$
$n_{\mathrm{s}}$	$0.969^{+0.021}_{-0.022}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.037}_{-0.039}$	$D_{\mathrm{M}}(2.33)$	$5762^{+48}_{-47}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0062}_{-0.0066}$	$D_{40}$	$1219^{+44}_{-43}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.020}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{220}$	$5709^{+110}_{-110}$	$\sigma_8(0.15)$	$0.747^{+0.021}_{-0.021}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.473^{+0.018}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.662^{+0.019}_{-0.019}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.5^{+6.4}_{-6.2}$	$f\sigma_8(0.51)$	$0.472^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$n_{\mathrm{s},0.002}$	$0.969^{+0.021}_{-0.022}$	$\sigma_8(0.51)$	$0.620^{+0.018}_{-0.018}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}$	$0.250^{+0.046}_{-0.051}$	$f\sigma_8(0.61)$	$0.467^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251^{+0.047}_{-0.052}$	$\sigma_8(0.61)$	$0.590^{+0.017}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.80^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2976^{+0.0089}_{-0.0087}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.2^{+1.7}_{-1.7}$	$\sigma_8(2.33)$	$0.3069^{+0.0095}_{-0.0092}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.54}_{-0.51}$	$r_*$	$144.78^{+0.98}_{-0.99}$	$f_{2000}^{143}$	$31^{+10}_{-10}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.47}_{-0.44}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.8^{+7.0}_{-7.1}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.25}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904^{+0.096}_{-0.096}$	$f_{2000}^{143 \times 217}$	$33^{+8}_{-8}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.8^{+2.8}_{-2.8}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$r_{\mathrm{drag}}$	$147.5^{+1.1}_{-1.1}$	$\chi_{\mathrm{lowl}}^2$	$22.7 (\nu: 0.8)$
$c_{217}$	$1.0012^{+0.0043}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1402^{+0.0016}_{-0.0016}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.8 (\nu: 15.4)$
$H_0$	$67.7^{+1.6}_{-1.6}$	$100\theta_{\mathrm{D}}$	$0.1612^{+0.0019}_{-0.0020}$	$\chi_{6\mathrm{DF}}^2$	$0.054 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.691^{+0.019}_{-0.020}$	$z_{\mathrm{eq}}$	$3374^{+76}_{-74}$	$\chi_{\mathrm{MGS}}^2$	$1.43 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.020}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1418^{+0.0032}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.014}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.1)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0019}_{-0.0019}$	$100\theta_{\mathrm{s,eq}}$	$0.4521^{+0.0071}_{-0.0071}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8$	$0.808^{+0.023}_{-0.024}$	$H(0.15)$	$73.0^{+1.4}_{-1.4}$	$\chi_{\mathrm{CMB}}^2$	$7484.5 (\nu: 15.3)$
$S_8$	$0.820^{+0.039}_{-0.038}$	$D_{\mathrm{M}}(0.15)$	$640^{+14}_{-13}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.021}_{-0.021}$	$H(0.38)$	$83.1^{+1.1}_{-1.1}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7498.32; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.77; R - 1 = 0.01513$$



### 16.3 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\text{b}}h^2$	$0.02211^{+0.00074}_{-0.00073}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.457^{+0.023}_{-0.024}$	$D_{\text{M}}(0.15)$	$647^{+20}_{-20}$
$\Omega_{\text{c}}h^2$	$0.1203^{+0.0042}_{-0.0042}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.609^{+0.020}_{-0.020}$	$H(0.38)$	$82.6^{+1.6}_{-1.6}$
$100\theta_{\text{MC}}$	$1.0407^{+0.0022}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.990^{+0.027}_{-0.028}$	$D_{\text{M}}(0.38)$	$1541^{+42}_{-41}$
$\tau$	$0.053^{+0.023}_{-0.022}$	$r_{\text{drag}}h$	$98.7^{+3.7}_{-3.6}$	$H(0.51)$	$89.3^{+1.4}_{-1.3}$
$Y_{\text{P}}$	$0.241^{+0.051}_{-0.056}$	$\langle d^2 \rangle^{1/2}$	$2.449^{+0.074}_{-0.074}$	$D_{\text{M}}(0.51)$	$1995^{+50}_{-48}$
$\ln(10^{10}A_{\text{s}})$	$3.038^{+0.045}_{-0.045}$	$z_{\text{re}}$	$7.5^{+2.2}_{-2.4}$	$H(0.61)$	$95.0^{+1.2}_{-1.2}$
$n_{\text{s}}$	$0.962^{+0.026}_{-0.025}$	$10^9 A_{\text{s}}$	$2.087^{+0.096}_{-0.093}$	$D_{\text{M}}(0.61)$	$2320^{+54}_{-53}$
$y_{\text{cal}}$	$1.0005^{+0.0064}_{-0.0062}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.879^{+0.037}_{-0.036}$	$H(2.33)$	$236.5^{+2.5}_{-2.5}$
$A_{100}^{\text{PS}}$	$241^{+70}_{-70}$	$D_{40}$	$1232^{+49}_{-49}$	$D_{\text{M}}(2.33)$	$5778^{+61}_{-61}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5707^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.022}$
$A_{217}^{\text{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2533^{+36}_{-34}$	$\sigma_8(0.15)$	$0.748^{+0.019}_{-0.018}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$815^{+14}_{-13}$	$f\sigma_8(0.38)$	$0.478^{+0.016}_{-0.017}$
$A_{143}^{\text{tSZ}}$	$< 8.81$	$D_{2000}$	$230.0^{+6.4}_{-6.5}$	$\sigma_8(0.38)$	$0.662^{+0.018}_{-0.017}$
$r_{143 \times 217}^{\text{PS}}$	$0.65^{+0.32}_{-0.33}$	$n_{\text{s},0.002}$	$0.962^{+0.026}_{-0.025}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$r_{143 \times 217}^{\text{CIB}}$	—	$Y_{\text{P}}$	$0.241^{+0.051}_{-0.056}$	$\sigma_8(0.51)$	$0.619^{+0.018}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.242^{+0.051}_{-0.056}$	$f\sigma_8(0.61)$	$0.470^{+0.013}_{-0.013}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.83^{+0.14}_{-0.14}$	$\sigma_8(0.61)$	$0.589^{+0.017}_{-0.016}$
$A_{100}^{\text{dust}}$	$1.01^{+0.52}_{-0.50}$	$z_*$	$1090.1^{+1.7}_{-1.7}$	$f\sigma_8(2.33)$	$0.2966^{+0.0095}_{-0.0086}$
$A_{143}^{\text{dust}}$	$0.97^{+0.46}_{-0.45}$	$r_*$	$144.57^{+0.99}_{-0.99}$	$\sigma_8(2.33)$	$0.305^{+0.011}_{-0.0096}$
$A_{217}^{\text{dust}}$	$0.97^{+0.24}_{-0.27}$	$100\theta_*$	$1.0410^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.41}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.887^{+0.095}_{-0.096}$	$f_{2000}^{217}$	$107.1^{+7.2}_{-7.2}$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$z_{\text{drag}}$	$1059.2^{+3.2}_{-3.1}$	$f_{2000}^{143 \times 217}$	$32^{+8}_{-8}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$r_{\text{drag}}$	$147.3^{+1.1}_{-1.1}$	$\chi_{\text{lensing}}^2$	$9.50 (\nu: 0.4)$
$H_0$	$67.0^{+2.3}_{-2.3}$	$k_{\text{D}}$	$0.1406^{+0.0018}_{-0.0018}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.4)$
$\Omega_{\Lambda}$	$0.681^{+0.028}_{-0.031}$	$100\theta_{\text{D}}$	$0.1609^{+0.0020}_{-0.0020}$	$\chi_{\text{lowl}}^2$	$23.9 (\nu: 1.6)$
$\Omega_{\text{m}}$	$0.319^{+0.031}_{-0.028}$	$z_{\text{eq}}$	$3403^{+95}_{-94}$	$\chi_{\text{CamSpec}}^2$	$7063.4 (\nu: 14.4)$
$\Omega_{\text{m}}h^2$	$0.1431^{+0.0040}_{-0.0039}$	$k_{\text{eq}}$	$0.01039^{+0.00029}_{-0.00029}$	$\chi_{\text{prior}}^2$	$7.5 (\nu: 5.8)$
$\Omega_{\text{m}}h^3$	$0.0958^{+0.0020}_{-0.0019}$	$100\theta_{\text{eq}}$	$0.812^{+0.019}_{-0.018}$	$\chi_{\text{CMB}}^2$	$7493.8 (\nu: 15.9)$
$\sigma_8$	$0.810^{+0.020}_{-0.020}$	$100\theta_{\text{s,eq}}$	$0.4491^{+0.0095}_{-0.0091}$		
$S_8$	$0.835^{+0.043}_{-0.043}$	$H(0.15)$	$72.3^{+2.0}_{-2.0}$		

$$\bar{\chi}_{\text{eff}}^2 = 7501.32; \Delta\bar{\chi}_{\text{eff}}^2 = 1.07; R - 1 = 0.00730$$



## 16.4 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225^{+0.00065}_{-0.00062}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.017}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1529^{+27}_{-27}$
$\Omega_{\mathrm{c}}h^2$	$0.1191^{+0.0028}_{-0.0028}$	$\sigma_8/h^{0.5}$	$0.985^{+0.025}_{-0.025}$	$H(0.51)$	$89.70^{+0.98}_{-0.96}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0018}_{-0.0019}$	$r_{\mathrm{drag}}h$	$99.7^{+2.4}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1981^{+33}_{-32}$
$\tau$	$0.056^{+0.021}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.060}_{-0.060}$	$H(0.61)$	$95.31^{+0.90}_{-0.87}$
$Y_{\mathrm{P}}$	$0.248^{+0.046}_{-0.052}$	$z_{\mathrm{re}}$	$7.8^{+2.0}_{-2.0}$	$D_{\mathrm{M}}(0.61)$	$2305^{+36}_{-36}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.041}_{-0.040}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.088}_{-0.082}$	$H(2.33)$	$235.9^{+1.9}_{-1.9}$
$n_{\mathrm{s}}$	$0.968^{+0.021}_{-0.021}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.035}_{-0.035}$	$D_{\mathrm{M}}(2.33)$	$5764^{+47}_{-47}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0063}_{-0.0066}$	$D_{40}$	$1223^{+42}_{-42}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.016}$
$A_{100}^{\mathrm{PS}}$	$243^{+60}_{-70}$	$D_{220}$	$5715^{+100}_{-100}$	$\sigma_8(0.15)$	$0.749^{+0.019}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$f\sigma_8(0.38)$	$0.475^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+14}_{-14}$	$\sigma_8(0.38)$	$0.664^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.8^{+6.5}_{-6.4}$	$f\sigma_8(0.51)$	$0.473^{+0.013}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$n_{\mathrm{s},0.002}$	$0.968^{+0.021}_{-0.021}$	$\sigma_8(0.51)$	$0.621^{+0.016}_{-0.016}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.31}$	$Y_{\mathrm{P}}$	$0.248^{+0.046}_{-0.052}$	$f\sigma_8(0.61)$	$0.468^{+0.012}_{-0.012}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249^{+0.046}_{-0.052}$	$\sigma_8(0.61)$	$0.591^{+0.016}_{-0.015}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	Age/Gyr	$13.80^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2980^{+0.0084}_{-0.0078}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.1^{+1.7}_{-1.7}$	$\sigma_8(2.33)$	$0.3073^{+0.0091}_{-0.0084}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.54}_{-0.51}$	$r_*$	$144.74^{+0.86}_{-0.92}$	$f_{2000}^{143}$	$31^{+10}_{-10}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.47}_{-0.44}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.6^{+7.0}_{-7.0}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.25}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901^{+0.086}_{-0.090}$	$f_{2000}^{143\times 217}$	$33^{+8}_{-8}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.7^{+2.8}_{-2.7}$	$\chi_{\mathrm{lensing}}^2$	$9.42\ (\nu: 0.3)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$r_{\mathrm{drag}}$	$147.5^{+1.0}_{-1.0}$	$\chi_{\mathrm{simall}}^2$	$397.2\ (\nu: 1.9)$
$c_{217}$	$1.0012^{+0.0043}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1403^{+0.0015}_{-0.0016}$	$\chi_{\mathrm{lowl}}^2$	$23.0\ (\nu: 0.9)$
$H_0$	$67.6^{+1.5}_{-1.5}$	$100\theta_{\mathrm{D}}$	$0.1611^{+0.0019}_{-0.0020}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.1\ (\nu: 14.6)$
$\Omega_{\Lambda}$	$0.689^{+0.018}_{-0.019}$	$z_{\mathrm{eq}}$	$3378^{+67}_{-66}$	$\chi_{6\mathrm{DF}}^2$	$0.057\ (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.019}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{MGS}}^2$	$1.33\ (\nu: 0.1)$
$\Omega_{\mathrm{m}}h^2$	$0.1420^{+0.0028}_{-0.0027}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8\ (\nu: 1.2)$
$\Omega_{\mathrm{m}}h^3$	$0.0960^{+0.0019}_{-0.0018}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0064}_{-0.0062}$	$\chi_{\mathrm{prior}}^2$	$7.6\ (\nu: 6.1)$
$\sigma_8$	$0.810^{+0.020}_{-0.020}$	$H(0.15)$	$72.9^{+1.4}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$7493.7\ (\nu: 15.4)$
$S_8$	$0.824^{+0.032}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$641^{+13}_{-13}$	$\chi_{\mathrm{BAO}}^2$	$6.2\ (\nu: 0.8)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$H(0.38)$	$83.0^{+1.1}_{-1.1}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.45$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.97$ ;  $R - 1 = 0.01905$



16.5 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213^{+0.00076}_{-0.00075}$	$S_8$	$0.838^{+0.069}_{-0.065}$	$100\theta_{\mathrm{s,eq}}$	$0.449^{+0.013}_{-0.013}$
$\Omega_{\mathrm{c}}h^2$	$0.1204^{+0.0058}_{-0.0058}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.459^{+0.038}_{-0.036}$	$H(0.15)$	$72.3^{+2.6}_{-2.5}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0022}_{-0.0023}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.032}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$647^{+26}_{-25}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.992^{+0.043}_{-0.042}$	$H(0.38)$	$82.6^{+2.0}_{-1.9}$
$Y_{\mathrm{P}}$	$0.243^{+0.051}_{-0.054}$	$r_{\mathrm{drag}}h$	$98.6^{+5.0}_{-4.8}$	$D_{\mathrm{M}}(0.38)$	$1541^{+52}_{-51}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.044}_{-0.033}$	$\langle d^2 \rangle^{1/2}$	$2.45^{+0.12}_{-0.11}$	$H(0.51)$	$89.4^{+1.6}_{-1.5}$
$n_{\mathrm{s}}$	$0.963^{+0.028}_{-0.028}$	$z_{\mathrm{re}}$	$< 9.49$	$D_{\mathrm{M}}(0.51)$	$1995^{+62}_{-61}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0064}_{-0.0063}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.095}_{-0.068}$	$H(0.61)$	$95.0^{+1.4}_{-1.3}$
$A_{100}^{\mathrm{PS}}$	$242^{+70}_{-70}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880^{+0.040}_{-0.039}$	$D_{\mathrm{M}}(0.61)$	$2320^{+67}_{-66}$
$A_{143}^{\mathrm{PS}}$	$40^{+30}_{-20}$	$D_{40}$	$1231^{+59}_{-55}$	$H(2.33)$	$236.6^{+3.5}_{-3.3}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{220}$	$5704^{+110}_{-110}$	$D_{\mathrm{M}}(2.33)$	$5777^{+63}_{-64}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.15)$	$0.463^{+0.034}_{-0.033}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{1420}$	$814^{+14}_{-14}$	$\sigma_8(0.15)$	$0.749^{+0.022}_{-0.020}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$D_{2000}$	$229.8^{+6.5}_{-6.5}$	$f\sigma_8(0.38)$	$0.479^{+0.026}_{-0.026}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.963^{+0.028}_{-0.028}$	$\sigma_8(0.38)$	$0.663^{+0.019}_{-0.016}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.243^{+0.051}_{-0.054}$	$f\sigma_8(0.51)$	$0.477^{+0.022}_{-0.022}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.244^{+0.052}_{-0.054}$	$\sigma_8(0.51)$	$0.621^{+0.018}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.51}$	Age/Gyr	$13.83^{+0.14}_{-0.14}$	$f\sigma_8(0.61)$	$0.471^{+0.019}_{-0.019}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.45}_{-0.44}$	$z_*$	$1090.2^{+1.8}_{-1.7}$	$\sigma_8(0.61)$	$0.590^{+0.017}_{-0.014}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.5^{+1.3}_{-1.3}$	$f\sigma_8(2.33)$	$0.2973^{+0.0090}_{-0.0073}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	$1.0410^{+0.0013}_{-0.0013}$	$\sigma_8(2.33)$	$0.3062^{+0.0099}_{-0.0080}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0028}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.88^{+0.12}_{-0.12}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.3^{+3.1}_{-3.0}$	$f_{2000}^{217}$	$107.4^{+7.0}_{-7.1}$
$H_0$	$67.0^{+3.0}_{-2.9}$	$r_{\mathrm{drag}}$	$147.3^{+1.3}_{-1.3}$	$f_{2000}^{143 \times 217}$	$33^{+8}_{-8}$
$\Omega_{\Lambda}$	$0.680^{+0.038}_{-0.042}$	$k_{\mathrm{D}}$	$0.1406^{+0.0020}_{-0.0020}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.5)$
$\Omega_{\mathrm{m}}$	$0.320^{+0.042}_{-0.038}$	$100\theta_{\mathrm{D}}$	$0.1610^{+0.0020}_{-0.0020}$	$\chi_{\mathrm{lowl}}^2$	$23.8 (\nu: 2.1)$
$\Omega_{\mathrm{m}}h^2$	$0.1432^{+0.0056}_{-0.0054}$	$z_{\mathrm{eq}}$	$3407^{+130}_{-130}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 (\nu: 15.9)$
$\Omega_{\mathrm{m}}h^3$	$0.0959^{+0.0020}_{-0.0019}$	$k_{\mathrm{eq}}$	$0.01040^{+0.00041}_{-0.00039}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 5.9)$
$\sigma_8$	$0.812^{+0.024}_{-0.023}$	$100\theta_{\mathrm{eq}}$	$0.812^{+0.026}_{-0.024}$	$\chi_{\mathrm{CMB}}^2$	$7484.5 (\nu: 15.8)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7492.12; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.86; R - 1 = 0.00634$$



## 16.6 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02227^{+0.00064}_{-0.00064}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.021}_{-0.021}$	$D_{\mathrm{M}}(0.38)$	$1527^{+29}_{-27}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0032}_{-0.0031}$	$\sigma_8/h^{0.5}$	$0.983^{+0.031}_{-0.030}$	$H(0.51)$	$89.76^{+0.98}_{-0.97}$
$100\theta_{\mathrm{MC}}$	$1.0412^{+0.0018}_{-0.0019}$	$r_{\mathrm{drag}} h$	$99.9^{+2.5}_{-2.5}$	$D_{\mathrm{M}}(0.51)$	$1979^{+34}_{-32}$
$\tau$	$0.055^{+0.019}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.072}_{-0.070}$	$H(0.61)$	$95.36^{+0.89}_{-0.88}$
$Y_{\mathrm{P}}$	$0.250^{+0.046}_{-0.051}$	$z_{\mathrm{re}}$	$< 9.53$	$D_{\mathrm{M}}(0.61)$	$2303^{+37}_{-35}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.045}_{-0.035}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.096}_{-0.073}$	$H(2.33)$	$235.8^{+2.2}_{-2.0}$
$n_{\mathrm{s}}$	$0.969^{+0.021}_{-0.021}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877^{+0.037}_{-0.038}$	$D_{\mathrm{M}}(2.33)$	$5762^{+48}_{-47}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0063}_{-0.0066}$	$D_{40}$	$1219^{+44}_{-42}$	$f\sigma_8(0.15)$	$0.454^{+0.020}_{-0.020}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{220}$	$5710^{+110}_{-110}$	$\sigma_8(0.15)$	$0.748^{+0.021}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2534^{+36}_{-35}$	$f\sigma_8(0.38)$	$0.473^{+0.017}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+14}_{-13}$	$\sigma_8(0.38)$	$0.663^{+0.018}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.5^{+6.4}_{-6.3}$	$f\sigma_8(0.51)$	$0.472^{+0.016}_{-0.016}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.88$	$n_{\mathrm{s},0.002}$	$0.969^{+0.021}_{-0.021}$	$\sigma_8(0.51)$	$0.621^{+0.017}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.32}$	$Y_{\mathrm{P}}$	$0.250^{+0.046}_{-0.051}$	$f\sigma_8(0.61)$	$0.467^{+0.015}_{-0.015}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251^{+0.046}_{-0.051}$	$\sigma_8(0.61)$	$0.591^{+0.016}_{-0.015}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.79^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2979^{+0.0086}_{-0.0075}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.2^{+1.7}_{-1.7}$	$\sigma_8(2.33)$	$0.3073^{+0.0091}_{-0.0079}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.54}_{-0.52}$	$r_*$	$144.78^{+0.96}_{-1.0}$	$f_{2000}^{143}$	$31^{+10}_{-10}$
$A_{143}^{\mathrm{dust}}$	$0.98^{+0.46}_{-0.44}$	$100\theta_*$	$1.0413^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.8^{+6.9}_{-7.1}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.25}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904^{+0.094}_{-0.098}$	$f_{2000}^{143 \times 217}$	$33^{+8}_{-8}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.8^{+2.7}_{-2.8}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0028}$	$r_{\mathrm{drag}}$	$147.5^{+1.1}_{-1.1}$	$\chi_{\mathrm{lowl}}^2$	$22.7 (\nu: 0.8)$
$c_{217}$	$1.0012^{+0.0043}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1402^{+0.0016}_{-0.0016}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.7 (\nu: 15.5)$
$H_0$	$67.8^{+1.6}_{-1.6}$	$100\theta_{\mathrm{D}}$	$0.1612^{+0.0019}_{-0.0019}$	$\chi_{6\mathrm{DF}}^2$	$0.053 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.691^{+0.019}_{-0.020}$	$z_{\mathrm{eq}}$	$3373^{+76}_{-73}$	$\chi_{\mathrm{MGS}}^2$	$1.45 (\nu: 0.2)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.020}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^2$	$0.1418^{+0.0032}_{-0.0031}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.014}_{-0.014}$	$\chi_{\mathrm{prior}}^2$	$7.7 (\nu: 6.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0019}_{-0.0019}$	$100\theta_{\mathrm{s,eq}}$	$0.4522^{+0.0071}_{-0.0071}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8$	$0.809^{+0.022}_{-0.022}$	$H(0.15)$	$73.0^{+1.4}_{-1.4}$	$\chi_{\mathrm{CMB}}^2$	$7484.4 (\nu: 15.1)$
$S_8$	$0.821^{+0.039}_{-0.038}$	$D_{\mathrm{M}}(0.15)$	$640^{+14}_{-13}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.021}_{-0.021}$	$H(0.38)$	$83.1^{+1.1}_{-1.1}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7498.14$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 0.82$ ;  $R - 1 = 0.01531$



## 16.7 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213^{+0.00074}_{-0.00068}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.457^{+0.024}_{-0.024}$	$D_{\mathrm{M}}(0.15)$	$646^{+19}_{-19}$
$\Omega_{\mathrm{c}}h^2$	$0.1201^{+0.0040}_{-0.0041}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.020}_{-0.020}$	$H(0.38)$	$82.6^{+1.6}_{-1.5}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0021}_{-0.0021}$	$\sigma_8/h^{0.5}$	$0.990^{+0.027}_{-0.027}$	$D_{\mathrm{M}}(0.38)$	$1539^{+38}_{-39}$
$\tau$	$0.054^{+0.019}_{-0.013}$	$r_{\mathrm{drag}}h$	$98.8^{+3.6}_{-3.4}$	$H(0.51)$	$89.4^{+1.3}_{-1.2}$
$Y_{\mathrm{P}}$	$0.242^{+0.050}_{-0.054}$	$\langle d^2 \rangle^{1/2}$	$2.449^{+0.074}_{-0.074}$	$D_{\mathrm{M}}(0.51)$	$1993^{+46}_{-47}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.043}_{-0.031}$	$z_{\mathrm{re}}$	$< 9.49$	$H(0.61)$	$95.1^{+1.2}_{-1.1}$
$n_{\mathrm{s}}$	$0.963^{+0.026}_{-0.025}$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.092}_{-0.065}$	$D_{\mathrm{M}}(0.61)$	$2318^{+50}_{-51}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0062}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.036}_{-0.036}$	$H(2.33)$	$236.4^{+2.4}_{-2.4}$
$A_{100}^{\mathrm{PS}}$	$241^{+70}_{-70}$	$D_{40}$	$1231^{+48}_{-49}$	$D_{\mathrm{M}}(2.33)$	$5776^{+56}_{-59}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5707^{+110}_{-100}$	$f\sigma_8(0.15)$	$0.461^{+0.021}_{-0.022}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{810}$	$2533^{+36}_{-34}$	$\sigma_8(0.15)$	$0.748^{+0.019}_{-0.017}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{1420}$	$815^{+14}_{-14}$	$f\sigma_8(0.38)$	$0.478^{+0.016}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$D_{2000}$	$230.0^{+6.4}_{-6.5}$	$\sigma_8(0.38)$	$0.663^{+0.018}_{-0.015}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.963^{+0.026}_{-0.025}$	$f\sigma_8(0.51)$	$0.476^{+0.014}_{-0.014}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.242^{+0.050}_{-0.054}$	$\sigma_8(0.51)$	$0.620^{+0.017}_{-0.014}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.243^{+0.051}_{-0.054}$	$f\sigma_8(0.61)$	$0.470^{+0.013}_{-0.013}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.83^{+0.13}_{-0.14}$	$\sigma_8(0.61)$	$0.590^{+0.017}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.52}_{-0.50}$	$z_*$	$1090.1^{+1.7}_{-1.7}$	$f\sigma_8(2.33)$	$0.2971^{+0.0091}_{-0.0073}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.44}$	$r_*$	$144.59^{+0.99}_{-0.97}$	$\sigma_8(2.33)$	$0.306^{+0.010}_{-0.0082}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.24}_{-0.26}$	$100\theta_*$	$1.0411^{+0.0012}_{-0.0012}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.095}_{-0.095}$	$f_{2000}^{217}$	$107.2^{+7.0}_{-7.2}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.3^{+3.2}_{-3.0}$	$f_{2000}^{143\times 217}$	$33^{+8}_{-8}$
$c_{217}$	$1.0012^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.3^{+1.1}_{-1.1}$	$\chi_{\mathrm{lensing}}^2$	$9.48\ (\nu: 0.4)$
$H_0$	$67.1^{+2.3}_{-2.1}$	$k_{\mathrm{D}}$	$0.1406^{+0.0017}_{-0.0018}$	$\chi_{\mathrm{simall}}^2$	$396.9\ (\nu: 1.4)$
$\Omega_{\Lambda}$	$0.682^{+0.028}_{-0.029}$	$100\theta_{\mathrm{D}}$	$0.1609^{+0.0020}_{-0.0020}$	$\chi_{\mathrm{lowl}}^2$	$23.8\ (\nu: 1.5)$
$\Omega_{\mathrm{m}}$	$0.318^{+0.029}_{-0.028}$	$z_{\mathrm{eq}}$	$3400^{+90}_{-92}$	$\chi_{\mathrm{CamSpec}}^2$	$7063.4\ (\nu: 14.5)$
$\Omega_{\mathrm{m}}h^2$	$0.1429^{+0.0037}_{-0.0039}$	$k_{\mathrm{eq}}$	$0.01038^{+0.00027}_{-0.00028}$	$\chi_{\mathrm{prior}}^2$	$7.5\ (\nu: 5.9)$
$\Omega_{\mathrm{m}}h^3$	$0.0958^{+0.0020}_{-0.0019}$	$100\theta_{\mathrm{eq}}$	$0.813^{+0.018}_{-0.017}$	$\chi_{\mathrm{CMB}}^2$	$7493.5\ (\nu: 15.5)$
$\sigma_8$	$0.811^{+0.020}_{-0.018}$	$100\theta_{\mathrm{s,eq}}$	$0.4494^{+0.0092}_{-0.0086}$		
$S_8$	$0.835^{+0.043}_{-0.043}$	$H(0.15)$	$72.4^{+2.0}_{-1.8}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7501.05$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1.04$ ;  $R - 1 = 0.00841$



16.8 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226^{+0.00065}_{-0.00063}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.017}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1529^{+27}_{-27}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0028}_{-0.0028}$	$\sigma_8/h^{0.5}$	$0.985^{+0.025}_{-0.024}$	$H(0.51)$	$89.71^{+0.98}_{-0.95}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0018}_{-0.0019}$	$r_{\mathrm{drag}} h$	$99.8^{+2.3}_{-2.3}$	$D_{\mathrm{M}}(0.51)$	$1981^{+32}_{-32}$
$\tau$	$0.056^{+0.019}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.060}_{-0.058}$	$H(0.61)$	$95.32^{+0.89}_{-0.87}$
$Y_{\mathrm{P}}$	$0.248^{+0.046}_{-0.052}$	$z_{\mathrm{re}}$	$< 9.57$	$D_{\mathrm{M}}(0.61)$	$2305^{+35}_{-35}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.040}_{-0.033}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.086}_{-0.069}$	$H(2.33)$	$235.9^{+1.9}_{-1.9}$
$n_{\mathrm{s}}$	$0.968^{+0.021}_{-0.022}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.035}_{-0.035}$	$D_{\mathrm{M}}(2.33)$	$5764^{+47}_{-47}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0063}_{-0.0066}$	$D_{40}$	$1223^{+42}_{-43}$	$f\sigma_8(0.15)$	$0.456^{+0.016}_{-0.016}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$D_{220}$	$5715^{+100}_{-100}$	$\sigma_8(0.15)$	$0.749^{+0.019}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$41^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$f\sigma_8(0.38)$	$0.475^{+0.014}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{1420}$	$815^{+14}_{-14}$	$\sigma_8(0.38)$	$0.664^{+0.017}_{-0.015}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{2000}$	$229.8^{+6.3}_{-6.4}$	$f\sigma_8(0.51)$	$0.473^{+0.013}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.87$	$n_{\mathrm{s},0.002}$	$0.968^{+0.021}_{-0.022}$	$\sigma_8(0.51)$	$0.621^{+0.016}_{-0.015}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.32}_{-0.31}$	$Y_{\mathrm{P}}$	$0.248^{+0.046}_{-0.052}$	$f\sigma_8(0.61)$	$0.469^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249^{+0.046}_{-0.052}$	$\sigma_8(0.61)$	$0.591^{+0.015}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.80^{+0.11}_{-0.11}$	$f\sigma_8(2.33)$	$0.2982^{+0.0083}_{-0.0074}$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.1^{+1.7}_{-1.7}$	$\sigma_8(2.33)$	$0.3075^{+0.0089}_{-0.0079}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.54}_{-0.51}$	$r_*$	$144.74^{+0.86}_{-0.92}$	$f_{2000}^{143}$	$31^{+10}_{-10}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.47}_{-0.44}$	$100\theta_*$	$1.0412^{+0.0011}_{-0.0011}$	$f_{2000}^{217}$	$107.6^{+7.0}_{-7.0}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.25}_{-0.27}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901^{+0.086}_{-0.090}$	$f_{2000}^{143 \times 217}$	$33^{+8}_{-8}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$z_{\mathrm{drag}}$	$1059.7^{+2.8}_{-2.8}$	$\chi_{\mathrm{lensing}}^2$	$9.38 (\nu: 0.3)$
$c_{100}$	$0.9975^{+0.0026}_{-0.0027}$	$r_{\mathrm{drag}}$	$147.5^{+1.0}_{-1.0}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 1.9)$
$c_{217}$	$1.0012^{+0.0043}_{-0.0040}$	$k_{\mathrm{D}}$	$0.1403^{+0.0015}_{-0.0016}$	$\chi_{\mathrm{lowl}}^2$	$22.9 (\nu: 0.9)$
$H_0$	$67.7^{+1.5}_{-1.5}$	$100\theta_{\mathrm{D}}$	$0.1611^{+0.0019}_{-0.0020}$	$\chi_{\mathrm{CamSpec}}^2$	$7064.1 (\nu: 14.6)$
$\Omega_{\Lambda}$	$0.690^{+0.018}_{-0.018}$	$z_{\mathrm{eq}}$	$3378^{+67}_{-66}$	$\chi_{6\mathrm{DF}}^2$	$0.055 (\nu: 0.0)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.018}_{-0.018}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00020}_{-0.00020}$	$\chi_{\mathrm{MGS}}^2$	$1.34 (\nu: 0.1)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0028}_{-0.0027}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.012}_{-0.012}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 1.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0019}_{-0.0018}$	$100\theta_{\mathrm{s,eq}}$	$0.4517^{+0.0063}_{-0.0062}$	$\chi_{\mathrm{prior}}^2$	$7.6 (\nu: 6.1)$
$\sigma_8$	$0.810^{+0.020}_{-0.019}$	$H(0.15)$	$72.9^{+1.4}_{-1.3}$	$\chi_{\mathrm{CMB}}^2$	$7493.6 (\nu: 15.3)$
$S_8$	$0.824^{+0.032}_{-0.031}$	$D_{\mathrm{M}}(0.15)$	$641^{+13}_{-13}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.8)$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.017}_{-0.017}$	$H(0.38)$	$83.0^{+1.1}_{-1.1}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.34$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 1.01$ ;  $R - 1 = 0.01969$



## 16.9 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.02231	$0.02230^{+0.00058}_{-0.00055}$	$\sigma_8$	0.8081	$0.808^{+0.022}_{-0.022}$	$100\theta_{s,eq}$	0.4507	$0.4504^{+0.0083}_{-0.0078}$
$\Omega_c h^2$	0.11944	$0.1196^{+0.0036}_{-0.0037}$	$S_8$	0.8248	$0.826^{+0.042}_{-0.043}$	$H(0.15)$	72.79	$72.7^{+1.8}_{-1.7}$
$100\theta_{MC}$	1.04093	$1.0409^{+0.0019}_{-0.0018}$	$\sigma_8 \Omega_m^{0.5}$	0.4517	$0.452^{+0.023}_{-0.024}$	$D_M(0.15)$	642.2	$643^{+17}_{-17}$
$\tau$	0.0532	$0.053^{+0.023}_{-0.021}$	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.605^{+0.022}_{-0.022}$	$H(0.38)$	82.92	$82.9^{+1.4}_{-1.3}$
$Y_P$	0.2463	$0.246^{+0.045}_{-0.047}$	$\sigma_8/h^{0.5}$	0.9835	$0.984^{+0.031}_{-0.032}$	$D_M(0.38)$	1531.3	$1532^{+34}_{-35}$
$\ln(10^{10} A_s)$	3.0389	$3.039^{+0.048}_{-0.045}$	$r_{drag} h$	99.43	$99.3^{+3.2}_{-3.1}$	$H(0.51)$	89.65	$89.6^{+1.2}_{-1.1}$
$n_s$	0.9671	$0.966^{+0.023}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	2.430	$2.433^{+0.079}_{-0.084}$	$D_M(0.51)$	1983.5	$1985^{+40}_{-42}$
$y_{cal}$	1.0002	$1.0004^{+0.0065}_{-0.0063}$	$z_{re}$	7.57	$7.5^{+2.2}_{-2.3}$	$H(0.61)$	95.28	$95.3^{+1.0}_{-0.94}$
$A_{100}^{PS}$	232	$240^{+60}_{-70}$	$10^9 A_s$	2.088	$2.09^{+0.10}_{-0.092}$	$D_M(0.61)$	2307.9	$2309^{+43}_{-45}$
$A_{143}^{PS}$	41	$40^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8777	$1.879^{+0.037}_{-0.034}$	$H(2.33)$	236.14	$236.2^{+2.1}_{-2.1}$
$A_{217}^{PS}$	102.7	$102^{+30}_{-40}$	$D_{40}$	1223.0	$1226^{+44}_{-44}$	$D_M(2.33)$	5764.8	$5766^{+48}_{-51}$
$A_{217}^{CIB}$	44.1	$40^{+20}_{-20}$	$D_{220}$	5714	$5718^{+99}_{-99}$	$f\sigma_8(0.15)$	0.4562	$0.457^{+0.021}_{-0.022}$
$A_{143}^{tSZ}$	6.67	$< 8.77$	$D_{810}$	2534.5	$2535^{+36}_{-34}$	$\sigma_8(0.15)$	0.7466	$0.747^{+0.020}_{-0.020}$
$r_{143 \times 217}^{PS}$	0.625	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	815.7	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	0.4743	$0.475^{+0.018}_{-0.018}$
$r_{143 \times 217}^{CIB}$	0.80	—	$D_{2000}$	230.2	$230.1^{+5.8}_{-5.9}$	$\sigma_8(0.38)$	0.6617	$0.662^{+0.018}_{-0.018}$
$\xi^{tSZ \times CIB}$	0.21	—	$n_{s,0.002}$	0.9671	$0.966^{+0.023}_{-0.021}$	$f\sigma_8(0.51)$	0.4728	$0.473^{+0.016}_{-0.016}$
$A^{kSZ}$	0.0	—	$Y_P$	0.2463	$0.246^{+0.045}_{-0.047}$	$\sigma_8(0.51)$	0.6192	$0.619^{+0.017}_{-0.017}$
$A_{100}^{dust}$	1.01	$1.01^{+0.51}_{-0.51}$	$Y_P^{BBN}$	0.2477	$0.247^{+0.045}_{-0.047}$	$f\sigma_8(0.61)$	0.4677	$0.468^{+0.015}_{-0.015}$
$A_{143}^{dust}$	0.979	$0.96^{+0.46}_{-0.45}$	Age/Gyr	13.801	$13.80^{+0.11}_{-0.12}$	$\sigma_8(0.61)$	0.5891	$0.589^{+0.016}_{-0.016}$
$A_{217}^{dust}$	0.973	$0.97^{+0.27}_{-0.27}$	$z_*$	1089.98	$1090.0^{+1.5}_{-1.4}$	$f\sigma_8(2.33)$	0.2970	$0.2969^{+0.0086}_{-0.0082}$
$A_{143 \times 217}^{dust}$	1.008	$1.03^{+0.41}_{-0.41}$	$r_*$	144.62	$144.59^{+0.84}_{-0.83}$	$\sigma_8(2.33)$	0.3062	$0.3060^{+0.0094}_{-0.0088}$
$c_{100}$	0.99764	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	1.04109	$1.04107^{+0.00090}_{-0.00092}$	$f_{2000}^{143}$	30.0	$30^{+10}_{-10}$
$c_{217}$	1.00130	$1.0012^{+0.0042}_{-0.0040}$	$D_M(z_*)/\text{Gpc}$	13.891	$13.889^{+0.080}_{-0.079}$	$f_{2000}^{217}$	106.8	$107.0^{+6.6}_{-6.7}$
$c_{TE}$	0.9968	$0.997^{+0.014}_{-0.014}$	$z_{drag}$	1059.78	$1059.8^{+2.6}_{-2.5}$	$f_{2000}^{143 \times 217}$	32.2	$32^{+7}_{-7}$
$c_{EE}$	0.9923	$0.992^{+0.017}_{-0.017}$	$r_{drag}$	147.30	$147.28^{+0.88}_{-0.86}$	$\chi_{simall}^2$	395.88	$396.9 (\nu: 1.5)$
$H_0$	67.50	$67.4^{+2.0}_{-1.9}$	$k_D$	0.14056	$0.1406^{+0.0015}_{-0.0015}$	$\chi_{lowl}^2$	22.85	$23.2 (\nu: 1.0)$
$\Omega_\Lambda$	0.6875	$0.686^{+0.024}_{-0.025}$	$100\theta_D$	0.16090	$0.1609^{+0.0018}_{-0.0017}$	$\chi_{CamSpec}^2$	11499.8	$11515.4 (\nu: 17.0)$
$\Omega_m$	0.3125	$0.314^{+0.025}_{-0.024}$	$z_{eq}$	3388	$3391^{+81}_{-81}$	$\chi_{prior}^2$	2.2	$7.9 (\nu: 6.0)$
$\Omega_m h^2$	0.14240	$0.1425^{+0.0034}_{-0.0034}$	$k_{eq}$	0.010339	$0.01035^{+0.00025}_{-0.00025}$	$\chi_{CMB}^2$	11918.5	$11935.5 (\nu: 17.2)$
$\Omega_m h^3$	0.09612	$0.0961^{+0.0016}_{-0.0015}$	$100\theta_{eq}$	0.8158	$0.815^{+0.016}_{-0.015}$			

Best-fit  $\chi_{eff}^2 = 11920.73$ ;  $\Delta\chi_{eff}^2 = -0.03$ ;  $\bar{\chi}_{eff}^2 = 11943.34$ ;  $\Delta\bar{\chi}_{eff}^2 = 0.88$ ;  $R - 1 = 0.01242$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.02) commander\_dx12.v3.2.29: 22.85 ( $\Delta$  -0.15) CamSpec like\_10.7HM\_1400\_unified: 11499.82 ( $\Delta$  0.17)



# 16.10 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02237^{+0.00048}_{-0.00048}$	$S_8$	$0.819^{+0.034}_{-0.035}$	$D_{\mathrm{M}}(0.15)$	$640^{+12}_{-12}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0026}_{-0.0027}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.018}_{-0.019}$	$H(0.38)$	$83.1^{+1.0}_{-0.95}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0017}_{-0.0016}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.019}_{-0.020}$	$D_{\mathrm{M}}(0.38)$	$1526^{+24}_{-25}$
$\tau$	$0.054^{+0.023}_{-0.022}$	$\sigma_8/h^{0.5}$	$0.980^{+0.029}_{-0.029}$	$H(0.51)$	$89.81^{+0.87}_{-0.83}$
$Y_{\mathrm{P}}$	$0.250^{+0.041}_{-0.045}$	$r_{\mathrm{drag}} h$	$99.9^{+2.2}_{-2.1}$	$D_{\mathrm{M}}(0.51)$	$1977^{+29}_{-30}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040^{+0.049}_{-0.047}$	$\langle d^2 \rangle^{1/2}$	$2.421^{+0.069}_{-0.070}$	$H(0.61)$	$95.41^{+0.78}_{-0.74}$
$n_{\mathrm{s}}$	$0.969^{+0.020}_{-0.018}$	$z_{\mathrm{re}}$	$7.6^{+2.2}_{-2.4}$	$D_{\mathrm{M}}(0.61)$	$2301^{+31}_{-33}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0064}_{-0.0065}$	$10^9 A_{\mathrm{s}}$	$2.09^{+0.10}_{-0.096}$	$H(2.33)$	$235.9^{+1.7}_{-1.7}$
$A_{100}^{\mathrm{PS}}$	$242^{+60}_{-70}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.036}_{-0.033}$	$D_{\mathrm{M}}(2.33)$	$5759^{+39}_{-40}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{40}$	$1220^{+39}_{-39}$	$f\sigma_8(0.15)$	$0.453^{+0.018}_{-0.018}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5721^{+98}_{-98}$	$\sigma_8(0.15)$	$0.746^{+0.021}_{-0.021}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+36}_{-34}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.016}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.75$	$D_{1420}$	$815^{+13}_{-14}$	$\sigma_8(0.38)$	$0.662^{+0.018}_{-0.019}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.31}_{-0.33}$	$D_{2000}$	$229.9^{+5.8}_{-6.1}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.015}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.969^{+0.020}_{-0.018}$	$\sigma_8(0.51)$	$0.619^{+0.017}_{-0.017}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.250^{+0.041}_{-0.045}$	$f\sigma_8(0.61)$	$0.466^{+0.014}_{-0.014}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251^{+0.042}_{-0.045}$	$\sigma_8(0.61)$	$0.589^{+0.016}_{-0.016}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.52}$	Age/Gyr	$13.787^{+0.089}_{-0.092}$	$f\sigma_8(2.33)$	$0.2973^{+0.0085}_{-0.0083}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.47}_{-0.46}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$\sigma_8(2.33)$	$0.3067^{+0.0090}_{-0.0086}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.69^{+0.77}_{-0.74}$	$f_{2000}^{143}$	$30^{+9}_{-10}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.40}_{-0.43}$	$100\theta_*$	$1.04118^{+0.00081}_{-0.00081}$	$f_{2000}^{217}$	$107.3^{+6.4}_{-6.7}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897^{+0.074}_{-0.072}$	$f_{2000}^{143 \times 217}$	$33^{+7}_{-8}$
$c_{217}$	$1.0012^{+0.0042}_{-0.0039}$	$z_{\mathrm{drag}}$	$1060.0^{+2.3}_{-2.3}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.7)$
$c_{TE}$	$0.997^{+0.014}_{-0.014}$	$r_{\mathrm{drag}}$	$147.36^{+0.82}_{-0.80}$	$\chi_{\mathrm{lowl}}^2$	$22.7 (\nu: 0.7)$
$c_{EE}$	$0.994^{+0.017}_{-0.016}$	$k_{\mathrm{D}}$	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.5 (\nu: 16.4)$
$H_0$	$67.8^{+1.4}_{-1.4}$	$100\theta_{\mathrm{D}}$	$0.1610^{+0.0017}_{-0.0017}$	$\chi_{6\mathrm{DF}}^2$	$0.044 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.691^{+0.017}_{-0.017}$	$z_{\mathrm{eq}}$	$3377^{+61}_{-61}$	$\chi_{\mathrm{MGS}}^2$	$1.42 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.309^{+0.017}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00019}_{-0.00019}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 (\nu: 0.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0026}_{-0.0025}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.0)$
$\Omega_{\mathrm{m}} h^3$	$0.0962^{+0.0014}_{-0.0015}$	$100\theta_{\mathrm{s,eq}}$	$0.4519^{+0.0060}_{-0.0058}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.5)$
$\sigma_8$	$0.807^{+0.023}_{-0.023}$	$H(0.15)$	$73.1^{+1.3}_{-1.2}$	$\chi_{\mathrm{CMB}}^2$	$11935.2 (\nu: 16.5)$

$\bar{\chi}_{\mathrm{eff}}^2 = 11949.00$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.71$ ;  $R - 1 = 0.01838$



# 16.11 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02228^{+0.00054}_{-0.00052}$	$\sigma_8$	$0.809^{+0.019}_{-0.018}$	$100\theta_{\mathrm{s,eq}}$	$0.4501^{+0.0072}_{-0.0072}$
$\Omega_{\mathrm{c}} h^2$	$0.1197^{+0.0033}_{-0.0033}$	$S_8$	$0.828^{+0.034}_{-0.034}$	$H(0.15)$	$72.7^{+1.6}_{-1.5}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0018}_{-0.0017}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.454^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$643^{+15}_{-16}$
$\tau$	$0.054^{+0.022}_{-0.020}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.017}_{-0.017}$	$H(0.38)$	$82.8^{+1.3}_{-1.2}$
$Y_{\mathrm{P}}$	$0.244^{+0.044}_{-0.047}$	$\sigma_8/h^{0.5}$	$0.986^{+0.024}_{-0.025}$	$D_{\mathrm{M}}(0.38)$	$1534^{+31}_{-32}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.041}_{-0.041}$	$r_{\mathrm{drag}} h$	$99.2^{+2.8}_{-2.7}$	$H(0.51)$	$89.6^{+1.1}_{-1.0}$
$n_{\mathrm{s}}$	$0.965^{+0.022}_{-0.020}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.062}_{-0.065}$	$D_{\mathrm{M}}(0.51)$	$1987^{+37}_{-38}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0064}_{-0.0063}$	$z_{\mathrm{re}}$	$7.6^{+2.1}_{-2.1}$	$H(0.61)$	$95.21^{+0.95}_{-0.87}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.088}_{-0.084}$	$D_{\mathrm{M}}(0.61)$	$2311^{+40}_{-41}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.036}_{-0.030}$	$H(2.33)$	$236.3^{+1.9}_{-1.9}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{40}$	$1229^{+41}_{-43}$	$D_{\mathrm{M}}(2.33)$	$5768^{+46}_{-47}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{220}$	$5721^{+99}_{-100}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.70$	$D_{810}$	$2535^{+35}_{-33}$	$\sigma_8(0.15)$	$0.747^{+0.018}_{-0.017}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.014}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$230.4^{+5.7}_{-6.0}$	$\sigma_8(0.38)$	$0.662^{+0.016}_{-0.016}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.965^{+0.022}_{-0.020}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.244^{+0.044}_{-0.047}$	$\sigma_8(0.51)$	$0.619^{+0.016}_{-0.015}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.51}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.245^{+0.044}_{-0.047}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.012}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.47}_{-0.45}$	Age/Gyr	$13.81^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	$0.589^{+0.015}_{-0.015}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$f\sigma_8(2.33)$	$0.2970^{+0.0081}_{-0.0078}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.42}$	$r_*$	$144.58^{+0.75}_{-0.76}$	$\sigma_8(2.33)$	$0.3061^{+0.0091}_{-0.0085}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04104^{+0.00087}_{-0.00091}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888^{+0.073}_{-0.073}$	$f_{2000}^{217}$	$106.8^{+6.6}_{-6.6}$
$c_{TE}$	$0.996^{+0.014}_{-0.014}$	$z_{\mathrm{drag}}$	$1059.7^{+2.5}_{-2.4}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$c_{EE}$	$0.992^{+0.017}_{-0.017}$	$r_{\mathrm{drag}}$	$147.27^{+0.82}_{-0.81}$	$\chi_{\mathrm{lensing}}^2$	$9.29 (\nu: 0.3)$
$H_0$	$67.4^{+1.8}_{-1.7}$	$k_{\mathrm{D}}$	$0.1407^{+0.0014}_{-0.0015}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$\Omega_{\Lambda}$	$0.685^{+0.021}_{-0.022}$	$100\theta_{\mathrm{D}}$	$0.1608^{+0.0017}_{-0.0017}$	$\chi_{\mathrm{lowl}}^2$	$23.4 (\nu: 1.0)$
$\Omega_{\mathrm{m}}$	$0.315^{+0.022}_{-0.021}$	$z_{\mathrm{eq}}$	$3393^{+73}_{-72}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 (\nu: 15.9)$
$\Omega_{\mathrm{m}} h^2$	$0.1426^{+0.0031}_{-0.0030}$	$k_{\mathrm{eq}}$	$0.01036^{+0.00022}_{-0.00022}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0016}_{-0.0015}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.014}$	$\chi_{\mathrm{CMB}}^2$	$11944.3 (\nu: 17.1)$
$\bar{\chi}_{\mathrm{eff}}^2 = 11952.12; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.68; R - 1 = 0.01489$					



# 16.12 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236^{+0.00048}_{-0.00047}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1528^{+23}_{-24}$
$\Omega_{\mathrm{c}}h^2$	$0.1191^{+0.0024}_{-0.0025}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.015}_{-0.016}$	$H(0.51)$	$89.76^{+0.88}_{-0.82}$
$100\theta_{\mathrm{MC}}$	$1.0410^{+0.0017}_{-0.0016}$	$\sigma_8/h^{0.5}$	$0.983^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.51)$	$1979^{+28}_{-29}$
$\tau$	$0.055^{+0.021}_{-0.019}$	$r_{\mathrm{drag}}h$	$99.8^{+2.1}_{-2.0}$	$H(0.61)$	$95.37^{+0.79}_{-0.73}$
$Y_{\mathrm{P}}$	$0.248^{+0.042}_{-0.044}$	$\langle d^2 \rangle^{1/2}$	$2.430^{+0.055}_{-0.057}$	$D_{\mathrm{M}}(0.61)$	$2303^{+30}_{-32}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.039}_{-0.040}$	$z_{\mathrm{re}}$	$7.8^{+2.0}_{-2.0}$	$H(2.33)$	$236.0^{+1.6}_{-1.6}$
$n_{\mathrm{s}}$	$0.968^{+0.020}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.083}_{-0.083}$	$D_{\mathrm{M}}(2.33)$	$5760^{+38}_{-40}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0065}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.035}_{-0.030}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$D_{40}$	$1224^{+38}_{-40}$	$\sigma_8(0.15)$	$0.748^{+0.018}_{-0.017}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5725^{+96}_{-98}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+36}_{-33}$	$\sigma_8(0.38)$	$0.663^{+0.016}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$230.2^{+5.8}_{-6.0}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.015}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.020}_{-0.018}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.011}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.248^{+0.042}_{-0.044}$	$\sigma_8(0.61)$	$0.591^{+0.015}_{-0.014}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.250^{+0.042}_{-0.044}$	$f\sigma_8(2.33)$	$0.2978^{+0.0078}_{-0.0074}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.791^{+0.088}_{-0.092}$	$\sigma_8(2.33)$	$0.3071^{+0.0083}_{-0.0080}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.52}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$f_{2000}^{143}$	$30^{+9}_{-10}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.48}_{-0.45}$	$r_*$	$144.67^{+0.69}_{-0.70}$	$f_{2000}^{217}$	$107.1^{+6.4}_{-6.6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	$1.04115^{+0.00080}_{-0.00080}$	$f_{2000}^{143\times 217}$	$32^{+7}_{-7}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.43}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895^{+0.068}_{-0.069}$	$\chi_{\mathrm{lensing}}^2$	$9.33\,(\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.9^{+2.2}_{-2.3}$	$\chi_{\mathrm{simall}}^2$	$397.1\,(\nu: 1.7)$
$c_{217}$	$1.0012^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.34^{+0.78}_{-0.77}$	$\chi_{\mathrm{lowl}}^2$	$22.9\,(\nu: 0.7)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$k_{\mathrm{D}}$	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8\,(\nu: 15.8)$
$c_{EE}$	$0.993^{+0.016}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.1610^{+0.0017}_{-0.0016}$	$\chi_{6\mathrm{DF}}^2$	$0.048\,(\nu: 0.0)$
$H_0$	$67.7^{+1.4}_{-1.3}$	$z_{\mathrm{eq}}$	$3380^{+56}_{-57}$	$\chi_{\mathrm{MGS}}^2$	$1.34\,(\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.016}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01032^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7\,(\nu: 0.9)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.016}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.011}_{-0.010}$	$\chi_{\mathrm{prior}}^2$	$7.8\,(\nu: 6.0)$
$\Omega_{\mathrm{m}}h^2$	$0.1421^{+0.0023}_{-0.0024}$	$100\theta_{\mathrm{s,eq}}$	$0.4515^{+0.0055}_{-0.0053}$	$\chi_{\mathrm{CMB}}^2$	$11944.2\,(\nu: 16.6)$
$\Omega_{\mathrm{m}}h^3$	$0.0962^{+0.0014}_{-0.0014}$	$H(0.15)$	$73.0^{+1.2}_{-1.1}$	$\chi_{\mathrm{BAO}}^2$	$6.0\,(\nu: 0.5)$
$\sigma_8$	$0.809^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$640^{+11}_{-12}$		
$S_8$	$0.822^{+0.028}_{-0.028}$	$H(0.38)$	$83.1^{+1.0}_{-0.92}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.04; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.63; R - 1 = 0.02077$$



### 16.13 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02255^{+0.00053}_{-0.00053}$	$\sigma_8$	$0.807^{+0.023}_{-0.023}$	$100\theta_{\mathrm{s,eq}}$	$0.4545^{+0.0067}_{-0.0077}$
$\Omega_{\mathrm{c}} h^2$	$0.1178^{+0.0035}_{-0.0030}$	$S_8$	$0.807^{+0.041}_{-0.036}$	$H(0.15)$	$73.7^{+1.4}_{-1.6}$
$100\theta_{\mathrm{MC}}$	$1.0416^{+0.0015}_{-0.0018}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.023}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$633^{+16}_{-13}$
$\tau$	$0.056^{+0.021}_{-0.023}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.597^{+0.022}_{-0.020}$	$H(0.38)$	$83.6^{+1.1}_{-1.2}$
$Y_{\mathrm{P}}$	$0.261^{+0.037}_{-0.043}$	$\sigma_8/h^{0.5}$	$0.975^{+0.031}_{-0.030}$	$D_{\mathrm{M}}(0.38)$	$1513^{+32}_{-28}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.047}_{-0.048}$	$r_{\mathrm{drag}} h$	$101.1^{+2.6}_{-2.9}$	$H(0.51)$	$90.24^{+0.91}_{-1.1}$
$n_{\mathrm{s}}$	$0.976^{+0.019}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	$2.398^{+0.080}_{-0.076}$	$D_{\mathrm{M}}(0.51)$	$1962^{+38}_{-33}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0062}_{-0.0065}$	$z_{\mathrm{re}}$	$7.8^{+2.1}_{-2.4}$	$H(0.61)$	$95.78^{+0.83}_{-0.92}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.10^{+0.10}_{-0.099}$	$D_{\mathrm{M}}(0.61)$	$2285^{+41}_{-36}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.034}_{-0.032}$	$H(2.33)$	$235.3^{+2.0}_{-1.9}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{40}$	$1208^{+43}_{-37}$	$D_{\mathrm{M}}(2.33)$	$5741^{+46}_{-43}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{220}$	$5727^{+92}_{-99}$	$f\sigma_8(0.15)$	$0.447^{+0.021}_{-0.019}$
$A_{143}^{\mathrm{tSZ}}$	$< 9.07$	$D_{810}$	$2537^{+33}_{-33}$	$\sigma_8(0.15)$	$0.747^{+0.020}_{-0.021}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.29}_{-0.31}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.468^{+0.018}_{-0.016}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$229.3^{+6.6}_{-5.9}$	$\sigma_8(0.38)$	$0.663^{+0.017}_{-0.019}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.976^{+0.019}_{-0.021}$	$f\sigma_8(0.51)$	$0.468^{+0.016}_{-0.015}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.261^{+0.037}_{-0.043}$	$\sigma_8(0.51)$	$0.621^{+0.017}_{-0.018}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.46}_{-0.53}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.262^{+0.038}_{-0.043}$	$f\sigma_8(0.61)$	$0.464^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.42}_{-0.47}$	Age/Gyr	$13.75^{+0.11}_{-0.098}$	$\sigma_8(0.61)$	$0.591^{+0.016}_{-0.018}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$z_*$	$1090.1^{+1.5}_{-1.5}$	$f\sigma_8(2.33)$	$0.2986^{+0.0082}_{-0.0088}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.04^{+0.38}_{-0.40}$	$r_*$	$144.82^{+0.76}_{-0.82}$	$\sigma_8(2.33)$	$0.3084^{+0.0080}_{-0.0093}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$100\theta_*$	$1.04140^{+0.00080}_{-0.00088}$	$f_{2000}^{143}$	$31^{+9}_{-10}$
$c_{217}$	$1.0013^{+0.0042}_{-0.0043}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907^{+0.075}_{-0.078}$	$f_{2000}^{217}$	$108.1^{+6.7}_{-7.3}$
$c_{TE}$	$0.999^{+0.014}_{-0.014}$	$z_{\mathrm{drag}}$	$1060.7^{+2.2}_{-2.3}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-7}$
$c_{EE}$	$0.996^{+0.015}_{-0.017}$	$r_{\mathrm{drag}}$	$147.44^{+0.83}_{-0.83}$	$\chi_{\mathrm{simall}}^2$	$397.2 (\nu: 2.0)$
$H_0$	$68.5^{+1.6}_{-1.8}$	$k_{\mathrm{D}}$	$0.1400^{+0.0014}_{-0.0012}$	$\chi_{\mathrm{lowl}}^2$	$21.8 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.700^{+0.018}_{-0.023}$	$100\theta_{\mathrm{D}}$	$0.1614^{+0.0017}_{-0.0018}$	$\chi_{\mathrm{CamSpec}}^2$	$11518.2 (\nu: 20.7)$
$\Omega_{\mathrm{m}}$	$0.300^{+0.023}_{-0.018}$	$z_{\mathrm{eq}}$	$3353^{+76}_{-71}$	$\chi_{\mathrm{H073p45}}^2$	$8.9 (\nu: 3.3)$
$\Omega_{\mathrm{m}} h^2$	$0.1409^{+0.0032}_{-0.0030}$	$k_{\mathrm{eq}}$	$0.01023^{+0.00023}_{-0.00022}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0966^{+0.0014}_{-0.0015}$	$100\theta_{\mathrm{eq}}$	$0.823^{+0.013}_{-0.015}$	$\chi_{\mathrm{CMB}}^2$	$11937.2 (\nu: 19.4)$
$\bar{\chi}_{\mathrm{eff}}^2 = 11954.03; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -0.24; R - 1 = 0.04865$					



# 16.14 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02231^{+0.00058}_{-0.00054}$	$\sigma_8$	$0.809^{+0.021}_{-0.018}$	$100\theta_{\mathrm{s,eq}}$	$0.4505^{+0.0082}_{-0.0077}$
$\Omega_{\mathrm{c}} h^2$	$0.1195^{+0.0035}_{-0.0037}$	$S_8$	$0.827^{+0.042}_{-0.043}$	$H(0.15)$	$72.8^{+1.8}_{-1.6}$
$100\theta_{\mathrm{MC}}$	$1.0409^{+0.0019}_{-0.0018}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.453^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.15)$	$642^{+17}_{-17}$
$\tau$	$0.054^{+0.020}_{-0.013}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.021}_{-0.021}$	$H(0.38)$	$82.9^{+1.4}_{-1.3}$
$Y_{\mathrm{P}}$	$0.246^{+0.045}_{-0.046}$	$\sigma_8/h^{0.5}$	$0.985^{+0.030}_{-0.029}$	$D_{\mathrm{M}}(0.38)$	$1532^{+34}_{-36}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.045}_{-0.032}$	$r_{\mathrm{drag}} h$	$99.4^{+3.2}_{-3.0}$	$H(0.51)$	$89.6^{+1.2}_{-1.1}$
$n_{\mathrm{s}}$	$0.967^{+0.023}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	$2.435^{+0.078}_{-0.081}$	$D_{\mathrm{M}}(0.51)$	$1984^{+40}_{-42}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0065}_{-0.0063}$	$z_{\mathrm{re}}$	$< 9.54$	$H(0.61)$	$95.3^{+1.0}_{-0.94}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.097}_{-0.065}$	$D_{\mathrm{M}}(0.61)$	$2309^{+43}_{-46}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.036}_{-0.033}$	$H(2.33)$	$236.2^{+2.1}_{-2.1}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{40}$	$1225^{+44}_{-44}$	$D_{\mathrm{M}}(2.33)$	$5765^{+48}_{-51}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{220}$	$5717^{+99}_{-99}$	$f\sigma_8(0.15)$	$0.457^{+0.021}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.81$	$D_{810}$	$2535^{+35}_{-34}$	$\sigma_8(0.15)$	$0.748^{+0.019}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.017}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$230.1^{+5.8}_{-6.0}$	$\sigma_8(0.38)$	$0.663^{+0.017}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.967^{+0.023}_{-0.021}$	$f\sigma_8(0.51)$	$0.474^{+0.015}_{-0.015}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.246^{+0.045}_{-0.046}$	$\sigma_8(0.51)$	$0.620^{+0.016}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.51}_{-0.51}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.248^{+0.045}_{-0.046}$	$f\sigma_8(0.61)$	$0.469^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.45}$	Age/Gyr	$13.80^{+0.11}_{-0.12}$	$\sigma_8(0.61)$	$0.590^{+0.016}_{-0.013}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.27}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$f\sigma_8(2.33)$	$0.2974^{+0.0083}_{-0.0066}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.41}_{-0.41}$	$r_*$	$144.59^{+0.84}_{-0.82}$	$\sigma_8(2.33)$	$0.3065^{+0.0090}_{-0.0072}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04108^{+0.00090}_{-0.00092}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.079}_{-0.078}$	$f_{2000}^{217}$	$107.0^{+6.6}_{-6.7}$
$c_{TE}$	$0.997^{+0.014}_{-0.014}$	$z_{\mathrm{drag}}$	$1059.8^{+2.5}_{-2.5}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$c_{EE}$	$0.992^{+0.018}_{-0.017}$	$r_{\mathrm{drag}}$	$147.28^{+0.88}_{-0.86}$	$\chi_{\mathrm{simall}}^2$	$396.8 (\nu: 1.5)$
$H_0$	$67.5^{+2.0}_{-1.9}$	$k_{\mathrm{D}}$	$0.1406^{+0.0015}_{-0.0015}$	$\chi_{\mathrm{lowl}}^2$	$23.2 (\nu: 1.0)$
$\Omega_{\Lambda}$	$0.687^{+0.024}_{-0.024}$	$100\theta_{\mathrm{D}}$	$0.1609^{+0.0018}_{-0.0017}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.2 (\nu: 16.9)$
$\Omega_{\mathrm{m}}$	$0.313^{+0.024}_{-0.024}$	$z_{\mathrm{eq}}$	$3390^{+79}_{-81}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1425^{+0.0033}_{-0.0034}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00024}_{-0.00025}$	$\chi_{\mathrm{CMB}}^2$	$11935.1 (\nu: 16.8)$
$\Omega_{\mathrm{m}} h^3$	$0.0961^{+0.0016}_{-0.0015}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.016}_{-0.015}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11943.03; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.84; R - 1 = 0.01121$$



16.15 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02237^{+0.00049}_{-0.00048}$	$S_8$	$0.820^{+0.033}_{-0.033}$	$D_M(0.15)$	$640^{+12}_{-12}$
$\Omega_c h^2$	$0.1189^{+0.0026}_{-0.0027}$	$\sigma_8 \Omega_m^{0.5}$	$0.449^{+0.018}_{-0.018}$	$H(0.38)$	$83.1^{+1.0}_{-0.95}$
$100\theta_{MC}$	$1.0411^{+0.0017}_{-0.0016}$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.019}_{-0.018}$	$D_M(0.38)$	$1526^{+24}_{-25}$
$\tau$	$0.055^{+0.020}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.982^{+0.027}_{-0.025}$	$H(0.51)$	$89.82^{+0.87}_{-0.81}$
$Y_P$	$0.250^{+0.041}_{-0.043}$	$r_{\text{drag}} h$	$99.9^{+2.2}_{-2.1}$	$D_M(0.51)$	$1977^{+29}_{-30}$
$\ln(10^{10} A_s)$	$3.043^{+0.047}_{-0.032}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.066}_{-0.065}$	$H(0.61)$	$95.42^{+0.78}_{-0.73}$
$n_s$	$0.969^{+0.020}_{-0.018}$	$z_{\text{re}}$	$< 9.62$	$D_M(0.61)$	$2301^{+31}_{-33}$
$y_{\text{cal}}$	$1.0005^{+0.0064}_{-0.0064}$	$10^9 A_s$	$2.10^{+0.10}_{-0.067}$	$H(2.33)$	$235.9^{+1.7}_{-1.7}$
$A_{100}^{\text{PS}}$	$242^{+60}_{-70}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.035}_{-0.033}$	$D_M(2.33)$	$5758^{+38}_{-40}$
$A_{143}^{\text{PS}}$	$40^{+20}_{-20}$	$D_{40}$	$1220^{+39}_{-39}$	$f\sigma_8(0.15)$	$0.454^{+0.017}_{-0.017}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5720^{+97}_{-97}$	$\sigma_8(0.15)$	$0.747^{+0.020}_{-0.016}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+35}_{-34}$	$f\sigma_8(0.38)$	$0.473^{+0.015}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$< 8.81$	$D_{1420}$	$815^{+13}_{-14}$	$\sigma_8(0.38)$	$0.663^{+0.017}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{2000}$	$229.9^{+5.8}_{-6.2}$	$f\sigma_8(0.51)$	$0.472^{+0.014}_{-0.013}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.969^{+0.020}_{-0.018}$	$\sigma_8(0.51)$	$0.620^{+0.016}_{-0.013}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.250^{+0.041}_{-0.043}$	$f\sigma_8(0.61)$	$0.467^{+0.013}_{-0.012}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.251^{+0.041}_{-0.044}$	$\sigma_8(0.61)$	$0.590^{+0.016}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01^{+0.49}_{-0.52}$	Age/Gyr	$13.786^{+0.089}_{-0.092}$	$f\sigma_8(2.33)$	$0.2978^{+0.0081}_{-0.0066}$
$A_{143}^{\text{dust}}$	$0.97^{+0.47}_{-0.45}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$\sigma_8(2.33)$	$0.3071^{+0.0086}_{-0.0069}$
$A_{217}^{\text{dust}}$	$0.97^{+0.26}_{-0.26}$	$r_*$	$144.69^{+0.76}_{-0.74}$	$f_{2000}^{143}$	$30^{+9}_{-10}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.41}_{-0.43}$	$100\theta_*$	$1.04118^{+0.00084}_{-0.00081}$	$f_{2000}^{217}$	$107.3^{+6.3}_{-6.6}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.897^{+0.074}_{-0.072}$	$f_{2000}^{143 \times 217}$	$33^{+7}_{-7}$
$c_{217}$	$1.0012^{+0.0041}_{-0.0040}$	$z_{\text{drag}}$	$1060.0^{+2.3}_{-2.3}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.7)$
$c_{TE}$	$0.997^{+0.014}_{-0.014}$	$r_{\text{drag}}$	$147.36^{+0.82}_{-0.80}$	$\chi_{\text{lowl}}^2$	$22.7 (\nu: 0.7)$
$c_{EE}$	$0.994^{+0.017}_{-0.016}$	$k_D$	$0.1404^{+0.0013}_{-0.0013}$	$\chi_{\text{CamSpec}}^2$	$11515.3 (\nu: 16.2)$
$H_0$	$67.8^{+1.4}_{-1.4}$	$100\theta_D$	$0.1610^{+0.0017}_{-0.0017}$	$\chi_{6\text{DF}}^2$	$0.043 (\nu: 0.0)$
$\Omega_\Lambda$	$0.691^{+0.017}_{-0.017}$	$z_{\text{eq}}$	$3376^{+61}_{-61}$	$\chi_{\text{MGS}}^2$	$1.43 (\nu: 0.1)$
$\Omega_m$	$0.309^{+0.017}_{-0.017}$	$k_{\text{eq}}$	$0.01030^{+0.00019}_{-0.00019}$	$\chi_{\text{DR12BAO}}^2$	$4.5 (\nu: 0.8)$
$\Omega_m h^2$	$0.1419^{+0.0025}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 5.9)$
$\Omega_m h^3$	$0.0962^{+0.0015}_{-0.0015}$	$100\theta_{s,\text{eq}}$	$0.4519^{+0.0060}_{-0.0058}$	$\chi_{\text{BAO}}^2$	$5.95 (\nu: 0.5)$
$\sigma_8$	$0.808^{+0.022}_{-0.018}$	$H(0.15)$	$73.1^{+1.3}_{-1.2}$	$\chi_{\text{CMB}}^2$	$11934.9 (\nu: 16.0)$

$$\bar{\chi}_{\text{eff}}^2 = 11948.72; \Delta\bar{\chi}_{\text{eff}}^2 = 0.73; R - 1 = 0.01724$$



16.16 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229^{+0.00054}_{-0.00052}$	$\sigma_8$	$0.810^{+0.018}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4503^{+0.0072}_{-0.0068}$
$\Omega_{\mathrm{c}}h^2$	$0.1196^{+0.0031}_{-0.0032}$	$S_8$	$0.828^{+0.034}_{-0.034}$	$H(0.15)$	$72.7^{+1.6}_{-1.5}$
$100\theta_{\mathrm{MC}}$	$1.0408^{+0.0018}_{-0.0017}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.454^{+0.019}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$643^{+14}_{-15}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.016}_{-0.017}$	$H(0.38)$	$82.9^{+1.3}_{-1.1}$
$Y_{\mathrm{P}}$	$0.244^{+0.044}_{-0.046}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.023}$	$D_{\mathrm{M}}(0.38)$	$1533^{+30}_{-31}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.039}_{-0.030}$	$r_{\mathrm{drag}}h$	$99.3^{+2.8}_{-2.6}$	$H(0.51)$	$89.6^{+1.1}_{-0.98}$
$n_{\mathrm{s}}$	$0.965^{+0.022}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	$2.440^{+0.062}_{-0.064}$	$D_{\mathrm{M}}(0.51)$	$1986^{+35}_{-37}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0063}_{-0.0062}$	$z_{\mathrm{re}}$	$< 9.51$	$H(0.61)$	$95.23^{+0.93}_{-0.87}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.084}_{-0.063}$	$D_{\mathrm{M}}(0.61)$	$2310^{+38}_{-41}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.034}_{-0.030}$	$H(2.33)$	$236.2^{+1.9}_{-1.9}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{40}$	$1228^{+41}_{-43}$	$D_{\mathrm{M}}(2.33)$	$5767^{+46}_{-47}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{220}$	$5721^{+98}_{-100}$	$f\sigma_8(0.15)$	$0.458^{+0.017}_{-0.017}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.73$	$D_{810}$	$2535^{+35}_{-33}$	$\sigma_8(0.15)$	$0.748^{+0.017}_{-0.015}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.014}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$230.4^{+5.7}_{-6.0}$	$\sigma_8(0.38)$	$0.663^{+0.016}_{-0.013}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.965^{+0.022}_{-0.019}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.244^{+0.044}_{-0.046}$	$\sigma_8(0.51)$	$0.620^{+0.015}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.50}_{-0.51}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246^{+0.044}_{-0.046}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.47}_{-0.45}$	Age/Gyr	$13.81^{+0.11}_{-0.11}$	$\sigma_8(0.61)$	$0.590^{+0.015}_{-0.012}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.27}_{-0.27}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$f\sigma_8(2.33)$	$0.2974^{+0.0079}_{-0.0065}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.42}$	$r_*$	$144.59^{+0.75}_{-0.75}$	$\sigma_8(2.33)$	$0.3065^{+0.0087}_{-0.0071}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0027}$	$100\theta_*$	$1.04105^{+0.00086}_{-0.00090}$	$f_{2000}^{143}$	$30^{+10}_{-10}$
$c_{217}$	$1.0011^{+0.0040}_{-0.0040}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889^{+0.072}_{-0.072}$	$f_{2000}^{217}$	$106.8^{+6.6}_{-6.6}$
$c_{TE}$	$0.996^{+0.014}_{-0.014}$	$z_{\mathrm{drag}}$	$1059.7^{+2.4}_{-2.4}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$c_{EE}$	$0.992^{+0.017}_{-0.017}$	$r_{\mathrm{drag}}$	$147.28^{+0.82}_{-0.80}$	$\chi_{\mathrm{lensing}}^2$	$9.26 (\nu: 0.2)$
$H_0$	$67.4^{+1.8}_{-1.6}$	$k_{\mathrm{D}}$	$0.1406^{+0.0014}_{-0.0015}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.4)$
$\Omega_{\Lambda}$	$0.686^{+0.021}_{-0.021}$	$100\theta_{\mathrm{D}}$	$0.1608^{+0.0018}_{-0.0017}$	$\chi_{\mathrm{lowl}}^2$	$23.4 (\nu: 0.9)$
$\Omega_{\mathrm{m}}$	$0.314^{+0.021}_{-0.021}$	$z_{\mathrm{eq}}$	$3392^{+70}_{-71}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.6 (\nu: 15.9)$
$\Omega_{\mathrm{m}}h^2$	$0.1426^{+0.0029}_{-0.0030}$	$k_{\mathrm{eq}}$	$0.01035^{+0.00021}_{-0.00022}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}}h^3$	$0.0961^{+0.0015}_{-0.0015}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.013}$	$\chi_{\mathrm{CMB}}^2$	$11944.1 (\nu: 16.7)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11951.89; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.64; R - 1 = 0.01571$$



16.17 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02236^{+0.00048}_{-0.00048}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.451^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1527^{+23}_{-24}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0024}_{-0.0024}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.015}_{-0.015}$	$H(0.51)$	$89.77^{+0.88}_{-0.80}$
$100\theta_{\mathrm{MC}}$	$1.0411^{+0.0017}_{-0.0016}$	$\sigma_8/h^{0.5}$	$0.984^{+0.023}_{-0.021}$	$D_{\mathrm{M}}(0.51)$	$1979^{+27}_{-29}$
$\tau$	$0.056^{+0.019}_{-0.014}$	$r_{\mathrm{drag}} h$	$99.8^{+2.1}_{-2.0}$	$H(0.61)$	$95.38^{+0.78}_{-0.71}$
$Y_{\mathrm{P}}$	$0.248^{+0.041}_{-0.043}$	$\langle d^2 \rangle^{1/2}$	$2.431^{+0.055}_{-0.055}$	$D_{\mathrm{M}}(0.61)$	$2303^{+30}_{-31}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.038}_{-0.032}$	$z_{\mathrm{re}}$	$< 9.60$	$H(2.33)$	$235.9^{+1.5}_{-1.6}$
$n_{\mathrm{s}}$	$0.968^{+0.020}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.082}_{-0.066}$	$D_{\mathrm{M}}(2.33)$	$5760^{+38}_{-40}$
$y_{\mathrm{cal}}$	$1.0007^{+0.0063}_{-0.0065}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879^{+0.034}_{-0.030}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{PS}}$	$241^{+60}_{-70}$	$D_{40}$	$1224^{+37}_{-40}$	$\sigma_8(0.15)$	$0.748^{+0.017}_{-0.015}$
$A_{143}^{\mathrm{PS}}$	$40^{+20}_{-20}$	$D_{220}$	$5725^{+96}_{-98}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2536^{+35}_{-33}$	$\sigma_8(0.38)$	$0.663^{+0.016}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+13}_{-13}$	$f\sigma_8(0.51)$	$0.473^{+0.012}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.85$	$D_{2000}$	$230.2^{+5.7}_{-6.0}$	$\sigma_8(0.51)$	$0.621^{+0.015}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.968^{+0.020}_{-0.017}$	$f\sigma_8(0.61)$	$0.468^{+0.011}_{-0.010}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.248^{+0.041}_{-0.043}$	$\sigma_8(0.61)$	$0.591^{+0.014}_{-0.013}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.250^{+0.042}_{-0.044}$	$f\sigma_8(2.33)$	$0.2980^{+0.0076}_{-0.0065}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.790^{+0.088}_{-0.092}$	$\sigma_8(2.33)$	$0.3073^{+0.0082}_{-0.0069}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.49}_{-0.52}$	$z_*$	$1090.0^{+1.5}_{-1.4}$	$f_{2000}^{143}$	$30^{+9}_{-10}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.48}_{-0.45}$	$r_*$	$144.67^{+0.68}_{-0.70}$	$f_{2000}^{217}$	$107.1^{+6.4}_{-6.6}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.27}_{-0.26}$	$100\theta_*$	$1.04116^{+0.00079}_{-0.00080}$	$f_{2000}^{143 \times 217}$	$32^{+7}_{-7}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02^{+0.41}_{-0.43}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895^{+0.068}_{-0.069}$	$\chi_{\mathrm{lensing}}^2$	$9.28 (\nu: 0.3)$
$c_{100}$	$0.9976^{+0.0027}_{-0.0027}$	$z_{\mathrm{drag}}$	$1060.0^{+2.3}_{-2.3}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.7)$
$c_{217}$	$1.0012^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.34^{+0.77}_{-0.77}$	$\chi_{\mathrm{lowl}}^2$	$22.9 (\nu: 0.7)$
$c_{TE}$	$0.997^{+0.014}_{-0.013}$	$k_{\mathrm{D}}$	$0.1405^{+0.0013}_{-0.0013}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 (\nu: 15.7)$
$c_{EE}$	$0.993^{+0.017}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.1610^{+0.0017}_{-0.0016}$	$\chi_{6\mathrm{DF}}^2$	$0.046 (\nu: 0.0)$
$H_0$	$67.7^{+1.4}_{-1.3}$	$z_{\mathrm{eq}}$	$3379^{+56}_{-57}$	$\chi_{\mathrm{MGS}}^2$	$1.35 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.016}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.016}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.011}_{-0.010}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 6.0)$
$\Omega_{\mathrm{m}} h^2$	$0.1421^{+0.0023}_{-0.0024}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0055}_{-0.0053}$	$\chi_{\mathrm{CMB}}^2$	$11944.0 (\nu: 16.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0962^{+0.0014}_{-0.0014}$	$H(0.15)$	$73.0^{+1.2}_{-1.1}$	$\chi_{\mathrm{BAO}}^2$	$6.00 (\nu: 0.5)$
$\sigma_8$	$0.810^{+0.019}_{-0.017}$	$D_{\mathrm{M}}(0.15)$	$640^{+11}_{-12}$		
$S_8$	$0.823^{+0.027}_{-0.027}$	$H(0.38)$	$83.07^{+0.99}_{-0.91}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 0.60; R - 1 = 0.02091$$



16.18 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02256^{+0.00052}_{-0.00053}$	$\sigma_8$	$0.808^{+0.022}_{-0.020}$	$100\theta_{\mathrm{s,eq}}$	$0.4546^{+0.0066}_{-0.0076}$
$\Omega_{\mathrm{c}} h^2$	$0.1177^{+0.0034}_{-0.0030}$	$S_8$	$0.808^{+0.041}_{-0.037}$	$H(0.15)$	$73.7^{+1.4}_{-1.6}$
$100\theta_{\mathrm{MC}}$	$1.0417^{+0.0014}_{-0.0018}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.022}_{-0.020}$	$D_{\mathrm{M}}(0.15)$	$633^{+16}_{-13}$
$\tau$	$0.057^{+0.021}_{-0.015}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.598^{+0.021}_{-0.018}$	$H(0.38)$	$83.6^{+1.1}_{-1.2}$
$Y_{\mathrm{P}}$	$0.261^{+0.037}_{-0.043}$	$\sigma_8/h^{0.5}$	$0.975^{+0.031}_{-0.028}$	$D_{\mathrm{M}}(0.38)$	$1513^{+32}_{-27}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.045}_{-0.035}$	$r_{\mathrm{drag}} h$	$101.1^{+2.6}_{-2.9}$	$H(0.51)$	$90.3^{+1.0}_{-1.0}$
$n_{\mathrm{s}}$	$0.976^{+0.018}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	$2.400^{+0.077}_{-0.069}$	$D_{\mathrm{M}}(0.51)$	$1962^{+38}_{-33}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0062}_{-0.0065}$	$z_{\mathrm{re}}$	$< 9.83$	$H(0.61)$	$95.79^{+0.88}_{-0.92}$
$A_{100}^{\mathrm{PS}}$	$244^{+60}_{-70}$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.097}_{-0.072}$	$D_{\mathrm{M}}(0.61)$	$2284^{+41}_{-36}$
$A_{143}^{\mathrm{PS}}$	$42^{+20}_{-20}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.034}_{-0.031}$	$H(2.33)$	$235.3^{+2.0}_{-1.9}$
$A_{217}^{\mathrm{PS}}$	$101^{+30}_{-30}$	$D_{40}$	$1208^{+43}_{-37}$	$D_{\mathrm{M}}(2.33)$	$5741^{+46}_{-43}$
$A_{217}^{\mathrm{CIB}}$	$41^{+20}_{-20}$	$D_{220}$	$5727^{+91}_{-96}$	$f\sigma_8(0.15)$	$0.448^{+0.021}_{-0.019}$
$A_{143}^{\mathrm{tSZ}}$	$< 9.08$	$D_{810}$	$2537^{+33}_{-33}$	$\sigma_8(0.15)$	$0.748^{+0.020}_{-0.018}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.30}_{-0.31}$	$D_{1420}$	$815^{+13}_{-13}$	$f\sigma_8(0.38)$	$0.469^{+0.017}_{-0.015}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$D_{2000}$	$229.3^{+6.7}_{-6.0}$	$\sigma_8(0.38)$	$0.664^{+0.017}_{-0.015}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.976^{+0.018}_{-0.021}$	$f\sigma_8(0.51)$	$0.469^{+0.016}_{-0.014}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.261^{+0.037}_{-0.043}$	$\sigma_8(0.51)$	$0.622^{+0.016}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.01^{+0.46}_{-0.52}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.262^{+0.037}_{-0.044}$	$f\sigma_8(0.61)$	$0.465^{+0.015}_{-0.013}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.42}_{-0.47}$	Age/Gyr	$13.75^{+0.10}_{-0.097}$	$\sigma_8(0.61)$	$0.592^{+0.015}_{-0.013}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.26}_{-0.27}$	$z_*$	$1090.1^{+1.5}_{-1.5}$	$f\sigma_8(2.33)$	$0.2990^{+0.0080}_{-0.0070}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.04^{+0.39}_{-0.40}$	$r_*$	$144.82^{+0.74}_{-0.82}$	$\sigma_8(2.33)$	$0.3088^{+0.0082}_{-0.0075}$
$c_{100}$	$0.9975^{+0.0027}_{-0.0026}$	$100\theta_*$	$1.04140^{+0.00079}_{-0.00088}$	$f_{2000}^{143}$	$31^{+10}_{-10}$
$c_{217}$	$1.0013^{+0.0042}_{-0.0043}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907^{+0.071}_{-0.078}$	$f_{2000}^{217}$	$108.1^{+6.7}_{-7.3}$
$c_{TE}$	$0.999^{+0.015}_{-0.014}$	$z_{\mathrm{drag}}$	$1060.7^{+2.2}_{-2.4}$	$f_{2000}^{143 \times 217}$	$34^{+6}_{-7}$
$c_{EE}$	$0.996^{+0.015}_{-0.017}$	$r_{\mathrm{drag}}$	$147.44^{+0.83}_{-0.83}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 2.1)$
$H_0$	$68.6^{+1.6}_{-1.8}$	$k_{\mathrm{D}}$	$0.1400^{+0.0014}_{-0.0012}$	$\chi_{\mathrm{lowl}}^2$	$21.8 (\nu: 0.6)$
$\Omega_{\Lambda}$	$0.700^{+0.019}_{-0.023}$	$100\theta_{\mathrm{D}}$	$0.1614^{+0.0017}_{-0.0018}$	$\chi_{\mathrm{CamSpec}}^2$	$11518.1 (\nu: 20.3)$
$\Omega_{\mathrm{m}}$	$0.300^{+0.023}_{-0.019}$	$z_{\mathrm{eq}}$	$3352^{+75}_{-70}$	$\chi_{\mathrm{H073p45}}^2$	$8.9 (\nu: 3.3)$
$\Omega_{\mathrm{m}} h^2$	$0.1409^{+0.0032}_{-0.0029}$	$k_{\mathrm{eq}}$	$0.01023^{+0.00023}_{-0.00021}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 6.2)$
$\Omega_{\mathrm{m}} h^3$	$0.0966^{+0.0014}_{-0.0015}$	$100\theta_{\mathrm{eq}}$	$0.823^{+0.013}_{-0.015}$	$\chi_{\mathrm{CMB}}^2$	$11937.0 (\nu: 18.7)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11953.75; \Delta\bar{\chi}_{\mathrm{eff}}^2 = -0.26; R - 1 = 0.05858$$



# 16.19 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15

Parameter	Best fit	99% limits	Parameter	Best fit	99% limits	Parameter	Best fit	99% limits
$\Omega_b h^2$	0.022378	$0.02228^{+0.00042}_{-0.00042}$	$\sigma_8$	0.8229	$0.808^{+0.020}_{-0.019}$	$100\theta_{s,eq}$	0.4516	$0.4503^{+0.0079}_{-0.0079}$
$\Omega_c h^2$	0.11902	$0.1196^{+0.0037}_{-0.0036}$	$S_8$	0.8360	$0.826^{+0.042}_{-0.042}$	$H(0.15)$	72.99	$72.7^{+1.4}_{-1.4}$
$100\theta_{MC}$	1.04099	$1.04081^{+0.00090}_{-0.00088}$	$\sigma_8 \Omega_m^{0.5}$	0.4579	$0.453^{+0.023}_{-0.023}$	$D_M(0.15)$	640.2	$643^{+14}_{-14}$
$\tau$	0.0706	$0.053^{+0.021}_{-0.022}$	$\sigma_8 \Omega_m^{0.25}$	0.6138	$0.605^{+0.021}_{-0.021}$	$H(0.38)$	83.07	$82.8^{+1.0}_{-0.99}$
$Y_P$	0.2447	$0.2438^{+0.0099}_{-0.0097}$	$\sigma_8/h^{0.5}$	0.9999	$0.984^{+0.031}_{-0.030}$	$D_M(0.38)$	1527.4	$1534^{+28}_{-28}$
$\ln(10^{10} A_s)$	3.0785	$3.038^{+0.044}_{-0.043}$	$r_{drag} h$	99.79	$99.2^{+2.8}_{-2.8}$	$H(0.51)$	89.77	$89.58^{+0.82}_{-0.78}$
$n_s$	0.9681	$0.965^{+0.013}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.471	$2.434^{+0.074}_{-0.072}$	$D_M(0.51)$	1978.9	$1986^{+32}_{-33}$
$y_{cal}$	1.0030	$1.0004^{+0.0063}_{-0.0063}$	$z_{re}$	9.24	$7.5^{+2.1}_{-2.4}$	$H(0.61)$	95.38	$95.21^{+0.67}_{-0.63}$
$A_{100}^{PS}$	235	$240^{+60}_{-60}$	$10^9 A_s$	2.173	$2.086^{+0.093}_{-0.087}$	$D_M(0.61)$	2302.9	$2311^{+35}_{-35}$
$A_{143}^{PS}$	42.8	$39^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	1.8866	$1.877^{+0.031}_{-0.029}$	$H(2.33)$	235.93	$236.2^{+2.2}_{-2.2}$
$A_{217}^{PS}$	105.0	$102^{+30}_{-30}$	$D_{40}$	1234.2	$1227^{+34}_{-33}$	$D_M(2.33)$	5760.1	$5768^{+29}_{-31}$
$A_{217}^{CIB}$	40.7	$40^{+20}_{-20}$	$D_{220}$	5753	$5717^{+100}_{-98}$	$f\sigma_8(0.15)$	0.4627	$0.457^{+0.021}_{-0.021}$
$A_{143}^{tSZ}$	5.24	$< 8.83$	$D_{810}$	2548.6	$2534^{+35}_{-34}$	$\sigma_8(0.15)$	0.7605	$0.746^{+0.018}_{-0.017}$
$r_{143 \times 217}^{PS}$	0.674	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	821.0	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	0.4818	$0.475^{+0.017}_{-0.017}$
$r_{143 \times 217}^{CIB}$	0.73	—	$D_{2000}$	232.37	$230.3^{+4.1}_{-4.3}$	$\sigma_8(0.38)$	0.6744	$0.661^{+0.015}_{-0.014}$
$\xi^{tSZ \times CIB}$	0.54	—	$n_{s,0.002}$	0.9681	$0.965^{+0.013}_{-0.013}$	$f\sigma_8(0.51)$	0.4806	$0.473^{+0.015}_{-0.015}$
$A^{kSZ}$	1.7	—	$Y_P$	0.2447	$0.2438^{+0.0099}_{-0.0097}$	$\sigma_8(0.51)$	0.6312	$0.618^{+0.014}_{-0.013}$
$A_{100}^{dust}$	1.009	$1.01^{+0.49}_{-0.50}$	$Y_P^{BBN}$	0.2460	$0.245^{+0.010}_{-0.0097}$	$f\sigma_8(0.61)$	0.4756	$0.468^{+0.014}_{-0.014}$
$A_{143}^{dust}$	0.953	$0.96^{+0.44}_{-0.45}$	Age/Gyr	13.791	$13.808^{+0.067}_{-0.069}$	$\sigma_8(0.61)$	0.6006	$0.588^{+0.013}_{-0.013}$
$A_{217}^{dust}$	0.981	$0.97^{+0.27}_{-0.26}$	$z_*$	1089.80	$1089.94^{+0.82}_{-0.77}$	$f\sigma_8(2.33)$	0.3029	$0.2966^{+0.0068}_{-0.0066}$
$A_{143 \times 217}^{dust}$	0.997	$1.03^{+0.42}_{-0.41}$	$r_*$	144.68	$144.61^{+0.82}_{-0.82}$	$\sigma_8(2.33)$	0.3124	$0.3056^{+0.0072}_{-0.0070}$
$c_{100}$	0.99773	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	1.04119	$1.04105^{+0.00081}_{-0.00081}$	$f_{2000}^{143}$	28.8	$30^{+7}_{-7}$
$c_{217}$	1.00116	$1.0011^{+0.0041}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	13.896	$13.890^{+0.076}_{-0.076}$	$f_{2000}^{217}$	106.4	$106.8^{+5.1}_{-5.0}$
$c_{TE}$	0.9951	$0.996^{+0.013}_{-0.013}$	$z_{drag}$	1059.86	$1059.64^{+0.98}_{-1.0}$	$f_{2000}^{143 \times 217}$	31.2	$32^{+5}_{-5}$
$c_{EE}$	0.9916	$0.992^{+0.013}_{-0.013}$	$r_{drag}$	147.34	$147.30^{+0.83}_{-0.83}$	$\chi_{small}^2$	402.51	$396.9 (\nu: 1.4)$
$H_0$	67.73	$67.4^{+1.7}_{-1.6}$	$k_D$	0.14064	$0.14064^{+0.00096}_{-0.00096}$	$\chi_{lowl}^2$	23.31	$23.3 (\nu: 0.5)$
$\Omega_\Lambda$	0.6903	$0.686^{+0.022}_{-0.023}$	$100\theta_D$	0.16076	$0.16082^{+0.00065}_{-0.00059}$	$\chi_{CamSpec}^2$	11498.1	$11514.6 (\nu: 15.7)$
$\Omega_m$	0.3097	$0.314^{+0.023}_{-0.022}$	$z_{eq}$	3379	$3391^{+83}_{-81}$	$\chi_{Aver15}^2$	0.08	$0.9 (\nu: 0.8)$
$\Omega_m h^2$	0.14204	$0.1425^{+0.0035}_{-0.0034}$	$k_{eq}$	0.010313	$0.01035^{+0.00025}_{-0.00025}$	$\chi_{prior}^2$	3.4	$7.8 (\nu: 5.7)$
$\Omega_m h^3$	0.09620	$0.09604^{+0.00088}_{-0.00088}$	$100\theta_{eq}$	0.8175	$0.815^{+0.016}_{-0.016}$	$\chi_{CMB}^2$	11923.9	$11934.8 (\nu: 16.1)$

Best-fit  $\chi_{eff}^2 = 11927.35$ ;  $\bar{\chi}_{eff}^2 = 11943.52$ ;  $R - 1 = 0.01118$

$\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.08 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 402.51 commander\_dx12\_v3.2\_29: 23.31 CamSpec like\_10.7HM\_1400\_unified: 11498.08



## 16.20 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00039}_{-0.00039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.448^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1528^{+21}_{-20}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0026}_{-0.0026}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.019}_{-0.018}$	$H(0.51)$	$89.73^{+0.63}_{-0.62}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00083}_{-0.00085}$	$\sigma_8/h^{0.5}$	$0.979^{+0.028}_{-0.025}$	$D_{\mathrm{M}}(0.51)$	$1980^{+24}_{-24}$
$\tau$	$0.053^{+0.021}_{-0.021}$	$r_{\mathrm{drag}} h$	$99.8^{+2.1}_{-2.0}$	$H(0.61)$	$95.33^{+0.53}_{-0.52}$
$Y_{\mathrm{P}}$	$0.244^{+0.010}_{-0.0098}$	$\langle d^2 \rangle^{1/2}$	$2.424^{+0.068}_{-0.061}$	$D_{\mathrm{M}}(0.61)$	$2304^{+26}_{-26}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.038^{+0.045}_{-0.041}$	$z_{\mathrm{re}}$	$7.6^{+2.1}_{-2.2}$	$H(2.33)$	$235.8^{+1.6}_{-1.6}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.095}_{-0.085}$	$D_{\mathrm{M}}(2.33)$	$5763^{+25}_{-25}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0062}_{-0.0062}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875^{+0.029}_{-0.027}$	$f\sigma_8(0.15)$	$0.453^{+0.017}_{-0.017}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1224^{+32}_{-31}$	$\sigma_8(0.15)$	$0.745^{+0.018}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5721^{+98}_{-100}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2534^{+34}_{-33}$	$\sigma_8(0.38)$	$0.660^{+0.016}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.83$	$D_{2000}$	$230.4^{+3.9}_{-4.3}$	$\sigma_8(0.51)$	$0.618^{+0.015}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.466^{+0.013}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.244^{+0.010}_{-0.0098}$	$\sigma_8(0.61)$	$0.588^{+0.014}_{-0.013}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.245^{+0.010}_{-0.0098}$	$f\sigma_8(2.33)$	$0.2966^{+0.0070}_{-0.0064}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.798^{+0.057}_{-0.057}$	$\sigma_8(2.33)$	$0.3059^{+0.0072}_{-0.0067}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.49}_{-0.51}$	$z_*$	$1089.83^{+0.68}_{-0.66}$	$f_{2000}^{143}$	$29^{+8}_{-7}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.45}$	$r_*$	$144.75^{+0.65}_{-0.64}$	$f_{2000}^{217}$	$106.6^{+5.1}_{-4.9}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	$1.04113^{+0.00075}_{-0.00074}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.40}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.903^{+0.063}_{-0.061}$	$\chi_{\mathrm{simall}}^2$	$397.0 (\nu: 1.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.70^{+0.96}_{-1.0}$	$\chi_{\mathrm{lowl}}^2$	$22.93 (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.44^{+0.71}_{-0.67}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 (\nu: 15.9)$
$c_{TE}$	$0.997^{+0.012}_{-0.013}$	$k_{\mathrm{D}}$	$0.14053^{+0.00083}_{-0.00086}$	$\chi_{\mathrm{Aver15}}^2$	$0.9 (\nu: 0.8)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16080^{+0.00063}_{-0.00058}$	$\chi_{6\mathrm{DF}}^2$	$0.046 (\nu: 0.0)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$z_{\mathrm{eq}}$	$3375^{+61}_{-61}$	$\chi_{\mathrm{MGS}}^2$	$1.36 (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.016}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00019}_{-0.00018}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.016}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.011}_{-0.011}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1419^{+0.0025}_{-0.0025}$	$100\theta_{\mathrm{s,eq}}$	$0.4519^{+0.0060}_{-0.0058}$	$\chi_{\mathrm{BAO}}^2$	$6.0 (\nu: 0.5)$
$\Omega_{\mathrm{m}} h^3$	$0.09604^{+0.00088}_{-0.00085}$	$H(0.15)$	$73.0^{+1.0}_{-1.0}$	$\chi_{\mathrm{CMB}}^2$	$11934.6 (\nu: 15.8)$
$\sigma_8$	$0.806^{+0.020}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$641^{+10}_{-10}$		
$S_8$	$0.819^{+0.033}_{-0.032}$	$H(0.38)$	$83.03^{+0.77}_{-0.75}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.33; R - 1 = 0.01547$$



**16.21 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02228^{+0.00042}_{-0.00041}$	$S_8$	$0.828^{+0.033}_{-0.033}$	$D_{\mathrm{M}}(0.15)$	$644^{+12}_{-13}$
$\Omega_{\mathrm{c}} h^2$	$0.1197^{+0.0031}_{-0.0031}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.454^{+0.018}_{-0.018}$	$H(0.38)$	$82.81^{+0.96}_{-0.88}$
$100\theta_{\mathrm{MC}}$	$1.04080^{+0.00091}_{-0.00086}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.606^{+0.016}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1534^{+24}_{-25}$
$\tau$	$0.053^{+0.020}_{-0.020}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.024}$	$H(0.51)$	$89.56^{+0.78}_{-0.71}$
$Y_{\mathrm{P}}$	$0.2437^{+0.0095}_{-0.0095}$	$r_{\mathrm{drag}} h$	$99.2^{+2.5}_{-2.4}$	$D_{\mathrm{M}}(0.51)$	$1987^{+29}_{-30}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040^{+0.040}_{-0.039}$	$\langle d^2 \rangle^{1/2}$	$2.439^{+0.057}_{-0.057}$	$H(0.61)$	$95.20^{+0.63}_{-0.57}$
$n_{\mathrm{s}}$	$0.965^{+0.012}_{-0.012}$	$z_{\mathrm{re}}$	$7.6^{+1.9}_{-2.1}$	$D_{\mathrm{M}}(0.61)$	$2312^{+31}_{-32}$
$y_{\mathrm{cal}}$	$1.0005^{+0.0062}_{-0.0063}$	$10^9 A_{\mathrm{s}}$	$2.091^{+0.084}_{-0.080}$	$H(2.33)$	$236.3^{+1.9}_{-1.9}$
$A_{100}^{\mathrm{PS}}$	$240^{+60}_{-60}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.028}_{-0.028}$	$D_{\mathrm{M}}(2.33)$	$5769^{+28}_{-29}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1229^{+31}_{-32}$	$f\sigma_8(0.15)$	$0.458^{+0.016}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-40}$	$D_{220}$	$5720^{+100}_{-100}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2535^{+34}_{-34}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.014}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.82$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.013}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.31}_{-0.33}$	$D_{2000}$	$230.3^{+4.0}_{-4.4}$	$f\sigma_8(0.51)$	$0.474^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.965^{+0.012}_{-0.012}$	$\sigma_8(0.51)$	$0.619^{+0.012}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2437^{+0.0095}_{-0.0095}$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.011}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450^{+0.0095}_{-0.0096}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.012}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.49}_{-0.51}$	Age/Gyr	$13.809^{+0.064}_{-0.067}$	$f\sigma_8(2.33)$	$0.2969^{+0.0062}_{-0.0060}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.45}$	$z_*$	$1089.95^{+0.77}_{-0.73}$	$\sigma_8(2.33)$	$0.3059^{+0.0066}_{-0.0067}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.28}_{-0.26}$	$r_*$	$144.58^{+0.72}_{-0.72}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.42}_{-0.41}$	$100\theta_*$	$1.04103^{+0.00080}_{-0.00077}$	$f_{2000}^{217}$	$106.8^{+5.0}_{-4.9}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888^{+0.067}_{-0.069}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$z_{\mathrm{drag}}$	$1059.6^{+1.0}_{-1.0}$	$\chi_{\mathrm{lensing}}^2$	$9.28 (\nu: 0.2)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$r_{\mathrm{drag}}$	$147.27^{+0.73}_{-0.74}$	$\chi_{\mathrm{simall}}^2$	$396.9 (\nu: 1.3)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14067^{+0.00086}_{-0.00092}$	$\chi_{\mathrm{lowl}}^2$	$23.40 (\nu: 0.4)$
$H_0$	$67.3^{+1.5}_{-1.4}$	$100\theta_{\mathrm{D}}$	$0.16081^{+0.00065}_{-0.00057}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 (\nu: 14.8)$
$\Omega_{\Lambda}$	$0.685^{+0.019}_{-0.020}$	$z_{\mathrm{eq}}$	$3393^{+70}_{-70}$	$\chi_{\mathrm{Aver15}}^2$	$0.9 (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.315^{+0.020}_{-0.019}$	$k_{\mathrm{eq}}$	$0.01036^{+0.00021}_{-0.00022}$	$\chi_{\mathrm{prior}}^2$	$7.9 (\nu: 5.7)$
$\Omega_{\mathrm{m}} h^2$	$0.1426^{+0.0029}_{-0.0029}$	$100\theta_{\mathrm{eq}}$	$0.815^{+0.014}_{-0.013}$	$\chi_{\mathrm{CMB}}^2$	$11943.6 (\nu: 16.1)$
$\Omega_{\mathrm{m}} h^3$	$0.09605^{+0.00088}_{-0.00087}$	$100\theta_{\mathrm{s,eq}}$	$0.4501^{+0.0069}_{-0.0066}$		
$\sigma_8$	$0.809^{+0.016}_{-0.016}$	$H(0.15)$	$72.6^{+1.3}_{-1.2}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.40; R - 1 = 0.01479$$



**16.22 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02232^{+0.00039}_{-0.00039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1529^{+19}_{-20}$
$\Omega_{\mathrm{c}} h^2$	$0.1191^{+0.0025}_{-0.0024}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.015}_{-0.015}$	$H(0.51)$	$89.70^{+0.62}_{-0.59}$
$100\theta_{\mathrm{MC}}$	$1.04089^{+0.00084}_{-0.00085}$	$\sigma_8/h^{0.5}$	$0.982^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.51)$	$1981^{+23}_{-23}$
$\tau$	$0.055^{+0.019}_{-0.019}$	$r_{\mathrm{drag}} h$	$99.7^{+2.0}_{-1.9}$	$H(0.61)$	$95.31^{+0.52}_{-0.51}$
$Y_{\mathrm{P}}$	$0.2439^{+0.0097}_{-0.0097}$	$\langle d^2 \rangle^{1/2}$	$2.432^{+0.054}_{-0.052}$	$D_{\mathrm{M}}(0.61)$	$2305^{+25}_{-25}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.039}_{-0.038}$	$z_{\mathrm{re}}$	$7.7^{+1.9}_{-2.0}$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.084}_{-0.078}$	$D_{\mathrm{M}}(2.33)$	$5764^{+25}_{-25}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0061}_{-0.0061}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.027}_{-0.027}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1226^{+30}_{-30}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5725^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.473^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+33}_{-34}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.80$	$D_{2000}$	$230.5^{+3.9}_{-4.2}$	$\sigma_8(0.51)$	$0.619^{+0.012}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.467^{+0.011}_{-0.010}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2439^{+0.0097}_{-0.0097}$	$\sigma_8(0.61)$	$0.589^{+0.012}_{-0.011}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452^{+0.0098}_{-0.0098}$	$f\sigma_8(2.33)$	$0.2973^{+0.0061}_{-0.0057}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.799^{+0.057}_{-0.058}$	$\sigma_8(2.33)$	$0.3065^{+0.0064}_{-0.0061}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.49}_{-0.50}$	$z_*$	$1089.84^{+0.67}_{-0.65}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.46}_{-0.44}$	$r_*$	$144.71^{+0.60}_{-0.59}$	$f_{2000}^{217}$	$106.6^{+5.0}_{-5.0}$
$A_{217}^{\mathrm{dust}}$	$0.98^{+0.28}_{-0.27}$	$100\theta_*$	$1.04112^{+0.00076}_{-0.00073}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900^{+0.058}_{-0.057}$	$\chi_{\mathrm{lensing}}^2$	$9.29 (\nu: 0.3)$
$c_{100}$	$0.9975^{+0.0029}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.71^{+0.99}_{-1.0}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.40^{+0.64}_{-0.63}$	$\chi_{\mathrm{lowl}}^2$	$23.11 (\nu: 0.3)$
$c_{TE}$	$0.996^{+0.013}_{-0.012}$	$k_{\mathrm{D}}$	$0.14057^{+0.00080}_{-0.00085}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 (\nu: 15.0)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16079^{+0.00063}_{-0.00057}$	$\chi_{\mathrm{Aver15}}^2$	$0.9 (\nu: 0.8)$
$H_0$	$67.6^{+1.2}_{-1.1}$	$z_{\mathrm{eq}}$	$3379^{+56}_{-55}$	$\chi_{6\mathrm{DF}}^2$	$0.050 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.689^{+0.015}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{MGS}}^2$	$1.29 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.311^{+0.015}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.010}_{-0.010}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0024}_{-0.0023}$	$100\theta_{\mathrm{s,eq}}$	$0.4515^{+0.0054}_{-0.0054}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.09606^{+0.00088}_{-0.00086}$	$H(0.15)$	$72.9^{+1.0}_{-0.96}$	$\chi_{\mathrm{CMB}}^2$	$11943.5 (\nu: 15.9)$
$\sigma_8$	$0.808^{+0.016}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	$641.1^{+9.7}_{-9.8}$	$\chi_{\mathrm{BAO}}^2$	$6.1 (\nu: 0.5)$
$S_8$	$0.822^{+0.028}_{-0.027}$	$H(0.38)$	$83.00^{+0.76}_{-0.72}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.34; R - 1 = 0.01579$$



### 16.23 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00042}_{-0.00042}$	$\sigma_8$	$0.809^{+0.019}_{-0.017}$	$100\theta_{s,eq}$	$0.4505^{+0.0079}_{-0.0078}$
$\Omega_c h^2$	$0.1196^{+0.0036}_{-0.0036}$	$S_8$	$0.827^{+0.042}_{-0.042}$	$H(0.15)$	$72.7^{+1.4}_{-1.3}$
$100\theta_{MC}$	$1.04082^{+0.00091}_{-0.00088}$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.023}_{-0.023}$	$D_M(0.15)$	$643^{+14}_{-14}$
$\tau$	$0.054^{+0.018}_{-0.013}$	$\sigma_8 \Omega_m^{0.25}$	$0.605^{+0.021}_{-0.021}$	$H(0.38)$	$82.9^{+1.0}_{-0.97}$
$Y_P$	$0.2438^{+0.0099}_{-0.0096}$	$\sigma_8/h^{0.5}$	$0.985^{+0.030}_{-0.029}$	$D_M(0.38)$	$1533^{+27}_{-28}$
$\ln(10^{10} A_s)$	$3.041^{+0.041}_{-0.029}$	$r_{drag} h$	$99.3^{+2.8}_{-2.8}$	$H(0.51)$	$89.59^{+0.81}_{-0.76}$
$n_s$	$0.965^{+0.013}_{-0.012}$	$\langle d^2 \rangle^{1/2}$	$2.437^{+0.072}_{-0.071}$	$D_M(0.51)$	$1986^{+32}_{-33}$
$y_{cal}$	$1.0004^{+0.0063}_{-0.0063}$	$z_{re}$	$< 9.41$	$H(0.61)$	$95.23^{+0.67}_{-0.61}$
$A_{100}^{PS}$	$240^{+60}_{-60}$	$10^9 A_s$	$2.092^{+0.088}_{-0.060}$	$D_M(0.61)$	$2310^{+34}_{-35}$
$A_{143}^{PS}$	$39^{+20}_{-20}$	$10^9 A_s e^{-2\tau}$	$1.877^{+0.030}_{-0.029}$	$H(2.33)$	$236.2^{+2.2}_{-2.2}$
$A_{217}^{PS}$	$102^{+30}_{-30}$	$D_{40}$	$1227^{+34}_{-33}$	$D_M(2.33)$	$5768^{+29}_{-31}$
$A_{217}^{CIB}$	$40^{+20}_{-20}$	$D_{220}$	$5717^{+100}_{-98}$	$f\sigma_8(0.15)$	$0.457^{+0.021}_{-0.022}$
$A_{143}^{tSZ}$	$< 8.83$	$D_{810}$	$2534^{+34}_{-34}$	$\sigma_8(0.15)$	$0.747^{+0.017}_{-0.015}$
$r_{143 \times 217}^{PS}$	$0.66^{+0.31}_{-0.33}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.38)$	$0.475^{+0.017}_{-0.018}$
$r_{143 \times 217}^{CIB}$	—	$D_{2000}$	$230.3^{+4.1}_{-4.3}$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.012}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.965^{+0.013}_{-0.012}$	$f\sigma_8(0.51)$	$0.473^{+0.015}_{-0.015}$
$A^{kSZ}$	—	$Y_P$	$0.2438^{+0.0099}_{-0.0096}$	$\sigma_8(0.51)$	$0.619^{+0.013}_{-0.010}$
$A_{100}^{dust}$	$1.01^{+0.49}_{-0.50}$	$Y_P^{BBN}$	$0.245^{+0.010}_{-0.0097}$	$f\sigma_8(0.61)$	$0.468^{+0.014}_{-0.014}$
$A_{143}^{dust}$	$0.96^{+0.44}_{-0.45}$	Age/Gyr	$13.807^{+0.067}_{-0.069}$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.0097}$
$A_{217}^{dust}$	$0.97^{+0.27}_{-0.26}$	$z_*$	$1089.93^{+0.80}_{-0.78}$	$f\sigma_8(2.33)$	$0.2970^{+0.0065}_{-0.0048}$
$A_{143 \times 217}^{dust}$	$1.03^{+0.42}_{-0.41}$	$r_*$	$144.62^{+0.81}_{-0.82}$	$\sigma_8(2.33)$	$0.3061^{+0.0068}_{-0.0049}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$100\theta_*$	$1.04105^{+0.00082}_{-0.00081}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$c_{217}$	$1.0011^{+0.0041}_{-0.0039}$	$D_M(z_*)/\text{Gpc}$	$13.891^{+0.076}_{-0.076}$	$f_{2000}^{217}$	$106.7^{+5.0}_{-5.0}$
$c_{TE}$	$0.996^{+0.013}_{-0.013}$	$z_{drag}$	$1059.7^{+1.0}_{-1.0}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$r_{drag}$	$147.31^{+0.84}_{-0.83}$	$\chi_{simall}^2$	$396.8 (\nu: 1.4)$
$H_0$	$67.4^{+1.6}_{-1.6}$	$k_D$	$0.14063^{+0.00096}_{-0.00096}$	$\chi_{lowl}^2$	$23.3 (\nu: 0.5)$
$\Omega_\Lambda$	$0.686^{+0.022}_{-0.023}$	$100\theta_D$	$0.16081^{+0.00064}_{-0.00059}$	$\chi_{CamSpec}^2$	$11514.4 (\nu: 15.6)$
$\Omega_m$	$0.314^{+0.023}_{-0.022}$	$z_{eq}$	$3390^{+83}_{-81}$	$\chi_{Aver15}^2$	$0.9 (\nu: 0.8)$
$\Omega_m h^2$	$0.1425^{+0.0035}_{-0.0034}$	$k_{eq}$	$0.01035^{+0.00025}_{-0.00025}$	$\chi_{prior}^2$	$7.8 (\nu: 5.6)$
$\Omega_m h^3$	$0.09604^{+0.00088}_{-0.00089}$	$100\theta_{eq}$	$0.815^{+0.015}_{-0.015}$	$\chi_{CMB}^2$	$11934.5 (\nu: 15.7)$
$\bar{\chi}_{eff}^2 = 11943.23; R - 1 = 0.01041$					



# 16.24 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233^{+0.00039}_{-0.00039}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.449^{+0.018}_{-0.018}$	$D_{\mathrm{M}}(0.38)$	$1528^{+20}_{-20}$
$\Omega_{\mathrm{c}}h^2$	$0.1189^{+0.0026}_{-0.0026}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.018}_{-0.017}$	$H(0.51)$	$89.73^{+0.63}_{-0.62}$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00084}_{-0.00086}$	$\sigma_8/h^{0.5}$	$0.980^{+0.027}_{-0.025}$	$D_{\mathrm{M}}(0.51)$	$1980^{+24}_{-24}$
$\tau$	$0.055^{+0.019}_{-0.013}$	$r_{\mathrm{drag}}h$	$99.8^{+2.1}_{-2.0}$	$H(0.61)$	$95.33^{+0.53}_{-0.52}$
$Y_{\mathrm{P}}$	$0.2440^{+0.0099}_{-0.0098}$	$\langle d^2 \rangle^{1/2}$	$2.427^{+0.066}_{-0.059}$	$D_{\mathrm{M}}(0.61)$	$2304^{+26}_{-26}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.043}_{-0.030}$	$z_{\mathrm{re}}$	$< 9.47$	$H(2.33)$	$235.8^{+1.6}_{-1.7}$
$n_{\mathrm{s}}$	$0.967^{+0.011}_{-0.011}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.092}_{-0.062}$	$D_{\mathrm{M}}(2.33)$	$5763^{+25}_{-25}$
$y_{\mathrm{cal}}$	$1.0004^{+0.0061}_{-0.0062}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.874^{+0.028}_{-0.027}$	$f\sigma_8(0.15)$	$0.454^{+0.017}_{-0.017}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1224^{+32}_{-30}$	$\sigma_8(0.15)$	$0.746^{+0.017}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5721^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.472^{+0.015}_{-0.014}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2534^{+34}_{-34}$	$\sigma_8(0.38)$	$0.661^{+0.015}_{-0.011}$
$A_{217}^{\mathrm{CIB}}$	$40^{+20}_{-20}$	$D_{1420}$	$816^{+12}_{-12}$	$f\sigma_8(0.51)$	$0.471^{+0.014}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.82$	$D_{2000}$	$230.4^{+4.0}_{-4.2}$	$\sigma_8(0.51)$	$0.619^{+0.014}_{-0.010}$
$r_{143\times 217}^{\mathrm{PS}}$	$0.66^{+0.32}_{-0.34}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.011}_{-0.011}$	$f\sigma_8(0.61)$	$0.466^{+0.013}_{-0.012}$
$r_{143\times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2440^{+0.0099}_{-0.0098}$	$\sigma_8(0.61)$	$0.589^{+0.014}_{-0.0096}$
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.245^{+0.010}_{-0.0098}$	$f\sigma_8(2.33)$	$0.2970^{+0.0068}_{-0.0049}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.797^{+0.057}_{-0.057}$	$\sigma_8(2.33)$	$0.3063^{+0.0069}_{-0.0049}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.48}_{-0.49}$	$z_*$	$1089.82^{+0.68}_{-0.66}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143}^{\mathrm{dust}}$	$0.97^{+0.46}_{-0.44}$	$r_*$	$144.76^{+0.65}_{-0.64}$	$f_{2000}^{217}$	$106.6^{+5.2}_{-5.0}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.28}_{-0.26}$	$100\theta_*$	$1.04113^{+0.00075}_{-0.00074}$	$f_{2000}^{143\times 217}$	$32^{+5}_{-5}$
$A_{143\times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.41}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904^{+0.063}_{-0.061}$	$\chi_{\mathrm{simall}}^2$	$396.9\ (\nu: 1.5)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0028}$	$z_{\mathrm{drag}}$	$1059.71^{+0.99}_{-1.0}$	$\chi_{\mathrm{lowl}}^2$	$22.95\ (\nu: 0.4)$
$c_{217}$	$1.0011^{+0.0043}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.44^{+0.71}_{-0.67}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.5\ (\nu: 15.8)$
$c_{TE}$	$0.997^{+0.013}_{-0.013}$	$k_{\mathrm{D}}$	$0.14052^{+0.00084}_{-0.00086}$	$\chi_{\mathrm{Aver15}}^2$	$0.9\ (\nu: 0.8)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16079^{+0.00063}_{-0.00058}$	$\chi_{6\mathrm{DF}}^2$	$0.044\ (\nu: 0.0)$
$H_0$	$67.7^{+1.2}_{-1.2}$	$z_{\mathrm{eq}}$	$3375^{+60}_{-61}$	$\chi_{\mathrm{MGS}}^2$	$1.37\ (\nu: 0.1)$
$\Omega_{\Lambda}$	$0.690^{+0.016}_{-0.016}$	$k_{\mathrm{eq}}$	$0.01030^{+0.00018}_{-0.00019}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6\ (\nu: 0.8)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.016}_{-0.016}$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.012}_{-0.011}$	$\chi_{\mathrm{prior}}^2$	$7.8\ (\nu: 5.8)$
$\Omega_{\mathrm{m}}h^2$	$0.1419^{+0.0025}_{-0.0026}$	$100\theta_{\mathrm{s,eq}}$	$0.4520^{+0.0059}_{-0.0058}$	$\chi_{\mathrm{BAO}}^2$	$5.97\ (\nu: 0.5)$
$\Omega_{\mathrm{m}}h^3$	$0.09605^{+0.00089}_{-0.00084}$	$H(0.15)$	$73.0^{+1.0}_{-1.0}$	$\chi_{\mathrm{CMB}}^2$	$11934.4\ (\nu: 15.6)$
$\sigma_8$	$0.807^{+0.019}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	$640^{+10}_{-9.9}$		
$S_8$	$0.819^{+0.033}_{-0.033}$	$H(0.38)$	$83.04^{+0.78}_{-0.76}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.07; R - 1 = 0.01536$$



16.25 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_b h^2$	$0.02228^{+0.00041}_{-0.00042}$	$S_8$	$0.828^{+0.032}_{-0.033}$	$D_M(0.15)$	$643^{+12}_{-12}$
$\Omega_c h^2$	$0.1196^{+0.0030}_{-0.0031}$	$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.018}_{-0.018}$	$H(0.38)$	$82.83^{+0.95}_{-0.84}$
$100\theta_{MC}$	$1.04081^{+0.00090}_{-0.00087}$	$\sigma_8 \Omega_m^{0.25}$	$0.606^{+0.016}_{-0.016}$	$D_M(0.38)$	$1534^{+23}_{-25}$
$\tau$	$0.055^{+0.018}_{-0.013}$	$\sigma_8/h^{0.5}$	$0.986^{+0.023}_{-0.023}$	$H(0.51)$	$89.58^{+0.77}_{-0.68}$
$Y_P$	$0.2437^{+0.0095}_{-0.0096}$	$r_{\text{drag}} h$	$99.2^{+2.5}_{-2.3}$	$D_M(0.51)$	$1986^{+28}_{-30}$
$\ln(10^{10} A_s)$	$3.042^{+0.038}_{-0.028}$	$\langle d^2 \rangle^{1/2}$	$2.441^{+0.057}_{-0.056}$	$H(0.61)$	$95.21^{+0.62}_{-0.56}$
$n_s$	$0.965^{+0.012}_{-0.011}$	$z_{\text{re}}$	$< 9.38$	$D_M(0.61)$	$2311^{+30}_{-32}$
$y_{\text{cal}}$	$1.0004^{+0.0062}_{-0.0063}$	$10^9 A_s$	$2.095^{+0.081}_{-0.057}$	$H(2.33)$	$236.2^{+1.8}_{-1.9}$
$A_{100}^{\text{PS}}$	$240^{+60}_{-60}$	$10^9 A_s e^{-2\tau}$	$1.878^{+0.027}_{-0.028}$	$D_M(2.33)$	$5768^{+28}_{-30}$
$A_{143}^{\text{PS}}$	$39^{+20}_{-20}$	$D_{40}$	$1229^{+31}_{-31}$	$f\sigma_8(0.15)$	$0.458^{+0.016}_{-0.017}$
$A_{217}^{\text{PS}}$	$102^{+30}_{-30}$	$D_{220}$	$5720^{+100}_{-100}$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.012}$
$A_{217}^{\text{CIB}}$	$40^{+20}_{-20}$	$D_{810}$	$2534^{+33}_{-34}$	$f\sigma_8(0.38)$	$0.476^{+0.013}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$< 8.77$	$D_{1420}$	$816^{+12}_{-12}$	$\sigma_8(0.38)$	$0.662^{+0.012}_{-0.010}$
$r_{143 \times 217}^{\text{PS}}$	$0.66^{+0.32}_{-0.33}$	$D_{2000}$	$230.3^{+4.0}_{-4.4}$	$f\sigma_8(0.51)$	$0.474^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\text{CIB}}$	—	$n_{s,0.002}$	$0.965^{+0.012}_{-0.011}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0093}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2437^{+0.0095}_{-0.0096}$	$f\sigma_8(0.61)$	$0.469^{+0.010}_{-0.011}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.2450^{+0.0095}_{-0.0096}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0088}$
$A_{100}^{\text{dust}}$	$1.00^{+0.49}_{-0.51}$	Age/Gyr	$13.808^{+0.063}_{-0.066}$	$f\sigma_8(2.33)$	$0.2972^{+0.0059}_{-0.0045}$
$A_{143}^{\text{dust}}$	$0.96^{+0.44}_{-0.45}$	$z_*$	$1089.93^{+0.73}_{-0.72}$	$\sigma_8(2.33)$	$0.3063^{+0.0064}_{-0.0048}$
$A_{217}^{\text{dust}}$	$0.97^{+0.27}_{-0.26}$	$r_*$	$144.60^{+0.72}_{-0.71}$	$f_{2000}^{143}$	$30^{+7}_{-7}$
$A_{143 \times 217}^{\text{dust}}$	$1.03^{+0.42}_{-0.42}$	$100\theta_*$	$1.04104^{+0.00080}_{-0.00077}$	$f_{2000}^{217}$	$106.7^{+4.9}_{-4.9}$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$D_M(z_*)/\text{Gpc}$	$13.890^{+0.068}_{-0.068}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$c_{217}$	$1.0011^{+0.0042}_{-0.0040}$	$z_{\text{drag}}$	$1059.7^{+1.0}_{-1.0}$	$\chi_{\text{lensing}}^2$	$9.23 (\nu: 0.2)$
$c_{TE}$	$0.996^{+0.012}_{-0.012}$	$r_{\text{drag}}$	$147.29^{+0.72}_{-0.73}$	$\chi_{\text{simall}}^2$	$396.9 (\nu: 1.4)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$k_D$	$0.14066^{+0.00087}_{-0.00091}$	$\chi_{\text{lowl}}^2$	$23.38 (\nu: 0.4)$
$H_0$	$67.4^{+1.5}_{-1.3}$	$100\theta_D$	$0.16081^{+0.00063}_{-0.00057}$	$\chi_{\text{CamSpec}}^2$	$11513.9 (\nu: 14.7)$
$\Omega_\Lambda$	$0.686^{+0.019}_{-0.019}$	$z_{\text{eq}}$	$3392^{+68}_{-69}$	$\chi_{\text{Aver15}}^2$	$0.9 (\nu: 0.8)$
$\Omega_m$	$0.314^{+0.019}_{-0.019}$	$k_{\text{eq}}$	$0.01035^{+0.00021}_{-0.00021}$	$\chi_{\text{prior}}^2$	$7.9 (\nu: 5.7)$
$\Omega_m h^2$	$0.1426^{+0.0028}_{-0.0029}$	$100\theta_{\text{eq}}$	$0.815^{+0.013}_{-0.013}$	$\chi_{\text{CMB}}^2$	$11943.4 (\nu: 15.7)$
$\Omega_m h^3$	$0.09605^{+0.00088}_{-0.00089}$	$100\theta_{s,\text{eq}}$	$0.4503^{+0.0069}_{-0.0064}$		
$\sigma_8$	$0.809^{+0.015}_{-0.014}$	$H(0.15)$	$72.7^{+1.3}_{-1.2}$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.14; R - 1 = 0.01491$$



**16.26**    **base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5**

Parameter	99% limits	Parameter	99% limits	Parameter	99% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00039}_{-0.00039}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.015}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1529^{+19}_{-20}$
$\Omega_{\mathrm{c}} h^2$	$0.1190^{+0.0024}_{-0.0024}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.015}_{-0.014}$	$H(0.51)$	$89.71^{+0.62}_{-0.60}$
$100\theta_{\mathrm{MC}}$	$1.04089^{+0.00084}_{-0.00085}$	$\sigma_8/h^{0.5}$	$0.983^{+0.022}_{-0.021}$	$D_{\mathrm{M}}(0.51)$	$1981^{+23}_{-23}$
$\tau$	$0.056^{+0.018}_{-0.014}$	$r_{\mathrm{drag}} h$	$99.7^{+1.9}_{-1.9}$	$H(0.61)$	$95.32^{+0.52}_{-0.51}$
$Y_{\mathrm{P}}$	$0.2439^{+0.0097}_{-0.0097}$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.053}_{-0.051}$	$D_{\mathrm{M}}(0.61)$	$2305^{+25}_{-25}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.038}_{-0.029}$	$z_{\mathrm{re}}$	$< 9.46$	$H(2.33)$	$235.9^{+1.5}_{-1.5}$
$n_{\mathrm{s}}$	$0.966^{+0.011}_{-0.010}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.082}_{-0.060}$	$D_{\mathrm{M}}(2.33)$	$5764^{+25}_{-25}$
$y_{\mathrm{cal}}$	$1.0006^{+0.0060}_{-0.0061}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876^{+0.027}_{-0.027}$	$f\sigma_8(0.15)$	$0.455^{+0.014}_{-0.014}$
$A_{100}^{\mathrm{PS}}$	$239^{+60}_{-60}$	$D_{40}$	$1226^{+30}_{-30}$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$39^{+20}_{-20}$	$D_{220}$	$5725^{+100}_{-100}$	$f\sigma_8(0.38)$	$0.474^{+0.012}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$102^{+30}_{-30}$	$D_{810}$	$2535^{+33}_{-34}$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.010}$
$A_{217}^{\mathrm{CIB}}$	$39^{+20}_{-20}$	$D_{1420}$	$816^{+11}_{-12}$	$f\sigma_8(0.51)$	$0.472^{+0.011}_{-0.010}$
$A_{143}^{\mathrm{tSZ}}$	$< 8.77$	$D_{2000}$	$230.5^{+3.9}_{-4.1}$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0095}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.32}_{-0.33}$	$n_{\mathrm{s},0.002}$	$0.966^{+0.011}_{-0.010}$	$f\sigma_8(0.61)$	$0.467^{+0.010}_{-0.0095}$
$r_{143 \times 217}^{\mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2439^{+0.0097}_{-0.0097}$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.0090}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452^{+0.0097}_{-0.0098}$	$f\sigma_8(2.33)$	$0.2975^{+0.0060}_{-0.0046}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.799^{+0.057}_{-0.058}$	$\sigma_8(2.33)$	$0.3067^{+0.0062}_{-0.0048}$
$A_{100}^{\mathrm{dust}}$	$1.00^{+0.49}_{-0.50}$	$z_*$	$1089.84^{+0.67}_{-0.65}$	$f_{2000}^{143}$	$29^{+7}_{-7}$
$A_{143}^{\mathrm{dust}}$	$0.96^{+0.45}_{-0.44}$	$r_*$	$144.72^{+0.60}_{-0.59}$	$f_{2000}^{217}$	$106.6^{+5.0}_{-5.0}$
$A_{217}^{\mathrm{dust}}$	$0.97^{+0.28}_{-0.27}$	$100\theta_*$	$1.04112^{+0.00077}_{-0.00073}$	$f_{2000}^{143 \times 217}$	$32^{+5}_{-5}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03^{+0.43}_{-0.42}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900^{+0.057}_{-0.057}$	$\chi_{\mathrm{lensing}}^2$	$9.23 (\nu: 0.2)$
$c_{100}$	$0.9975^{+0.0028}_{-0.0027}$	$z_{\mathrm{drag}}$	$1059.71^{+0.98}_{-1.0}$	$\chi_{\mathrm{simall}}^2$	$397.1 (\nu: 1.6)$
$c_{217}$	$1.0011^{+0.0043}_{-0.0040}$	$r_{\mathrm{drag}}$	$147.40^{+0.63}_{-0.63}$	$\chi_{\mathrm{lowl}}^2$	$23.11 (\nu: 0.3)$
$c_{TE}$	$0.996^{+0.012}_{-0.012}$	$k_{\mathrm{D}}$	$0.14056^{+0.00080}_{-0.00085}$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 (\nu: 14.9)$
$c_{EE}$	$0.992^{+0.013}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16079^{+0.00063}_{-0.00058}$	$\chi_{\mathrm{Aver15}}^2$	$0.9 (\nu: 0.8)$
$H_0$	$67.6^{+1.1}_{-1.1}$	$z_{\mathrm{eq}}$	$3378^{+55}_{-55}$	$\chi_{6\mathrm{DF}}^2$	$0.048 (\nu: 0.0)$
$\Omega_{\Lambda}$	$0.690^{+0.015}_{-0.015}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00017}_{-0.00017}$	$\chi_{\mathrm{MGS}}^2$	$1.30 (\nu: 0.1)$
$\Omega_{\mathrm{m}}$	$0.310^{+0.015}_{-0.015}$	$100\theta_{\mathrm{eq}}$	$0.817^{+0.010}_{-0.010}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 (\nu: 0.8)$
$\Omega_{\mathrm{m}} h^2$	$0.1420^{+0.0023}_{-0.0023}$	$100\theta_{\mathrm{s,eq}}$	$0.4516^{+0.0053}_{-0.0053}$	$\chi_{\mathrm{prior}}^2$	$7.8 (\nu: 5.8)$
$\Omega_{\mathrm{m}} h^3$	$0.09606^{+0.00088}_{-0.00086}$	$H(0.15)$	$72.9^{+1.0}_{-0.95}$	$\chi_{\mathrm{CMB}}^2$	$11943.4 (\nu: 15.6)$
$\sigma_8$	$0.808^{+0.016}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$641.0^{+9.6}_{-9.7}$	$\chi_{\mathrm{BAO}}^2$	$6.02 (\nu: 0.5)$
$S_8$	$0.822^{+0.028}_{-0.027}$	$H(0.38)$	$83.00^{+0.75}_{-0.72}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.15; R - 1 = 0.01663$$