Table 6. Cosmological Parameter Summary

Description	Symbol	*WMAP*-only	*WMAP*+BAO+SN
Parameters for Standard ΛCDM Model [a]			
Age of universe	t_0	13.69 ± 0.13 Gyr	13.73 ± 0.12 Gyr
Hubble constant	H_0	$71.9^{+2.6}_{-2.7}$ km/s/Mpc	70.1 ± 1.3 km/s/Mpc
Baryon density	Ω_b	0.0441 ± 0.0030	0.0462 ± 0.0015
Physical baryon density	$\Omega_b h^2$	0.02273 ± 0.00062	0.02265 ± 0.00059
Dark matter density	Ω_c	0.214 ± 0.027	0.233 ± 0.013
Physical dark matter density	$\Omega_c h^2$	0.1099 ± 0.0062	0.1143 ± 0.0034
Dark energy density	Ω_Λ	0.742 ± 0.030	0.721 ± 0.015
Curvature fluctuation amplitude, $k_0 = 0.002$ Mpc^{-1} [b]	$\Delta^2_{\mathcal{R}}$	$(2.41 \pm 0.11) \times 10^{-9}$	$(2.457^{+0.092}_{-0.093}) \times 10^{-9}$
Fluctuation amplitude at $8h^{-1}$ Mpc	σ_8	0.796 ± 0.036	0.817 ± 0.026
$l(l+1)C^{TT}_{220}/2\pi$	C_{220}	5756 ± 42 μK^2	5748 ± 41 μK^2
Scalar spectral index	n_s	$0.963^{+0.014}_{-0.015}$	$0.960^{+0.014}_{-0.013}$
Redshift of matter-radiation equality	$z_{\rm eq}$	3176^{+151}_{-150}	3280^{+88}_{-89}
Angular diameter distance to matter-radiation eq.[c]	$d_A(z_{\rm eq})$	14279^{+186}_{-189} Mpc	14172^{+141}_{-139} Mpc
Redshift of decoupling	z_*	1090.51 ± 0.95	$1091.00^{+0.72}_{-0.73}$
Age at decoupling	t_*	380081^{+5843}_{-5841} yr	375938^{+3148}_{-3115} yr
Angular diameter distance to decoupling [c,d]	$d_A(z_*)$	14115^{+188}_{-191} Mpc	14006^{+142}_{-141} Mpc
Sound horizon at decoupling [d]	$r_s(z_*)$	146.8 ± 1.8 Mpc	145.6 ± 1.2 Mpc
Acoustic scale at decoupling [d]	$l_A(z_*)$	$302.08^{+0.83}_{-0.84}$	$302.11^{+0.84}_{-0.82}$
Reionization optical depth	τ	0.087 ± 0.017	0.084 ± 0.016
Redshift of reionization	$z_{\rm reion}$	11.0 ± 1.4	10.8 ± 1.4
Age at reionization	$t_{\rm reion}$	427^{+88}_{-65} Myr	432^{+90}_{-67} Myr
Parameters for Extended Models [e]			
Total density [f]	$\Omega_{\rm tot}$	$1.099^{+0.100}_{-0.085}$	1.0052 ± 0.0064
Equation of state [g]	w	$-1.06^{+0.41}_{-0.42}$	$-0.972^{+0.061}_{-0.060}$
Tensor to scalar ratio, $k_0 = 0.002$ Mpc^{-1} [b,h]	r	< 0.43 (95% CL)	< 0.20 (95% CL)
Running of spectral index, $k_0 = 0.002$ Mpc^{-1} [b,i]	$dn_s/d\ln k$	-0.037 ± 0.028	$-0.032^{+0.021}_{-0.020}$
Neutrino density [j]	$\Omega_\nu h^2$	< 0.014 (95% CL)	< 0.0065 (95% CL)
Neutrino mass [j]	$\sum m_\nu$	< 1.3 eV (95% CL)	< 0.61 eV (95% CL)
Number of light neutrino families [k]	$N_{\rm eff}$	> 2.3 (95% CL)	4.4 ± 1.5

[a]The parameters reported in the first section assume the 6 parameter ΛCDM model, first using *WMAP* data only (Dunkley et al. 2008), then using *WMAP*+BAO+SN data (Komatsu et al. 2008).

[b]$k = 0.002$ Mpc^{-1} $\longleftrightarrow$ $l_{\rm eff} \approx 30$.

[c]Comoving angular diameter distance.

[d] $l_A(z_*) \equiv \pi\, d_A(z_*)\, r_s(z_*)^{-1}$.

[e] The parameters reported in the second section place limits on deviations from the ΛCDM model, first using *WMAP* data only (Dunkley et al. 2008), then using *WMAP*+BAO+SN data (Komatsu et al. 2008). A complete listing of all parameter values and uncertainties for each of the extended models studied is available on LAMBDA.

[f] Allows non-zero curvature, $\Omega_k \neq 0$.

[g] Allows $w \neq -1$, but assumes w is constant.

[h] Allows tensors modes but no running in scalar spectral index.

[i] Allows running in scalar spectral index but no tensor modes.

[j] Allows a massive neutrino component, $\Omega_\nu \neq 0$.

[k] Allows $N_{\rm eff}$ number of relativistic species. The last column adds the HST prior to the other data sets.

REFERENCES

Dunkley, J. et al. 2008, ApJS

Komatsu, E. et al. 2008, ApJS