	Θ	Jax-cosmo + NUTS						Jax-cosmo + EMCEE				CCL + EMCEE	
		$\hat{R}_{\text{emu}}$	$\hat{R}_{\text{EH}}$	$\hat{R}_{\text{EH}}$	$N_{\text{eff, emu}}$	$N_{\text{eff, EH}}$	$N_{\text{eff, EH}}$	$\hat{R}_{\text{emu}}$	$\hat{R}_{\text{EH}}$	$N_{\text{eff, emu}}$	$N_{\text{eff, EH}}$	$\hat{R}$	N_{eff}
Cosmology	σ_8	1.03	1.00	1.00	100.87	226.46	5089.51	1.01	1.01	26643.62	23122.48	1.01	19805.50
	Ω_c	1.04	1.00	1.00	98.96	231.33	7251.65	1.00	1.01	27577.44	24662.87	1.01	14532.90
	Ω_b	1.02	1.01	1.00	119.01	215.91	16921.67	1.00	1.00	25359.79	27730.30	1.00	30962.90
	h	1.03	1.01	1.00	154.39	216.93	13851.48	1.01	1.01	28905.07	26988.88	1.00	28334.30
	n_s	1.02	1.00	1.00	162.39	224.01	10428.34	1.00	1.00	28725.95	24831.30	1.00	27392.04
Multiplicative	m_1	1.00	1.00	1.00	26899.59	28466.05	28454.33	1.00	1.00	29733.33	27025.16	1.00	30976.37
	m_2	1.00	1.00	1.00	30162.91	31501.89	27208.89	1.01	1.00	30498.90	20029.92	1.00	29987.82
	m_3	1.00	1.00	1.00	22418.98	14947.42	25078.72	1.02	1.00	28544.70	29542.97	1.00	28032.17
	m_4	1.00	1.00	1.00	23150.80	19668.46	23255.40	1.02	1.00	28117.92	29991.51	1.00	30023.22
Shifts (WL)	$\delta_\gamma^{(1)}$	1.00	1.00	1.00	11641.79	14501.72	26754.64	1.01	1.00	30254.03	28360.70	1.00	27762.59
	$\delta_\gamma^{(2)}$	1.00	1.00	1.00	26897.94	28750.67	27599.23	1.02	1.01	26809.42	20617.51	1.00	28058.48
	$\delta_\gamma^{(3)}$	1.00	1.00	1.00	22043.15	20569.63	31982.40	1.00	1.00	27572.08	27945.59	1.00	30458.54
	$\delta_\gamma^{(4)}$	1.00	1.00	1.00	20535.00	14632.33	22938.51	1.00	1.00	31715.25	30385.49	1.00	28910.44
IA	A_{IA}	1.00	1.00	1.00	929.52	2104.89	13579.69	1.01	1.01	25075.28	24416.51	1.00	24353.05
	η	1.00	1.01	1.00	326.75	338.89	14657.57	1.00	1.00	31347.98	28231.86	1.00	26321.44
Bias	b_1	1.02	1.00	1.00	167.24	466.70	7656.80	1.00	1.00	27075.28	21016.71	1.00	22206.50
	b_2	1.02	1.00	1.00	145.47	379.87	6715.03	1.01	1.01	27275.00	18163.87	1.01	18339.23
	b_3	1.02	1.00	1.00	151.85	405.45	6268.85	1.02	1.01	23209.75	24325.27	1.01	19986.38
	b_4	1.02	1.00	1.00	149.39	426.17	6294.94	1.01	1.01	27189.63	24430.25	1.01	17597.54
	b_5	1.01	1.00	1.00	167.87	469.73	6586.74	1.02	1.01	24167.24	22575.16	1.00	18870.94
Shifts (GC)	$\delta_g^{(1)}$	1.00	1.00	1.00	27164.49	28204.16	36942.66	1.01	1.00	30043.51	29989.68	1.00	29401.92
	$\delta_g^{(2)}$	1.00	1.00	1.00	30664.71	30095.51	33449.80	1.01	1.00	30967.70	29218.06	1.01	27575.15
	$\delta_g^{(3)}$	1.00	1.00	1.00	27771.71	29376.60	38055.21	1.00	1.00	29050.33	28852.30	1.00	28726.68
	$\delta_g^{(4)}$	1.00	1.00	1.00	28329.21	28084.89	30844.33	1.00	1.00	31404.21	30403.77	1.00	30375.75
	$\delta_g^{(5)}$	1.00	1.00	1.00	26172.76	28371.17	29383.91	1.01	1.00	31069.95	22340.16	1.00	30034.18

Table 1: Sampler diagnostics - NUTS ($N_{\text{samples}} = 15000$, $\varepsilon = 0.1$, $N_{\text{step}} = 31$, time ~ 20 hours, $N_{\text{steps, emu}} = [372\,793, 403\,357]$, $N_{\text{steps, EH}} = [383\,467, 401\,015]$), EMCEE ($N_{\text{samples}} = 10000$, $N_{\text{walkers}} = 50$, $\varepsilon = 10^{-4}$, time ~ 7 hours 15 minutes), CCL ($N_{\text{samples}} = 10000$, $N_{\text{walkers}} = 50$, $\varepsilon = 10^{-4}$, time ~ 36 hours)

	Θ	Jax-cosmo + NUTS				Jax-cosmo + EMCEE				CCL + EMCEE	
		μ_{emu}	σ_{emu}	μ_{EH}	σ_{EH}	μ_{emu}	σ_{emu}	μ_{EH}	σ_{EH}	μ	σ
Cosmology	σ_8	0.841	0.065	0.832	0.063	0.845	0.063	0.830	0.063	0.816	0.062
	Ω_c	0.229	0.025	0.227	0.025	0.228	0.023	0.228	0.025	0.236	0.026
	Ω_b	0.043	0.007	0.045	0.007	0.043	0.007	0.045	0.007	0.046	0.007
	h	0.717	0.051	0.714	0.049	0.720	0.050	0.712	0.050	0.708	0.049
	n_s	0.960	0.057	0.959	0.055	0.959	0.057	0.961	0.056	0.952	0.055
Multiplicative	m_1	0.012	0.023	0.011	0.023	0.013	0.023	0.013	0.025	0.011	0.022
	m_2	0.011	0.022	0.011	0.023	0.011	0.022	0.011	0.022	0.010	0.022
	m_3	0.019	0.022	0.019	0.022	0.018	0.021	0.019	0.022	0.018	0.022
	m_4	0.009	0.022	0.008	0.022	0.008	0.022	0.007	0.022	0.007	0.022
Shifts (WL)	$\delta_\gamma^{(1)}$	-0.002	0.015	-0.002	0.015	-0.002	0.015	-0.002	0.015	-0.003	0.015
	$\delta_\gamma^{(2)}$	-0.029	0.012	-0.029	0.012	-0.029	0.012	-0.030	0.012	-0.029	0.012
	$\delta_\gamma^{(3)}$	0.007	0.010	0.007	0.010	0.007	0.010	0.008	0.010	0.008	0.010
	$\delta_\gamma^{(4)}$	-0.020	0.020	-0.020	0.020	-0.020	0.019	-0.020	0.020	-0.020	0.020
IA	A_{IA}	0.363	0.187	0.352	0.182	0.372	0.187	0.371	0.175	0.367	0.174
	η	0.034	2.590	-0.111	2.525	0.126	2.193	0.055	2.227	-0.041	2.367
Bias	b_1	1.381	0.126	1.372	0.129	1.377	0.122	1.376	0.129	1.416	0.133
	b_2	1.691	0.131	1.681	0.138	1.685	0.129	1.685	0.136	1.726	0.143
	b_3	1.650	0.124	1.643	0.131	1.641	0.119	1.646	0.127	1.685	0.135
	b_4	2.041	0.154	2.028	0.161	2.032	0.149	2.034	0.158	2.080	0.166
	b_5	2.076	0.163	2.067	0.170	2.065	0.158	2.075	0.167	2.118	0.172
Shifts (GC)	$\delta_g^{(1)}$	0.001	0.007	0.001	0.007	0.001	0.007	0.001	0.007	0.001	0.007
	$\delta_g^{(2)}$	0.001	0.007	0.002	0.007	0.002	0.007	0.002	0.007	0.002	0.007
	$\delta_g^{(3)}$	0.002	0.006	0.002	0.006	0.002	0.006	0.002	0.006	0.002	0.006
	$\delta_g^{(4)}$	0.002	0.009	0.003	0.009	0.003	0.010	0.003	0.010	0.003	0.010
	$\delta_g^{(5)}$	0.000	0.010	-0.001	0.010	0.000	0.010	-0.001	0.010	0.000	0.010

Table 2: Summary statistics of all the parameters

NUTS with EH

- Number of steps: [201026, 242731]

- Step size: 0.01

- Number of tree depth: 8

- Time taken: 13 hours 27 minutes

Thinning is always decreasing the effective sample size. However, the number of effective samples per sample, $\frac{N_{\text{eff}}}{n}$, increases until the thinning is large enough that the thinned samples are uncorrelated.