

MoG model with  $d = 20$ ,  $q = 5$ , and  $n = m = 5 \cdot 10^4$ 

Statistic	$\mu$ -deformation			$\Sigma_{ii}$ -deformation		
	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)
$t_{SW}$	$0.04957^{+0.018}_{-0.02}$	$0.06694^{+0.017}_{-0.017}$	3023	$0.01679^{+0.005}_{-0.0063}$	$0.02315^{+0.0045}_{-0.005}$	3197
$t_{\overline{KS}}$	<b><math>0.00482^{+0.0013}_{-0.0018}</math></b>	<b><math>0.00667^{+0.0011}_{-0.0013}</math></b>	2966	<b><math>0.00175^{+0.00052}_{-0.00068}</math></b>	<b><math>0.00248^{+0.00042}_{-0.00052}</math></b>	3185
$t_{SKS}$	$0.03647^{+0.011}_{-0.014}$	$0.04821^{+0.011}_{-0.012}$	<b>2899</b>	$0.01329^{+0.003}_{-0.0043}$	$0.01759^{+0.0025}_{-0.003}$	<b>3022</b>
$t_{FGD}$	$0.05778^{+0.026}_{-0.027}$	$0.0787^{+0.023}_{-0.021}$	4047	$0.01945^{+0.0063}_{-0.0081}$	$0.02651^{+0.0053}_{-0.0056}$	4507
$t_{MMD}$	$0.04425^{+0.019}_{-0.018}$	$0.06215^{+0.017}_{-0.015}$	10204	$0.00923^{+0.0058}_{-0.0051}$	$0.01305^{+0.0053}_{-0.0044}$	11217
$t_{LLR}$	$0.00021^{+0.00013}_{-0.00014}$	$0.0003^{+0.00013}_{-0.00014}$	5911	$7e-05^{+5e-05}_{-4e-05}$	$0.0001^{+5e-05}_{-4e-05}$	6304

Statistic	$\Sigma_{i \neq j}$ -deformation			pow <sub>+</sub> -deformation		
	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)
$t_{SW}$	$0.02162^{+0.0056}_{-0.008}$	$0.02935^{+0.0045}_{-0.0055}$	<b>3410</b>	$0.00581^{+0.0017}_{-0.0022}$	$0.00798^{+0.0015}_{-0.0017}$	<b>3157</b>
$t_{\overline{KS}}$	$1.00146^{+0.00074}_{-0.00031}$	$1.00238^{+0.00055}_{-0.00031}$	3967	<b>0.0004</b> $^{+0.00015}_{-0.00017}$	<b>0.00059</b> $^{+0.00013}_{-0.00014}$	3363
$t_{SKS}$	$0.02306^{+0.0071}_{-0.0088}$	$0.03079^{+0.0062}_{-0.0072}$	3553	$0.0043^{+0.0009}_{-0.0013}$	$0.00565^{+0.00074}_{-0.0009}$	3193
$t_{FGD}$	<b>0.00551</b> $^{+0.0015}_{-0.002}$	<b>0.00748</b> $^{+0.0013}_{-0.0013}$	6327	$0.00702^{+0.0021}_{-0.0028}$	$0.00965^{+0.0016}_{-0.0019}$	4870
$t_{MMD}$	$0.01723^{+0.008}_{-0.0072}$	$0.02431^{+0.0069}_{-0.0064}$	11450	$0.00332^{+0.0018}_{-0.0017}$	$0.00467^{+0.0017}_{-0.0014}$	11801
$t_{LLR}$	-	-	-	$2e-05^{+1e-05}_{-1e-05}$	$2e-05^{+1e-05}_{-1e-05}$	6877

Statistic	pow_-deformation			$\mathcal{N}$ -deformation		
	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)
$t_{SW}$	$0.00604^{+0.0017}_{-0.0023}$	$0.00825^{+0.0016}_{-0.0018}$	<b>3051</b>	$0.19318^{+0.025}_{-0.039}$	$0.22704^{+0.019}_{-0.026}$	<b>2403</b>
$t_{\overline{KS}}$	<b><math>0.00042^{+0.00015}_{-0.00018}</math></b>	<b><math>0.00061^{+0.00013}_{-0.00015}</math></b>	3372	<b><math>0.00751^{+0.002}_{-0.0024}</math></b>	<b><math>0.00993^{+0.0018}_{-0.002}</math></b>	2934
$t_{SKS}$	$0.00441^{+0.00092}_{-0.0014}$	$0.00574^{+0.00077}_{-0.00094}$	3324	$0.15874^{+0.023}_{-0.034}$	$0.18473^{+0.019}_{-0.023}$	2726
$t_{FGD}$	$0.00722^{+0.0021}_{-0.0027}$	$0.00987^{+0.0016}_{-0.0019}$	4892	$0.18095^{+0.023}_{-0.038}$	$0.21269^{+0.016}_{-0.02}$	3756
$t_{MMD}$	$0.00353^{+0.0016}_{-0.0015}$	$0.00494^{+0.0014}_{-0.0012}$	11418	$0.43531^{+0.066}_{-0.11}$	$0.51609^{+0.045}_{-0.054}$	8642
$t_{LLR}$	$2e-05^{+1e-05}_{-1e-05}$	$2e-05^{+1e-05}_{-1e-05}$	6991	-	-	-

Statistic	$\mathcal{U}$ -deformation		Timing	
	$\epsilon_{95\%CL}$	$\epsilon_{99\%CL}$	$t$ (s)	$t^{\text{null}}$ (s)
$t_{\text{SW}}$	$0.33394^{+0.044}_{-0.068}$	$0.39248^{+0.033}_{-0.044}$	<b>2354</b>	338
$t_{\overline{\text{KS}}}$	<b><math>0.01211^{+0.003}_{-0.0035}</math></b>	<b><math>0.01575^{+0.0027}_{-0.003}</math></b>	2835	<b>155</b>
$t_{\text{SKS}}$	$0.27395^{+0.041}_{-0.059}$	$0.3188^{+0.033}_{-0.04}$	2601	509
$t_{\text{FGD}}$	$0.31409^{+0.04}_{-0.07}$	$0.36919^{+0.027}_{-0.036}$	3643	2795
$t_{\text{MMD}}$	$0.75353^{+0.12}_{-0.18}$	$0.89336^{+0.078}_{-0.098}$	7700	13860
$t_{\text{LLR}}$	-	-	-	-