

Supplementary Material

APPENDIX 1: TABLE OF VARIANTS

Table S1: ABCG and its ten variants

Version	Sparse	NAG	BPCG	Index	Pattern
0 (ABCG)	FALSE	FALSE	FALSE	FALSE	FALSE
1	FALSE	FALSE	FALSE	TRUE	TRUE
2	TRUE	FALSE	FALSE	FALSE	FALSE
3	FALSE	TRUE	FALSE	FALSE	FALSE
4	TRUE	FALSE	FALSE	TRUE	TRUE
5	FALSE	TRUE	FALSE	TRUE	TRUE
6	TRUE	TRUE	FALSE	TRUE	TRUE
7	FALSE	FALSE	TRUE	FALSE	FALSE
8	FALSE	FALSE	TRUE	TRUE	TRUE
9	TRUE	FALSE	TRUE	FALSE	FALSE
10	TRUE	FALSE	TRUE	TRUE	TRUE

Note: `True` means we implement this technique in this variant, and `False` means we do not implement this technique in this variant. For example, version 5 implements NAG, Index, and Pattern.

APPENDIX 2: TABLES OF NUMERICAL EXPERIMENT RESULTS

Table S2: Results for order-3 nonnegative tensors with $n = 500$ samples

Tensor Size	Version	NMSE Arithmetic Mean $\pm$ SE	Time (s)				
			Arithmetic Mean $\pm$ SE	Geometric Mean	Min	Median	Max
10×3	0	0.017 ± 0.001	1.874 ± 0.061	1.777	0.756	1.849	3.935
	1	0.017 ± 0.001	1.054 ± 0.044	0.966	0.352	1.006	2.688
	2	0.018 ± 0.001	2.116 ± 0.071	1.996	0.757	2.102	4.114
	3	0.017 ± 0.001	2.225 ± 0.067	2.120	0.885	2.224	4.234
	4	0.018 ± 0.001	1.346 ± 0.060	1.218	0.381	1.277	2.998
	5	0.017 ± 0.001	1.450 ± 0.056	1.339	0.398	1.386	3.168
	6	0.017 ± 0.001	1.868 ± 0.073	1.720	0.520	1.810	4.035
	7	0.017 ± 0.001	2.014 ± 0.063	1.914	0.819	2.001	3.383
	8	0.017 ± 0.001	1.252 ± 0.054	1.135	0.443	1.211	2.956
	9	0.017 ± 0.001	2.834 ± 0.113	2.600	0.829	2.681	5.694
	10	0.017 ± 0.001	2.093 ± 0.103	1.828	0.480	1.821	4.795
20×3	0	0.115 ± 0.004	3.931 ± 0.073	3.860	2.086	3.952	6.390
	1	0.115 ± 0.004	2.094 ± 0.043	2.046	1.020	2.139	3.314
	2	0.118 ± 0.004	4.170 ± 0.078	4.091	1.884	4.272	5.912
	3	0.118 ± 0.004	4.639 ± 0.077	4.574	2.955	4.728	7.014
	4	0.118 ± 0.004	2.518 ± 0.051	2.459	1.029	2.588	3.625
	5	0.118 ± 0.004	2.898 ± 0.051	2.849	1.522	2.980	3.958
	6	0.118 ± 0.004	3.879 ± 0.070	3.811	1.999	3.915	5.515
	7	0.114 ± 0.004	4.561 ± 0.076	4.497	2.405	4.636	6.781
	8	0.114 ± 0.004	2.768 ± 0.049	2.722	1.173	2.742	4.529
	9	0.117 ± 0.004	6.315 ± 0.116	6.200	3.526	6.309	9.101
	10	0.117 ± 0.004	4.712 ± 0.096	4.602	2.274	4.747	6.609
30×3	0	0.240 ± 0.005	2.935 ± 0.068	2.852	1.547	2.952	4.793
	1	0.240 ± 0.005	1.600 ± 0.039	1.551	0.865	1.584	2.488
	2	0.241 ± 0.005	2.967 ± 0.077	2.871	1.659	2.931	5.475
	3	0.241 ± 0.005	3.435 ± 0.072	3.360	1.818	3.424	5.760
	4	0.241 ± 0.005	1.774 ± 0.051	1.705	0.973	1.711	3.659
	5	0.241 ± 0.005	2.222 ± 0.053	2.161	1.228	2.160	3.936
	6	0.241 ± 0.005	2.846 ± 0.073	2.757	1.600	2.757	5.172
	7	0.240 ± 0.005	3.561 ± 0.082	3.467	1.808	3.419	5.874
	8	0.240 ± 0.005	2.192 ± 0.058	2.112	1.060	2.142	3.501
	9	0.239 ± 0.005	4.649 ± 0.139	4.433	2.079	4.598	8.300
	10	0.239 ± 0.005	3.328 ± 0.117	3.112	1.475	3.313	5.927
40×3	0	0.323 ± 0.004	2.171 ± 0.053	2.111	1.377	2.099	4.007
	1	0.323 ± 0.004	1.314 ± 0.032	1.279	0.865	1.255	2.528
	2	0.322 ± 0.004	2.250 ± 0.053	2.193	1.439	2.214	4.380

	3	0.321 ± 0.004	2.661 ± 0.053	2.610	1.723	2.676	4.692
	4	0.322 ± 0.004	1.423 ± 0.033	1.389	0.926	1.365	2.847
	5	0.321 ± 0.004	1.812 ± 0.036	1.780	1.225	1.755	3.351
	6	0.321 ± 0.004	2.211 ± 0.045	2.172	1.546	2.114	4.350
	7	0.321 ± 0.004	2.641 ± 0.059	2.577	1.484	2.627	4.666
	8	0.321 ± 0.004	1.684 ± 0.042	1.636	0.984	1.626	3.312
	9	0.321 ± 0.004	3.125 ± 0.083	3.022	1.911	3.034	5.673
	10	0.321 ± 0.004	2.248 ± 0.071	2.151	1.333	2.058	4.529
50×3	0	0.385 ± 0.005	1.876 ± 0.042	1.835	1.327	1.725	3.046
	1	0.385 ± 0.005	1.305 ± 0.027	1.281	0.900	1.216	2.289
	2	0.383 ± 0.004	2.025 ± 0.045	1.982	1.321	1.885	3.622
	3	0.382 ± 0.005	2.272 ± 0.047	2.229	1.676	2.162	3.866
	4	0.383 ± 0.004	1.444 ± 0.029	1.418	1.077	1.360	2.535
	5	0.382 ± 0.005	1.691 ± 0.032	1.663	1.248	1.618	2.760
	6	0.382 ± 0.005	2.053 ± 0.035	2.026	1.566	1.974	3.193
	7	0.384 ± 0.004	2.181 ± 0.054	2.121	1.447	2.010	3.839
	8	0.384 ± 0.004	1.541 ± 0.038	1.499	1.055	1.425	2.697
	9	0.384 ± 0.005	2.659 ± 0.060	2.601	1.889	2.459	4.401
	10	0.384 ± 0.005	2.033 ± 0.046	1.989	1.504	1.897	3.544
60×3	0	0.444 ± 0.004	1.821 ± 0.031	1.797	1.409	1.733	2.765
	1	0.444 ± 0.004	1.403 ± 0.023	1.386	1.079	1.342	2.154
	2	0.444 ± 0.004	1.990 ± 0.033	1.965	1.550	1.887	2.965
	3	0.444 ± 0.004	2.205 ± 0.044	2.166	1.565	2.013	3.808
	4	0.444 ± 0.004	1.577 ± 0.024	1.560	1.213	1.504	2.348
	5	0.444 ± 0.004	1.777 ± 0.031	1.751	1.309	1.641	2.991
	6	0.444 ± 0.004	2.197 ± 0.035	2.171	1.626	2.078	3.722
	7	0.445 ± 0.005	2.013 ± 0.044	1.970	1.442	1.879	3.631
	8	0.445 ± 0.005	1.576 ± 0.032	1.546	1.138	1.478	2.842
	9	0.446 ± 0.004	2.469 ± 0.049	2.427	1.791	2.322	4.521
	10	0.446 ± 0.004	2.047 ± 0.041	2.012	1.483	1.953	3.967
70×3	0	0.497 ± 0.004	1.865 ± 0.032	1.841	1.386	1.791	3.426
	1	0.497 ± 0.004	1.573 ± 0.027	1.552	1.174	1.520	2.861
	2	0.498 ± 0.004	2.054 ± 0.032	2.031	1.577	1.995	3.699
	3	0.495 ± 0.005	2.187 ± 0.042	2.152	1.548	2.084	4.448
	4	0.498 ± 0.004	1.768 ± 0.026	1.751	1.342	1.728	3.095
	5	0.495 ± 0.005	1.947 ± 0.036	1.920	1.332	1.895	4.123
	6	0.495 ± 0.005	2.384 ± 0.039	2.357	1.689	2.332	4.698
	7	0.498 ± 0.004	2.045 ± 0.043	2.006	1.480	1.933	3.964
	8	0.498 ± 0.004	1.746 ± 0.037	1.713	1.246	1.640	3.412
	9	0.500 ± 0.004	2.507 ± 0.055	2.462	1.891	2.387	5.654
	10	0.500 ± 0.004	2.229 ± 0.049	2.190	1.694	2.118	5.110
80×3	0	0.546 ± 0.004	1.943 ± 0.036	1.915	1.439	1.856	3.640
	1	0.546 ± 0.004	1.768 ± 0.031	1.743	1.32	1.700	3.273
	2	0.545 ± 0.004	2.163 ± 0.035	2.138	1.665	2.092	3.992

	3	0.542 ± 0.004	2.282 ± 0.041	2.249	1.654	2.158	3.858
	4	0.545 ± 0.004	1.998 ± 0.032	1.976	1.552	1.935	3.759
	5	0.542 ± 0.004	2.140 ± 0.037	2.112	1.566	2.043	3.686
	6	0.542 ± 0.004	2.645 ± 0.041	2.617	1.959	2.568	4.670
	7	0.547 ± 0.004	2.125 ± 0.044	2.087	1.589	2.002	4.312
	8	0.547 ± 0.004	1.956 ± 0.043	1.920	1.430	1.859	4.544
	9	0.546 ± 0.004	2.600 ± 0.054	2.557	1.902	2.484	6.003
	10	0.546 ± 0.004	2.443 ± 0.050	2.405	1.858	2.371	5.699
90×3	0	0.580 ± 0.004	2.049 ± 0.039	2.016	1.416	1.928	3.341
	1	0.580 ± 0.004	1.991 ± 0.038	1.959	1.441	1.876	3.380
	2	0.580 ± 0.004	2.296 ± 0.036	2.271	1.663	2.216	3.516
	3	0.575 ± 0.004	2.416 ± 0.037	2.387	1.669	2.366	3.210
	4	0.580 ± 0.004	2.269 ± 0.035	2.244	1.697	2.189	3.367
	5	0.575 ± 0.004	2.404 ± 0.038	2.375	1.671	2.367	3.488
	6	0.575 ± 0.004	2.987 ± 0.042	2.958	2.101	2.987	4.231
	7	0.579 ± 0.004	2.257 ± 0.045	2.216	1.541	2.108	3.658
	8	0.579 ± 0.004	2.215 ± 0.045	2.174	1.474	2.062	3.642
	9	0.579 ± 0.004	2.774 ± 0.042	2.744	1.854	2.693	4.205
	10	0.579 ± 0.004	2.729 ± 0.043	2.698	1.886	2.679	4.089
100×3	0	0.611 ± 0.004	2.150 ± 0.038	2.119	1.520	2.074	3.353
	1	0.611 ± 0.004	2.295 ± 0.041	2.262	1.660	2.195	3.702
	2	0.611 ± 0.004	2.451 ± 0.037	2.425	1.801	2.373	3.946
	3	0.603 ± 0.004	2.624 ± 0.054	2.575	1.671	2.484	4.746
	4	0.611 ± 0.004	2.575 ± 0.039	2.547	1.839	2.530	4.168
	5	0.603 ± 0.004	2.708 ± 0.054	2.659	1.815	2.589	4.811
	6	0.603 ± 0.004	3.285 ± 0.059	3.237	2.173	3.170	5.938
	7	0.608 ± 0.004	2.542 ± 0.065	2.468	1.645	2.380	4.636
	8	0.608 ± 0.004	2.963 ± 0.097	2.845	1.831	2.698	8.809
	9	0.609 ± 0.004	3.149 ± 0.061	3.097	2.128	3.005	6.003
	10	0.609 ± 0.004	3.178 ± 0.062	3.126	2.027	3.029	6.136

Note: For each problem, the lowest mean and median computation time are highlighted.

Table S3: Results for increasing order nonnegative tensors and $n = 10,000$ samples

Tensor Size	Version	NMSE Arithmetic Mean $\pm$ SE	Time (s)				
			Arithmetic Mean $\pm$ SE	Geometric Mean	Min	Median	Max
10^4	0	0.010 ± 0.000	14.620 ± 0.160	14.533	11.13	14.723	20.162
	1	0.010 ± 0.000	4.515 ± 0.081	4.443	2.658	4.497	7.198
	2	0.010 ± 0.000	14.736 ± 0.194	14.622	11.543	14.569	25.271
	3	0.010 ± 0.000	15.814 ± 0.194	15.698	11.103	15.732	21.805
	4	0.010 ± 0.000	4.335 ± 0.084	4.260	2.725	4.237	8.669
	5	0.010 ± 0.000	5.608 ± 0.098	5.521	2.963	5.590	8.890
	6	0.010 ± 0.000	5.784 ± 0.107	5.686	2.974	5.752	9.049
	7	0.010 ± 0.000	14.761 ± 0.194	14.643	11.197	14.555	22.625
	8	0.010 ± 0.000	4.200 ± 0.074	4.138	2.524	4.194	8.091
	9	0.010 ± 0.000	14.802 ± 0.199	14.678	10.361	14.700	23.429
	10	0.010 ± 0.000	4.419 ± 0.088	4.332	2.424	4.442	8.617
10^5	0	0.025 ± 0.001	25.214 ± 0.275	25.063	18.646	25.012	33.507
	1	0.025 ± 0.001	5.512 ± 0.105	5.409	3.140	5.537	8.445
	2	0.025 ± 0.001	25.195 ± 0.276	25.041	17.925	25.227	33.771
	3	0.025 ± 0.001	25.598 ± 0.275	25.449	18.907	25.801	33.583
	4	0.025 ± 0.001	5.504 ± 0.113	5.383	3.106	5.585	8.536
	5	0.025 ± 0.001	6.391 ± 0.106	6.297	3.458	6.433	9.155
	6	0.025 ± 0.001	6.582 ± 0.109	6.487	3.697	6.590	9.444
	7	0.025 ± 0.001	24.640 ± 0.305	24.462	18.711	24.558	39.111
	8	0.025 ± 0.001	4.899 ± 0.068	4.850	3.126	4.914	6.599
	9	0.025 ± 0.001	24.502 ± 0.290	24.340	17.616	24.007	38.234
	10	0.025 ± 0.001	5.174 ± 0.084	5.106	3.203	5.127	8.583
10^6	0	0.057 ± 0.002	33.437 ± 0.475	33.076	17.539	33.360	50.010
	1	0.057 ± 0.002	6.562 ± 0.111	6.467	3.647	6.566	9.963
	2	0.058 ± 0.002	33.606 ± 0.393	33.357	17.525	33.712	41.967
	3	0.058 ± 0.003	32.549 ± 0.436	32.241	18.479	32.502	43.975
	4	0.058 ± 0.002	6.883 ± 0.098	6.809	3.914	6.906	8.725
	5	0.058 ± 0.003	6.869 ± 0.112	6.770	4.069	7.110	9.002
	6	0.058 ± 0.003	7.310 ± 0.121	7.202	4.343	7.522	10.257
	7	0.057 ± 0.002	31.687 ± 0.419	31.394	16.671	31.747	42.899
	8	0.057 ± 0.002	5.750 ± 0.082	5.688	3.091	5.777	7.923
	9	0.057 ± 0.003	32.288 ± 0.399	32.024	18.471	32.798	41.716
	10	0.057 ± 0.003	6.313 ± 0.097	6.233	3.326	6.418	8.507
10^7	0	0.145 ± 0.007	42.770 ± 1.192	41.208	15.333	41.701	96.280
	1	0.145 ± 0.007	8.799 ± 0.233	8.504	3.763	8.448	17.070
	2	0.147 ± 0.008	47.611 ± 1.045	46.352	17.773	46.859	78.931
	3	0.145 ± 0.008	42.546 ± 1.046	41.273	18.386	42.818	82.233
	4	0.147 ± 0.008	13.314 ± 0.253	13.054	6.425	13.584	19.319

	5	0.145 ± 0.008	9.650 ± 0.206	9.430	5.242	9.701	16.758
	6	0.145 ± 0.008	12.430 ± 0.254	12.168	6.576	12.144	20.844
	7	0.146 ± 0.008	41.994 ± 0.942	40.854	21.795	41.982	60.821
	8	0.146 ± 0.008	8.729 ± 0.190	8.522	5.101	8.807	14.279
	9	0.146 ± 0.008	46.652 ± 1.067	45.448	21.751	46.404	83.582
	10	0.146 ± 0.008	11.801 ± 0.254	11.534	6.208	11.542	20.518
$10^{\times 8}$	0	0.381 ± 0.021	96.221 ± 5.042	83.698	15.480	88.210	333.633
	1	0.381 ± 0.021	42.482 ± 2.792	36.519	6.272	38.715	254.793
	2	0.387 ± 0.021	140.427 ± 10.279	121.552	22.769	125.905	820.344
	3	0.381 ± 0.021	115.342 ± 18.396	82.210	14.612	84.227	1690.488
	4	0.387 ± 0.021	80.225 ± 7.295	68.880	13.509	68.795	588.859
	5	0.381 ± 0.021	62.368 ± 17.093	34.881	6.601	33.880	1589.041
	6	0.380 ± 0.021	82.748 ± 14.217	56.711	10.151	54.676	1121.405
	7	0.386 ± 0.021	106.177 ± 8.930	86.913	15.541	85.482	678.892
	8	0.386 ± 0.021	51.834 ± 7.228	38.044	6.814	37.735	519.459
	9	0.385 ± 0.021	124.828 ± 9.714	105.228	19.539	111.054	923.472
	10	0.385 ± 0.021	70.414 ± 8.270	57.581	10.774	58.946	837.845

Note: For each problem, the lowest mean and median computation time are highlighted.

Table S4: Results for nonnegative tensors with size $10^{\times 6}$ and increasing n samples

Sample Percent	Version	NMSE Arithmetic Mean $\pm$ SE	Time (s)				
			Arithmetic Mean $\pm$ SE	Geometric Mean	Min	Median	Max
0.01	0	0.982 ± 0.004	0.276 ± 0.010	0.258	0.142	0.246	0.650
	1	0.982 ± 0.004	0.243 ± 0.009	0.227	0.122	0.215	0.546
	2	0.981 ± 0.004	0.329 ± 0.016	0.298	0.150	0.285	1.019
	3	0.982 ± 0.004	0.304 ± 0.012	0.282	0.148	0.265	0.649
	4	0.981 ± 0.004	0.299 ± 0.015	0.270	0.130	0.256	0.919
	5	0.982 ± 0.004	0.265 ± 0.011	0.246	0.129	0.242	0.576
	6	0.982 ± 0.004	0.292 ± 0.013	0.266	0.131	0.281	0.685
	7	0.980 ± 0.004	0.284 ± 0.012	0.264	0.151	0.252	0.654
	8	0.980 ± 0.004	0.250 ± 0.010	0.232	0.131	0.211	0.549
	9	0.981 ± 0.004	0.328 ± 0.016	0.299	0.148	0.281	0.873
	10	0.981 ± 0.004	0.293 ± 0.015	0.264	0.129	0.253	0.817
0.1	0	0.564 ± 0.022	9.507 ± 0.439	8.565	2.548	8.182	21.995
	1	0.564 ± 0.022	2.977 ± 0.116	2.758	0.843	2.616	6.217
	2	0.568 ± 0.022	9.161 ± 0.370	8.469	2.804	8.037	20.648
	3	0.571 ± 0.022	9.504 ± 0.415	8.647	2.548	8.306	24.41
	4	0.568 ± 0.022	3.176 ± 0.107	3.002	1.087	2.948	6.223
	5	0.571 ± 0.022	3.040 ± 0.116	2.822	0.874	2.836	7.308
	6	0.571 ± 0.022	3.482 ± 0.130	3.237	0.952	3.273	8.053
	7	0.547 ± 0.023	9.270 ± 0.467	8.291	2.227	8.018	31.432
	8	0.547 ± 0.023	2.931 ± 0.140	2.666	0.844	2.669	10.910
	9	0.562 ± 0.022	9.111 ± 0.388	8.329	2.841	8.463	21.631
	10	0.562 ± 0.022	3.334 ± 0.129	3.089	0.965	3.194	7.059
1	0	0.057 ± 0.002	33.437 ± 0.475	33.076	17.539	33.360	50.010
	1	0.057 ± 0.002	6.562 ± 0.111	6.467	3.647	6.566	9.963
	2	0.058 ± 0.002	33.606 ± 0.393	33.357	17.525	33.712	41.967
	3	0.058 ± 0.003	32.549 ± 0.436	32.241	18.479	32.502	43.975
	4	0.058 ± 0.002	6.883 ± 0.098	6.809	3.914	6.906	8.725
	5	0.058 ± 0.003	6.869 ± 0.112	6.770	4.069	7.110	9.002
	6	0.058 ± 0.003	7.310 ± 0.121	7.202	4.343	7.522	10.257
	7	0.057 ± 0.002	31.687 ± 0.419	31.394	16.671	31.747	42.899
	8	0.057 ± 0.002	5.750 ± 0.082	5.688	3.091	5.777	7.923
	9	0.057 ± 0.003	32.288 ± 0.399	32.024	18.471	32.798	41.716
	10	0.057 ± 0.003	6.313 ± 0.097	6.233	3.326	6.418	8.507
10 ($n = 10^5$)	0	0.050 ± 0.002	266.905 ± 3.785	263.971	138.684	266.407	370.278
	1	0.050 ± 0.002	58.075 ± 1.347	56.526	31.177	56.269	101.203
	2	0.051 ± 0.002	269.866 ± 3.637	267.083	133.925	268.477	359.523
	3	0.050 ± 0.002	246.770 ± 3.353	244.199	138.894	249.96	335.414
	4	0.051 ± 0.002	58.629 ± 1.302	57.232	33.940	56.590	93.109

5	0.050 ± 0.002	56.653 ± 0.964	55.822	37.055	56.013	80.008
6	0.050 ± 0.002	56.285 ± 0.975	55.431	34.631	55.497	79.487
7	0.050 ± 0.002	241.195 ± 3.388	238.465	138.051	242.977	333.482
8	0.050 ± 0.002	48.434 ± 0.696	47.934	30.473	48.433	69.063
9	0.050 ± 0.002	244.385 ± 3.051	242.218	149.075	245.842	335.246
10	0.050 ± 0.002	50.598 ± 0.711	50.099	34.797	50.104	73.951

Note: For each problem, the lowest mean and median computation time are highlighted.

Table S5: Results for nonnegative tensors with size 10×7 and increasing n samples

Sample Percent	Version	NMSE Arithmetic Mean $\pm$ SE	Time (s)				
			Arithmetic Mean $\pm$ SE	Geometric Mean	Min	Median	Max
0.01	0	0.884 ± 0.016	9.906 ± 0.733	7.952	1.338	7.456	44.304
	1	0.884 ± 0.016	5.154 ± 0.371	4.266	0.772	3.993	25.657
	2	0.883 ± 0.016	10.435 ± 0.717	8.677	1.413	8.409	41.956
	3	0.885 ± 0.015	8.978 ± 0.637	7.337	1.441	7.069	35.707
	4	0.883 ± 0.016	6.120 ± 0.385	5.259	0.897	5.237	25.234
	5	0.885 ± 0.015	4.542 ± 0.307	3.846	0.833	3.825	20.304
	6	0.888 ± 0.015	6.185 ± 0.496	5.055	0.913	4.931	34.564
	7	0.870 ± 0.018	8.363 ± 0.612	6.796	1.506	6.664	40.259
	8	0.870 ± 0.018	4.242 ± 0.286	3.585	0.818	3.483	18.221
	9	0.874 ± 0.017	9.320 ± 0.663	7.599	1.565	7.122	32.849
	10	0.874 ± 0.017	5.444 ± 0.373	4.546	0.939	4.325	21.065
0.1	0	0.145 ± 0.007	42.770 ± 1.192	41.208	15.333	41.701	96.280
	1	0.145 ± 0.007	8.799 ± 0.233	8.504	3.763	8.448	17.070
	2	0.147 ± 0.008	47.611 ± 1.045	46.352	17.773	46.859	78.931
	3	0.145 ± 0.008	42.546 ± 1.046	41.273	18.386	42.818	82.233
	4	0.147 ± 0.008	13.314 ± 0.253	13.054	6.425	13.584	19.319
	5	0.145 ± 0.008	9.650 ± 0.206	9.430	5.242	9.701	16.758
	6	0.145 ± 0.008	12.430 ± 0.254	12.168	6.576	12.144	20.844
	7	0.146 ± 0.008	41.994 ± 0.942	40.854	21.795	41.982	60.821
	8	0.146 ± 0.008	8.729 ± 0.190	8.522	5.101	8.807	14.279
	9	0.146 ± 0.008	46.652 ± 1.067	45.448	21.751	46.404	83.582
	10	0.146 ± 0.008	11.801 ± 0.254	11.534	6.208	11.542	20.518
1	0	0.112 ± 0.005	245.863 ± 6.133	238.338	148.868	233.195	408.085
	1	0.112 ± 0.005	47.923 ± 0.899	47.145	32.281	45.655	77.549
	2	0.112 ± 0.005	252.129 ± 5.768	245.421	148.470	248.945	366.094
	3	0.113 ± 0.005	247.820 ± 5.260	242.007	145.381	264.145	350.913
	4	0.112 ± 0.005	53.755 ± 0.978	52.931	35.569	52.759	95.705
	5	0.113 ± 0.005	53.408 ± 0.811	52.784	33.295	53.193	73.774
	6	0.113 ± 0.005	55.586 ± 0.824	54.963	34.203	55.012	76.677
	7	0.110 ± 0.005	233.996 ± 5.571	227.430	143.104	233.493	388.936
	8	0.110 ± 0.005	46.640 ± 0.647	46.189	32.440	46.543	64.163
	9	0.109 ± 0.005	238.510 ± 5.316	232.407	144.561	235.277	326.239
	10	0.109 ± 0.005	50.178 ± 0.679	49.708	34.546	50.580	65.287
10 ($n = 10^6$)	0	0.108 ± 0.005	2830.535 ± 57.672	2773.083	1868.109	2654.533	4015.562
	1	0.108 ± 0.005	1223.087 ± 13.412	1216.033	989.056	1225.745	1662.859
	2	0.108 ± 0.005	2776.876 ± 53.723	2726.519	1940.371	2576.609	3907.286
	3	0.110 ± 0.005	2781.695 ± 55.039	2728.281	1899.844	2749.232	4377.475
	4	0.108 ± 0.005	1138.666 ± 27.790	1117.027	910.320	1065.029	2873.461

5	0.110 ± 0.005	1182.486 ± 19.024	1170.131	939.523	1139.444	2230.349
6	0.110 ± 0.005	1137.827 ± 10.332	1133.184	917.410	1116.388	1408.491
7	0.108 ± 0.005	2636.415 ± 54.039	2583.335	1730.813	2380.683	3738.891
8	0.108 ± 0.005	1045.224 ± 8.729	1041.659	899.932	1032.678	1261.093
9	0.110 ± 0.005	2687.159 ± 50.578	2640.935	1957.054	2510.885	3761.409
10	0.110 ± 0.005	1090.345 ± 8.418	1087.132	928.105	1076.160	1310.540

Note: For each problem, the lowest mean and median computation time are highlighted.