Overview of figures and tables GBM_alpha_1_sigma_4_x0_100

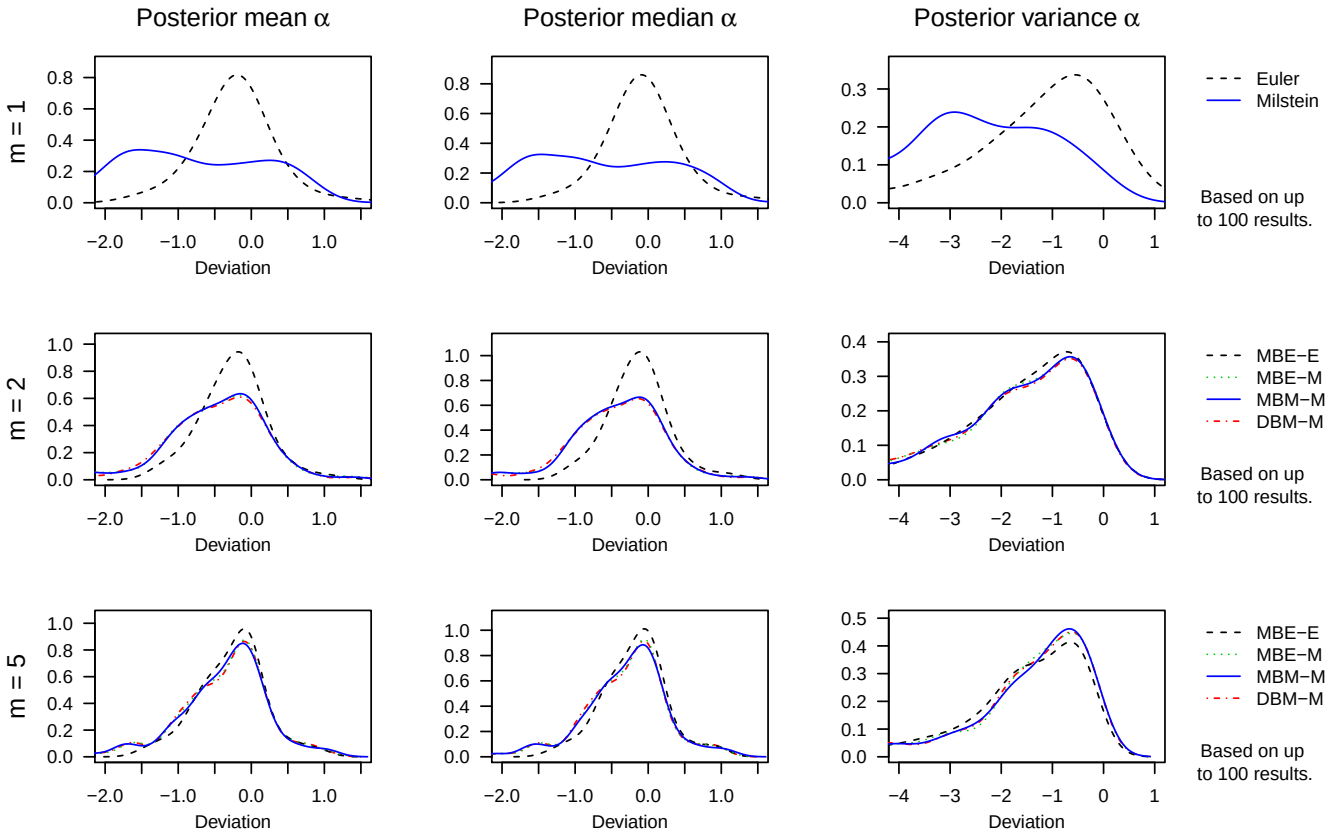
This document provides the same kind of figures and tables as the section "Results" of the article

Pieschner, Fuchs (2020) Bayesian inference for diffusion processes: using higher-order approximations for transition densities

for model and parameter combination GBM_alpha_1_sigma_4_x0_100 and for different numbers M of observations.

M = 10

Density plots of discrepancies



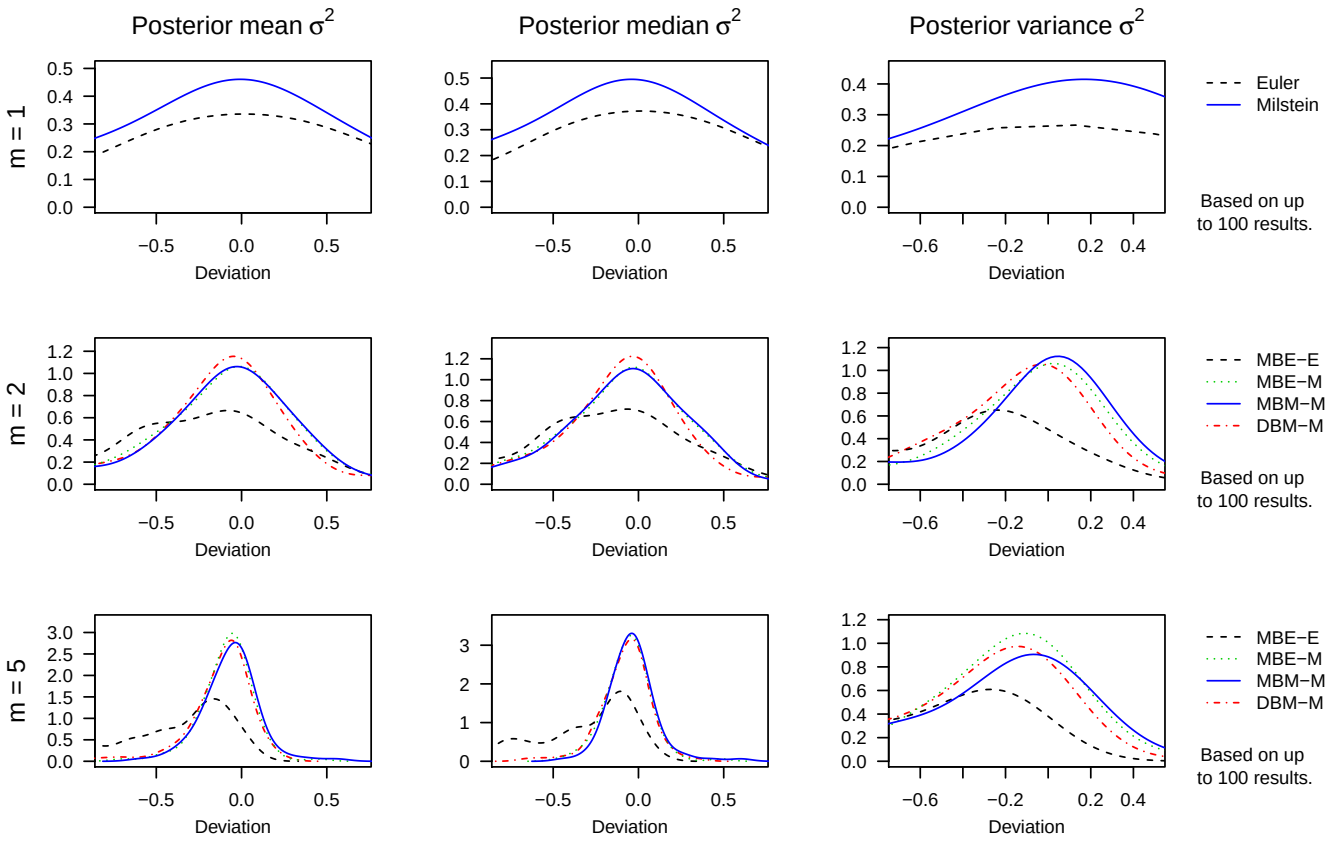

Posterior mean σ2
Posterior median σ2
Posterior variance σ2
m = 1
m = 2
m = 5
Deviation
Euler
Milstein
MBE−E
MBE−M
MBM−M
DBM−M
Based on up to 100 results.

Table of RMSE

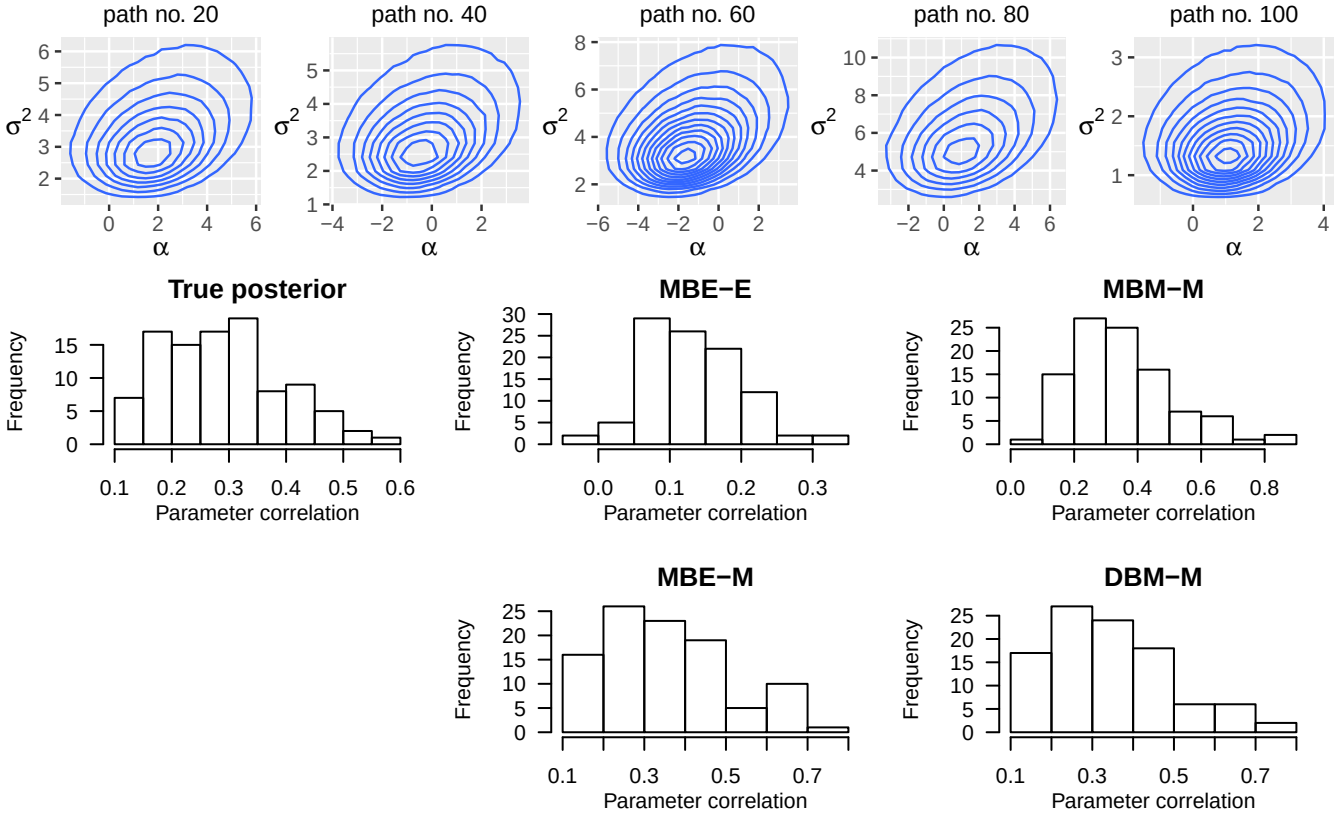
	mean_alpha	median_alpha	variance_alpha	mean_sigma2	median_sigma2	variance_sigma2
Euler_m_1	0.542	0.479	1.845	3.307	2.961	19.953
Milstein_m_1	1.642	1.609	3.193	0.991	0.927	1.484
MBE-E_m_2	0.502	0.430	2.092	0.963	0.848	2.024
MBE-M_m_2	1.044	0.995	2.215	0.475	0.455	0.894
MBM-M_m_2	1.035	0.986	2.240	0.494	0.467	1.052
DBM-M_m_2	1.095	1.038	2.317	0.501	0.469	1.169
MBE-E_m_5	0.535	0.469	2.016	0.727	0.585	2.223
MBE-M_m_5	0.665	0.607	1.826	0.172	0.143	0.802
MBM-M_m_5	0.683	0.623	1.847	0.174	0.143	0.963
DBM-M_m_5	0.677	0.617	1.842	0.214	0.162	1.048

Table of performance measures

	numIter_mean	numIter_cv	multESS_mean	multESS_cv
Euler_m_1	26706004	0.04	1045564	0.21
Milstein_m_1	7642971	0.07	90308	0.51
MBE-E_m_2	9037133	0.03	204569	0.18
MBE-M_m_2	2828831	0.03	13294	0.80
MBM-M_m_2	329363	0.02	3591	0.68
DBM-M_m_2	2724875	0.03	15701	0.84
MBE-E_m_5	7249137	0.03	68672	0.17
MBE-M_m_5	1533202	0.04	6380	0.53
MBM-M_m_5	83370	0.06	592	0.41
DBM-M_m_5	1483576	0.04	7433	0.51

	ARpath_mean	ARpath_cv	ARparam_mean	ARparam_cv
Euler_m_1	0.602	0.02	NA	NA
Milstein_m_1	0.318	0.28	NA	NA
MBE-E_m_2	0.539	0.01	0.718	0.09
MBE-M_m_2	0.355	0.28	0.599	0.17
MBM-M_m_2	0.356	0.28	1.000	0.00
DBM-M_m_2	0.359	0.27	0.660	0.15
MBE-E_m_5	0.406	0.01	0.804	0.05
MBE-M_m_5	0.359	0.10	0.708	0.10
MBM-M_m_5	0.358	0.10	0.890	0.05
DBM-M_m_5	0.360	0.09	0.772	0.08

Parameter correlations



M = 20

Density plots of discrepancies

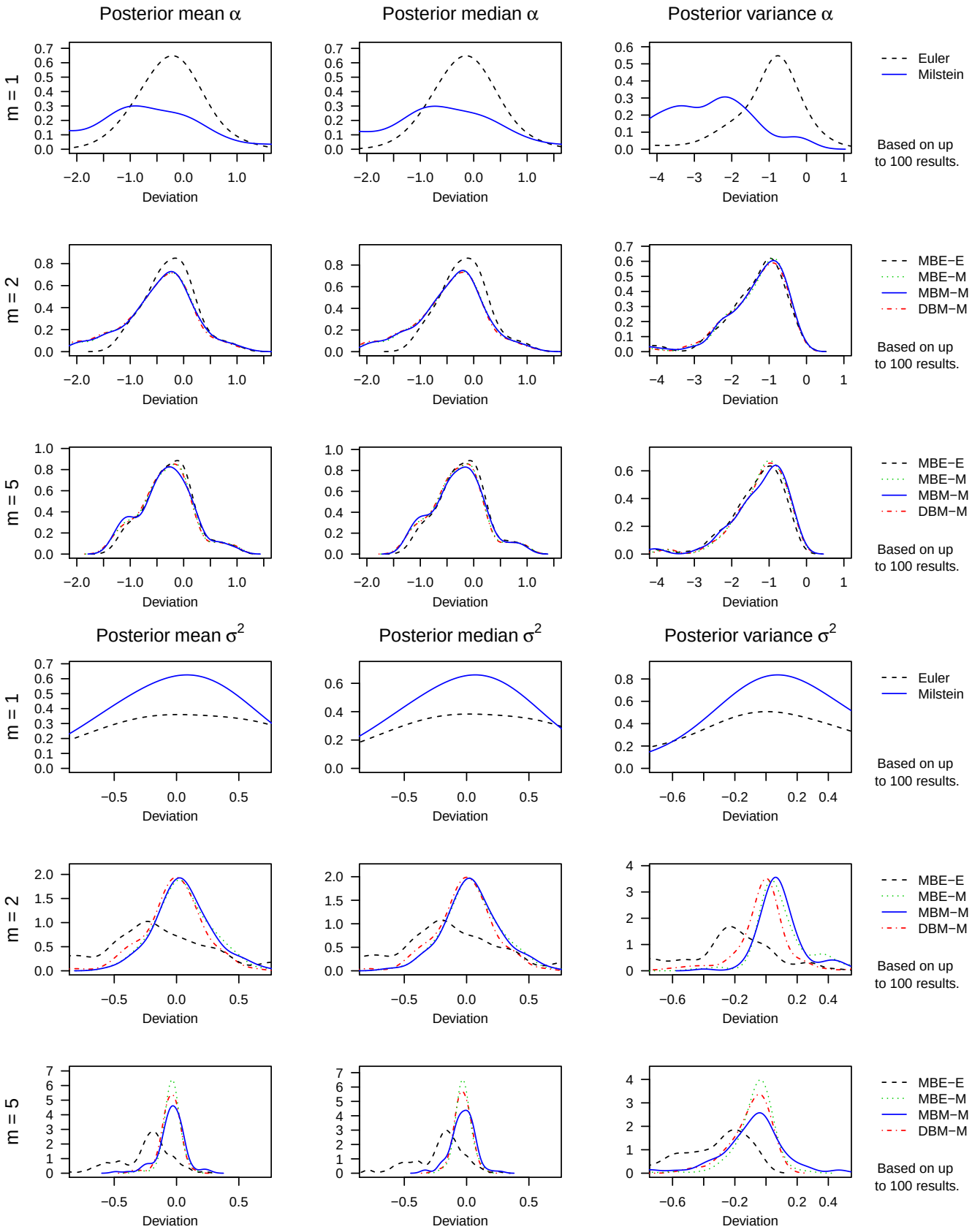


Table of RMSE

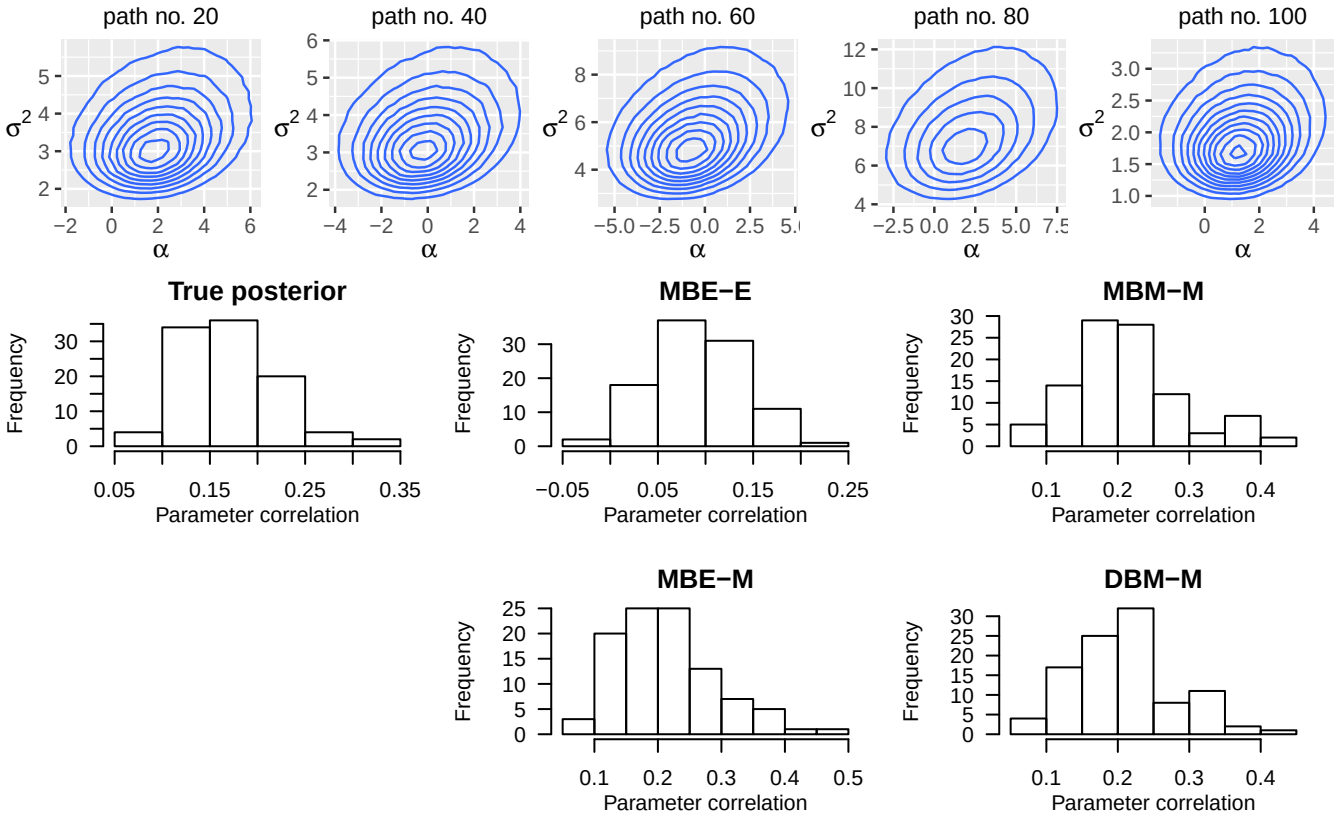
	mean_alpha	median_alpha	variance_alpha	mean_sigma2	median_sigma2	variance_sigma2
Euler_m_1	0.562	0.521	1.368	1.875	1.765	2.874
Milstein_m_1	2.211	2.173	3.115	0.619	0.598	0.504
MBE-E_m_2	0.517	0.477	1.610	0.606	0.563	0.688
MBE-M_m_2	0.811	0.781	1.593	0.231	0.227	0.256
MBM-M_m_2	0.806	0.778	1.556	0.229	0.227	0.191
DBM-M_m_2	0.841	0.808	1.643	0.229	0.223	0.285
MBE-E_m_5	0.533	0.497	1.573	0.398	0.346	0.706
MBE-M_m_5	0.590	0.559	1.450	0.074	0.065	0.217
MBM-M_m_5	0.596	0.562	1.491	0.117	0.100	0.320
DBM-M_m_5	0.592	0.563	1.450	0.091	0.074	0.276

Table of performance measures

	numIter_mean	numIter_cv	multESS_mean	multESS_cv
Euler_m_1	25836918	0.06	1037849	0.16
Milstein_m_1	4443643	0.03	66063	0.50
MBE-E_m_2	8919383	0.07	126631	0.21
MBE-M_m_2	1879002	0.06	11061	0.54
MBM-M_m_2	316136	0.07	4343	0.39
DBM-M_m_2	1828917	0.07	14889	0.49
MBE-E_m_5	7034020	0.07	39847	0.16
MBE-M_m_5	919768	0.07	3406	0.27
MBM-M_m_5	83971	0.09	453	0.24
DBM-M_m_5	901874	0.07	3818	0.23

	ARpath_mean	ARpath_cv	ARparam_mean	ARparam_cv
Euler_m_1	0.528	0.01	NA	NA
Milstein_m_1	0.292	0.29	NA	NA
MBE-E_m_2	0.451	0.01	0.778	0.05
MBE-M_m_2	0.366	0.14	0.706	0.08
MBM-M_m_2	0.367	0.14	1.000	0.00
DBM-M_m_2	0.368	0.14	0.765	0.06
MBE-E_m_5	0.316	0.01	0.850	0.03
MBE-M_m_5	0.302	0.02	0.781	0.04
MBM-M_m_5	0.302	0.02	0.950	0.02
DBM-M_m_5	0.302	0.02	0.836	0.03

Parameter correlations



M = 50

Density plots of discrepancies

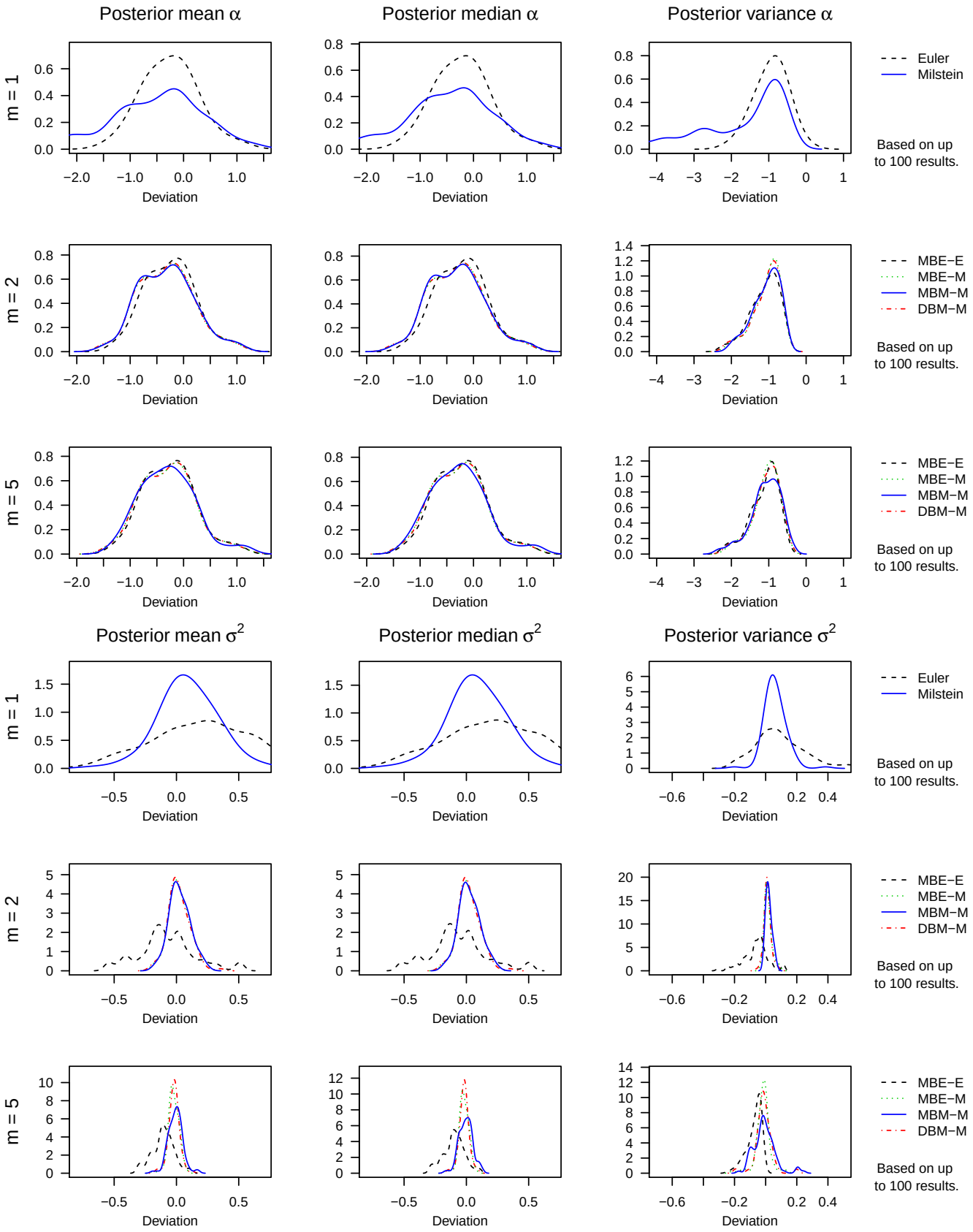


Table of RMSE

	mean_alpha	median_alpha	variance_alpha	mean_sigma2	median_sigma2	variance_sigma2
Euler_m_1	0.571	0.551	1.026	0.718	0.700	0.307
Milstein_m_1	1.677	1.610	2.114	0.244	0.241	0.089
MBE-E_m_2	0.542	0.526	1.186	0.243	0.235	0.102
MBE-M_m_2	0.601	0.592	1.127	0.088	0.088	0.028
MBM-M_m_2	0.604	0.597	1.126	0.088	0.089	0.028
DBM-M_m_2	0.601	0.593	1.134	0.091	0.091	0.025
MBE-E_m_5	0.553	0.540	1.185	0.140	0.131	0.088
MBE-M_m_5	0.583	0.571	1.131	0.046	0.043	0.051
MBM-M_m_5	0.596	0.587	1.163	0.057	0.055	0.071
DBM-M_m_5	0.581	0.569	1.144	0.046	0.042	0.056

Table of performance measures

	numIter_mean	numIter_cv	multESS_mean	multESS_cv
Euler_m_1	23942553	0.07	941400	0.11
Milstein_m_1	2075797	0.06	58670	0.30
MBE-E_m_2	7903585	0.03	69328	0.14
MBE-M_m_2	897414	0.03	6052	0.20
MBM-M_m_2	260237	0.05	3119	0.16
DBM-M_m_2	896342	0.06	7219	0.18
MBE-E_m_5	6158252	0.07	18891	0.11
MBE-M_m_5	410718	0.06	1021	0.16
MBM-M_m_5	74907	0.08	240	0.21
DBM-M_m_5	406680	0.07	1117	0.17

	ARpath_mean	ARpath_cv	ARparam_mean	ARparam_cv
Euler_m_1	0.405	0.00	NA	NA
Milstein_m_1	0.337	0.16	NA	NA
MBE-E_m_2	0.326	0.00	0.857	0.02
MBE-M_m_2	0.311	0.01	0.820	0.02
MBM-M_m_2	0.311	0.01	1.000	0.00
DBM-M_m_2	0.311	0.01	0.858	0.02
MBE-E_m_5	0.214	0.00	0.903	0.01
MBE-M_m_5	0.210	0.00	0.859	0.02
MBM-M_m_5	0.210	0.01	0.987	0.00
DBM-M_m_5	0.210	0.00	0.897	0.01

Parameter correlations