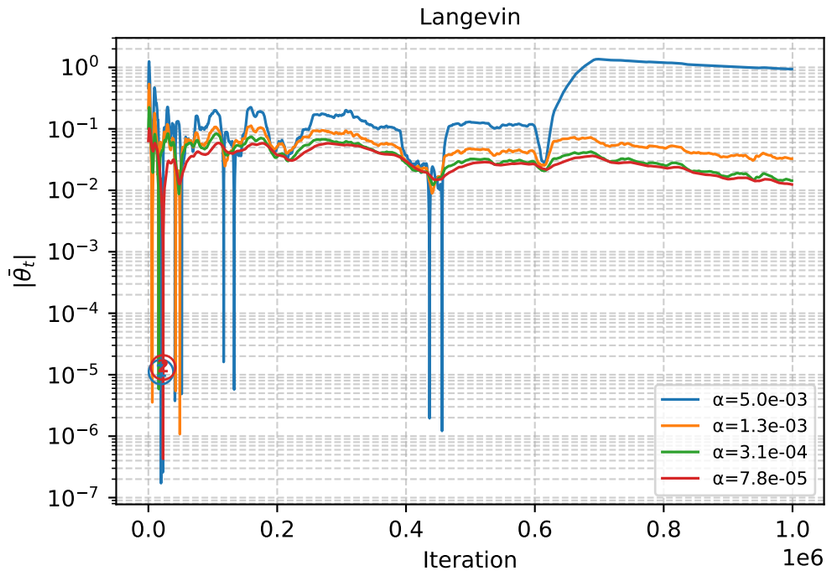
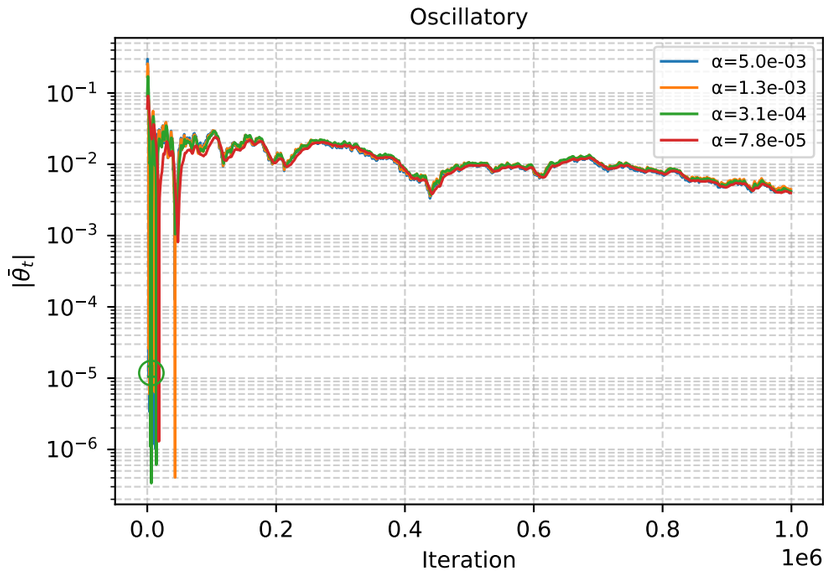
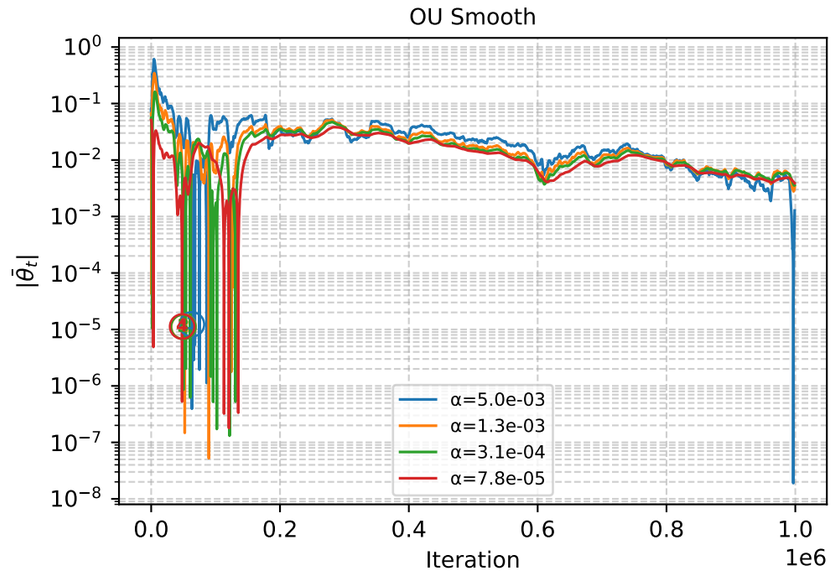
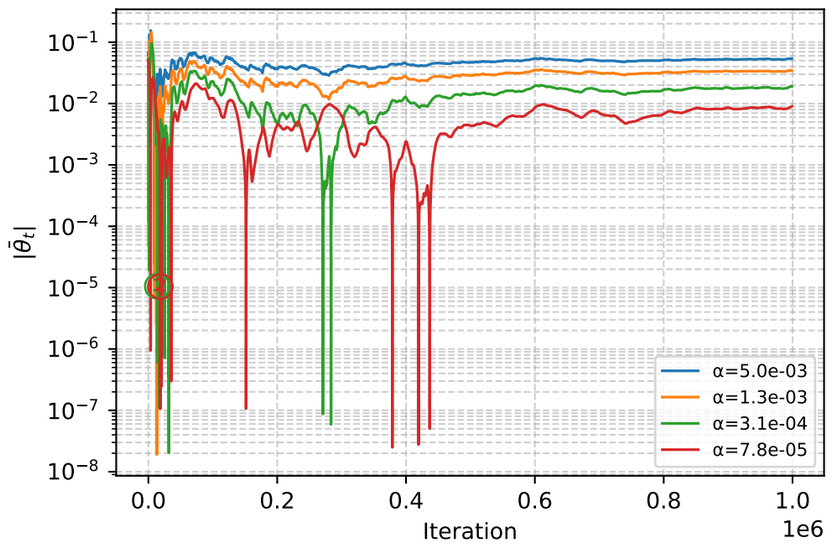
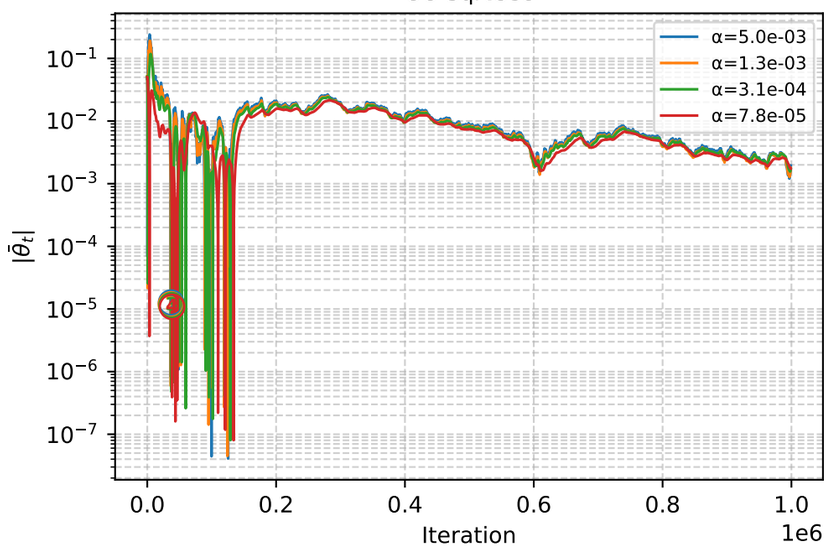
Cubic SA with Polyak-Ruppert Averaging (500-State Kernels)

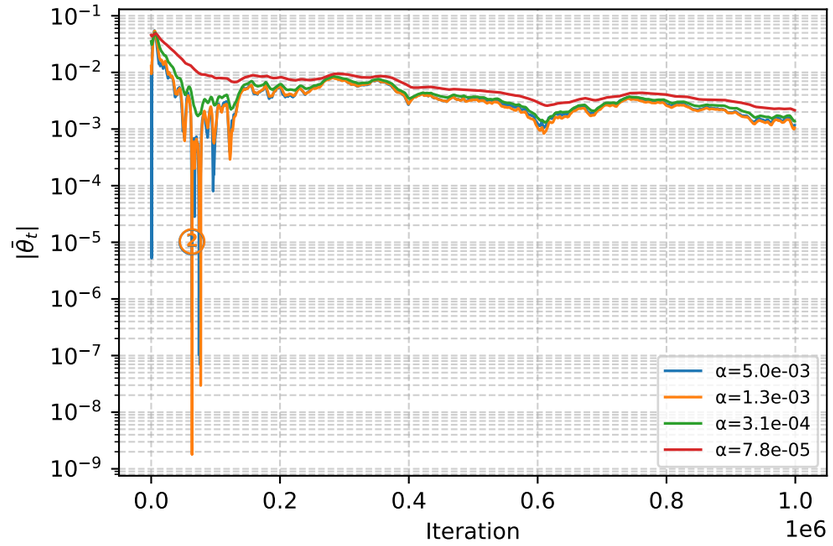


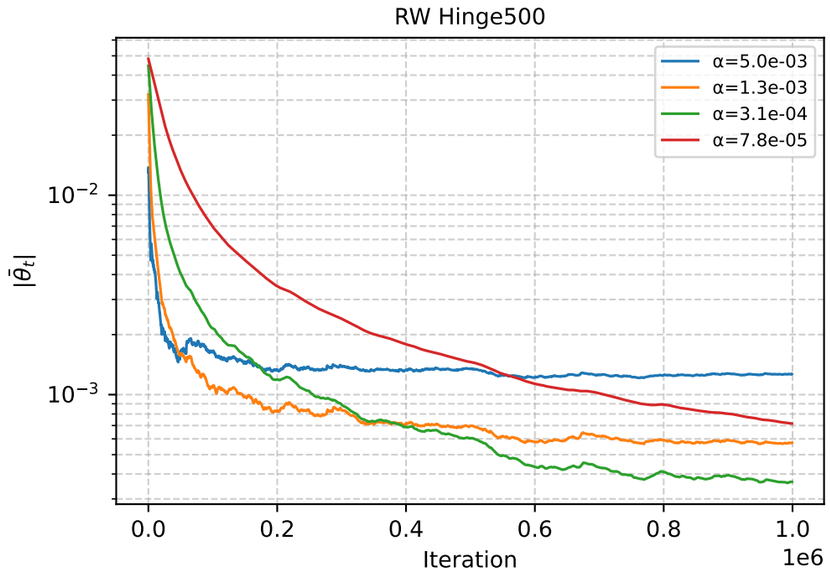


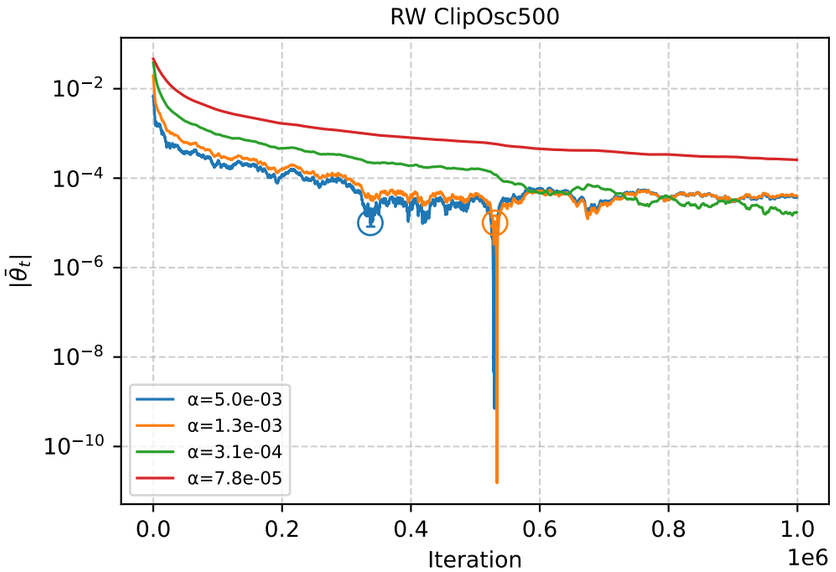


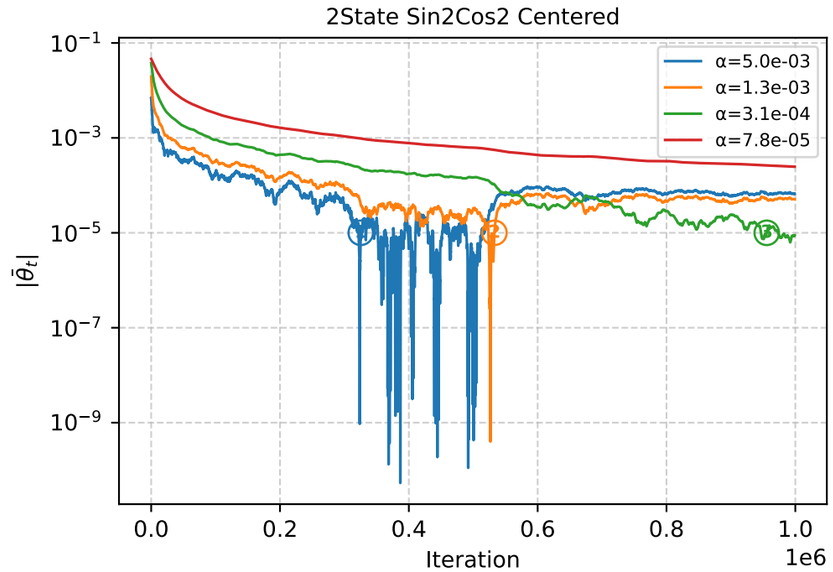












--- Logs for Kernel: Langevin ---

Log Event #1 (α=5.0e-03) - Transition @ t=20615

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
20610	8.762e-02	-4.168e-01	-5.914e-01	2.202e-01	-8.388e-06
20611	8.576e-02	-2.857e-01	-4.566e-01	2.105e-02	-4.227e-06
20612	8.359e-02	-4.211e-01	-5.877e-01	-1.356e-01	-1.720e-07
20613	7.997e-02	-3.024e-01	-4.618e-01	-4.018e-02	3.707e-06
20614	7.746e-02	-3.174e-01	-4.718e-01	-1.145e-01	7.465e-06
--- (Instability Occurs) ---					
20615	7.453e-02	-2.708e-01	-4.195e-01	1.141e-01	1.108e-05
20616	7.300e-02	-1.167e-01	-2.623e-01	-4.481e-02	1.462e-05
20617	7.146e-02	-5.130e-02	-1.939e-01	-9.509e-03	1.808e-05
20618	7.045e-02	3.733e-02	-1.032e-01	-3.967e-04	2.150e-05
20619	6.993e-02	-4.492e-02	-1.844e-01	1.320e-01	2.489e-05

Log Event #2 (α=7.8e-05) - Transition @ t=23858

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
23853	-1.077e-01	-3.013e-01	-8.707e-02	-1.045e-01	9.460e-06
23854	-1.077e-01	-1.894e-01	2.487e-02	-1.800e-01	4.943e-06
23855	-1.077e-01	-8.188e-02	1.324e-01	-7.217e-02	4.269e-07
23856	-1.077e-01	-2.474e-01	-3.316e-02	-2.001e-01	-4.089e-06
23857	-1.078e-01	-2.943e-01	-8.004e-02	7.111e-02	-8.605e-06
--- (Instability Occurs) ---					
23858	-1.078e-01	-4.324e-01	-2.181e-01	-1.236e-01	-1.312e-05
23859	-1.078e-01	-4.802e-01	-2.658e-01	8.076e-02	-1.764e-05
23860	-1.078e-01	-3.851e-01	-1.707e-01	1.399e-02	-2.216e-05
23861	-1.078e-01	-2.853e-01	-7.095e-02	6.876e-02	-2.667e-05
23862	-1.078e-01	-3.261e-01	-1.118e-01	9.095e-02	-3.119e-05

--- Logs for Kernel: Oscillatory ---

Log Event #1 (α=3.1e-04) - Transition @ t=7330

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
7325	2.137e-02	-7.523e-02	-1.180e-01	-2.398e-01	-2.565e-06
7326	2.126e-02	-2.158e-01	-2.583e-01	-3.250e-01	3.369e-07
7327	2.108e-02	-3.620e-03	-4.577e-02	2.145e-02	3.213e-06
7328	2.107e-02	-9.617e-02	-1.383e-01	4.526e-02	6.087e-06
7329	2.104e-02	-7.686e-02	-1.189e-01	6.209e-02	8.957e-06
--- (Instability Occurs) ---					
7330	2.102e-02	4.437e-02	2.336e-03	-2.899e-02	1.182e-05
7331	2.101e-02	-4.394e-02	-8.596e-02	8.278e-02	1.469e-05
7332	2.101e-02	3.641e-02	-5.607e-03	1.007e-02	1.755e-05
7333	2.101e-02	2.539e-01	2.119e-01	-4.378e-02	2.041e-05
7334	2.107e-02	1.625e-01	1.204e-01	4.181e-02	2.328e-05

--- Logs for Kernel: OU Smooth ---

Log Event #1 (α=5.0e-03) - Transition @ t=64259

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
64254	2.482e-01	7.115e-01	2.294e-01	6.699e-02	-7.386e-06
64255	2.497e-01	7.684e-01	2.836e-01	-1.889e-01	-3.500e-06
64256	2.502e-01	7.740e-01	2.883e-01	8.019e-02	3.937e-07
64257	2.520e-01	8.670e-01	3.780e-01	9.937e-02	4.316e-06
64258	2.544e-01	8.276e-01	3.342e-01	1.251e-01	8.275e-06
--- (Instability Occurs) ---					
64259	2.567e-01	8.118e-01	3.142e-01	-4.506e-02	1.227e-05
64260	2.581e-01	8.947e-01	3.947e-01	-1.149e-01	1.629e-05
64261	2.595e-01	8.641e-01	3.616e-01	-6.683e-02	2.032e-05
64262	2.609e-01	8.618e-01	3.565e-01	-8.317e-02	2.438e-05
64263	2.623e-01	8.538e-01	3.461e-01	7.956e-02	2.846e-05

Log Event #2 (α=1.3e-03) - Transition @ t=51280

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
51275	1.768e-01	2.582e-01	-9.002e-02	1.395e-01	-6.029e-06
51276	1.768e-01	1.593e-01	-1.891e-01	4.719e-02	-2.580e-06
51277	1.767e-01	2.034e-01	-1.446e-01	-6.234e-02	8.653e-07
51278	1.764e-01	1.181e-01	-2.294e-01	-5.388e-02	4.306e-06
51279	1.761e-01	5.660e-02	-2.902e-01	1.981e-01	7.739e-06
--- (Instability Occurs) ---					
51280	1.759e-01	3.506e-02	-3.115e-01	1.278e-01	1.117e-05
51281	1.757e-01	-5.672e-02	-4.029e-01	-3.430e-02	1.460e-05
51282	1.752e-01	-1.176e-02	-3.569e-01	1.885e-02	1.801e-05
51283	1.747e-01	5.605e-02	-2.883e-01	7.028e-02	2.142e-05
51284	1.745e-01	1.391e-01	-2.047e-01	-7.042e-02	2.482e-05

Log Event #3 (α=3.1e-04) - Transition @ t=50909

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
50904	1.043e-01	2.004e-01	-6.955e-03	-1.405e-02	8.486e-07
50905	1.042e-01	1.471e-01	-6.024e-02	-8.972e-02	2.897e-06
50906	1.042e-01	1.819e-01	-2.536e-02	7.648e-02	4.943e-06
50907	1.042e-01	1.110e-01	-9.631e-02	-1.939e-02	6.990e-06
50908	1.042e-01	1.316e-01	-7.568e-02	7.843e-02	9.037e-06
--- (Instability Occurs) ---					
50909	1.042e-01	7.277e-02	-1.345e-01	-9.808e-02	1.108e-05
50910	1.041e-01	8.028e-02	-1.268e-01	-6.467e-02	1.313e-05
50911	1.041e-01	1.720e-01	-3.499e-02	3.734e-02	1.517e-05
50912	1.041e-01	1.086e-01	-9.841e-02	7.519e-02	1.721e-05
50913	1.040e-01	1.847e-01	-2.231e-02	-1.001e-01	1.926e-05

Log Event #4 (α=7.8e-05) - Transition @ t=49024

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
49019	6.419e-02	8.844e-02	-3.968e-02	-8.905e-03	4.711e-06
49020	6.419e-02	1.131e-01	-1.500e-02	1.650e-01	6.021e-06
49021	6.420e-02	1.716e-01	4.350e-02	-3.650e-02	7.330e-06
49022	6.420e-02	2.046e-01	7.642e-02	-1.820e-01	8.640e-06
49023	6.419e-02	1.581e-01	3.001e-02	-9.238e-02	9.949e-06
--- (Instability Occurs) ---					
49024	6.419e-02	1.416e-01	1.345e-02	4.101e-02	1.126e-05
49025	6.419e-02	6.156e-02	-6.656e-02	-4.804e-02	1.257e-05
49026	6.418e-02	1.468e-01	1.872e-02	8.364e-02	1.388e-05
49027	6.419e-02	2.040e-01	7.588e-02	9.065e-02	1.518e-05
49028	6.421e-02	1.914e-01	6.328e-02	-1.617e-01	1.649e-05

--- Logs for Kernel: OU Sin ---

Log Event #1 (α=3.1e-04) - Transition @ t=14837

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
14832	5.602e-02	-1.856e-02	-1.304e-01	1.213e-02	-8.326e-06
14833	5.598e-02	5.937e-02	-5.243e-02	-5.630e-02	-4.551e-06
14834	5.595e-02	-9.504e-03	-1.212e-01	5.948e-02	-7.797e-07
14835	5.593e-02	-2.033e-02	-1.320e-01	1.036e-01	2.990e-06
14836	5.592e-02	-7.369e-02	-1.854e-01	3.535e-02	6.759e-06
--- (Instability Occurs) ---					
14837	5.587e-02	-7.726e-02	-1.888e-01	-7.449e-02	1.052e-05
14838	5.579e-02	-8.589e-02	-1.973e-01	2.019e-01	1.428e-05
14839	5.579e-02	-1.403e-01	-2.517e-01	-1.634e-03	1.804e-05
14840	5.571e-02	-1.329e-01	-2.442e-01	3.205e-02	2.180e-05
14841	5.565e-02	-1.884e-01	-2.995e-01	-1.686e-01	2.554e-05

Log Event #2 (α=7.8e-05) - Transition @ t=19594

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
19589	2.250e-02	-2.880e-01	-3.330e-01	-5.316e-02	4.707e-06
19590	2.247e-02	-2.725e-01	-3.174e-01	-3.450e-02	5.854e-06
19591	2.244e-02	-2.991e-01	-3.440e-01	5.240e-02	6.999e-06
19592	2.242e-02	-3.422e-01	-3.871e-01	7.081e-02	8.143e-06
19593	2.239e-02	-4.371e-01	-4.819e-01	3.873e-02	9.285e-06
--- (Instability Occurs) ---					
19594	2.236e-02	-5.190e-01	-5.637e-01	-1.516e-01	1.043e-05
19595	2.230e-02	-4.847e-01	-5.293e-01	-9.629e-02	1.156e-05
19596	2.225e-02	-4.630e-01	-5.075e-01	5.000e-02	1.270e-05
19597	2.222e-02	-4.392e-01	-4.836e-01	6.221e-02	1.383e-05
19598	2.218e-02	-5.153e-01	-5.597e-01	-3.023e-03	1.496e-05

--- Logs for Kernel: OU SqrtOsc ---

Log Event #1 (α=5.0e-03) - Transition @ t=37949

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
37944	-1.221e-01	2.565e-01	4.990e-01	1.059e-01	2.483e-06
37945	-1.191e-01	2.247e-01	4.612e-01	-8.289e-02	-6.559e-07
37946	-1.172e-01	1.746e-01	4.075e-01	6.928e-02	-3.745e-06
37947	-1.148e-01	2.722e-01	5.004e-01	-4.091e-02	-6.771e-06
37948	-1.125e-01	2.121e-01	4.358e-01	1.476e-01	-9.737e-06
--- (Instability Occurs) ---					
37949	-1.096e-01	1.191e-01	3.371e-01	1.114e-01	-1.263e-05
37950	-1.074e-01	4.000e-02	2.535e-01	6.740e-02	-1.545e-05
37951	-1.058e-01	-5.978e-02	1.506e-01	1.380e-01	-1.824e-05
37952	-1.043e-01	2.523e-02	2.328e-01	-1.175e-01	-2.099e-05
37953	-1.038e-01	1.010e-01	3.074e-01	9.565e-02	-2.372e-05

Log Event #2 (α=1.3e-03) - Transition @ t=37636

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
37631	1.575e-01	-4.213e-02	-3.534e-01	-3.169e-02	-8.917e-06
37632	1.571e-01	-1.092e-01	-4.195e-01	-5.199e-04	-4.744e-06
37633	1.565e-01	-1.571e-02	-3.250e-01	-1.041e-01	-5.845e-07
37634	1.560e-01	-8.439e-02	-3.927e-01	-8.360e-03	3.560e-06
37635	1.555e-01	-1.781e-01	-4.854e-01	-1.168e-01	7.692e-06
--- (Instability Occurs) ---					
37636	1.547e-01	-1.436e-01	-4.495e-01	-8.008e-02	1.180e-05
37637	1.541e-01	-1.080e-01	-4.125e-01	-8.372e-02	1.590e-05
37638	1.535e-01	-1.551e-01	-4.585e-01	8.701e-02	1.997e-05
37639	1.530e-01	-6.225e-02	-3.647e-01	-5.884e-02	2.404e-05
37640	1.525e-01	-9.008e-02	-3.915e-01	-6.639e-02	2.809e-05

Log Event #3 (α=3.1e-04) - Transition @ t=38796

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
38791	5.829e-02	-9.312e-01	-1.048e+00	-1.486e-01	4.062e-06
38792	5.792e-02	-8.675e-01	-9.831e-01	8.473e-02	5.555e-06
38793	5.763e-02	-9.474e-01	-1.062e+00	1.158e-01	7.040e-06
38794	5.734e-02	-8.827e-01	-9.972e-01	-2.119e-01	8.518e-06
38795	5.696e-02	-8.039e-01	-9.176e-01	-8.025e-02	9.986e-06
--- (Instability Occurs) ---					
38796	5.665e-02	-8.262e-01	-9.393e-01	-7.922e-02	1.145e-05
38797	5.633e-02	-8.365e-01	-9.490e-01	-1.054e-01	1.290e-05
38798	5.600e-02	-7.558e-01	-8.677e-01	6.963e-02	1.434e-05
38799	5.575e-02	-7.886e-01	-8.999e-01	-2.001e-01	1.578e-05
38800	5.541e-02	-7.995e-01	-9.102e-01	4.396e-02	1.720e-05

Log Event #4 (α=7.8e-05) - Transition @ t=39509

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
39504	4.434e-02	5.700e-01	4.814e-01	-1.049e-01	5.213e-06
39505	4.437e-02	6.499e-01	5.613e-01	-5.191e-02	6.336e-06
39506	4.441e-02	6.929e-01	6.042e-01	-6.072e-02	7.460e-06
39507	4.445e-02	7.764e-01	6.876e-01	5.431e-03	8.585e-06
39508	4.451e-02	8.554e-01	7.665e-01	-9.648e-02	9.711e-06
--- (Instability Occurs) ---					
39509	4.456e-02	9.284e-01	8.394e-01	-1.025e-01	1.084e-05
39510	4.462e-02	1.004e+00	9.149e-01	-6.507e-02	1.197e-05
39511	4.468e-02	1.041e+00	9.522e-01	1.467e-01	1.310e-05
39512	4.477e-02	9.977e-01	9.083e-01	-8.367e-02	1.423e-05
39513	4.483e-02	1.009e+00	9.194e-01	3.502e-02	1.537e-05

--- Logs for Kernel: Discrete Smooth 500 ---

Log Event #1 (α=5.0e-03) - Transition @ t=63928

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
63923	-5.709e-02	-1.182e-01	-4.247e-03	-9.573e-02	-5.703e-06
63924	-5.759e-02	-1.222e-01	-7.260e-03	7.452e-02	-6.604e-06
63925	-5.725e-02	-1.182e-01	-3.921e-03	1.487e-02	-7.499e-06
63926	-5.720e-02	-1.142e-01	-2.213e-05	9.969e-02	-8.394e-06
63927	-5.670e-02	-1.182e-01	-5.022e-03	2.671e-01	-9.281e-06
--- (Instability Occurs) ---					
63928	-5.539e-02	-1.142e-01	-3.622e-03	1.444e-01	-1.015e-05
63929	-5.468e-02	-1.102e-01	-1.016e-03	-1.404e-02	-1.100e-05
63930	-5.476e-02	-1.142e-01	-4.874e-03	-1.501e-01	-1.186e-05
63931	-5.553e-02	-1.102e-01	6.764e-04	7.194e-03	-1.273e-05
63932	-5.549e-02	-1.062e-01	4.606e-03	-1.216e-01	-1.359e-05

Log Event #2 (α=1.3e-03) - Transition @ t=64471

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
64466	-3.958e-02	-9.018e-02	-1.109e-02	2.375e-01	-7.312e-06
64467	-3.929e-02	-8.617e-02	-7.645e-03	8.126e-02	-7.921e-06
64468	-3.920e-02	-9.018e-02	-1.184e-02	-4.608e-02	-8.529e-06
64469	-3.927e-02	-8.617e-02	-7.685e-03	-4.802e-02	-9.138e-06
64470	-3.934e-02	-9.018e-02	-1.155e-02	5.843e-03	-9.748e-06
--- (Instability Occurs) ---					
64471	-3.935e-02	-8.617e-02	-7.531e-03	-5.148e-02	-1.036e-05
64472	-3.942e-02	-9.018e-02	-1.139e-02	-5.476e-02	-1.097e-05
64473	-3.951e-02	-8.617e-02	-7.219e-03	-1.928e-02	-1.158e-05
64474	-3.954e-02	-8.216e-02	-3.145e-03	-1.774e-02	-1.220e-05
64475	-3.957e-02	-8.617e-02	-7.101e-03	6.300e-02	-1.281e-05

--- Logs for Kernel: RW ClipOsc500 ---

Log Event #1 (α=5.0e-03) - Transition @ t=337968

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
337963	4.615e-03	0.000e+00	-9.230e-03	9.759e-02	9.925e-06
337964	5.057e-03	0.000e+00	-1.011e-02	2.276e-03	9.940e-06
337965	5.018e-03	0.000e+00	-1.004e-02	1.905e-01	9.955e-06
337966	5.920e-03	0.000e+00	-1.184e-02	-5.414e-02	9.972e-06
337967	5.590e-03	0.000e+00	-1.118e-02	3.009e-02	9.989e-06
--- (Instability Occurs) ---					
337968	5.685e-03	0.000e+00	-1.137e-02	9.637e-02	1.001e-05
337969	6.110e-03	0.000e+00	-1.222e-02	-1.039e-01	1.002e-05
337970	5.530e-03	0.000e+00	-1.106e-02	-3.119e-03	1.004e-05
337971	5.459e-03	0.000e+00	-1.092e-02	-4.164e-03	1.006e-05
337972	5.383e-03	0.000e+00	-1.077e-02	4.535e-02	1.007e-05

Log Event #2 (α=1.3e-03) - Transition @ t=531597

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
531592	1.952e-03	0.000e+00	-3.904e-03	-1.441e-01	9.984e-06
531593	1.767e-03	0.000e+00	-3.534e-03	-9.442e-02	9.987e-06
531594	1.644e-03	0.000e+00	-3.289e-03	7.509e-02	9.990e-06
531595	1.734e-03	0.000e+00	-3.468e-03	9.638e-02	9.994e-06
531596	1.850e-03	0.000e+00	-3.701e-03	-6.634e-02	9.997e-06
--- (Instability Occurs) ---					
531597	1.763e-03	0.000e+00	-3.526e-03	4.908e-02	1.000e-05
531598	1.820e-03	0.000e+00	-3.640e-03	9.258e-02	1.000e-05
531599	1.931e-03	0.000e+00	-3.862e-03	-1.158e-01	1.001e-05
531600	1.781e-03	0.000e+00	-3.563e-03	9.143e-02	1.001e-05
531601	1.891e-03	0.000e+00	-3.782e-03	-3.403e-02	1.001e-05

--- Logs for Kernel: 2State Sin2Cos2 Centered ---

Log Event #1 (α=5.0e-03) - Transition @ t=326382

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
326377	-2.602e-03	-5.000e-01	-4.948e-01	1.074e-01	-9.933e-06
326378	-4.539e-03	5.000e-01	5.091e-01	-1.787e-01	-9.947e-06
326379	-2.888e-03	-5.000e-01	-4.942e-01	7.401e-02	-9.955e-06
326380	-4.989e-03	5.000e-01	5.100e-01	-2.698e-01	-9.971e-06
326381	-3.788e-03	-5.000e-01	-4.924e-01	9.152e-02	-9.982e-06
--- (Instability Occurs) ---					
326382	-5.792e-03	5.000e-01	5.116e-01	6.160e-02	-1.000e-05
326383	-2.926e-03	-5.000e-01	-4.941e-01	-6.251e-02	-1.001e-05
326384	-5.710e-03	5.000e-01	5.114e-01	1.204e-01	-1.003e-05
326385	-2.551e-03	-5.000e-01	-4.949e-01	1.179e-01	-1.003e-05
326386	-4.436e-03	5.000e-01	5.089e-01	-2.041e-01	-1.005e-05

Log Event #2 (α=1.3e-03) - Transition @ t=533862

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
533857	-2.180e-03	-5.000e-01	-4.956e-01	-1.657e-01	-9.979e-06
533858	-3.007e-03	5.000e-01	5.060e-01	1.308e-02	-9.985e-06
533859	-2.358e-03	-5.000e-01	-4.953e-01	-9.958e-02	-9.989e-06
533860	-3.102e-03	5.000e-01	5.062e-01	-1.835e-01	-9.995e-06
533861	-2.698e-03	-5.000e-01	-4.946e-01	-1.163e-01	-1.000e-05
--- (Instability Occurs) ---					
533862	-3.462e-03	5.000e-01	5.069e-01	-2.191e-01	-1.001e-05
533863	-3.102e-03	-5.000e-01	-4.938e-01	-1.599e-01	-1.001e-05
533864	-3.919e-03	5.000e-01	5.078e-01	4.853e-02	-1.002e-05
533865	-3.224e-03	-5.000e-01	-4.936e-01	-7.592e-04	-1.003e-05
533866	-3.842e-03	5.000e-01	5.077e-01	-7.840e-02	-1.003e-05

Log Event #3 (α=3.1e-04) - Transition @ t=956630

Iter (t)	θ_t	x_{t+1}	g(θ,x)	ξ_t	avg(θ_t)
956625	9.972e-04	-5.000e-01	-5.020e-01	-4.758e-02	9.996e-06
956626	8.254e-04	5.000e-01	4.983e-01	-2.191e-01	9.997e-06
956627	9.127e-04	-5.000e-01	-5.018e-01	-3.386e-02	9.998e-06
956628	7.453e-04	5.000e-01	4.985e-01	-1.866e-02	9.998e-06
956629	8.952e-04	-5.000e-01	-5.018e-01	-6.712e-02	9.999e-06
--- (Instability Occurs) ---					
956630	7.174e-04	5.000e-01	4.986e-01	1.828e-01	1.000e-05
956631	9.304e-04	-5.000e-01	-5.019e-01	-2.868e-02	1.000e-05
956632	7.646e-04	5.000e-01	4.985e-01	-1.296e-01	1.000e-05
956633	8.798e-04	-5.000e-01	-5.018e-01	4.137e-02	1.000e-05
956634	7.360e-04	5.000e-01	4.985e-01	-1.163e-01	1.000e-05