Table 1: Performance Results for SparseQuadratic_5D_pattern[1, 3] Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
L-BFGS-MoreThuente	8.81e-8	1.36e-7	1.12e-8	6.56e-7	23.6	100.0	0.000
QQN-StrongWolfe	2.22e-7	1.26e-7	4.00e-8	4.52e-7	29.1	100.0	0.001
L-BFGS-Aggressive	2.84e-7	3.06e-8	2.36e-7	3.36e-7	31.0	100.0	0.000
QQN-Bisection-2	1.58e-7	2.16e-7	1.83e-9	7.77e-7	37.5	100.0	0.001
QQN-Bisection-1	1.79e-7	2.00e-7	4.95e-9	7.40e-7	38.0	100.0	0.001
L-BFGS	4.77e-7	3.20e-7	1.77e-8	9.73e-7	48.4	100.0	0.001
QQN-CubicQuadraticInterpolation	4.31e-7	3.85e-8	3.60e-7	4.92e-7	57.0	100.0	0.001
GD-WeightDecay	9.21e-7	4.76e-8	8.42e-7	9.96e-7	99.8	100.0	0.003
L-BFGS-Limited	4.57e-7	2.77e-7	4.26e-9	9.93e-7	117.5	100.0	0.003
QQN-GoldenSection	1.09e-7	1.38e-7	2.49e-9	4.81e-7	132.7	100.0	0.002
L-BFGS-Conservative	2.84e-7	3.62e-7	1.15e-10	9.31e-7	314.8	100.0	0.008
GD	9.77e-7	1.24e-8	9.59e-7	9.96e-7	352.9	100.0	0.009
Adam-WeightDecay	9.85e-7	7.96e-9	9.73e-7	9.99e-7	1727.8	100.0	0.037
Adam	3.67e-3	1.54e-3	5.91e-4	5.76e-3	2502.0	0.0	0.051
Trust Region-Conservative	4.06e0	2.02e0	8.95e-3	5.15e0	1737.1	0.0	0.012
Adam-Robust	6.93e-2	2.46e-2	2.83e-2	1.11e-1	2502.0	0.0	0.057
Trust Region-Precise	4.92e-1	5.29e-1	3.14e-2	1.49e0	306.4	0.0	0.002
Trust Region-Adaptive	1.23e3	4.09e2	5.86e-2	1.37e3	90.2	0.0	0.001
Adam-AMSGrad	1.95e-1	5.56e-2	1.19e-1	3.19e-1	2502.0	0.0	0.057
GD-Nesterov	3.19e-1	3.40e-2	2.73e-1	3.98e-1	22.0	0.0	0.001
Adam-Fast	3.56e-1	1.39e-2	3.36e-1	3.82e-1	37.5	0.0	0.001
GD-Momentum	5.03e-1	4.96e-2	4.06e-1	6.07e-1	22.0	0.0	0.001
GD-AdaptiveMomentum	9.75e-1	6.24e-2	8.63e-1	1.09e0	19.4	0.0	0.001
Trust Region-Standard	1.81e2	7.08e0	1.67e2	1.90e2	40.6	0.0	0.000
Trust Region-Aggressive	1.82e4	7.17e2	1.51e4	1.86e4	27.0	0.0	0.000