Table 1: Performance Results for SparseRosenbrock_10D Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-GoldenSection	5.84e-1	5.22e-1	5.69e-7	2.38e0	4401.4	5.0	0.085
QQN-StrongWolfe	5.37e-1	7.63e-1	1.90e-9	3.16e0	2419.7	45.0	0.076
QQN-CubicQuadraticInterpolation	1.42e-1	1.61e-1	1.89e-8	3.94e-1	1670.9	55.0	0.073
QQN-Bisection-1	6.70e-1	9.09e-1	1.26e-7	3.85e0	2281.2	20.0	0.067
Adam-AMSGrad	5.73e0	9.36e-1	4.14e0	7.62e0	2502.0	0.0	0.060
Adam-Robust	1.19e1	2.30e0	9.15e0	2.07e1	2380.8	0.0	0.058
Adam	4.91e0	1.16e0	3.14e0	7.20e0	2502.0	0.0	0.054
L-BFGS-MoreThuente	7.68e0	8.03e0	2.91e-4	2.32e1	2749.9	0.0	0.052
L-BFGS-Limited	1.28e0	3.17e0	3.17e-1	1.51e1	3999.6	0.0	0.051
Adam-WeightDecay	3.27e0	7.74e0	1.06e-2	2.19e1	2150.9	0.0	0.049
L-BFGS-Conservative	1.05e7	4.58e7	2.96e-2	2.10e8	3686.9	0.0	0.039
L-BFGS-Aggressive	1.81e2	7.47e1	8.09e1	4.01e2	3852.0	0.0	0.029
QQN-Bisection-2	3.21e0	5.76e0	3.42e-1	1.61e1	842.9	0.0	0.022
Trust Region-Precise	1.04e2	6.99e1	1.18e0	2.43e2	3002.0	0.0	0.020
Trust Region-Conservative	1.56e2	4.85e1	6.91e1	2.68e2	3002.0	0.0	0.020
Trust Region-Adaptive	2.92e1	2.81e1	2.02e1	1.48e2	2139.5	0.0	0.014
GD	3.27e0	5.80e0	1.20e0	2.11e1	388.9	0.0	0.011
Adam-Fast	1.90e0	5.64e0	5.27e-2	2.63e1	206.0	0.0	0.005
GD-WeightDecay	4.84e0	9.20e0	1.18e-1	2.47e1	127.2	0.0	0.004
GD-Nesterov	7.90e-1	5.92e-1	5.84e-2	2.48e0	100.3	0.0	0.003
Trust Region-Standard	2.05e1	3.97e-1	1.95e1	2.11e1	439.7	0.0	0.003
L-BFGS	2.80e2	3.25e2	2.70e1	1.32e3	136.4	0.0	0.002
GD-AdaptiveMomentum	1.31e1	1.44e1	5.08e-2	3.27e1	43.6	0.0	0.002
Trust Region-Aggressive	2.11e1	8.10e-1	1.97e1	2.26e1	122.0	0.0	0.001
GD-Momentum	3.15e1	1.33e1	3.12e-1	4.42e1	21.1	0.0	0.001