

Table 1: Performance Results for StyblinskiTang\\$_2D\$Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-Bisection-2	-7.69×10^1	4.24	-7.83×10^1	-6.42×10^1	142.2	90.0	0.003
L-BFGS	-7.67×10^1	3.68	-7.83×10^1	-6.42×10^1	170.2	80.0	0.002
QQN-StrongWolfe	-7.54×10^1	5.63	-7.83×10^1	-6.42×10^1	196.2	75.0	0.005
QQN-GoldenSection	-7.43×10^1	7.34	-7.83×10^1	-5.01×10^1	268.8	75.0	0.004
QQN-CubicQuadraticInterpolation	-7.52×10^1	5.90	-7.83×10^1	-6.42×10^1	208.9	72.5	0.006
GD	-7.41×10^1	7.21	-7.83×10^1	-5.01×10^1	78.0	72.5	0.002
QQN-Backtracking	-7.20×10^1	9.46	-7.83×10^1	-5.01×10^1	133.4	65.0	0.003
L-BFGS-Conservative	-7.69×10^1	4.24	-7.83×10^1	-6.42×10^1	505.4	60.0	0.011
QQN-Bisection-1	-7.44×10^1	7.04	-7.83×10^1	-5.01×10^1	272.1	60.0	0.004
QQN-MoreThuente	-6.59×10^1	1.63×10^1	-7.83×10^1	-3.99×10^1	240.7	55.0	0.007
Adam-Fast	-7.36×10^1	4.03	-7.51×10^1	-6.15×10^1	72.0	30.0	0.001
Trust Region-Standard	-4.64	2.89×10^2	-7.83×10^1	1.25×10^3	223.3	30.0	0.001
GD-WeightDecay	-7.19×10^1	1.00×10^1	-7.83×10^1	-3.87×10^1	54.9	25.0	0.002
GD-Nesterov	-6.37×10^1	1.45×10^1	-7.83×10^1	-3.57×10^1	31.4	15.0	0.001
GD-Momentum	-4.63×10^1	1.97×10^1	-7.83×10^1	-2.15×10^1	41.2	10.0	0.001
Trust Region-Adaptive	-4.76×10^1	1.10×10^1	-5.07×10^1	3.85×10^{-1}	572.1	0.0	0.003
L-BFGS-Aggressive	-4.51×10^1	1.41×10^1	-7.71×10^1	-2.92×10^1	775.2	0.0	0.006
Adam-WeightDecay	-1.35×10^1	2.16	-1.80×10^1	-9.45	502.0	0.0	0.010
Adam-AMSGrad	-3.12	1.19	-5.01	-1.70	502.0	0.0	0.011
Adam	-2.96	9.09×10^{-1}	-5.09	-1.54	502.0	0.0	0.010
Trust Region-Conservative	-2.12	3.30×10^{-1}	-2.70	-1.73	602.0	0.0	0.004