

Table 1: Performance Results for Ackley\10Dn_a20n_b0.2n_c6.28e0Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-Bisection-2	3.36	4.15×10^{-1}	2.32	3.57	114.5	20.0	0.002
L-BFGS	3.52	6.85×10^{-1}	1.80	5.52	146.7	20.0	0.003
QQN-MoreThuente	3.45	5.27×10^{-1}	1.16	3.57	91.4	5.0	0.002
QQN-Bisection-1	3.46	4.23×10^{-1}	1.65	3.57	120.2	5.0	0.002
QQN-Backtracking	3.50	3.40×10^{-1}	2.01	3.57	148.9	5.0	0.005
QQN-GoldenSection	3.35	7.32×10^{-1}	1.86×10^{-11}	3.57	203.4	3.3	0.003
L-BFGS-Aggressive	3.47	5.52×10^{-1}	1.18×10^{-1}	3.79	200.8	2.5	0.003
QQN-CubicQuadraticInterpolation	3.50	3.40×10^{-1}	2.01	3.58	295.6	2.5	0.011
QQN-StrongWolfe	3.57	1.01×10^{-14}	3.57	3.57	79.2	0.0	0.002
GD	3.57	2.82×10^{-10}	3.57	3.57	98.3	0.0	0.003
L-BFGS-Conservative	3.57	5.40×10^{-5}	3.57	3.57	223.4	0.0	0.005
Adam-WeightDecay	3.57	3.36×10^{-5}	3.57	3.57	270.2	0.0	0.006
Adam	3.57	1.92×10^{-4}	3.57	3.58	502.0	0.0	0.011
Trust Region-Conservative	3.58	3.37×10^{-3}	3.57	3.59	215.8	0.0	0.002
Adam-AMSGrad	3.58	3.94×10^{-3}	3.57	3.59	502.0	0.0	0.012
GD-WeightDecay	3.59	4.20×10^{-3}	3.59	3.60	19.4	0.0	0.001
Adam-Fast	3.61	4.16×10^{-2}	3.57	3.69	135.6	0.0	0.003
GD-Nesterov	3.66	3.74×10^{-2}	3.60	3.77	14.1	0.0	0.000
GD-Momentum	3.76	6.72×10^{-2}	3.67	3.94	14.4	0.0	0.000
Trust Region-Adaptive	3.91	7.34×10^{-1}	3.59	6.26	16.9	0.0	0.000
Trust Region-Standard	4.71	9.08×10^{-1}	3.63	5.87	9.9	0.0	0.000