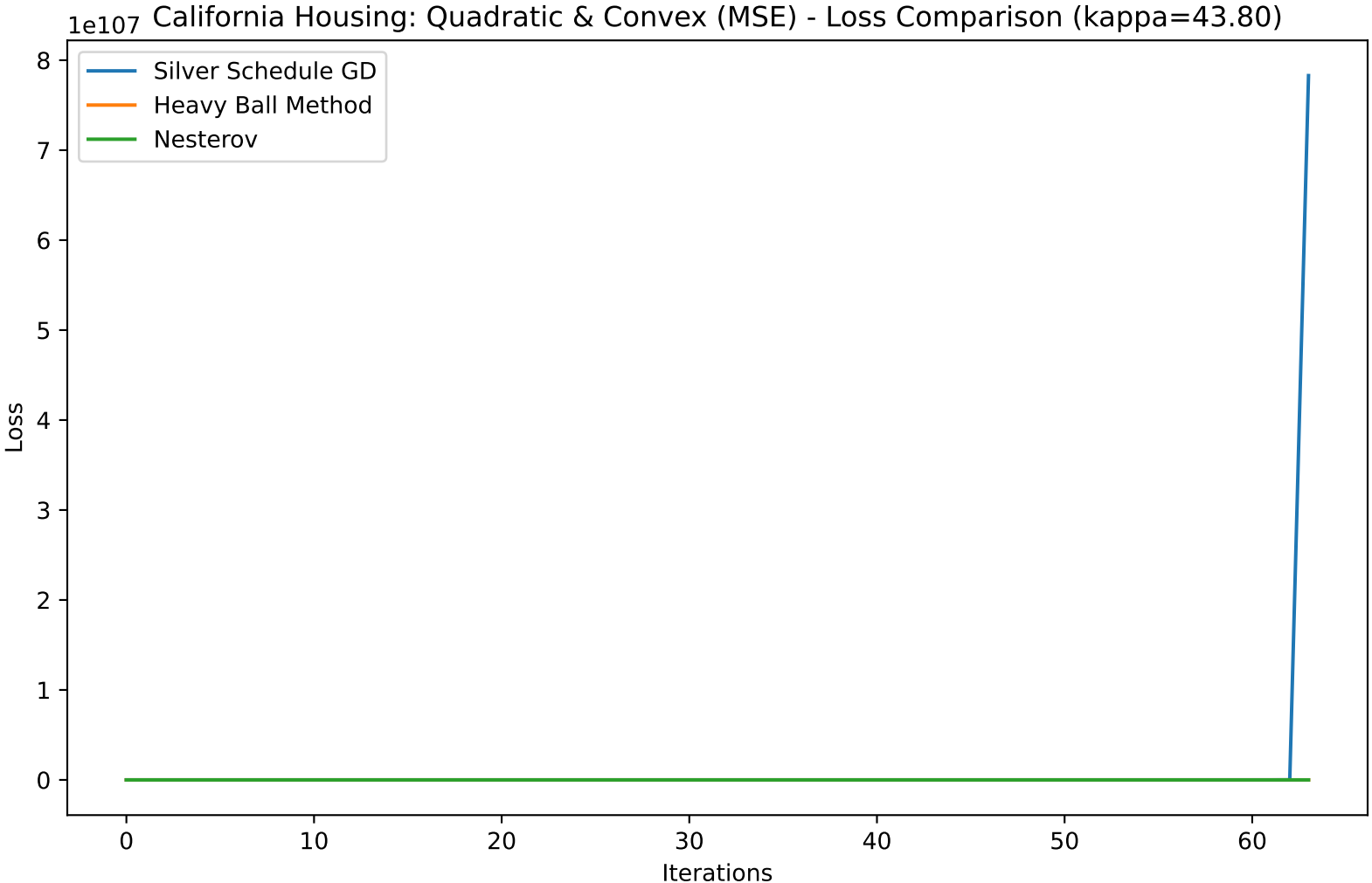
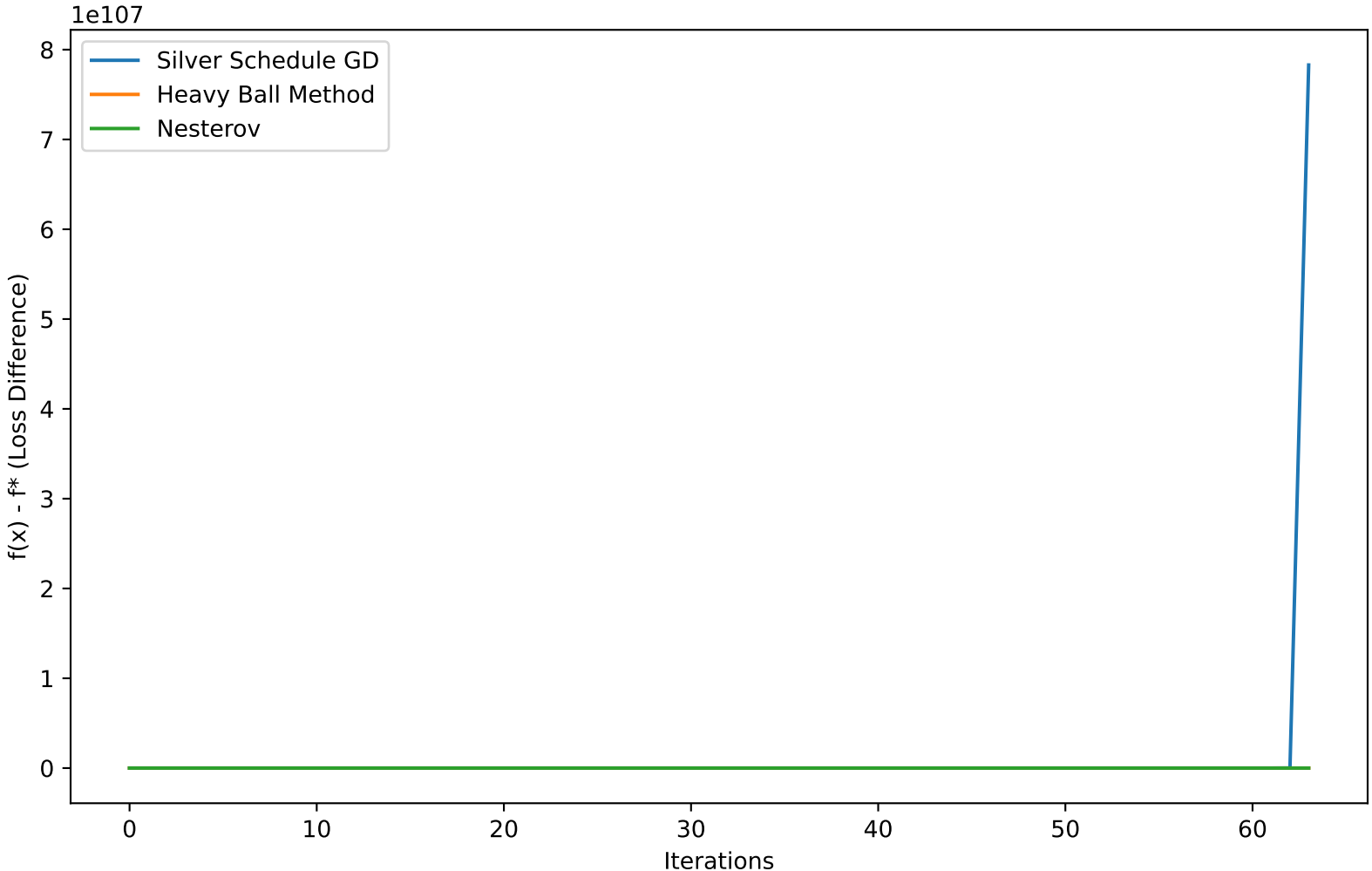
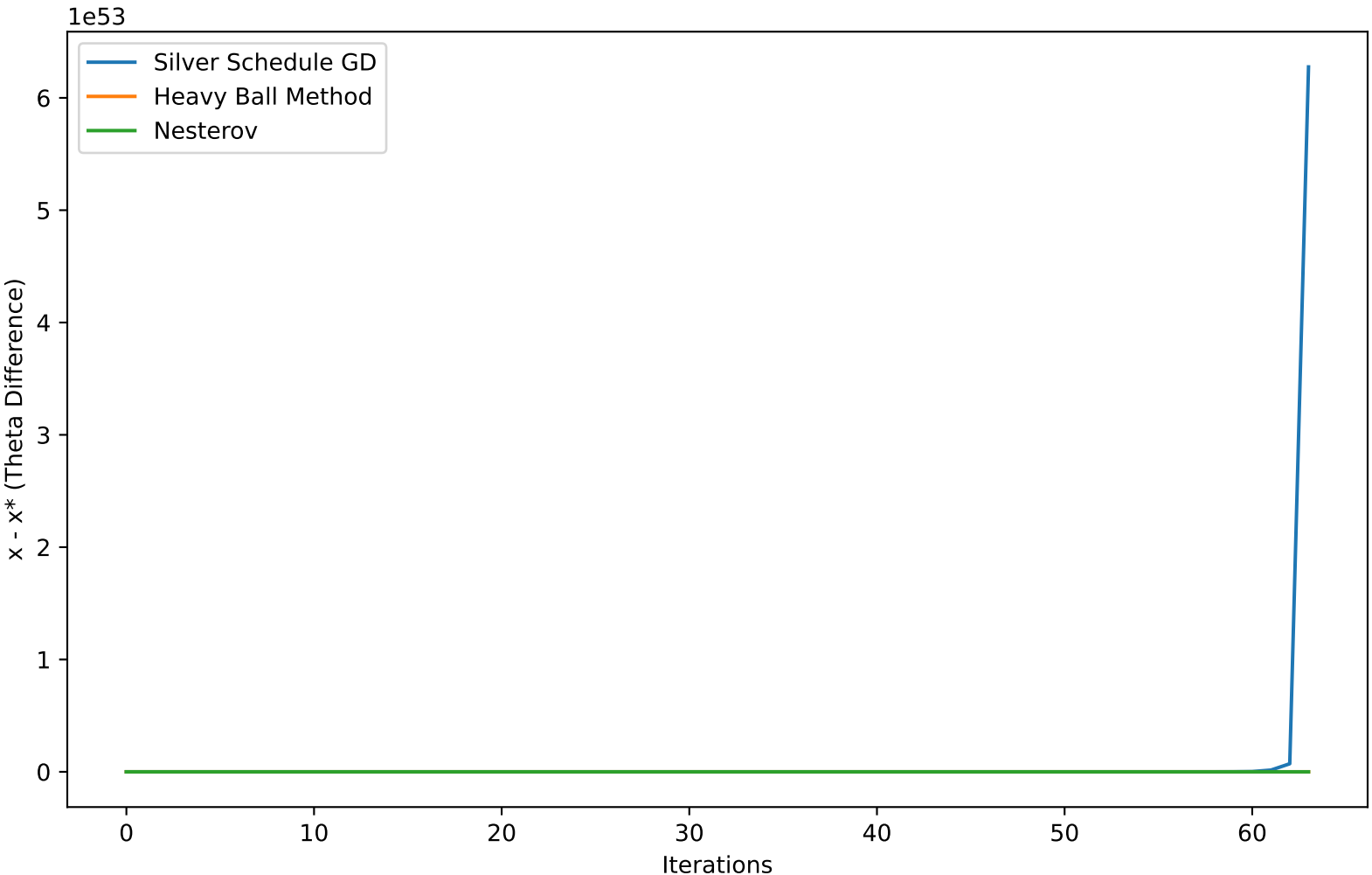
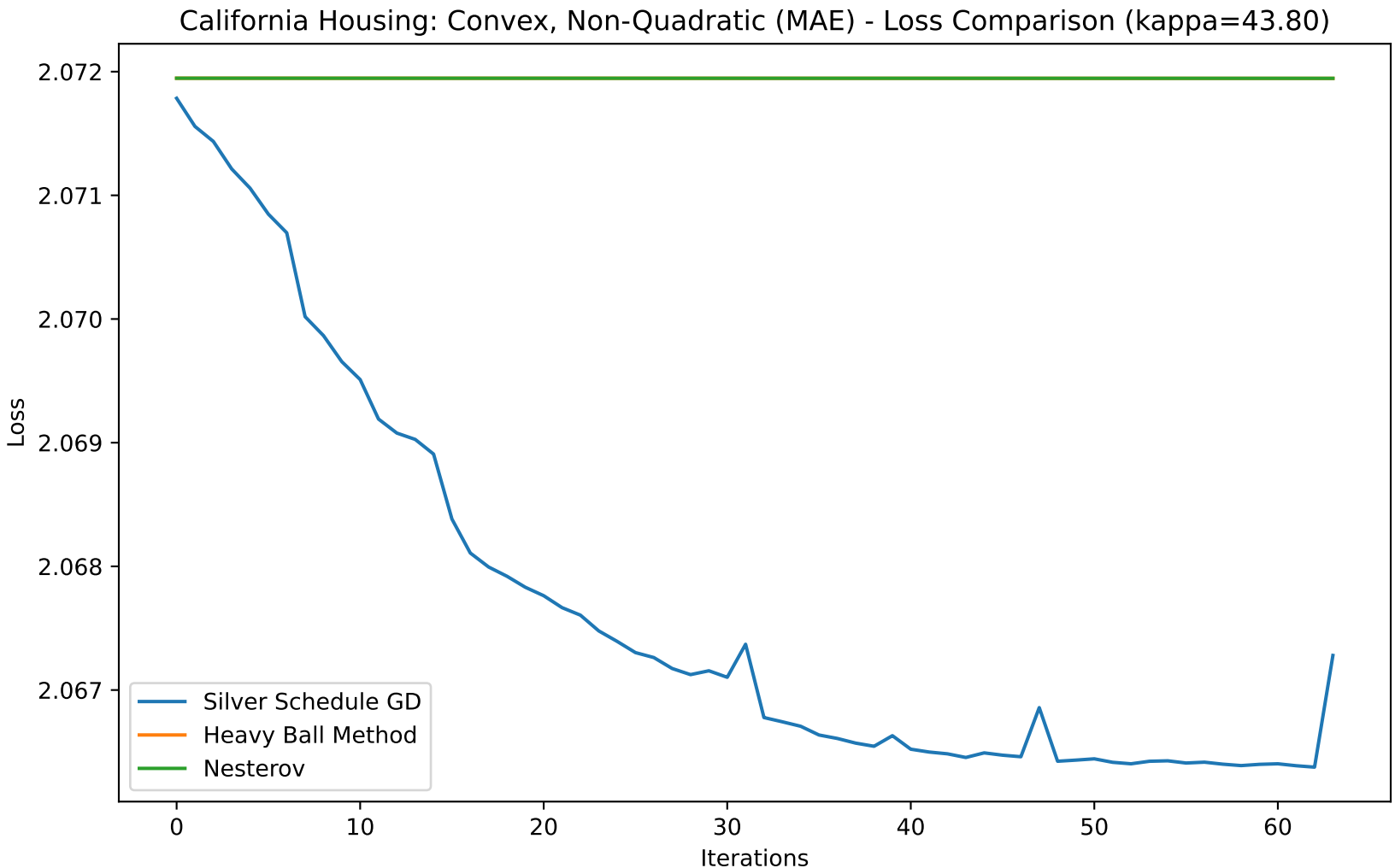
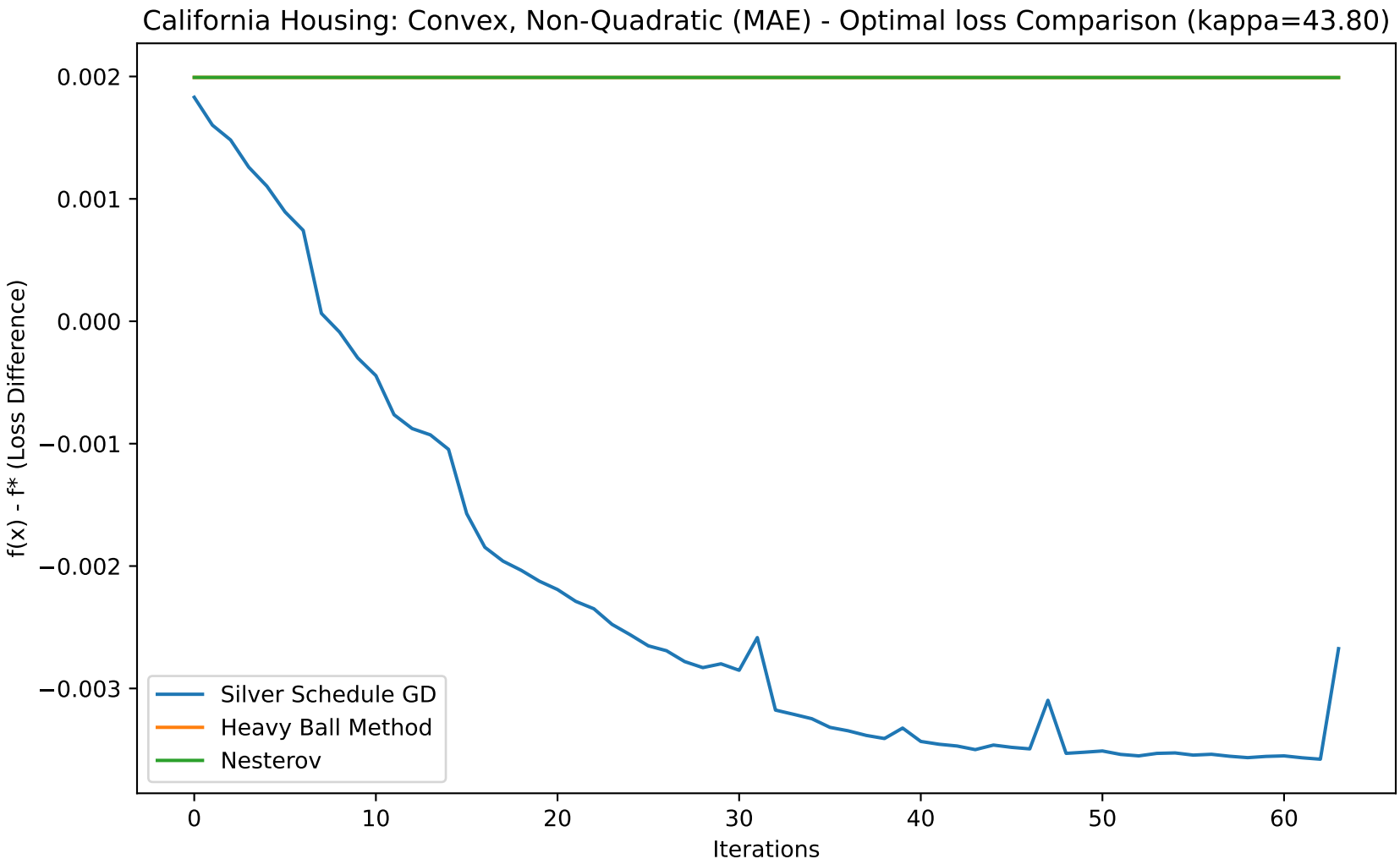
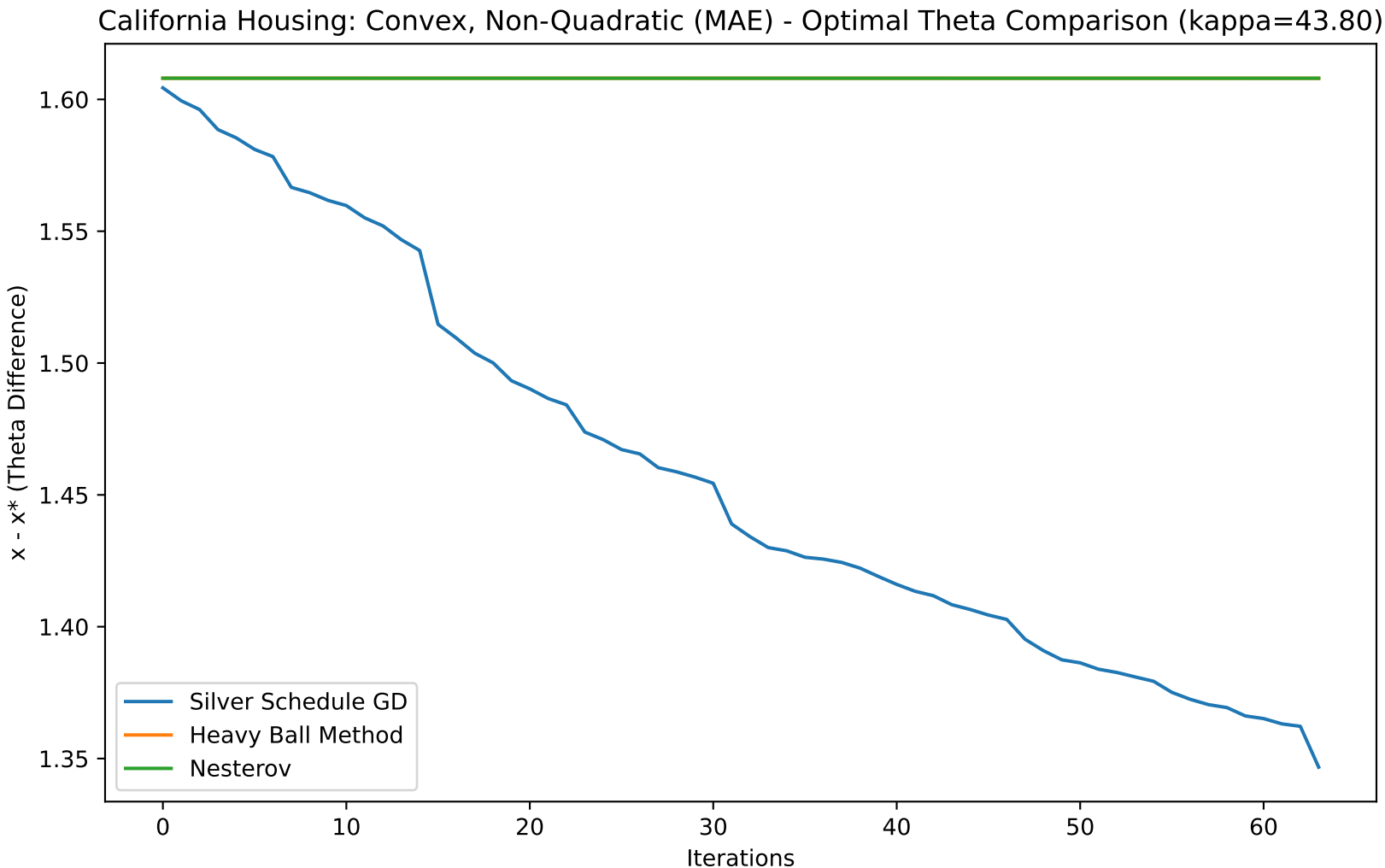

California Housing: Quadratic & Convex (MSE) - Loss Comparison (kappa=43.80)
1e107
Silver Schedule GD
Heavy Ball Method
Nesterov
Loss
Iterations
0
1
2
3
4
5
6
7
8
0
10
20
30
40
50
60

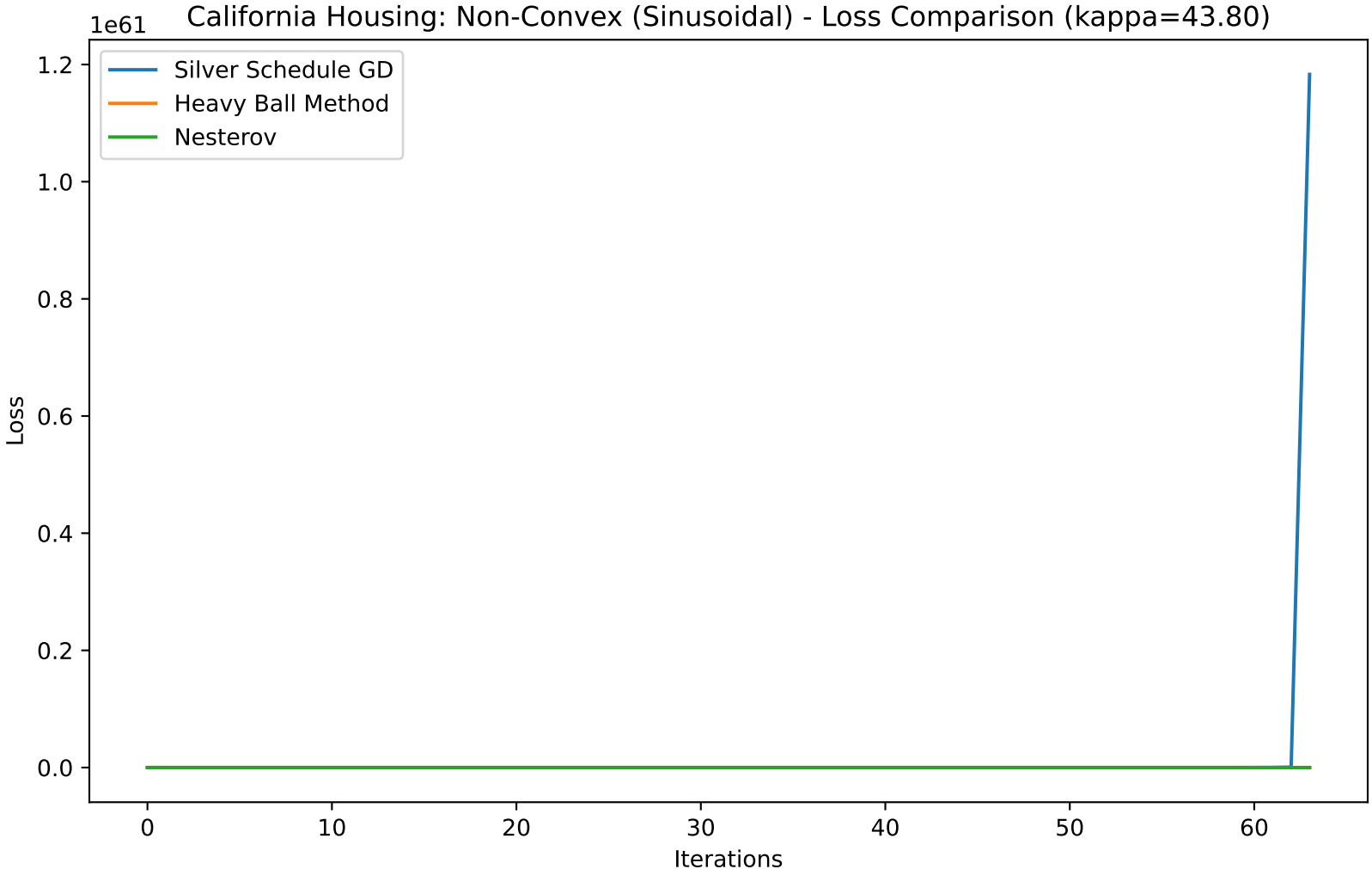

California Housing: Quadratic & Convex (MSE) - Optimal loss Comparison (kappa=43.80)
1e107
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
Iterations
0
1
2
3
4
5
6
7
8
0
10
20
30
40
50
60

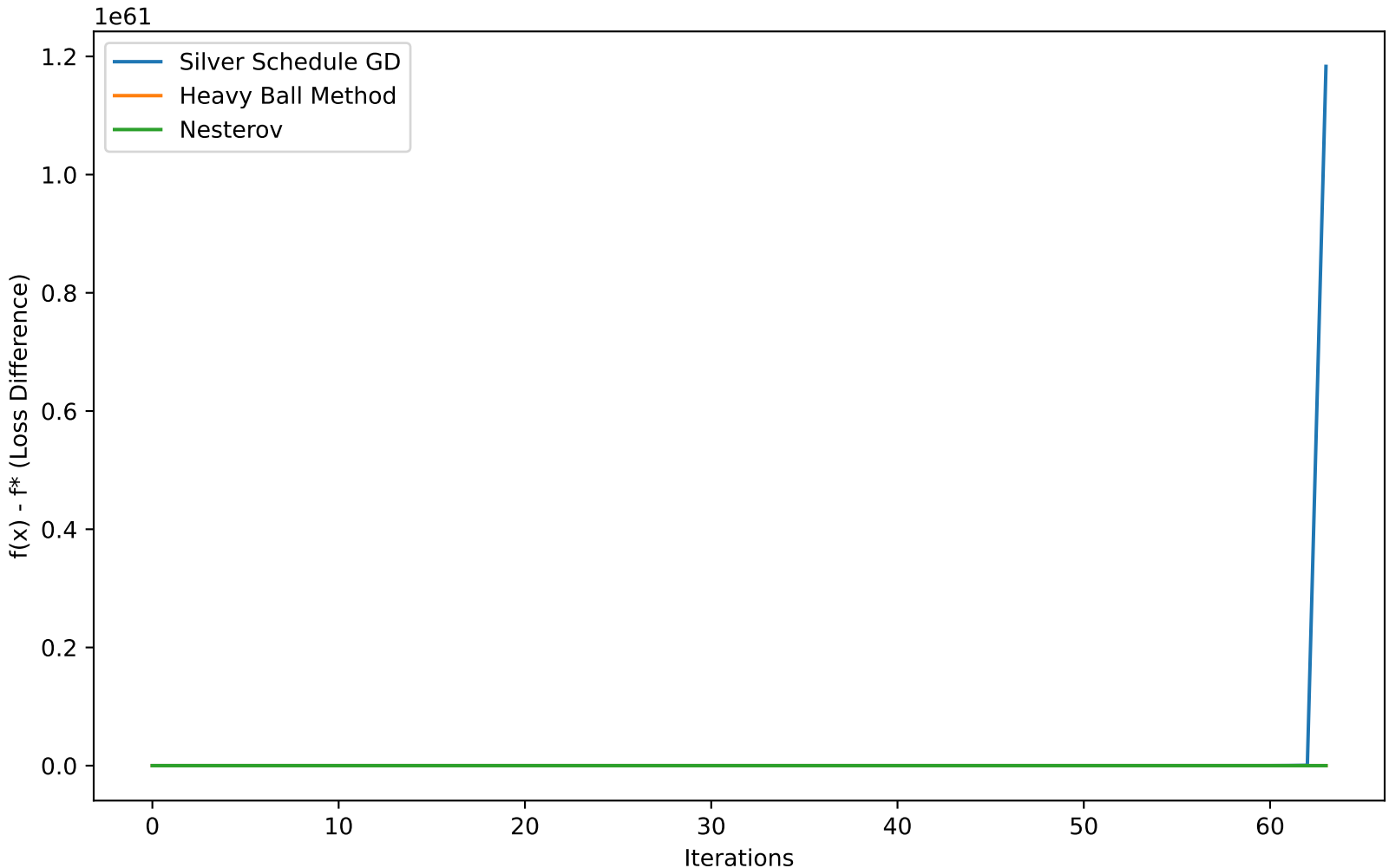

California Housing: Quadratic & Convex (MSE) - Optimal Theta Comparison (kappa=43.80)
1e53
Silver Schedule GD
Heavy Ball Method
Nesterov
x - x* (Theta Difference)
Iterations
0
1
2
3
4
5
6
0
10
20
30
40
50
60

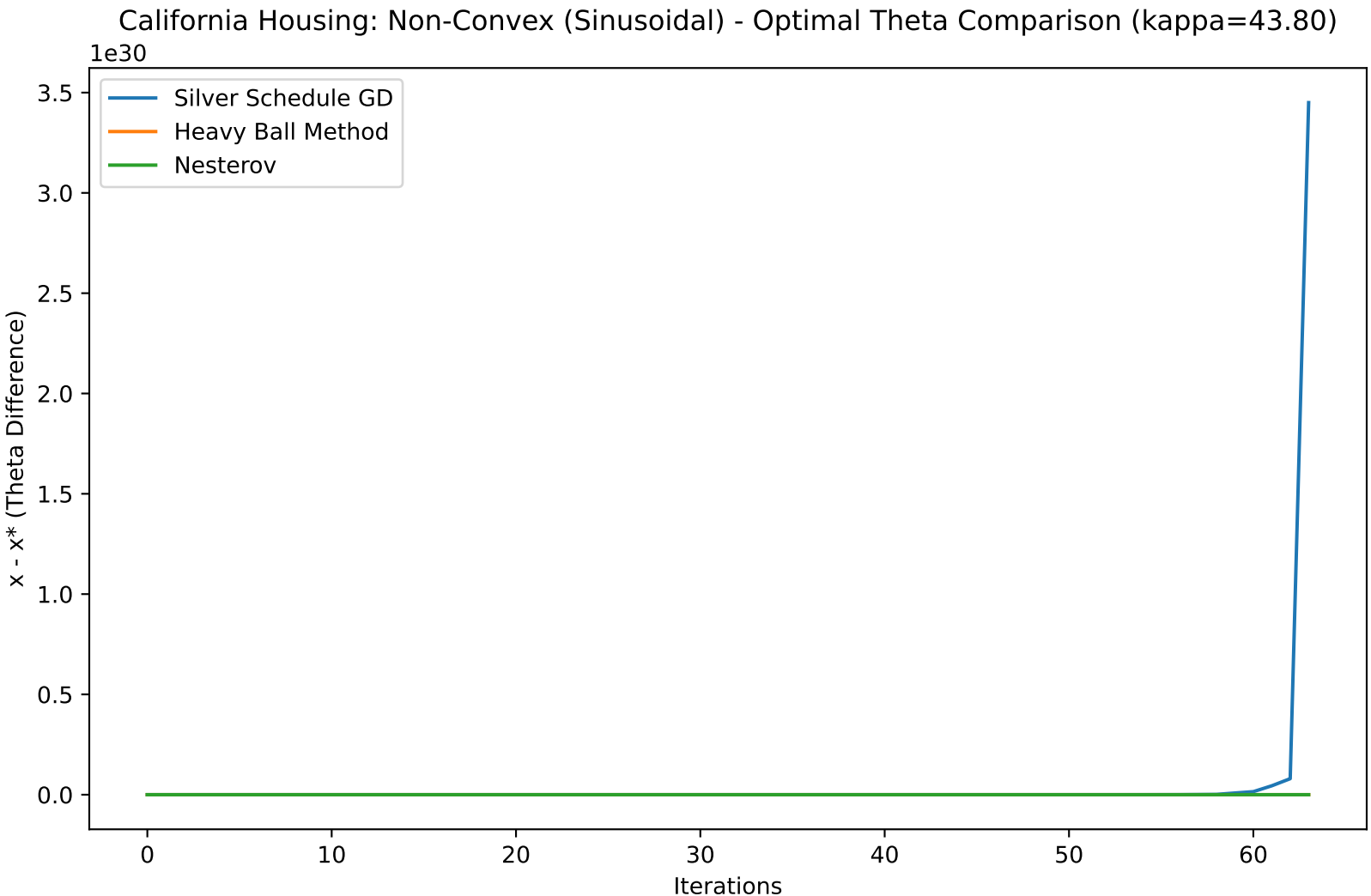

California Housing: Convex, Non-Quadratic (MAE) - Loss Comparison (kappa=43.80)
2.072
2.071
2.070
2.069
2.068
2.067
Loss
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

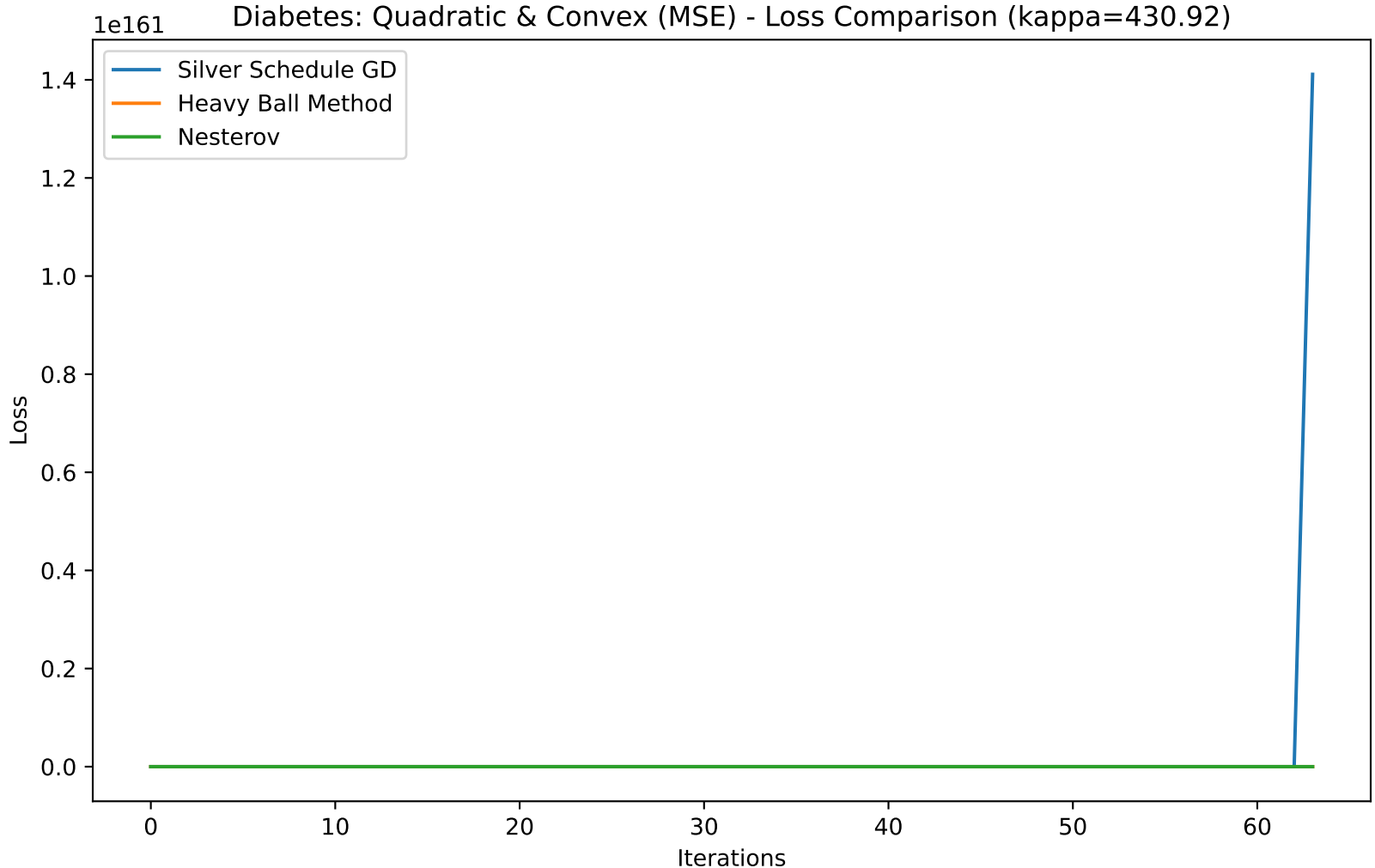

California Housing: Convex, Non-Quadratic (MAE) - Optimal loss Comparison (kappa=43.80)
0.002
0.001
0.000
−0.001
−0.002
−0.003
f(x) - f* (Loss Difference)
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

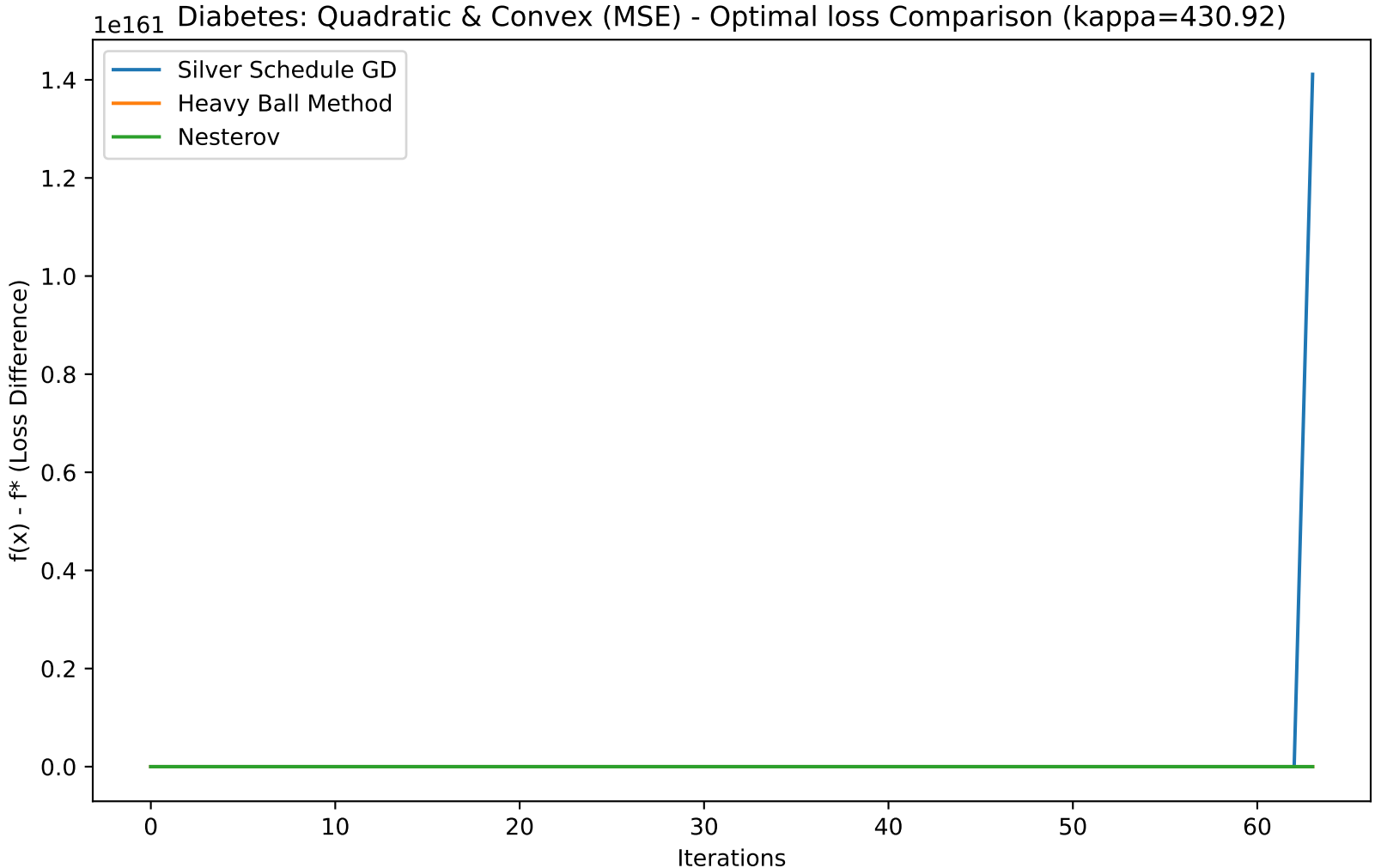

California Housing: Convex, Non-Quadratic (MAE) - Optimal Theta Comparison (kappa=43.80)
x - x* (Theta Difference)
1.60
1.55
1.50
1.45
1.40
1.35
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

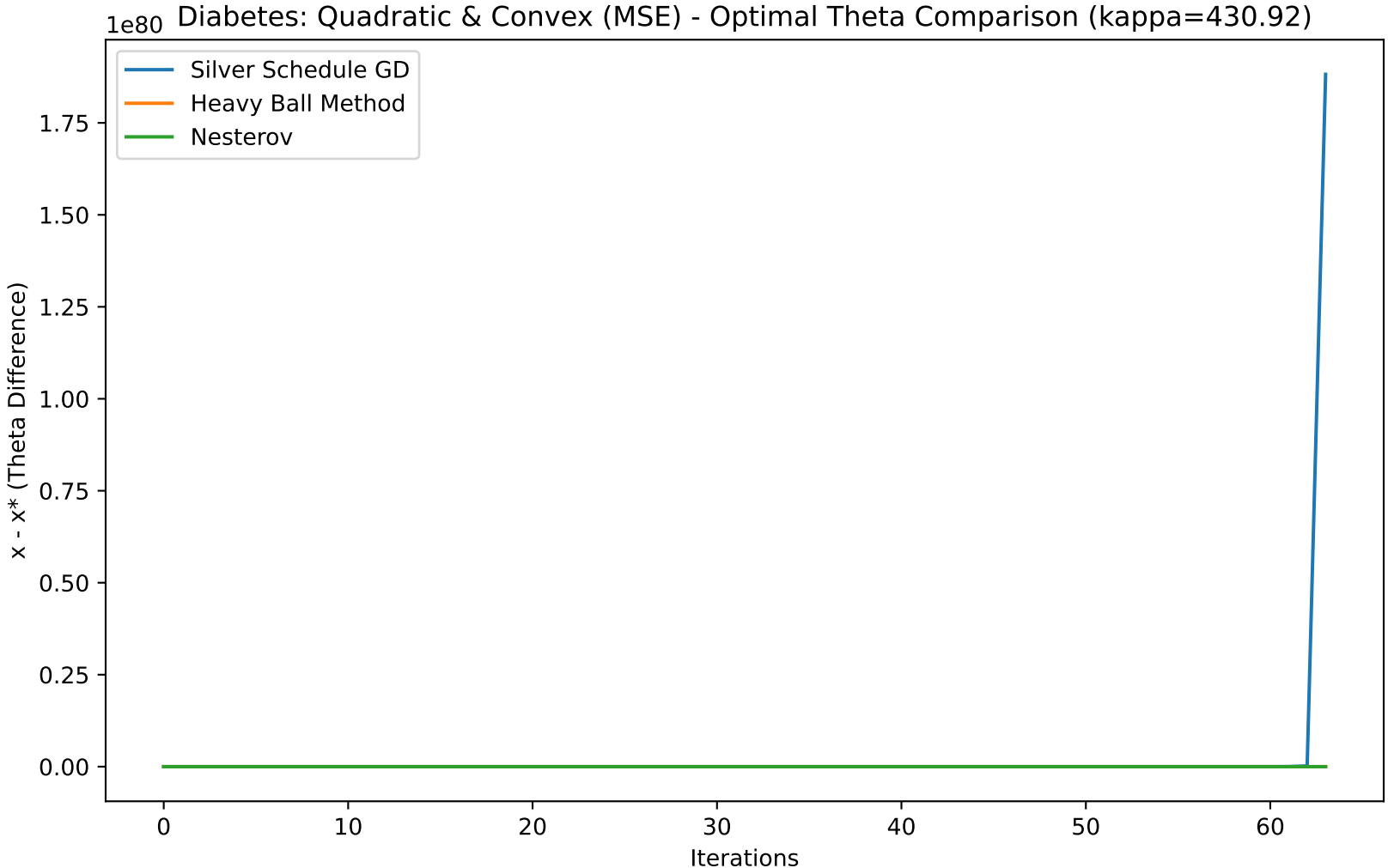

California Housing: Non-Convex (Sinusoidal) - Loss Comparison (kappa=43.80)
1e61
Silver Schedule GD
Heavy Ball Method
Nesterov
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Loss
0
10
20
30
40
50
60
Iterations

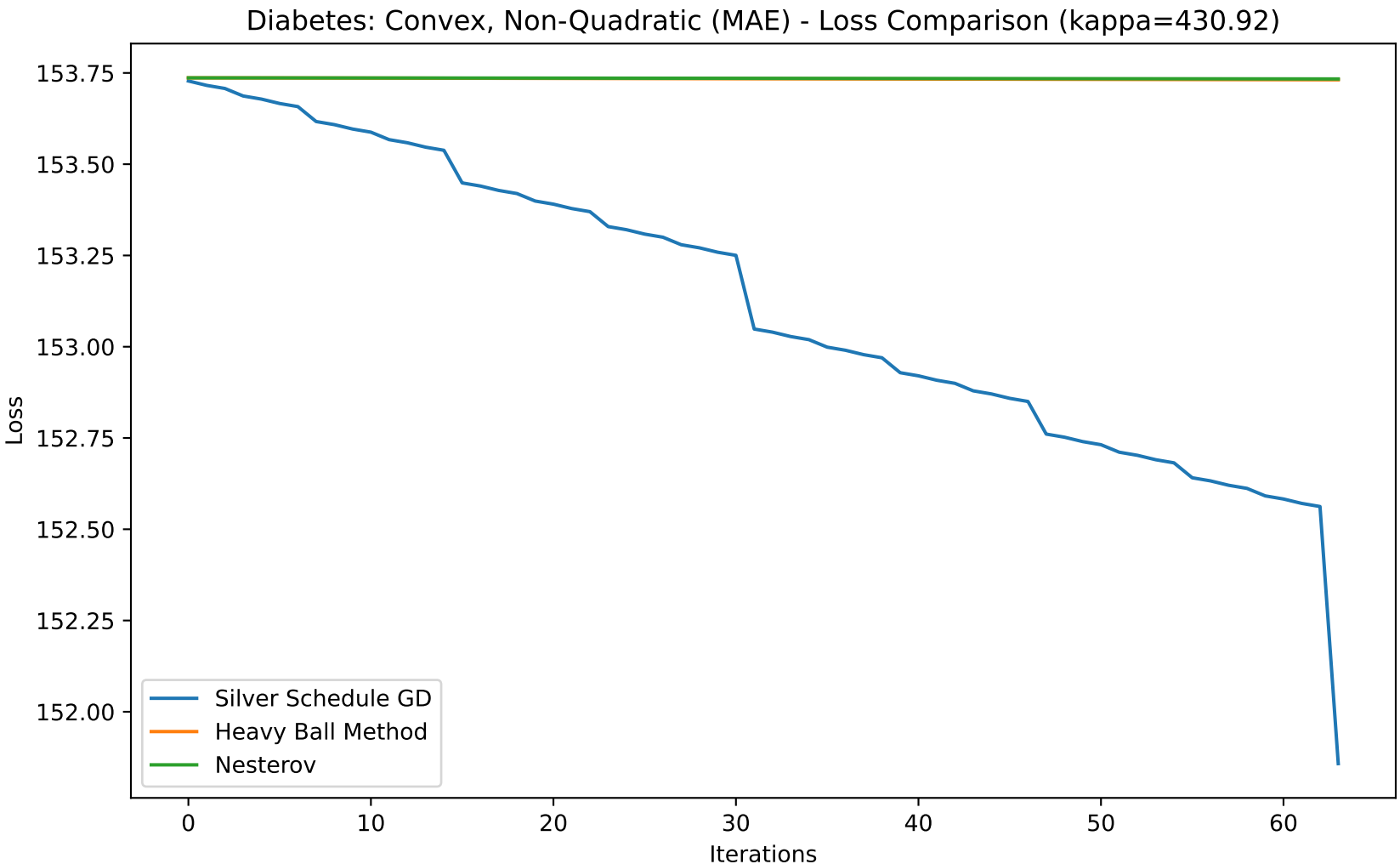

California Housing: Non-Convex (Sinusoidal) - Optimal loss Comparison (kappa=43.80)
1e61
Silver Schedule GD
Heavy Ball Method
Nesterov
1.2
1.0
0.8
0.6
0.4
0.2
0.0
f(x) - f* (Loss Difference)
0
10
20
30
40
50
60
Iterations

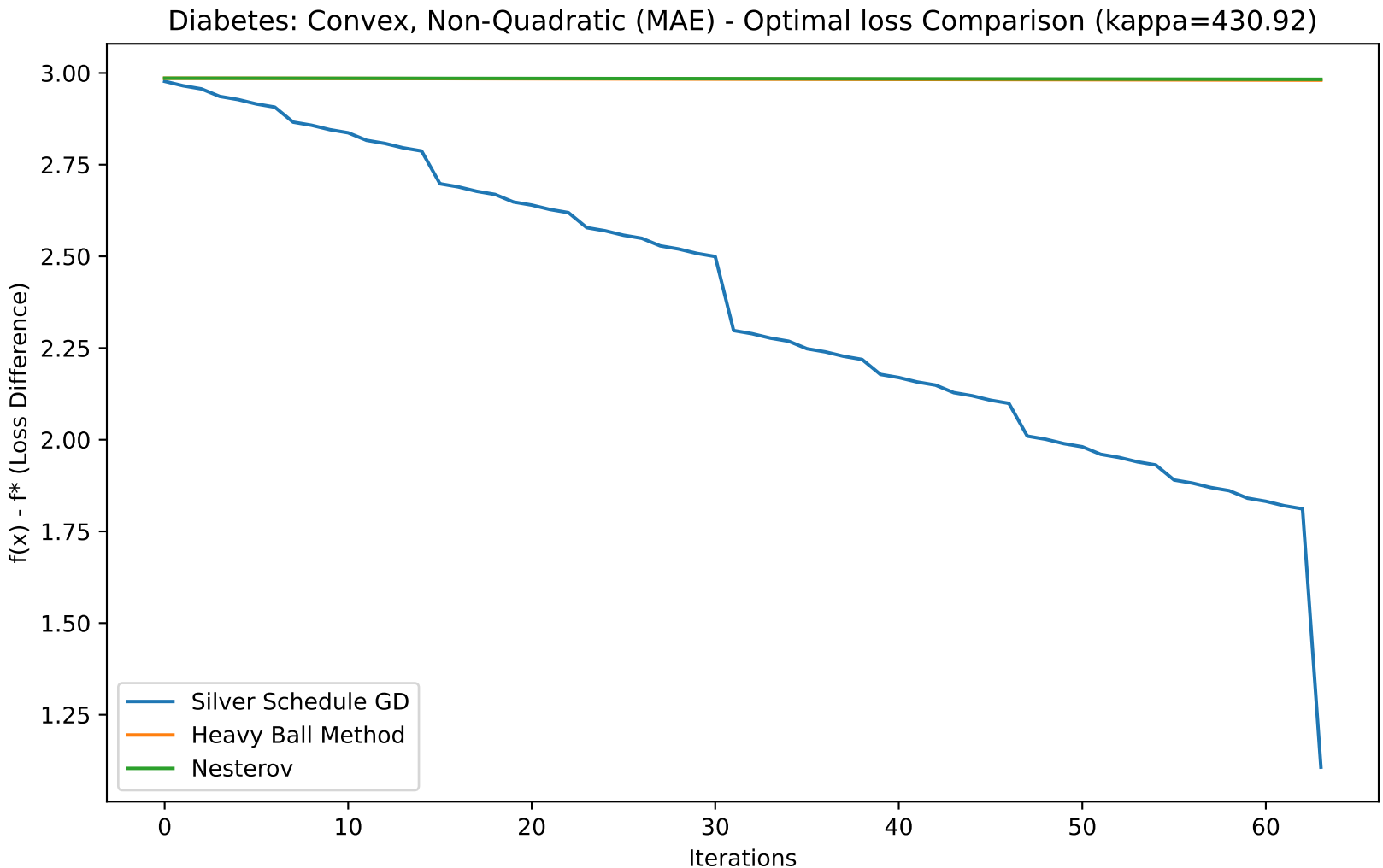

California Housing: Non-Convex (Sinusoidal) - Optimal Theta Comparison (kappa=43.80)
1e30
Silver Schedule GD
Heavy Ball Method
Nesterov
x - x* (Theta Difference)
Iterations
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
10
20
30
40
50
60

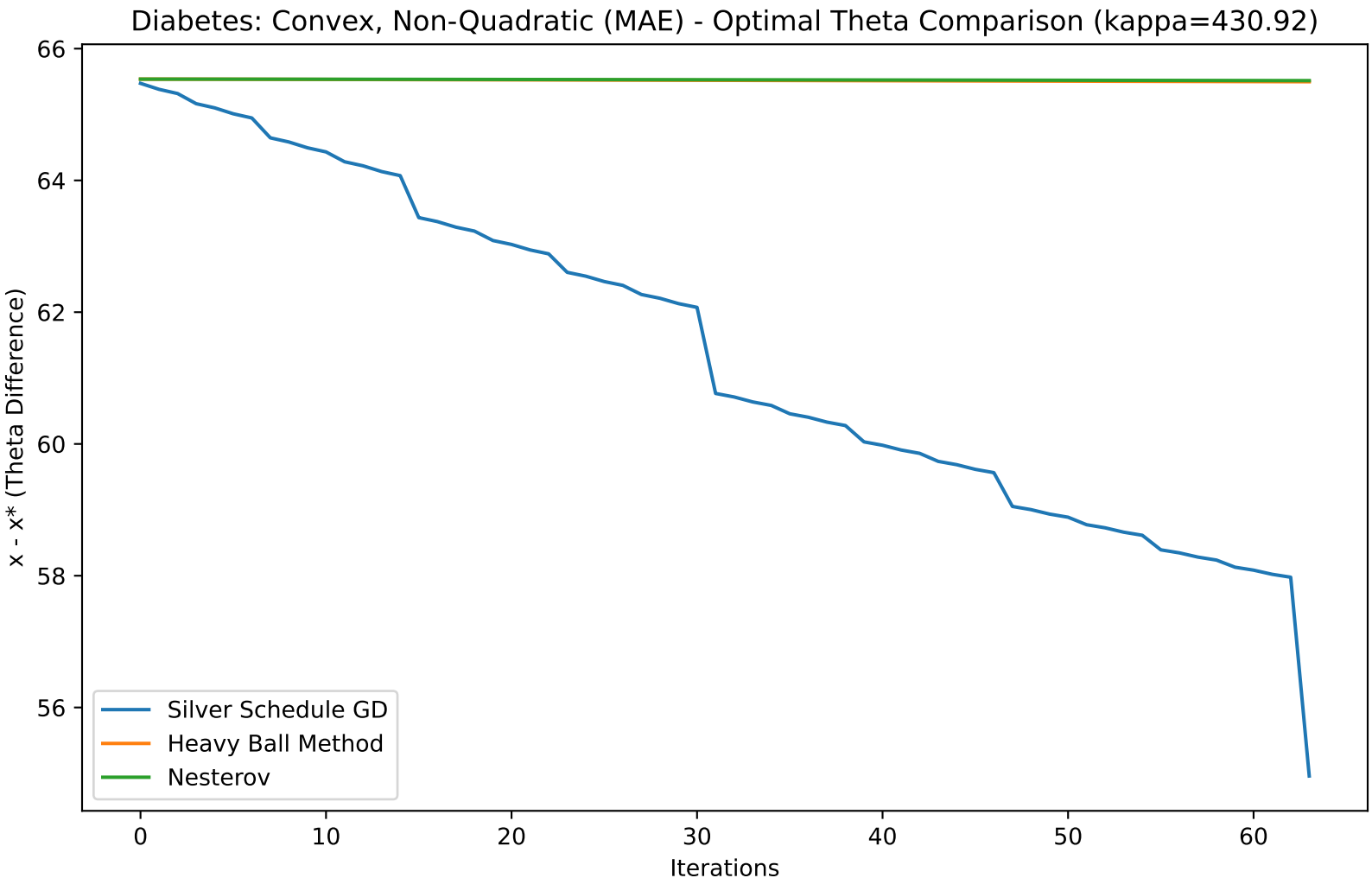

Diabetes: Quadratic & Convex (MSE) - Loss Comparison (kappa=430.92)
1e161
Silver Schedule GD
Heavy Ball Method
Nesterov
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Loss
0
10
20
30
40
50
60
Iterations

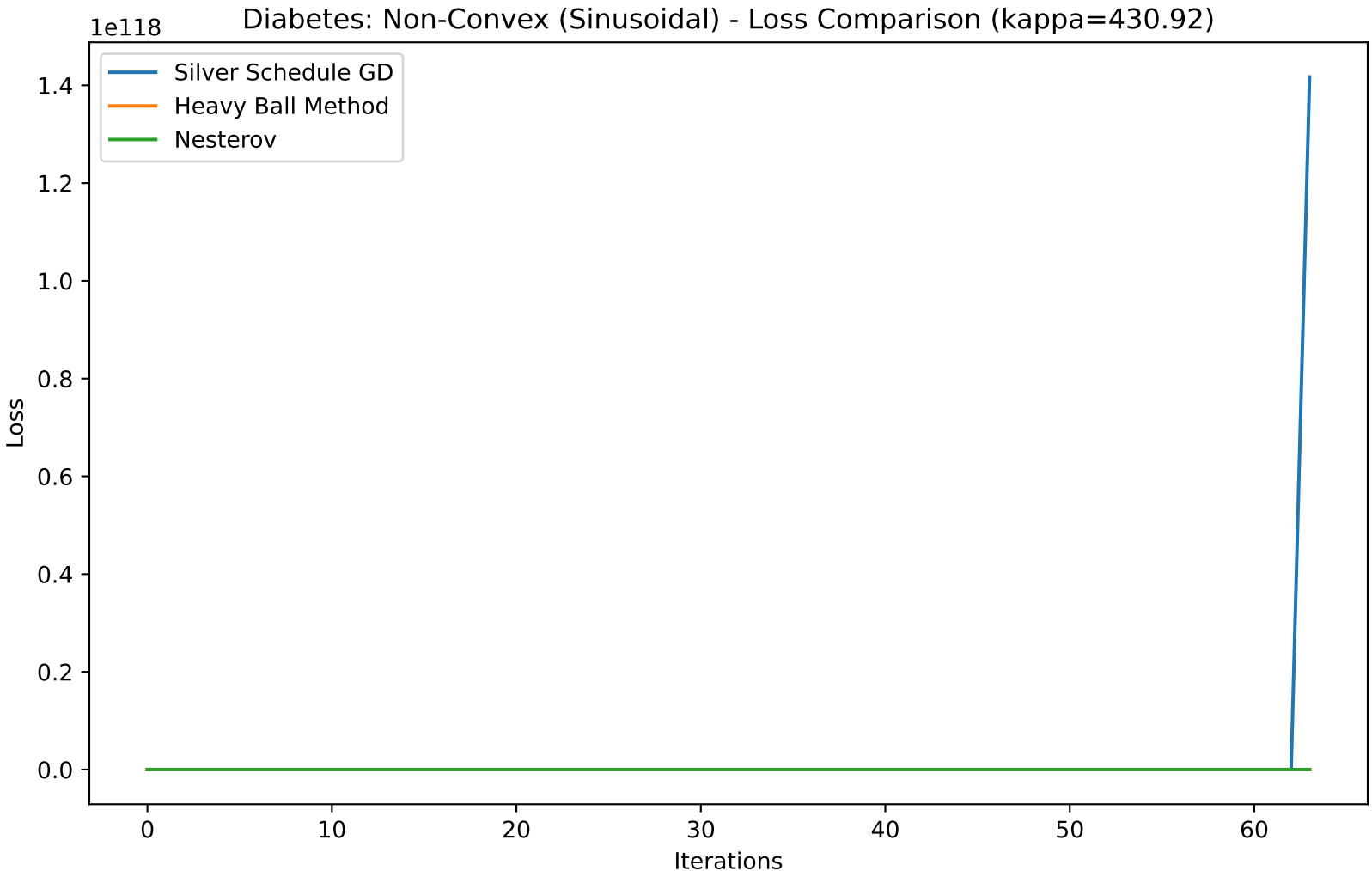

Diabetes: Quadratic & Convex (MSE) - Optimal loss Comparison (kappa=430.92)
1e161
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
Iterations
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
10
20
30
40
50
60

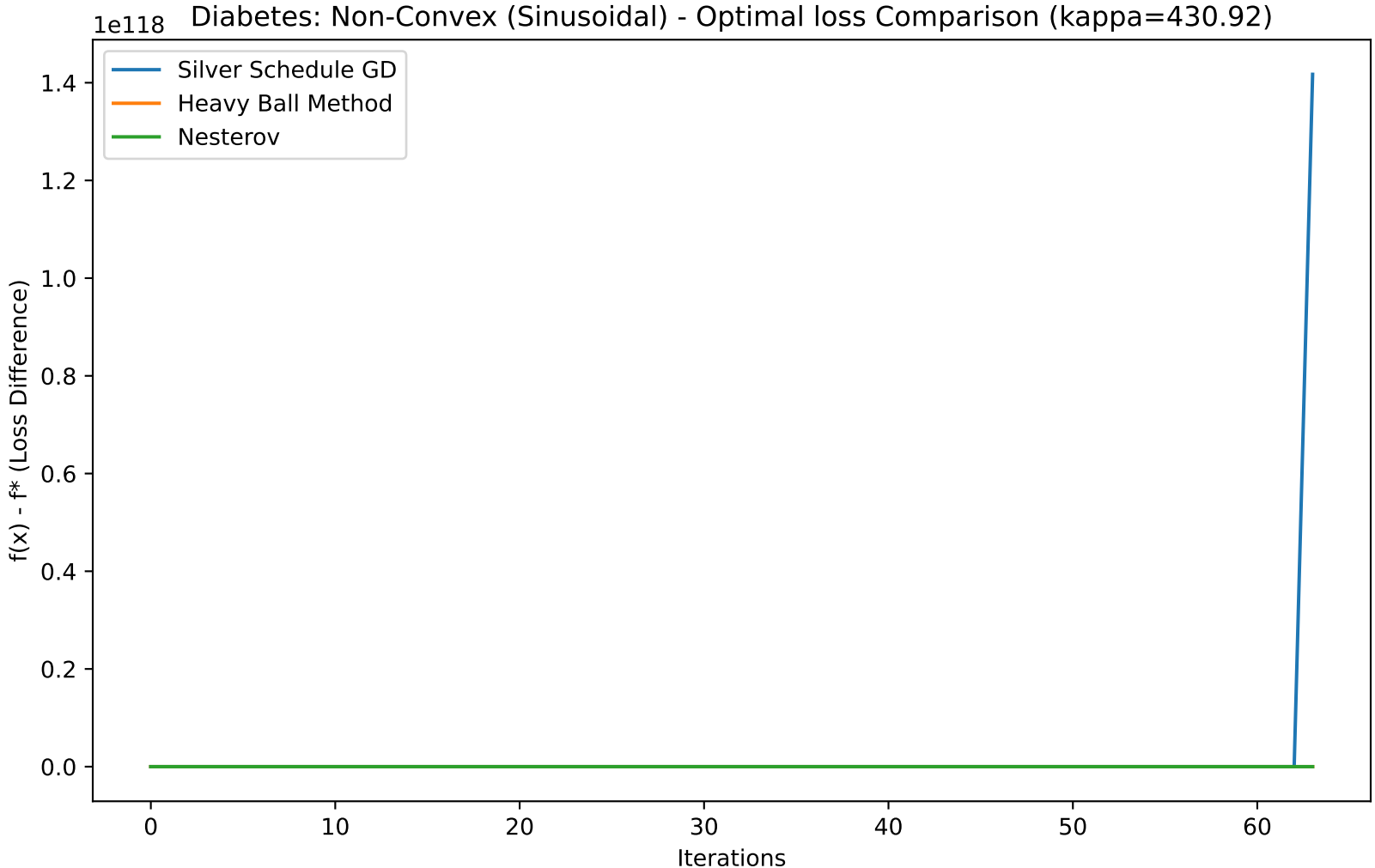

Diabetes: Quadratic & Convex (MSE) - Optimal Theta Comparison (kappa=430.92)
1e80
Silver Schedule GD
Heavy Ball Method
Nesterov
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
x - x* (Theta Difference)
0
10
20
30
40
50
60
Iterations

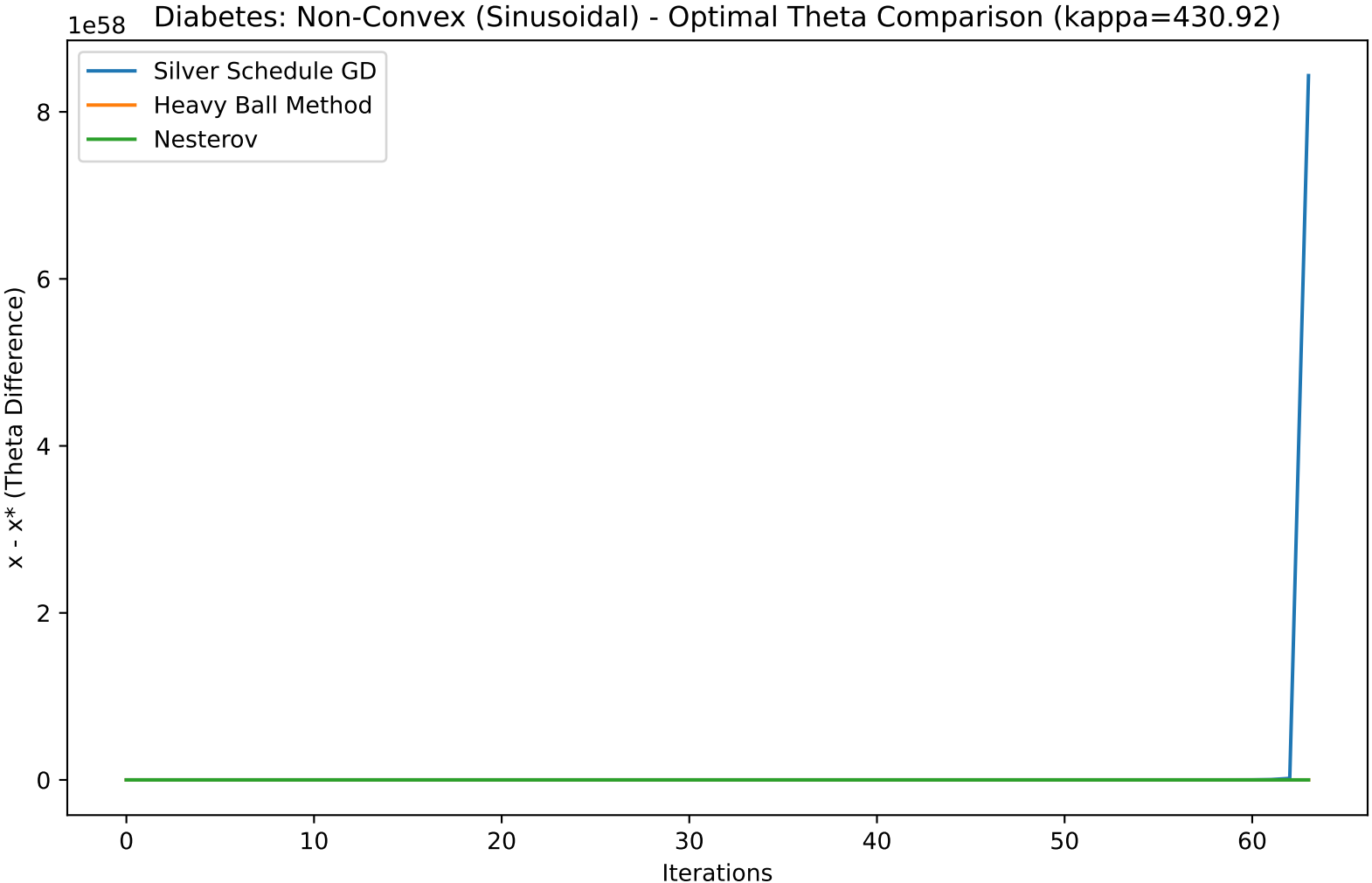

Diabetes: Convex, Non-Quadratic (MAE) - Loss Comparison (kappa=430.92)
153.75
153.50
153.25
153.00
152.75
152.50
152.25
152.00
Loss
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

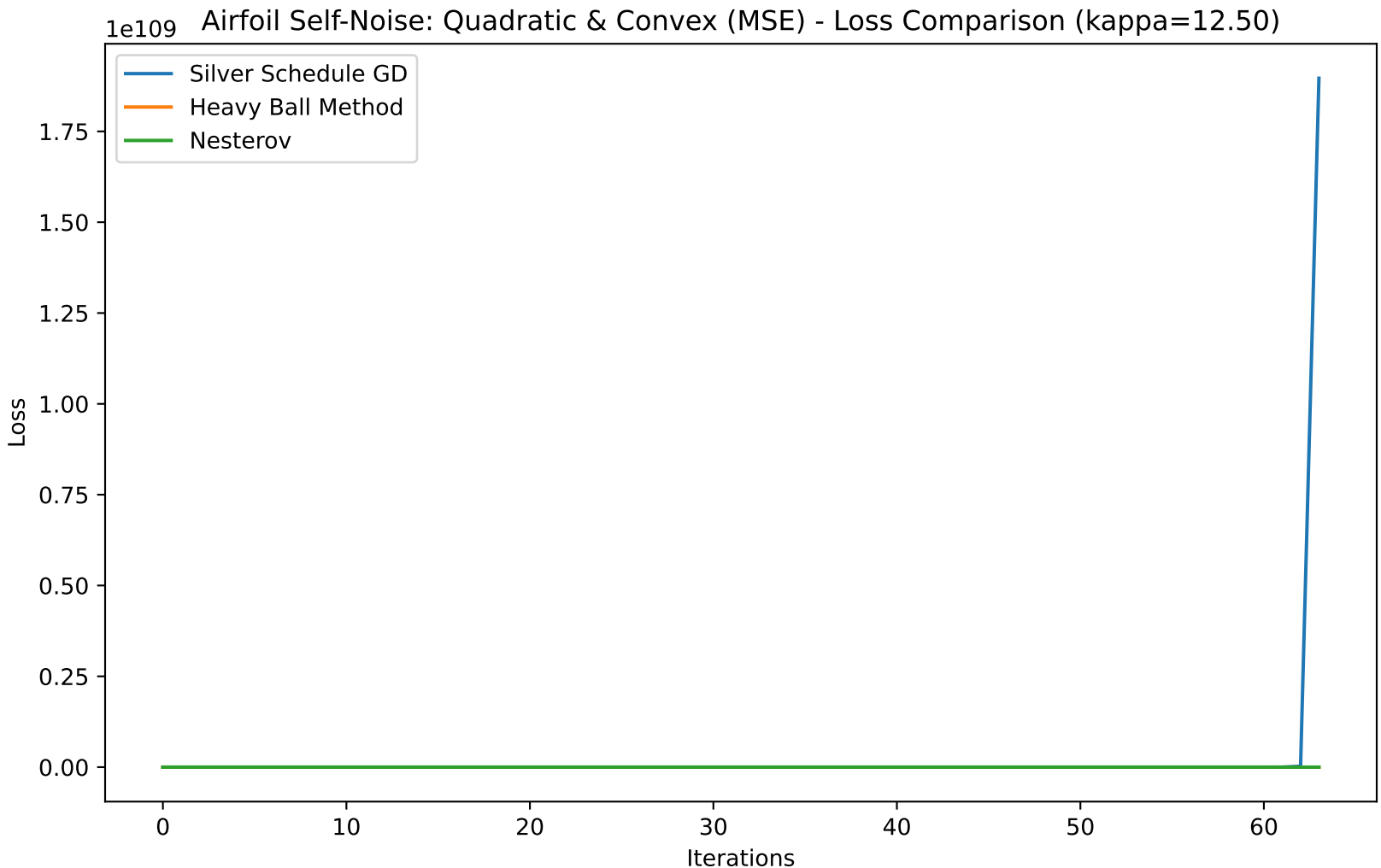

Diabetes: Convex, Non-Quadratic (MAE) - Optimal loss Comparison (kappa=430.92)
f(x) - f* (Loss Difference)
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

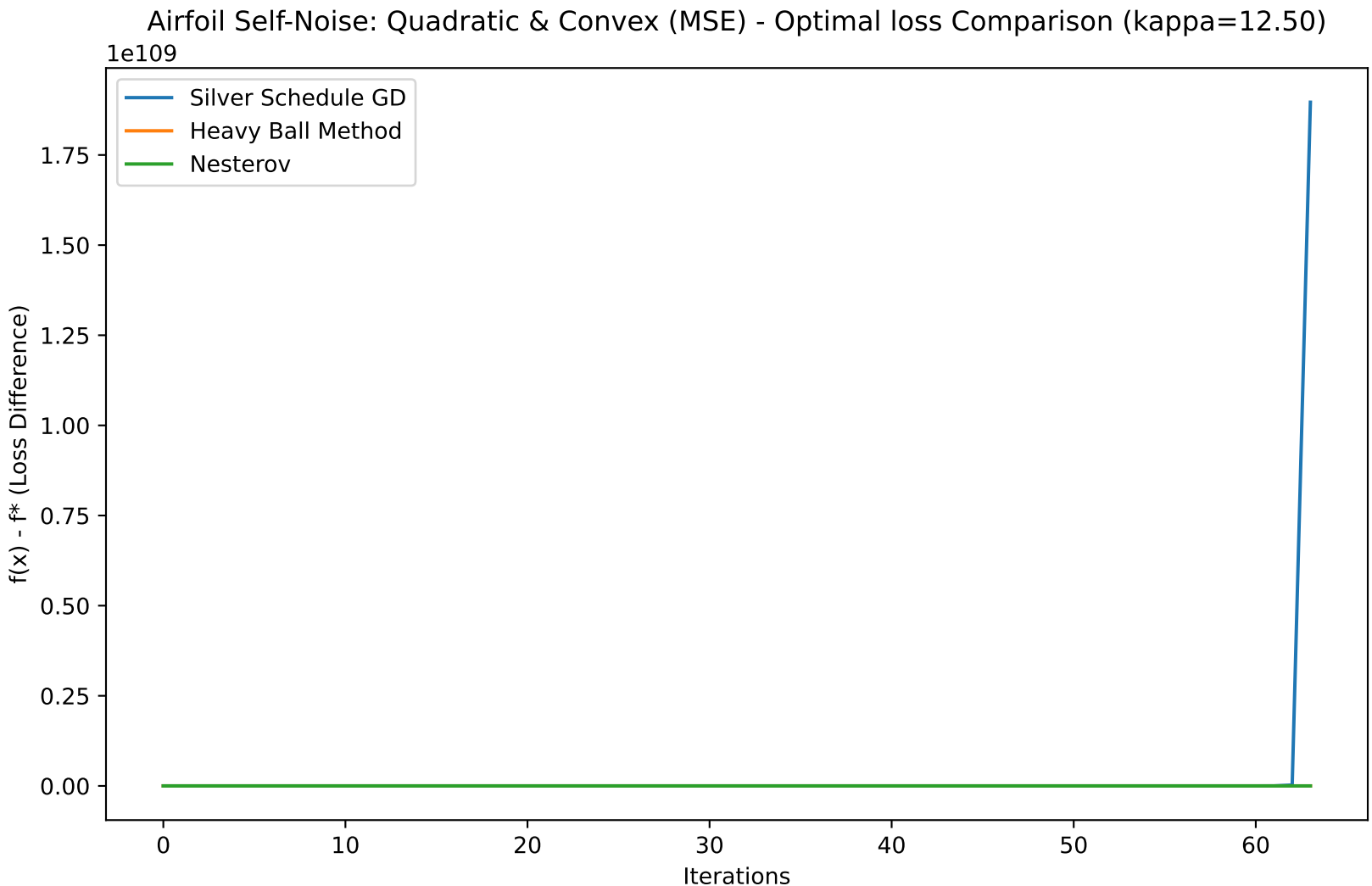

Diabetes: Convex, Non-Quadratic (MAE) - Optimal Theta Comparison (kappa=430.92)
x - x* (Theta Difference)
Iterations
66
64
62
60
58
56
0
10
20
30
40
50
60
Silver Schedule GD
Heavy Ball Method
Nesterov

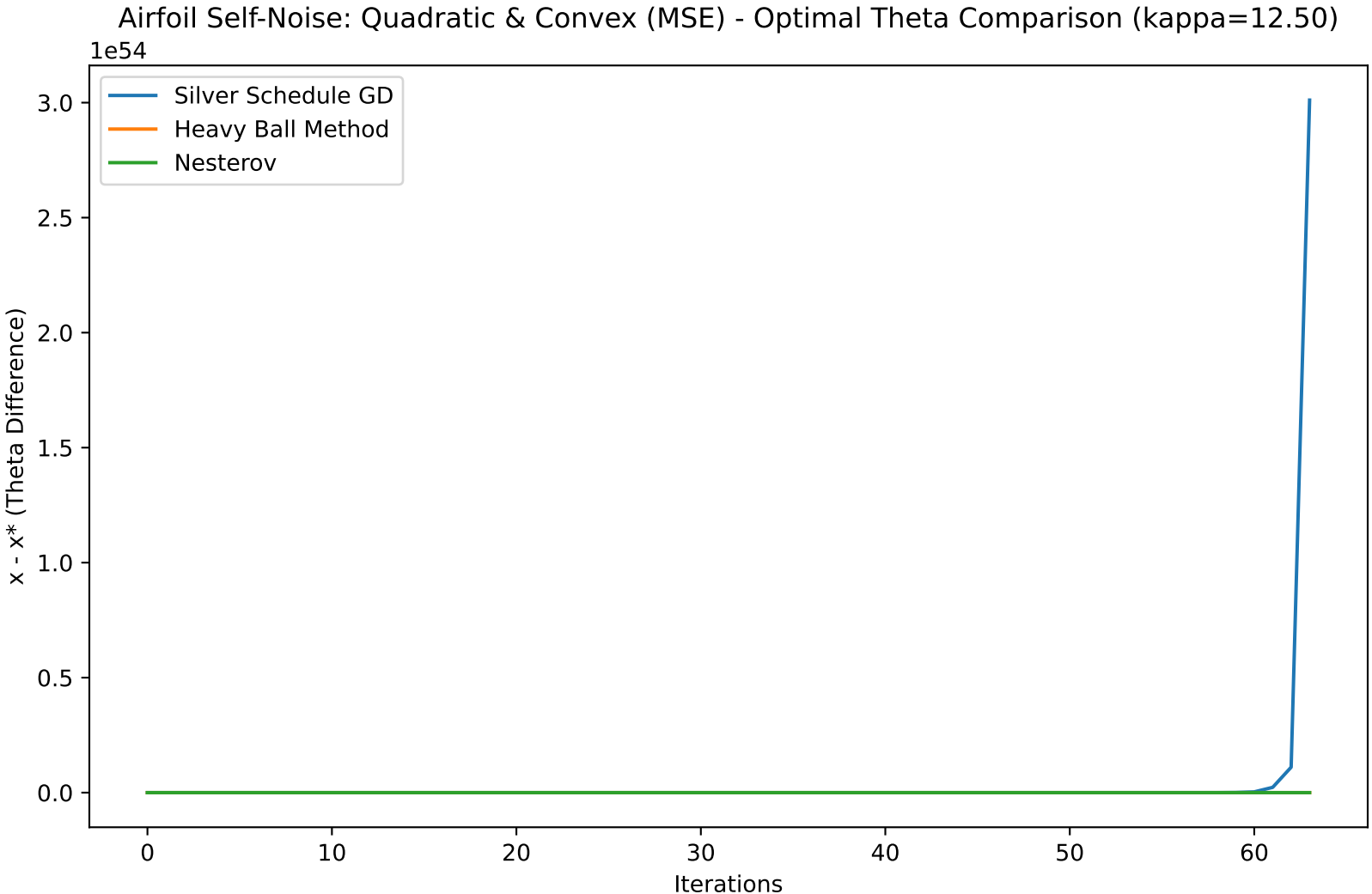

Diabetes: Non-Convex (Sinusoidal) - Loss Comparison (kappa=430.92)
1e118
Silver Schedule GD
Heavy Ball Method
Nesterov
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Loss
0
10
20
30
40
50
60
Iterations

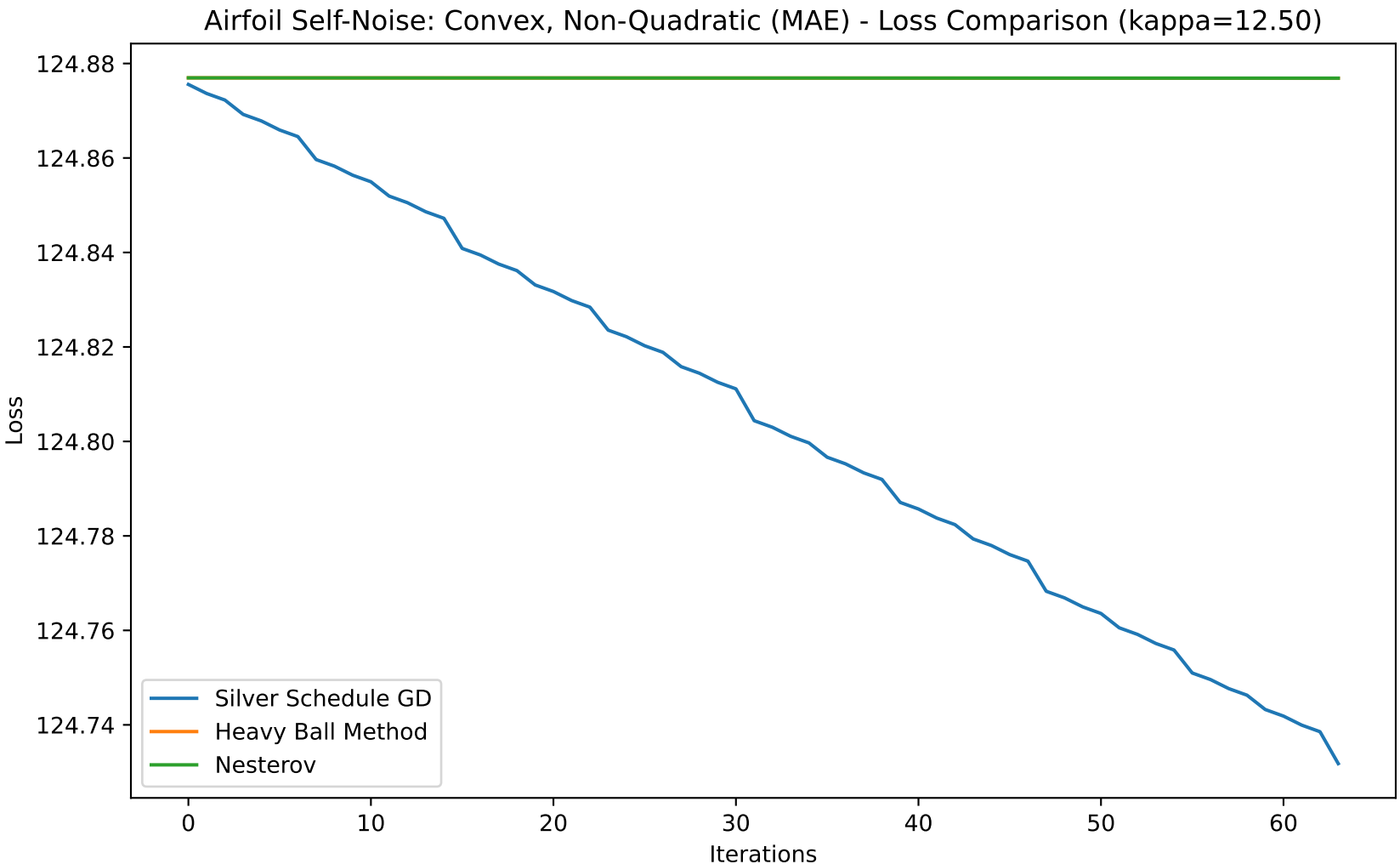

Diabetes: Non-Convex (Sinusoidal) - Optimal loss Comparison (kappa=430.92)
1e118
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
Iterations
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
10
20
30
40
50
60

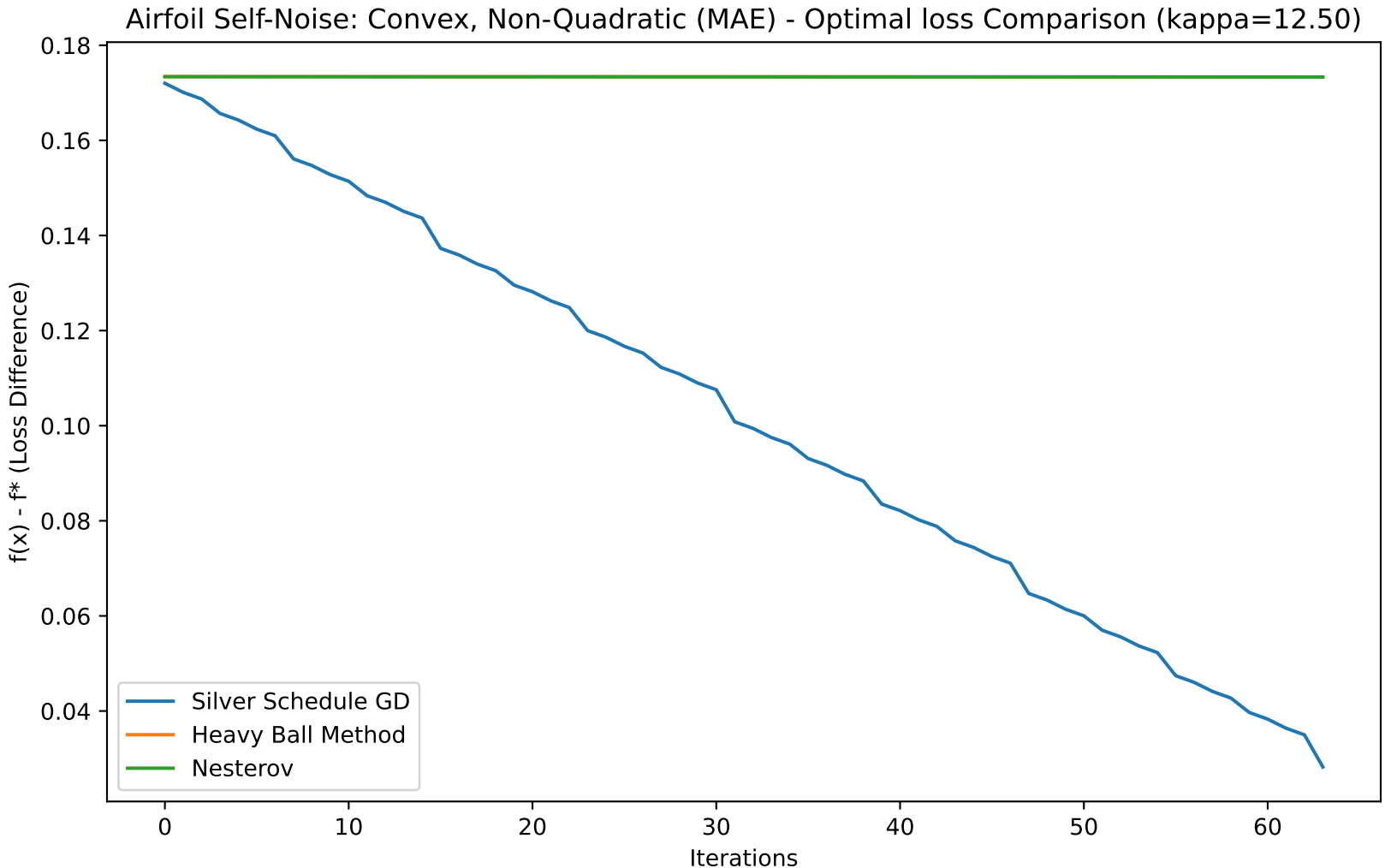

Diabetes: Non-Convex (Sinusoidal) - Optimal Theta Comparison (kappa=430.92)
1e58
Silver Schedule GD
Heavy Ball Method
Nesterov
x - x* (Theta Difference)
Iterations
0
2
4
6
8
0
10
20
30
40
50
60

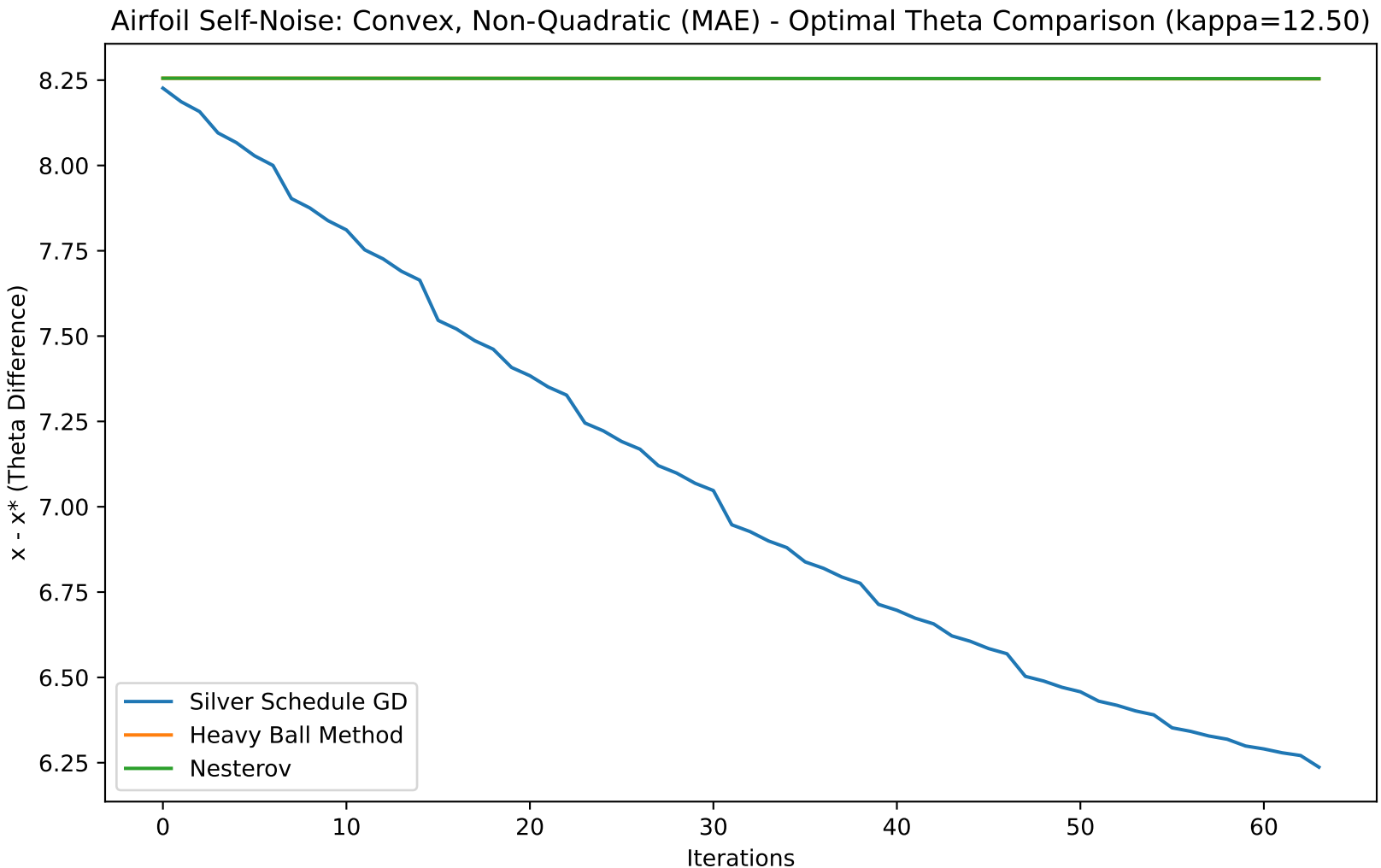

Airfoil Self-Noise: Quadratic & Convex (MSE) - Loss Comparison (kappa=12.50)
1e109
Silver Schedule GD
Heavy Ball Method
Nesterov
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Loss
0
10
20
30
40
50
60
Iterations

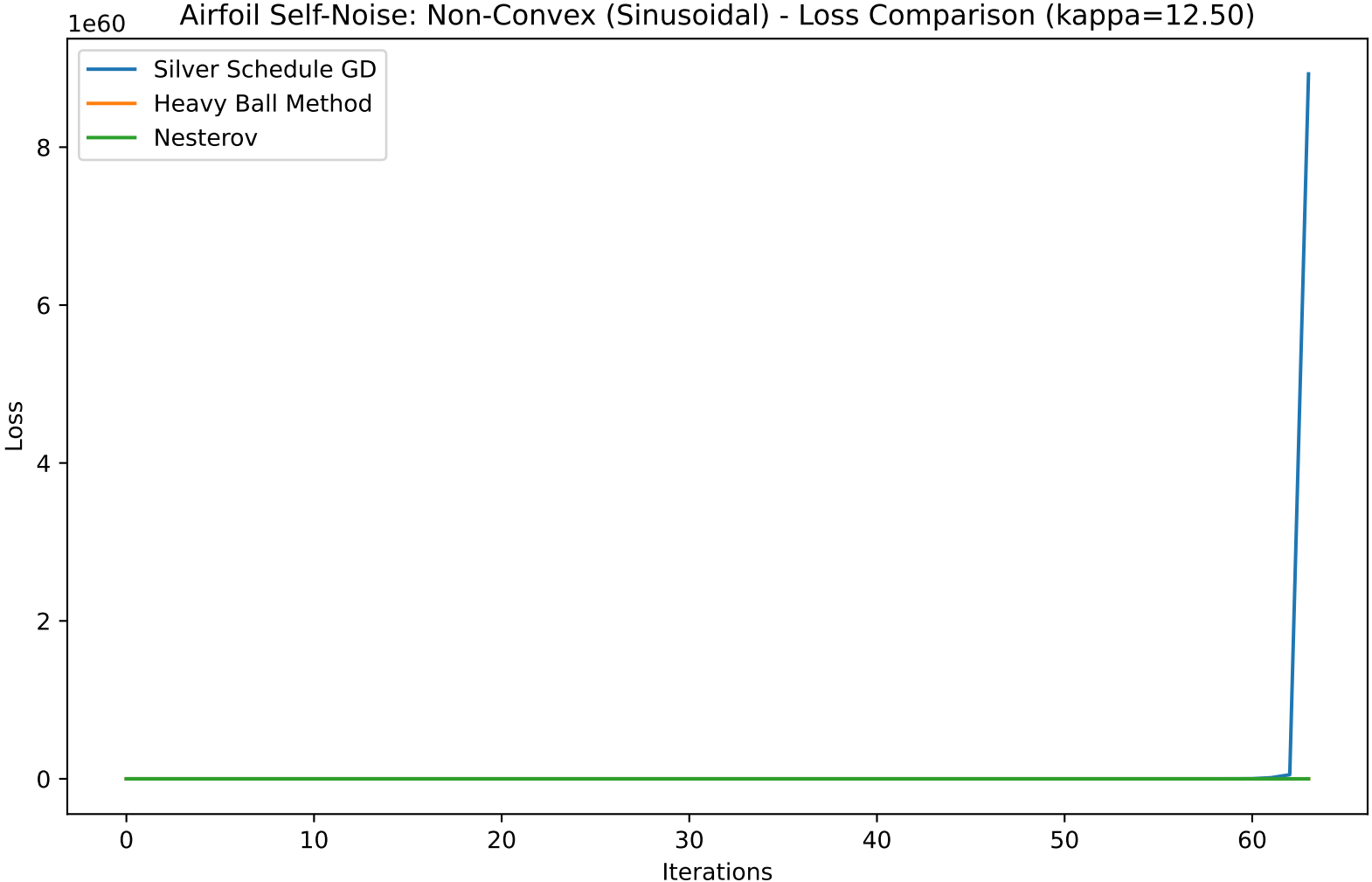

Airfoil Self-Noise: Quadratic & Convex (MSE) - Optimal loss Comparison (kappa=12.50)
1e109
Silver Schedule GD
Heavy Ball Method
Nesterov
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
f(x) - f* (Loss Difference)
0
10
20
30
40
50
60
Iterations

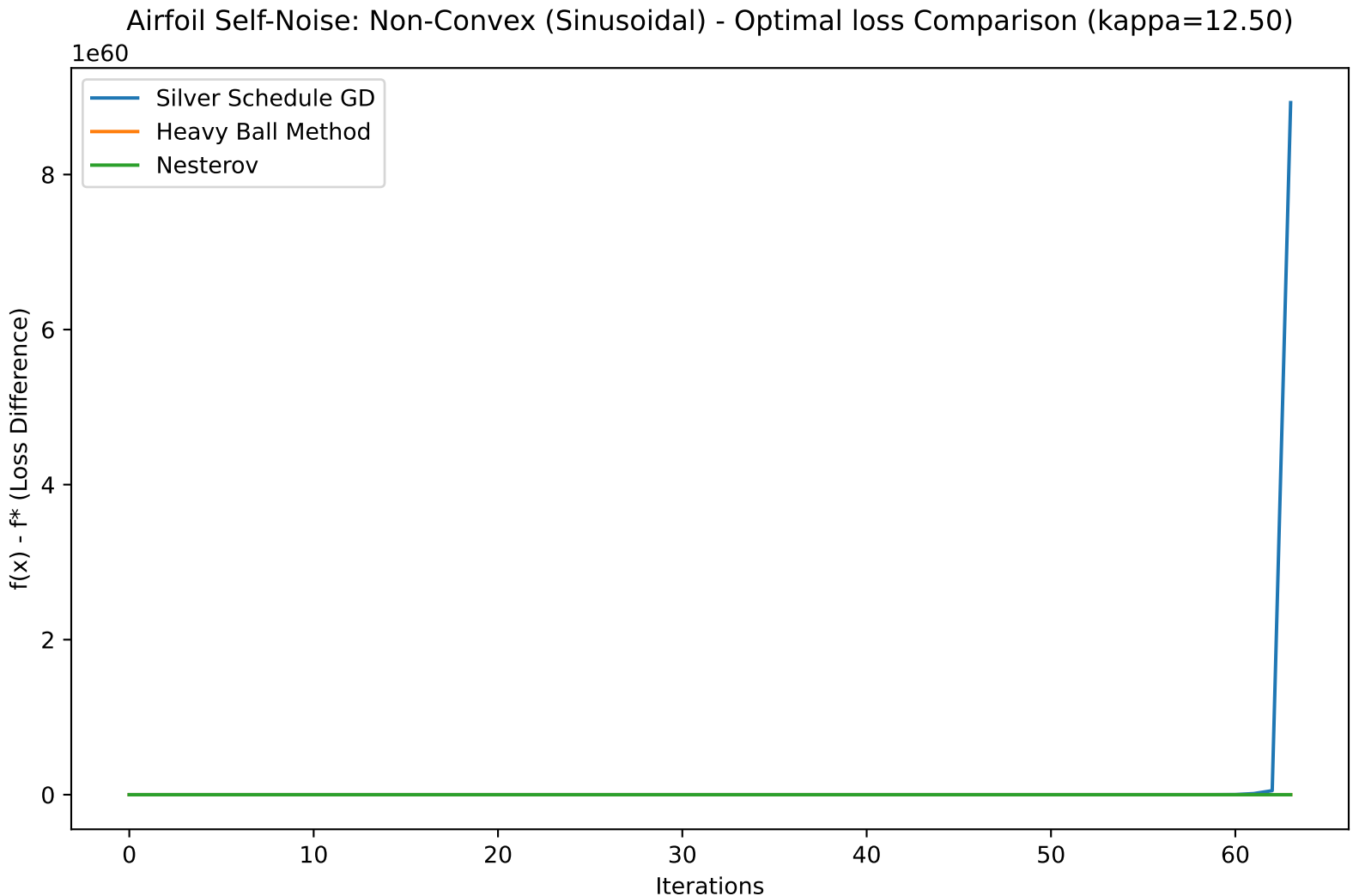

Airfoil Self-Noise: Quadratic & Convex (MSE) - Optimal Theta Comparison (kappa=12.50)
1e54
Silver Schedule GD
Heavy Ball Method
Nesterov
3.0
2.5
2.0
1.5
1.0
0.5
0.0
x - x* (Theta Difference)
0
10
20
30
40
50
60
Iterations

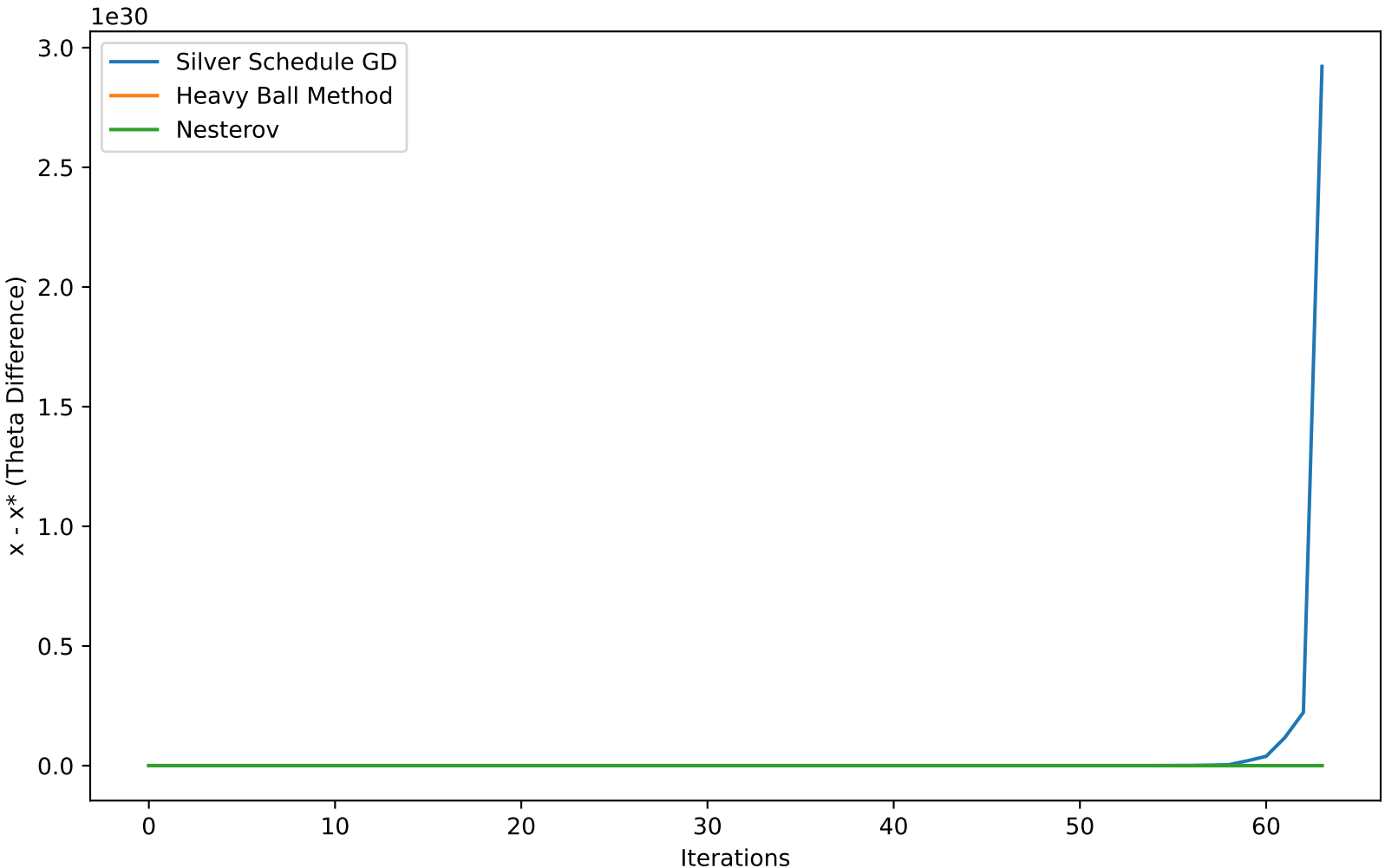

Airfoil Self-Noise: Convex, Non-Quadratic (MAE) - Loss Comparison (kappa=12.50)
124.88
124.86
124.84
124.82
124.80
124.78
124.76
124.74
Loss
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

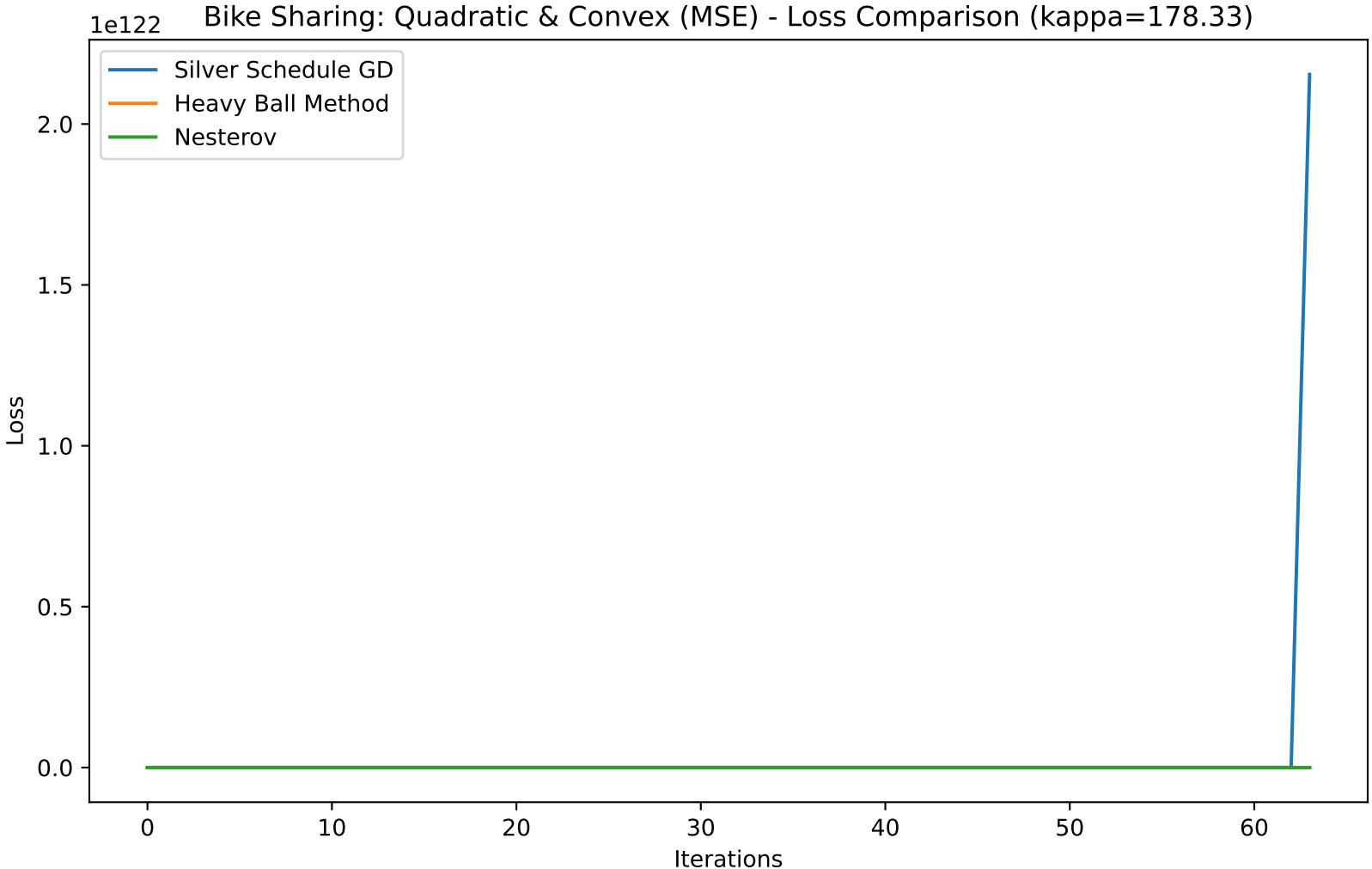

Airfoil Self-Noise: Convex, Non-Quadratic (MAE) - Optimal loss Comparison (kappa=12.50)
f(x) - f* (Loss Difference)
Iterations
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0
10
20
30
40
50
60
Silver Schedule GD
Heavy Ball Method
Nesterov

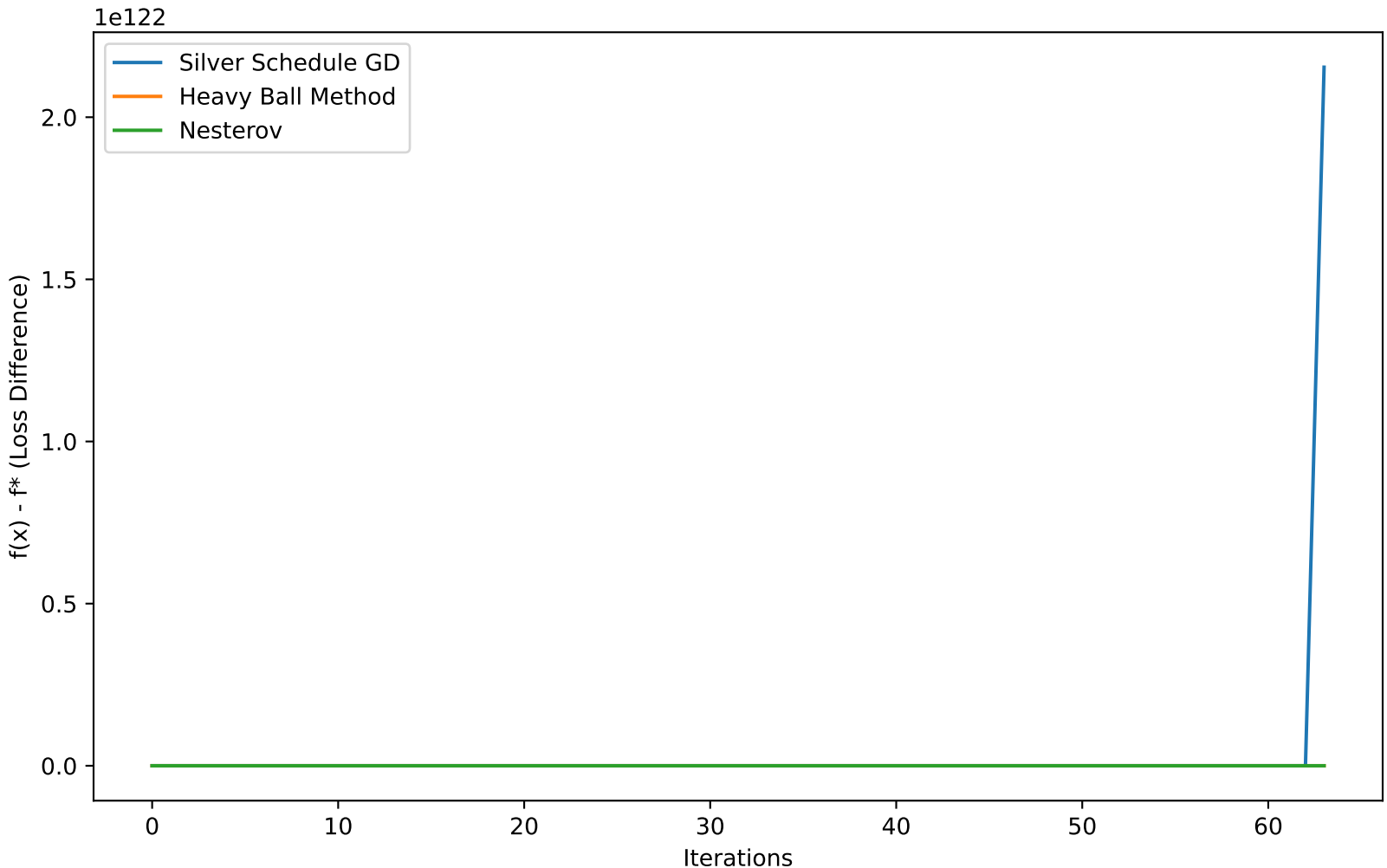

Airfoil Self-Noise: Convex, Non-Quadratic (MAE) - Optimal Theta Comparison (kappa=12.50)
x - x* (Theta Difference)
Iterations
8.25
8.00
7.75
7.50
7.25
7.00
6.75
6.50
6.25
0
10
20
30
40
50
60
Silver Schedule GD
Heavy Ball Method
Nesterov

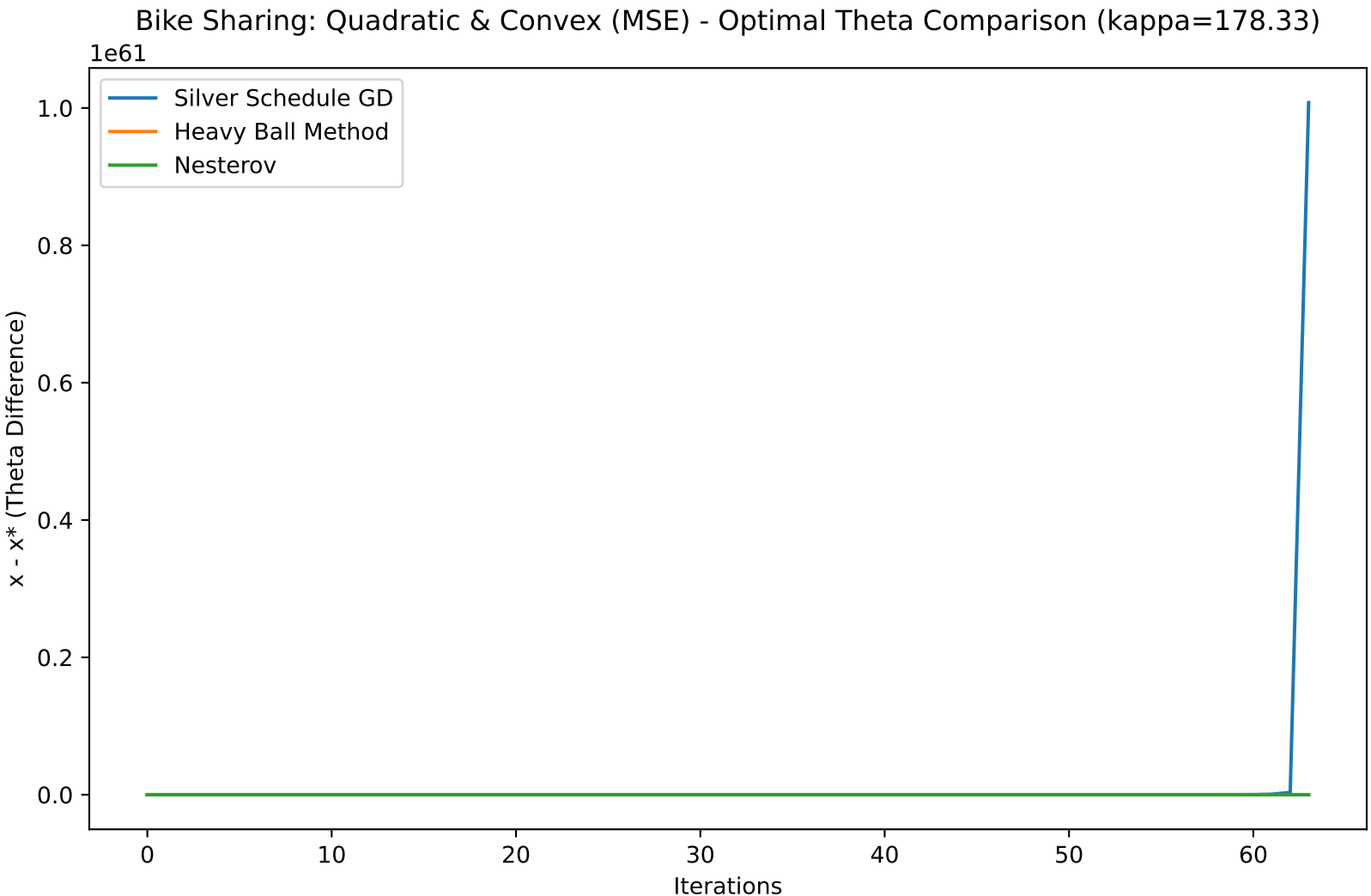

Airfoil Self-Noise: Non-Convex (Sinusoidal) - Loss Comparison (kappa=12.50)
1e60
Silver Schedule GD
Heavy Ball Method
Nesterov
Loss
Iterations
0
2
4
6
8
0
10
20
30
40
50
60

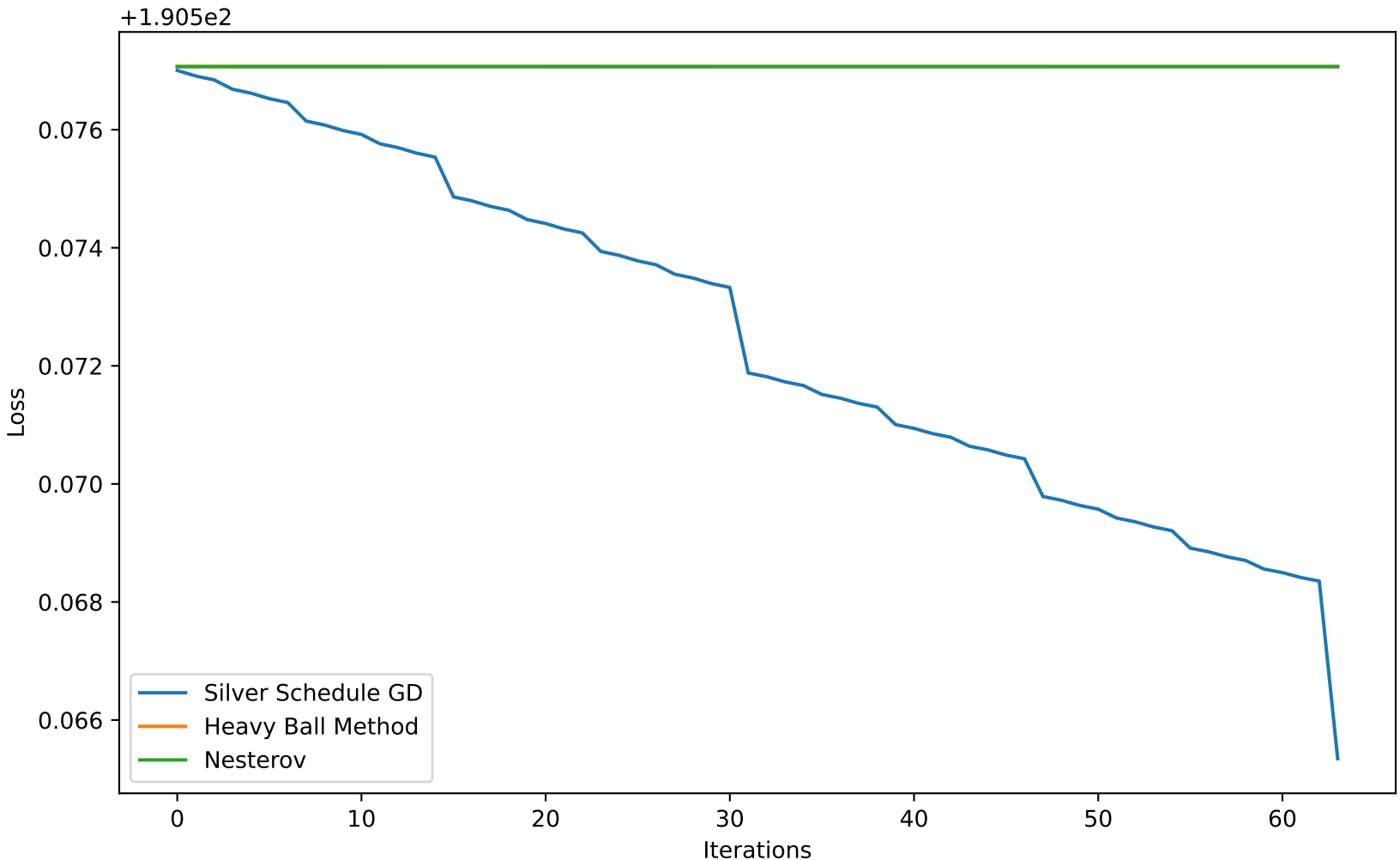

Airfoil Self-Noise: Non-Convex (Sinusoidal) - Optimal loss Comparison (kappa=12.50)
1e60
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
0
2
4
6
8
0
10
20
30
40
50
60
Iterations

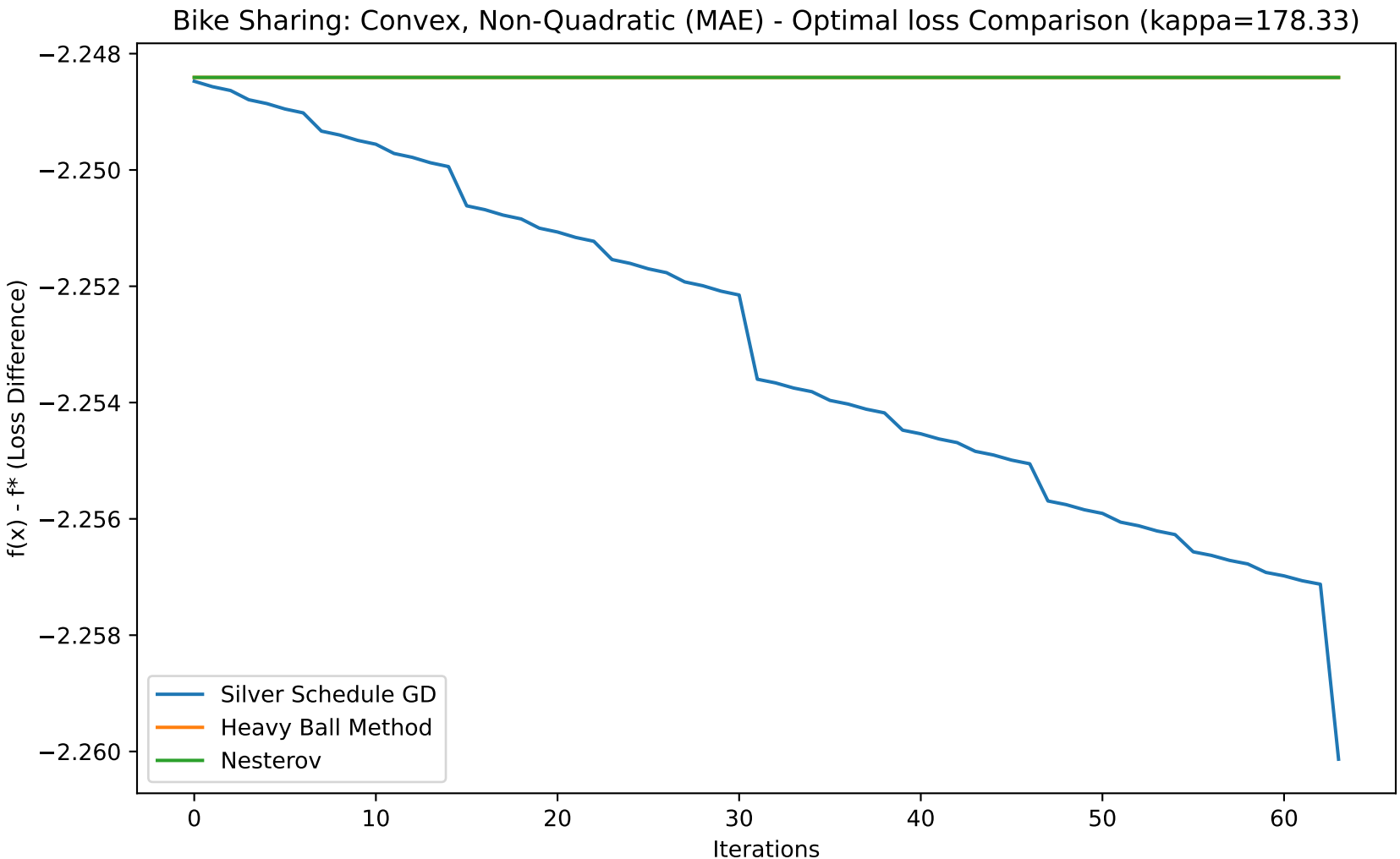

Airfoil Self-Noise: Non-Convex (Sinusoidal) - Optimal Theta Comparison (kappa=12.50)
1e30
3.0
2.5
2.0
1.5
1.0
0.5
0.0
x - x* (Theta Difference)
Silver Schedule GD
Heavy Ball Method
Nesterov
0
10
20
30
40
50
60
Iterations

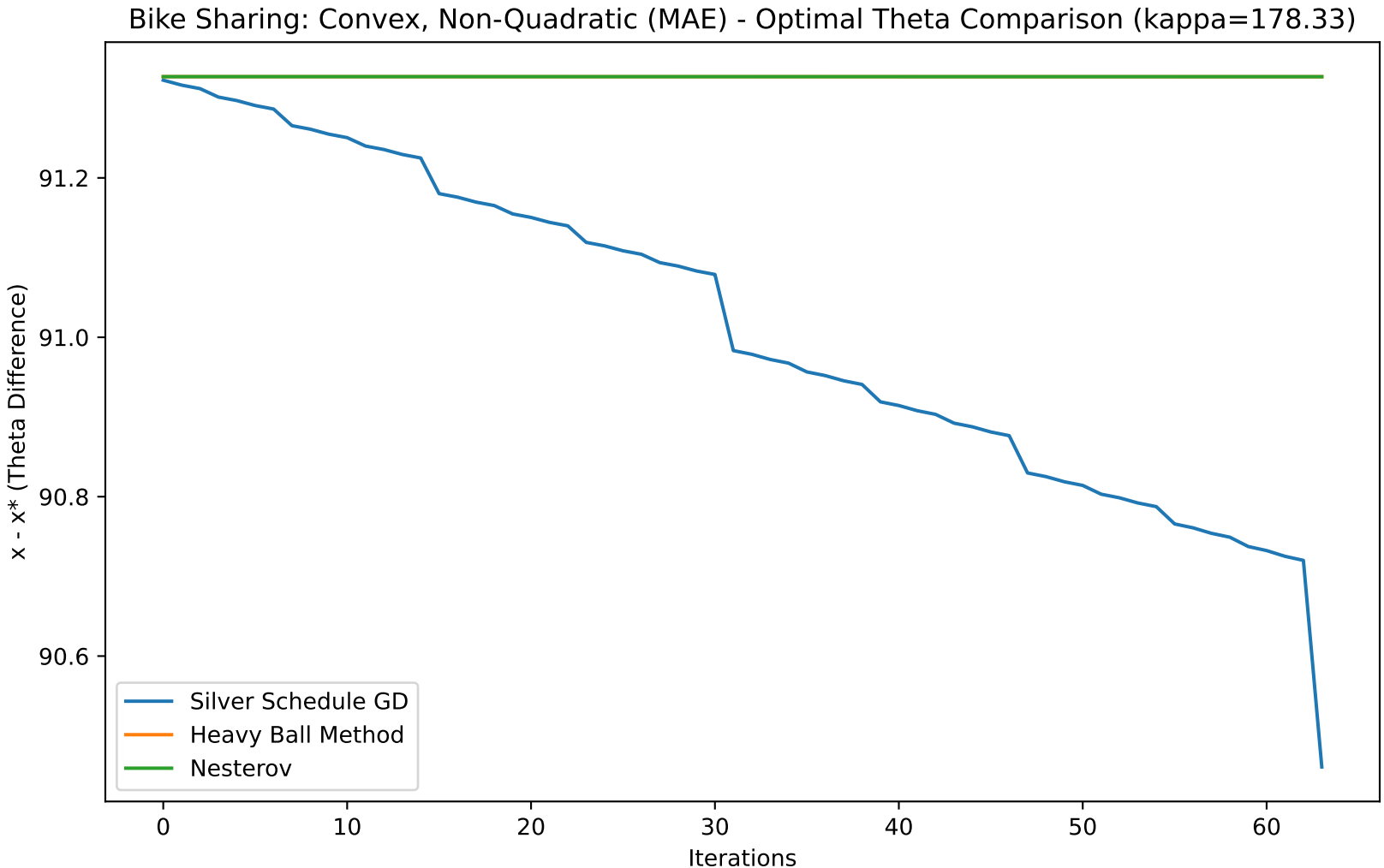

Bike Sharing: Quadratic & Convex (MSE) - Loss Comparison (kappa=178.33)
1e122
Silver Schedule GD
Heavy Ball Method
Nesterov
2.0
1.5
1.0
0.5
0.0
Loss
0
10
20
30
40
50
60
Iterations

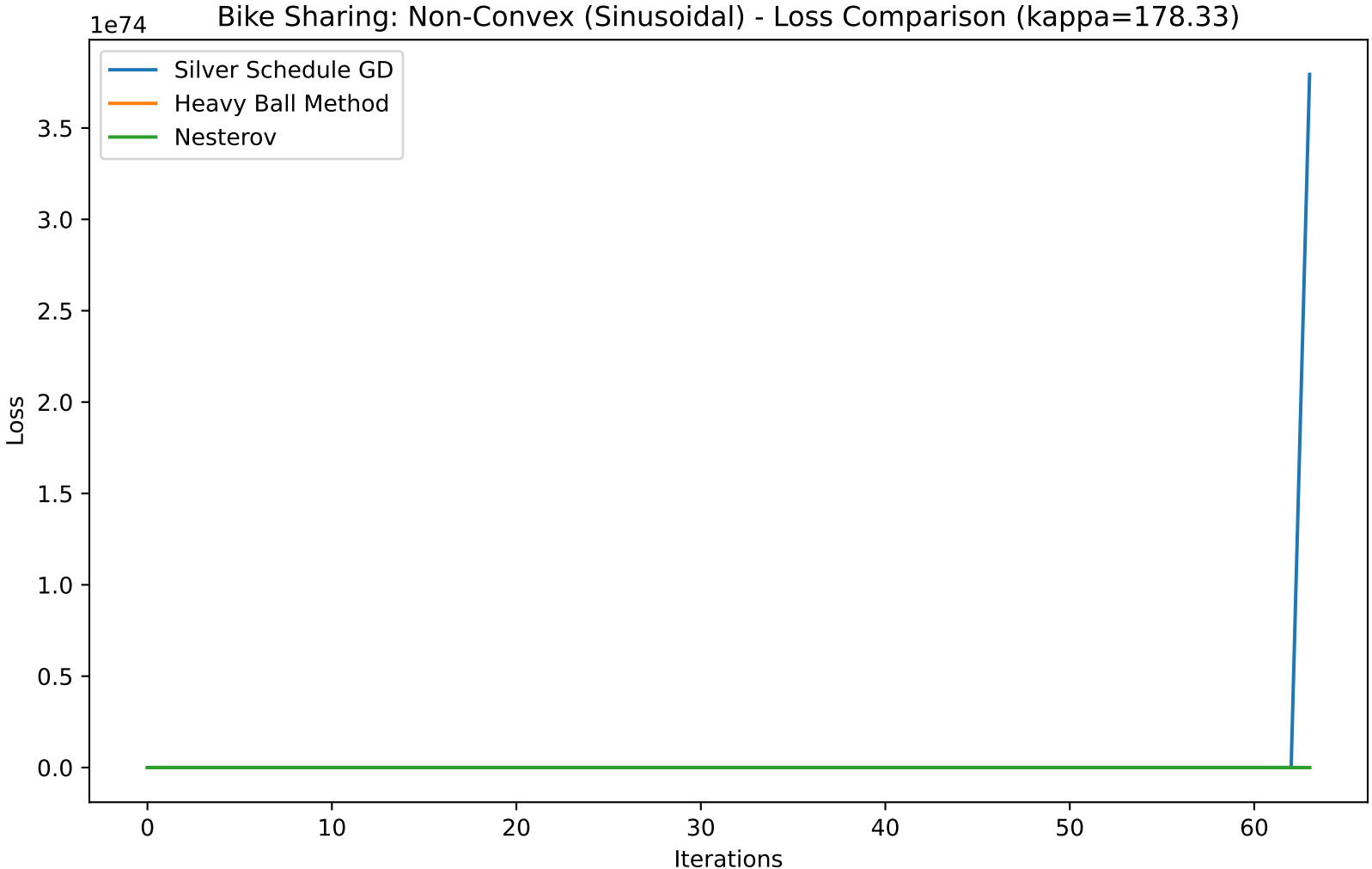

Bike Sharing: Quadratic & Convex (MSE) - Optimal loss Comparison (kappa=178.33)
1e122
Silver Schedule GD
Heavy Ball Method
Nesterov
2.0
1.5
1.0
0.5
0.0
f(x) - f* (Loss Difference)
0
10
20
30
40
50
60
Iterations

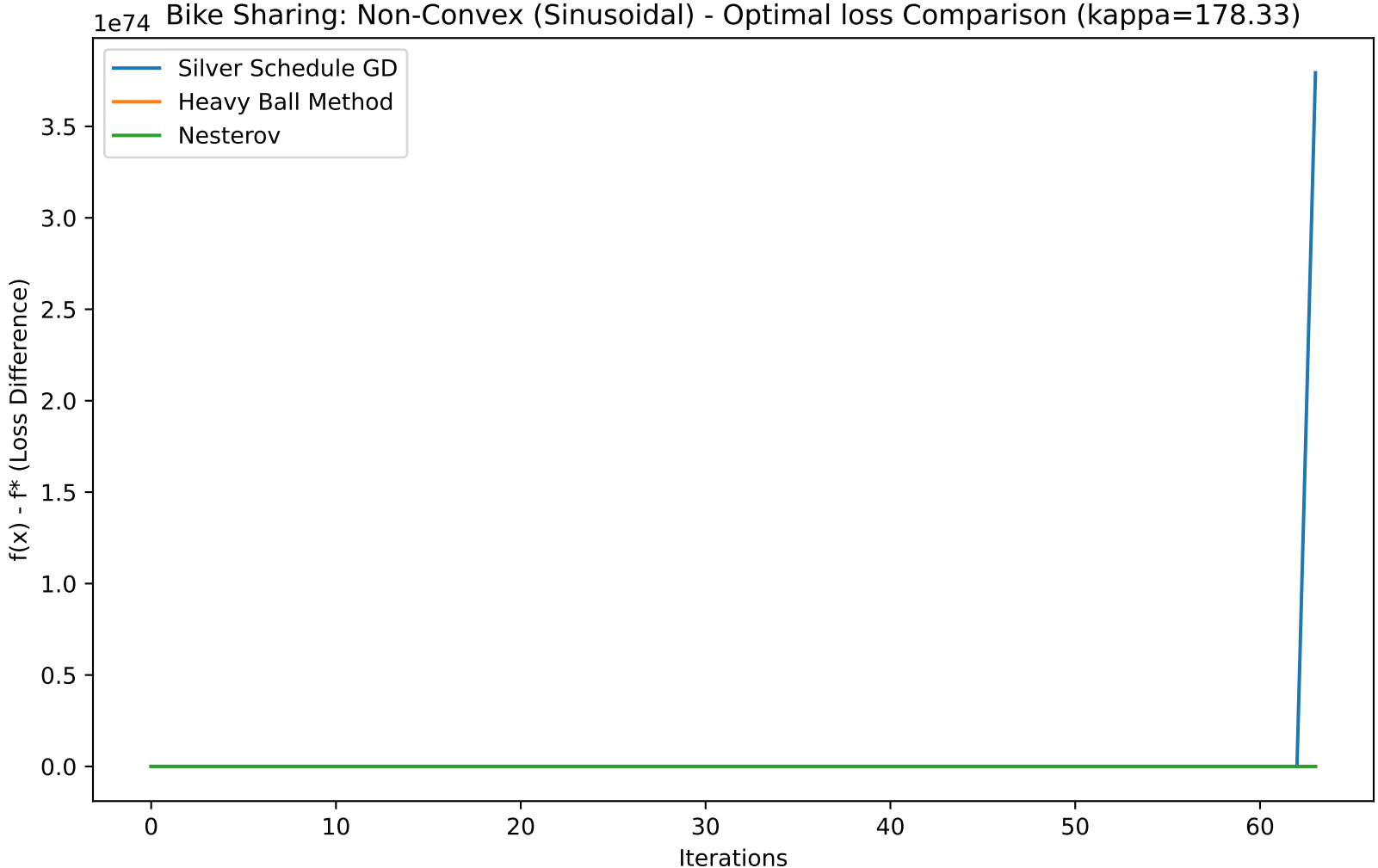

Bike Sharing: Quadratic & Convex (MSE) - Optimal Theta Comparison (kappa=178.33)
1e61
Silver Schedule GD
Heavy Ball Method
Nesterov
1.0
0.8
0.6
0.4
0.2
0.0
x - x* (Theta Difference)
0
10
20
30
40
50
60
Iterations

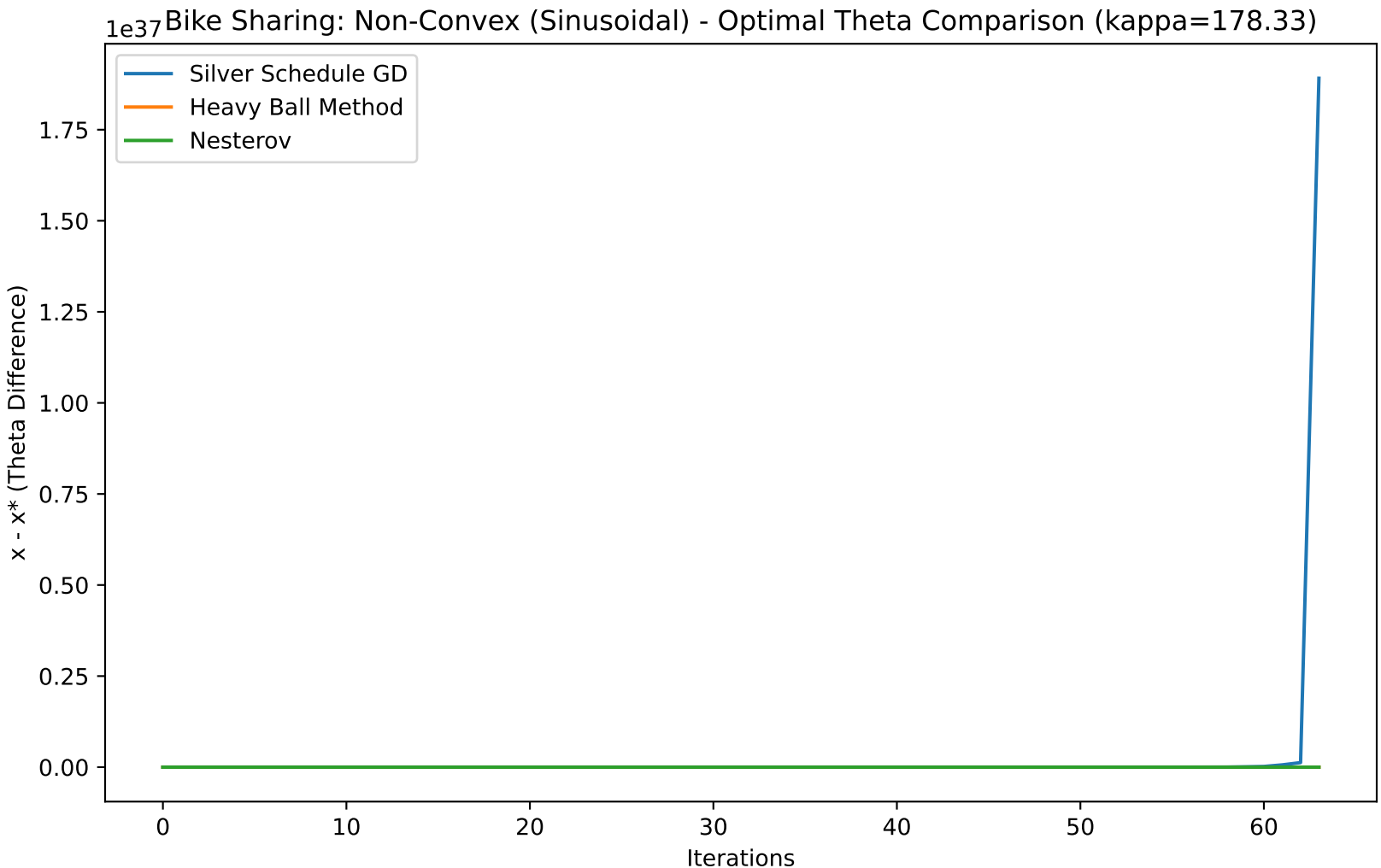

Bike Sharing: Convex, Non-Quadratic (MAE) - Loss Comparison (kappa=178.33)
+1.905e2
0.076
0.074
0.072
0.070
0.068
0.066
Loss
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

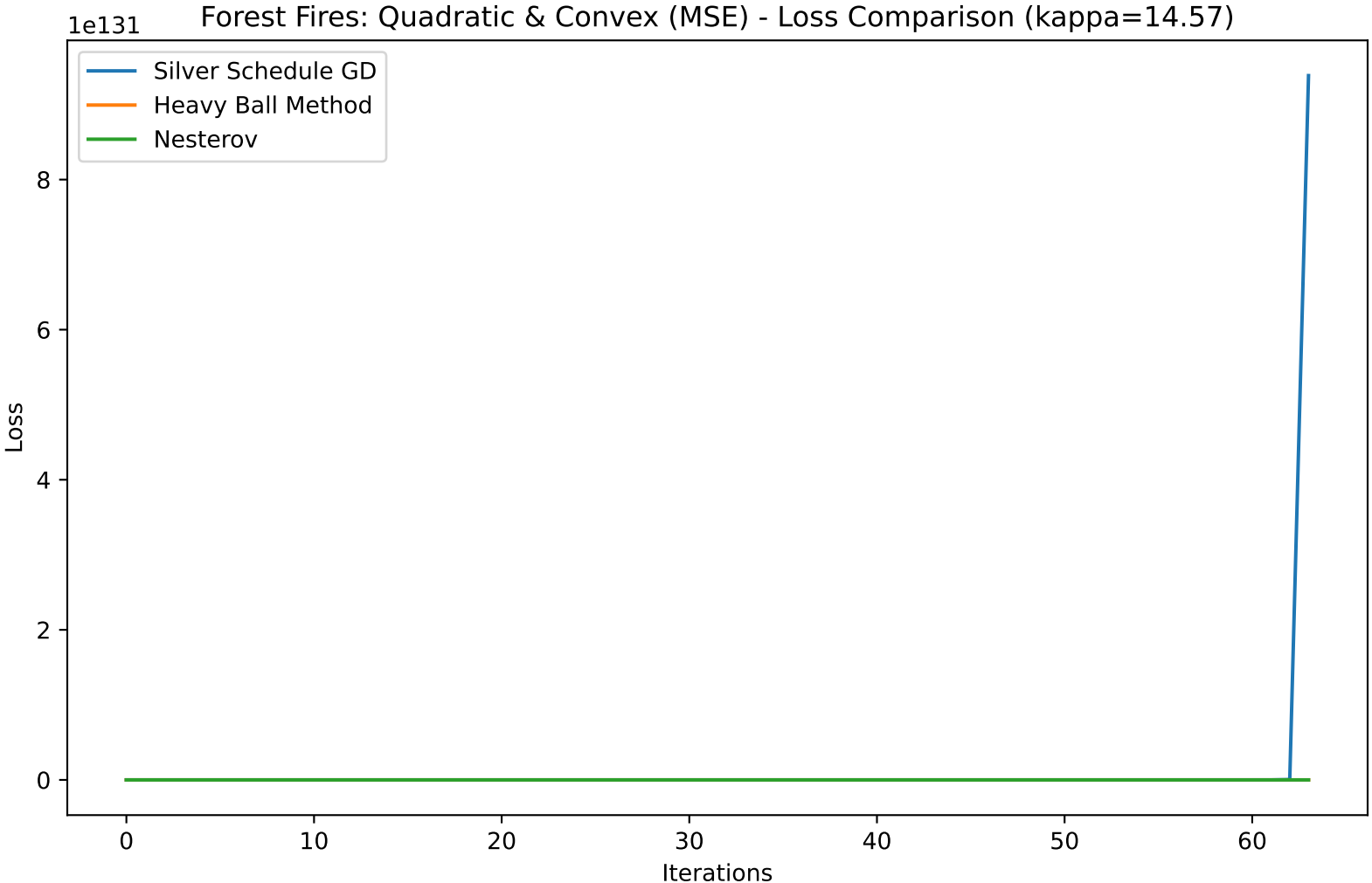

Bike Sharing: Convex, Non-Quadratic (MAE) - Optimal loss Comparison (kappa=178.33)
−2.248
−2.250
−2.252
−2.254
−2.256
−2.258
−2.260
f(x) - f* (Loss Difference)
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

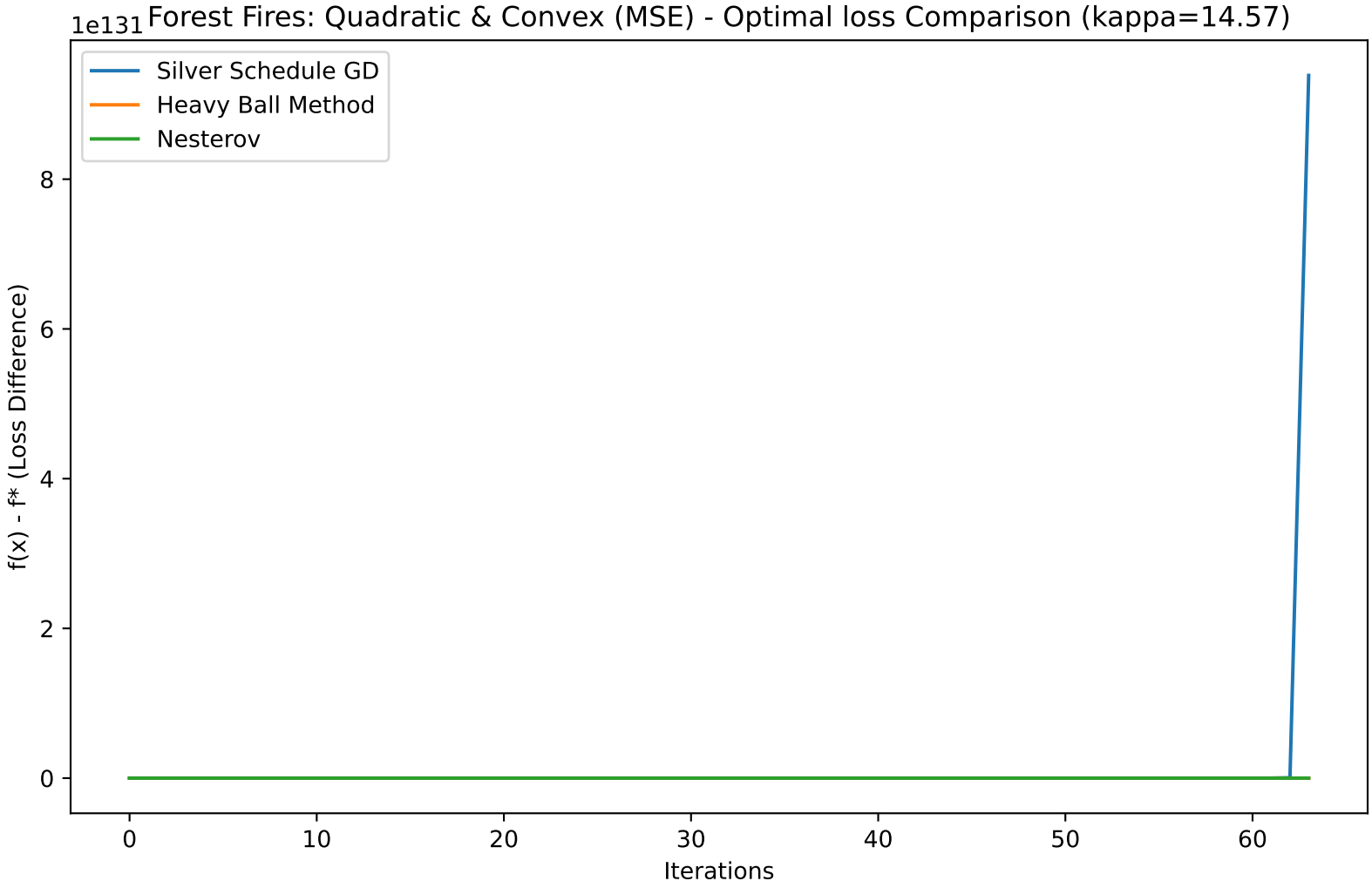

Bike Sharing: Convex, Non-Quadratic (MAE) - Optimal Theta Comparison (kappa=178.33)
x - x* (Theta Difference)
91.2
91.0
90.8
90.6
0
10
20
30
40
50
60
Iterations
Silver Schedule GD
Heavy Ball Method
Nesterov

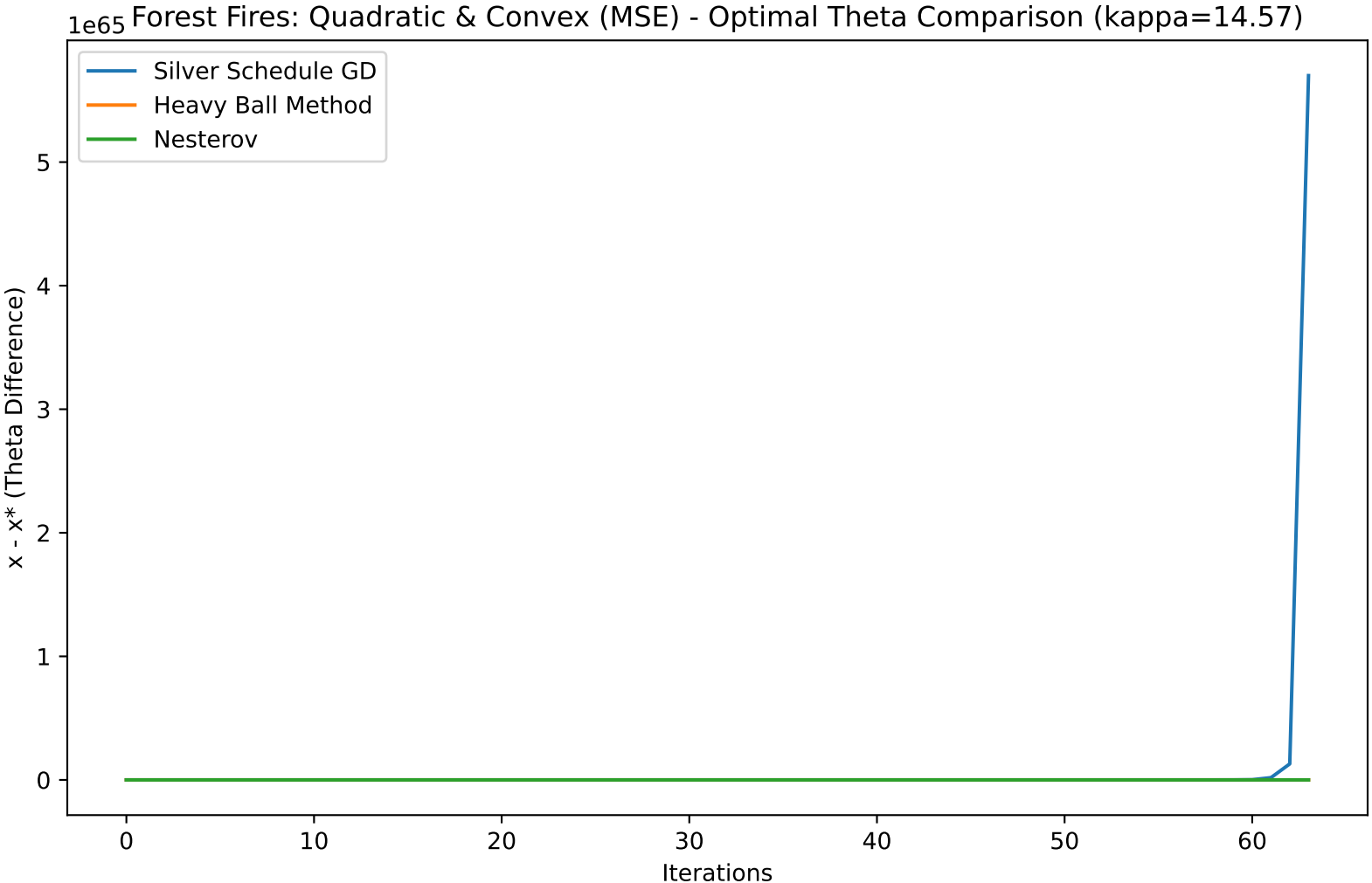

Bike Sharing: Non-Convex (Sinusoidal) - Loss Comparison (kappa=178.33)
1e74
Silver Schedule GD
Heavy Ball Method
Nesterov
Loss
Iterations
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
10
20
30
40
50
60

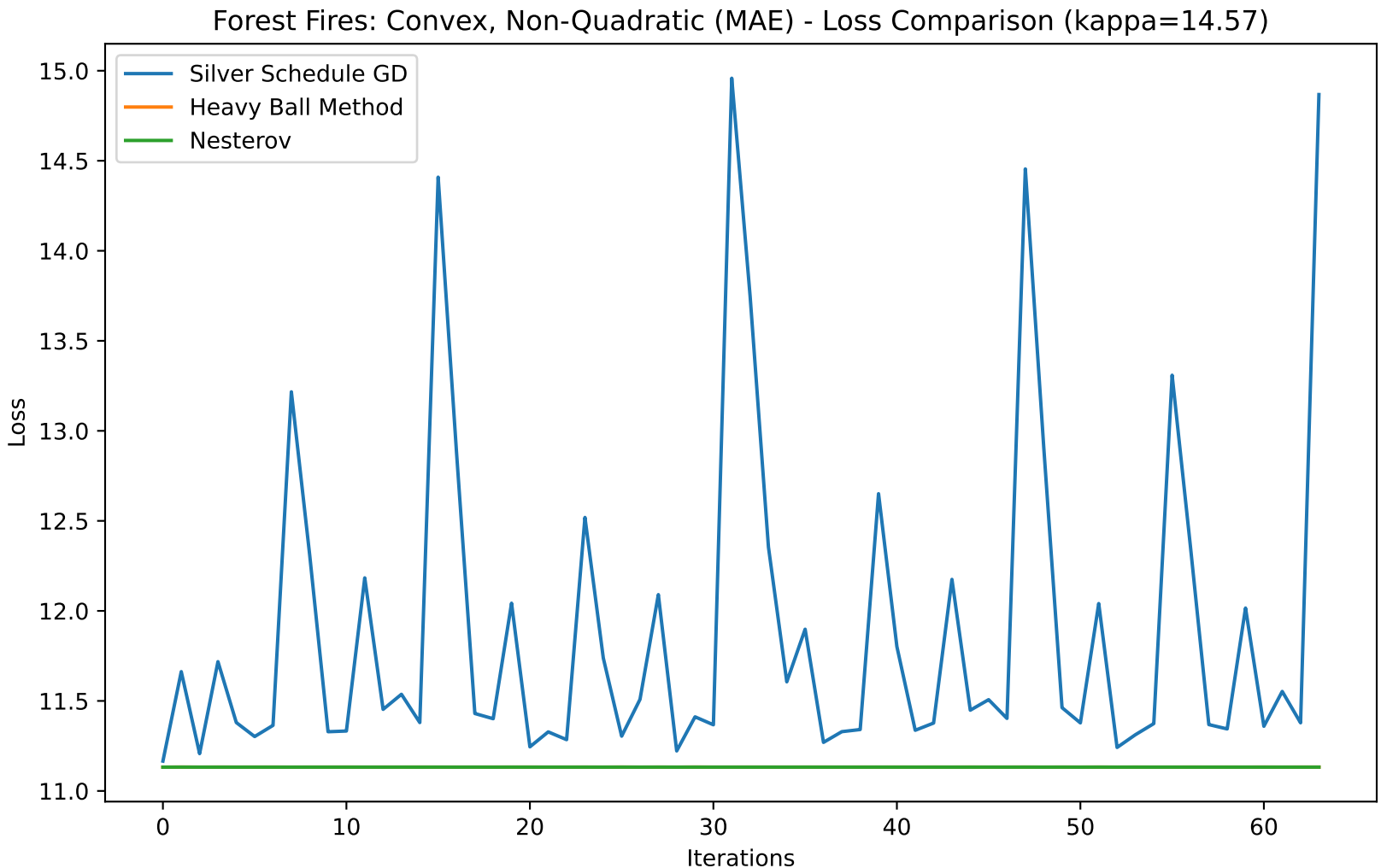

Bike Sharing: Non-Convex (Sinusoidal) - Optimal loss Comparison (kappa=178.33)
1e74
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
10
20
30
40
50
60
Iterations

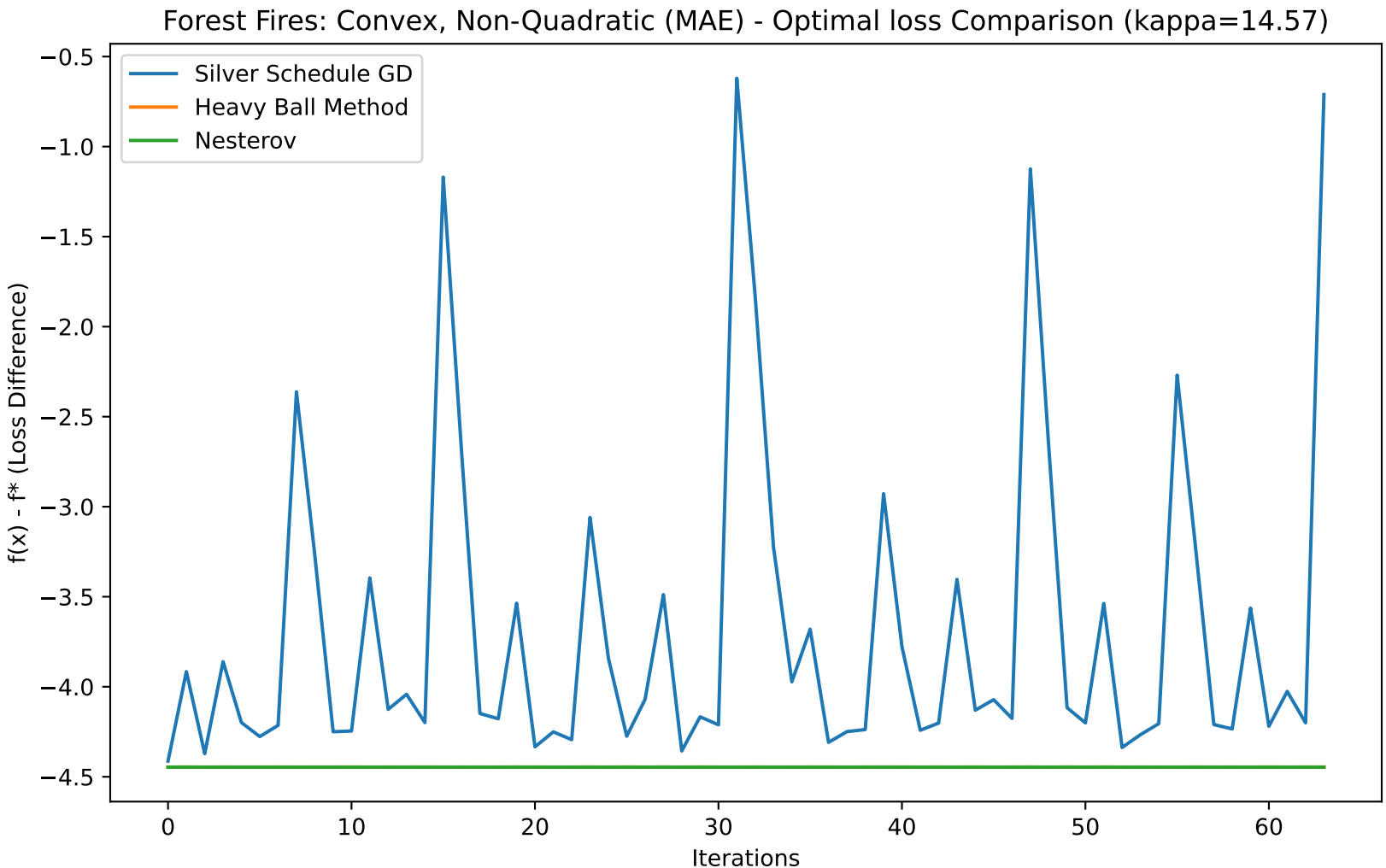

Bike Sharing: Non-Convex (Sinusoidal) - Optimal Theta Comparison (kappa=178.33)
1e37
Silver Schedule GD
Heavy Ball Method
Nesterov
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
x - x* (Theta Difference)
0
10
20
30
40
50
60
Iterations

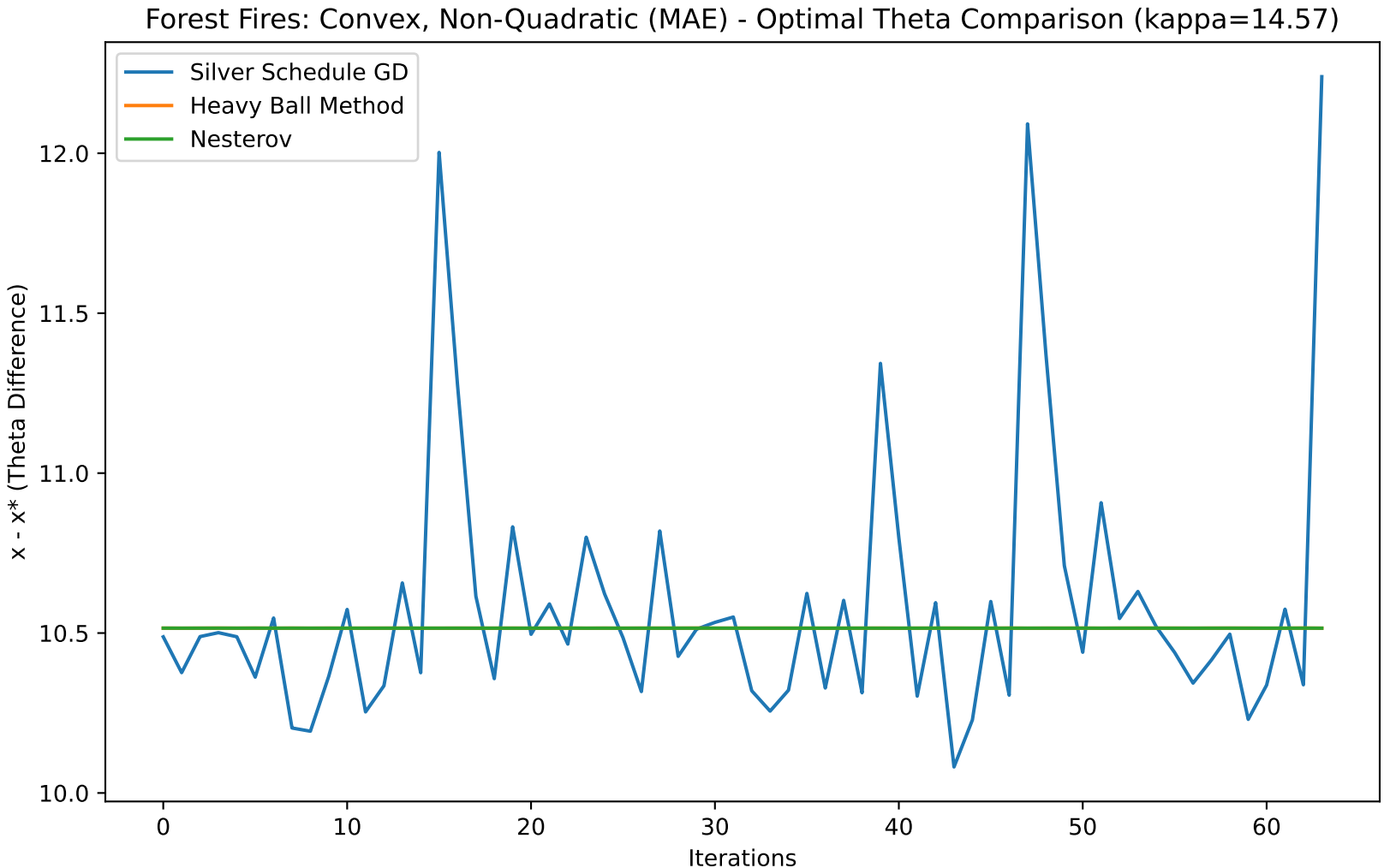

Forest Fires: Quadratic & Convex (MSE) - Loss Comparison (kappa=14.57)
1e131
Silver Schedule GD
Heavy Ball Method
Nesterov
Loss
Iterations
0
2
4
6
8
0
10
20
30
40
50
60

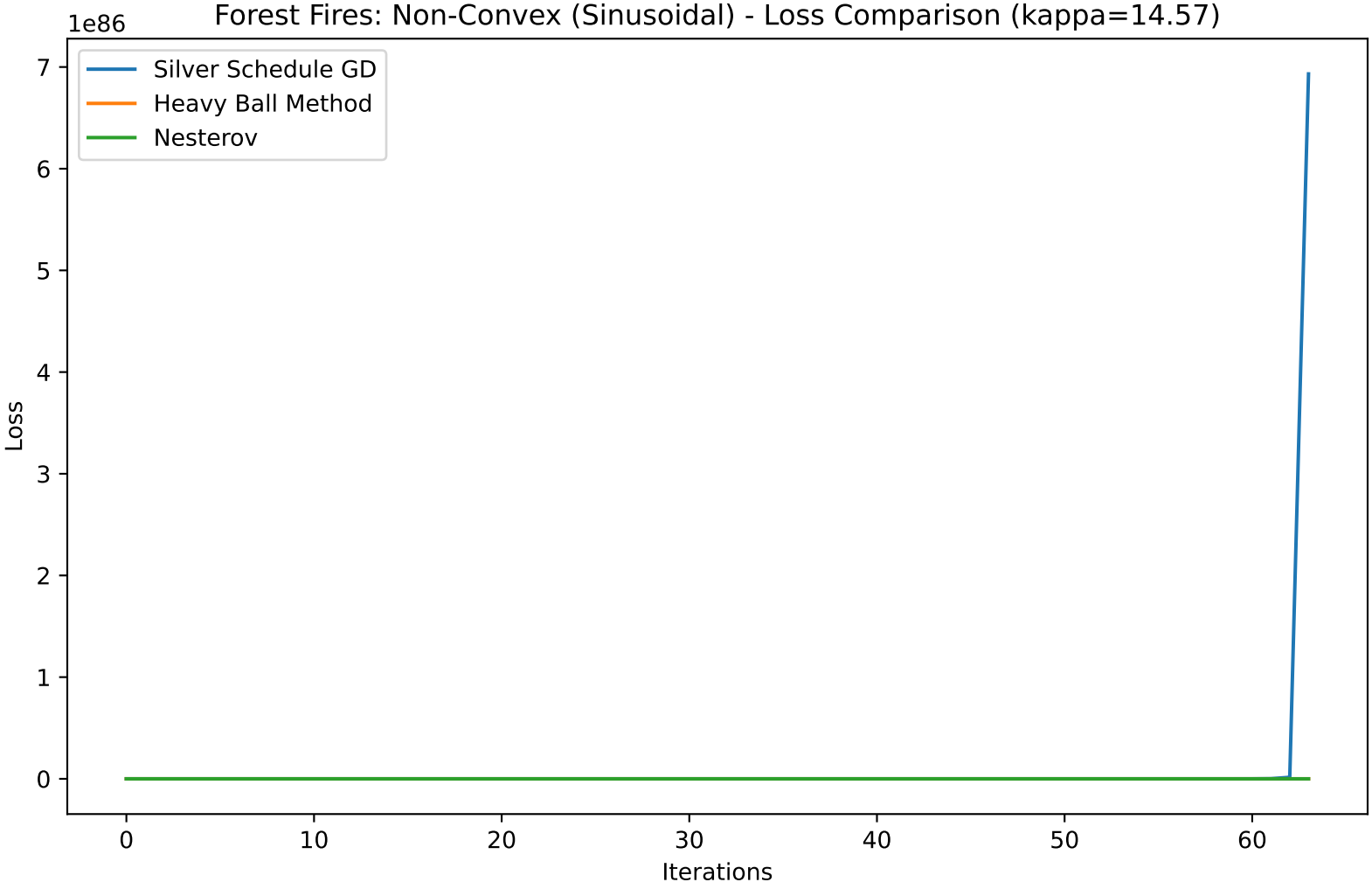

Forest Fires: Quadratic & Convex (MSE) - Optimal loss Comparison (kappa=14.57)
1e131
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
0
2
4
6
8
0
10
20
30
40
50
60
Iterations

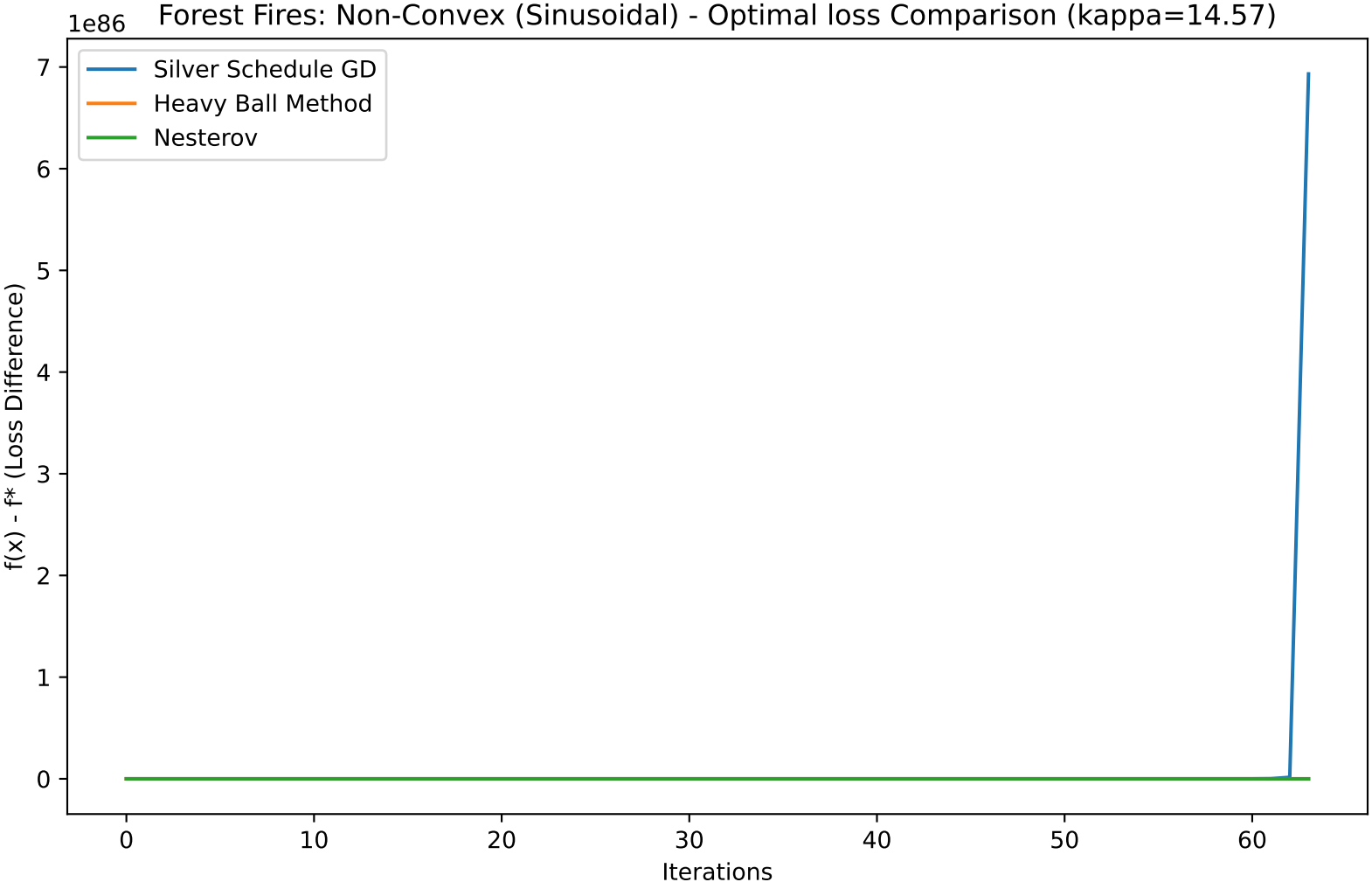

Forest Fires: Quadratic & Convex (MSE) - Optimal Theta Comparison (kappa=14.57)
1e65
Silver Schedule GD
Heavy Ball Method
Nesterov
x - x* (Theta Difference)
Iterations
0
1
2
3
4
5
0
10
20
30
40
50
60

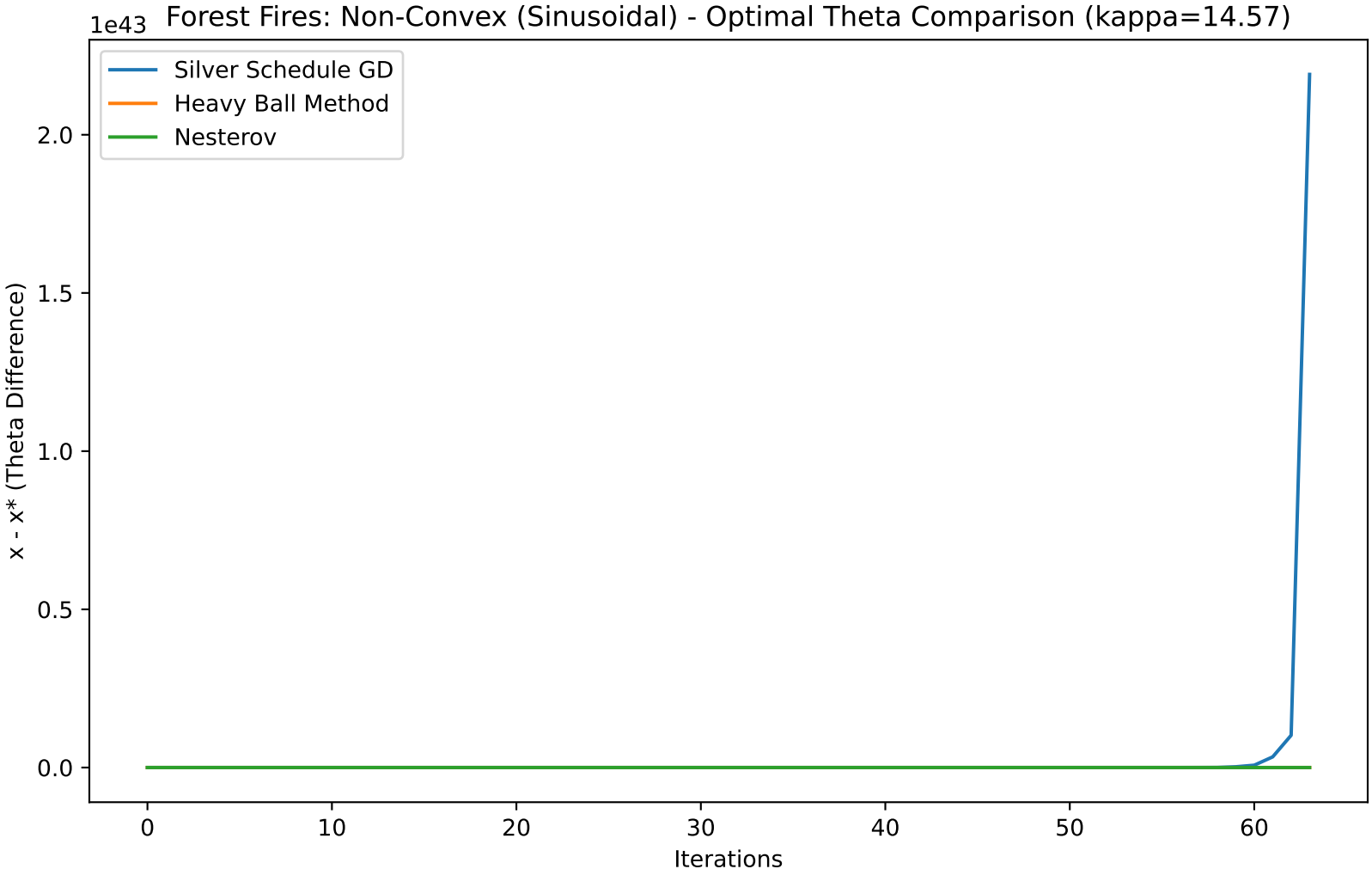

Forest Fires: Convex, Non-Quadratic (MAE) - Loss Comparison (kappa=14.57)
Silver Schedule GD
Heavy Ball Method
Nesterov
Loss
Iterations
15.0
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
0
10
20
30
40
50
60


Forest Fires: Convex, Non-Quadratic (MAE) - Optimal loss Comparison (kappa=14.57)
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
−0.5
−1.0
−1.5
−2.0
−2.5
−3.0
−3.5
−4.0
−4.5
0
10
20
30
40
50
60
Iterations


Forest Fires: Convex, Non-Quadratic (MAE) - Optimal Theta Comparison (kappa=14.57)
Silver Schedule GD
Heavy Ball Method
Nesterov
x - x* (Theta Difference)
12.0
11.5
11.0
10.5
10.0
0
10
20
30
40
50
60
Iterations


Forest Fires: Non-Convex (Sinusoidal) - Loss Comparison (kappa=14.57)
1e86
Silver Schedule GD
Heavy Ball Method
Nesterov
Loss
Iterations
0
1
2
3
4
5
6
7
0
10
20
30
40
50
60


Forest Fires: Non-Convex (Sinusoidal) - Optimal loss Comparison (kappa=14.57)
1e86
Silver Schedule GD
Heavy Ball Method
Nesterov
f(x) - f* (Loss Difference)
Iterations
0
1
2
3
4
5
6
7
0
10
20
30
40
50
60


Forest Fires: Non-Convex (Sinusoidal) - Optimal Theta Comparison (kappa=14.57)
1e43
Silver Schedule GD
Heavy Ball Method
Nesterov
2.0
1.5
1.0
0.5
0.0
x - x* (Theta Difference)
0
10
20
30
40
50
60
Iterations