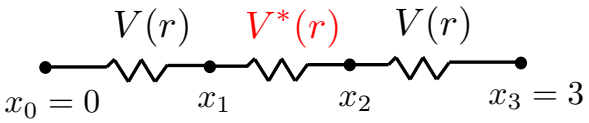


Quadratic potential

$$V(r) = k\,(r-a)^2$$

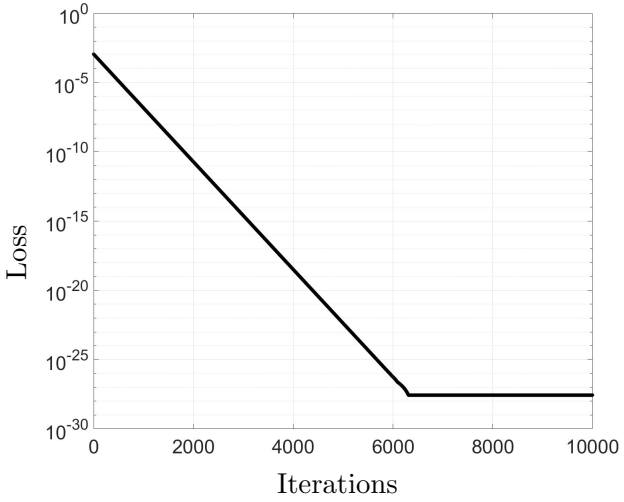
- Generate data

  $\{k = 1, k^* = 1, a = 1, a^* = 1.2\}$

  $\{x_1 = 0.933, x_2 = 2.067\}$

- Estimate positions and parameters

Guess -> $\{k = 0.9, k^* = 1.1, a = 1.1, a^* = 1.1\}$



Output parameter set

$\{k = 0.89, k^* = 1.1, a = 1.02, a^* = 1.2\}$

Lennard Jones potential

$$V(r) = \frac{A}{r^{12}} - \frac{B}{r^{6}}$$

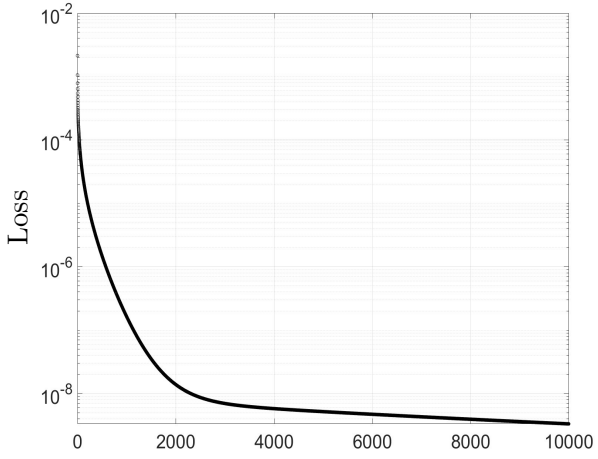
- Generate data

  $\{A = 1, A^* = 1.1, B = 2, B^* = 2\}$

  $\{x_1 = 0.985, x_2 = 1.984\}$

- Estimate positions and parameters

Guess -> $\{A = 0.9, A^* = 1.2, B = 2.2, B^* = 2.1\}$



Output parameter set

$\{A = 1.8, A^* = 1.92, B = 2.1, B^* = 1.75\}$