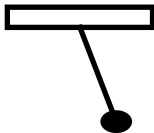


Hamiltonian system



$$\mathcal{H}(q, p) = p^2/2 + (1 - \cos(q))$$

$$\mathcal{D} = \{q_i, p_i, \dot{q}_i, \dot{p}_i\}_{i=1}^K$$

Initial approximation

$$\hat{\mathcal{H}} = W\phi + b$$

ϕ is sampled (unsupervised)

$$(W, b) = \arg \min \mathcal{L}(\nabla \phi, \dot{q}, \dot{p})$$

Resample using $\hat{\mathcal{H}}(q, p)$

$$W^*\phi^* + b^* \approx \mathcal{H}(q, p)$$

ϕ^* is SWIM-sampled

$$(W^*, b^*) = \arg \min \mathcal{L}(\nabla \phi^*, \dot{q}, \dot{p})$$