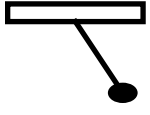
1. Data: Hamiltonian system

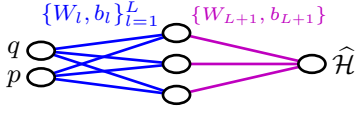


$\mathcal{H}(q,p) = p^2/2 + (1-\cos(q))$

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

2. Initial approximation (U-SWIM)

$\widehat{\mathcal{H}}(q,p) = W_{L+1}\Phi^{(L)}(q,p) + b_{L+1}$

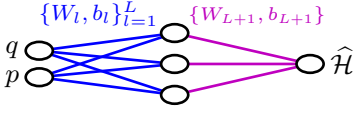


$\{W_l, b_l\}_{l=1}^L$ are sampled (unsupervised)

$\{W_{L+1}, b_{L+1}\} = \arg\min \mathcal{L}(\nabla\Phi^{(L)}, \mathcal{D})$

3. Resample using $\widehat{\mathcal{H}}(q,p)$ (A-SWIM)

$W_{L+1}\Phi^{(L)}(q,p) + b_{L+1} \approx \mathcal{H}(q,p)$



$\{W_l, b_l\}_{l=1}^L$ are SWIM-sampled

$\{W_{L+1}, b_{L+1}\} = \arg\min \mathcal{L}(\nabla\Phi^{(L)}, \mathcal{D})$