

Task 3: Real Pendulum

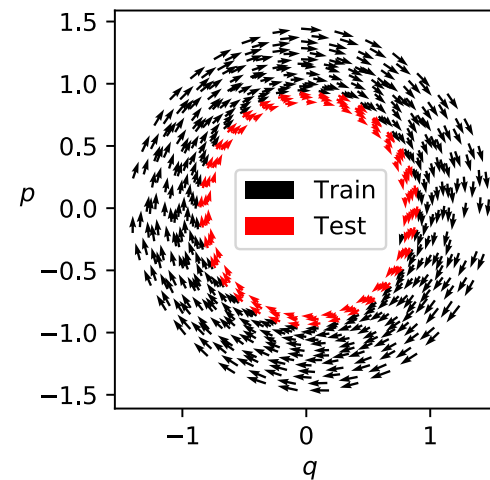
Hamiltonian

$$\mathcal{H} = 2mgl(1 - \cos q) + \frac{l^2 p^2}{2m}$$

Real pendulum



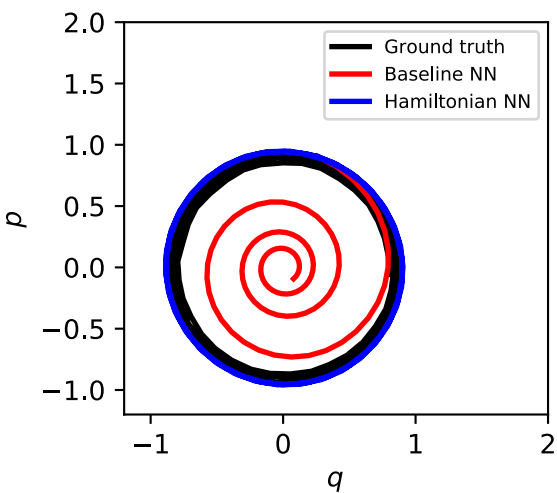
Noisy observations



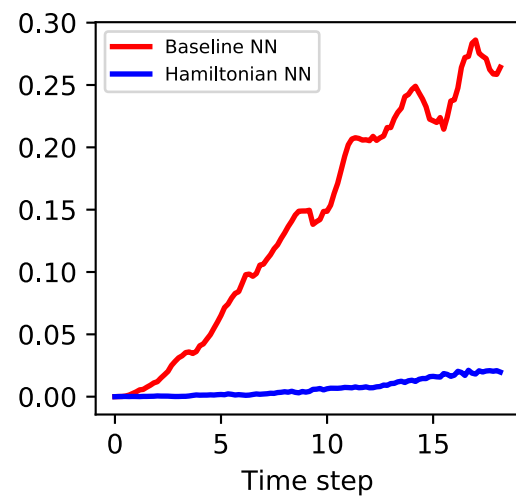
Training settings

- 1 trajectory of 555 observations
- Adam with 10^{-3} learn rate
- 3 layers of 200 units
- 2000 gradient steps
- `tanh` activations

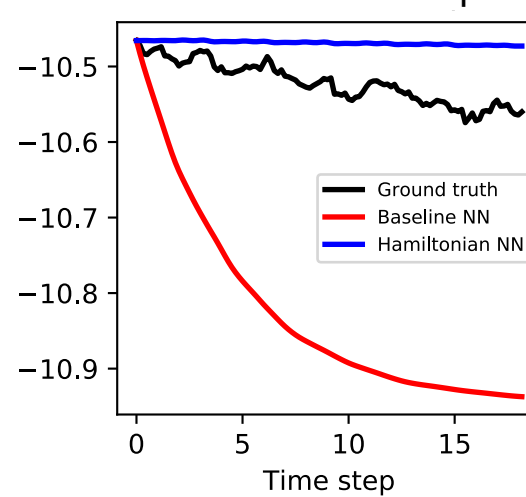
Predictions



MSE between coordinates



Total HNN-conserved quantity



Total energy

