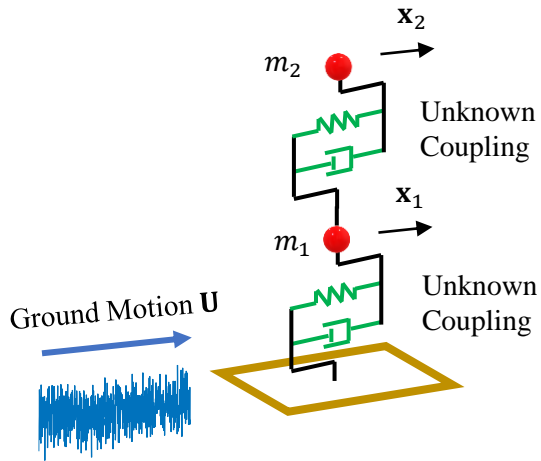


MSD Oscillators



EOM Constraint:

$$\mathbf{M}\ddot{\mathbf{X}} + \mathcal{F}(\mathbf{X}, \dot{\mathbf{X}}; \boldsymbol{\Theta}) = \mathbf{U}$$

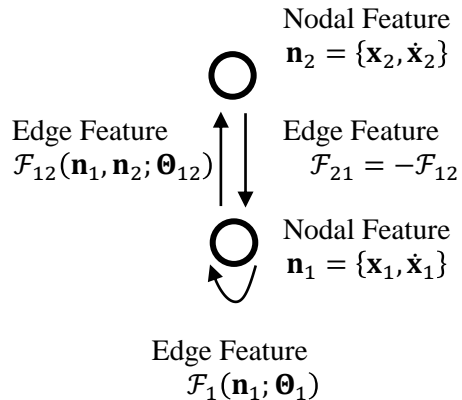
Data Constraints:

$$\ddot{\mathbf{X}}_{pred} \rightarrow \ddot{\mathbf{X}}_{ref}$$

$$\dot{\mathbf{X}}_{pred} \rightarrow \dot{\mathbf{X}}_{ref}$$

$$\mathbf{X}_{pred} \rightarrow \mathbf{X}_{ref}$$

Graph Network (parameters $\boldsymbol{\Theta}$)



Objectives:

1. Time-history prediction
2. Damage localization