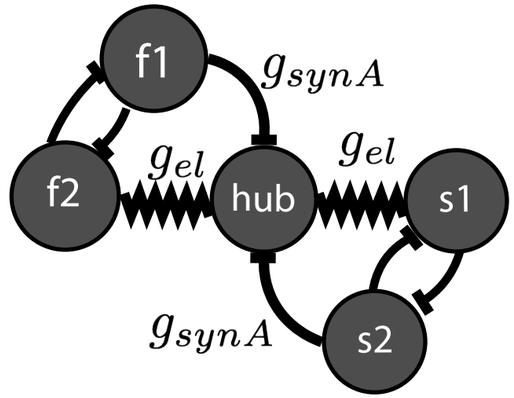
A

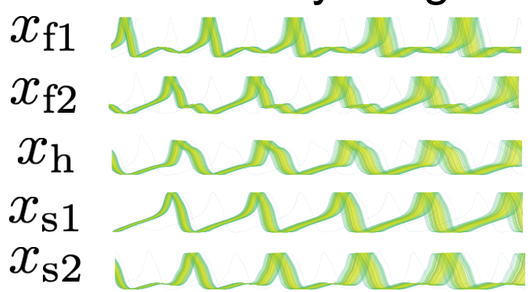
STG

biological model



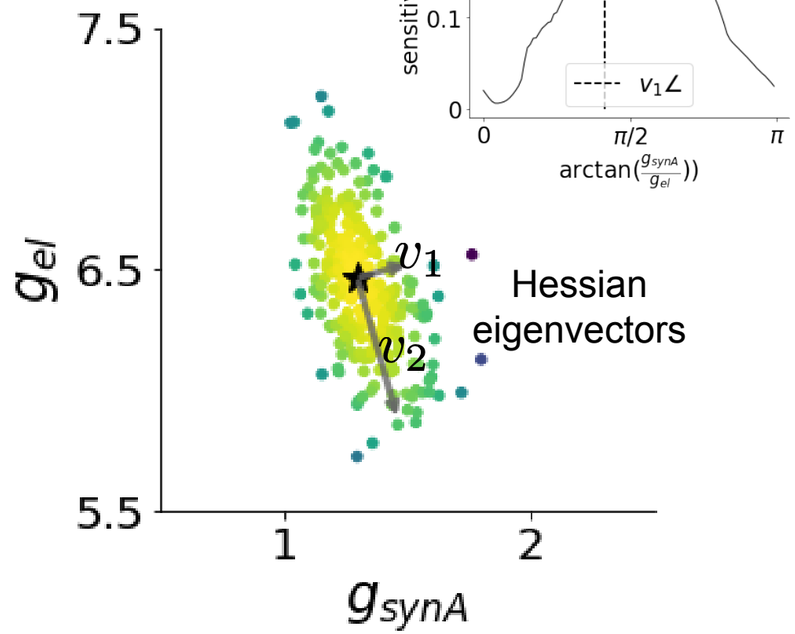
network syncing

emergent property



Emergent property inference (EPI)

B

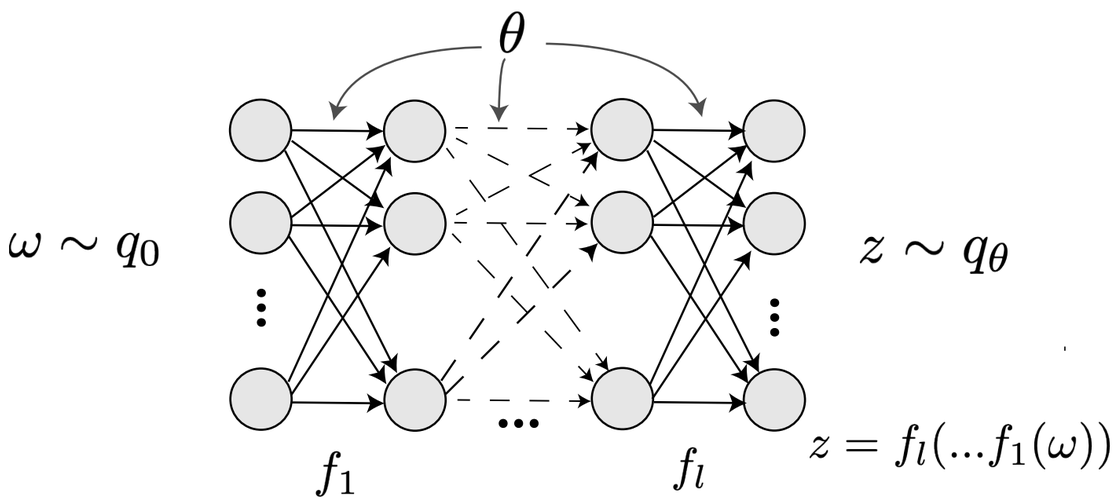


C

Emergent property inference (EPI) training objective

$$q_\theta^* = \arg\max_{q_\theta \in Q} H(q_\theta)$$

$$\text{s.t. } E_{\underbrace{z\sim q_\theta}_{\text{model parameter samples}}}\left[E_{\underbrace{x\sim p(x|z)}_{\text{model simulations}}}\left[\underbrace{T(x)}_{\text{emergent property statistics}}\right]\right] = \underbrace{\mu}_{\text{emergent property constraints}}$$

D

Deep probability distribution