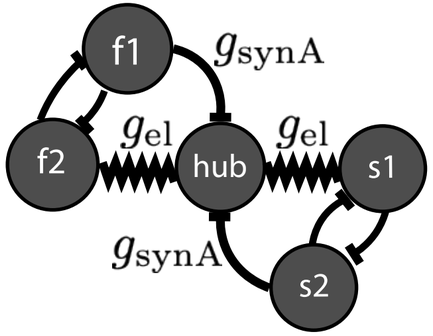
A

Biological model:
STG

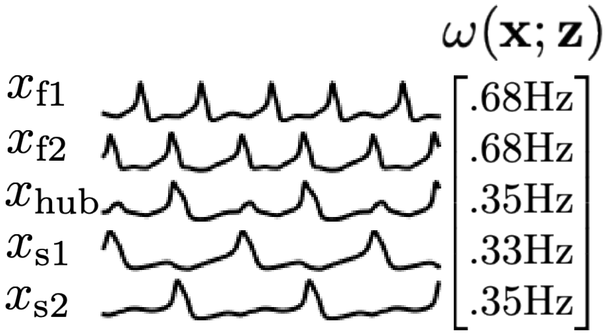


$$\mathbf{z} = \begin{bmatrix} g_{\text{el}} \\ g_{\text{synA}} \end{bmatrix} \quad \mathbf{x} = \begin{bmatrix} x_{\text{f1}} \\ x_{\text{f2}} \\ x_{\text{hub}} \\ x_{\text{s1}} \\ x_{\text{s2}} \end{bmatrix}$$

$$C_m \frac{d\mathbf{x}}{dt} = -h(\mathbf{x}; \mathbf{z}) + d\mathbf{B}$$

B

Emergent property statistic:
spiking frequency



C

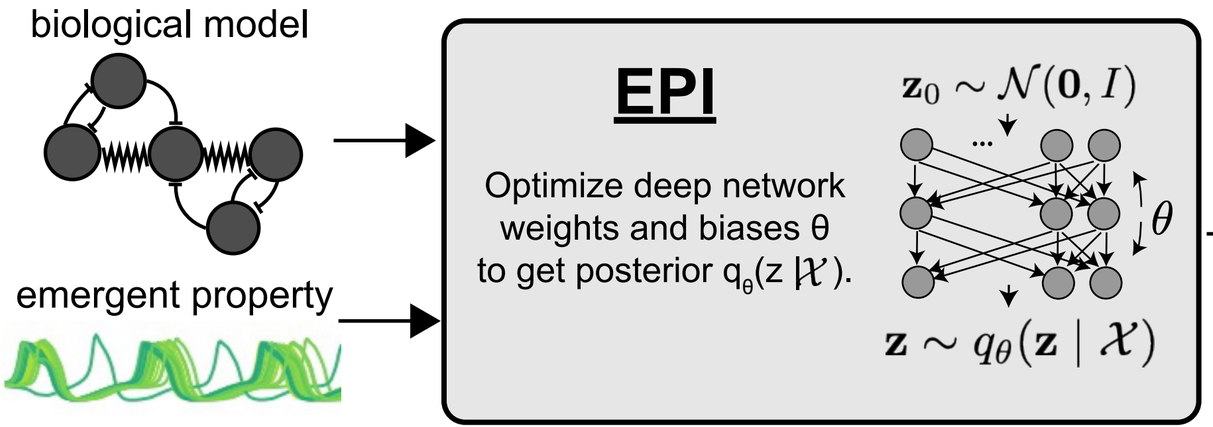
Emergent property:
intermediate hub frequency

$$\mathbb{E}_{\mathbf{z},\mathbf{x}}\left[\omega_{\text{hub}}(\mathbf{x}; \mathbf{z})\right] = 0.55\text{Hz}$$

$$\text{Var}_{\mathbf{z},\mathbf{x}}\left[\omega_{\text{hub}}(\mathbf{x}; \mathbf{z})\right] = 0.025^2\text{Hz}^2$$

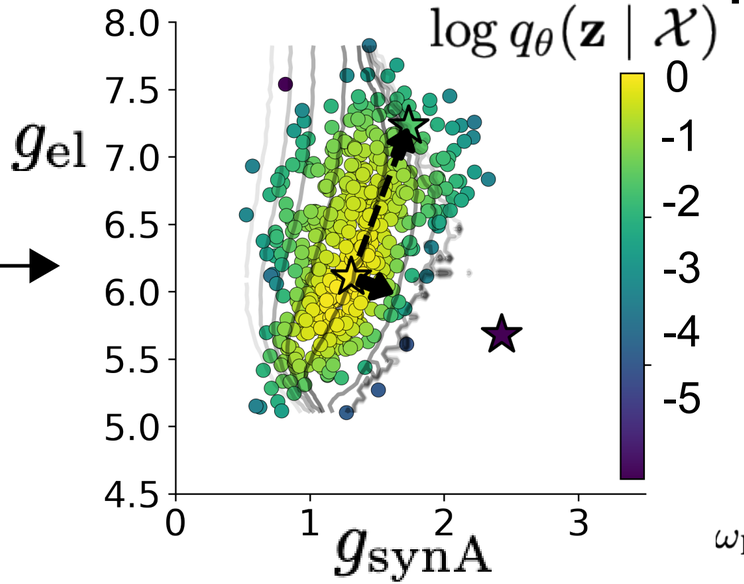
D

Emergent property inference



E

EPI posterior



F

Posterior simulations