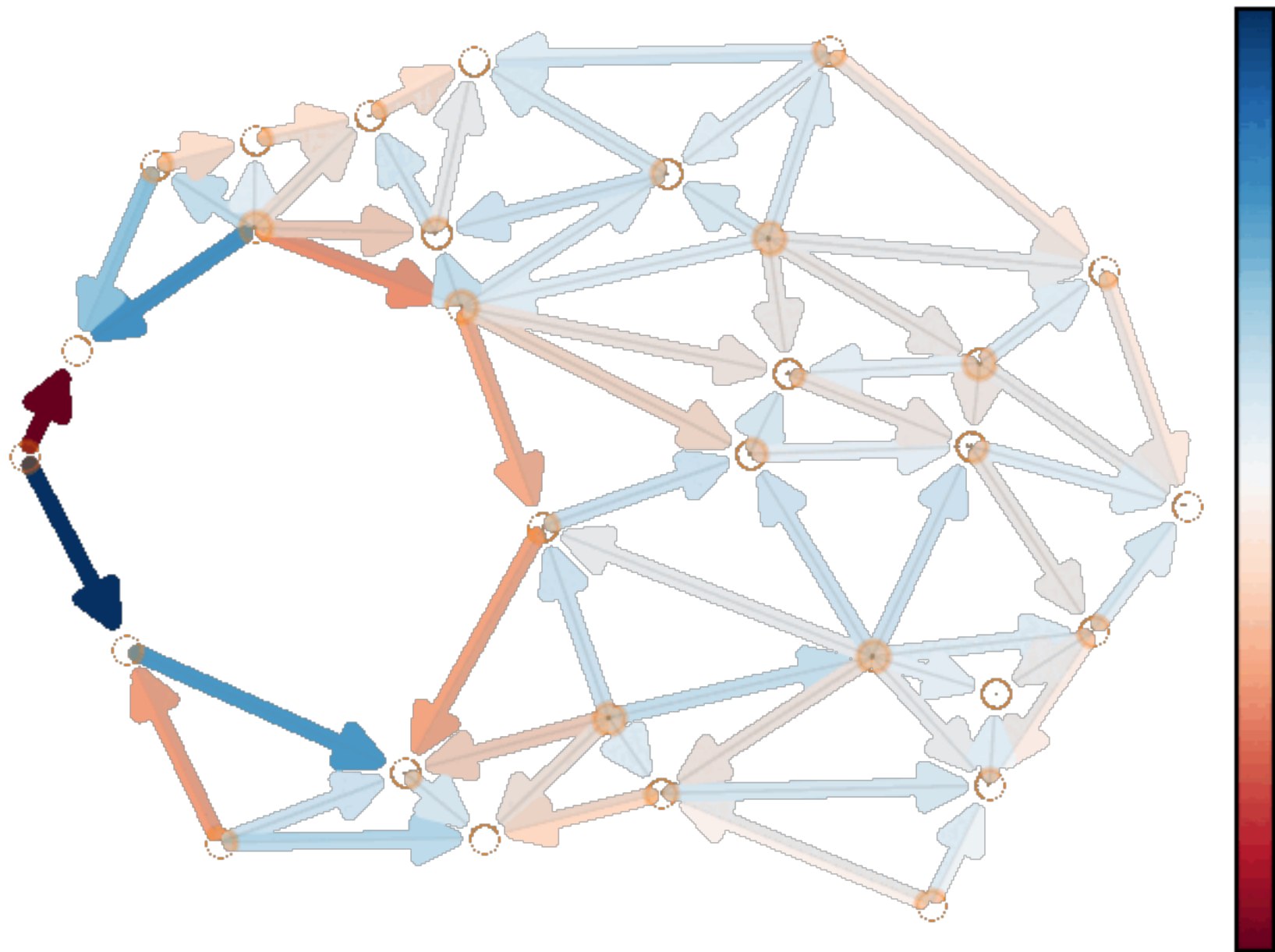
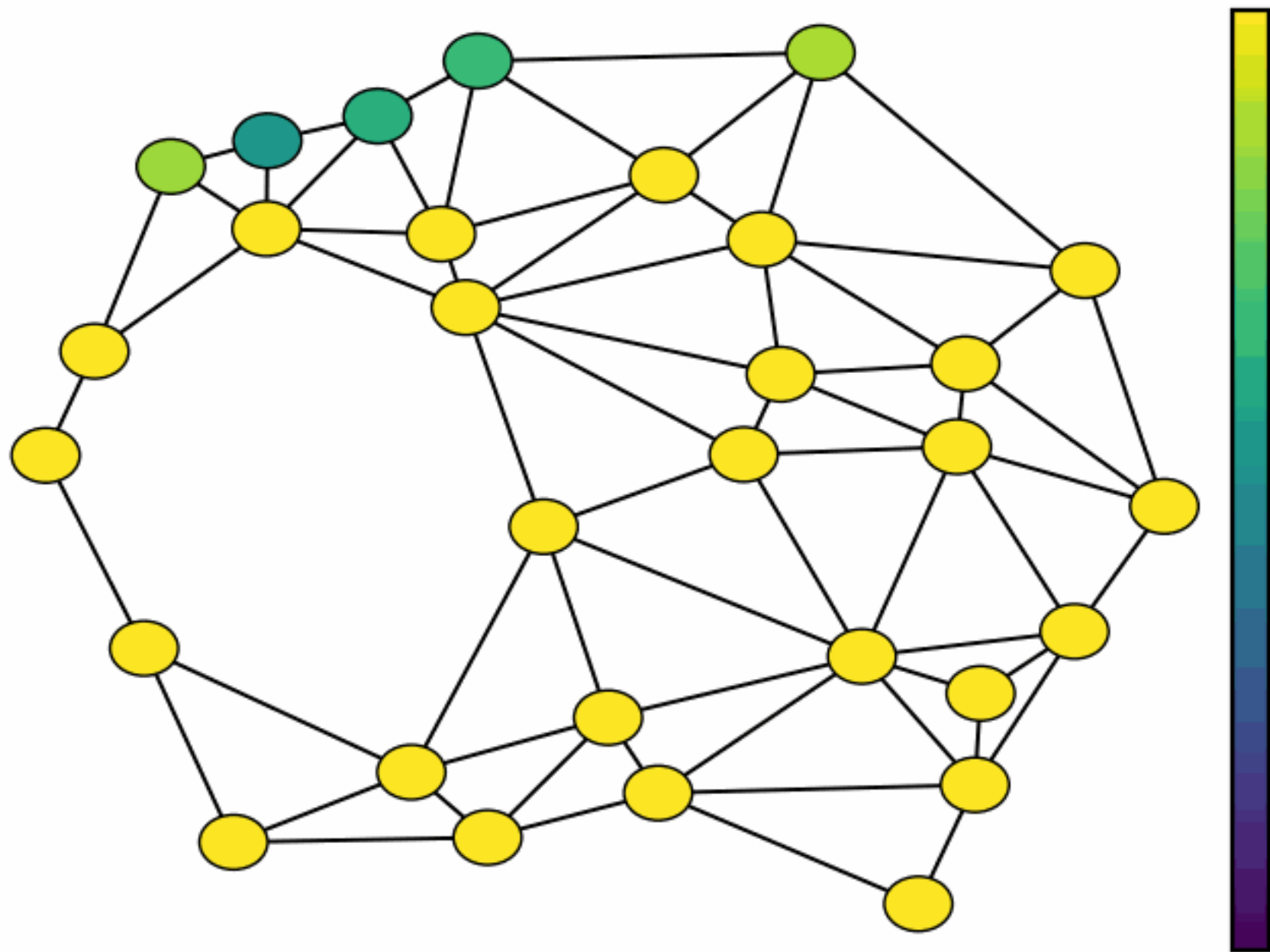


Diffusion GPS

Diffusion processes on Riemannian manifolds

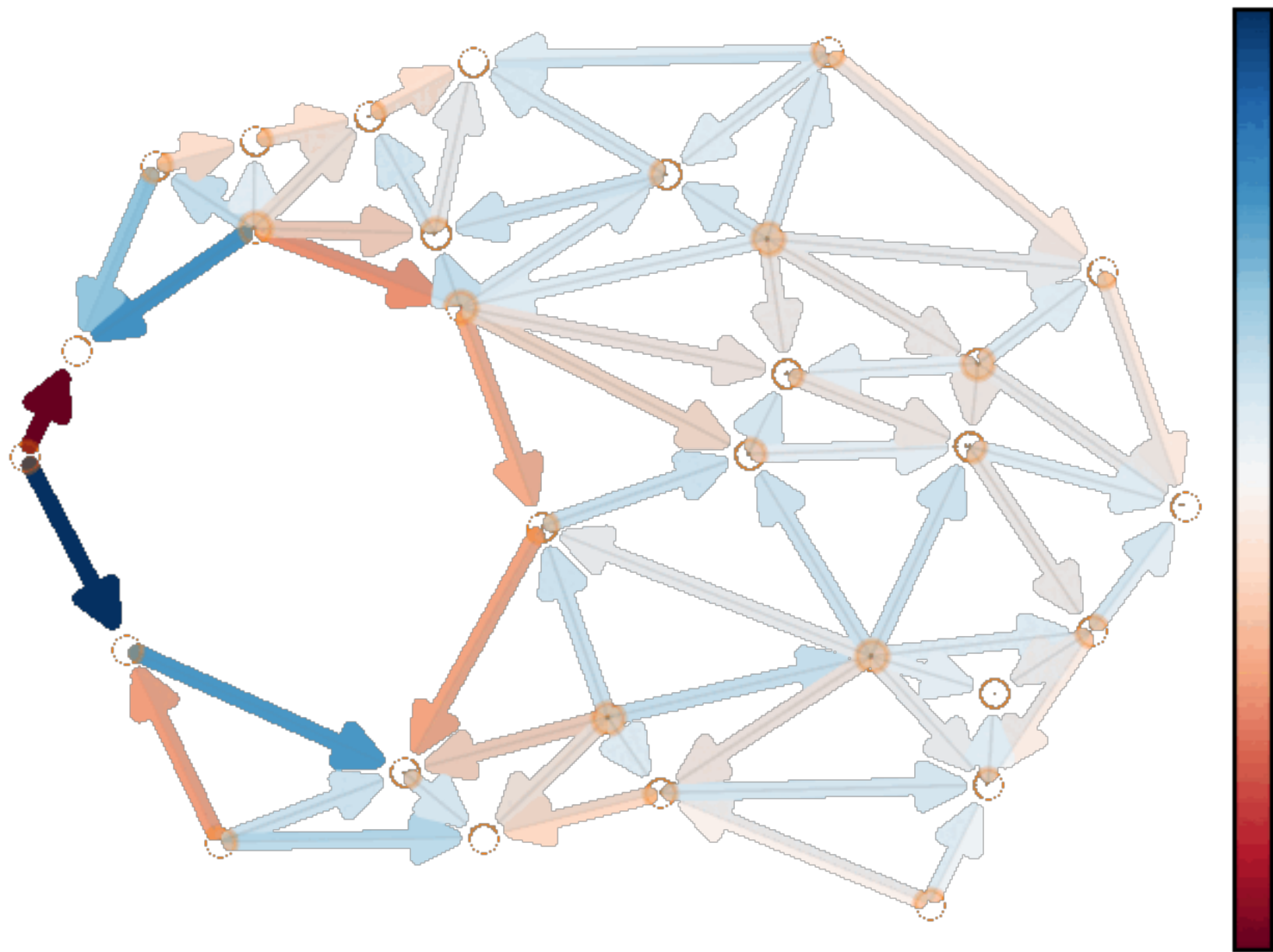


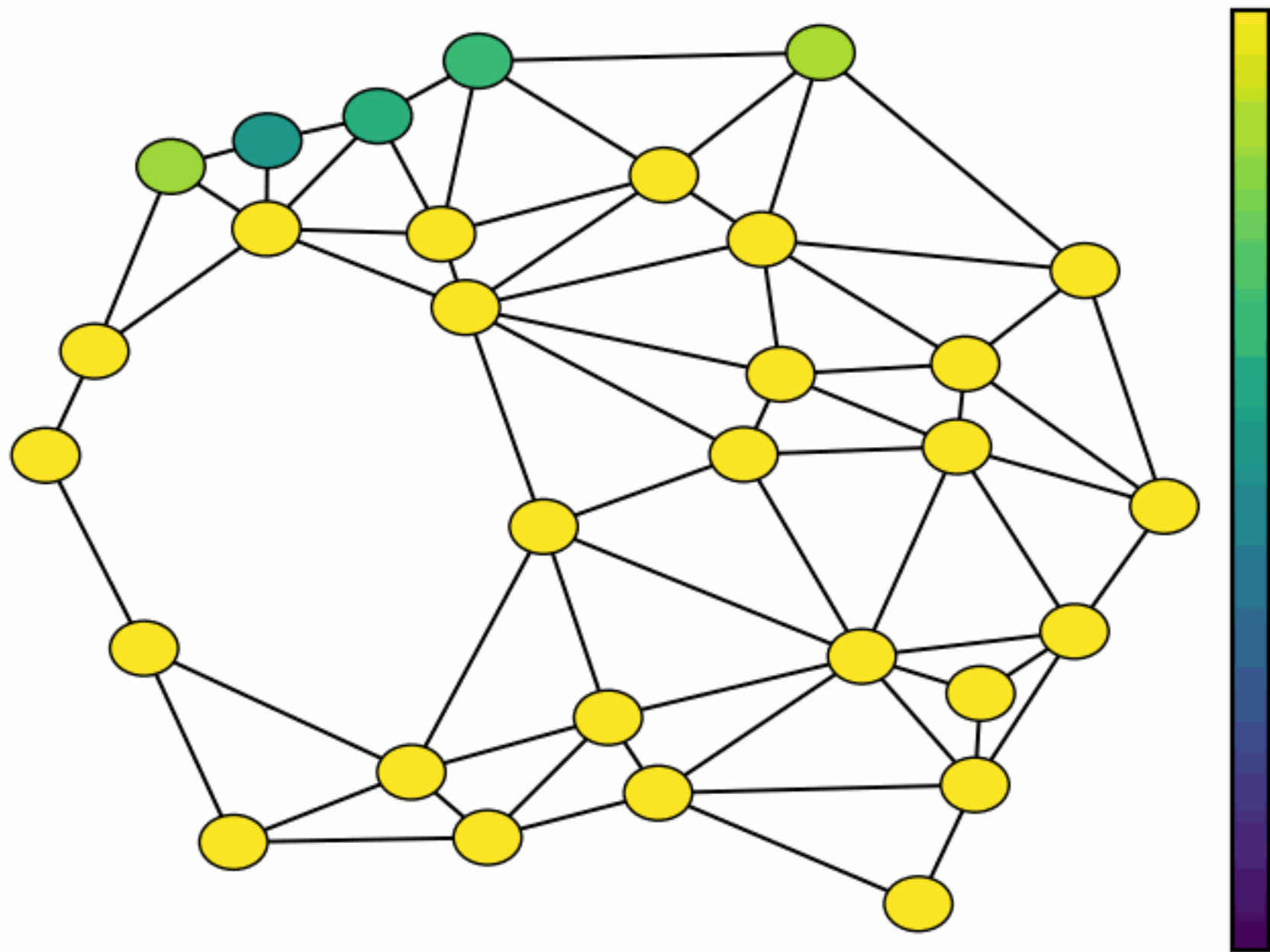




Diffusionsnordes

Diffusion driven edges

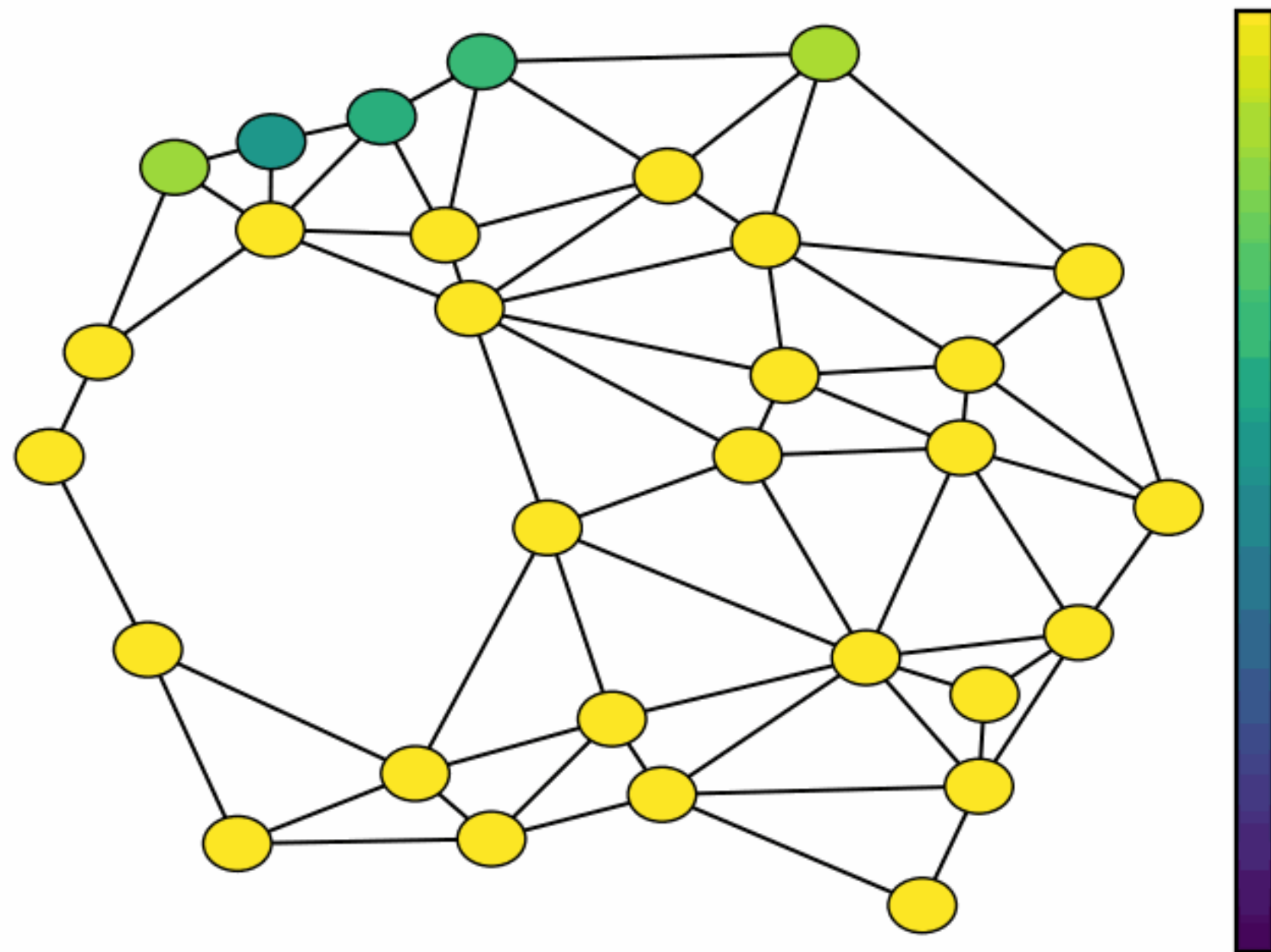




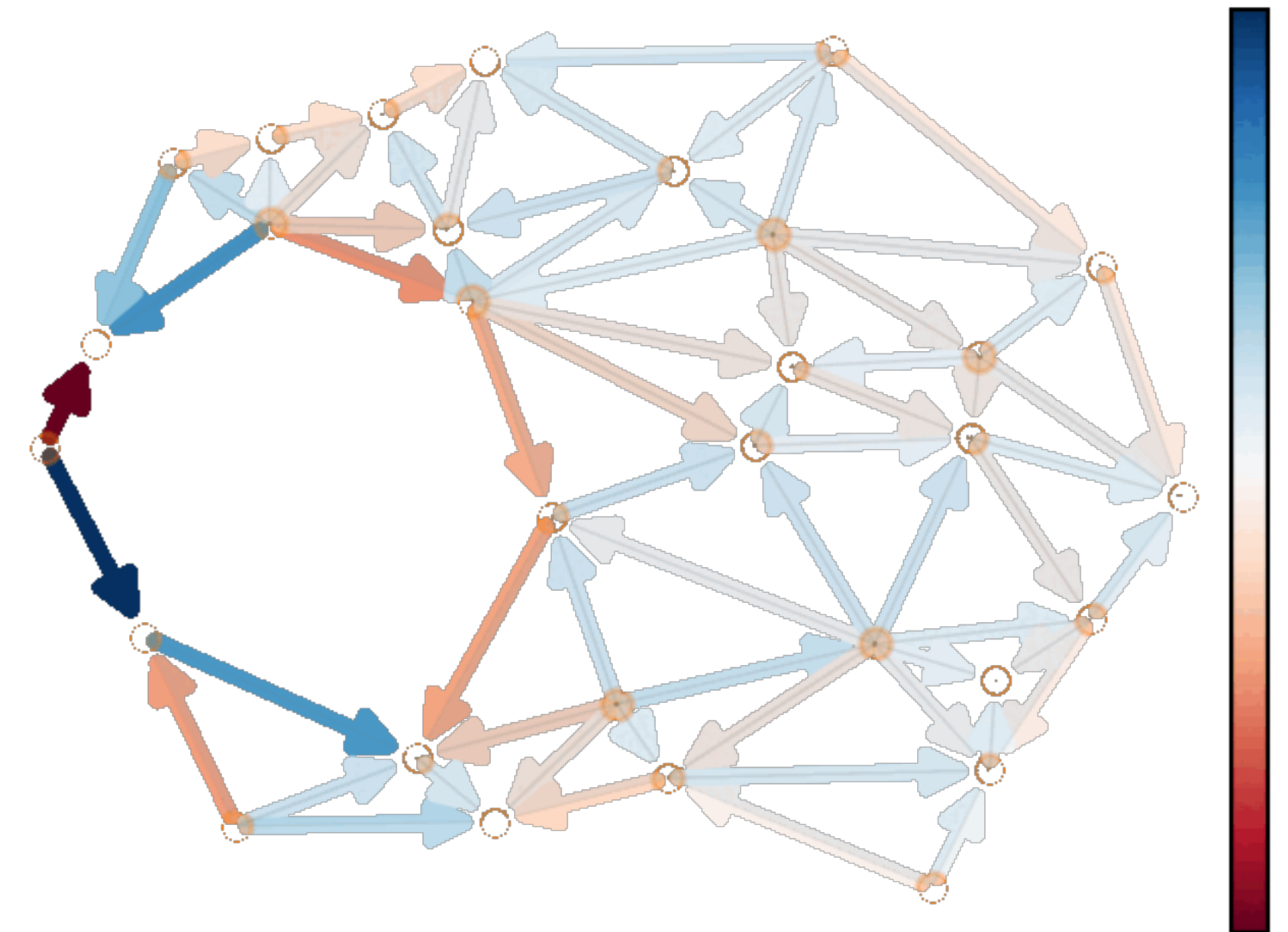
Diffusion GPs

Diffusion processes on nodes and edges

Diffusion on nodes



Diffusion on edges

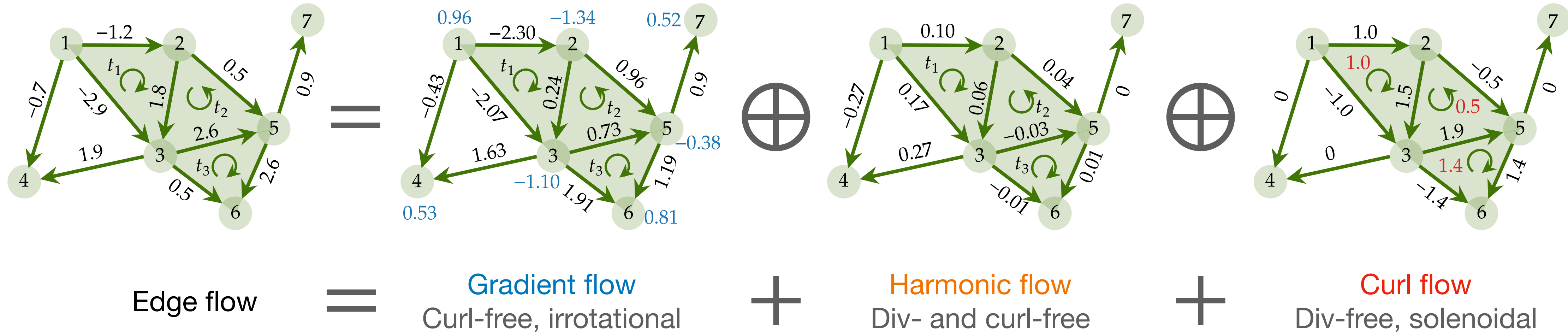


Hodge decomposition

Lovász et al. 2004; Lim et al. 2020

$$\mathbb{R}^{N_1} = \text{im}(\mathbf{B}_1^\top) \oplus \text{ker}(\mathbf{L}_1) \oplus \text{im}(\mathbf{B}_2)$$

$$\mathbf{f}_1 = \mathbf{f}_G + \mathbf{f}_H + \mathbf{f}_C$$



Hodge-compositional Edge GP

$$\mathbf{f}_G \sim \text{GP}(\mathbf{0}, \mathbf{K}_G)$$

$$\mathbf{f}_H \sim \text{GP}(\mathbf{0}, \mathbf{K}_H)$$

$$\mathbf{f}_C \sim \text{GP}(\mathbf{0}, \mathbf{K}_C)$$