Optimal TSB - Gaussian case

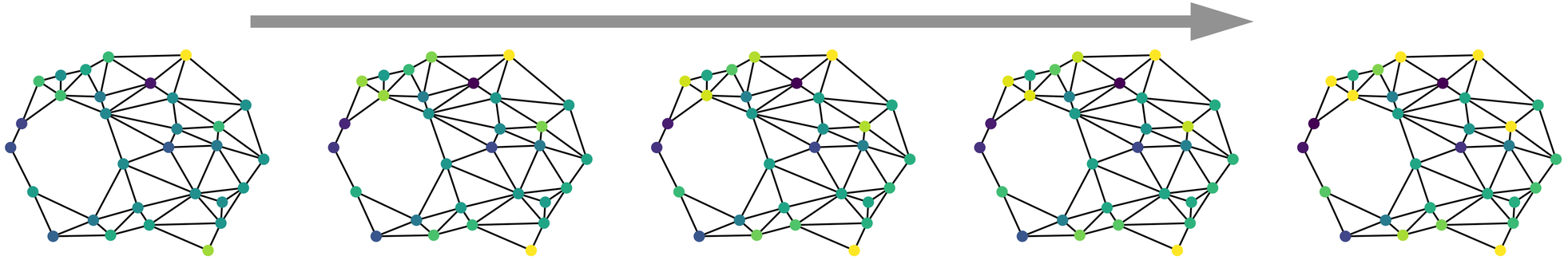
- Results 2: characterize $\mathbb{P}$ in terms of Itô differential

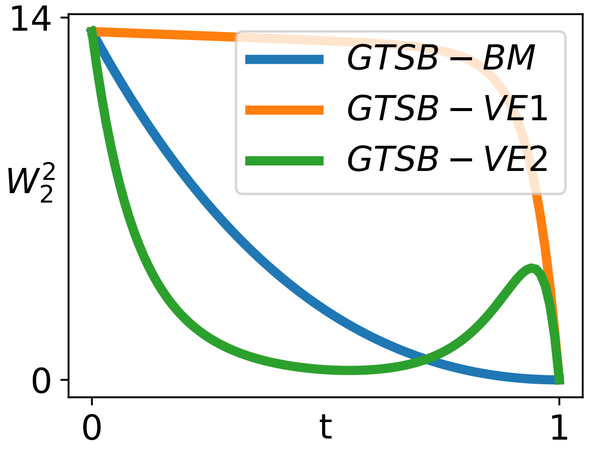
$$\mathrm{d}X_t = f_\tau(t, X_t; L)\,\mathrm{d}t + g_t\,\mathrm{d}W_t, \quad \text{where} \quad f_\tau(t, x; L) = S_t^\top \Sigma_t^{-1}(x - \mu_t) + \dot{\mu}_t$$

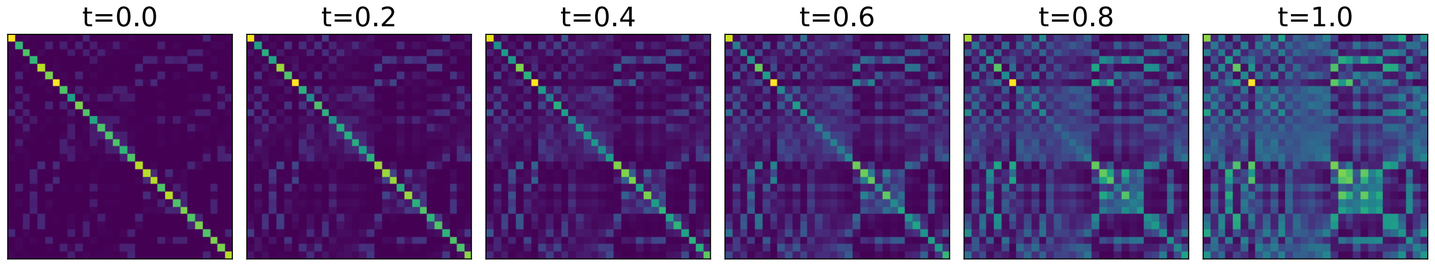
- S_t depends on the transition kernel
- Generalize the recent result [Bunne et al. 2023]
- Optimal $\mathbb{P}$ is in the law of a specific SDE class
- Infinitesimal generator + some tricks (central identity of quantum field theory)
- Can be used as a better (stronger-biased) reference process

Correctness of Gaussian solution

- On a graph, Matérn GP ρ_0 with $\Sigma_0 = (I + L)^{-1.5}$ and Diffusion GP ρ_1 with $\Sigma_1 = \exp(-20L)$
- Measure the Bures-Wasserstein distance







Covariances of GTSB-BM