Challenges

Heterogeneous random geometric graph models are prime candidate to model real networked complex systems.

But they rely heavily on our capacity to find high quality embeddings of the original datasets.
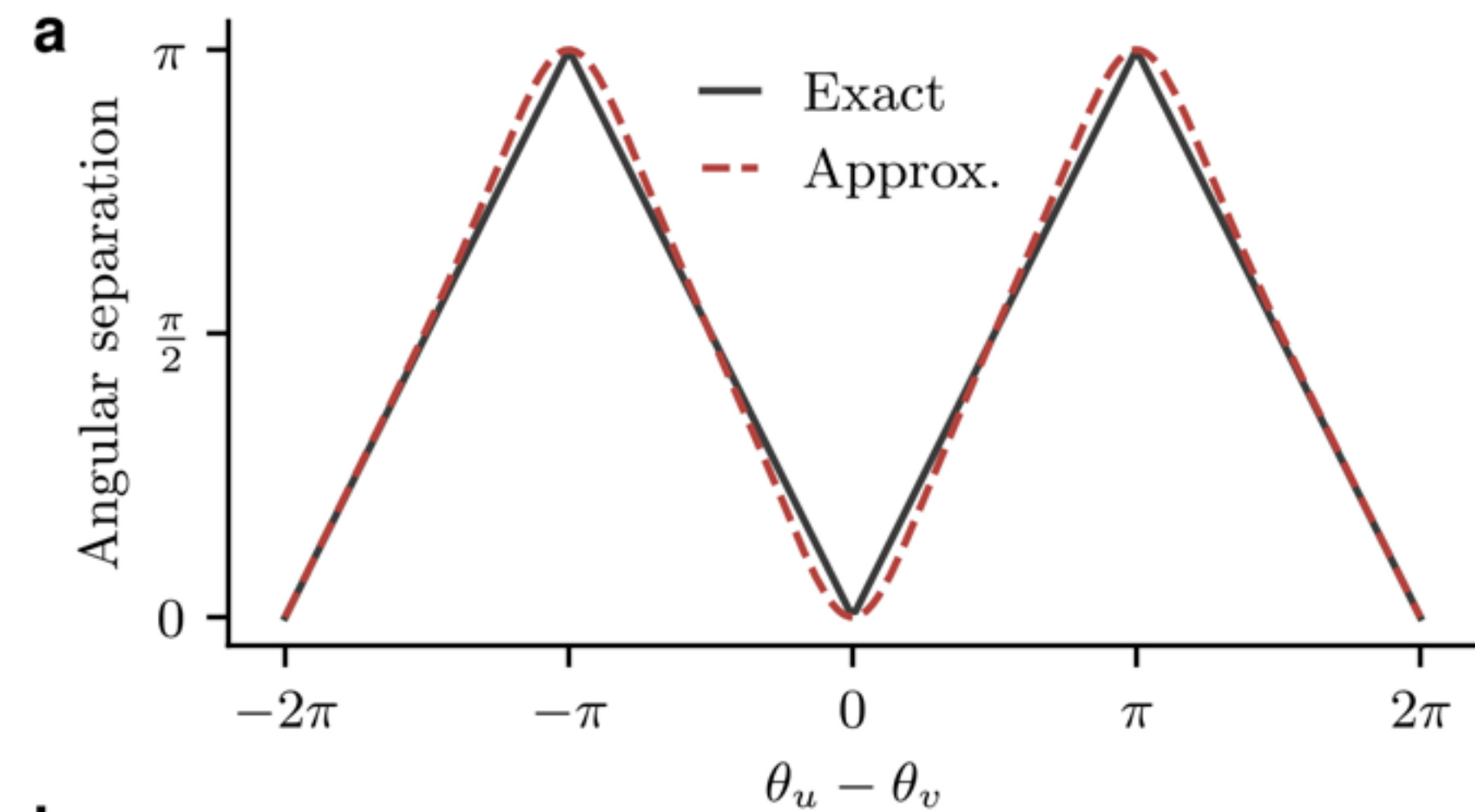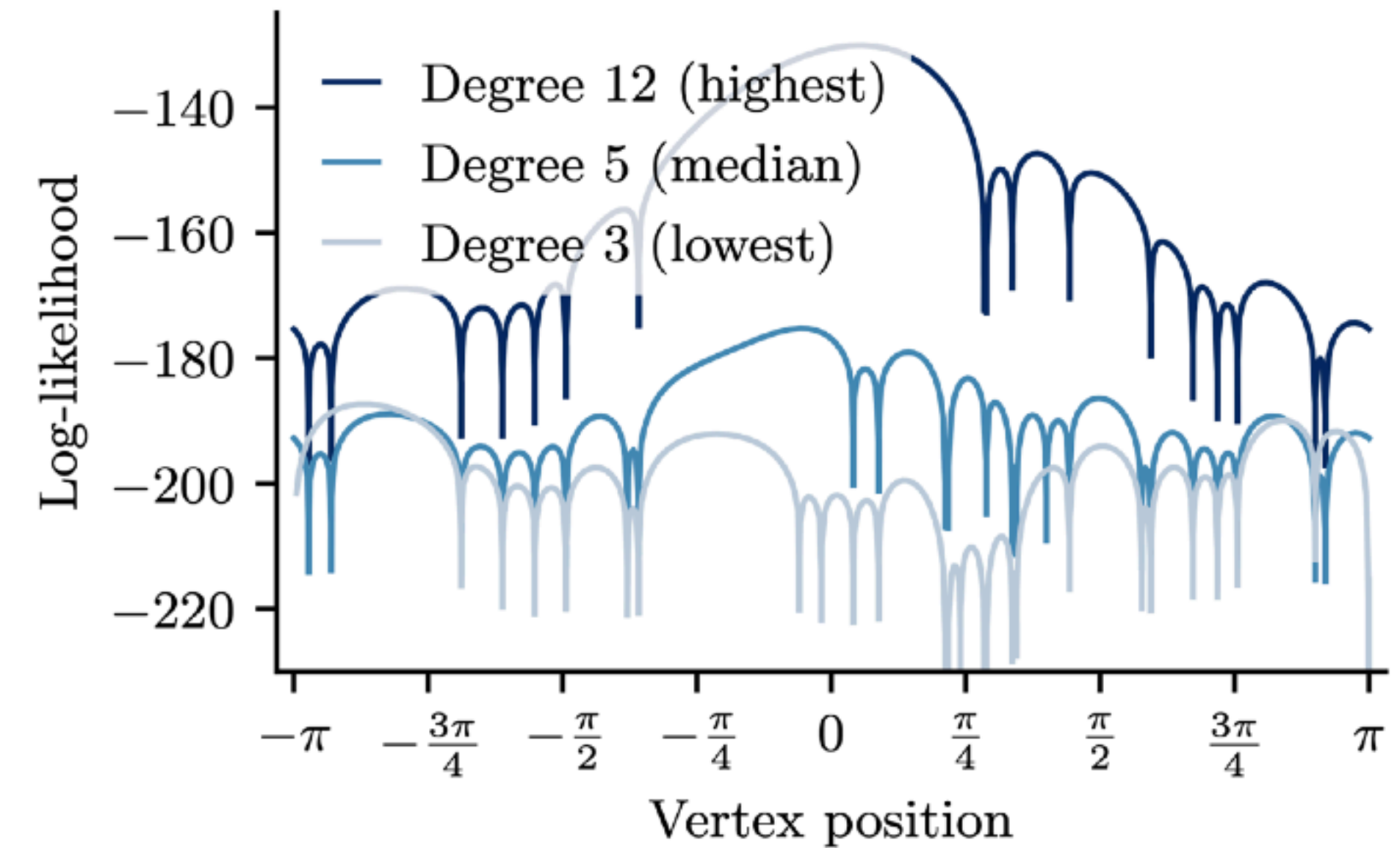
▷ Difficult optimization problem

- rugged landscape
- numerous symmetries (rotation, reflection, graph automorphisms)
- gradient not always well defined

▷ Out-of-the-box solutions do not work well

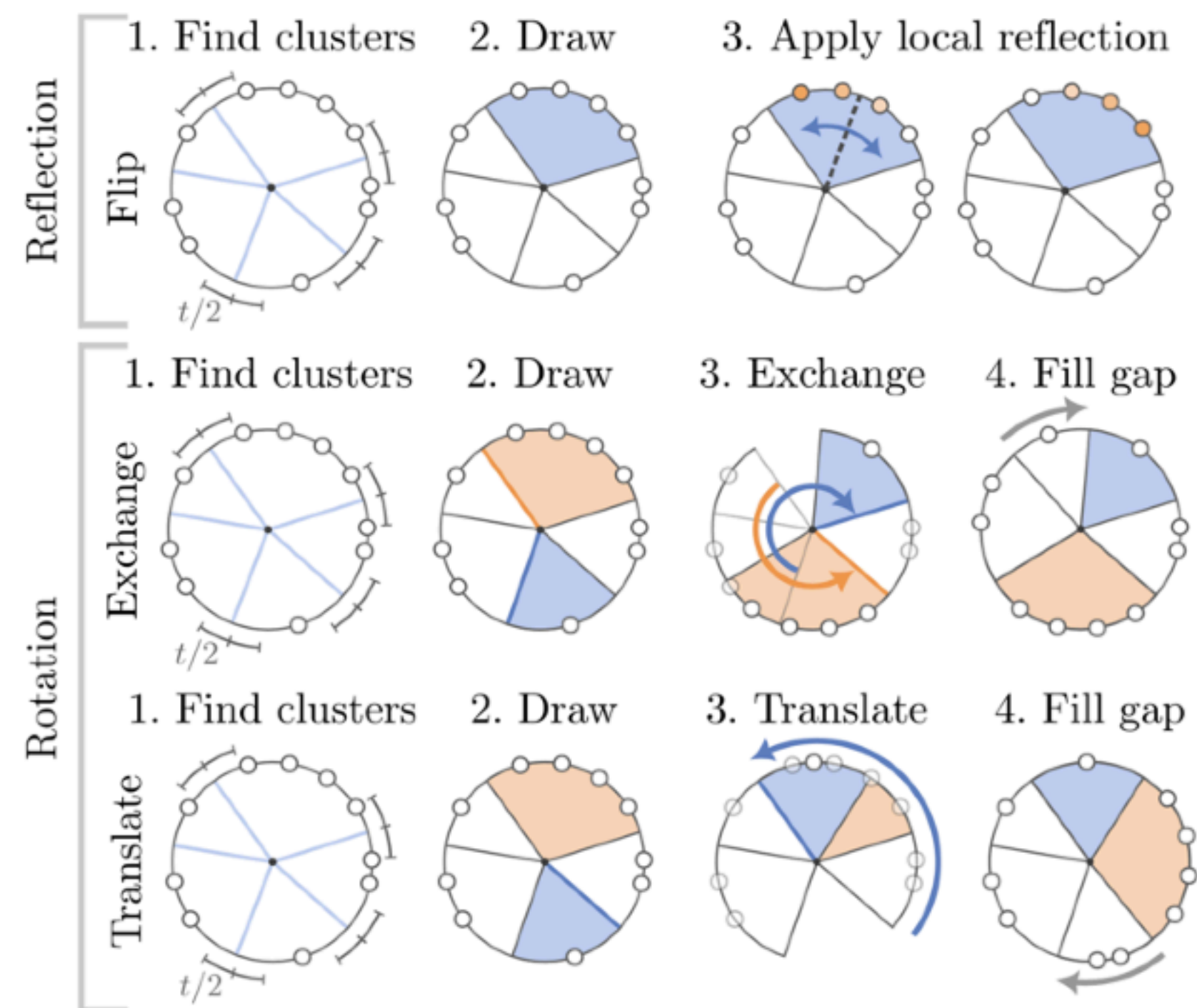- Hamiltonian Monte-Carlo
- gradient descent

▷ Current state-of-the-art embedding methods

- rely on heuristics
- do not provide uncertainties (loglikelihood maximization)

Challenges: some solutions

Leverage the specificities of the model to design better sampling algorithm.

Better mixing and exploration than standard sampling algorihms.