

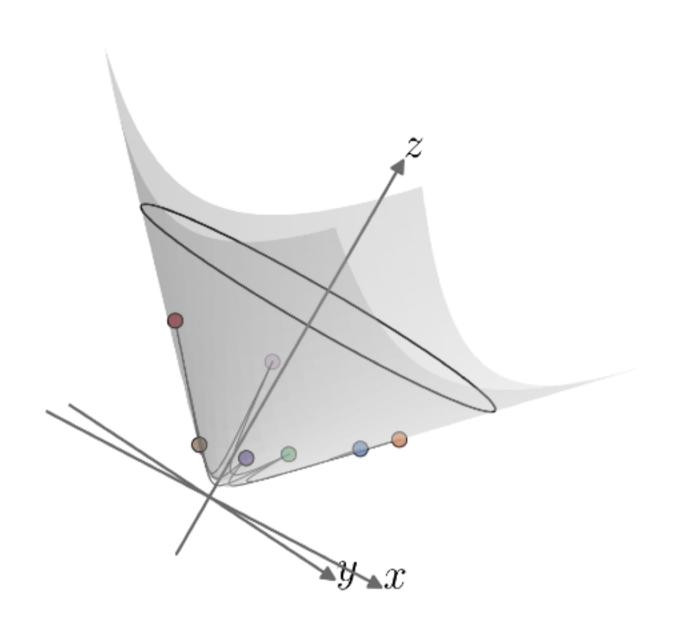
Outline

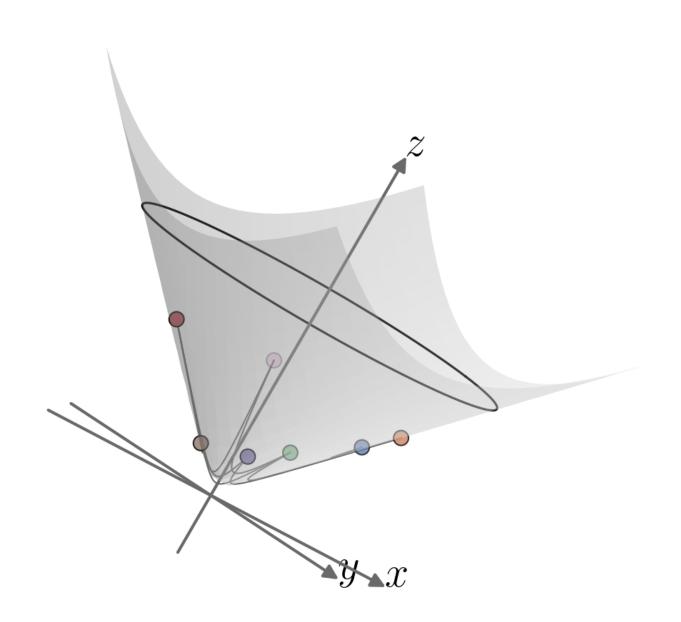
1. Are simple models enough to study complex systems/networks?

2. "Simple" ways to encode structural complexity

(a) latent metric space

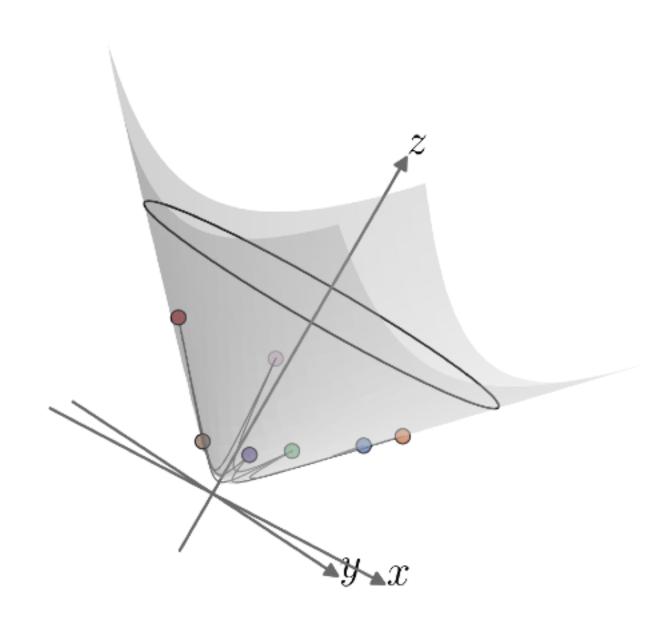
(b) stub types





Outline

- 1. Are simple models enough to study complex systems/networks?
- 2. "Simple" ways to encode structural complexity
 - (a) latent metric space
 - (b) stub types



Maximally random graph ensembles

The probability, $P(\mathbb{A})$, for a $N \times N$ adjacency matrix $\mathbb{A} = \{a_{ij}\} = \in [0,1]^{\binom{N}{2}}$ that maximizes the entropy subjected to the L constaints $(l=1,2,\ldots,L)$

$$S(\{\mathbb{A}\}) = -\sum_{\mathbb{A}} P(\mathbb{A}) \ln P(\mathbb{A}) \qquad \bar{F}_l = \sum_{\mathbb{A}} F_l(\mathbb{A}) P(\mathbb{A})$$

is (α_l) being the l-th Lagrange multiplier)

$$P(\mathbb{A}) \propto \exp\left(-\sum_{l=1}^{L} \alpha_l F_l(\mathbb{A})\right).$$