Homework 5
Statistical Connectomics
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Problem

You should sample a graph from some model with some size, number of vertices, and some clusters. Compute likelihood for same model with true number of clusters compute likelihood for same model with some other number of clusters report on the results (pictures, words, code).

Stochastic Block Model Simulation

A stochastic block model graph generating function was created. Taking inputs controlling the self and outward connecting probabilities, the function generates a random graph as well as its probabilities. This graph was visualized (below left) and its log likelihood values calculated for all clusters 1 up to k and plotted (below right).

It was found that the log likelihood increased sharply from 1 to 2 clusters, then seemed to plateau after that for clusters of k > 2. This is consistent with the intuition that the likelihoods for graphs given a wrong number of clusters should be lower than that of the correct number of clusters.