

Example of competing topologies

0. Find best E_k .

a. Recipe for best E_k

Optimal k^{th} critical energy. For E_1 we have seen that the star is optimal. Now if we want to minimize E_k , we need to make E_k as small as possible.

b. Example

c. Colormap of E_1 for those topologies//

d. Explicit formula to explain intersections.//

e. Generally if we consider larger k, N , then we can consider more complicated topologies that have more critical energy intersections. This motivates the idea of using a colormap with a large number of topologies. From analysis of simple topologies we can classify the set of networks that have the same behavior for low energies. The larger the k , the more possible optimal topologies. Interesting behaviors of E_s

a. How to minimize a specific E_k that we are more interested in

b. Which of the possible topologies is the best for a given beta (environmental energy distribution)?

1. Analytically find when p values cross

2. Not reasonable to do this for large numbers of topologies

3.

Looking at small topologies (figure with star and line), we can already see that