

Abstract: Evolution of Network Structure with a Fixed Number of Edges and Nodes

Carissa Flocken

June 2012

Abstract

We consider a model that incorporates local rewiring of nodes and edges. We use a high-degree expansion in order to describe the first model that we believe would produce a power law with an exponential cut off at the tail. However, we find that non-trivial correlations exist between degrees; this discredits our use of the high-degree expansion in this master equation. This result is produced through the dynamics of the model, and contrary to our assumption, the degree distribution seems to be condensing—amplifying the “rich get richer” phenomenon that is present in a network without correlations between degrees. This model produces negative correlations such as we observe in the world-wide-web and the Internet.