

Abstract

It was observed that many real-world networks such as the Internet, social networks, biological networks, and Collaboration graphs have the so-called power law degree distributions. A graph is called a power law graph if the fraction of vertices with degree k is approximately proportional to k^{-b} for some constant b . The classical Erdos and Renyi random graph model $G(n,p)$ is not suitable for modeling these power law graphs. Many random graphs models are developed. Among these models, we directly generalize $G(n,p)$ into “random graphs with given expected degree sequences”. We considered several graph properties such as the size and volume of the giant component, the average distance/the diameter, and the spectra. Some theoretic results will be compared to real data.

This is a joint work with Fan Chung Graham.