[P25] Biconnected components in complex networks

P. Kim, Seoul National University

We study the emergence of the giant biconnected component in random networks including the Erdos-Renyi random networks and scale free networks using the generating function method. Biconnected components are the sets of nodes and their links such that every pair in the set is connected by at least two distinct paths, so that the removal of a single link cannot cause them disconnected.

The size of the giant biconnected component is computed for finite systems as well as in the thermodynamic limit, which allows us to derive and numerically check the finite-size scaling behavior. We also study the giant biconnected components in real-world networks, which are compared with those in random networks.