

**[P21] Complete trail of co-authorship network evolution***Deokjae Lee, SNU*

We observe the complete trail of the evolution of a co-authorship network of scientists working on complex networks. The evolution has three distinct regimes. Small isolated clusters are nucleated in the first regime and a giant cluster is formed through the second regime. In third regime, the giant cluster becomes relatively stable. We focus on the dynamics forming the giant cluster in the second regime. In the regime, two kinds of processes conduct the dynamics. Firstly the cluster aggregation process results the emergence of a singly connected giant cluster and tree-like growth of the cluster. Secondly the appearance of long-range links results the formation of a bi-connected giant cluster, which is a part of the singly connected giant cluster, and collapse of the tree-like structure. Competition between the tree-like growth by cluster aggregation and formation of long-range links makes large fluctuation of mean separation between nodes in the giant cluster. This fluctuation vanishes after the giant cluster becomes large enough in the third regime. This observation suggests that we need to consider percolation by both of single connectedness and bi-connectedness to understand and model the formation of real networks.