

## Effects of Global and Local Rewiring on SIS Epidemic Adaptive Networks

*Tuesday, 22 May 2018 14:00 (15 minutes)*

Adaptive epidemic network is generally driven by two main processes: (1) infection-recovery process that changes the states of the nodes, and (2) rewiring process that modifies the topology of the network. We consider an adaptive susceptible-infected-susceptible (SIS) epidemic on a network. In this work, a link is rewired randomly to a chosen susceptible node according to a prescribed global or local rewiring method. In the global rewiring case, a susceptible node could break the link with its infected neighbour to form a new link with another susceptible in the graph. In this rewiring mechanism, the node must know health status of every other node in the network in order to rewire. This is however impractical in real life because the knowledge is only limited to a certain neighbouring group of nodes surrounding a given point. We propose a more realistic rewiring method called the local rewiring method, where a new link is limited to join a susceptible within a neighbouring distance. We investigate the impact of local versus global rewiring on an epidemic network. A new disease prevention behaviour emerges as a result.

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**Session Classification:** A17: Statistical and Theoretical Physics

**Track Classification:** Statistical and Theoretical Physics