

[P17] Threshold cascade dynamics on multiplex networks*Kyu-Min Lee, Korea University*

Many real-world complex systems consist of constituents which have multiple types of relations. Therefore they should be considered in the framework of “multiplex” networks. Here we study the Watts threshold model on multiplex networks. Through the analytic and numerical calculations, we found that the multiplexity in the system facilitates global cascades comparing with simplex network counterpart. Specifically, multiplex networks can cooperatively achieve global cascades when each layer is unsusceptible in isolation. For general ℓ -plex networks, global cascades are possible even for threshold $R \geq 1/2$, which is impossible in simplex networks. A number of variants, such as the mixture model, are also studied.