Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Epidemic and information co-spreading in adaptive social networks YUNHAN LONG, The College of William and Mary, THILO GROSS COLLABORATION, LEAH B. SHAW TEAM — We model simultaneous evolution of an epidemic and information about the epidemic on an adaptive social network. The classical Susceptible-Infectious-Susceptible (SIS) model is extended. Susceptible and infectious nodes are each divided into informed and uninformed types. Informed nodes affect the network structure by rewiring their network connections adaptively to avoid disease exposure. The impacts of mass media information and communication on the disease spreading and network structure are explored, and stochastic simulations are compared with a moment closure approximation. When the rewiring rate is high, the infection and information levels of the population show periodic oscillations for certain ranges of contact rate, and the moment closure approximation predicts similar dynamics. The epidemic threshold in the presence of rewiring and information is considered. Our results indicate that information can play a significant role in minimizing disease spread.

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Date submitted: 15 Dec 2011 Electronic form version 1.4