

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

A simple model for studying interacting networks¹ WENJIA LIU, SHIVAKUMAR JOLAD, BEATE SCHMITTMANN, R.K.P. ZIA, Virginia Tech — Many specific physical networks (e.g., internet, power grid, interstates), have been characterized in considerable detail, but in isolation from each other. Yet, each of these networks supports the functions of the others, and so far, little is known about how their interactions affect their structure and functionality. To address this issue, we consider two coupled model networks. Each network is relatively simple, with a fixed set of nodes, but dynamically generated set of links which has a preferred degree, κ . In the stationary state, the degree distribution has exponential tails (far from κ), an attribute which we can explain. Next, we consider two such networks with different κ 's, reminiscent of two social groups, e.g., extroverts and introverts. Finally, we let these networks interact by establishing a controllable fraction of cross links. The resulting distribution of links, both within and across the two model networks, is investigated and discussed, along with some potential consequences for real networks.

¹Supported in part by NSF-DMR-0705152 and 1005417.

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Date submitted: 12 Nov 2010

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