

Abstract Submitted  
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**Spectra of Adjacency Matrices in Networks with Extreme Introverts and Extroverts**<sup>1</sup> KEVIN E. BASSLER, Department of Physics, University of Houston, ROYCE K.P. ZIA, Department of Physics and Astronomy, Iowa State University, and Department of Physics, Virginia Tech — In recent studies of networks with preferred degrees (suitable for describing social networks in which individuals tend to prefer a certain number of contacts), the XIE model of extreme introverts and extroverts was found to display remarkable collective behavior and to raise interesting theoretical issues. Though this system is defined through its dynamics, i.e., introverts/extroverts always cut/add links, the steady state turns out to be a Boltzmann-like distribution. While the intra-group links are static, the cross-links are dynamic and lead to an ensemble of bipartite graphs, with extraordinary long-ranged correlations between elements of the incidence matrix (details in JSTAT P07013, 2015). Here, we report simulation studies of a different perspective of networks, namely, the spectra associated with this ensemble of adjacency matrices. As a baseline, we first consider the spectra associated with (the adjacency matrices of) a simple random (Erdős-Rényi) ensemble of bipartite graphs, where simulation results can be understood analytically.

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