

*Department of Mathematics and Statistics
Colloquium Lecture Series*

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THE LOCAL STRUCTURE GRAPH MODEL

The statistical analysis of networks is a popular research topic with ever widening applications. One common statistical modeling approach for this purpose is the Exponential Random Graph Model (ERGM), which specifies a model through interpretable, global network features. In this talk I will introduce a new model for network analysis, the Local Structure Graph Model (LSGM). In contrast to the ERGM, the LSGM specifies a network model through local features and allows for an interpretable and controllable local dependence structure. In particular, the LSGM is formulated by a set of full conditional distributions for each network edge, e.g., the probability of edge presence/absence, depending on neighborhoods of other edges. Additional LSGM model features are introduced to aid in specification and to help alleviate a common issue (occurring also with the ERGM) of model degeneracy. The proposed model will be demonstrated on a network of tornadoes in Arkansas where the LSGM is shown to perform significantly better than a model without local dependence. Extensions to include attribute information and account for higher order dependence will also be discussed, along with adjustments necessary to maintain the advantages of the model.

Emily Casleton is a candidate for the statistics faculty position in DMS.

Thursday, February 27, 2014

Chapman 106

1:05 – 1:55 pm

Refreshments after the talk in Chapman 101A