

Department of Applied Mathematics and Statistics
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SEMINAR

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304 Whitehead Hall
Refreshments: 3:30 p.m.
Seminar: 4:00 p.m.

SOME PRESSING TOPICS IN NETWORK ANALYSIS

ABSTRACT

Three topics/approaches are discussed as “open problems” where solutions are sorely needed for further progress. They are labeled as “blockmodeling,” “network autocorrelation,” and “quadratic assignment regression.” While each represents an avenue of fruitful methods for studying social network phenomena, they all still subject to problems stemming from considering social networks as social structures.

First, blockmodeling has become one of the most used tools for the delineation of the structure of social networks. This approach has been generalized by expanding the types of blocks and blockmodels in order to fit a variety of blockmodels to data. While this is an approach that shows great promise, there is a need to further expand the set of block types to cover a wider range of substantively interesting empirical networks and a further need to deal with the computational burden of fitting blockmodels to large networks. Second, many studies employ regression methods where the data points are actors (vertices) in a network. For these data sets, the assumption of independent data points is untenable and inference is seriously compromised when the inherent nature of network interdependence is ignored. While considerable progress has been made, especially in the context of geographic space, there is a pressing need to rethink many statistical procedures to take into account such interdependencies. Finally, quadratic assignment regression methods are useful when the “variables” are matrix arrays of network ties rather than vectors of vertex attributes. However, here, there is a pressing need to generalize the approach to multiple equation systems. An invitation is extended to others to put their shoulders to these wheels, as they represent great promises for future progress.