

Algebraic Statistics for Social Network Models: Recent Results and Challenges

Stephen E. Fienberg
Carnegie Mellon University

Abstract

Tools from algebraic geometry have recently found major application in statistics, especially in the study of discrete random variables for contingency table and network models, and the synthesis of algebraic geometry and statistics has been dubbed *algebraic statistics*. With collaborators, I have recently developed algebraic statistical tools for the study of some dyadic random graph models, including Markov bases, which have important implications for the existence of maximum likelihood estimation and other statistical problems. These tools do not extend in a simple fashion to more complex models in the class of exponential random graph models. In this presentation, I will provide some of the technical and statistical background for these developments and I explain why there are difficulties as we move away from dyadic network models. I will also describe some of the challenges for algebraic statistics in this area of research.

Tuesday, April 24, 2012
Sherrerd Hall 101
4:30 PM