



Speaker: Sonja Petrovic
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Thursday, October 17, 2013
11:00 AM
125 Hayes-Healy Hall

Title: Network/graph algorithms in algebraic statistics

Abstract:

The field of algebraic statistics has flourished in recent years, with work that allows us to use the perspective and methods from algebra and geometry to gain key insights into statistical models. Random graph models and difficulties posed by large sparse data sets are of particular interest. The theory needed for the study of extensions of basic models and applications to social networks is the focus of ongoing research.

The p_1 model is a directed random graph model used to describe dyadic interactions in a social network in terms of effects due to differential attraction (popularity) and expansiveness, as well as an additional effect due to reciprocation. It belongs to the most important and flexible class of statistical models for networks. This talk will focus on a problem related to the algebraic structure of the p_1 model giving rise to MCMC algorithms, and directly relevant to the goodness-of-fit testing problem. We will in particular highlight the underlying algorithm for testing the model. We will discuss the extensions to more general models, and what kinds of MCMC algorithms for graphs and hypergraphs need to be developed moving forward.

This talk is being presented jointly by the Department of Mathematics and the Interdisciplinary Center for Network Science and Applications (iCeNSA)