



ANNOUNCES A  
COLLOQUIUM

**David Hunter**

*Penn State University*

will speak on

**Scalable Statistical Estimation Methods for large,  
Time-Varying Networks**

(Joint work with Duy Vu, Arthur Asuncion, and Padhraic Smyth)

**Time: 3:00 PM – 4:00 PM**

**Date: Friday, February 10, 2012**

**Place: Alter Hall 748**

**Abstract**

The analysis of the formation and evolution of networks over time is of fundamental importance to social science, biology, and many other fields. While longitudinal network data sets are increasingly being recorded at the granularity of individual time-stamped events, most studies only focus on collapsed cross-sectional snapshots of the network. Leveraging ideas from survival and event history analysis, we introduce a continuous-time regression modeling framework for network event data that can incorporate both time-varying network statistics and time-varying regression coefficients. This framework can apply to both egocentric processes defined for individual nodes and relational processes defined for pairs of nodes. We also develop an efficient inference scheme that allows our approach to scale to large networks. We apply our techniques to various synthetic and real-world datasets, such as citation networks and social networks, and show that the proposed inference approach can accurately estimate the model coefficients, which is useful for interpreting the evolution of the network; furthermore, the learned model has systematically better predictive performance compared to standard baseline methods.

Guest Parking Available in the **Liacouras Garage**  
(Located on **15th Street between Montgomery and Cecil B. Moore Avenues**)