

## DEPARTMENT OF STATISTICS AND BIOSTATISTICS

**Lan Wang**

School of Statistics  
University of Minnesota

***Quantile Criterion for Optimal Treatment  
Regimes Estimation*****March 29, 2017****3:20 – 4:20pm**

Light refreshments will be served

**110 Frelinghuysen Road  
Hill Center, Room 552**

**Abstract:** The problem of finding the optimal treatment regime (or a series of sequential treatment regimes) based on individual characteristics has received considerable attention in areas such as economics, personalized medicine and government policies. In the current literature, the optimal treatment regime is usually defined as the one that maximizes the average benefit in the potential population. We introduce new quantile-optimal treatment regime, which enjoys appealing properties in important applications. Given a collection of decision rules, we study a robust estimator of the quantile-optimal treatment regime which does not require specifying an outcome regression model. We propose an alternative formulation of the estimator as a solution of an optimization problem with an estimated nuisance parameter. This novel representation allows us to further investigate the asymptotic theory of the estimated optimal treatment regime using empirical process techniques. It is revealed that the theory involves a nonstandard convergence rate and a non-normal limiting distribution. (Joint work with Yu Zhou, Rui Song and Ben Sherwood).

**Bio:** Lan Wang earned her PhD at Penn State and has been on the faculty of the University of Minnesota since then. An associate editor at the Annals of Statistics, JASA, Biometrics, and previously at JRSS B, her research interests lie in nonparametric and semiparametric statistics with a focus on high-dimensional data analysis, quantile regression, estimating equations, censored data, model diagnostics and their applications.

