

**RUTGERS UNIVERSITY
DEPARTMENT OF STATISTICS AND BIOSTATISTICS
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Seminar

Speaker: **Fang Han**
Department of Biostatistics
John Hopkins University

Title: **Robust Covariance Functional Inference**

Time: **3:20pm – 4:20pm, Wednesday, February 25, 2015**

Place: **552 Hill Center**

Abstract

Covariance functional inference plays a key role in high dimensional statistics. A wide variety of statistical methods, including principal component analysis, Gaussian graphical model estimation, and multiple linear regression, are intrinsically inferring covariance functionals. In this talk, I will present a unified framework for analysis of complex (non-Gaussian, heavy-tailed, dependent,...) high dimensional data. It connects covariance functional inference to robust statistics. Within this unified framework, I will introduce three new methods: elliptical component analysis, robust homogeneity test, and rank-based estimation of latent VAR model. They cover both estimation and testing problems in high dimensions and are applicable to independent or time series data. Although the generative models are complex, we show the rather surprising result that all proposed methods are minimax optimal and their performance is comparable to Gaussian-based counterparts under the Gaussian assumption. We further illustrate the strength of the proposed unified framework on real equity data.

**** Refreshments will be served @3:00pm in Room 502 Hill Center****