

Stanford University
Department of Statistics

DEPARTMENTAL SEMINAR

4:30pm, Thursday, February 21, 2019
History Corner, Main Quad 01-200 Room 205
Refreshments served at 4pm in Sequoia Lounge.

Speaker: Joshua Cape, *Johns Hopkins University*

Title: **Statistical analysis and spectral methods
for signal-plus-noise matrix models**

Abstract:

Estimating eigenvectors and principal subspaces is of fundamental importance for numerous problems in statistics, data science, and network analysis, including covariance matrix estimation, principal component analysis, and community detection. For each of these problems, we obtain foundational results that precisely quantify the local (e.g., entrywise) behavior of sample eigenvectors within the context of a unified signal-plus-noise matrix framework. Our methods and results collectively address eigenvector consistency and asymptotic normality, decompositions of high-dimensional matrices, Procrustes analysis, deterministic perturbation bounds, and real-data spectral clustering applications in connectomics.