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# STATISTICS SEMINAR

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UW-Department of Statistics

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**Abstract:** This talk addresses two topics related to robust statistical procedures for analyzing noisy, high-dimensional data: (I) path-based spectral clustering and (II) robust multi-reference alignment. Both methods must overcome a large ambient dimension and lots of noise to extract the relevant low dimensional data structure in a computationally efficient way. In (I), the goal is to partition the data into meaningful groups, and this is achieved by a novel approach which combines a data driven metric with graph-based clustering. Using a data driven metric allows for strong theoretical guarantees and fast algorithms when clusters concentrate around low-dimensional sets. In (II), the goal is to recover a hidden signal from many noisy observations of the hidden signal, where each noisy observation includes a random translation, a random dilation, and high additive noise. A wavelet based approach is used to apply a data-driven, nonlinear unbiaseding procedure, so that the estimate of the hidden signal is robust to high frequency perturbations.

**TITLE:** Robust Statistical Procedures for Noisy, High-dimensional Data

**Speaker:**

**Anna Little**

Postdoc Dept. of Computational Mathematics Michigan State University

**Time & Place:**

Wednesday,  
November 13, 2019

**4:00**, Room 140

Bardeen

Cookies & Coffee @  
**3:30**, Rm 1210 MSC

