Speaker: Noureddine El Karoui  
Department of Statistics, UC Berkeley

Title: Some robustness questions in high-dimensional statistics

Abstract:
Over the last few years, there has been some interest in the statistics community for questions involving large dimensional random matrices. The paradigm considered there can be used to ask questions about the behavior of classical statistical techniques (such as Linear Discriminant Analysis and Regularized Discriminant Analysis) and solutions of classical problems of applied mathematics (e.g., the Markowitz problem in Finance) in the high-dimensional setting.

A potentially important question is that of robustness of the corresponding results, and while much has been made of the apparent robustness of various random matrix results, we will show that the sensitivity of the results is not so much to distributional assumptions as it is to their very simple geometric consequences. Hence, when one moves from a Gaussian-like setting to an elliptical-like setting, the first-order robustness of the results vanishes. Interestingly, this larger framework also sheds a bit of light on the behavior of the bootstrap in some high-dimensional questions.

Some of this work is joint with Holger Koesters from Bielefeld (Germany).