

STANFORD UNIVERSITY
DEPARTMENT OF STATISTICS
DEPARTMENTAL SEMINAR

4:10 p.m., Tuesday, October 30, 2007
60 Evans Hall, Berkeley

(There will be refreshments at 3:30 and reception after the talk, both at 1011 Evans Hall)

Andrea Montanari
Departments of Electrical Engineering and Statistics
Stanford University

Estimating random variables from random sparse observations

Let X_1, \dots, X_n be a collection of iid discrete random variables and Y_1, \dots, Y_m a set of noisy observations of such variables. Assume each observation to be a random function of a random subset of the X_i 's. We consider the problem of estimating the X_i 's from such observations. This setting encompasses a large array of challenging problems arising in communications, computer science and statistics. I will describe several examples including sparse graph coding, counting in satisfiability problems, and group testing. I will then prove a few mathematical properties of such systems that arise in the limit of a large number of variables and discuss their implications.