Stanford University  
Department of Statistics

DEPARTMENTAL SEMINAR

4:15pm, Tuesday, February 1, 2011  
NOTE SPECIAL ROOM:  
*** Jordan Hall, Building 01-420, Room 040 ***  
Cookies served at 3:45pm, 1st Floor Lounge.

Speaker:  David Donoho, Stanford University

Title:  Precise Optimality in Compressed Sensing: Rigorous Theory and Ultra-Fast Algorithms

Abstract:

While Compressed Sensing has generated a great deal of published work, quite a lot of it is merely qualitative — talking about loose performance bounds — or else empirical — describing computer experiments. In my talk I will describe some large-system optimality problems we have recently solved precisely, and fast algorithms which have a theoretical motivation, provably achieve the optimal performance level, and are dramatically faster in certain precise senses than the most popular iterative algorithms. Our approach unites minimax decision theory from statistics with ideas from statistical physics and belief propagation.

This is joint work with Andrea Montanari, Arian Maleki, and Iain Johnstone.