

## STANFORD PROBABILITY SEMINAR

**Mauro Maggioni**, Yale

**Monday, 27 February 2006**

**4:15pm** (Refreshments at 4pm in the 1st Floor Lounge)

Sequoia Hall, Room 200

### **Multiscale Diffusion Analysis and Organization of Graphs and Data Sets**

**Abstract.** We present novel ideas and constructions that allow the multiscale organization of graphs and data sets. These constructions are based on ideas related to diffusions on data set, and use different time and space scales associated with diffusion to infer multiscale hierarchical organizations of a graph. They allow to organize complex data sets and to generalize important signal processing tools to graphs. In order to emphasize the wide applicability of these techniques we will touch upon their applications to the organization of document corpora, dimensionality reduction for dynamical systems, nonlinear image denoising, protein functionality prediction, reinforcement and semi-supervised learning.