Chez Pierre

Presents ...

Monday, October 19, 2009
12:00pm
MIT Room 4-331

Elizabeth Leicht

University of California - Davis

"Methods and Models for the Study of Complex Networks"

Many biological, social, and technological systems take the form of networks. Over the past decade a science of networks has been emerging and providing insights into the structure and function of many disparate types of networks, such as protein-interactions in a cell, collaboration networks of scientists, the Internet, and the World Wide Web. A great deal of this work emphasizes the study of network growth and structure, including phase transitions in network structure, and tools from statistical physics are enabling many of the advances. The first part of this talk will focus on key aspects of network structure, in particular modularity or community structure, methods for its detection, and implications for real networks. In addition, the talk will describe how modularity can be exploited to alter the location of the phase transition marking the onset of large- scale connectivity in networks and how these results impact our understanding of systems of interacting networks, with implications for diseases spreading across geographic regions and for engineering minimalist communications networks.