Stanford University
Departments of Mathematics and Statistics

PROBABILITY SEMINAR

4:15pm, Monday, May 19, 2014
Sequoia Hall Room 200
Cookies served at 3:45pm, 1st floor Lounge.

Speaker: James Zhao, University of Southern California

Title: Sampling Graphs with Given Degrees

Abstract:

The problem of uniformly sampling graphs with given degrees is important for the statistical study of many real-world networks. Existing algorithms fall into two broad categories: combinatorial algorithms, which work well for sparse graphs but can be exponentially bad for dense ones, and Markov Chain Monte Carlo, which always runs in polynomial time but is impractically slow.

In this talk, I will present a new algorithm that is in some sense a hybrid of these two techniques, which achieves best-possible runtime for sparse graphs as well as an important class of dense graphs. The idea is to expand the state space and contract back down in a way that maintains uniformity, and is applicable to a variety of other combinatorial families.