

Stanford University
Departments of Mathematics and Statistics

PROBABILITY SEMINAR

4:30pm, Monday, October 26, 2015
Sequoia Hall Room 200

Cookies served at 4pm, 1st floor Lounge.

Speaker: Harry Crane
Department of Statistics,
Rutgers University

Title: Partial symmetries in random structures

Abstract:

The study of exchangeability emerges from classical considerations of symmetry and the principle of indifference in inductive inference. In practice, many statistical and scientific problems exhibit only partial symmetry determined by some underlying structure in a population. As a simple example, consider measurements X_1, X_2, \dots , taken on a population of men and Y_1, Y_2, \dots , taken on a population of women. Without further information, we may assume the distribution of $(X_1, X_2, \dots; Y_1, Y_2, \dots)$ is symmetric under independent relabeling of the X 's and Y 's, but not under arbitrary relabeling of the entire sequence. In general applications, the symmetries may be more complex, leading to the notion of "relative exchangeability", a type of partial exchangeability which reflects distributional invariance with respect to the symmetries of another structure. I will discuss recent work in this area, including a generic representation for relatively exchangeable structures and applications to the study of certain combinatorial stochastic processes, including coalescent and graph-valued processes.

Some of this work is joint with Henry Towsner.