Stanford University  
Departments of Mathematics and Statistics

PROBABILITY SEMINAR

4:15pm, Monday, January 5, 2015  
Sequoia Hall Room 200

Cookies served at 3:45pm, 1st floor Lounge.

Speaker: Riddhipratim Basu  
Department of Statistics,  
UC Berkeley

Title: Increasing subsequences on the plane and the Slow Bond Problem

Abstract:

For a Poisson process in the plane with intensity 1, the distribution of the maximum number of points on an oriented path from (0,0) to (N,N) has been studied in detail, culminating in Baik–Deift–Johansson’s celebrated Tracy–Widom fluctuation result. We consider a variant of the model where one adds, on the diagonal, some additional points according to a one dimensional Poisson process with rate $\lambda$. The question of interest here is whether for all positive values of $\lambda$, this results in a change in the law of large numbers for the the number of points on a maximal path. A closely related question comes from a variant of Totally Asymmetric Simple Exclusion Process, introduced by Janowsky and Lebowitz. Consider a TASEP in 1-dimension, where the bond at the origin rings at a slower rate $r < 1$. The question is whether for all values of $r < 1$, the single slow bond produces a macroscopic change in the system. We provide affirmative answers to both the questions.

This is based on joint work with Vladas Sidoravicius and Allan Sly.