

Stanford University
Departments of Mathematics and Statistics

PROBABILITY SEMINAR

*** A Joint Presentation with the Applied Math Seminar ***

4:30pm, Wednesday, January 17, 2018
Sloan Mathematics Center Room 384H

Speaker: Li-Cheng Tsai, *Columbia University*

Title: KPZ equation limit for the six vertex model

Abstract:

The Six Vertex (6V) model, initially introduced as a model for ice, is an integrable model for tiling in two dimensions. In this talk we consider symmetric and stochastic 6V models, and show that, under certain scaling into the ferroelectric/disordered phase critical point, fluctuations described by the Kardar–Parisi–Zhang (KPZ) equation arise.

Our approach utilizes the one- and two-point Markov duality enjoyed by the stochastic 6V model. One-point duality gives the (so-called) microscopic Hopf–Cole transform, and thereby exposes the connection to the KPZ equation. On the other hand, two-point duality provides exact, analyzable formulas that help to establish certain self-averaging, which is the key step in the proof given the aforementioned transform.

This is joint work with Ivan Corwin, Promit Ghosal, and Hao Shen.