



The Spring 2007 Condensed Matter Seminar series presents:

Prof. Min Kang
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Carolina State University)

*“Linearity in Tropical Algebra in
Some Interface Growth”*

We investigate linearity (in tropical algebra) of the updating operators applied to some interface growth models and how this grants subadditivity hidden behind. This ensures the presence of a law of large numbers under Eulerian scaling. Building upon previous work by T. Seppalainen, this finally produces a Hamilton-Jacobi equation at the macroscopic level via a Hopf-Lax formula identified at the microscopic level as tropical linearity.

Using this flexible framework we study the large space and time scale behavior of a totally asymmetric, nearest-neighbor exclusion process in one dimension with random jump rates attached to the particles. When slow particles are sufficiently rare the system has a phase transition. At low densities there are no equilibrium distributions, and on the hydrodynamic scale the initial profile is transported rigidly. We elaborate this situation further by finding the correct order of the correction from the hydrodynamic limit, together with distributional bounds averaged over the disorder.

Wednesday, January 24, 2007
4:00 P.M.
304 Robeson Hall