Mathematics, Statistics, and Computer Science **@ UIC**

## Departmental Colloquium

*Stochastic partial differential equations in supercritical, subcritical, and critical dimensions*

Alexander Dunlap (NYU)

**Abstract:** A pervading question in the study of stochastic PDE is how small-scale random forcing in an equation combines to create nontrivial statistical behavior on large spatial and temporal scales. I will discuss recent progress on this topic for several related stochastic PDEs - stochastic heat, KPZ, and Burgers equations - and some of their generalizations. These equations are (conjecturally) universal models of physical processes such as a polymer in a random environment, the growth of a random interface, branching Brownian motion, and the voter model. The large-scale behavior of solutions on large scales is complex, and in particular depends qualitatively on the dimension of the space. I will describe the phenomenology, and then describe several results and challenging problems on invariant measures, growth exponents, and limiting distributions.

Tuesday, November 29 at 3:00 PM in 636 SEO