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

Departmental Colloquium

Obliquely reflected Brownian motion

Zhen-Qing Chen (University of Washington, Seattle, WA)

Abstract: Boundary theory for one-dimensional diffusions is now well understood. Boundary theory for multi-dimensional diffusions is much richer and remains to be better understood. In this talk, we will be concerned with the construction and characterization of obliquely reflected Brownian motions in all bounded simply connected planar domains, including non-smooth domains, with general reflection vector field on the boundary. We show that the family of all obliquely reflected Brownian motions in a given domain can be characterized in two different ways, either by the field of angles of oblique reflection on the boundary or by the stationary distribution and the rate of rotation of the process about a reference point in the domain. We further show that Brownian motion with darning and excursion reflected Brownian motion can be obtained as a limit of obliquely reflected Brownian motions.

Based on joint work with K. Burdzy, D. Marshall and K. Ramanan.

Friday, February 19 at 3:00 PM in SEO 636