Abstract

This talk concerns the self intersection of a single Brownian trajectory, and the mutual intersection of several independent Brownian trajectories. The study of the tail behaviors for the intersection local times and intersection of the ranges, such as large and moderate deviations, has its root in physics. Mathematically, it is the first step toward understanding the exponential asymptotics of the local times and additive functionals of the multi-parameter processes such as the Brownian sheets. In this talk, I will talk about some recent progress made in this area and its possible impact on some related areas. Among other things, I will give answer to a conjecture raised by the French physicist Bertrand Duplantier. The discussion will highlight intuition and idea. Part of the talk is based on the joint works with Richard Bass, Wenbo Li and Jay Rosen.