



北京理工大学

数学与统计学院学术报告

Introduction to Local Times of Markov Processes

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摘要:

Given a random process X , its *local times* measure, in some sense, the amount of time the process stays at each state, and their definition changes depending on if X is indexed by a discrete set (the nonnegative integers) or a continuous set (the nonnegative real line). For the discrete case, we start by studying the random walk on the integers, introducing an exit problem, and establishing its connections with electric networks. After that, we consider a more general random walk on a connected graph. For this one, its local times are related to squares of Gaussian processes thanks to the so-called Isomorphism Theorems. For the continuous case, the canonical example is the Brownian motion. It has several properties which are analogue to those of the random walk, and we will see that its local times can also be described using Gaussian processes. Finally, we will make some comments on the case of Lévy processes and recent work in this direction.

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