

國立陽明交通大學應用數學系

演講公告

主講人：李彥奇教授（國立中央大學）

講題：From First-Hitting Locations to Gaussian Variance

Mixtures: Channel Structure and Capacity Scaling

時間：115 年 11 月 3 日(星期二) 下午 14:00 –15:00

地點：(光復校區) 科學一館 213 室

Abstract

The location at which a diffusing particle first reaches a boundary provides a natural link between stochastic geometry and non-Gaussian probability laws. In this talk, we consider Brownian motion with constant drift normal to an absorbing hyperplane and study its transverse first-hitting location. The resulting distribution admits a Gaussian variance-mixture representation, revealing how a random hitting time generates a family of spatial laws that approaches a Cauchy distribution as the drift vanishes. We then explore the information-theoretic consequences by treating this boundary-induced randomness as additive channel noise. Under a second-moment input constraint, we obtain an exact capacity expansion in the large-input-power limit: the logarithmic growth coefficient is determined by the boundary dimension, while the constant term depends on the transport parameters only through the noise entropy. The talk connects first-hitting distributions, Gaussian mixtures, and capacity scaling through a common geometric and probabilistic framework.

敬請公告 歡迎參加

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