



Welcome to Complex System and Biophysics Seminar

Beyond Gaussian diffusion: random motion in fluctuating environments

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Date: 2026/10/01 (Thur.)

Venue: S4-625

Time: 12:00-13:00

Abstract:

Diffusion in complex environments often exhibits non-Gaussian displacement statistics, even when the mean-squared displacement grows linearly in time. These observations have motivated models in which the diffusivity itself fluctuates, reflecting the changing conditions experienced by moving particles. I will present the doubly stochastic continuous-time random walk, which incorporates this idea into a general random-walk framework. I will discuss how environmental fluctuations influence transport and first-passage phenomena, and how their timescales govern the emergence and disappearance of non-Gaussian behavior. Finally, I will outline extensions of this approach to other stochastic processes and discuss ongoing work.