Bangalore Probability Seminar

Title : Geometry of random walks and random interlacements

Speaker : Subhajit Goswami (Tata Institute of Fundamental Research, Mumbai)

Date : Tuesday, 04 November 2025

Time : 1:30 PM (IST)

Abstract : Geometric properties of random walks display a rich phenomenology. To mention a but a few examples, in planar setups one knows for instance that the outer boundary of a Brownian motion has Hausdorff dimension 4/3 (originally conjectured by Mandelbrot and proved relatively recently in early 2000 following the discovery of Schramm-Loewner evolution (SLE)) and that several natural ``observables" (its occupation measure, thick points, uncovered set etc.) exhibit a (multi-)fractal structure. In the present talk, I will discuss some recent results related to the topology and geometry of random walk trajectories in higher dimensions which call for a novel random object called the "random interlacements" introduced by Sznitman in 2010 (Ann. of Math. 2010). In the course of the talk, I will try to illustrate how the random interlacements allow us to exploit deep connections between different parts of Probability theory and analysis to answer some very fundamental questions about the random walk. Based on several joint works (some ongoing) with different collaborators including Hugo Duminil-Copin, Pierre-Francois Rodriguez, Franco Severo, Yuriy Shulzhenko and Augusto Teixeira.

Venue : Chern Lecture Hall
Zoom Link: https://us02web.zoom.us/j/88670406480
Meeting ID: 886 7040 6480