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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Seminar

Title : Percolation, spatial minimal spanning trees, and Stein's method

Speaker : Sanchayan Sen, McGill University, Québec

Date : Thursday, August 17, 2017

Time : 2:30 PM

Venue : Madhava Lecture Hall, ICTS Campus, Bangalore

Abstract : Kesten and Lee [Ann. Appl. Probab. (1996)] proved that the total length of a minimal spanning tree on certain random point configurations in \mathbb{R}^d satisfies a central limit theorem. They also raised the question: how to make these results quantitative? Error estimates in central limit theorems satisfied by many other standard functionals studied in stochastic geometry are known, but techniques employed to tackle the problem for those functionals do not apply directly to the minimal spanning tree. Thus, the problem of determining the convergence rate in the central limit theorem for Euclidean minimal spanning trees had remained open. We discuss a general technique for approaching this problem and establish bounds on the convergence rate, thus answering the question of Kesten and Lee. We also discuss a way of quantifying the classical Burton-Keane argument for uniqueness of the infinite open percolation cluster, which plays a crucial role in our approach. Based on joint work with Sourav Chatterjee.