



INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

ASHOK MAITRA MEMORIAL LECTURE

Date: February 22, 2024

Time: 04:15 PM

VENUE:

L-infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Critical scaling for anisotropic percolation system on Z^2

SPEAKER:

Maria Eulalia-Vares

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ABSTRACT:

Motivated by a question that arose in the frame of ferromagnetic Ising models with a layered interaction, I plan to discuss one further example of the interplay between SPDEs and percolation methods. For concreteness, we consider the following anisotropic graph on the two dimensional lattice Z^2 : horizontal edges are set for each pair of vertices within a given Euclidean distance N and vertical edges connect only nearest neighbor vertices. On this graph one considers a Bernoulli percolation model, so that horizontal edges are open with probability $1/(2N)$, corresponding to the critical mean field value. The goal is the determination of a critical exponent for the opening probability of the vertical bonds which would allow us to observe a phase transition for all large N . This brings us naturally to an analysis of the scaling limit of the growth process restricted to each horizontal layer. This is inspired by the work of Mueller and Tribe on the long range contact process and plays a key role. A renormalization scheme is used for the percolative regime.

The talk is mostly based on a joint work with Thomas Mountford and Hao Xue [1].

Reference:

[1] T.S. Mountford, M. E. Vares, H. Xue. Critical scaling for an anisotropic percolation system on Z^2 , *Electronic Jr. Probab.* 25, p. 129, 44pp. 2020

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