

THE UNIVERSITY



OF HONG KONG

*Institute of Mathematical Research
Department of Mathematics*

Probability Seminar

On some recent trends in spin systems on the lattice

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Date: October 31, 2024 (Thursday)

Time: 4:00 – 5:00pm

Venue: Room 210, Run Run Shaw Bldg., HKU

Abstract

This introductory talk highlights recent progress in the analysis of different spin systems on Euclidean lattices. Models of this type have been of substantial interest in mathematical physics and probability theory during the last decades, with a particular emphasis on the nature of phase transitions (i.e. points in the space of underlying parameters in which the large-scale behavior of the model undergoes a marked change) and the investigation of properties of the critical and off-critical regimes.

Important benchmark models that this talk will focus on include the Ising model, the XY model, and the Gaussian free field (GFF), in which the single-spin spaces are $\{-1, 1\}$, the unit circle S^1 or the real line, respectively. We will give an overview of the different types of phase transitions in these models, with a view towards current developments in the investigation of the (off-)critical regimes in the Ising model and level-sets of the GFF.

All are welcome