Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

Thursday, 20 November 2025, 16:30
Lipschitz-Saal (LWK 1.016)

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Glauber dynamics of the FK percolation and new bound on the critical point for q<1

The FK percolation model is a variant of classical percolation, in which, in addition to the weight p on the edges, a weight q is added to the clusters. When $q < 1$, the invalidity of the FKG inequalities makes it difficult to study the phase diagram. For example, in dimension 2 with $q \geq 1$, we know exactly for which values of p and q the model admits a phase transition, and the value of the critical point is known. For $q < 1$, the best bounds on the critical point are given by comparison inequalities, which state a stochastic domination of the model by product measures.
In a joint work with Vincent Beffara and Tejas Oke, we slightly improve these comparison inequalities to extend the known regime of uniqueness and improve the bounds on p_c. To do this, we introduce the Glauber dynamics of the model and certain local approximations, which will give a stochastic domination of the model by an inhomogeneous product measure.