Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 16th December 12:15

Online meeting (Webex)

Towards a 1-dependent version of the Harris–Kesten theorem

Victor Falgas Ravry

(Umeå University)

Consider a random subgraph of the square integer lattice obtained by including each edge independently at random with probability p, and leaving it out otherwise. The Harris–Kesten theorem states that if p is at most $1/2$, then almost surely all connected components in this random subgraph are finite, while if $p > 1/2$ then almost surely there exists a unique infinite connected component.

But now what if we introduced some local dependencies between the edges? More precisely, suppose each edge still has a probability p of being included in our random subgraph, but its state (present/absent) may depend on the states of edges it shares a vertex with. To what extent can we exploit such local dependencies to delay the appearance of an infinite component?

In this talk I will discuss this question, which first arose in work of Balister, Bollobás and Walters in 2005, as well as some recent progress around it.

Meeting link:

 https://tugraz.webex.com/tugraz/j.php?MTID=m44797227fd680cc7956ebb840b6f033a

Meeting number: 2730 500 3129

Password: vQydpg372D4

Joshua Erde, Mihyun Kang, Michael Missethan