

Oberseminar Mathematische Stochastik

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The critical probability for confetti percolation equals $1/2$

Abstract:

In the confetti percolation model, or two-coloured dead leaves model, radius one disks arrive on the plane according to a space-time Poisson process. Each disk is colored black with probability p and white with probability $1 - p$. This defines a two-colouring of the plane, where the color of a point on the plane is determined by the last disk to arrive that covers it.

In this talk we will show that the critical probability for confetti percolation equals $1/2$. That is, if $p > 1/2$ then a.s. there is an unbounded curve in the plane all of whose points are black; while if $p \leq 1/2$ then a.s. all connected components of the set of black points are bounded. This answers a question of Benjamini and Schramm. The proof makes use of earlier work by Hirsch and an asymmetric version of a „sharp threshold“ result of Bourgain.