Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 1st April 14:15

Online meeting (Webex)

Hyperbolic Voronoi percolation

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I will discuss percolation on the Voronoi tessellation generated by a homogeneous Poisson point process on the hyperbolic plane. That is, to each point z of a constant intensity Poisson point process Z on the hyperbolic plane we assign its Voronoi cell – the region consisting of all points that are closer to z than to any other z' in Z – and we colour each cell black with probability p and white with probability $1 - p$, independently of the colours of all other cells. We say that percolation occurs if there is an infinite connected cluster of black cells.

Hyperbolic Poisson-Voronoi percolation was first studied by Benjamini and Schramm about twenty years ago. Their results show that there are spectacular differences with the corresponding model in the Euclidean plane.

I will sketch joint work with my recently graduated doctoral student Ben Hansen that resolves a conjecture and an open question, posed by Benjamini and Schramm, on the behaviour of the "critical probability for percolation" as a function of the intensity parameter of the underlying Poisson process. (Unlike in Euclidean Poisson-Voronoi percolation, this critical value depends on the intensity of the underlying Poisson process.)

Based on joint work with Benjamin Hansen.

Meeting link:

https://tugraz.webex.com/tugraz/j.php?MTID=m40f85343e56ff5051d731ace1bea82e4

Meeting number: 2731 089 0467

Password: btHRJxCa252

Joshua Erde, Mihyun Kang