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Multi-dimensional percolation

Percolation is concerned with the existence of an infinite path in a (Bernoulli) random subgraph of the lattice Z^D. We can rephrase this as the existence of a Lipschitz embedding (or an injective graph homomorphism) of the infinite line Z into the random subgraph. What happens if we replace the line Z with another lattice Z^d? I'll answer this for all values of the two dimensions d and D, and the Lipschitz constant. Based on joint works with Dirr, Dondl, Grimmett and Scheutzow.