Mathematics, Statistics, and Computer Science **@ UIC**

Combinatorics and Probability Seminar

Empirical measures, geodesic lengths, and a variational formula in first-passage percolation

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Abstract: We consider the standard first-passage percolation model on Z^d, in which each edge is assigned an i.i.d. nonnegative weight, and the passage time between any two points is the smallest total weight of a nearest-neighbor path between them. This induces a random "disordered" geometry on the lattice. Our primary interest is in the empirical measures of edge-weights observed along geodesics in this geometry, say from 0 to [n\xi], where \xi is a fixed unit vector. For various dense families of edge-weight distributions, we prove that these measures converge weakly to a deterministic limit as n tends to infinity. The key tool is a new variational formula for the time constant. In this talk, I will derive this formula and discuss its implications for the convergence of both empirical measures and lengths of geodesics.

Monday, November 29 at 2:00 PM in 636 SEO