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Abstract

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Coexistence of First passage percolation processes on hyperbolic graphs

Joint with Alexandre Stauffer

We consider two first-passage percolation processes FPP_1 and FPP_λ, spreading with rates 1 and $\lambda > 0$ respectively, on a non-amenable hyperbolic graph G with bounded degree. FPP_1 starts from a single source at the origin of G, while the initial con figuration of FPP_λ consists of countably many seeds distributed according to a product of iid Bernoulli random variables of parameter $\mu > 0$ on $V(G) \setminus \{o\}$. Seeds start spreading FPP_λ after they are reached by either FPP_1 or FPP_λ. We show that for any such graph G, and any fixed value of $\lambda > 0$ there is a value $\mu_0 = \mu_0(G, \lambda) > 0$ such that for all $0 < \mu < \mu_0$ the two processes coexist with positive probability. This shows a fundamental difference with the behavior of such processes on $\mathbb{Z}^d$.