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The chemical distance of random interlacements in the low intensity regime.

Abstract:

Random interlacements (RI) is a Poissonian soup of doubly-infinite random walk trajectories on $\mathbb{Z}^d$. A parameter $\mu > 0$ controls the intensity of the Poisson point process. In a natural way, the model defines a long-range percolation on the edges of $\mathbb{Z}^d$. We thus obtain the random interlacements graph, composed of those edges traversed by a trajectory in RI. This talk focuses on the chemical distance of the random interlacements graph in dimensions $d \geq 5$. In this setting, I will present a proof of novel upper and lower asymptotic bounds on the chemical distance for $\mu \ll 1$. This is a joint work with E. Procaccia and R. Rosenthal.