Mathematics > Probability

Self-avoiding walk is sub-ballistic

Hugo Duminil-Copin, Alan Hammond

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We prove that self-avoiding walk on Z^d is sub-ballistic in any dimension d at least two. That is, writing ||u|| for the Euclidean norm of u \in Z^d, and SAW_n for the uniform measure on self-avoiding walks gamma:{0,...,n} \to Z^d for which gamma_0 = 0, we show that, for each v > 0, there exists c > 0 such that, for each positive integer n, SAW_n (max {|| gamma_k || : k \in {0,...,n}} > v n) < e^{- c n}.

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