Iterated Log Law for various graph parameters

Abstract:

We show that a version of the classical Iterated Log Law of Khinchin, and independently of Kolmogorov from the 1920's, holds for various parameters in the binomial random graph model and in a random 0/1 Bernoulli matrix. In particular, for a constant p, we show that such a law holds for the number of copies of a fixed graph H in G(n,p), we show a similar statement for the number of Hamilton cycles in a random k-uniform hypergraph, provided that k\geq 4. In the graph case (that is, k=2), since the number of Hamilton cycles in G(n,p), denoted by X_n, does not converge to a normal distribution but rather tends to a log-normal distribution (as has been first proved by Janson), we show that a version of the Iterated Log Law holds for \log X_n. We also obtain similar result for the permanent of a 0/1 Bernoulli random matrix.

No prior knowledge is required.

Joint with Daniel Motealegre and Van Vu.