Independent sets in random subgraphs of the hypercube

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Independent sets in bipartite regular graphs have been studied extensively in combinatorics, probability, computer science and more. The problem of counting independent sets is particularly interesting in the d-dimensional hypercube $\{0,1\}^d$, motivated by the lattice gas hardcore model from statistical physics. Independent sets also turn out to be very interesting in the context of random graphs. In this talk we will review some fundamental results, and discuss new results on random subgraphs of the hypercube. This talk is based on joint work with Yinon Spinka.