E i n l a d u n g

zu einem Vortrag im

Kolloquium der Angewandten Mathematik

Am Mittwoch, 16. Juli 2008, 16 Uhr c.t., M 5, spricht

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über

Random subgraphs of the $2D$ Hamming graph: the supercritical phase

Abstract:

The 2-dimensional Hamming graph $H(2, n)$ consists of the $n2$ vertices (i, j), $1 \leq i, j \leq n$, two vertices being adjacent when they share a common coordinate. We examine random subgraphs of $H(2, n)$ in percolation with edge probability p, so that the average degree is $2(n-1)p = 1 + \epsilon$. In earlier work, the size of the largest connected component was estimated precisely for a large class of graphs including $H(2, n)$ for $\epsilon \leq \Lambda n^{-2/3}$, where $\Lambda > 0$ is a constant. Until now, no matching lower bound on the size in the supercritical regime has been obtained.

Here we prove that, when $\epsilon \gg (\log n)^{1/3} n^{-2/3}$, then the largest connected component has size close to $2\epsilon n2$ with high probability. We thus obtain a law of large numbers for the largest connected component size, and show that the corresponding values of p are supercritical. Except for the factor $(\log n)^{1/3}$, this identifies the size of the largest connected component all the way down to the critical p window. We further show that the second largest component has size close to ϵ^{-2}, so that a dominant component has emerged.

This is based on joint work with Remco van der Hofstad, and with Remco van der Hofstad and Joel Spencer.

gez. Nina Gantert