

Meeting: 1005, Newark, Delaware, SS 16A, Special Session on Probabilistic Paradigms in Combinatorics

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Regular Subgraphs of Random Graphs.

We prove that there exists a function $\rho_k = (4+o(1))k$ such that $G(n, \rho/n)$ contains a k -regular graph with high probability whenever $\rho > \rho_k$. In the case of $k = 3$, it is also shown that $G(n, \rho/n)$ contains a 3-regular graph with high probability whenever $\rho > \lambda \approx 5.1494$. These are the first constant bounds on the average degree in $G(n, p)$ for the existence of a k -regular subgraph. We also discuss the appearance of 3-regular subgraphs in cores of random graphs. It is not known whether the $k + 1$ -core of a random graph when it exists contains a k -regular subgraph with high probability. (Received February 07, 2005)