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Regular Subgraphs of Random Graphs

In this talk, 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.