Hamilton cycles in random graphs with minimum degree at least 3

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Abstract

We consider the existence of Hamilton cycles in the random graph $G = G_{n,m}^{\delta \geq 3}$. This is a random graph chosen uniformly from the set of graphs with vertex set $[n]$, m edges and minimum degree at least 3. We show that if $m > 2.663n$ then whp G is Hamiltonian. Our result is based upon an improved analysis of the 2-Greedy algorithm for finding perfect 2-matchings. This new lower bound is the same lower bound given by Frieze and Pittel for the expansion of so-called Posá sets.