New sufficient condition for hamiltonian graphs

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Abstract

Let G be a graph and $\alpha(G)$ be the independence number of G. For a vertex $v \in V(G)$, $d(v)$ and $N(v)$ represent the degree of v and the neighborhood of v in G, respectively. In this paper, we prove that if G is a k-connected graph of order n, and if $\max\{d(v) : v \in S\} \geq n/2$ for every independent set S of G with $|S| = k$ which has two distinct vertices $x, y \in S$ satisfying $1 \leq |N(x) \cap N(y)| \leq \alpha(G) - 1$, then G is Hamiltonian. This generalizes some former results by Dirac, Ore, Fan and Chen.