

Hamiltonian cycles in critical graphs with large maximum degree

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Abstract

It is shown that an overfull Δ -critical graph with n vertices that satisfies $\Delta \geq \frac{n}{2}$ is Hamiltonian. If the Overfull Subgraph Conjecture was proved to be true, then the above result could be said that any Δ -critical graph with n vertices that satisfies $\Delta \geq \frac{n}{2}$ is Hamiltonian. Since the Overfull Subgraph Conjecture is still open, the natural question is how to directly prove a Δ -critical graph with n vertices that satisfies $\Delta \geq \frac{n}{2}$ is Hamiltonian. In 2015, it was shown that a Δ -critical graph with n vertices that satisfies $\Delta \geq \frac{4n}{5}$ is Hamiltonian. In this talk, we show that if G is a Δ -critical graph with n vertices satisfying $\Delta \geq \frac{3n}{4}$, then G is Hamiltonian.

Keywords: Hamiltonian graph, Overfull subgraph conjecture, Δ -critical graph.