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Tough graphs and Hamiltonian degree conditions

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A graph G is *Hamiltonian* if there exists a cycle in G containing all vertices of G. A graph G is *t-tough* if, for all subsets of vertices S, the number of connected components in $G \setminus S$ is at most $|S|/t$.

In 1995, Hoàng conjectured the following.

Conjecture 1 (Hoàng ([1])) *Let G be a graph with degree sequence $d_1, d_2, \ldots, d_n$ and let t be a positive integer.*

If G is t-tough and if, for all i such that $t \leq i < n/2, d_i \leq i$ $d_{n-i+t \leq n-i}$ then G is Hamiltonian.

He proved that conjecture 1 is true for $t \leq 3$. We proved that it is true for $t \leq 6$. To do this, we extended into a version for t-tough graphs, the closure lemma due to Bondy and Chvàtal.

Références

[1] C. T. Hoàng, *Hamiltonian degree conditions for tough graphs*, Discrete Mathematics, 142(1-3) (1995) 121—139.