Cycles in graphs with small bipartite holes

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Abstract

An (s,t)-bipartite-hole in a graph G consists of two disjoint sets of vertices S and T with $|S| = s$ and $|T| = t$ such that $E(S,T) = \emptyset$. We use $\alpha^*(G)$ to denote the largest integer s such that G contains an (s,s)-bipartite-hole. Given any constant $\mu > 0$, there exists some constant $\alpha > 0$ such that the following holds. Let G be a graph on n vertices such that $\delta(G) \geq \sum_{i=3}^{n} x_i + \mu n$ and $\alpha^*(G) \leq \alpha n$, where x_i is an integer. We showed that there exists an $\{x_i C_i\}_{3\leq i\leq n}$-factor in G. This work is joint with Jie Han and Donglei Yang.

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