A TRIPLE OF HEAVY SUBGRAPHS ENSURING PANCYCLICITY OF 2-CONNECTED GRAPHS

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Abstract

A graph $G$ on $n$ vertices is said to be pancyclic if it contains cycles of all lengths $k$ for $k \in \{3, \ldots, n\}$. A vertex $v \in V(G)$ is called super-heavy if the number of its neighbours in $G$ is at least $(n + 1)/2$. For a given graph $H$ we say that $G$ is $H$-$f_1$-heavy if for every induced subgraph $K$ of $G$ isomorphic to $H$ and every two vertices $u, v \in V(K)$, $d_K(u, v) = 2$ implies that at least one of them is super-heavy. For a family of graphs $\mathcal{H}$ we say that $G$ is $\mathcal{H}$-$f_1$-heavy, if $G$ is $H$-$f_1$-heavy for every graph $H \in \mathcal{H}$.

Let $D$ denote the deer, a graph consisting of a triangle with two disjoint paths $P_3$ adjoined to two of its vertices. In this paper we prove that every 2-connected $\{K_{1,3}, P_7, D\}$-$f_1$-heavy graph on $n \geq 14$ vertices is pancyclic. This result extends the previous work by Faudree, Ryjáček and Schiermeyer.

Keywords: cycle, Fan-type heavy subgraph, Hamilton cycle, pancyclicity.

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References


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