

Hamilton-Connected Hourglass-free Line Graphs

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Abstract:

Motivated by Thomassen's conjecture that every 4-connected line graph is Hamiltonian, and as line graphs are $K_{1,3}$ -free graphs, many researchers have investigated the Hamiltonian properties of graphs forbidding certain induced graphs including $K_{1,3}$. The hourglass Γ_0 is the unique simple graph with degree sequence $(4, 2, 2, 2, 2)$ and P_n is the path on n . In [Discrete Mathematics 341 (2018) 1806-1815], Z. Ryjáček, P. Vrána and L. Xiong posed a conjecture that every 3-connected $\{K_{1,3}, \Gamma_0, P_{16}\}$ -free graph is Hamilton-connected. X. Liu and L. Xiong in [Discrete Mathematics 345(2022), 112910] proved this conjecture. We continue to study this problem aiming to characterize all extremal graphs. We have found a family \mathcal{W} of graphs formed by subdividing the Wagner graph and by attaching pendent vertices, and prove that every 3-connected $\{K_{1,3}, \Gamma_0, P_{18}\}$ -free graph G is Hamilton-connected unless the Hamilton-connected closure of G is a member of \mathcal{W} .