

Graph isomorphism for S_d -graphs

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An H -graph is the intersection graph of connected subgraphs of a suitable subdivision of a fixed graph H [1]. We focus on S_d -graphs as a special case. A graph G is an S_d -graph when it is the intersection graph of connected subgraphs of a subdivision of a fixed star S_d . It is useful to mention that, for an S_d -graph G with some proper maximal clique $C \in G$, each connected component of $G - C$ is an interval graph and the partial order on the connected components of $G - C$ has a chain cover of size $\leq d$ [2]. Considering the recognition algorithm given by [2], we give a polynomial time reduction to S_d -graph isomorphism from the isomorphism problem for posets of width d . Then, we give an FPT-time algorithm to solve the isomorphism problem for S_d -graphs with bounded clique size. Finally, (an open problem from [2]), we identify the complexity of the graph isomorphism problem for S_d -graphs when the clique size is unbounded.

REFERENCES

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- [2] S. Chaplick, M. Töpfer, J. Voborník, P. Zeman, On H -topological intersection graphs, *CoRR* (2016).