
Few Induced Disjoint Paths for H-Free Graphs

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Abstract

Paths $P_1, \dots, P_k$ in a graph $G=(V,E)$ are mutually induced if any two distinct P_i and P_j have neither common vertices nor adjacent vertices. For a fixed integer k , the k -Induced Disjoint Paths problem is to decide if a graph G with k pairs of specified vertices (s_i, t_i) contains k mutually induced paths P_i such that each P_i starts from s_i and ends at t_i . We prove new complexity results for k -Induced Disjoint Paths if the input is restricted to H -free graphs, that is, graphs without a fixed graph H as an induced subgraph. We compare our results with a complexity dichotomy for Induced Disjoint Paths, the variant where k is part of the input.

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