ON A RELATION BETWEEN $k$-PATH PARTITION AND $k$-PATH VERTEX COVER

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The vertex cover problem and the vertex partition problem are central problems in graph theory and many generalizations are known. Two examples are the minimum $k$-path vertex cover problem (M$k$PVCP for short, introduced in [1]), which asks for a minimum vertex sets covering every path of length $k-1$, and the minimum $k$-path partition problem (M$k$PPP for short, introduced in [2]), which asks for a minimum number of paths in a maximal path packing whose every path has at least one and at most $k$ vertices.

In this talk we will present a relation between M$k$PPP and M$k$PVCP, which gives us new bounds for their invariants and a new necessary condition for NP-hardness of M$k$PVCP in terms of forbidden subgraphs.

Keywords: $k$-path partition, $k$-path vertex cover, forbidden subgraphs.

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References


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