

Computing Maximum Uniquely Restricted Matchings in Restricted Interval Graphs

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Abstract : A uniquely restricted matching is defined to be a matching M whose matched vertices induces a sub-graph which has only one perfect matching. In this paper, we make progress on the open question of the status of this problem on interval graphs (graphs obtained as the intersection graph of intervals on a line). We give an algorithm to compute maximum cardinality uniquely restricted matchings on certain sub-classes of interval graphs. We consider two sub-classes of interval graphs, the former contained in the latter, and give $O(|E|^2)$ time algorithms for both of them. It is to be noted that both sub-classes are incomparable to proper interval graphs (graphs obtained as the intersection graph of intervals in which no interval completely contains another interval), on which the problem can be solved in polynomial time.

Keywords : uniquely restricted matching, interval graph, matching, induced matching, witness counting

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