

Approaches that Solve Combinatorial Problems for Some New Classes

Hamadi Ahmed

Ecole Nationale des Travaux Publics

ahmed.hamadi7@caramail.com

(joint work with Ait Haddadene Hacene)

In this paper, we present our contribution for solving the NP-Hard graph combinatorial problems for some new classes. Our algorithmic approaches based on some property of graphs are applied Quasi-Locally Neighbourhood k Cliques graphs ($QLNC_k$ for short) i.e. graphs such that each induced subgraph has a vertex whose neighbourhood can be partitioned into at most k maximal cliques. We give polynomial combinatorial algorithm of recognizing $QLNC_2$ graphs and also polynomial combinatorial algorithms solving the cardinality maximum clique problem in $QLNC_2$ graphs, and also in perfect $QLNC_3$ graphs.

Keywords: Combinatorial Problems (Graph Coloring Problem, Recognizing Problem, Maximum Clique Problem); Elimination Ordering; Combinatorial Algorithms. .