

Exact algorithms for dominating clique problems

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Abstract

We handle in this paper three dominating clique problems, namely, the decision problem itself when one asks if there exists a dominating clique in a graph G and two optimization versions where one asks for a maximum- and a minimum-size dominating clique, if any. For the three problems we propose optimal algorithms with provably worst-case upper bounds improving existing ones by (D. Kratsch and M. Liedloff, *An exact algorithm for the minimum dominating clique problem*, Theoretical Computer Science 385(1-3), pp. 226–240, 2007). We then settle all the three problems in sparse and dense graphs also providing improved upper running time bounds.