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1 Introduction

A graph is an ordered pair $G = (V, E)$ consisting of a finite nonempty set V of vertices and a set E of edges, where each edge is an unordered pair of vertices. A dominating set of $G = (V, E)$ is a set $D \subseteq V$ such that each vertex not in D has at least one neighbor in D. A paired-dominating set is a dominating set whose induced subgraph contains at least one perfect matching [1].

Raz and Safra prove that the dominating set problem has no polynomial-time $(c \log |V|)$-approximation algorithms for some $c>0$ unless P = NP [3]. Lin and Tu design an $O(|E| + |V|)$-time algorithm for interval graphs and an $O(|E|(|E| + |V|))$-time algorithm for circular-arc graphs for the minimum paired dominating set problem [2].

Let f:N $\rightarrow$ N be any function. If, given any graph $G = (V, E)$, an algorithm A outputs a paired dominating set of G whose size is at most $f(|V|)$ times the minimum, then A is said to be $f(|V|)$-approximate for the minimum paired dominating set problem.

References

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[3] R. Raz and S. Safra. A sub-constant error-probability low-degree test, and a sub-constant error-probability PCP characterization of NP. In *Pro-*

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