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A Vizing-type result for semi-total domination. (English) Zbl 1407.05172

Discrete Appl. Math. 258, 8-12 (2019).

Summary: A set of vertices S in a simple isolate-free graph G is a semi-total dominating set of G if it is a dominating set of G and every vertex of S is within distance 2 of another vertex of S. The semi-total domination number of G, denoted by $\gamma_{t2}(G)$, is the minimum cardinality of a semi-total dominating set of G. In this paper, we study semi-total domination of Cartesian products of graphs. Our main result establishes that for any graphs G and H, $\gamma_{t2}(G\Box H) \geq \frac{1}{3}\gamma_{t2}(G)\gamma_{t2}(H)$.

MSC:

05C69 Vertex subsets with special properties (dominating sets, independent sets, cliques, etc.)
05C76 Graph operations (line graphs, products, etc.)

Keywords:

Cartesian products; total domination number; semi-total domination number

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paper as accurately as possible without claiming the completeness or perfect precision of the matching.