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BOUNDING THE LOCATING-TOTAL DOMINATION NUMBER OF A TREE IN TERMS OF ITS ANNIHILATION NUMBER

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Abstract

Suppose $G = (V, E)$ is a graph with no isolated vertex. A subset S of V is called a locating-total dominating set of G if every vertex in V is adjacent to a vertex in S, and for every pair of distinct vertices u and v in $V - S$, we have $N(u) \cap S \neq N(v) \cap S$. The locating-total domination number of G, denoted by $\gamma_t^L(G)$, is the minimum cardinality of a locating-total dominating set of G. The annihilation number of G, denoted by $a(G)$, is the largest integer k such that the sum of the first k terms of the nondecreasing degree sequence of G is at most the number of edges in G. In this paper, we show that for any tree of order $n \geq 2$, $\gamma_t^L(T) \leq a(T) + 1$ and we characterize the trees achieving this bound.

Keywords: total domination, locating-total domination, annihilation number, tree.

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