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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References


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