A $k$-coloring of a connected graph $G$ of order $n \geq 3$ is a $k$-partiton $\Pi = \{S_1, \ldots, S_k\}$ of $V(G)$ into independent sets, called colors. A $k$-coloring is called neighbor-locating if for every pair of vertices $u, v$ belonging to the same color $S_i$, there exist a color $S_j$ such that either $u$ or $v$ has some neighbors in $S_j$, but not both. The neighbor-locating-chromatic number $\chi_{NL}(G)$ is the minimum cardinality of a neighbor-locating-coloring of $G$.

It is shown that $3 \leq \chi_{NL}(G) \leq n$, and that $\chi_{NL}(G) = n$ if and only if $G$ is a complete multipartite graph. It is also proved that if $\Delta(G) = \Delta$ and $\chi_{NL}(G) = k$, then $n \leq k \cdot (\min\{2^{k-1} - 1, \sum_{j=1}^{\Delta} \binom{k-1}{j}\})$ and that this bound is tight. The neighbor-locating-chromatic number of paths and cycles are determined. A number of results for pseudotrees, i.e., for trees and unicyclic graphs are also established.

**Keywords:** coloring, domination, location, vertex partition.

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**References**

