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OPTIMAL LOCATING-TOTAL DOMINATING SETS IN STRIPS OF HEIGHT 3

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Abstract

A set C of vertices in a graph $G = (V, E)$ is total dominating in G if all vertices of V are adjacent to a vertex of C. Furthermore, if a total dominating set C in G has the additional property that for any distinct vertices $u, v \in V \setminus C$ the subsets formed by the vertices of C respectively adjacent to u and v are different, then we say that C is a locating-total dominating set in G.

Previously, locating-total dominating sets in strips have been studied by Henning and Jafari Rad (2012). In particular, they have determined the sizes of the smallest locating-total dominating sets in the finite strips of height 2 for all lengths. Moreover, they state as open question the analogous problem for the strips of height 3. In this paper, we answer the proposed question by determining the smallest sizes of locating-total dominating sets in the finite strips of height 3 as well as the smallest density in the infinite strip of height 3.

Keywords: locating-total dominating set, domination, square grid, strip.
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