On Bounds and Exact Values for Total Domination Ratios of Archimedean Lattices

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The concept of efficient total domination and an inductive approach exactly determine the total domination ratios of nine of the eleven Archimedean lattices. An integer program for deficiency minimization on a large finite subgraph and a scaling result yield nontrivial lower bounds for the total domination ratios of the remaining two Archimedean lattices. A modification of this method allows for improvements on known lower bounds for the domination ratios of the $(3^2, 4, 3, 4)$ and $(3, 6, 3, 6)$ lattices.

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