

New Results on Location Domination and Identifying Codes

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We show that location domination and identification code numbers of an n vertex graph G are at least $\Omega(\frac{n}{\tilde{\beta}(G)})$, where $\tilde{\beta}(G)$ is the degeneracy of the neighborhood system of G (as a hypergraph). This is a consequence of a result we prove to bound the number of edges in any hypergraph which is shown to be more effective than SauerShelah lemma when applied to hypergraphs that arise from neighborhood systems of some structured graphs.

With aid of the above lower bound, we design EPTAS (efficient polynomial time approximation schemes) for computing location domination and identification code numbers of graphs excluding a fixed minor, as well as graphs with bounded expansion. This significantly generalizes the existing results in this area.

Keywords: Location domination, Identifying codes in graphs.