On graph classes with constant domination-packing ratio

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Abstract

The dominating number $\gamma(G)$ of a graph G is the minimum size of a vertex set whose closed neighborhood covers all the vertices of the graph. The packing number $\rho(G)$ of G is the maximum size of a vertex set whose closed neighborhoods are pairwise disjoint. We show constant bounds on the ratio $\gamma(G)/\rho(G)$ for various graph classes. For example, we improve the bound for planar graphs. The result implies a constant integrality gap for the domination and packing problems.