Upper bounds for inverse domination in graphs

Elliot Krop*, Clayton State University; Jessica McDonald, Auburn University; Gregory J. Puleo, Auburn University

In any graph G, the domination number $\gamma(G)$ is at most the independence number $\alpha(G)$. The *Inverse Domination Conjecture* says that, in any isolate-free G, there exists pair of vertex-disjoint dominating sets D, D' with $|D| = \gamma(G)$ and $|D'| \leq \alpha(G)$. We prove that this statement is true if the upper bound $\alpha(G)$ is replaced by $\frac{3}{2}\alpha(G) - 1$ (and G is not a clique). We also prove that the conjecture holds whenever $\gamma(G) \leq 5$ or $|V(G)| \leq 16$.

2010 Mathematics Subject Classification: 05C69

Keywords: domination, inverse domination, independence number, inverse domination conjecture, Kulli-Sigarkanti conjecture