Upper bounds on the domination and total domination numbers of a graph in terms of minimum degree

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Abstract

In this talk, we present a survey of the currently best known upper bounds on the domination number $\gamma(G)$ and total domination number $\gamma_t(G)$ of a connected graph G in terms of its order n and small minimum degree $\delta \in \{1, 2, \ldots, 6\}$. For example, we show that if $\delta = 6$, then $\gamma(G) \le \frac{127}{418}\, n < \left(\frac{1}{4} + \frac{27}{500}\right) n$, where $\frac{1}{4}n$ is conjectured to be the correct bound. We also show that if $\delta = 6$, then $\gamma_t(G) \le \frac{4549}{13299} n < \left(\frac{4}{13} + \frac{17}{494}\right) n$, where $\frac{4}{13}n$ is conjectured to be the correct bound. These results improve the best known bounds to date.