INDEPENDENT DOMINATION IN PLANAR GRAPHS

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A set S of vertices in a graph G is a dominating set of G if every vertex not in S is adjacent to a vertex in S. An independent dominating set in G is a dominating set of G with the additional property that it is an independent set. The independent domination number, $i(G)$, is the minimum cardinality among all independent dominating sets in G. It is known that for any planar graph G of order n with minimum degree at least 2, it holds that $i(G) \leq \frac{1}{2}n$ [1]. In the talk we present an infinite family of planar graphs G with minimum degree 2 that achieve equality in the bound. It is known that for any tree T of order n, it holds that $i(T) \leq \frac{1}{2}n$. We also provide a constructive characterization of all trees T that achieve equality in the bound.

References

[1] W. Goddard and M. A. Henning, Independent domination, colorings and the fractional idomatic number of a graph. *Appl. Math. Comput.* **382** (2020), 125340.