γ'-Realizability and Assorted Musings on Inverse Domination

John Asplund, Dalton State College
Joe Chaffee, Kaiser Permanente
James Hammer, Cedar Crest College
Matt Noble*, Middle Georgia State University

In this talk, we introduce γ'-realizable sequences. For a finite, simple graph G containing no isolated vertices, $I \subset V(G)$ is said to be an *inverse dominating set* if I dominates all of G and I is contained by the complement of some minimum dominating set D. Define a sequence of positive integers $(x_1, \ldots, x_n)$ to be *γ'-realizable* if there exists a graph G having exactly n distinct minimum dominating sets $D_1, \ldots, D_n$ where for each $i \in \{1, \ldots, n\}$, the minimum size of an inverse dominating set in $V(G) \setminus D_i$ is equal to x_i. We intend to detail a few intermediate results which could optimistically be called progress toward the resolution of the problem of deciding, for an arbitrary sequence, whether or not that sequence is γ'-realizable.

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