Extensions of Colored Domination

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Given a partition $\mathcal{S} = \{S_1, S_2, \ldots, S_t\}$ of the vertex set $V(G)$ of a graph G, $\mathcal{S}$ is called the coloring of G and S_i is the color class i. An $\mathcal{S}$-dominating set D is a dominating set with the property that either $D \cap S_i = S_i$ or $D \cap S_i = \emptyset$ for $1 \leq i \leq t$. The $\mathcal{S}$-domination number $\gamma(G; (S))$ is the minimum cardinality of an $\mathcal{S}$-dominating set. The k-partition domination number, $\gamma_{PRT(k)}(G)$, is the maximum value of $\gamma(G; \mathcal{S})$ over all partitions with each $|S_i| \leq k$, and the k-partition proper colored domination number, $\gamma^*_{PRT(k)}(G)$, is the maximum value of $\gamma(G; \mathcal{S})$ over all enclaveless partitions with each $|S_i| \leq k$. This talk will focus on new classes of graphs as well as applying these definitions to Liar's dominating sets and other set-sized dominating sets.
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