Zero Forcing, Power Domination, and Product Power Throttling of a Graph

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Zero forcing and power domination are coloring processes on a graph based on color change rules. Zero forcing and power domination are related in that power domination of a graph is the process of using a domination step and then the zero forcing process to observe vertices in the graph. The study of power domination in graphs results from the analysis of electrical network monitoring. The product power throttling number of a graph studies product throttling for power domination. We define the product power throttling number of a graph to be the minimum product of the size of a power dominating set of a graph and the number of steps it takes for all the vertices in the graph to be observed. In this talk, we briefly introduce zero forcing and power domination. We provide bounds for the product throttling number and discuss certain families of graphs for which the product throttling number is known.

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