Minimum p^{th} power domination in graphs

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Abstract

A fractional dominating function (FDF) on a graph G is an assignment of weights between 0 and 1 to its vertices so that the sum of the weights over each closed neighborhood is at least 1. A minimum pth power (fractional) dominating function on a graph is an FDF on the graph such that the sum of the pth powers of the weights of all the vertices is a minimum; when $p = 1$, these are called minimum fractional dominating functions, and the minimum achieved is the fractional domination number $\gamma_f(G)$ of the graph. We investigate the corresponding p^{th} power parameters $\gamma_f^{(p)}(G)$ and the FDFs that achieve these values. This is joint work with Dean Hoffman, Peter Johnson and Robert Rubalcaba.