1123-05-43   **Chassidy Bozeman*** (`cbozeman@iastate.edu`), Carver Hall, 411 MORRILL RD, AMES, IA 50011-2104, Ames, IA 50010. *Zero forcing, power domination, and power propagation time.*

Zero forcing is an iterative coloring procedure that starts by initially coloring vertices white and blue and then repeatedly applies the following color change rule: if any vertex colored blue has exactly one white neighbor, then that neighbor is changed from white to blue. Any initial set of blue vertices that can color the entire graph blue is called a zero forcing set. The zero forcing number is the cardinality of a minimum zero forcing set. The zero forcing number of a simple graph is an upper bound for the maximum nullity of the graph (the largest possible nullity over all symmetric real matrices whose ijth entry (for $i \neq j$) is nonzero whenever $\{i, j\}$ is an edge in G and is zero otherwise). Power domination (motivated by the monitoring of the electric power grid system), uses the power color change rule that starts by initially coloring vertices white and blue and then applies the following rules: 1) In step 1, for any white vertex w that has a blue neighbor, change the color of w from white to blue. 2) For the remaining steps, apply the color change rule. We present results on the power domination problem of a given graph by considering the power dominating sets of minimum cardinality and the amount of steps necessary to color the entire graph blue. (Received August 09, 2016)