

1120-05-311

Adam Berliner, Chassidy Bozeman, Steve Butler, Minerva Catral, Leslie Hogben and Brenda K Kroschel* (bkkroschel@stthomas.edu), Mail #OSS 201, 2115 Summit Ave., St. Paul, MN 55105, and **Jephian Chin-Hung Lin, Nathan Warnberg and Michael Young.**
Zero forcing propagation time on oriented graphs. Preliminary report.

Zero forcing is an iterative coloring procedure on a graph, G , that starts by initially coloring vertices white and blue and then repeatedly applies the following rule: if any blue vertex has a unique (out-)neighbor that is colored white, then that neighbor is forced to change color from white to blue. An initial set of blue vertices that can force the entire graph to blue is called a zero forcing set. The minimum cardinality of a zero forcing set on a graph, G , is the zero forcing number, $Z(G)$. This graph parameter was first introduced by the AIM Special Graphs Work Group in 2008 for undirected graphs and later extended to simple digraphs. It is of interest because there is a relationship between the zero forcing number and the geometric multiplicity of the eigenvalue 0 for a matrix associated with the graph. In this paper we consider the minimum number of iterations needed for this color change rule to color all of the vertices blue, also known as the propagation time, for oriented graphs. (Received February 23, 2016)