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**Carolyn Kim\*** ([carolynkim@college.harvard.edu](mailto:carolynkim@college.harvard.edu)). *Zero Forcing Numbers and Graph Powers.*

Suppose we have an undirected graph  $G = (V(G), E(G))$  where some set of vertices  $Z \subset V(G)$  is initially colored black and the rest are colored white. By the color change rule, a white vertex turns black if it is the only white neighbor of a black vertex. If all the vertices eventually turn white,  $Z$  is called a *zero forcing set* of  $G$ , and the minimum size of  $Z$  over all zero forcing sets of  $G$  is called the *zero forcing number*,  $Z(G)$ . The zero forcing number has been shown to give a bound on the minimum rank of a graph. In this talk, we show that although in general adding edges to a graph might increase or decrease the zero forcing number, taking the power of a graph always increases the zero forcing number, provided the graph is not already complete:  $Z(G^k) < Z(G^{k+1})$  if  $G^k \neq G^{k+1}$ . We also provide a partial generalization of this result to directed graphs. (Received September 22, 2011)