1106-05-724 **David Amos*** (amosd2@math.tamu.edu), **Yair Caro**, **Randy Davila** and **Ryan Pepper**.
Upper bounds on the k-forcing number of a graph.

Given a simple undirected graph G and a positive integer k, the k-forcing number of G, denoted $F_k(G)$, is the minimum number of vertices that need to be initially colored so that all vertices eventually become colored during the discrete dynamical process described by the following rule. Starting from an initial set of colored vertices and stopping when all vertices are colored: if a colored vertex has at most k non-colored neighbors, then each of its non-colored neighbors becomes colored. When $k = 1$, this is equivalent to the zero forcing number, a recently introduced invariant used to bound the maximum nullity of a graph. Here, we give several upper bounds for the k-forcing number. For example, we have for connected graphs $F_k(G) \leq \frac{(\Delta-2)n+2}{\Delta+k-2}$, where Δ is the maximum degree of G and n is the order of G. When $k = 1$, this gives a sharp answer to a question posed by Meyer about regular, connected, bipartite circulant graphs. Finally, we discuss a relationship between the k-forcing number and the connected k-domination number. (Received September 05, 2014)