Kiran Chilakamarri, Nathaniel Dean and Cong X Kang* (kangc@tamug.edu), 200 Seawolf Parkway, Galveston, TX 77554, and Eunjeong Yi. Iteration index of a zero forcing set in a graph. Preliminary report.

Let each vertex of a graph $G = (V(G), E(G))$ be given one of two colors, say, “black” and “white”. Let $Z$ denote the (initial) set of black vertices of $G$. The color-change rule converts the color of a vertex from white to black if the white vertex is the only white neighbor of a black vertex. The set $Z$ is said to be a zero forcing set of $G$ if all vertices of $G$ will be turned black after finitely many applications of the color-change rule. The zero-forcing number of $G$ is the minimum of $|Z|$ over all zero forcing sets $Z \subseteq V(G)$. Zero forcing parameters have been studied and applied to the minimum rank problem for graphs in numerous articles. Now, define the iteration index of a zero forcing set of a graph $G$ to be the number of (global) applications of the color change rule required to turn all vertices of $G$ black. We will, in this talk, present some basic properties of the iteration index and discuss some preliminary results on certain graphs. (Received September 20, 2010)