1077-15-109 **Chennah Heroor*** (chennah@mit.edu), **Troy Klingler** (kling1te@cmich.edu), **Anthony Pochini** (pochi1as@cmich.edu) and **Gretchen Schillemat** (geschillemat@gmail.com). *Bounds for the Minimum Semi-Definite Rank of Circulant Graphs.* Preliminary report.

The minimum rank of a graph is the smallest possible rank of any real symmetric matrix associated to the given graph.

The real (complex) minimum semi-definite rank of a graph is the minimum rank among symmetric (Hermitian) positive semi-definite matrices associated to the given graph. A circulant graph, $G = Circ(n, S)$, is a graph with n vertices in which the i^{th} vertex is adjacent to the $(i+j)^{th}$ and $(i-j)^{th}$ vertices for each j in S which is a subset of {1, . . . , n}. The zero forcing set of a graph G is a subset of vertices Z, which are all colored black with the vertices in $G - Z$ colored white, where the derived coloring of G using a color change rule is all black. We are interested in the zero forcing number, denoted $Z(G)$, which is the minimum $|Z|$ over all zero forcing sets for a graph G. A positive semi-definite zero forcing number $Z_+(G)$ is defined using a different color change rule. In this talk, we will present results on $Z(G)$ and $Z_+(G)$ of certain classes of circulant graphs including $Circ(n, \{1, t\})$ and $Circ(n, \{a, a+1, a+2, \dots, t\})$. These graph parameters provide bounds on the minimum rank and minimum semidefinite rank of these graphs. (Received July 27, 2011)