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**Bonnie C. Jacob** and **Jobby Jacob\*** ([jxjsma@rit.edu](mailto:jxjsma@rit.edu)). *Graph rankings based on  $l_p$  norms.*

For a graph  $G$ , a function  $f : V(G) \rightarrow \{1, 2, \dots, k\}$  is a  $k$ -ranking, if  $f(u) = f(v)$  implies that every  $u - v$  path contains a vertex  $x$  such that  $f(x) > f(u) = f(v)$ . The rank number of a graph  $G$  is the minimum value of  $k$  such that  $G$  has a  $k$ -ranking. Hence the rank number of a graph is obtained by applying the  $l_\infty$  norm (max norm) to the vertex labels. Jamison and Narayan studied the rank numbers of graphs based on the  $l_1$  norm (sum norm).

In this talk, we will look at rank numbers of graphs based on  $l_p$  norms for  $0 < p < \infty$ . We will compare rank numbers based on  $l_p$  norms for  $0 < p < \infty$  to the traditional rank numbers for different classes of graphs. We will show that there are graphs such that the set of traditional optimal rankings and the set of  $l_p$  optimal rankings are disjoint. (Received September 12, 2014)