1116-05-133 **Roger Vargas*** (rv2@williams.edu), Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267, **Abigail Waldron**, Mathematics Department, Presbyterian College, Clinton, SC 29325, and **Anika Sharma**, Department of Mathematics, 244 Mathematics Building, Buffalo, NY 14260-2900. *Centrality Properties of Graphs with an Application of Functional Connectivity of the Brain.* Preliminary report.

We investigate the leverage centrality of a vertex which is a comparison of the degree of a vertex with the degrees of its neighbors. This property was introduced by Joyce et al. (doi:10.1371/journal.pone.0012200) for the analysis of functional Magnetic Resonance Imaging data of the brain. We explore this property from a mathematical perspective and determine the leverage centrality for several families of graphs. In particular we show the number of distinct leverage centralities in the Cartesian product of path powers ($P_n^k \times \cdots \times P_n^k$) has a surprising link to the triangular and figurate numbers.

In addition, we also apply degree centrality to data from a functional magnetic resonance imaging (fMRI) study at the University of Rochester. To accurately and precisely model dynamic functional connectivity of the brain it is not sufficient to use a single static network, but rather a time varying aggregate of hundreds of networks. (Received August 05, 2015)