Discrete Mathematics Seminar

Time: Friday, 30 March 2012, 12:30-1:30 PM
Room: 238 Derrick Hall
Title: A signed hypergaphic analog of q-distance matrices
Speaker: Dr. Lucas Rusnak, Mathematics Department

Abstract:

The entries of the q-distance matrix of a graph are the number of paths of length q between two vertices provided the distance satisfies a graphical girth bound. The q-distance matrix is understood by removing re-tracings of walks counted within powers of the adjacency matrix. Moreover, there is a simple relationship between the distance matrix and the adjacency matrix if the graph is k-regular.

I will introduce a new specialization of a weak-walk called a "route" that is only distinguishable from a path on the hypergraphic level. It is through the q-route matrix we are able to extend the closed q-distance matrix formulas for k-regular graphs to the signed q-route matrix of oriented hypergraphs. From this we have immediate corollaries for signed graphs and non-regular graphs.

This is joint work with Garry Bowlin.