GRADUATE SEMINAR

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Defining Eigenvalues for Hypergraphs

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3:00 PM - 4:00 PM
Math Lounge (CW 307.20)

Abstract: Classical graph theory is a well-studied area of interest. Of particular interest are the eigenvalues of graphs. By representing a graph as a matrix, we may determine the eigenvalues of said matrix using various techniques from linear algebra. These eigenvalues can be used to help characterize some of the invariant parameters of graphs and consequently can be used to help better understand the structure of graphs from a more general point of view.

A newer area of interest is known as hypergraph theory. Hypergraphs are an extension of graphs in that they too are made up a set of vertices, but the edges of ordinary graphs are replaced with hyperedges. In this talk, I will define and explore the generalization of eigenvalues from graphs to hypergraphs. There are several different definitions of eigenvalues of hypergraphs in the literature and each enables us to generalize certain properties of eigenvalues of graphs. I will discuss one of these definitions in detail and discuss some of the properties that these eigenvalues satisfy.

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Mathematics and Statistics