

Discrete Mathematics Seminar

Time: Friday, 25 March 2011, 12:30–1:30 PM
Location: 238 Derrick Hall
Title: A Survey of Oriented Hypergraphs
Speaker: Dr. Lucas Rusnak, Mathematics Department

Abstract:

An oriented hypergraph is a combinatorial model of $\{0, \pm 1\}$ -matrices which allows for the adaptation of graph theoretic techniques to study advanced networking problems. We will discuss the problem of detecting flaws in higher dimensional networks and how to establish control over their variables. Topics will include reinforcing network structure, establishment of optimal control variables, and recent progress on applying these techniques to structurally flawed networks.

I will also present an outline of the proof of the first case of the Circuit Classification Theorem, discuss how the remaining cases are handled, and relate the only unproven case to the study of structurally flawed networks.

This talk will be presented from an accessible linear algebra standpoint and no prior understanding of matroids, informatics, or routing will be required to appreciate the results.