

GRADUATE SEMINAR

Fatemeh Naghipour

Zero Forcing Parameters for Graphs

PhD Student supervised by Dr. Shaun Fallat and Dr. Karen Meagher

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3:30

Math Lounge (CW 307.20)

Abstract:

A graph or digraph describes the zero-nonzero pattern of a family of matrices. The *minimum rank problem* is to determine the minimum among the ranks of the matrices in one of these families. Considerable progress has been made on the *minimum rank* problem for the family of symmetric matrices described by a simple graph (with a free diagonal), although the problem is far from solved. In this presentation, we will give a brief introduction on the graph parameters *zero forcing number* and *positive semidefinite zero forcing number* which are powerful tools to approach the minimum rank problem. We also establish some interesting connections between these parameters and other graph parameters, such as the chromatic number and the independence number of a graph. Furthermore, we prove equalities between these parameters and well-known graph parameters such as the “path cover number” and the “tree cover number” in some families of graphs.