

COLLOQUIUM

Speaker: Houston Schuerger

of Tarleton State University

~Title: Zero Forcing and Vertex Cuts

10-22-2026

Time: 3:30 PM Location: Neckers 156

Refreshments following in math library.

Title:Zero Forcing and Vertex Cuts

Abstract:

In graph theory, graphs are objects comprised of collections of points called vertices and line segments called edges connecting pairs of vertices called neighbors. Zero forcing is a dynamic coloring process on graphs. During the process one begins with each of a graph's vertices colored either blue or white and if a blue vertex u has a unique white neighbor v then u can force v to become blue, with the goal being that the entire graph is eventually blue. Since its introduction, the area has continued to grow, spawning multiple variants, and having impacts in areas ranging from linear algebra to monitoring power grids. Exploring the problem from a more topological perspective concerned with the interplay of global and local properties has lead to recent discoveries identifying a host of graph substructures, including vertex cuts, which have an impact on the zero forcing process. This talk will cover a selection of these substructures, multiple zero forcing variants, use of an automated conjecturing program called TxGraffiti, and the research opportunities opened by these discoveries for everyone from undergraduate students to leading researchers in the field.