

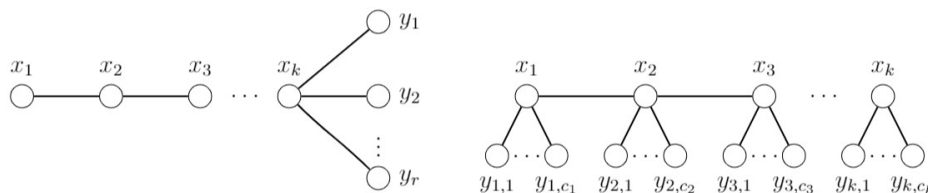
# VCU Discrete Mathematics Seminar

## *A Reduction Method for Rainbow Turán Numbers*

**Victoria Bednar  
(VCU!)**

Wednesday, Mar. 16  
1:00-1:50

Zoom! @ <https://vcu.zoom.us/j/92975799914>  
password=graphs2357



Given a specific number of vertices, how many edges can a graph have while still avoiding certain subgraphs? The Turán number of a graph  $H$ ,  $ex(n, H)$ , answers this very question. Formally, the Turán number of a graph  $H$  is the largest number of edges among all  $n$  vertex graphs with no  $H$  subgraph. A natural extension was formally introduced in 2007 by Keevash, Mubayi, Sudakov and Verstraëte. The rainbow Turán number of a graph  $H$ ,  $ex^*(n, H)$ , is the largest number of edges for an  $n$  vertex graph  $G$  such that some proper edge coloring of  $G$  does not contain a rainbow  $H$  subgraph.

This talk will open with an introduction to extremal graph theory, Turán numbers, and rainbow Turán numbers. Then we will explore the reduction method for finding upper bounds on rainbow Turán numbers, and use this to inform a discussion of results for the rainbow Turán numbers of double stars, caterpillars, and perfect binary trees.

For the DM seminar schedule, see:

<https://go.vcu.edu/discrete>