The Theory of Pursuit-Evasion Games

(Org: **Rylo Ashmore** (Memorial University of Newfoundland), **Danny Dyer** (Memorial University of Newfoundland) and/et **Erin Meger** (Queen's University))

RYLO ASHMORE, Memorial University of Newfoundland

ALEX CLOW, Simon Fraser University

Eternal Distance-k Domination in Trees

This talk considers the eternal distance-k domination problem, a variant of the eternal domination problem where guards can move any distance $t \in \{0, 1, \ldots, k\}$ on their turn. We prove upper and lower bounds for the eternal distance-k domination number of a graph in terms of order, maximum degree, and k, before showing that both bounds are tight for trees. The rest of the talk will present open conjectures regarding the eternal distance-k domination number of trees, along with evidence to support these conjectures.

This is joint work with Christopher van Bommel (University of Guelph).

STEPHEN FINBOW, St. Francis Xavier University

MELISSA HUGGAN, Vancouver Island University

MEAGAN MANN, Queen's University

JOY MORRIS, University of Lethbridge

Cop numbers of generalised Petersen graphs

It was previously proved by Ball et al. (2015) that the cop number of any generalised Petersen graph is at most 4. I will present results that determine the cop number for all of the known generalised Petersen graphs that actually have cop number 4, and that place them in the context of infinite families. The same proof techniques also show that any graph with girth at least 9 and minimum degree δ has cop number strictly greater than δ; this represents a minor improvement to this special case of Frankl's more general bound. My talk is based on joint work with Harmony Morris, Tigana Runte, and Adrian Skelton.

AMANDA PORTER, University of Victoria

ASIYEH SANAEI, Kwantlen Polytechnic University

Damage Number of Small Graphs

The damage variation in the game of Cops and Robber on graphs is a version of the game in which the robber damages each distinct vertex that he moves onto without capture. The parameter "damage number of a graph" is then the minimum number of unique vertices of the graph that can be damaged by the robber. It has been shown that in almost all graphs the damage number is less than $\frac{n}{2}$, where n is the order of the graph, and upper bounds on the damage number of the graphs with $n \leq 8$ are known. After introduction and a brief review of the existing results, recent developments on the damage number of the graphs of order nine will be presented.

BOTING YANG, University of Regina