ANDREA BURGESS, University of New Brunswick Saint John

Cops that surround a robber

In this talk, we introduce a variant of the game of cops and robber in which the winning condition for the cops is to "surround" the robber by occupying all of his adjacent vertices. The *surrounding cop number* $s(G)$ is the minimum number of cops required to guarantee that the cops have a winning strategy. Trivially, $s(G)$ is bounded below by $\delta(G)$, the minimum degree of G. It is easy to see that the cop number $c(G)$ is also a lower bound for $s(G)$, since once the cops surround the robber they can occupy his position in the next round; thus $s(G)$ cops win the traditional cops and robber game. While $s(G)$ is close to $\max\{c(G), \delta(G)\}$ for some graph classes, the difference between $s(G)$ and both $c(G)$ and $\delta(G)$ can be arbitrarily large.

We present some results and observations on the surrounding cops and robber game. This includes an exploration of the game for various classes of graphs, such as generalized Petersen graphs, incidence and intersection graphs of designs, and certain product graphs.

This is joint work with Rosalind Cameron, Nancy Clarke, Peter Danziger and David Pike.