Throttling for the Game of Cops and Robbers

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The color change rule for zero forcing in a graph G is that a blue vertex v can force a white vertex w to become blue if w is the only white neighbor of v. B_0 is the initial set of blue vertices and B_{i+1} is the set of blue vertices after the color change rule is applied to every vertex in the set B_i. The set B_0 is a zero forcing set if there is a t such that $B_t = V(G)$. The zero forcing number of G is the minimum size of a zero forcing set. The propagation time for B_0, $\mathrm{pt}(G, B_0)$, is the smallest t such that $B_t = V(G)$. The standard throttling number of G is the minimum of $|B_0| + \mathrm{pt}(G, B_0)$ where B_0 ranges over all zero forcing sets of G. Throttling was introduced and studied by Butler and Young in 2013. PSD zero forcing is a variant in which the color change rule is applied to each component of $G - B_i$ separately. Recently, results were obtained for the PSD throttling number th_+. Cops and robbers is a game played on a graph in which cops and a robber alternate turns moving along the edges of the graph. The cops win if a cop moves to the same position as the robber. This talk will present results on throttling for the game of cops and robbers and its connection to th_+.

This abstract is for a talk to be given in the session on research from the GRWC.