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Capture time of cop-win graphs

The game of cops and robber is a two player game, played on a graph, between a cop and a robber. First the cop chooses a vertex, then the robber chooses a vertex; then play alternates. On a turn, a player may move to an adjacent vertex or remain still. A graph is cop-win if the cop can guarantee a win. The capture time of a cop-win graph is the number of cop moves required to win. Let capt(n) be the capture time of a graph on n vertices with maximum capture time. Gavenciak showed that capt(n) $= n - 4$, for $n \geq 7$, and characterized these extremal graphs. We show how to use a new tool of "corner ranking" to prove these results more efficiently. This is joint work with David Offner.