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Confining the Robber on Cographs

In this talk, the notions of *trapping* and *confining* the robber on a graph, and the corresponding cop numbers are introduced. The latter two are easily seen to be lower bounds for the (regular) cop number of a graph. We present some structurally necessary conditions for graphs G not containing the path on k vertices (P_k -free graphs) so that $k - 3$ cops do not have a strategy to capture or confine the robber on G . We show that for planar cographs and planar P_5 -free graphs the confining cop number is at most one and two, respectively, and that the number of vertices of connected cographs having a confining cop number ≥ 2 has a tight lower-bound of eight. We conclude by posing two conjectures concerning the confining cop number of P_5 -free graphs and the smallest planar graph of confining cop number of three.