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Using spotlights to find a robber

We consider a pursuit game which models a cop using a spotlight (or spotlights) to search for a robber on a dark graph. A spotlight can point at any one vertex at any time (regardless of adjacency) but the cop cannot see the robber unless he occupies an illuminated vertex. We characterize the graphs on which one spotlight is sufficient in order to guarantee capture of the robber in bounded time and discuss a surprising optimal strategy for the cop. We will also discuss (tight) bounds on the number of spotlights required to find the robber on general graphs.