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The localization capture time of a graph

The localization game is a graph searching game analogous to Cops and Robbers, but where the robber is invisible, and the cops send distance probes in an attempt to identify the location of the robber. We present a graph parameter called the capture time, which measures the number of rounds in an instance of the localization game assuming optimal play. We consider graphs for which the capture time is linear in the order of the graph, and show that this holds for trees and interval graphs. We study monotonicity properties of capture time, and give bounds for the parameter on trees and multipartite graphs. New bounds on the localization number and capture time are given using treewidth and the chromatic number. We finish with an investigation of capture time on the incidence graphs on designs, and bounds are given in the case of projective planes.