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Cops and Eternal Robbers

We consider a Cops and Robbers variant where the robber has allies! For a positive integer, t , the cops must capture the robber in at most t turns. When a robber is caught, a new robber appears elsewhere in the graph and the timer resets, giving the cops at most t turns to capture the new robber (from the current cop position). This process repeats. This can be viewed as an infinite number of plays of Cops and Robbers with the cop placement dependent on the previous capture position and each play has a fixed amount of time in which the cops must capture the robber. This talk introduces this variant of Cops and Robbers and presents early results. A main question to consider is the following: What is the minimum number of cops required to guarantee capture of the eternal robbers in at most t turns for each play?

This is joint work with Anthony Bonato, Trent Marbach, and Fionn Mc Inerney.