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Edge Cops and Robber on Triangle-Free Graphs

We consider an edge variant of the classic game of Cops and Robber, introduced by Dudek, Gordinowicz, and Prałat, where players occupy edges rather than vertices. The parameter of interest in this setting is the edge cop number of a graph: the minimum number of cops required to guarantee capture of the robber. We study the edge cop number of triangle-free graphs via its relationship to the cop number of their associated line graphs. In particular, we show that the edge cop number is unbounded on the class of triangle-free graphs, and characterize the triangle-free graphs that are edge cop-win.

This is joint work with Melissa Huggan and Gary MacGillivray.