1163-05-202 **Joshua Carlson**, **Robin Eagleton**, **Jesse Geneson**, **John Petrucci**, **Carolyn Reinhart*** (reinh196@iastate.edu) and **Preetul Sen**. *The damage throttling number of a graph.*

The *cop throttling number* of a graph, introduced by Breen et al., optimizes the balance between the number of cops used and the number of rounds required to catch the robber in a game of Cops and Robbers. Cox and Sanaei studied a variant of Cops and Robbers in which the robber tries to occupy (or damage) as many vertices as possible and the cop tries to minimize this damage, the minimum number of vertices damaged in this way is called the emphdamage number. We introduce the emphdamage throttling number of a graph, denoted $operatornameth_d(G)$, which optimizes the balance between the number of cops used and the number of vertices damaged in the graph. We formalize the definition of emph$k$-damage number, which extends the damage number to games played with k cops. We prove that the damage throttling number is tightly bounded above by one less than the cop throttling number but the parameters exhibit interesting differences. Infinite families of examples and non-examples of tightness in this bound are given. For most families of connected graphs G of order n that we consider, we find that $operatornameth_d(G) = O(sqrtn)$. However, we find an infinite family of connected graphs G of order n for which $operatornameth_d(G) = Omega(n^{2/3})$. (Received August 26, 2020)