1146-05-462 **Miranda R. Bowie*** (mbowie@una.edu) and **Peter J. Slater**. *Set-Sized Total Domination on the Infinite Square Grid.*

Consider locating an intruder in a facility modeled by a graph G using detection devices placed at a subset of the vertices. If it is assumed that a detection device at a vertex v can determine the location of an intruder in its closed neighborhood $N[v]$, then a set of detection devices placed at a dominating set of G will be able to locate an intruder. Assuming that the intruder at v can control the information reported from v led to the study of liar's domination which is equivalent to set-sized (2,3)-domination. For set-sized $(c_1, c_2, \ldots)$-domination one must dominate not just single vertices but vertex sets of size k at least c_k times. Similarly, assuming a detection device at a vertex v can only determine the location of an intruder in its open neighborhood $N(v)$ led to the total domination versions of liar's domination and set-sized domination. Set-sized total domination on the infinite square grid, $Z\Box Z$, will be discussed. (Received January 28, 2019)