

1154-05-2310      **Tom Shlomi\*** ([tshlomi1836@eagle.fgcu.edu](mailto:tshlomi1836@eagle.fgcu.edu)). *Discrete Balls and New Bounds on  $(t, r)$  Broadcast Domination of  $n$ -Dimensional Grids.*

A well-studied problem in graph theory is graph domination, or the guard problem. If each guard can protect the vertex it is placed at and all adjacent vertices, what is the minimum number of guards needed to guard the graphs? In the past decade, study has begun in  $(t, r)$  broadcast domination. In the 21st century, cellular reception is needed in the graph. Each broadcast provides  $t - d$  reception to each vertex a distance  $d < t$  away, and  $r$  reception is needed for the cell signal to work. Again, we are trying to minimize the number of broadcasts needed. In this talk, I'll explore this problem on infinite grids of arbitrary dimension, and some counterintuitive facts I discovered during my research. (Received September 17, 2019)