

1096-VN-953

**David Blessing\*** (dcblessi@eagle.fgcu.edu), 5110 Atlantic Ct., Cape Coral, FL 33901, and  
**Erik Insko, Katie Johnson** and **Christie Mauretour**. *(t,r)-Broadcasting Domination Numbers of Grids*. Preliminary report.

We explore a new domination theory of graphs that we call  $(t,r)$ -broadcast domination in the setting of grid graphs. In this theory, a broadcasting vertex  $v$  sends a non-negative signal of strength  $t - k$  to each vertex that is distance  $k$  from  $v$ . A  $(t,r)$ -dominating set is a subset of broadcasting vertices of a graph  $G$  such that every vertex in  $G$  receives a combined signal of strength at least  $r$ . The theory of  $(t,r)$ -broadcast domination has potential applications in real world covering problems such as wide area networking, irrigation, and surveillance. We give minimal  $(t,r)$ -domination sets for small grids and prove upper bounds for large grids when  $t, r \leq 3$ . (Received September 11, 2013)