

1106-VN-1633 **Erik A Insko*** (einsko@fgcu.edu), **Armando Grez** and **Michael Farina**. *New Upper Bounds on the Distance Domination Numbers of Grids*. Preliminary report.

In his 1992 Ph.D. thesis Chang identified an efficient way to dominate $m \times n$ grid graphs and conjectured that his construction gives the most efficient dominating sets for relatively large grids. In 2011 Gonçalves, Pinlou, Rao, and Thomassé proved Chang's conjecture, establishing a closed formula for the domination number of a grid. In March 2013 Fata, Smith and Sundaram established upper bounds for the k -distance domination numbers of grid graphs by generalizing Chang's construction of dominating sets to k -distance dominating sets. In this paper we use algebraic and geometric arguments to improve the upper bounds established by Fata, Smith, and Sundaram for the k -distance domination numbers of grids. (Received September 14, 2014)