1145-VP-1021 **Manuel A Davila***, mdavila9@calstatela.edu, and **Cynthia M Ramirez** and **Gwen Ostergren**. *The Chromatic Number of a Two Dimensional Lattice.*

This work is based on the open problem, "The Chromatic Number of the Plane." This problem asks for the minimal number of colors needed to color the Euclidean Plane so that no two points that are one unit distance apart are of the same color. In our variation of this problem we focus on a discrete approximation of the Euclidean plane. We use the set of points of the form $(\frac{p}{n}, \frac{q}{n})$ where p, q are integers and n is a fixed positive integer. As n approaches infinity, these sets approximate the plane. We also introduce a small positive number, ϵ, and we require two points in the Euclidean plane to be of different colors if their distance is between $1-\epsilon$ and $1+\epsilon$. For $n = 3$, we prove that a lower bound for the chromatic number is 5 when $\epsilon = \frac{\sqrt{13}}{3} - 1$. (Received September 18, 2018)