1135-00-1266 **Yunfan Zhao*** (yzhao58@jhu.edu) and **Thomas G Marge** (thomas.g.marge@jhu.edu).

Efficient and Perfect Domination on Archimedean Lattices. Preliminary report.

A set of vertices S is said to dominate a graph G=(V,E) if every vertex in V is either in set S or is adjacent to a vertex in set S. A dominating set is a perfect dominating set if every vertex not in the dominating set is dominated exactly once. For a finite graph G, T is a minimal dominating set if it dominates G and has a cardinality less than or equal to every other dominating set of G. Similarly, T_p is a minimal perfect dominating set if it is a perfect dominating set of G and has a cardinality less than or equal to every other perfect dominating set of G. For finite graphs, the minimal domination ratio of G=$\frac{|T|}{|V|}$ and the minimal perfect domination ratio of G=$\frac{|T_p|}{|V|}$. We extend the notion of domination ratio and perfect domination ratio to infinite graphs composed of replicable subgraphs. Archimedean lattices are vertex-transitive infinite graphs formed by regular polygons. We calculate upper and lower bounds for domination ratios of Archimedean lattices. Furthermore, we have solved exact domination ratios for most Archimedean lattices. (Received September 20, 2017)