

1053-05-253

Dan Cranston and **Gexin Yu*** (gyu@wm.edu). *A New Lower Bound on the Density of Vertex Identifying Codes for the Infinite Hexagonal Grid*. Preliminary report.

Given a graph G , an identifying code $C \subseteq V(G)$ is a vertex set such that for any two distinct vertices $v_1, v_2 \in V(G)$, the sets $N[v_1] \cap C$ and $N[v_2] \cap C$ are distinct and nonempty (here $N[v]$ denotes a vertex v and its neighbors). We study the case when G is the infinite hexagonal grid H . Cohen et.al. constructed two identifying codes for H with density $3/7$ and proved that any identifying code for H must have density at least $16/39 \approx 0.410256$. Both their upper and lower bounds were best known until now. Here we prove a lower bound of $12/29 \approx 0.413793$. (Received September 07, 2009)