1067-05-1853 **Joshua Hanes***, Department of Sciences and Mathematics, 1100 College St., MUW-100, Columbus, MS 39701, and **Tristan Denley**, 601 College St., Clarksville, TN 37044. *Distance Labelings of Trees.* Preliminary report.

Let V be a non-empty set, $\phi : V \to Z^+$ be an injective function, and $D \subseteq Z^+$. The **distance graph** $G(\phi, D)$ is the graph with vertex set V and edge set defined by$(u, v) \in E(G) \iff |\phi(u) - \phi(v)| \in D$ for $u, v \in V$.

In [2] Ferrera, Kohayakawa and Rödl introduced this construction, and investigated a variety of parameters connected with representing graphs in this way. In particular they considered $D(G) = \min_{G(\phi,D)\cong G} |D|$. Whilst $D(G)$ is always at most $|E(G)|$ they showed that there are graphs on n vertices for which $D(G) \geq \binom{n}{2} - n^{3/2}(\log n)^{1/2+o(1)}$.

We shall consider a variety of properties of this parameter. In particular we shall show that given $\Delta \geq 2$ and $n \geq 3$ for any tree on $n \geq 3$ vertices with maximum degree Δ, $D(T) \leq \log_{\frac{\Delta}{\Delta-1}} n + 1$. Indeed we shall also show the existence of trees on n vertices with max degree Δ for which $D(T) \geq \frac{\log n}{\log(\log_{\Delta-1}(n^2)+1)}$. (Received September 22, 2010)