1077-05-2548 **Joshua Hanes*** (Jhanes@as.muw.edu), Mississippi University for Women, 1100 College St., MUW-100, Columbus, MS 39701, and **Tristan Denley**, Austin Peay State University, 601 College St., Clarksville, TN 37044. *Modular-Distance Labelings of Graphs.* Preliminary report.

In [5] Ferrara, Kohayakawa, and Rödl introduced a way to represent graphs using vertex labels and distances. Here we will consider a modification of this construction, which we shall call **modular distance graphs**. Let $V$ be a non-empty set, $\Phi : V \mapsto Z^+$ be an injective function, and $D_m \subseteq Z^+ \times P$ where $P$ is the set of prime integers. Then the **modular distance graph** $G(\Phi, D_m)$ is the graph with vertex set $V$ and edge set defined by $(u,v) \in E(G) \iff |\Phi(u) - \Phi(v)| \equiv a (\text{mod} p)$ for some $u, v \in V$ and $(a,p) \in D_m$.

We shall consider the parameter $D_m(G) = \min_{G(\Phi,Dm)\cong G} |Dm|$, showing that for any graph with maximum degree $\Delta$ $D_m(G) \leq \frac{1}{2}\Delta + (O(\Delta^{\frac{2}{3}}(\log\Delta)^{\frac{1}{3}}))$ and that there graphs for which $D_m(G) > \frac{5\Delta}{12}$. We also show that $D_m(G) \leq 20$ when $G$ is planar. (Received September 22, 2011)