1023-05-1340 **Tristan Denley**, 305 Hume Hall, University, MS 38677, and **Joshua Hanes*** (Jhanes@olemiss.edu), 214 Hume Hall, University, MS 38677. *Distance Graphs on the Integers.*

Let V be a non-empty set where $\phi : V \to Z^+$ and $D \subseteq Z^+$. Ferrara, Kohayakawa and Rödl define the **Distance Graph** (V, ϕ, D) to have vertex set V and edge set defined by $(u, v) \in E(G) \iff |\phi(u) - \phi(v)| \in D$. Let $D_e(G) = \min_{(V,\phi,D)\cong G} |D|$. They showed that for almost all n-vertex graphs G,

$$D_e(G) \geq \frac{1}{2}\binom{n}{2} - (1 + o(1))n^{3/2}(\log n)^{1/2}.$$

Let V be a non-empty set where $\phi : V \to Z^+$ and $D_{mod} \subseteq Z^+ \times Z^+$. We define the **Modular Distance Graph** (V, ϕ, D) to be the graph with vertex set V and edge set defined by $(u, v) \in E(G) \iff |\phi(u) - \phi(v)| \equiv a (mod\, b)$ for some $(a, b) \in D_{mod}$. Let $D_{mod}(G) = \min_{(V,\phi,D_{mod})\cong G} |D_{mod}|$.

We present a number of results about this construction, principally

Theorem: For any graph G with max degree Δ,

$$D_{mod}(G) \leq \frac{1}{2}\Delta + (O(\Delta^{\frac{2}{3}}(\log \Delta)^{\frac{1}{3}})).$$

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