

On the \mathbb{Z}_n -magic Labeling Problem: Theorems and Open Questions

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Labeling problems are an important area of research in graph theory. In addition to being of mathematical interest, they have applications in the construction of missile guidance codes, x-ray crystallography, and communication network design. In this talk, we discuss \mathbb{Z}_n -magic labelings of graphs: Let \mathbb{Z}_n denote the group of integers, modulo n . We call a graph $G = (V, E)$ **\mathbb{Z}_n -magic** if there exists an edge set labeling $f : E(G) \rightarrow \mathbb{Z}_n - \{0\}$ such that the induced vertex set labeling $f^+ : V(G) \rightarrow \mathbb{Z}_n$, defined by $f^+(v) = \sum \{f(u, v) : (u, v) \in E(G)\}$, is a constant map.

This talk will be accessible to a wide audience. Open questions and conjectures will also be presented within the talk.