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ORIENTABLE $\mathbb{Z}_N$-DISTANCE MAGIC GRAPHS

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Abstract

Let $G = (V, E)$ be a graph of order n. A distance magic labeling of G is a bijection $\ell\colon V \to \{1, 2, \ldots, n\}$ for which there exists a positive integer k such that $\sum_{x\in N(v)} \ell(x) = k$ for all $v \in V$, where $N(v)$ is the open neighborhood of v.

Tuttes flow conjectures are a major source of inspiration in graph theory. In this paper we ask when we can assign n distinct labels from the set $\{1, 2, \ldots, n\}$ to the vertices of a graph G of order n such that the sum of the labels on heads minus the sum of the labels on tails is constant modulo n for each vertex of G. Therefore we generalize the notion of distance magic labeling for oriented graphs.

Keywords: distance magic graph, digraph, flow graph.

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