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

SYLWIA CICHACZ

AGH University of Science and Technology
al. A. Mickiewicza 30, 30-059 Kraków, Poland
e-mail: cichacz@agh.edu.pl

BRYAN FREYBERG

Southwest Minnesota State University
Marshall, MN, USA
e-mail: bryan.freyberg@smsu.edu

AND

DALIBOR FRONCEK

University of Minnesota Duluth
Duluth, MN, USA
e-mail: dalibor@d.umn.edu

Abstract

Let $G = (V, E)$ be a graph of order $n$. A distance magic labeling of $G$ is a bijection $\ell: V \rightarrow \{1, 2, \ldots, n\}$ 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 $v$.

Tutte’s 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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References


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