D-Magic Oriented Graphs

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This talk will explore D-magic labelings of oriented graphs. A *D-magic labeling* of an oriented graph G is a bijection $f : V(G) \to \{1, 2, \ldots, |V(G)|\}$ such that there exists a magic constant k with

$$w(x) = \sum_{y \in N_D(x)} f(y) = k,$$

where

$$N_D(x) = \{y | d(x, y) \in D\}$$

where $D \subseteq \{0, \ldots, diam(G)\}$ is a distance set. If G admits a D-magic labeling, then G is called D-magic. Results on trees and multipartite graphs will be discussed. Various properties of D-magic oriented graphs will also be discussed including a construction technique for a $\{1\}$-magic oriented graph of any order and bounds for the magic constant.

Keywords: distance magic, oriented graph, digraph, graph labeling