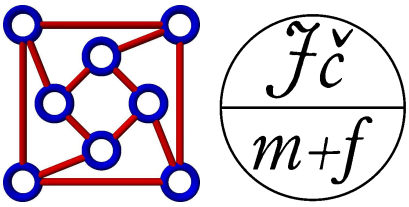

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Gamma-supermagic Labeling of Cartesian Products of Two Cycles

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úterý 13. červene 2021, od 12:30, EA553

A graph $G = (V, E)$ with $|V| = p, |E| = q$ is called Γ-*supermagic* if there exists a bijection f from E to an Abelian group Γ of order q such that the *weight* $w(x)$ of each vertex x, defined as the sum of labels of all edges incident with x, is equal to the same *magic element* μ. In other words,

$$w(x) = \sum_{xy \in E} f(xy) = \mu$$

for all $x \in V$ and some $\mu \in \Gamma$. The labeling is called a Γ-*supermagic labeling*.

It was proved by DF, James McKeown, John McKeown, and Michael McKeown, that a $\mathbb{Z}_{2mn}$-supermagic labeling of the Cartesian product $C_m \Box C_n$ exists for all $m, n \geq 3$.

We present some further results on Γ-supermagic labeling of $C_m \Box C_n$ by other Abelian groups.

Keywords: Γ-supermagic labeling, group supermagic labeling