

On Graceful Spectra of Graphs

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For integer $k \geq 1$, a (p, q) -graph $G = (V, E)$ is called a k -graceful graph if there exists an injective mapping $f : V(G) \rightarrow \{0, 1, \dots, k + q - 1\}$ such that the induced map $f^* : E(G) \rightarrow \mathbb{N}$ defined by $f^*((u, v)) = |f(u) - f(v)|$ for all $(u, v) \in E(G)$ is a bijection to $\{k, k + 1, \dots, k + q + 1\}$. The graceful spectra of G is the set $\{k \mid G \text{ is a } k\text{-graceful graph}\}$ and denoted by $\text{GS}(G)$. In this paper, we investigate the set $\text{GS}(G)$ and exhibit infinite families of graphs G with $\text{GS}(G) = \mathbb{N}$ but not admit α -labeling.

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