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A note on dispensing number algorithm of graphs

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Abstract

Let X denote a finite set of non-negative integers and $\mathcal{P}(X)$ be its power set. An integer additive set-labeling (IASL) of a graph G is an injective set-valued function $f : V(G) \to \mathcal{P}(X) - \{\emptyset\}$, where induced function $f^+ : E(G) \to \mathcal{P}(X) - \{\emptyset\}$ is defined by $f^+(uv) = f(u) + f(v)$, the sumset of $f(u)$ and $f(v)$. An arithmetic integer additive set-labeling (AIASL) of a graph is an IASL under which the set-label of every element of G is an arithmetic progression. A prime AIASL is an AIASL in which the common difference of the set label of any vertex is a prime multiple (or divisor) of the common difference of the set-labels of its adjacent adjacent vertices. The dispensing number of an AIASL-graph G is the minimum number of edges to be removed from G so that it admits a prime AIASL. In this note, we discuss an algorithm for finding the dispensing number of arbitrary graphs.

Keywords: *Integer additive set-labeled graphs, arithmetic integer additive set-labeled graphs, prime arithmetic integer additive set-labeled graphs, dispensing number of a graph, dispensing number algorithm.*

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