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Arithmetic integer additive set-valued graphs: a creative review

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Abstract

For a non-empty ground set X, finite or infinite, the set-valuation or set-labeling of a given graph G an injective function f: V(G) → P(X), where P(X) is the power set of the set X. A set-indexer of a graph G is an injective set-valued function f: V(G) → P(X) such that the function f* : E(G) → P(X)-{Φ} defined by f*(uv) = f(u)*f(v) for every uv∈E(G) is also injective, where * is a binary operation on sets. Let No b the set of all non-negative integers and P(No) is its power set. An integer additive set-labeling (IASL of a graph G is an injective function f: V(G) → P(No) such that the induced function f+: E(G) → P(No) i defined by f+(uv) = f(u) + f(v), where f(u) + f(v) is the sumset of the sets f(u) and f(v). An IASL f of a grap G is said to be an integer additive set-indexer (IASI) of G if the induced function f+ is also injective. I this paper, we critically and creatively review the concepts and properties of a particular type integer additive set-valuation, called arithmetic integer additive set-valuation of graphs.

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