GENERALIZED SUM LIST COLORINGS OF GRAPHS

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Abstract

A (graph) property $P$ is a class of simple finite graphs closed under isomorphisms. In this paper we consider generalizations of sum list colorings of graphs with respect to properties $P$.

If to each vertex $v$ of a graph $G$ a list $L(v)$ of colors is assigned, then in an $(L,P)$-coloring of $G$ every vertex obtains a color from its list and the subgraphs of $G$ induced by vertices of the same color are always in $P$. The $P$-sum choice number $\chi^P_{sc}(G)$ of $G$ is the minimum of the sum of all list sizes such that, for any assignment $L$ of lists of colors with the given sizes, there is always an $(L,P)$-coloring of $G$.

We state some basic results on monotonicity, give upper bounds on the $P$-sum choice number of arbitrary graphs for several properties, and determine the $P$-sum choice number of specific classes of graphs, namely, of all complete graphs, stars, paths, cycles, and all graphs of order at most 4.

**Keywords:** sum list coloring, sum choice number, generalized sum list coloring, additive hereditary graph property.

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References


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