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SUM-LIST COLOURING OF UNIONS OF A HYPERCYCLE AND A PATH WITH AT MOST TWO VERTICES IN COMMON

Ewa Drgas-Burchardt and Elżbieta Sidorowicz

Faculty of Mathematics, Computer Science and Econometrics
University of Zielona Góra
Prof. Z. Szafrana 4a, 65–516 Zielona Góra, Poland

e-mail: e.drgas-burchardt@wmie.uz.zgora.pl
e.sidorowicz@wmie.uz.zgora.pl

Abstract

Given a hypergraph $\mathcal{H}$ and a function $f : V(\mathcal{H}) \longrightarrow \mathbb{N}$, we say that $\mathcal{H}$ is f-choosable if there is a proper vertex colouring ϕ of $\mathcal{H}$ such that $\phi(v) \in L(v)$ for all $v \in V(\mathcal{H})$, where $L : V(\mathcal{H}) \longrightarrow 2^{\mathbb{N}}$ is any assignment of $f(v)$ colours to a vertex v. The sum choice number $\mathcal{H}i_{sc}(\mathcal{H})$ of $\mathcal{H}$ is defined to be the minimum of $\sum_{v\in V(\mathcal{H})} f(v)$ over all functions f such that $\mathcal{H}$ is f-choosable. For an arbitrary hypergraph $\mathcal{H}$ the inequality $\chi_{sc}(\mathcal{H}) \leq |V(\mathcal{H})| + |\mathcal{E}(\mathcal{H})|$ holds, and hypergraphs that attain this upper bound are called *sc*-greedy. In this paper we characterize *sc*-greedy hypergraphs that are unions of a hypercycle and a hyperpath having at most two vertices in common. Consequently, we characterize the hypergraphs of this type that are forbidden for the class of *sc*-greedy hypergraphs.

Keywords: hypergraphs, sum-list colouring, induced hereditary classes, forbidden hypergraphs.

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