



Mathematics > Combinatorics

k -Conflict-Free Coloring and k -Strong-Conflict-Free Coloring for One Class of Hypergraphs and Online k -Conflict-Free Coloring

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Conflict-free coloring is a kind of coloring of hypergraphs requiring each hyperedge to have a color which appears only once. More generally, there are k -conflict-free coloring (k -CF-coloring for short) and k -strong-conflict-free coloring (k -SCF-coloring for short) for some positive integer k . These two colorings are extensions of conflict-free coloring. Let H_n be the hypergraph induced by the points $\{1, 2, \dots, n\}$ with respect to intervals. At first, we study the k -SCF-coloring of H_n , give the exact k -SCF-coloring number of H_n for $k=2, 3$, and present upper and lower bounds of the k -SCF-coloring number of H_n for all k . Second, we give the exact k -CF-coloring number of H_n for all k . Finally, we extend some results about online conflict-free coloring for hypergraphs obtained in Bar-Noy et al. (2010) to online k -CF-coloring.

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