C-Perfect hypergraphs: a survey

Vitaly I. Voloshin, Troy University, Troy, Alabama

Mixed hypergraph is a triple $H=(X,C,D)$ with vertex set $X$ and families of $C$-edges and $D$-edges. In a proper coloring of vertices, every $C$-edge has two vertices of the same color, and every $D$-edge has two vertices of different colors. Mixed hypergraph is called $C$-perfect if, for any induced subhypergraph, the upper chromatic number coincides with the maximum number of vertices which contain no $C$-edge. Mixed hypergraph is called minimal $C$-imperfect, if it is not $C$-perfect but any induced subhypergraph is $C$-perfect.

We survey some results and open problems in the direction of perfect mixed hypergraphs. In particular, we give a survey of known minimal imperfect hypergraphs.

Keywords: graph and hypergraph coloring, upper chromatic number, perfect graphs and hypergraphs.