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Vitaly I. Voloshin* (vvoloshin@troy.edu). *Coloring Mixed Hypergraphs: a survey of some recent results and open problems.* Preliminary report.

Mixed hypergraph is a triple $\mathcal{H} = (V, \mathcal{C}, \mathcal{D})$ with vertex set V and two families of subsets called 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. A mixed hypergraph \mathcal{H} is called colorable if it admits at least one proper coloring; otherwise it is uncolorable.

A k -partition of a vertex set is called feasible if it is induced by a proper coloring using precisely k colors. For an n -vertex mixed hypergraph, the chromatic spectrum is the sequence (r_1, r_2, \dots, r_n) , where each r_k is the number of feasible k -partitions.

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 recent results and open problems concerning chromatic spectrum and C -perfection of mixed hypergraphs.

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