

# Conflict-free coloring of graphs

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(joint work with Roman Glebov and Tibor Szabó)

Conflict-free chromatic number of hypergraphs was introduced Even *et al.* and was motivated by a frequency assignment problem. We study this parameter of the neighborhood hypergraphs of graphs from extremal and probabilistic points of view. We resolve a question of Pach and Tardos about the maximum conflict-free chromatic number the neighborhood hypergraph of an  $n$ -vertex graph can have. Our construction is randomized. In relation to this we study the evolution of the conflict-free chromatic number of the Erdős-Rényi random graph  $G(n, p)$  and give the asymptotics for  $p = \omega(1/n)$ . We also show that for  $p \geq 1/2$  the conflict-free chromatic number differs from the domination number by at most 3.