



CONFLICT-FREE COLORING OF PLANAR GRAPHS

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A conflict-free coloring of a graph is a coloring of vertices such that for every vertex there is a color that appears exactly once in its (open/closed) neighborhood. The smallest number of colors required to color a graph G in such a way is called the conflict-free chromatic number of G , denoted by $\chi_{CFC_c}(G)$ for closed neighborhood and $\chi_{CFC_o}(G)$ for open neighborhood. For a class of graphs \mathcal{C} we define $\chi_{CFC}(\mathcal{C}) = \max\{\chi_{CFC}(G) \mid G \in \mathcal{C}\}$. Motivated by the frequency assignment problem, this type of coloring was first introduced in a geometric setting by Even et al. in 2003.

It has been shown by Z. Abel et al. that for the class of planar graphs \mathcal{P} , the following holds: $3 \leq \chi_{CFC_c}(\mathcal{P}) \leq 4$. In this talk, we will present an improved lower bound achieving $\chi_{CFC_c}(\mathcal{P}) = 4$. Then we show a new way of looking at problems concerning mainly conflict-free coloring with respect to the open neighborhood and mention its relation to result by F. Huang et al. which proves that $\chi_{CFC_o}(\mathcal{P}) \leq 5$.

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