On b-acyclic chromatic number of cubic and subcubic graphs

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Let G be a graph. An acyclic k-coloring of G is a map $c : V(G) \to \{1, \ldots, k\}$ such that $c(u) \neq c(v)$ for any $uv \in E(G)$ and the subgraph induced by the vertices of any two colors $i, j \in \{1, \ldots, k\}$ is a forest. If every vertex v of a color class V_i misses a color $\ell_v \in \{1, \ldots, k\}$ in its closed neighborhood, then every $v \in V_i$ can be recolored with ℓ_v and we obtain a $(k-1)$-coloring of G. If a new coloring c' is also acyclic, then such a recoloring is an acyclic recoloring step and c' is in relation $\lhd_a$ with c. The acyclic b-chromatic number $A_b(G)$ of G is the maximum number of colors in an acyclic coloring where no acyclic recoloring step is possible. Equivalently, it is the maximum number of colors in a minimum element of the transitive closure of $\lhd_a$. In this talk, we develop the results presented in [1] by considering $A_b(G)$ of cubic and subcubic graphs.

References

[1] M. Anholcer, S. Cichacz, I. Peterin, On b-acyclic chromatic number of a graph. Comp. Appl. Math. 42, 21 (2023).