

Backbone coloring of planar graphs

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Resumo/Abstract:

Given a graph G , and a spanning subgraph H of G , a backbone k -coloring of (G, H) is a proper k -coloring of G such that the distance between the colors of the extremities of every edge in H is at least 2. The backbone chromatic number of (G, H) is the minimum number of colors needed in any backbone coloring of (G, H) . These concepts were introduced around 2003 by Broersma, Fomin, Golovach and Woeginger, and have received much attention since then. Observe that a proper k -coloring of G can be easily transformed into a backbone $(2k - 1)$ -coloring of (G, H) simply by using only odd colors $\{1, \dots, 2k - 1\}$. Also, in general this is tight since $BBC(G, G) = 2\chi(G) - 1$. Hence, most of the works investigate the restriction of the problem to certain types of backbones. In particular, many conjectures and questions have been posed on the value $BBC(G, H)$, when G is restricted to planar graphs and H is restricted to some other class of graphs. In this seminar, we will talk about the state of the art of the problem restricted to planar graphs.