Acyclic List Edge Coloring of Planar Graphs

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Abstract

A proper edge coloring of a graph is said to be *acyclic* if any cycle is colored with at least three colors. The *acyclic chromatic index*, denoted $a'(G)$, is the least number of colors required for an acyclic edge coloring of G. An *edge-list* L of a graph G is a mapping that assigns a finite set of positive integers to each edge of G. An acyclic edge coloring ϕ of G such that $\phi(e) \in L(e)$ for any $e \in E(G)$ is called an *acyclic L-edge coloring* of G. A graph G is said to be *acyclically k-edge choosable* if it has an acyclic L-edge coloring for any edge-list L that satisfies $|L(e)| \geq k$ for each edge e. The *acyclic list chromatic index* is the least integer k such that G is acyclically k-edge choosable.

In [1, 2, 3, 4, 5], upper bounds for the acyclic chromatic indexes of several classes of planar graphs were obtained. In this talk, we summarize results of these papers and obtain upper bounds for the acyclic list chromatic index of planar graphs. This talk is based on a joint work with Ko-Wei Lih.

References

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