

ACYCLIC EDGE COLORING OF PLANAR GRAPHS

DÁVID HUDÁK, FRANTIŠEK KARDOŠ AND ROMAN SOTÁK

Pavol Jozef Šafárik University in Košice, Slovakia

e-mail: david.hudak@student.upjs.sk, frantisek.kardos@upjs.sk,
roman.sotak@upjs.sk

BORUT LUŽAR AND RISTE ŠKREKOVSKI

University of Ljubljana, Slovenia

e-mail: borut.luzar@gmail.com, skrekovski@gmail.com

An acyclic edge coloring of a graph is a proper edge coloring without bichromatic cycles. In 1978, it was conjectured that $\Delta(G) + 2$ colors suffice for an acyclic edge coloring of every graph G [1]. The conjecture has been verified for several classes of graphs, however, the best known upper bound for as special class as planar graphs are, is $\Delta + 12$ [2]. In this talk, we present recent results on planar simple graphs which need only $\Delta(G)$ colors for an acyclic edge coloring. We show that a planar graph with girth g and maximum degree Δ admits such acyclic edge coloring if $g \geq 12$, or $g \geq 8$ and $\Delta \geq 4$, or $g \geq 7$ and $\Delta \geq 5$, or $g \geq 6$ and $\Delta \geq 6$, or $g \geq 5$ and $\Delta \geq 10$. Our results improve some previously known bounds.

Keywords: Acyclic edge coloring, Planar graph, Discharging method.

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References

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