Zhu, Enqiang; Li, Zepeng; Shao, Zehui; Xu, Jin

Summary: An acyclic coloring of a graph is a proper coloring of the graph, for which every cycle uses at least three colors. Let \( G^4 \) be the set of maximal planar graphs of minimum degree 4, such that each graph in \( G^4 \) contains exactly four odd-vertices and the subgraph induced by the four odd-vertices contains a quadrilateral. In this article, we show that every acyclic 4-coloring of a maximal planar graph with exact four odd-vertices is locally equitable with regard to its four odd-vertices. Moreover, we obtain a necessary and sufficient condition for a graph in \( G^4 \) to be acyclically 4-colorable, and give an enumeration of the acyclically 4-colorable graphs in \( G^4 \).

MSC:
05C15 Coloring of graphs and hypergraphs
05C10 Planar graphs; geometric and topological aspects of graph theory

Keywords:
acyclically coloring; maximal planar graphs; locally equitable coloring; necessary and sufficient condition; enumeration

Software:
ColPack

Full Text: DOI

References:
[7] Borodin, O. V.; Ivanova, A. O., Acyclic 4-choosability of planar graphs with no 4- and 5-cycles, J. Graph Theory, 72, 374-397, (2013) · Zbl 1261.05013


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