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Acyclic colorings of planar graphs. (English) Zbl 0742.05041
Discrete Math. 91, No. 1, 91-94 (1991).

In 1969, *G. Chartrand* and *H. V. Kronk* [J. Lond. Math. Soc. 44, 612–616 (1969; [Zbl 0175.50505](#))] showed that the vertex arboricity of a planar graph is at most 3. In other words, the vertex set of a planar graph can be partitioned into three sets each inducing a forest. In this paper it is proved that the vertex set of a planar graph can be partitioned into three sets such that each set induces a linear forest (i.e. a forest in which every component is a path). Also, for a given planar graph, one is guaranteed neither (a) a partition into two linear forests and a matching; nor (b) a partition into three linear forests such that every pair of colors induces an outerplanar graph. Part (b) shows that conjecture *A* proposed by *L. Cowen*, *R. H. Cowen* and *D. R. Woodall* [J. Graph Theory 10, 187–195 (1986; [Zbl 0596.05024](#))] is false.

Reviewer: [Ioan Tomescu \(București\)](#)

MSC:

[05C15](#) Coloring of graphs and hypergraphs
[05C10](#) Planar graphs; geometric and topological aspects of graph theory
[05C05](#) Trees

Cited in **20** Documents

Keywords:

[acyclic coloring](#); [planar graph](#); [linear forests](#); [outerplanar graph](#)

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