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3-Vertex Factors in Graphs

Saieed Akbari

Sharif University of Technology &

School of Mathematics, Institute for Research
in Fundamental Sciences (IPM)

Abstract

Let H be a graph. For a given graph G, an H-factor of G is a spanning subgraph of G whose components are isomorphic to H. In 1985, Akiyama and Kano conjectured that every 3-conneted cubic graph of order divisible by 3 has a P_3-factor. In this paper we conjecture that the aforementioned conjecture also holds for 3-connected 4-regular graphs. We show that the later conjecture implies the first one. In 2007 an infinite family of 2-connected cubic planar bipartite graphs of order divisible by 3 with no P_3-factor was constructed. In this paper, we present a simple construction for this result.

Let $H = K_1 \cup K_2$. We determine all graphs with maximum degree at most 3 admitting an H-factor. Also, we study those graphs which admit a $\overline{K_3}$-factor.

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TÜRK MATEMATİK DERNEĞİ