

ABSTRACT

We propose a conjecture for 2 -factors of cubic graphs, which asserts that for any even $k \geq 4$, every bridgeless cubic graph having only k -cycles in each 2 -factor is Hamiltonian, that is, it is 2 -factor hamiltonian.

We prove that every bridgeless cubic graph having only 8 -cycles in each 2 -factor is isomorphic to the unique Hamiltonian graph.

Furthermore, we prove that a bridgeless cubic planar graph G has only k -cycles in each 2 -factor if and only if $k=4$ and G is the complete graph of order 4 .