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In 1978, Thomassen [1] showed that if in a planar n -vertex graph containing no cubic vertices *all* vertex-deleted subgraphs are hamiltonian, then the graph itself is hamiltonian. I showed that this is true even if we replace “*all*” (i.e. n) by “ $n - 1$ ”, see [2]. If we now replace “ $n - 1$ ” by “ $n - 2$ ”, a counterexample appears, namely $K_2 + 3K_1$.

Question. *Are there any other such counterexamples?*

I can show that such a counterexample must contain a vertex of degree 2.

References

- [1] C. Thomassen. Hypohamiltonian graphs and digraphs. In: *Proc. Internat. Conf. Theory and Appl. of Graphs*, Kalamazoo, 1976, LNCS **642**, Springer, Berlin (1978) 557–571.
- [2] C. T. Zamfirescu. Cubic vertices in planar hypohamiltonian graphs. To appear in: *J. Graph Theory*.