

LOVÁSZ-PLUMMER CONJECTURE ON SPANNING HALIN SUBGRAPHS

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Abstract. A *Halin graph*, is a plane graph $H = T \cup C$ such that T is a spanning tree of H with no vertices of degree 2 where $|T| \geq 4$ and C is a cycle whose vertex set is the set of leaves of T . Halin graphs are edge-minimal 3-connected graphs with many interesting properties. In 1975, Lovász and Plummer conjectured that “every 4-connected plane triangulation has a spanning Halin subgraph”. In this paper, we show that there is an infinite family of 4-connected plane triangulations that have no spanning Halin subgraph. Consequently, the Lovász and Plummer Conjecture does not hold. On the other hand, a few sufficient conditions for graphs containing spanning Halin subgraphs are recently obtained. We will present these results.