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Complete Tripartite Graphs with Spanning Maximal Planar Subgraphs

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Abstract : A simple graph is planar if it there is a way of drawing it in the plane without edge crossings. A planar graph which is not a proper spanning subgraph of another planar graph is a maximal planar graph. We prove that for complete tripartite graphs of order at most 9, the only ones that contain a spanning maximal planar subgraph are K1,1,1, K2,2,2, K2,3,3, and K3,3,3. The main result gives a necessary and sufficient condition for the complete tripartite graph Kx,y,z to contain a spanning maximal planar subgraph.

Keywords : complete tripartite graph, graph, maximal planar graph, planar graph, subgraph
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