

A Spanning -Tree Increasing Surgery for Proper Threshold Graphs

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A graph is a split graph if its node set can be partitioned into a clique and an independent set. A split graph G is a threshold graph if, for all pairs of nodes u and v in G , $N(u) - \{v\} \subseteq N(v) - \{u\}$ whenever $deg(u) \leq deg(v)$. Further, we define a proper threshold graph to be one in which all nodes in the independent set are of the same degree. While a lower bound on the number of spanning trees on graphs in a particular node-edge class has been established, it was not achieved via graph surgeries. Such a graph has a clique of maximum order and a maximal number of bridges among all connected graphs in its class. We present two surgeries on proper threshold graphs that move its structure closer to that of the lower bound graph, but which nonetheless do not decrease the number of spanning trees.

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