

Existence and Construction of Maximal Rectangular Duals

Authors : Krishnendra Shekhawat

Abstract : Given a graph $G = (V, E)$, a rectangular dual of G represents the vertices of G by a set of interior-disjoint rectangles such that two rectangles touch if and only if there is an edge between the two corresponding vertices in G . Rectangular duals do not exist for every graph, so we can define maximal rectangular duals. A maximal rectangular dual is a rectangular dual of a graph G such that there exists no graph G' with a rectangular dual where G is a subgraph of G' . In this paper, we enumerate all maximal rectangular duals (or, to be precise, the corresponding planar graphs) up to six nodes and presents a necessary condition for the existence of a rectangular dual. This work allegedly has applications in integrated circuit design and architectural floor plans.

Keywords : adjacency, degree sequence, dual graph, rectangular dual

Conference Title : ICDMAA 2017 : International Conference on Discrete Mathematics, Algorithms and Applications

Conference Location : Vancouver, Canada

Conference Dates : August 07-08, 2017