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**Right angle crossing graphs and 1-planarity.** (English) 


Summary: A Right Angle Crossing Graph (also called RAC graph for short) is a graph that has a straight-line drawing where any two crossing edges are orthogonal to each other. A 1-planar graph is a graph that has a drawing where every edge is crossed at most once. We study the relationship between RAC graphs and 1-planar graphs in the extremal case that the RAC graphs have as many edges as possible. It is known that a maximally dense RAC graph with \( n > 3 \) vertices has \( 4n - 10 \) edges. We show that every maximally dense RAC graph is 1-planar. Also, we show that for every integer \( i \) such that \( i \geq 0 \), there exists a 1-planar graph with \( n = 8 + 4i \) vertices and \( 4n - 10 \) edges that is not a RAC graph.

For the entire collection see [Zbl 1232.68014].

**MSC:**

- 68R10 Graph theory (including graph drawing) in computer science
- 05C10 Planar graphs; geometric and topological aspects of graph theory
- 05C62 Graph representations (geometric and intersection representations, etc.)
- 68U05 Computer graphics; computational geometry (digital and algorithmic aspects)

**Full Text:** DOI

**References:**


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