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Mark Kempton* (mark.kempton@gmail.com), 1990 South 50 East, Orem, UT 84058. *Minimum Rank of Outerplanar Graphs*. Preliminary report.

Given a graph $G = (V, E)$ we define $\mathcal{S}(G)$ to be the set of symmetric matrices associated with G whose zero-nonzero pattern is given by the edges of the graph. The problem of finding the minimum rank of all such matrices has grown in interest recently. It is well known that the minimum rank of any graph is bounded above by the *clique cover number*, the minimum number of cliques needed to cover all edges of the graph. In many cases, the minimum rank is equal to the clique cover number. We generalize the idea of the clique cover number to covers using a few basic graphs whose minimum rank is known, and give a solution to the minimum rank problem for outerplanar graphs in terms of these subgraph cover numbers. A consequence of this result is that the minimum rank of an outerplanar graph is independent of the field from which the entries of the matrices are taken. (Received February 16, 2010)