

## On Maximum Rectilinear Crossing Number of Subdivided Stars

Joshua Fallon, Louisiana State University

Given a graph  $G$ , its maximum rectilinear crossing number  $\overline{\text{mcr}}(G)$  is the maximum number of edge crossings that can appear in a drawing of  $G$  in the plane with each edge a line segment. It is trivially bounded above by the graph's thrackle bound, which is the number of non-consecutive edge pairs. For a caterpillar  $T$ ,  $\overline{\text{mcr}}(T)$  and the thrackle bound are equal. If a tree is not a caterpillar, it must contain a subgraph  $S$  isomorphic to  $K_{1,3}$  with each edge subdivided once. Woodall has shown that no rectilinear drawing of  $S$  achieves the thrackle bound. We present some results on more general subdivided stars to contribute to the understanding of maximum rectilinear crossing number of trees.

Keywords: rectilinear crossing number, trees, maximum crossing number