

1073-05-24

**Drago Bokal, Mojca Bracic, Eva Czabarka\*** (czabarka@math.sc.edu) and **Laszlo A. Szekely**. *Graph orientation and lower bounds on crossing number*.

There are several lower bounds on the (ordinary) crossing number of a graph provided by the Euler formula and its variants involving the girth, the Leighton Lemma and other methods. Euler-type and Leighton-type bounds are often better on a proper subgraph than on the entire graph. We examine how to find a best subgraph with respect to an Euler-type lower bound on crossing number. The problem of finding such a subgraph is equivalent to finding an orientation with a certain property in a multigraph. The solution is a slight extension of a result of Frank and Gyárfás on optimal graph orientations. (Received July 02, 2011)