

## Rainbow Spanning Trees in Properly Edge-Colored Graphs

Katherine Perry\*, Hung-Lin Fu, Yuan-Hsun Lo, Chris Rodger, Auburn University

A spanning tree of a properly edge-colored graph is rainbow provided that each of its edges receives a distinct color. In 1996, Brualdi and Hollingsworth conjectured that if  $K_{2m}$  is properly  $(2m - 1)$ - edge-colored, then the edges of  $K_{2m}$  can be partitioned into  $m$  rainbow spanning trees, except when  $m = 2$ . In this talk, we will look at an inductive argument which constructs approximately  $\sqrt{m}$  rainbow edge-disjoint spanning recursively in any properly edge-colored  $K_{2m}$  and also look at finding edge-disjoint rainbow spanning trees in other classes of properly edge-colored graphs.

Keywords: edge-coloring, complete graph, rainbow spanning tree