Rainbow Spanning Trees in Edge-Colored Complete Graphs

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

A spanning tree of a properly edge-colored complete graph, K_n, 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 2000, Krussel et al proved the existence of 3 edge-disjoint rainbow spanning trees for sufficiently large m. In this talk we will look at an inductive argument which constructs rainbow edge-disjoint spanning trees recursively, the number of which is approximately $\sqrt{m}$.

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