

Proper diameter of edge-colored graphs

Vincent Coll (Lehigh University), Jonelle Hook* (Mount St. Mary's University), Colton Magnant (Georgia Southern University), Karen McCready (King's College), and Kathleen Ryan (DeSales University)

A properly colored path in an edge-colored graph is a path in which consecutive edges have distinct colors. If there exists a properly colored path between each pair of vertices in the graph, then the graph is properly connected. For a properly connected graph G whose edges are colored using k colors, we introduce the *proper diameter* of G , $pdiam_k(G)$, to be the maximum length of all shortest properly colored paths between each pair of vertices in G . In this talk, we will discuss some general properties of proper diameter and examine the proper diameter for various classes of graphs including fans, complete bipartite graphs, and ladders.

Keywords: diameter, properly colored, properly connected, proper diameter