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Vincent Coll, Jonelle Hook, Colton Magnant, Karen McCreedy*
(karenmccready@kings.edu) and **Kathleen Ryan**. *The Proper Diameter of a Graph*. Preliminary report.

In fiber-optic communication, where carrier waves for each incoming and outgoing signal to a node must be operating at a different frequency in order to avoid interference, finding a path over which a signal can travel without interference can be thought of as a problem of edge-colored graphs. An edge-colored graph is properly connected if there exists a properly colored path between every pair of vertices in the graph, where a path is properly colored if consecutive edges have distinct colors. In such a graph, we define the proper diameter of the graph to be the maximum length of a shortest properly colored path between any two vertices in the graph. We consider various families of graphs to compare the diameter of the graph to possible proper diameters for 2-colorings. (Received September 10, 2016)