

1125-VF-3021

Janet Fierson* (fierson@lasalle.edu), Dept. of Mathematics and Computer Science, La Salle University, 1900 W. Olney Ave., Philadelphia, PA 19141, and **Eric Frazier III.** *Computer-aided investigation of coloring graphs under rainbow connection.* Preliminary report.

Given a graph G and a positive integer k , the k -coloring graph of G is constructed by creating a vertex for each proper k -coloring of G and inserting an edge between vertices in the coloring graph whose corresponding colorings of G differ in exactly one position. Originally applied to vertex coloring and edge coloring, the concept of the coloring graph has recently been applied to rainbow connection. In an edge-colored graph, a path is said to be rainbow if no two of its edges share a color; a graph is rainbow-connected if a rainbow path exists for every pair of vertices.

Incorporating technology into the research process in the area of coloring graphs under rainbow connection has facilitated the discovery of structures, the formulation of conjectures, and the investigation of variations on the rules for coloring the original graph G and inserting edges in the coloring graph itself. In addition, studying random graphs of various types has led to a better sense of what is “typical” of coloring graphs under rainbow connection. In this talk, we present theoretical results and the specific ways in which technology played a role in their discovery. (Received September 20, 2016)