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Janet L. Fierson* (fierson@lasalle.edu), Dept. of Mathematics and Computer Science, La Salle University, 1900 W. Olney Ave., Philadelphia, PA 19141, and **Kristen Heaney**. *An extension of the (strong) rainbow connection number*. Preliminary report.

(Strong) rainbow connection is a concept introduced by Chartrand et al. (2008) in the area of graph coloring. The (strong) rainbow connection number of a connected graph G is the minimum number of colors required to color the edges of G in such a way that every pair of vertices is connected by a rainbow (shortest) path, a (shortest) path with no two edges assigned the same color. Many recent papers have addressed this topic and its relationship to other graph properties.

(Strong) rainbow connection finds applications in minimization problems in areas such as networking and secure transfer of information. The motivation for our work is a desire for further optimization. Building on the foundation of the (strong) rainbow connection number of a graph, we introduce a new concept. We present results for several specific classes of graphs, discuss general relationships and conclusions, and introduce potential areas for future research. (Received September 25, 2012)