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Heather M. Russell* (hrussell@richmond.edu). *Symmetries in graph coloring reconfiguration*. Preliminary report.

A reconfiguration system consists of a collection of states and a rule for transitioning between states. By constructing a corresponding transition graph which represents states as vertices and transitions as edges, one can use tools from graph theory to analyze the structure of these systems. In this talk, we discuss a reconfiguration system which has a set of states consisting of the proper vertex k -colorings of a fixed underlying graph and a transition rule given by recoloring a single vertex of that graph. We consider the transition graph for this system as well as an associated locally CAT(0) cube complex for which the transition graph is the one-skeleton. Finally, we discuss structural properties of graph coloring reconfiguration systems that become apparent by considering the action of permuting colors on the transition graph and cube complex. (Received September 11, 2020)