1077-05-587 **sarah-marie belcastro*** (sbelcast@email.smith.edu) and **Ruth Haas** (rhaas@email.smith.edu). *Counting Kempe-equivalence classes for 3-edge-colored cubic graphs.*

Maximal two-color chains of graph edges are called *edge-Kempe chains*, and switching the colors along such a chain is called a *edge-Kempe switch*. Given two proper edge colorings of a graph, can you always get from one to the other via a sequence of edge-Kempe switches? (No.) If one edge-coloring of a graph can be transformed into another edge-coloring of that graph by a sequence of edge-Kempe switches, then the two edge-colorings are *edge-Kempe equivalent*. If a graph has at least two proper edge colorings that are not Kempe-equivalent, how many non-equivalent proper edge colorings are there? We attempt to compute the number (denoted $K'(G,3)$) of edge-Kempe equivalence classes of 3-edge colorings for certain types of cubic graphs. Along the way, we will introduce decompositions of cubic graphs and of 3-edge colorings of cubic graphs that assist in our computations. (Received September 07, 2011)