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J. Beier, J. Fierson, R. Haas, C. Lienert, Heather M. Russell*
(hrussell12@washcoll.edu) and **K. Shavo**. *Classifying coloring graphs*.

Given a graph G and a natural number k , the k -coloring graph of G is the graph whose vertex set is the proper k -colorings of the vertices of G with two k -colorings adjacent if they differ on exactly one vertex. In this talk, we ask the question: What graphs can be coloring graphs? In other words, given a graph H , do there exist G and k such that H is the k -coloring graph of G ? We will answer this question for several classes of graphs and discuss important obstructions to being a coloring graph involving order, girth, and induced subgraphs.

This is joint work with J. Beier, J. Fierson, R. Haas, C. Lienert, and K. Shavo begun in 2013 at the summer REUF workshop. K. Shavo will give a second talk about this project with a focus on forbidden subgraphs. (Received September 08, 2014)