Michael Ferrara* (michael.ferrara@ucdenver.edu). Strong Chromatic Index of Subcubic Planar Graphs with Large Girth.

The strong chromatic index of a graph $G$, denoted $\chi'_s(G)$, is the least number of colors needed to edge-color $G$ so that edges at distance at most two receive distinct colors. The strong list chromatic index, denoted $\chi'_{\ell,s}(G)$, is the least integer $k$ such that if arbitrary lists of size $k$ are assigned to each edge then $G$ can be edge colored from those lists where edges at distance at most two receive distinct colors. We use the discharging method, the Combinatorial Nullstellensatz, and computation to show that if $G$ is a subcubic planar graph with $\text{girth}(G) \geq 47$ then $\chi'_{\ell,s}(G) \leq 5$, and if $\text{girth}(G) \geq 30$ then $\chi'_s(G) \leq 5$.

This project was started at the 2014 Rocky Mountain-Great Plains Graduate Research Workshop in Combinatorics (GRWC), and is joint with Philip DeOrsey, Jennifer Diemunsch, Nathan Graber, Stephen Harke, Sogol Jahanebkam, Bernard Lidický, Luke Nelsen, Derrick Stolee, and Eric Sullivan. As time permits, we will also give a brief overview of the GRWC, which provides a new and unique opportunity for graduate students to collaborate each summer. (Received February 24, 2015)