Taylor Short* (shorttm2@email.sc.edu), Craig Larson and Bethany Turner. Towards Vizing’s Independence Number Conjecture. Preliminary report.

The chromatic index $\chi'$ of a graph is the minimum number of colors needed to properly color its edges. A graph $G$ with maximum degree $\Delta$ is edge critical if $\chi'(G - e) = \Delta$ for every edge $e$. The independence number $\alpha$ of a graph is the cardinality of a largest set of vertices which are pairwise non-adjacent. For edge critical graphs with $n$ vertices, Vizing conjectured that $\alpha(G) \leq n/2$. For these graphs, Woodall has shown that $\alpha(G) \leq 3n/5$ and better results exist for specific values of $\Delta$. We discuss a new approach using the Independence Decomposition Theorem: namely that any graph can be decomposed into unique subgraphs having certain nice properties. (Received September 15, 2014)