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Mingfang Huang, Michael Santana* (santanmi@gvsu.edu) and **Gexin Yu**. *Strong edge-coloring graphs with maximum degree four*. Preliminary report.

A strong edge-coloring of a graph is a coloring of the edges such that each color class forms an induced matching. In 1985, Erdős and Nešetřil conjectured that every graph with maximum degree Δ has a strong edge-coloring using at most $\frac{5}{4}\Delta^2$ if Δ is even, and at most $\frac{5}{4}\Delta^2 - \frac{1}{2}\Delta + \frac{1}{4}$ if Δ is odd. While this conjecture has been the impetus for a great deal of work in strong edge-colorings, only one nontrivial case (for graphs of maximum degree three) has been verified, due to Anderson, and independently, Horák, Qing, and Trotter. In 2006, Cranston showed that 22 colors suffice for graphs with maximum degree four. In this talk, we will present our recent work that shows 21 colors suffice, extending this to multigraphs with maximum degree four. (Received February 05, 2017)