1035-05-1445 **Tao Jiang*** (`jiangt@muohio.edu`), Department of Mathematics and Statistics, Miami University, Oxford, OH 45056. *Properly colored cycles and Rainbow cycles in edge-colored graphs.* Preliminary report.

The general problem of interest here is: what kind of color patterns are forced to occur in every edge-coloring of some host graph satisfying certain constraints? This problem is motivated by the canonical ramsey theorem and the Turan problem. As in the Turan problem, general techniques often fail for cycles, leaving the case for cycles particularly intriguing.

We survey some recent results and problems on cycles. In particular, we present a proof of the following conjecture of Axenovich, Jiang,and Tuza: for every k there is a constant λ_k depending only on k such that for large n if the edges of K_n are colored such that at least λ_k different colors appear at each vertex then we can always find a properly colored cycle of length exactly k in this coloring. The value of λ_k given in the proof is large. It remains as an interesting problem to find better bounds on λ_k. (Received September 19, 2007)