1146-05-410 **Andrzej Czygrinow**, **Theodore Molla*** (molla@usf.edu), **Brendan Nagle** and **Roy Oursler**.
Rainbow cycles in edge-colored graphs with large minimum color degree. Preliminary report.

A subgraph of an edge-colored graph is called *rainbow* if its edges are assigned distinct colors. Let $t \geq 4$ be an even number and let $0 \leq r \leq 2$ be such that $t \equiv r \pmod 3$. The main focus of this talk will be a proof that every edge-colored graph G on n vertices contains a rainbow t-cycle if, for every vertex v, at least $(n+3+2r)/3$ different colors appear on the edges incident to v and n is sufficientl large. This condition is sharp when r is either 1 or 2. This is related to the work of Li and Li, Ning, Xu, & Zhang who proved a similar result for rainbow triangles.

There is a close connection between results of this type and similar results for oriented graphs. In fact, the arguments for our result on rainbow cycles serve as a basis for a proof of the following statement: For every $t \geq 4$ and for n sufficiently large, every oriented graph on n vertices with minimum out-degree at least $(n+1)/3$ contains a directed t-cycle. This is a partial strengthening of a theorem of Kelly, Kühn & Osthus, who proved that the statement is true when minimum out-degree is replaced by minimum semidegree. (Received January 28, 2019)