1071-20-279 **Murray Elder**, **Gillian Z. Elston** and **Gretchen Ostheimer***
(Gretchen.Ostheimer@hofstra.edu). *Groups with Logspace Normal Form.*

One natural measure of the complexity of a finitely generated group is the computational complexity of a normal form function for the group, as such a normal form enables us to perform all three basic group operations – equality testing, multiplication and inversion. Many researchers have attempted (and continue to attempt) to categorize groups according to the time complexity, the space complexity and other language-theoretic measures of complexity of these three basic operations. In this talk, we present work-in-progress toward an answer to the following question: in what kinds of groups can these three basic operations be performed with very limited memory space? More specifically, what kinds of groups have a normal form function that can be computed by a Turing machine in which the size of the work tape is bounded by the logarithm of the size of the input? (Received March 08, 2011)