1096-39-2571 **Talitha M. Washington*** (talitha.washington@howard.edu), Howard University, Department of Mathematics, Washington, DC 20059, and **Ronald E. Mickens** (rmickens@cau.edu), Clark Atlanta University, Department of Physics, Atlanta, GA 30314. *Nonstandard Finite Difference Discretizations of Population Models Satisfying Conservation Laws.*

In this talk, we consider the roles conservation laws can play in providing restrictions on the construction of finite difference discretizations of interacting population systems, modeled by coupled ordinary differential equations. Our analysis is formulated within the nonstandard finite difference (NSFD) methodology of Ronald Mickens. Using a number of well-known population models, we illustrate the details of our procedures by constructing appropriate NSFD discretizations. The relevance of these results to various issues associated with the numerical integration of the original population system differential equations is also presented, especially the role of positivity of the solutions. This is joint work with Ronald Mickens. (Received September 17, 2013)