

**Meeting:** 1006, Lubbock, Texas, SS 14A, Special Session on Undergraduate and Graduate Student Research (and Related Poster Session organized by Ali Khoujmane and Mara D. Neusal, Texas Tech)

1006-65-27            **Dobromir T Dimitrov\*** (dobri@uta.edu), The University of Texas at Arlington, Department of Mathematics, Box 19408, Arlington, TX 76019. *Nonstandard Numerical Methods with Applications to Predator-Prey Models.*

Positive and elementary stable nonstandard (PESN) finite-difference methods, having the same qualitative features as the corresponding continuous predator-prey models, are formulated and analyzed. The proposed numerical techniques are based on a nonlocal modeling of the growth-rate function and a nonstandard discretization of the time derivative. This approach leads to significant qualitative improvements in the behavior of the numerical solution. Applications of the PESN methods to a specific Rosenzweig-MacArthur predator-prey model are also presented. (Received January 07, 2005)