

Meeting: 1006, Lubbock, Texas, SS 10A, Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models

1006-92-198 **Azmy S. Ackleh*** (ackleh@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, and **Ben G. Fitzpatrick** and **Horst Thieme**.
Rate distribution and survival of the fittest: A formulation on the space of measures.

In this paper we address the basic mathematical properties of a general population model having distributed growth and mortality rates. The problem considered generalizes previous efforts in three ways. First, our model involves nonlinear growth and mortality terms. Second, the parameter space is assumed to be any compact subset of $(0, \infty) \times (0, \infty)$, and third, the solutions of the rate distribution model are constructed in spaces of measures. The latter point is particularly appropriate for the asymptotic behavior, in which survival of the fittest manifests itself as a Dirac delta measure being the attractor of the dynamical system. As opposed to our previous approaches to these problems, the measure space formulation allows the (weakly) stable equilibrium to be a point in the state space. (Received February 14, 2005)