

1067-91-1819 **John M Cleveland*** (jcleve72@gmail.com), PA , and **Azmy S Ackleh.** *Evolutionary Game Theory on Measure Spaces.*

This is part of a work attempting to find a unified theory for fully nonlinear evolutionary game theoretic models. Here we deal with asymptotic analysis. To study the long term behavior of replicator mutator dynamics, a dynamical system on the state space of finite signed Borel measures along with a certain notion of weak or "generalized" asymptotic limit are shown essential.

We show the population to be permanent and for pure replicator dynamics a Dirac mass centered on the fittest trait is a globally attracting equilibrium (Continuous Stable Strategy). For discrete strategy spaces pure replicator dynamics and small perturbations thereof also yield globally asymptotically stable equilibria. Biology, Economics, Network and Social Science, are all fruitful fields of application. (Received September 21, 2010)