

1014-93-936

**Jagdish Chandra** ([jchandra@gwu.edu](mailto:jchandra@gwu.edu)), Research Professor, Statistics Department, The George Washington University, Washington, DC 20052, and **G. S. Ladde\*** ([ladde@uta.edu](mailto:ladde@uta.edu)), Department of Mathematics, P.O. Box 19408, The University of Texas at Arlington, Arlington, TX 76019.

*Stability Analysis of Stochastic Multi-Agent Dynamic Systems*. Preliminary report.

Many complex interacting systems can be modelled as stochastic multi-agent systems. The dynamics of these agents is influenced both by deterministic as well as stochastic forces. We formulate dynamical equations that incorporate intra-agent (species) and inter-agent interactions affected both by the internal as well as the external random perturbations. We then utilize a Liapunov-like/energy function to investigate the stability of the steady-state of this multi-agent system. Our study provides an insight into the interaction patterns of collective behavior in such multi-agent systems. (Received September 26, 2005)