1035-60-1084   **G. S. Ladde*** (`gladde@cas.usf.edu`), Department of Mathematics and Statistics, University of South Florida, 4202 East Fowler Avenue, PHY 114, Tampa, FL 33620-5700. *Stochastic Systems: A Class of Hybrid Systems.* Preliminary report.

Many infrastructure systems such as power grids, transportation systems, financial market, and communication network can be modeled by stochastic hybrid dynamical systems. In this work, we investigate qualitative properties of such network-centric dynamical systems that might be subject to external random perturbations. By employing an extended variational comparison theorem based on Lyapunov-like/Energy functions and appropriate random differential and discrete time series inequalities, qualitative results are derived for a class of stochastic hybrid systems. (Received September 18, 2007)