

1077-93-325

**S. Sathananthan, N. Jordan Jameson\*** (njordan.jameson@gmail.com) and **M. J. Knap.**

*Hybrid Impulsive Control of Stochastic Systems with Multiplicative Noise under Markovian Switching.*

Motivated by Markovian Switching Rational Expectation Models (MSRE) in economics, a problem of state output feedback stabilization of discrete-time stochastic systems with multiplicative noise under Markovian switching is considered. Under some appropriate assumptions, the stabilization of this system under pure impulsive control is given. Further under impulsive control, the output feedback stabilization problem is investigated. The jump Markovian switching is modeled by a discrete-time Markov chain. The control input is simultaneously applied to both the rate vector and the diffusion term. Sufficient conditions based on linear matrix inequalities (LMI's) for stochastic stability is obtained. The robustness results of such stability concept against all admissible uncertainties are also investigated. The parameter uncertainties we consider here are norm bounded. An example is given to demonstrate the obtained results. (Received August 22, 2011)