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Zhixin Yang* (zhixin.yang@wayne.edu), 656 West Kirby FAB 1250, Detroit, MI 48201, **George Yin** (gyin@math.wayne.edu), 656 West Kirby FAB 1217, Detroit, MI 48201, and **Haibo Li** (lih08@mails.tsinghua.edu.cn), Tsinghua University, Beijing, 100084, Peoples Rep of China.
Stability of Numerical Methods for Jump Diffusions and Markovian Switching Jump Diffusions.

This work is devoted to stability analysis of numerical solutions to jump diffusions and jump diffusions with Markovian switching. Different from the existing treatments of Euler-Maurayama methods for solutions of stochastic differential equations, we use techniques from stochastic approximation. We analyze the almost sure exponential stability and exponential p -stability. The benchmark test model in numerical solutions, namely, one-dimensional linear scalar jump diffusion is examined first and easily verifiable conditions are presented. Then Markovian regime-switching jump diffusions are dealt with. Moreover, analysis on stability of numerical methods for linearizable and multi-dimensional jump diffusions is carried out. (Received August 09, 2013)