

A Theorem on Asymptotic Stability of Solutions to Nonlinear Stochastic Difference Equations with Volterra Type Noises

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ABSTRACT: A general theorem on global a.s. asymptotic stability of solutions to some nonlinear stochastic difference equations in \mathbb{R}^1 with in-the-arithmetic-mean-sense monotone terms as main part of its drift and Volterra type dependence of its diffusion terms is presented as a certain application of convergence theorems for semimartingale inequalities to the decomposition of appropriate Lyapunov-Krasovskii functionals.

Key words. Stochastic difference equation of Volterra type; global asymptotic stability; almost sure stability

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