Almost Sure Stability of Some Stochastic Dynamical Systems With Memory

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ABSTRACT: Almost sure asymptotic stability of stochastic difference and differential equations with nonanticipating memory terms is studied in $\mathbb{R}^1$. Sufficient criteria are obtained with help of Lyapunov-Krasovskiĭ-type functionals, martingale decomposition and semimartingale convergence theorems.

Key words and phrases. Almost sure stability, stochastic systems, stochastic differential equations, stochastic difference equations, systems with memory, asymptotic behavior.