

Stochastic Equations with Correlated Noise and Their Applications

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Abstract Properties of stochastic differential equations with jumps are studied. Lyapunov-type methods are derived to assess long-time behavior of solutions and general results are applied in specific cases. In the first case, conditions in terms of the geometric properties of the coefficients for stability in terms of boundedness in probability in the mean are obtained. By means of Krylov Bogolyubov Theorem criterion for existence of invariant measures is given subsequently. In the second case, the long-time behavior refers to existence of an almost sure single-point limit not depending on the initial condition. This result is then applied to get a continuous-time Robbins-Monro type stochastic approximation procedure for finding roots of a given function.