

PROBLEM OF OPTIMALITY FOR SINGULAR STOCHASTIC CONTROL SYSTEMS

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This paper is devoted to the optimal control problem of stochastic switching systems. Switching systems form the special class of hybrid systems and have the benefit for description of process with continuous dynamics. The first order necessary condition of optimality is a powerful tool for the study of optimal control problem, but is not always effective. For example, when the solution of adjoint equation is identically zero or the maximum principle is trivial, classified as singular cases, to investigate the corresponding optimal control problem is required additional information. The stochastic optimal control problem of switching system along singular controls is considered. The concept of singularity in maximum principle sense for stochastic switching systems is introduced. Second order necessary optimality condition for above mentioned systems with uncontrolled diffusion coefficients and with the right side restrictions in the form of inclusion is proved. The switching points are obtained. Finally, the transversality conditions for switching law are established.

STOCHASTIC OPTIMAL CONTROL PROBLEM FOR LINEAR SWITCHING SYSTEMS WITH VARIABLE DELAY

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In this paper the stochastic optimal control problem of linear switching systems with variable delay is investigated. A necessary and sufficient condition of optimality for stochastic linear quadratic control problem is obtained. Linear quadratic controller is determined by means of stochastic Riccati equations.