THE ABSOLUTE STABILITY OF STOCHASTIC CONTROL SYSTEM WITH MARKOVIAN SWITCHING

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Abstract. This paper investigates the absolute stability of stochastic control systems with Markovian switching. At first, we give the definition of stochastic absolute stability for the stochastic control system with Markovian switching. Then we study the stochastic absolute stability under different hypotheses, some sufficient conditions are provided. These conditions are algebraic criteria which are easy to check, and a concise approach named M-method is introduced to compute them. Our results show that the stochastic switched system can be stochastically absolutely stable even if the subsystems are unstable. At last, some examples are given to illustrate our results.

Keywords: Absolute stability; Stochastic control systems; Stochastic differential equations; Markovian switching

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