ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

17. Control Theory and Optimization

1991 MS Classification: 49, 60

Katz Isaak Ya., Ural State Academy of Railway Transport, Russia

Optimal stabilization of linear controllable systems with random structure

A linear-quadric problem of optimal stabilization for the dynamic system with random structure: $dx = A(y(t))xdt + B(y(t))u + \sigma(y(t))xdw(t)$.
is considered. Here x is n-dimensional phase vector, $y(t)$ is pure discontinuous Markov stochastic process with, $w(t)$ is a standart Winer process $u = u(x,y)$ is m-dimensional control. It is supposed that the condition on phase vector: $p\{x(\tau+o) \in (z, z+dz)|x(\tau-o) = x\} = q(z,x)dz + o(dz)$ holds in random moments τ of a change of piecewise constant realization $y(t)$, where $p\{.|.\}$ conditional probability. The problem is to obtain control $u = u(x,y)$ provided asymptotic mean square stability of the system and minimizing the quality functional. The sufficient conditions of the stabilizing controls existence are studied, constructive methods for solving problem are proposed. The problem with incompete information is discussed.