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AN ITERATIVE METHOD FOR AN EQUILIBRIUM POINT OF LINEAR QUADRATIC STOCHASTIC DIFFERENTIAL GAMES WITH STATE AND CONTROL-DEPENDENT NOISE*

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Abstract

We study a numerical algorithm for solving the coupled stochastic algebraic Riccati equations arising in the infinite time horizon nonzero-sum linear quadratic (LQ) differential games of stochastic systems. We construct a matrix sequence, which converges to the solution of the considered coupled stochastic algebraic Riccati equations and defines the Nash equilibrium point, which solves a stochastic control problem with state, control and external disturbance-dependent noise. Computer realizations of the introduced methods are numerically compared via Python.

MSC: 91A25, 15A24, 60H35

keywords: Stochastic H_2/H_∞, differential games, Nash equilibrium, stochastic Riccati equation.

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