

论文与报告

线性离散系统的鲁棒约束方差控制--含结构参数扰动的情形

王子栋, 郭治

南京理工大学11系, 南京; 南京理工大学10系, 南京

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摘要

研究一类性能鲁棒控制器的设计问题, 即针对含结构参数扰动的线性离散随机系统, 设计反馈控制器, 使闭环系统不仅渐近稳定, 而且其每个状态分量的稳态方差不大于各自预先给定的上界. 基于一个修正的代数 Riccati 方程, 给出了上述性能鲁棒控制器的存在条件及解析表达式, 并举出相应的数值例子, 以说明本文设计方法的简单性与直接性.

关键词 [线性离散系统](#) [参数扰动](#) [鲁棒控制](#)

分类号

Robust Constrained Variance Control for Linear Discrete Systems With Structured Parameter Perturbations

Wang Zidong, Guo Zhi

The 11th Dept., Nanjing Univ. of Sci. Tech., Nanjing; The 10th Dept., Nanjing Univ. of Sci. Tech., Nanjing

Abstract

In this paper the problem of designing a class of performance robust controllers is considered. The purpose of the addressed problem is to design feedback controllers, or the linear discrete stochastic systems with structured parameter perturbations, such that the closed-loop system is stable and the steady-state variance of each state is not greater than the prespecified upper bound, simultaneously. Based on a modified algebraic Riccati equation, this paper provides the conditions for the existence of the previous performance robust controllers. The explicit expression of the controller is also presented. A numerical example illustrates the simplicity and directness of the present design method.

Key words [Linear discrete systems](#) [parameter perturbations](#) [robust control](#)

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通讯作者

作者个人主页 王子栋; 郭治

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