

短文

区间变时滞不确定线性系统带记忆 H_∞ 状态反馈控制

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收稿日期 2006-12-13 修回日期 2007-4-7 网络版发布日期 接受日期

摘要

一类存在范数有界不确定性的线性时变时滞系统, 其时变时滞仅给出时滞变化的上下界, 而对时滞变化率未作任何约束. 对于这类区间时变时滞系统, 给出了一种新型的 Lyapunov-Krasovskii 泛函讨论其稳定性, 通过分割平均时滞的方法减小保守性, 得到以线性矩阵不等式(LMI)形式给出的稳定性判据. 最后分析并给出了一种带记忆的 H_∞ 状态反馈控制器. 数值实例表明了本文方法的有效性.

关键词 [区间时变时滞](#) [时滞系统](#) [线性矩阵不等式\(LMI\)](#) [带记忆 \$H_\infty\$ 状态反馈控制](#)

分类号 [TP13](#)

H_∞ State Feedback Control with Memory for Uncertain Linear Systems with Interval Time-varying Delay

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Abstract

A new type of Lyapunov-Krasovskii functional based on fractioning the average delay approach is presented to analyze the stability of a class of linear systems with norm-bounded uncertainty and interval time-varying delay which belongs to a given interval and has no restriction on the delay-derivative. The delay-dependent conditions are proposed in terms of linear matrix inequality (LMI) and the conservatism is reduced through our delay fractioning method. Then the H_∞ state feedback controller with memory is presented through analyzing the stability of the closed-loop system. Numerical examples are also given to illustrate the effectiveness of the proposed method.

Key words [Interval time-varying delay](#) [time delay systems](#) [LMI](#) [\$H_\infty\$ state feedback control with memory](#)

DOI: 10.1360/aas-007-1211

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