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长论文

广义不确定周期时变系统的鲁棒稳定性分析

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摘要
研究广义不确定周期时变系统的鲁棒稳定性问题.基于广义周期时变系统Lyapunov不等式,提出了广义不确定周期时变系统鲁棒稳定的概念,采用矩阵不等式(LMI)方法,得到了该类系统鲁棒稳定的充分必要条件;然后,进一步研究了在状态反馈控制下保证闭环系统鲁棒稳定的条件,给出了一族状态反馈鲁棒稳定器的设计方法;最后,引入了广义周期时变系统二次稳定的概念,并讨论了二次稳定性与鲁棒稳定性之间的关系.

关键词 广义不确定周期时变系统 鲁棒稳定性 矩阵不等式 状态反馈鲁棒控制器 二次稳定性
分类号

Analysis of Robust Stability for Linear Time-varying Uncertain Periodic Descriptor Systems

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Abstract
In this paper, the problems of robust stability for linear time-varying uncertain periodic descriptor systems are treated. Based on the results of Lyapunov inequality of linear time-varying periodic descriptor systems, the definition of robust stability is put forward, and by using linear matrix inequalities, a necessary and sufficient condition is obtained for the systems to be robustly stable. Then, the condition that the close-loop system under state feedback control is robustly stable is considered and a kind of state feedback robust controllers is presented. Finally, the definition of quadratic stability is introduced, and the relation between quadratic stability and robust stability of the systems is discussed.

Key words Linear time-varying uncertain periodic descriptor systems robust stability linear matrix inequalities state feedback robust controllers quadratic stability
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