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论文

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不确定线性系统的鲁棒容错控制设计

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ROBUST FAULT-TOLERANT CONTROL AND DESIGN FOR UNCERTAIN LINEAR SYSTEMS

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摘要 研究含结构参数扰动的不确定线性系统的鲁棒容错控制问题,即设计反馈控制器,使闭环系统对可允的参数扰动具有鲁棒性,同时对执行器或传感器失效具有完整性。基于修正的代数矩阵方程,给出了期望的鲁棒容错控制器的存在条件及其显式表示,并以设计实例说明文中设计方法的直接性与简单性

关键词: 线性系统 鲁棒控制 完整性 容错

Abstract: The problem of robust fault-tolerant control for uncertain linear systems with structured parameter perturbation is studied. The purpose is to design the feedback controllers such that the closed-loop systems possess robustness for the case of parameter perturbations, and possess integrity for the case of actuator or sensor failures. Based on a modified algebra matrix equation, this paper provides the conditions for the existence of the desired robust fault-tolerant controllers. An explicit expression of the desired controllers is also presented. A design example is used to demonstrate the directness and simplicity of the present design method.

Keywords: linear systems robustness integrity fault-tolerance

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