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论文与报告

多变量系统敏感性及鲁棒性综合最优的H∞解耦设计方法

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摘要
本文利用H∞设计理论提出了一种多变量系统敏感性及鲁棒性综合最优的解耦设计方法, 证明了单变量系统所能达到的最优敏感性及鲁棒性指标值仅由被控对象右半平面的零极点决定, 而与左半平面的零极点无关. 另外, 本文对谱分解及模型匹配问题的求解算法作了改进, 给出了一个算例.

关键词 H∞设计理论 敏感性及鲁棒性 多变量控制系统

分类号

A H∞ Decoupling Method for Designing Controllers with Optimal Sensitivity and Robustness for MIMO Systems

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Abstract
A decoupling design method is proposed by using H∞ optimal design theory to obtain controllers that have both optimal sensitivity and rubustness for MIMO systems. It is proved in the paper that the optimal performance of the sensitivity and robustness of a SISO plant is only determined by its right half plane poles and zeros, which is essential to the effectiveness of the decoupling method. An algorithm for solving spectrum decomposition and model matching problems is improved and used in the iteration process of the decoupling method. Finally an example is discussed to illustrate the usage of the method.

Key words H∞ design theory sensitivity and robustness MIMO systems

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