自动化学报 1998 24 (01): 37-43 ISSN: 0254-4156 CN: 11-2109/TP

论文与报告

电子换向电机伺服系统的二自由度H∞优化鲁棒控制

卢子广,王维亚

广西大学电气工程系,南宁

收稿日期 1995-6-6 修回日期 网络版发布日期 接受日期

摘要
应用Youla二自由度控制器设计参数化公式,对电子换向电机伺服系统导出了基于一自由度控制设计的二自由度H∞控制器结构,该结构用Kwkernaak多项式H∞优化设计方法获希望的跟踪特性,用Zames的模型参考变换近似逆概念对扰动进行最佳抑制,并对负载扰动和参数变化的敏感性进行分析.实验结果表明系统具有良好的跟踪特性和抗扰性.

关键词 伺服系统 二自由度控制 H∞设计 鲁棒控制

分类号

H∞ Optimal Robust Control of Electronically Commutated Motor Servo System Using Two-Degrees-of-Freedom Controller Desigh

Lu Ziguang,Wang Weiya

Department of Electrical Engineering,Guangxi University,Nanning

Abstract
By using Youla parametrization of two-degrees-of-freedom controller design, an H∞ optimal robust controller is proposed for electronically commutated motor servo system based on one-degree-of-freedom controller design. The expected tracking performance is obtained by using Kwakernaakrs polynomial H∞ optimal design method. The optimal rejection of disturbances is obtained by using Zamesr model reference transformation approximate inverse concept. The sensitivity to load disturbance and parameters variation are analysed. The experimental results demonstrate its excellent tracking and disturbance suppression performance.

Key words Servo system two-degrees-of-freedom controller H∞ design robust control

DOI:

通讯作者

作者个人主页 卢子广;王维亚