

论文与报告

具有单调性非线性项的非线性系统降维观测器设计

朱芳来, 丁宣浩

1. Institute of Mathematics and Statistics, Chongqing Technology & Business University, Chongqing 400067, P.R.China

2. College of Electronics and Information Engineering, Tongji University, Shanghai 200092, P.R.China

收稿日期 2006-8-29 修回日期 2007-2-5 网络版发布日期 接受日期

摘要

Based on the discussion about the existence and design method of full-order observer for systems with monotone nonlinearities, a reduced-order observer design method is developed under the assumption that a linear matrix inequality (LMI) has positive definite matrix solution and the reduced-order observer gain matrix is computed by the solution of LMI. By a linear transformation, a reduced-order observer which does not contain the information of the derivative of the system output is provided. A model is simulated and some conclusions are drawn based on the comparison of the results of reduced-order observer to that of full-order observer. The simulation shows that the design method developed by this paper has good performance.

关键词 [Linear matrix inequality \(LMI\)](#) [monotone nonlinearities](#) [full-order observer](#) [reduced-order observer](#)

分类号

The Design of Reduced-order Observer for Systems with Monotone Nonlinearities

ZHU Fang-Lai, DING Xuan-Hao

1. Institute of Mathematics and Statistics, Chongqing Technology & Business University, Chongqing 400067, P.R.China

2. College of Electronics and Information Engineering, Tongji University, Shanghai 200092, P.R.China

Abstract

Based on the discussion about the existence and design method of full-order observer for systems with monotone nonlinearities, a reduced-order observer design method is developed under the assumption that a linear matrix inequality (LMI) has positive definite matrix solution and the reduced-order observer gain matrix is computed by the solution of LMI. By a linear transformation, a reduced-order observer which does not contain the information of the derivative of the system output is provided. A model is simulated and some conclusions are drawn based on the comparison of the results of reduced-order observer to that of full-order observer. The simulation shows that the design method developed by this paper has good performance.

Key words [Linear matrix inequality \(LMI\)](#) [monotone nonlinearities](#) [full-order observer](#) [reduced-order observer](#)

DOI: 10.1360/aas-007-1290

通讯作者 朱芳来 flzhu816@quet.edu.cn

作者个人主页 朱芳来; 丁宣浩

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF \(558KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献\[PDF\]](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“Linear matrix inequality \(LMI\)”的 相关文章](#)

▶ [本文作者相关文章](#)

· [朱芳来](#)

· [丁宣浩](#)