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短文

一类不确定非线性系统鲁棒自适应观测器设计的新方法

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摘要
针对一类非匹配时变不确定非线性系统设计了一种新的鲁棒自适应观测器. 首先利用几何方法将系统转化为观测器类似的标准型, 然后在观测器中引入待定补偿项, 使得补偿误差同状态估计误差间传递函数是严格正实的, 从而取消了已有结果对未知非线性动态的 Lipschitz和匹配条件等的不合理限制.

关键词 非线性系统 非匹配时变不确定 鲁棒自适应观测器 严格正实性

分类号

A Novel Approach of Robust Adaptive Observer for a Class of Nonlinear Uncertain Systems

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Abstract
A novel robust adaptive observer is designed for a class of nonlinear systems with mismatch time-varying uncertainties. First, the systems are transformed into observer-like canonical form by geometric methods. Secondly, the compensated term is introduced in the observer, which makes the transfer function between compensated errors and estimated error strictly positive real. As the design and the theoretical analysis are unified, unreasonable limitations to nonlinear dynamics, such as matching and Lipschitz conditions, are removed.

Key words Nonlinear system mismatched time-varying uncertainty robust adaptive observer strictly positive real property

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