短文

# 考虑摩擦力影响精密伺服系统的鲁棒自适应控制

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摘要
针对具有摩擦力扰动的精密伺服系统提出了一种鲁棒自适应控制方法. 首先, 对基于 bristle模型的动态摩擦力模型进行了线性参数化,该线性参数化过程包含了对stribeck效应的线性参数化处理;然后,基于构造的Lyapunov函数设计全局渐近稳定自适应控制律,并对闭环系统的跟踪性能进行了严格的理论分析. 仿真实验验证了算法的有效性.

关键词   摩擦力   伺服系统   鲁棒自适应控制   Lyapunov函数

分类号   TP273

## Robust Adaptive Control for High-Precision Servo-System in the Presence of Friction Effects

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Abstract
In this paper, a robust adaptive controller is proposed for high precision servo system with friction. The dynamic friction model based on the bristle friction model is first linearized and parameterized, which includes linearization and parameterization of stribeck effect; then, a global asymptotic stable adaptive control law is derived based on constructed Lyapunov function, and strict theoretical analysis is carried out for tracking performance of closed-loop system. Simulation proves the effectiveness of the proposed algorithm.

Key words   Friction   servo-system   robust adaptive control   Lyapunov function

DOI :

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