[2007-0825]强跟踪延迟滤波算法及其在感应电机无速度传感器控制中的应用

陆可, 肖建

摘要

在强跟踪滤波(Strong Track Filter, STF)算法和延迟Kalman滤波(Schmidt Extended Kalman Filter, SEKF)算法的基础上，提出了强跟踪延迟滤波(Strong Track Schmidt Filter, STSF)算法，结合感应电机降阶模型建立了电机状态估计算法，将其应用于感应电机无速度传感器控制系统中，并与EKF、SEKF和STF三种算法的状态估计性能作比较. 仿真和实验结果表明，STSF算法在估计精度、跟踪速度、抑止噪声等方面均优于EKF算法，并且计算复杂度显著降低，能有效在线估计电机转速和磁链.

关键词　　感应电机,无速度传感器控制, 降阶模型, 卡尔曼滤波器, 强跟踪滤波器

分类号

Strong Track Schmidt Filter and Its Application to Speed Sensorless Control of Induction Motor

LU Ke, XIAO Jian

Abstract

Based on Strong Track Filter (STF) and Schmidt Extended Kalman Filter (SEKF), a Strong Track Schmidt Filter (STSF) is proposed. By using the reduced-order model of induction motor, a state estimation algorithm is established and is applied to speed sensorless control system of induction motor. Comparison has been made between the results of EKF, SEKF, STF algorithms about the motor state estimation performance. Simulation and experiment results show that STSF is better than EKF on the estimating accuracy, tracking speed, restraining noise, and moreover, the computational complexity is also largely decreased. It proves that STSF algorithm can carry the task of motor speed and flux estimation in real time.

Key words　　Induction motor　speed sensorless control　reduced-order model　kalman filter　strong track filter

DOI：

通讯作者

作者个人主页　　陆可; 肖建

扩展功能

本文信息

▸ Supporting info
▸ PDF(679KB)
▸ [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"感应电机, 无速度传感器控制, 降阶模型, 卡尔曼滤波器, 强跟踪滤波器"的 相关文章

▸本文作者相关文章

· 陆可
· 肖建