

短文

## 自适应UKF算法在目标跟踪中的应用

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### 摘要

针对目标跟踪中系统噪声统计特性未知导致滤波发散或者滤波精度不高的问题, 提出了一种自适应无迹卡尔曼滤波(Unscented Kalman filter, UKF)算法. 该算法在滤波过程中, 利用改进的Sage-Husa估计器在线估计未知系统噪声的统计特性, 并对滤波发散的情况进行判断和抑制, 有效提高了滤波的数值稳定性, 减小了状态估计误差. 仿真实验结果表明, 与标准UKF算法相比, 自适应UKF算法明显改善了目标跟踪的精度和稳定性.

**关键词** [目标跟踪](#) [自适应滤波](#) [无迹卡尔曼滤波](#)

分类号

## Adaptive UKF Method with Applications to Target Tracking

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### Abstract

To improve low filtering precision and divergence caused by unknown system noise statistics in target tracking, an adaptive UKF (Unscented Kalman filter) is proposed. In the filtering process, by introducing the modified Sage-Husa noise statistic estimator, the new algorithm can estimate the statistical parameters of unknown system noises online and restrain the filtering divergence. Therefore, the filter numerical stability is effectively improved and the state estimation error is reduced. Simulation results show that compared with the standard UKF algorithm the proposed algorithm provides better accuracy and stability for target tracking.

**Key words** [Target tracking](#) [adaptive filtering](#) [unscented Kalman filter \(UKF\)](#)

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