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A SIMPLE UNSCENTED KALMAN FILTER FOR ATTITUDE QUATERNIONS

Abstract

The theory for a novel Unscented Kalman Filter (UKF) is presented for processing attitude quaternions. The UKF formulation involves generating and using sigma points using the traditional small-angle approximations for attitude errors. The algorithm is evaluated using simulated spacecraft data. Aspects of this approach such as convergence and robustness are compared with earlier UKFs for attitude quaternions which used a more complicated approach.