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## 基于双捷联算法的POS误差在线标定方法

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### Online Calibration of POS Error Based on Double Strapdown Algorithm

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摘要

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**摘要** 为了提升位置和姿态测量系统(POS)的精度,结合POS工作过程中典型的匀速直线运动,提出了一种准实时的POS误差在线标定方法。首先设计了基于双捷联算法的在线标定方案,对系统误差方程进行简化处理,求出中时期导航条件下的系统误差状态转移阵。然后根据POS的两段相邻匀速直线运动导航误差,对系统误差参数进行在线标定,并通过可观测性分析得出POS运动与系统误差在线标定效果之间的对应关系。车载试验和飞行试验结果表明,在POS正常遥感作业过程中,本文提出的在线标定方法能够有效提升系统精度。

**关键词:** 航空遥感 位置和姿态测量系统 在线标定 误差模型 可观测性 双捷联算法

**Abstract:** In order to improve the performance of position and orientation system (POS), a new online calibration method is proposed based on the typical uniform rectilinear motion of POS. First, an online calibration scheme based on double strapdown algorithm is designed, and the simplified system error model is introduced. Then the system error state transfer matrix is derived under medium term navigation conditions. Subsequently, online calibration of system error parameters is carried out according to the neighborhood uniform rectilinear motion navigation error of POS, and through the observability analysis of system error states, the corresponding relationship between POS motion and online calibration precision is established. Vehicle test and flight test results show that the new online calibration method proposed in this paper can effectively improve system accuracy during the normal remote sensing task of POS.

**Keywords:** airborne remote sensing position and orientation system online calibration error model observability double strapdown algorithm

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