

A Short-Baseline Dual-Antenna BDS/MEMS-IMU Integrated Navigation System

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Abstract : This paper puts forward a short-baseline dual-antenna BDS/MEMS-IMU integrated navigation, constructs the carrier phase double difference model of BDS (BeiDou Navigation Satellite System), and presents a 2-position initial orientation method on BDS. The Extended Kalman-filter has been introduced for the integrated navigation system. The differences between MEMS-IMU and BDS position, velocity and carrier phase indications are used as measurements. To show the performance of the short-baseline dual-antenna BDS/MEMS-IMU integrated navigation system, the experiment results show that the position error is less than 1m, the pitch angle error and roll angle error are less than 0.1° , and the heading angle error is about 1° .

Keywords : MEMS-IMU (Micro-Electro-Mechanical System Inertial Measurement Unit), BDS (BeiDou Navigation Satellite System), dual-antenna, integrated navigation

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