

三轴加速度传感器安装误差标定方法研究

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摘要:

针对三轴加速度传感器在车辆行驶状态测量方面的应用, 研究了三轴加速度传感器在车辆上的安装误差问题, 提出了一种通过数学解算模型对安装误差进行标定的方法。标定过程无需借助其他测量仪器, 只需要使用安装后的传感器进行多次测量, 通过数学模型解算这组测量数据即可实现安装误差的测量与标定。通过实验验证, 此方法方便高效, 标定误差小于 $\pm 3\%$ 。

关键词: 加速度传感器; 误差标定; 欧拉定理; 车辆姿态

Research on calibration method for the installation error of three-axis acceleration sensor

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Abstract:

For the important role of three-axis acceleration sensor in the vehicle state measurement, this paper studies the installation error when the acceleration sensor installed in the vehicle. A calibration method based on a mathematical model is proposed. Without any other measuring instruments, the calibration process can be completed by the model calculating several measurement data from the fixed sensor. Experiments result proves the validity of this method, and the calibration error is less than 3%.

Keywords: acceleration sensor; error calibration; Euler theorem; vehicle attitude

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