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环形激光陀螺误差测试及估计

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ERROR TESTING AND ESTIMATING OF RING LASER GYRO

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摘要

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摘要 在引进 L-1型环形激光陀螺(Ring Laser Gyro,RLG)的基础上,对 RLG的各项误差,包括零偏、标度因数等的测试和估计进行了实验研究。对比研究了两种随机游走系数的计算方法;根据高低温环境测试数据,建立了零偏温度模型并进行了补偿;在国内首次采用 Allan方差技术对 RLG的各误差成分进行了分离和估计,实验证明 Allan方差法为一种评估 RLG性能的有效方法

关键词: 环形激光陀螺 误差模型 Allan方差

Abstract: On the basis of the L 1 ring laser gyro (RLG), the test and estimation of RLG's errors, including bias, scalefactor, etc., are studied experimentally in this paper. Two kinds of algorithms are compared and analyzed to calculate the random walk coefficient of RLG. According to the data derived from the environmental temperature test, a temperature model of RLG is established and the compensation is also performed. For the first time in China, the Allan variance technique is applied to separate and estimate RLG's errors, which is experimentally proved to be an effective method to evaluate the RLG's performance.

Keywords: ring laser gyro (RLG) error model Allan variance

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