[1]王玲玲,富立,陶韬,等.信息融合在捷联航姿系统中的应用[J].弹箭与制导学报,2009,6:6.
WANG Lingling,FU Li,TAO Tao,et al.Application of Information Fusion Technique on Strap down AHRS[J].,2009,6:6.

信息融合在捷联航姿系统中的应用(PDF)

《弹箭与制导学报》[ISSN:1673-9728/CN:61-1234/TJ] 期数: 2009年第6期 页码: 6 栏目: 导弹与制导技术 出版日期: 2009-12-25

Title: Application of Information Fusion Technique on Strap down AHRS

作者: 王玲玲1; 富立1; 陶韬2; 胡永胜2
1 北京航空航天大学自动化科学与电气工程学院，北京100191； 2 北京青云航空仪表有限公司，北京100086

Author(s): WANG Lingling1; FU Li1; TAO Tao2; HU Yongsheng2
1 School of Automation Science and Electrical Engineering, BUAA, Beijing 100191,China; 2 Beijing Keeven Aviation Instrument Co.Ltd, Beijing 100086, China

关键词: 捷联航姿系统; 信息融合; IMU; 磁罗盘

Keywords: attitude heading reference system; information fusion; IMU; compass

分类号: V249 322

DOI: -

文献标识码: A

摘要: 在捷联式航姿系统的软件算法设计过程中，为了减小航姿解算过程中因陀螺漂移等因素造成的随时间推移而积累的姿态误差，采用了基于磁罗盘、加速度计和速率陀螺三种传感器的信息融合技术，从而实现了对姿态积累误差的不定时修正。对基于该融合算法的捷联航姿系统进行了多次静态试验和跑车试验，并以国外某型高精度光纤/GPS组合系统为基准进行了精度考核，试验结果表明设计的航姿系统动态姿态精度为±1 0°，从而验证了融合算法的有效性。

Abstract: In order to minimum the attitude error caused by gyroscope drift during heading attitude calculating process, the information fusion technique based on compass, accelerators and rate gyroscopes was adopted during strapdown AHRS design to correct attitude error. Many driving and static tests, during which the foreign FOG /GPS integrated system is used as a reference, indicate the validity of the fusion algorithm, and the attitude dynamic accuracy of AHRS achieves ±1.0 degree with the data fusion technique.

导航/NAVIGATE
本期目录/Table of Contents
下一篇/Next Article
上一篇/Previous Article

工具/TOOLS
引用本文的文章/References
下载 PDF/Download PDF(107KB)
立即打印本文/Print Now

参考文献/REFERENCES

[1]Jau Hsiung Wang and Yang Gao. Multi sensor data fusion for land vehicle attitude estimation using a fuzzy expert system[J]. Data Science Journal, 2005, 4: 127-139.
[2]Young Soo Suh. Attitude estimation using low cost accelerometer and gyroscope[C]// Proceedings of the 7th Korea Russia International Symposium, KORUS 2003.
[3]George Michalareas. Spacecraft attitude estimation based on magnetometer measurements and the covariance intersection algorithm[C]// IEEE Aerospace Conference Proceedings, 2002: 2205-2219.
[4]Miller R B. A new strap down attitude algorithm[J]. Journal of Guidance, Control, and Dynamics,1983, 6(4): 287-291.
[5]Demoz Gebre Egziabher, Roger C Hayward, J David Powell. Design of multi sensor attitude determination system[J].

IEEE Transactions on Aerospace and Electronic Systems, 2004, 40(2): 627-649.
[6]陈哲. 捷联导航系统原理[M]. 北京：宇航出版社，1986.
[7]张谦，裴海龙，罗沛，等. 一种捷联姿态航向参考系统信息融合算法应用[J]. 计算机工程与应用，2007,43(15):230-233.
[8]以光衢. 惯性导航原理[M]. 北京： 航空工业出版社，1987.

备注/Memo: 收稿日期：2008-12-22 基金项目：北京航空航天大学教改立项课题（400375）资助作者简介：王玲玲（1981-），女，山东潍坊人，助理实验师，硕士，研究方向：惯性导航、组合导航及实验技术与建模。