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Title: Algorithm Research on Independent Alignment of Aircraft Carrier's SINS

作者: [袁 涛](#); [曲志刚](#); [徐景硕](#); [刘美洁](#)
海军航空工程学院青岛校区,山东青岛 266041

Author(s): [YUAN Tao](#); [QU Zhigang](#); [XU Jingshuo](#); [LIU Meijie](#)
Qingdao Branch of Naval Aeronautical and Astronautical University,Shandong
Qingdao 266041,China

关键词: [舰载机](#); [自主对准](#); [算法流程](#); [重力加速度](#); [航空母舰](#)

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摘要: 随着我海军现代化进程的不断发 展,舰载武器倍受关注,但风浪等因素影响产生的航母摇摆晃动,会给舰载机捷联惯性导航系统的初始对准带来困难。但考虑到惯性空间中航母摇摆晃动所产生的干扰加速度一般为谐波形式且幅值也小于重力加速度幅值,因此通过平滑处理后仍能从加速度计的输 出中提取可用的重力加速度矢量信息,根据这一思路,文中给出了基于重力加速度积分矢量的解析自主粗对准和自主精对准的算法流程。理论分析和仿真结果表明,该运动基座上捷联惯导自对准方法能有效解决舰船系泊状态下舰载机的初始对准问题。

Abstract: With the development of China's army modernization, the aircraft carrier weapon has been fielded as a strategic weapon. Because of the wave, the sea breeze effect causes the carrier deck swing and sway. This brings difficulty to carrier aircraft inertial navigation system SINS initial alignment. To solve this problem, it was inferred that aircraft carrier rocking shaking produced by the interference of acceleration in inertial space is the harmonic form and generally smaller than the acceleration due to gravity amplitude. So the gravity information can be got from output of acceleration after smoothing, and the process of acceleration due to gravity point's vector of analytic coarse alignment and fine alignment algorithm was put forward. Theoretical analysis and simulation results show that the moving base SINS alignment method can effectively solve the initial alignment of the aircraft carrier in the state of the ship mooring.

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- [1] 王司,邓正隆.惯导系统动基座传递对准技术综述[J].中国惯性技术学报,2003,11(2):61-67.
- [2] 秦永元,严恭敏,顾冬晴,等.摇摆基座上基于信息的捷联惯导粗对准研究[J].西北工业大学学报,2005,23(5):681-684.
- [3] 赵长山,秦永元,白亮.基于双矢量定姿的摇摆基座粗对准算法分析与实验[J].中国惯性技术学报,2009,17(4):436-440.
- [4] Napolitano F, Gaiffe T, Cottreau Y, et al. PHINS: the first high performances inertial navigation system based on fiber optic gyroscopes[C]//9th Saint Petersburg International Conference on Integrated Navigation Systems, 2002:296-304.
- [5] 郭所凤,申功璋,吴成富,等.先进飞机控制系统[M].北京:国防工业出版社,2003.
- [6] 施红兵.不变性理论在稳定性罗经中的应用研究[D].上海:上海交通大学,1994.
- [7] 秦永元,朱新颖.舰载机捷联惯导自对准方案设计与仿真[J].中国惯性技术学报,2008,16(1):28-33.
- [8] 袁涛,李四海.病态理论在捷联惯导粗对准中的应用[J].兵工自动化,2011,30(10):27-29.

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