点击复制

工具/TOOLS

引用本文的文章/References

下载 PDF/Download PDF(160KB)

立即打印本文/Print Now

导弹发射车SINS/GNS定位定向技术(PDF)

Title: SINS/GNS Positioning and Orientation for Missile Launching Vehicle

作者：　黄巍; 王跃钢; 沈琰; 徐洪涛

第二炮兵工程学院，西安710025

Author(s):　HUANG Wei; WANG Yuegang; SHEN Yan; XU Hongtao

The Second Artillery Engineering College, Xi' an 710025,China

摘要：　针对导弹发射车对导航系统的全自主性及精度的特殊要求，提出将地磁匹配定位定向系统与惯性导航系统进行组合。地磁匹配过程中采用了基于 Hausdorff 距离的相似算法。基于U卡尔曼滤波算法，对SINS/GNS全自主定位定向组合系统与捷联惯导系统单独定位定向在同一条件下的误差情况进行了对比仿真。仿真结果表明，装有地磁匹配惯导系统的导弹发射车定位定向的精确度有了明显提高，滤波收敛性较好。

Abstract:　Focused on the special requirements for independence and precision of navigation system in missile launching vehicle, the navigation program which matches inertial guidance system with geomagnetic matching positioning and orientation system was put forward. The similar algorithm based on Hausdorff range was adopted in the geomagnetic matching process. The SINS/GNS independent positioning and orientation system was designed under the same condition, the two different errors (SINS/GNS and SINS) were compared and simulated based on the UKF. The simulation result shows that the positioning and orientation accuracy of the missile launching vehicle equipped with SINS/GNS is improved evidently and the filter convergence has great reliability.

参考文献/REFERENCES

[1] 晏登洋·惯性/地磁组合导航技术研究 [D]·西安: 西北工业大学，2006.

[2] 乔玉坤，王仕成，张琪·地磁匹配制导技术应用于导 弹武器系统的制约因素分析 [J]·飞航导弹，2006 （8）:39-41.

[3] 谢仕民· 地磁匹配定位技术算法及惯导组合导航 仿真 [C] //西安惯性技术学会第十届学术交流会 论文集，2007:5-14.

[4] 徐洪波，彭卫，苏建忠·基于Hausdorff 距离的地形 匹配 [J] ·红外与激光工程，2002，31（5）:375- 377.

[5] 陈莹，韩崇昭·基于Hausdorff 距离的3维模型匹 配的改进方法 [J] ·中国图象图形学报，2005，10 （3）:326-331.

［6］ Julier S, Uhlmann J, Durrant－Whyte H F. A new method for the non－linear transformations of means and covariances in filters and estimators［J］.IEEE Transaction on Automatic Control，2000，45（3）: 477-482.