Navigation error of inertial/geomagnetic navigation technology for cruise aircraft

Shi G.-G., Zhou J., Ge Z.-L.

Institute of Precision Guidance and Control, Northwestern Polytechnical University, Xi'an 710072, China

Abstract: Geomagnetic aided navigation is a new branch of integrated navigation technology, and the research on navigation error is an important part in analyzing the performance of inertial/geomagnetic integrated navigation system. This paper chooses the cruise aircraft flying at a constant or near constant height as its application object, establishes a Kalman filter for the inertial/geomagnetic integrated navigation system, and discusses the influences of each factor on the position and velocity errors by theoretical analysis and simulation results. These factors include revised method, accuracy of inertial sensors, geomagnetic feature, measurement error of magnetometer, grid interval of geomagnetic map, filtering period, and initial navigation errors.

Author Keywords: Cruise aircraft; Inertial/geomagnetic integrated navigation; Kalman filter; Navigation error

Year: 2010

Source title: Zhongguo Guanxing Jishu Xuebao/Journal of Chinese Inertial Technology

Volume: 18

Issue: 1

Page : 70-75

Link: Scorpus Link

Document Type: Article

Source: Scopus

Authors with affiliations:

1. Shi, G.-G., Institute of Precision Guidance and Control, Northwestern Polytechnical University, Xi'an 710072, China
2. Zhou, J., Institute of Precision Guidance and Control, Northwestern Polytechnical University, Xi'an 710072, China
3. Ge, Z.-L., Institute of Precision Guidance and Control, Northwestern Polytechnical University, Xi'an 710072, China