论文

航空重力测量中载体运动加速度的确定

肖云

西安测绘研究所，西安 710054

摘要　　航空重力测量是使用重力仪、GPS及其他传感器测定地球重力场的一种新型技术，其基本原理是利用重力仪测定包括重力加速度、载体运动加速度以及其他一些加速度在内的总加速度，从观测值中减去利用GPS确定的载体运动加速度，再加上一些改正，得到了重力加速度. 本文推导了确定载体运动加速度的直接解算法的公式，利用某次航空重力测量数据，分别在静态、动态两种情况下，分析了确定载体运动加速度精度. 结果表明：在静态、60s的平滑间隔条件下，载体加速度的确定精度是0.4—0.9mGal；在动态、90s的平滑间隔条件下，整个飞行测段载体运动加速度的确定精度是1—3mGal.

关键词　航空重力测量　GPS　速度　加速度　低通滤波
分类号
DOI:

DETERMINATION OF MOVING 　 BASE ACCELERATIONIN AIRBORNE GRAVIMETRY

XIAO YUN

Xi'an Research Institute of Surveying and Mapping, Xi'an 710054, China

Abstract Airborne gravimetry is a new technique for determination of earth gravity, in which Gravimeter, GPS and other sensors are used. The basic theory is that Gravimeter senses the total acceleration including gravity signal, inertial acceleration and other accelerations, and GPS determines inertial acceleration of moving 　 base, then gravity will be yielded if inertial acceleration can be subtracted from total acceleration with some corrections. Therefore, determination of inertial acceleration by using GPS is one of key problems. A mathematic model of direct calculation method was deduced in this paper. The data from an airborne gravimetry were tested. Finally, acceleration precise was evaluated in static and kinematic condition. The results indicated that the acceleration accuracy at 0.4—0.9mGal level can be achieved during 60s interval in static condition and 1—3mGal level can be achieved in 90s interval in kinematic condition.

Key words　Airborne gravimetry; GPS; Velocity; Acceleration; Lowpass 　 filter.

通讯作者:
 xiaoyungg@sina.com
作者个人主页: 肖云

扩展功能

本文信息
- Supporting info
- PDF(0KB)
- [HTML全文](0KB)
- 参考文献

服务与反馈
- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

相关信息
- 本刊中 包含"航空重力测量"的相关文章
- 本文作者相关文章
- 肖云