

地面高精度绝对重力仪

High-precision ground absolute gravimeter

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地面高精度绝对重力仪是在国家 863 计划重大项目资金支持下，由北京地质仪器厂及北京奥地探测仪器有限公司研制出的原理样机，实现重力场值的高精度绝对测量。

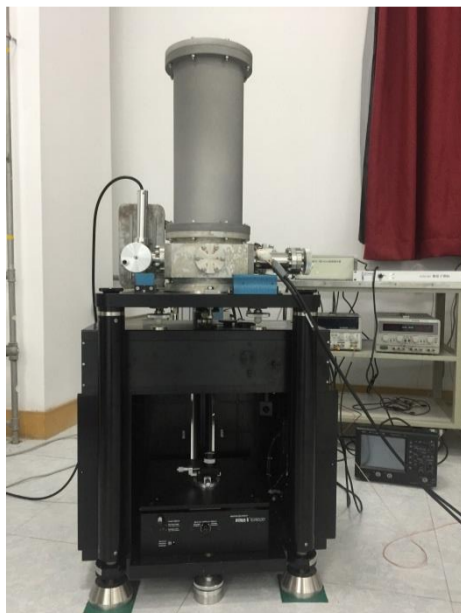
该仪器集光、机、电于一体，采用稳频激光干涉测量技术，使用光电接收器接收激光干涉图样并经过 A/D 转换到高速采集卡记录，通过准确拟合真空状态下自由落体的下落距离和时间，考虑气压、固体潮和极移等改正后实现重力值的高精度绝对测量。

The prototype machine of high-precision ground absolute gravimeter is developed by Beijing geological instrument factory, which can achieve the absolute measurement of gravitational field. This project is supported by the National High-Technology Project (863).

The gravimeter is a kind of equipments including optics, electrics and mechanics. Based on the requency stabilized laser interferometry, laser interference fringes are received by photoelectric detector, and then recorded by high-speed acquisition through the A/D conversion. To realize the high-precision absolute measurement of gravity, distances and time of fall body in the vacuum are fitted by software which contains the correction of air pressure, tide, polar motion and so on.

地面高精度绝对重力仪的测量精度优于 0.02 毫伽，准确度优于 0.05 毫伽，单次测量周期在 10s 以内，功耗小于 300W，传感器重量约 60Kg。主要应用于计量、测绘、地质、地震与资源勘探等领域。

The general specifications of high precision ground absolute gravimeter are as follows. Accuracy: ≤ 0.02 mGal. Precision: ≤ 0.05 mGal. Single measurement period: ≤ 10 s. Power consumption: ≤ 300 W(at ambient temperature of 25°C). Weight: Approximately 60Kg (sensor part). The main application fields are metrology, mapping, geology, earthquake, resource exploration and so on.



地面高精度绝对重力仪图 1



地面高精度绝对重力仪图 2