

A compact control system for mobile atom interferometer

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A compact design of the control system is critical for realization of mobile atom interferometers(AIs). We design and realize a highly integrated control system used for mobile AI-based gravimeters. The control system contains analog and digital IOs, 2W AOM drivers, precise current sources with the stability of $1\mu\text{A}$ under the condition of 0.5A direct current output and photodiode current amplifiers. This electronic and control system was applied to an absolute atom gravimeter. Successfully serve the gravity measurements for many days and gets a gravity measurement precision up to $30\mu\text{Gal}/\sqrt{\text{Hz}}$.

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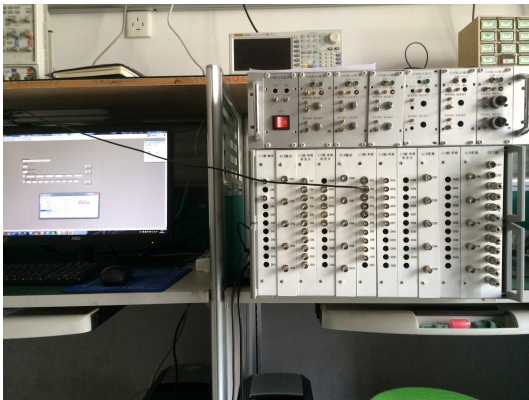


Fig. 1. System diagram

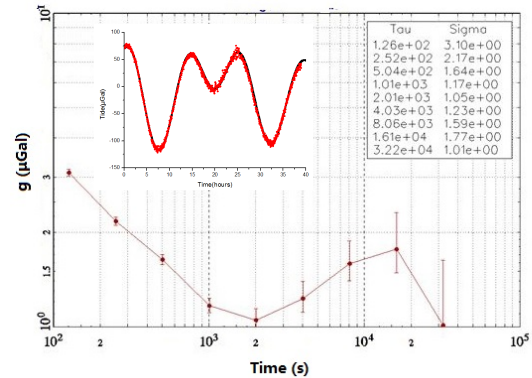


Fig. 2. The Allan deviation of the gravity data after deducing theoretical tide value. And the 40 hours' gravity measurement compared the theoretical tide value (inside graph).

Keywords: Compact control system, Mobile atom interferometer.

References

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