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LEYKAUF, Bastian (Humboldt-Universität zu Berlin)

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Title: High-precision atom interferometer GAIN

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The atom interferometer GAIN uses interfering ensembles of laser-cooled Rb-87 atoms in a fountain setup to precisely and accurately measure local gravity. Our instrument's performance was compared to falling corner-cube and superconducting gravimeters during several measurement campaigns at geodetic observatories, demonstrating sensitivities better than $100 \text{ nm/s}^2/\sqrt{\text{Hz}}$, long-term stability better than 1 nm/s^2 and an accuracy comparable with the best classical instruments.

Beyond its capabilities as a gravimeter, we will present the results of a test of the Continuous Spontaneous Localization (CSL) collapse model we recently performed. Furthermore, we will report on improvements implemented into the apparatus, including a new modularized laser system and FPGA-based laser stabilization.

Poster Abstract

Session Classification: Poster Session

Track Classification: Experimental - Tabletop experiments