

Abstract Submitted
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Gravity measurements below 10^{-9} g with a transportable absolute quantum gravimeter JEAN LAUTIER GAUD, PIERRE VERMEULEN, VINCENT MNORET, LAURA ANTONI-MICOLLIER, CAMILLE JANVIER, BRUNO DESRUELLE, Muquans, ARNAUD LANDRAGIN, Syrte, Observatoire de Paris, CNRS, UPMC, PSL University, PHILIPPE BOUYER, LP2N, Institut d'Optique, CNRS — This paper presents the Absolute Quantum Gravimeter (AQG), a transportable gravity sensor based on light-pulse atom interferometry with laser-cooled ^{87}Rb atoms. Several units have been integrated so far and we present the detailed analysis of their performances. We report on a stability of the measurements of g at a level below 10^{-9} g in various types of environment and on the capability to sustain month-long drift-free continuous acquisitions. The AQG is an industry-grade gravity sensor which meets the objective to provide a device based on atom interferometry with laser-cooled atoms as a mobile and automated turn-key device. It is leaving the laboratory for geophysical studies in hydrology, geodesy and volcanology. This paper will also be the occasion to describe in more details the high degree of maturity of several key enabling technologies such as intelligent integrated laser systems that can help Quantum Technologies with cold atoms in Quantum Computing, Quantum Simulation and Quantum Communication.

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