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# A transportable absolute Quantum Gravimeter employing Bose-Einstein condensates

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The transportable Quantum Gravimeter QG-1 is designed to acquire absolute values for local gravity while maintaining long-term stability and providing mobile deployment capabilities. The measurement relies on the principle of atom interferometry with Bose-Einstein condensates (BECs). Free falling BECs act as ideal test masses and offer precise control mechanisms.

In general, all atom gravimeters share the characteristic of not suffering from wear and tear during measurement campaigns and thereby inherently surpress the need for recalibration of the device. Additionally, employing magnetically lensed BECs in contrast to thermal atoms used in the current generation of atom gravimeters significantly reduces the expansion rate of the ensemble and hence the systematic uncertainties related to wavefront abberations and the Coriolis force.

In order to apply these advantages for mobile operation a compact atom-chip setup providing a high BEC flux, a fiber-based frequency doubled telecom laser system and compact electronics were developed.

This contribution focuses on the principle of operation including the recent progress and the perspectives to overcome the leading order limitations of state-of-the-art atom gravimeters.

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