

Abstract Submitted  
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**Atom-chip Gravimeter with Bose-Einstein Condensates**<sup>1</sup> SVEN ABEND, Institute for Quantum Optics, Leibniz University Hannover, MARTINA GEBBE, ZARM, University Bremen, MATTHIAS GERSEMANN, CHRISTIAN SCHUBERT, ERNST M. RASEL, Institute for Quantum Optics, Leibniz University Hannover, QUANTUS COLLABORATION, GEOQ TEAM — Atom interferometry is a well-proven tool to measure inertial forces or fundamental constants with high accuracy. Bose-Einstein condensates (BECs) or delta-kick collimated (DKC) atoms present ideal sources for precise measurements due to their small spatial and momentum width. We generate such an ensemble in a miniaturized atom-chip setup, where BEC generation and DKC can be performed fast and reliably. We present new results on our prototype atom-chip gravimeter, which takes place in a volume of a one-centimeter cube and comprises an innovative fountain scheme to enhance the device's sensitivity. The relaunch mechanism consists of the combination of double Bragg diffraction with Bloch oscillations. Based on these methods we develop a next generation device capable of catching to state-of-the-art gravimeters by using a high-flux atom-chip-based source.

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