

Abstract Submitted  
for the DAMOP17 Meeting of  
The American Physical Society

**Large momentum transfer atomic interferometric gyroscope<sup>1</sup>**

ROBERT COMPTON, JOSHUA DORR, KARL NELSON, Honeywell, RICHARD PARKER, BRIAN ESTEY, HOLGER MÜLLER, UC Berkeley — Atom interferometry holds out significant promise as the basis for compact, low cost, high performance inertial sensing. Some light pulse atom interferometers are based on an atomic beam-splitter in which the interferometer paths separate at the velocity imparted by a two-photon (Raman) recoil event, resulting in narrow path separation and a corresponding high aspect ratio between the length and width of the interferometer. In contrast, proposals for large momentum transfer (LMT) offer paths to larger separation between interferometer arms, and aspect ratios approaching 1. Here, we demonstrate an LMT gyroscope based on a combination of Bragg and Bloch atomic transitions adding up to a total of 8 photons of momentum transfer. We discuss prospects for scalability to larger photon numbers where angular random walk (ARW) can be better than navigation-grade.

<sup>1</sup>This research was developed with funding from DARPA. The views, opinions, and/or findings contained herein are those of the presenters and should not be interpreted as representing the official views or policies of the DoD or the US Government.

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Date submitted: 26 Jan 2017

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