Abstract Submitted
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Magnetic Waveguide for Atom Interferometry and Inertial Navigation Applications[1] ROBERT HORNE, CHARLES SACKETT, University of Virginia — Atom interferometry using Bose-Einstein condensates has potential applications in inertial navigation [1,2]. We present recent work on the development of a new magnetic waveguide specifically designed for these inertial navigation measurements. The waveguide is implemented using a modified Time Orbiting Potential (TOP) configuration that will allow support against gravity and provide a cylindrically symmetric, harmonic trapping potential for our ^{87}Rb condensate. Based on simulations, the trap will be continuously adjustable, providing trapping frequencies in the horizontal plane from 1 Hz to 100 Hz. This will allow the implementation of a scalable gyroscope and an accelerometer using the same device. Additionally, the trap is continuously deformable from a harmonic potential to a ring trap. Trap characterization and additional measurement results will also be presented.

[1] K. J. Hughes, J. H. T. Burke, and C. A. Sackett, Phys. Rev. Lett. 102, 150403 (2009)
[2] J. H. T. Burke and C. A. Sackett, Phys. Rev. A 80, 061603(R) (2009)

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