Abstract Submitted
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Yb Bose-Einstein condensate Interferometer for h/m and α[1] BEN PLOTKIN-SWING, ALAN JAMISON, WILL DOWD, ANDERS HANSON, ALEXANDER KHRAMOV, RICHARD ROY, SUBHADEEP GUPTA, University of Washington — We report high-precision results from a matter-wave interferometer using a Yb Bose-Einstein condensate (BEC) as a source. This contrast interferometer measures h/m, where h is Planck's constant and m is the mass of an ytterbium atom, which is used to determine the fine structure constant α. We will present the techniques and results from our current apparatus, including the highest accuracy measurement to date using a BEC matter-wave interferometer and our progress toward measuring and controlling the effects of atomic interactions. We will also describe a new apparatus, currently under construction, which is designed to yield a sub-part-per-billion measurement of α.

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Ben Plotkin-Swing
University of Washington

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