Abstract Submitted
for the DAMOP17 Meeting of
The American Physical Society

**Measuring the fine structure constant with Bragg diffraction and Bloch oscillations**

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We have demonstrated a new scheme for atom interferometry based on large-momentum-transfer Bragg beam splitters and Bloch oscillations. In this new scheme, we have achieved a resolution of $\delta\alpha/\alpha = 0.25ppb$ in the fine structure constant measurement, which gives over 10 million radians of phase difference between freely evolving matter waves. We have suppressed many systematic effects known in most atom interferometers with Raman beam splitters such as light shift, Zeeman effect shift as well as vibration. We have also simulated multi-atom Bragg diffraction to understand sub-ppb systematic effects, and implemented spatial filtering to further suppress systematic.

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Date submitted: 19 Jan 2017 Electronic form version 1.4