Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Spectroscopy of the ^{199}Hg Optical Clock Transition at 265.5 nm
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— Neutral Hg is an excellent candidate for a stable and accurate atomic clock. The doubly-forbidden clock transition at 265.5 nm can provide an extremely high-quality resonance factor (Q) when confined in an optical lattice at the Stark-shift free "magic" wavelength. A key feature of the Hg system is the expected reduced uncertainty of black-body radiation induced Stark shifts compared to other optically-based neutral atom clocks. We demonstrate precision spectroscopy of the $^1S_0$ - $^3P_0$ clock transition in ^{199}Hg in a MOT. The MOT population of 10^6 atoms was depleted by over 70% using 3 mW from a cavity-stabilized probe laser tuned to the clock transition. We present our characterization of the transition and efforts to implement a stable Hg clock system.

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Date submitted: 28 Jan 2013 Electronic form version 1.4