Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

**Generating High-Power Bragg Pulses for Atom Interferometry**[1]
ANDREW NEELY, ZACK PAGEL, WEICHENG ZHONG, HOLGER MLLER, University of California, Berkeley — Achieving lower systematic errors in atom interferometry calls for greater optical power. To this end, we are building a high-power quasi CW laser system, generating 150-$\mu$s pulses with a 100-Hz repetition rate of light near the 852 nm D2 line of Cesium by amplifying a 500-mW Nd:YAG CW seed to produce up to 10 kW peak power at 1064 nm in 1 J pulses. This is converted to several kW of peak power at 532 nm using second harmonic generation in LBO. We will use this to pump optical parametric amplification in periodically poled SLT, seeded by spectroscopically stabilized 852 nm light. This system is designed to deliver more than 1 kW peak power and should allow us to realize higher-order Bragg diffraction in our atomic fountain, a major step towards a higher precision measurement of the fine structure constant.

[1]Our work is made possible by the W.M. Keck Foundation, the National Science Foundation grant number 1806583, NIST grant No. 60NANB17D311, and the Department of Energy HEP-QIS QuantISED Program.

Andrew Neely
University of California, Berkeley

Date submitted: 02 Feb 2020 Electronic form version 1.4