Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Nonlinear Optics with Tapered Fibers and Magneto-Optically Trapped Rubidium BETHANY LITTLE, CHRIS MULLARKEY, JOHN HOWELL, NICK VAMIVAKAS, QIANG LIN, University of Rochester — Tapered optical fibers of sub-wavelength diameter present a promising means of integrating the light-atom interaction into larger scale devices. We present work on a tapered fiber system loaded by a magneto optical trap of Rubidium atoms, in which a combination of red and blue detuned beams create a one-dimensional lattice trap along the fiber. The same fiber is used for interacting with the atoms in the trap via the evanescent fields of light propagating along the fiber. Light storage has been demonstrated in a similar system with Cesium [1], and we believe that much nonlinear optics remains to be explored in this regime. We also plan to see how these nonlinear effects can be enhanced with the addition of a micro-resonator such as the ones in [2]

[1]Sayrin, Clausen, Albrecht, Schneeweiss, and Rauschenbeutel, Optica **2**,353-356 (2015)
[2]Lu, Lee, Rogers, and Lin, Optics Express **25**, 30826-30832 (2014)

Bethany Little
University of Rochester

Date submitted: 28 Jan 2016 Electronic form version 1.4