

Abstract Submitted  
for the DAMOP12 Meeting of  
The American Physical Society

**Atom trapping laboratory for upper level undergraduate students**<sup>1</sup> C. MOK, S. WINTER, H. BEICA, B. BARRETT, R. BERTHIAUME, A. VOROZCOVS, F. YACHOUA, N. AFKHAMI-JEDDI, R. MARANTS, M. AGGARWAL, A. KUMARAKRISHNAN, Department of Physics and Astronomy, York University — We present an overview of experiments covered in two semester-length laboratory courses dedicated to laser spectroscopy and atom trapping. These courses constitute a powerful approach for teaching experimental physics in a manner that is both contemporary and capable of providing the background and skills relevant to a variety of research laboratories. The courses are designed to be accessible for all undergraduate streams in physics and applied physics as well as incoming graduate students. In the introductory course, students carry out several experiments in atomic and laser physics. In a follow up course, students trap atoms in a magneto-optical trap and carry out preliminary investigations of the properties of laser cooled atoms based on the expertise acquired in the first course. We discuss details of experiments, impact, possible course formats, budgetary requirements, and challenges related to long-term maintenance. The experiments described here have operated reliably for over five years.

<sup>1</sup>Work supported by Optech Inc. and York University

A. Kumarakrishnan  
Department of Physics and Astronomy, York University

Date submitted: 24 Jan 2012

Electronic form version 1.4