

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

K-shell photodetachment from O^- N.D. GIBSON, C.W. WALTER, D.J. MATYAS, Y.-G. LI, R.M. ALTON, S.E. LOU, Denison Univ., R.C. BILODEAU, N. BERRAH, WMU, A. AGUILAR, LBL, ALS, D. HANSTORP, U. of Gothenburg — The K-shell photodetachment spectrum of O^- has been investigated using the merged ion-photon beam photodetachment technique. O^- ions were produced in a Cs sputtered negative ion source (SNICS II) on a new Movable Ion Photon Beamline (MIPB) while the photons were produced by the undulator on the Advanced Light Source Beamline 8.0.1. Positive oxygen ions formed by multiple detachment were detected as a function of photon energy. Photoexcitation of a $1s$ electron leads to a short-lived Feshbach resonance ~ 3 eV below the $1s$ detachment threshold due to the extra stability of the now full $2p^6$ shell [1]. The Feshbach resonance is observed near 525 eV in the O^+ , O^{2+} and O^{3+} channels. Comparisons to inner-shell photoionization of O will be discussed for both experiment [2] and theory [3]. [1] Bilodeau RC, *et al.*, Phys. Rev. A, **72**, 050701(R), 2005. [2] Stolte WC, *et al.*, J. Phys. B, **30**, 4489, 1997. [3] Gorczyca TW, McLaughlin BM, J. Phys. B, **33**, L859, 2000. *This material is based in part upon work supported by the National Science Foundation under Grant No. 0757976 and by DOE, Office of Science, BES, Chemical Sciences, Geosciences and Biosciences Divisions. The ALS is supported by DOE, Office of Science, BES. DH acknowledges support from the Swedish Research Council.

Nevin Gibson
Denison Univ.

Date submitted: 04 Feb 2011

Electronic form version 1.4