

Abstract Submitted  
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**Observed cyclotron structure in photodetachment to excited states of the O atom**<sup>1</sup> JOHN YUKICH, HANNAH THIGPEN, Davidson College — The  ${}^2P_{3/2} \rightarrow {}^3P_2$  and  ${}^2P_{1/2} \rightarrow {}^3P_2$  photodetachment thresholds for ions such as  $S^-$  and  $O^-$  have been examined in numerous experiments. In many of these experiments, structure in the cross section due to Zeeman and cyclotron transitions has been resolved. Our most recent experiment explores transitions to the first two excited states of the O neutral in an attempt to detect similar cyclotron and Zeeman structure. The apparatus in the experiment includes a Penning ion trap which creates, traps and stores the  $O^-$  ions, and a single-mode, tunable, amplified diode laser. For the first time in our laboratory photodetachment work, we have observed cyclotron structure in the detachment to an excited state, specifically for the  ${}^2P_{1/2} \rightarrow {}^3P_0$  electronic transition.

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