Abstract Submitted
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Infrared Photodetachment Spectroscopy of As^{-}[1] N.D. GIBSON, C.W. WALTER, A.P. SNEDDEN, R.L. FIELD III, J.Z. SHAPIRO, C.M. JANCZAK, Denison University, D. HANSTORP, Gothenburg University, Sweden — The binding energy and fine structure splittings of the arsenic negative ion (As^{-}) have been measured using tunable laser photodetachment threshold spectroscopy. The relative cross section for neutral atom production was measured with a crossed laser-ion beam apparatus over selected photon energy ranges between 0.63 – 0.81 eV. An s-wave threshold was observed near 0.8048 eV due to the opening of the As^{-} ($4p^4$ $^3P_2$) to As ($4p^3$ $^4S_{3/2}$) ground state to ground state transition, which defines the electron affinity of As. Thresholds were also observed for detachment from the J = 0 and 1 levels of As^{-}, permitting accurate determination of the fine structure splittings. The values measured in the present work are consistent with previous measurements [1,2], and substantially reduce the uncertainties. [1] T.P. Lippa *et al.*, J. Chem. Phys. **109**, 10727 (1998); [2] G. Haeffler *et al.*, Z. Phys. D **42**, 263 (1997).

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