

Abstract Submitted
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Tunable Infrared Laser Photodetachment Spectroscopy of Ce^{-1}

Y.-G. LI, R.M. ALTON, S.E. LOU, D.J. MATYAS, R.L. FIELD III, N.D. GIBSON, C.W. WALTER, Denison University, Granville, OH, D. HANSTORP, University of Gothenburg, Sweden — The negative ion of cerium has been investigated using tunable infrared laser photodetachment spectroscopy. The relative cross section for neutral atom production was measured with a crossed laser-beam—ion-beam apparatus over selected photon energy ranges between 0.56 – 0.7 eV. The photodetachment spectrum reveals several sharp peaks due to negative ion resonances. The energies and widths of the resonances were determined by fitting with Fano profiles. The results suggest that at least some of these resonances are due to transitions from the Ce^{-} ($4f5d^26s^2 \ ^4H_{9/2}$) excited fine-structure level, which was recently predicted to be bound by 0.562 eV [1].

[1] S.M. O'Malley and D.R. Beck, *Phys. Rev. A* **79**, 012511 (2009).

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