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Photodetachment Spectroscopy of Ce^{-}[*1]

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The lanthanide series of negative ions provides interesting challenges and rich spectroscopic results for experiment and theory alike. A 12keV Ce^{-} beam has been used in perpendicular arrangement with tunable radiation from an Nd:YAG pumped OPPO laser to perform laser photodetachment spectroscopy. The quantity of photodetached neutrals has been measured as a function of photon energy in order to determine the relative cross section for neutral production. Within the range 0.5eV – 0.75eV, the spectrum exhibits five sharp peaks in addition to broad threshold behavior. The energies and widths of these resonances will be used to further explain the discrepancies between standing theoretical [1] and experimental [2] values for the electron affinity.

[1] S.M. O'Malley and D.R. Beck, *PRA* **61**, 034501 (2000), **74**, 042509 (2006); X. Cao and M. Dolg, *PRA* **69**, 042508 (2004).
[2] V.T. Davis and J.S. Thompson, *PRL* **88**, 073003 (2002).

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