

Abstract Submitted
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Measuring positron-atom binding energies through laser-assisted photo-recombination¹ C.M. SURKO, J.R. DANIELSON, R.E. CONTINETTI, University of California, San Diego, G.F. GRIBAKIN, Queen's University Belfast, Belfast, UK — Trap-based positron beams are important for a range of atomic physics experiments. They have, for example, enabled the measurement of positron binding energies for over 60 molecules to date. However, in spite of numerous, accurate theoretical predictions, there have been no experiments to study positron attachment to atoms, due primarily to the difficulty of forming these attached states in two-body collisions. Described here is the proposal for an experiment to use laser-assisted photo-recombination (LAPR) of positrons and metal atoms in the vapor phase to study positron binding to atoms.² This experiment relies on the development of a new hot-cell apparatus to provide a collision chamber for metal vapors. Signal rates are estimated for zinc atoms using 0.35 eV photons. Important facets of the design of the experiment are based upon experience studying resonant annihilation spectra of molecules using a trapped based beam.

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²C. M. Surko, J. R. Danielson, G. F. Gribakin, and R. E. Continetti, *New J. Phys.* **14**, 065004 (2012).

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