

Abstract Submitted  
for the DAMOP12 Meeting of  
The American Physical Society

**Observing forbidden radiative decay of highly charged ions in a compact Penning trap** SAMUEL M. BREWER, University of Maryland at College Park, NICHOLAS D. GUISE, JOSEPH N. TAN, National Institute of Standards and Technology — We report observations of radiative decay from metastable states of highly charged ions captured in a newly-developed compact Penning trap. Ions of interest are created in the NIST electron beam ion trap (EBIT), extracted in an ion beamline, and captured in a compact Penning trap built in a novel unitary architecture to facilitate collection of photons emitted by stored ions. As an example, Ar<sup>13+</sup> ions are captured in one of the two fine structure levels forming the lowest lying states, allowing us to monitor the fluorescence (blue light) of the spin-flipping (M1) decay to the ground state. We present recent results from the newly deployed ion capture apparatus and briefly discuss previous in-EBIT experiments as well as an earlier study involving ion capture in an electrostatic Kingdon ion trap. Our results illustrate the potential of unitary Penning traps for a variety of studies,<sup>1</sup> including experiments to produce hydrogenlike ions for spectroscopic tests of QED.<sup>2</sup>

<sup>1</sup>J. N. Tan, *et. al.*, “Unitary Penning Traps,” at this meeting (poster).

<sup>2</sup>N.D. Guise, *et. al.*, “Charge Exchange and spectroscopy with isolated highly charged ions,” at this meeting.

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Date submitted: 27 Jan 2012

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