

Abstract Submitted
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Precision Measurement of Isotope Shifts in the ${}^2S_{1/2} \rightarrow {}^2D_{5/2}$ 729 nm E2 transition in Ca^{+1} S. CHARLES DORET, FELIX KNOLLMAN, Williams College — We report progress towards a precise measurement of the isotope shifts in the $4^2S_{1/2} \rightarrow 3^2D_{5/2}$ 729 nm electric quadrupole transition in Ca^+ . We co-trap two isotopes and simultaneously excite both ions using frequency sidebands on a single laser, dramatically reducing systematic uncertainties from many sources such as laser frequency drift or magnetic field instabilities. Such measurements hold the potential to reach sub-Hz precision, offering a path towards probing New Physics at long and intermediate length scales while also providing benchmarks for ever-improving atomic and nuclear theory.

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