

Abstract Submitted
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Off-line collinear laser spectroscopy on stable Ca ions¹ G. GIVEN, K. MINAMISONO, A. J. MILLER, NSCL/Dep. of Phys. and Astron., MSU, D. GARAND, NSCL, MSU, P. F. MANTICA, FRIB/Dep. of Chem., MSU, E. P. ABEL, NSCL/Dep. of Chem., MSU — On-line collinear laser spectroscopy (CLS) relies on the use of stable ion beams to perform critical reference measurements for the extraction of nuclear properties such as nuclear moments and charge radii. An experiment has been approved at NSCL to deduce the charge radii for the Ca ($Z = 20$) isotopes across $N = 20$. Discontinuities in charge radius trends at nucleon magic numbers are evidence for large shell gaps. However, no discontinuity is evident in the neighboring Ar ($Z = 18$) and K ($Z = 19$) isotopes across $N = 20$. In preparation for this future experiment, stable $^{40,42,44}\text{Ca}^+$ beams were produced using a Penning Ionization Gauge (PIG) ion source at the BEam COoling and LAser spectroscopy (BECOLA) facility at NSCL/MSU. These stable isotopes will serve as essential calibrations for future CLS measurements on neutron-deficient Ca isotopes. Details of the off-line CLS experiment, subsequent data analysis, and obtained isotope shifts of $^{42,44}\text{Ca}$ will be presented.

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Gabriel Given
NSCL/Dep. of Phys. and Astron., MSU

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