Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Commissioning of a new photon detection system for charge radii measurements of neutron-deficient Ca[1] J. WATKINS, NSCL, MSU/University of Washington, D. GARAND, NSCL, MSU, A. J. MILLER, K. MINAMISONO, N. EVERETT, R. C. POWEL, NSCL/Dept. of Phys., MSU, B. MAAß, W. NÖRTERSHÄUSER, TU Darmstadt, C. KALMAN, J. LANTIS, NSCL/Dept. of Chem., MSU, C. KUJAWA, Dept. of Chem., Augustana University, P. MANTICA, FRIB/Dept. of Chem., MSU — Calcium is unique for its possession of two stable isotopes of "doubly magic" nuclei at proton and neutron numbers $(Z, N) = (20, 20)$ and $(20, 28)$. Recent charge radii measurements of neutron-rich calcium isotopes yielded an upward trend beyond current theoretical predictions [R. F. G. Ruiz et al., Nat. Phys. 12, 594 (2016)]. At the BECOLA facility at NSCL/MSU, Ca charge radii measurements will be extended to the neutron-deficient regime using collinear laser spectroscopy. A new photon detection system with an ellipsoidal reflector and a compound parabolic concentrator has been commissioned for the experiment. The system increases the signal-to-noise ratio by reducing background, which is critical for the low production rates of the Ca experiment. Details of the system and results of the characterization tests will be discussed.

[1]Work supported in part by NSF Grant PHY-15-65546, U.S. DOE grant DE-NA0002924 and by the Deutsche Forschungsgemeinschaft Grant SFB 1245

Jacob Watkins
University of Washington

Date submitted: 29 Jul 2017 Electronic form version 1.4