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Charge radii and nuclear moments of neutron-deficient potassium isotopes[1] K. MINAMISONO, B.R. BARQUEST, G. BOLLEN, M. HUGHES, R. STRUM, D. TARAZONA, NSCL/Dep. Physics and Astronomy, MSU, H.B. ASBERRY, K. COOPER, K. HAMMERTON, A. KLOSE, P.F. MANTICA, D.J. MORRISSEY, NSCL/Dep. Chemistry, MSU, CH. GEPPERT, T. U. Darmstadt, J. HARRIS, R. RINGLE, J.A. RODRIGUEZ, D.M. ROSSI, C.A. RYDER, A. SMITH, S. SCHWARZ, C. SUMITHRARACHCHI, NSCL, MSU — The monotonic change of charge radii of K isotopes across $N = 20$ suggests a reduction of the shell gap. A systematic study of the charge radii and ground state magnetic and quadrupole moments of neutron-deficient $^{35-37}$K isotopes is underway at the BEam COoling and LAser spectroscopy (BECOLA) facility at NSCL/MSU to investigate the anomalous trend in charge radii. The K isotopes were produced by fragmentation of a ^{40}Ca beam, thermalized in a linear gas cell, extracted at an energy of 30 keV, and transported to BECOLA. The K ion beam was cooled and bunched, and neutralized in a Na vapor cell. Laser-induced fluorescence was detected as a function of the Doppler-tuned laser frequency and time relative to the release of the beam bunch. The beta-NMR technique was used to determine ground-state nuclear moments, where hyperfine splittings are too small to resolve using collinear laser spectroscopy.

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