Abstract Submitted
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Population distribution following atomic charge exchange of 29.85 keV Ni^+ on a sodium vapor[1] A.J. MILLER, K. MINAMISONO, B. ISHERWOOD, NSCL/Dept. of Physics and Astronomy, MSU, H.B. ASBERRY, P.F. MANTICA, NSCL/Dept. of Chemistry, MSU, D.M. ROSSI, C.A. RYDER, R. STRUM, NSCL — Collinear laser spectroscopy (CLS) is a well-developed technique for measuring hyperfine spectra of ions or atoms. While laser-excitation from the ground state of a singly ionized species may be possible for some elements, the electronic-structure of the corresponding neutral species provides an extended selection of transition frequencies for CLS studies. Atomic charge-exchange reaction is one method to produce atomic beams. The final electronic state population distribution subsequent to charge exchange of a 29.85 keV Ni^+ beam impinging on sodium vapor was investigated for four emission lines in Ni I using CLS. These measurements were performed at the BEam COoling and LAser spectroscopy (BECOLA) facility at NSCL/MSU. The results were compared to simulations, which considered the calculated charge-exchange cross section and redistribution of the population through rapid spontaneous decay. Fair agreement was obtained between simulation and experiment. The details of cross section calculation and simulation, and extension to other charge-exchange systems will be discussed.

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