Abstract Submitted
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Electron Population Manipulation of Transition Metal Isotopes in an RFQ Ion Trap[1] JEREMY LANTIS, KEI MINAMISONO, DAVID GARAND, COLTON KALMAN, NAMRATA KASARANENI, National Superconducting Cyclotron Laboratory, YUAN LIU, Oak Ridge National Laboratory, ANDREW MILLER, JOEL ZUZELSKI, National Superconducting Cyclotron Laboratory — Collinear laser spectroscopy(CLS) is a powerful tool for determining the differential mean-square charge radii and nuclear electromagnetic moments of rare isotopes. CLS measurements of the first and second-row transition metals are difficult due to low production rates and unfavorable electronic populations. An optical pumping technique has been developed at the BECOLA facility at the NSCL/MSU to manipulate electronic populations and improve sensitivity in laser spectroscopy measurements. The technique was tested with stable Zr beams, whose neutron-deficient isotopes have important implications for stewardship science. A ^{90}Zr ion beam was produced in a plasma discharge source and trapped in an RFQ ion trap. The electronic populations of the trapped ions were manipulated with pulsed laser light followed by laser-resonant fluorescence measurements. Details and results from commissioning tests will be discussed.

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