

Abstract Submitted  
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**Towards laser spectroscopy of isolated highly charged ions** ERIC NORRGARD, AUNG NIANG, ANGELA SMALL, JOSEPH TAN, NIST — We report on progress towards laser spectroscopy of several highly charged ion (HCI) species produced in an electron beam ion trap (EBIT) and transferred to a unitary Penning trap. H-like Rydberg atoms will be prepared by charge exchange between trapped bare nuclei and a beam of Rydberg Rb atoms. Laser spectroscopy of H-like Rydberg HCIs is insensitive to nuclear size or interactions, which should allow precise measurement of the Rydberg constant. Another application would monitor fluorescence decay of metastable states, excited either by a resonant laser or by electron bombardment in the EBIT, to measure the forbidden transitions of HCIs that are potentially useful in developing optical clock transitions or quantum information processing. Progress in constructing a novel compact apparatus will also be presented.

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