

Abstract Submitted  
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**Ion Beam Metastable fraction deduced from Rydberg Spectroscopy Background Levels**<sup>1</sup> CHRIS SMITH, STEPHEN LUNDEEN, Colorado State University, CHARLES FEHRENBACH, Kansas State University — The metastable content of  $U^{6+}$ ,  $Pb^{4+}$  and  $Pb^{2+}$  ion beams from an ECR source was measured as a bi-product of spectroscopic studies of Rydberg levels of  $U^{5+}$ ,  $Pb^{3+}$ , and  $Pb^+$  that used the Resonant Excitation Stark Ionization Spectroscopy (RESIS) technique. Autoionization of metastable Rydberg levels within the Stark Ionization detector proves to be the dominant background and noise source with this technique. To reduce this background, a device was introduced to induce autoionization of metastable Rydberg levels prior to the detector. Measurements with this device enabled the deduction of the initial metastable fraction of the ion beam. Results varied from 20 - 50% for these beams.

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