

Abstract Submitted
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Towards A Miniature EBIT for the Production and Isolation of Highly Charged Ions with Low Ionization Threshold A.S. NAING, Univ of Delaware, S.F. HOOGERHEIDE, J.M. DREILING, J.N. TAN, National Institute of Standards and Technology — Multiply-ionized atoms are known to play a key role in the study of many radiative and collisional processes occurring in laboratory and astrophysical plasmas [1]. Recent theoretical studies indicate that certain highly-ionized atoms with special features, e.g., Pr^{9+} , Nd^{10+} , could potentially be useful for the development of next-generation atomic clocks, for quantum information processing, and in the search for variation in the fine-structure constant [2]. Highly charged ions are typically produced in an electron beam ion trap (EBIT) with a strong magnetic field, such as the EBIT at NIST. However, lower fields are more suitable for abundantly producing the proposed candidate ions, as well as other interesting ions with relatively low ionization thresholds (greater than 100 eV and up to 2000 eV). We are developing a room-temperature miniature electron beam ion source/trap (mini-EBIS/T) that is optimized for ions with low ionization. We report on the progress in the design/construction of the mini-EBIS/T and the production/trapping of the above-mentioned ions. [1] H.F. Beyer and V.P. Shevelko, *Intro to the Physics of Highly Charged Ions*, Inst. of Physics, 2003. [2] M. Safronova, *et al.*, PRL **113**, 030801 (2014).

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