

Abstract Submitted  
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**X-ray emission measurements following charge exchange with atomic H using merged beams**<sup>1</sup> C. AMBARISH, A. ROY, D. WULF, F. T. JAECKEL, D. MCCAMMON, Dept. of Physics, University of Wisconsin-Madison, WI 53706, D. SEELY, Dept. of Physics, Albion College, MI 49224, V. ANDRIANARIJAONA, Dept. of Physics, Pacific Union College, Angwin, CA 94508, C. C. HAVENER, R. ZHANG, Physics Division, Oak Ridge National Laboratory, TN 37830 — A novel experiment to study X-ray emission following charge exchange (CX) between highly charged ions and atomic hydrogen is currently in progress using the University of Wisconsin and Goddard Space Flight Center X-ray quantum micro calorimeter detector (XQC). Ions present in the solar wind and planetary exospheres can be generated by an ECR ion source at Oak Ridge National Laboratory (ORNL) and merged with a neutral H beam spanning six orders of magnitude in collision energy. The (n,l) distributions of captured electrons with atomic H as a target is the remaining elusive benchmark for modeling of CX processes. Our measurements of Balmer series line ratio with Ne[IX] + He are compared to ratios constructed from Multi-channel Landau-Zener (MCLZ) calculations [1], which are used to produce atomic data needed to characterize X-ray emissions from a variety of astrophysical objects. The measured line ratios are in excellent agreement with the calculations for the 4s → 4p emission, while indicating an increasing state-selectivity for the 4d and 4f states. Details of the apparatus design with initial low background spectra will also be presented. [1] D. Lyons, R. S. Cumbee, and P. C. Stancil, *Astrophys. J* 232, 27 (2017).

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