

Abstract Submitted
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X-ray Emission Cross Sections following Charge Exchange by Multiply-Charged Ions of Astrophysical Interest.¹ SEBASTIAN OTRANTO, RONALD OLSON, Physics Department, University of Missouri-Rolla, Rolla MO 65401, PETER BEIERSDORFER, Department of Physics, Lawrence Livermore National Laboratory, Livermore CA 94550 — State selective nl -electron capture cross sections calculated using the classical trajectory Monte Carlo (CTMC) model are presented for highly charged ions with $Z = 6-10$ colliding with atoms and molecules. The energy dependence of the l -level populations is investigated. The calculated cross sections are compared with measurements made by Greenwood *et al* [1], using O^{8+} and Ne^{10+} on various targets at 3 keV/amu, and with recent x-ray emission cross sections measured with the EBIT machine at LLNL using O^{8+} and $Ne^{9+,10+}$ on different targets at 10 eV/amu. We use the calculated cross sections to present an ab initio determination of the soft x-ray spectrum of comet C/Linear 1999 S4 that was observed on the Chandra X-ray Observatory [2]. [1] J. B. Greenwood, I. D. Williams, S. J. Smith and A. Chutjian, Phys. Rev. A 63, 062707 (2001). [2] C. M. Lisse, D. J. Christian, K. Dennerl, K. J. Meech, R. Petre, H. A. Weaver and S. J. Wolk, Science 292, 1343 (2001).

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