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Line ratios of soft x-ray emissions following charge exchange between C^{6+} and Kr C.I. GUILLEN, S.L. ROMANO, V.M. ANDRIANARIJAONA, Department of Physics, Pacific Union College, Angwin, CA 94508, D. MCCAMMON, Department of Physics, University of Wisconsin, Madison, WI 53706, M. FOGLE, Department of Physics, Auburn University, Auburn, AL 36849, D.G. SEELY, Department of Physics, Albion College, Albion, MI 49224, C.C. HAVENER, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6372, USA
— The radiance line ratios (Ly-β thru -ε over Ly-α) for soft x-ray emission following charge exchange between C^{6+} and Kr are reported for collision velocities between 250 and 3000 km/s, which are characteristic of the solar wind. The spectra were measured at the Oak Ridge National Laboratory ion-atom merged beams apparatus equipped with a 10 eV FWHM resolution x-ray detector. A crossing between the measured Ly-β/Ly-α and Ly-γ/Ly-α is well resolved around 950 km/s and could be used as a velocity indicative tool. There is no Kr theory, but Kr has the same ionization potential as H so that the results reported here are compared to calculations done on C^{6+}+H. On the other side, double-electron-capture is possible for this system and for any multi-electron target. True double capture is seen to be only 10% of the single-electron-capture. This research is supported in part by the NASA Solar & Heliospheric Physics Program NNH07ZDA001N, NASA Grant No. NNX09AF09G, by the Office of Fusion Energy Sciences and the Office of Basic Energy Sciences of the U.S. Department of Energy, and by the National Science Foundation through Grant No. PHY-106887.

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