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Radiative Double Electron Capture in F^{9+} + C Collisions T. ELKAFRAWY, J.A. TANIS, Department of Physics, Western Michigan University, Kalamazoo, A. SIMON, Michigan State Uinversity, NSCL, A. WARCZAK, Institute of Physics, Jagiellonian University, Krakow, Poland — Radiative double electron capture (RDEC) is a fundamental process involving the capture of two electrons with the simultaneous emission of a single photon. For loosely bound target electrons RDEC can be treated as time reversed double photoionization in which the photon-electron interaction is the origin of electron emission, offering a tool for the exploration of problems in atomic systems such as the electron-electron interaction in electromagnetic fields or the search for a proper description of a two electron-continuum wave function. In the present work, both radiative electron capture (REC) and RDEC were investigated in collisions of 2.21 MeV/u bare and H-like fluorine ions with carbon foils. This experiment was conducted at Western Michigan University using the tandem Van de Graaff accelerator, with the emitted x-rays at 90° to the beam line measured in coincidence with singly- and doubly-charge changed ions. Current results are compared with previous measurements for O^{8+} + C collisions [1] and with recent theoretical calculations [2-4].
[1] A. Simon *et al.*, Phys. Rev. Lett. **104** (12), 123001 (2010) [2] A. I. Mikhailov *et al.*, Phys. Lett. A **328**, 350 (2004) [3] A. I. Mikhailov *et al.*, Phys. Rev. A **69**, 032703 (2004) [4] A. Nefiodov *et al.*, Phys. Lett. A **346**, 158 (2005).

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