

Abstract Submitted
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Radiative Double Electron Capture (RDEC) in 40 MeV F^{8+} and F^{9+} + Ne Collisions¹ DAVID LA MANTIA, NUWAN KUMARA, ASGHAR KAYANI, Western Michigan University, ANNA SIMON, University of Notre Dame, JOHN TANIS, Western Michigan University — The capture of two electrons with the simultaneous emission of a single photon is known as radiative double electron capture (RDEC). This process is the time-inverse of double photoionization and gives insight into electron correlation. Preliminary RDEC cross sections were measured for $F^{8,9+}$ colliding with neon. The corresponding RDEC cross section for F^{8+} is about 4 times smaller than that for F^{9+} , as expected as capture of both electrons to the projectile K shell is not allowed. This work was performed at Western Michigan University (WMU) using the tandem Van de Graaff accelerator. Beams of 40 MeV F^{8+} and F^{9+} collided with neon inside a differentially pumped cell. Surface barrier detectors were used to observe the charge-changed projectiles and a Si(Li) x-ray detector, placed at 90° to the incident beam, was used to measure photons coincident with the charge-changed ions. Previous RDEC experiments with gaseous targets failed to find conclusive evidence for this event,² while successful observations were performed at WMU using a solid carbon target.³

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²G. Bednarz, *et al.* NIM B, **205** 573 (2003)

³A. Simon, *et al.* PRL **104**, 123001 (2010)

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