

Abstract Submitted
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Radiative double electron capture (RDEC) by $F^{9+,8+}$ and $O^{8+,7+}$ in collisions with a thin carbon target* NUWAN KUMARA, DAVID LA MANTIA, CRAIG MCCOY, JOHN TANIS, Western Michigan University — Radiative double electron capture occurs when a highly charged projectile captures two electrons from a target atom and simultaneously emits a photon. RDEC can be considered the time inverse of double photoionization and hence can be used to study electron correlation. Previous results for RDEC have been reported for thin-foil carbon¹ (by incident ~ 2 MeV/u O^{8+} and F^{9+} ions) and gas² (by ~ 2 MeV/u $F^{9+,8+}$ ions) targets. Here, RDEC measurements for ~ 2 MeV/u $F^{9+,8+}$ and $O^{8+,7+}$ ions in collisions with thin-foil carbon were conducted and compared with previous carbon and gas target results. Measurements for the one-electron projectiles F^{8+} and O^{7+} with the C-foil target avoid transfer of both electrons to the projectile K shell. Preliminary cross sections obtained from the present data for bare ions on carbon generally agree with previous bare ion results for the solid and gas targets. However, the new measurements show the interesting result that the cross sections for the one-electron projectiles on carbon are nearly the same as those for the bare ions, in significant contrast with the previous results for gas targets. *Supported in part by NSF ¹ A. Simon et al., *PRL* **104**, 123001 (2010) ² P. N. S. Kumara et al., *Nucl. Instrum. Methods Phys. Res. B* **408** 174-177(2017)

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