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Analysis of radiative emissions in O^{6+}-argon, -water, and -methane charge-exchange collisions[1] ANTHONY C. K. LEUNG, TOM KIRCHNER, York University — Charge exchange between highly-charged (solar wind) ions and neutrals is the main mechanism responsible for the observed x-ray emission from comets. A recent joint experimental/theoretical work looked at these processes for O^{6+} collisions with argon atoms and a variety of molecules including water and methane at impact energies which correspond to the low and high solar wind speeds [1]. In the present work we study these collision systems using the two-center basis generator method within the independent electron model [2]. For the molecular targets we used a spectral representation of the target Hamiltonian and found that a closure approximation was necessary to produce reliable total cross section results for single-, double-, and triple-electron transfer. For the single-electron transfer channel we carried out a radiative cascade analysis and compared the resulting emission spectra with the classical-trajectory Monte Carlo calculations reported in [1]. Overall, the agreement is satisfactory. [1] J. R. Machacek *et al.*, Astrophys. J. **809** 75 (2015). [2] A. C. K. Leung and T. Kirchner, Phys. Rev. A **95** 042703 (2017).

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