

Abstract Submitted
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Electron transfer, ionization, and excitation in collisions between protons and the ions F^{8+} and Ne^{9+} THOMAS WINTER, Retired — Coupled-state cross sections are being determined for electron transfer, ionization, and excitation in collisions between keV-energy protons and the hydrogenic ions F^{8+} and Ne^{9+} initially in the ground state, extending early¹ and more recent work² on the less highly charged target ions He^+ , Li^{2+} , Be^{3+} , B^{4+} , and C^{5+} , and work reported at the 2016 DAMOP meeting on the target ions N^{6+} and O^{7+} . As in the more recent works, a basis of 60 Sturmians on each center is being used, and in a second calculation, a basis of 280 Sturmians on the target nucleus and a single $1s$ function on the proton is being used. The extent to which high-energy scaling rules with target nuclear charge Z are valid is being examined further for transfer to the ground state, total transfer, and ionization, as well as for excitation and individual-state processes at intermediate energies near where the cross sections peak, and at lower energies.

¹T. G. Winter, Phys. Rev. A **35**, 3799 (1987).

²T. G. Winter, Phys. Rev. A **87**, 032704 (2013).

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