

Abstract Submitted
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Electron transfer, ionization, and excitation in collisions between protons and the ions Na^{10+} and Mg^{11+} . 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 Na^{10+} and Mg^{11+} 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 and 2017 DAMOP meetings on the target ions N^{6+} , O^{7+} , F^{8+} , and Ne^{9+} . As in the more recent works, a basis of 60 Sturmians on each center is being used, as well as bases of several hundred Sturmians on the target nucleus and a single $1s$ function on the proton. For excitation and ionization, various single-center bases are also considered. The extent to which simple scaling rules with target nuclear charge Z are valid is being examined further for direct excitation as well as ionization and electron transfer at intermediate energies near where the cross sections peak.

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

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

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