

Abstract Submitted
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Electron transfer, ionization, and excitation in collisions between protons and the ions P^{14+} and S^{15+} . 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 P^{14+} and S^{15+} initially in the ground state, extending early ¹ and more recent work ² on the less highly charged target ions He^+ , Li^{2+} , ..., C^{5+} , and work reported at recent DAMOP meetings on the target ions N^{6+} , O^{7+} , ..., Si^{13+} . Considering the high asymmetry of the collisional systems, most of the recently chosen bases consist of about a hundred Sturmians on the target nucleus, only augmented by a single $1s$ function on the proton when electron transfer is considered; its contribution is otherwise negligible. The extent to which simple scaling rules with target nuclear charge Z are valid is being examined further for ionization and electron transfer, and particularly for direct excitation, at intermediate energies near where the cross sections peak, as well as at higher energies.

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

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

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