

Abstract Submitted  
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**Electron transfer, ionization, and excitation in collisions between protons and the ions  $\text{N}^{6+}$  and  $\text{O}^{7+}$**  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  $\text{N}^{6+}$  and  $\text{O}^{7+}$ , extending early<sup>1</sup> and more recent work<sup>2</sup> on the less highly charged target ions  $\text{He}^+$ ,  $\text{Li}^{2+}$ ,  $\text{Be}^{3+}$ ,  $\text{B}^{4+}$ , and  $\text{C}^{5+}$ . As in the more recent work, 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.

<sup>1</sup>T. G. Winter, Phys. Rev. A **35**, 3799 (1987).

<sup>2</sup>T. G. Winter, Phys. Rev. A **87**, 032704 (2013).

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