Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Electron transfer, ionization, and excitation in collisions between protons and the ions Al^{12+} and Si^{13+}. 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 Al^{12+} and Si^{13+} 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+}, ..., Mg^{11+}. Considering the high asymmetry of the collisional systems, most of the recently chosen bases consist of several hundred Sturmians on the target nucleus and a single $1s$ function on the proton. For excitation and ionization, 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.

[1]T. G. Winter, Phys. Rev. A **35**, 3799 (1987).
[2]T. G. Winter, Phys. Rev. A **87**, 032704 (2013).

Thomas Winter
Retired

Date submitted: 27 Jan 2019 Electronic form version 1.4