

Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Positronium collisions with rare-gas atoms¹ ILYA FABRIKANT, University of Nebraska-Lincoln, GLEB GRIBAKIN, ANDREW SWANN, Queen's University Belfast, ROBYN WILDE, Oregon Institute of Technology — We calculate elastic scattering of positronium (Ps) by the Xe atom using the recently developed pseudopotential method[†] and review general features of Ps scattering from heavier rare-gas atoms: Ar, Kr and Xe. The total scattering cross section is dominated by two contributions: elastic scattering and Ps ionization (break-up). To calculate the Ps ionization cross sections we use the binary-encounter method for Ps collisions with an atomic target. Our results for the ionization cross section agree well with previous calculations carried out in the impulse approximation. Our total Ps-Xe cross section, when plotted as a function of the projectile velocity, exhibits similarity with the electron-Xe cross section for the collision velocities higher than 0.8 a.u., and agrees very well with the measurements at Ps velocities above 0.5 a.u.

[†]Fabrikant I I and Gribakin G F 2014 *Phys. Rev. A* **90** 052717

¹Supported by the US National Science Foundation

Ilya Fabrikant
University of Nebraska-Lincoln

Date submitted: 21 Dec 2015

Electronic form version 1.4