

Abstract Submitted
for the DAMOP15 Meeting of
The American Physical Society

An Investigation of Positronium-Hydrogen Collision¹ S.J. WARD, DENTON WOODS, University of North Texas, P. VAN REETH, University College London — Elastic positronium-hydrogen (Ps-H) scattering is of interest as it is a fundamental four-body Coulomb process. Using the complex Kohn variational method, we compute the phase shifts for elastic Ps-H scattering for the six lowest partial waves [1,2]. The $^{1,3}S$ - and $^{1,3}P$ -wave phase shifts can be viewed as benchmark results. Using a quantum defect theory [3], we determine $^{1,3}S$ and $^{1,3}P$ scattering lengths and $^{1,3}S$ effective ranges. We also compute elastic integrated, elastic differential and momentum-transfer cross sections.

[1] Denton Woods, S. J. Ward and P. Van Reeth, *unpublished* (2015).

[2] Denton Woods, P. Van Reeth and S. J. Ward, <http://meetings.aps.org/link/BAPS.2014.DAMOP.Q1.55>.

[3] Bo Gao, Phys. Rev. A **58**, 4222 (1998).

¹S. J. W. acknowledge support from NSF under grant no. PHYS-0968638. Computational resources were provided by UNT's High Performance Computing Services.

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Date submitted: 22 Jan 2015

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