

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Positronium-hydrogen scattering for the first six partial waves¹

DENTON WOODS, University of North Texas, P. VAN REETH, University College London, S.J. WARD, University of North Texas — We have performed Kohn variational calculations for the S-, P- and D-waves of positronium-hydrogen scattering using elaborate trial wavefunctions which contains a large number of Hylleraas-type terms for the short-range part [1]. The trial wavefunctions include all 6 interparticle coordinates. The $^1,^3S$, $^1,^3P$ and 1D phase shifts compare well with close-coupling results [2,3], but the 3D phase shifts are appreciably lower. We are investigating improving the accuracy of the 3D phase shifts using a variety of techniques. In addition, we have preliminary Kohn variational data for the F-, G- and H-wave with fewer short-range terms.

[1] Denton Woods, P. Van Reeth and S.J. Ward, <http://meetings.aps.org/Meeting/MAR14/Event/215763> (and references within).

[2] Jennifer E. Blackwood, Mary T. McAlinden and H.R.J. Walters, *Phys. Rev. A*, **65**, 032517-1 (2002).

[3] H.R.J. Walters, A.C.H. Yu, S. Sahoo and Sharon Gilmore, *Nucl. Instrum. and Methods Phys. Res. B* **221**, 149 (2004).

¹S.J.W. acknowledges support from NSF under grant no. PHYS-968638.

Denton Woods
University of North Texas

Date submitted: 30 Jan 2014

Electronic form version 1.4