Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Low-energy D-wave positronium-hydrogen scattering[1] DENTON WOODS, University of North Texas, P. VAN REETH, University College London, S.J. WARD, University of North Texas — We are investigating the four-body Coulomb process of positronium-hydrogen (Ps-H) scattering below the Ps(n=2) excitation threshold using the Kohn variational method and variants. Our Ps-H ^1D-wave phase shifts compare reasonably well with the close-coupling results [1,2], but our ^3D-wave phase shifts are appreciably lower. In an attempt to improve the accuracy of these, we are employing a sectors-based approach [3] and the modification of the short-range Hylleraas terms with an exponential in the r_{12} coordinate. We are investigating the use of the Born approximation for higher partial waves. We plan also to present our latest S-wave and P-wave results using the Kohn variational method [4].

[1] H.R.J. Walters *et al*, Nucl. Instrum. Methods B **221**, 149-159 (2004).
[2] J. Blackwood *et al*, Phys. Rev. A **65**, 032517 (2002).
[3] Zong-Chao Yan and Y.K. Ho, Phys. Rev. A **59**, 2697 (1999).
[4] Denton Woods, S. J. Ward and P. Van Reeth, http://meetings.aps.org/link/BAPS.2013.DAMOP.Q1.122 (and references within).

[1]S.J. Ward acknowledges support from NSF under grant no. PHYS-968638.

Denton Woods
University of North Texas

Date submitted: 14 Nov 2013 Electronic form version 1.4