

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Resonances in PsH below the $p+Ps^-$ threshold¹ ZONG-CHAO YAN, University of New Brunswick, Y.K. HO, Institute of Atomic and Molecular sciences, Academia Sinica, Taipei, Taiwan — Recently, Di Rienzi and Drachman carried out an investigation of high-lying resonances in the Ps-H system lying below the $Ps^- + H^+$ threshold [1]. Using an effective potential formalism, they calculated the resonance energies for some S, P and D states. In the present work, we present a calculation of S-wave resonances lying below the $p + Ps^-$ threshold by using the method of complex-coordinate rotation [2]. We use elaborate Hylleraas wave functions [3] in which all the six inter-particle coordinates are included [4]. Using up to 6412 terms in the basis functions, resonance energies and widths for several lower members of a Rydberg series are calculated. At the meeting, we will compare our preliminary results with those of the earlier calculation [1].

[1] J. Di Rienzi and R. J. Drachman, Phys. Rev. A 76 (2007) 032705.

[2] Y. K. Ho, Phys. Rept. 99 (1983) 1, and references therein.

[3] Z.-C. Yan and Y. K. Ho, Phys. Rev. A 59 (1999) 2697.

[4] Z.-C. Yan and G. W. F. Drake, J. Phys. B. 30 (1997) 4723.

¹YKH is supported by NSC of Taiwan, ROC. ZCY is supported by NSERC of Canada.

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Date submitted: 28 Jan 2008

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