

Abstract Submitted
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Multichannel Effective Range Theory Analysis of Zeros in the Positronium formation Scattering Amplitude for Positron-Hydrogen Collisions¹ S. J. WARD², ALBANDARI W. ALROWAILY³, University of North Texas, P. VAN REETH, University College London — Recently, using the Kohn and inverse Kohn variational methods we found two zeros in the Ps-formation scattering amplitude for positron-hydrogen scattering in the Ore gap and we determined their positions accurately [1]. Two separate circular rings of zeros are present in the corresponding differential cross section due to azimuthal symmetry. We are currently analyzing the zeros in the Ps-formation scattering amplitude using a multichannel effective range theory (MERT) that includes the polarization potential in the second channel [2], which in our case is the Ps-p channel. This MERT has previously been applied to positron-hydrogen collisions [3] for partial waves $L \leq 2$ and shown to provide for the Ore gap reasonable results for the partial wave cross sections for Ps-formation and for Ps-p scattering. [1] A. W. Alrowaily, S. J. Ward, P. Van Reeth, *submitted*. [2] S. Watanabe and C. H. Greene, Phys. Rev. A **22**, 158 (1980). [3] S. J. Ward and J. H. Macek, Phys. Rev. A **62**, 052715 (2000).

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