Computation of Low-Energy Positronium-Hydrogen Collisions using the Kohn Variational Method

Denton Woods, S. J. Ward[1] and P. Van Reeth

The Kohn variational method is an established method that can provide benchmark calculations for quantum few-body systems. We consider the four-body Coulomb process of positronium-hydrogen (Ps-H) scattering. We improve upon the numerics of prior accurate S- and P-wave Kohn variational calculations of Ps-H elastic scattering [1,2]. For instance, we use a procedure that removes Hylleraas-type terms that lead to linear dependence [3]. In addition to using the Kohn and inverse Kohn variational methods as previously used, we use the generalized and complex Kohn variational methods [4]. We are extending the calculations of Ps-H to include the D-wave.

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