Positronium-hydrogen scattering for the first six partial waves

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 \(^1\)S, \(^1\)P and \(^1\)D phase shifts compare well with close-coupling results [2,3], but the \(^3\)D phase shifts are appreciably lower. We are investigating improving the accuracy of the \(^3\)D 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.


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