Scattering in three-body Coulomb system

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Scattering of a charged particle with a two-particle target system which is bound by the attractive Coulomb interaction is considered. Although, the leading contribution to the asymptotic form of the wave function and its components comes from the asymptotic Coulomb interaction between the two-particle target and the spectator particle, the next long-range terms of the multipole expansion of this interaction plays important role in energy regions where the excited state channels are open [1,2]. In this contribution we discuss the role of the explicit asymptotic representations for the wave function components which take into account as the Coulomb as well as the induced dipole interactions between the two-body target and the spectator particle. The general method from [3] is used for constructing asymptotic solutions. The derived asymptotics is then intended for the use in electron and positron scattering off the hydrogen (anti hydrogen) atom calculations in the energy region above the thresholds of exited states of the target where the induced dipole interaction produces specific effects in scattering data [4-6]. The Faddeev-Merkuriev set of equations is used for describing the scattering process [7].

References

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