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CONTRIBUTION OF INDUCED DIPOLE INTERACTION TO THE ASYMPTOTIC BEHAVIOR OF WAVE FUNCTION COMPONENTS FOR THE SCATTERING IN THREE BODY COULOMB SYSTEMS

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CONTRIBUTION OF INDUCED DIPOLE INTERACTION TO THE ASYMPTOTIC BEHAVIOR OF WAVE FUNCTION COMPONENTS FOR THE SCATTERING IN THREE BODY COULOMB SYSTEMS

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We consider the scattering of a charged particle with a two-particle target system which is bound by the attractive Coulomb interaction. The Faddeev-Merkuriev set of equations is used for describing the scattering process [1,2]. 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 play important role in energy region where the excited state channels are open [3]. In this contribution we derive 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 [4] is used for constructing asymptotic solutions. The derived asymptotics is then intended for the use in electron and positron scattering off the hydrogen atom and helium cation calculations in the energy regions above the thresholds of exited states of the targets where the induced dipole interaction produces specific effects in scattering data [4].

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The speaker is a student or young scientist

No

Section

1. Nuclear structure: theory and experiment

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Session Classification: Nuclear structure: theory and experiment