A study of the pseudostate-close-coupling method using a non-orthogonal Laguerre-L ^{2} basis for electron-helium scattering

A. Kartono[1] and T. Winata[2]

[1] Laboratory for Theoretical and Computational Physics, Physics Department, Faculty of Mathematical and Natural Sciences, Institut Pertanian Bogor, Jalan Raya Pajajaran Bogor 16143, Indonesia; [2] Laboratory for Physics of Electronic Material, Physics Department, Faculty of Mathematical and Natural Sciences, Institut Teknologi Bandung, Jalan Ganesa 10 Bandung 40132, Indonesia; agukar@dosen.fisika.net

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Abstract

We present the pseudostate-close-coupling method using a non-orthogonal Laguerre-L^2 basis function for the calculations of electron-helium scattering. Our method is a frozen-core model of the target in which one of the electrons is restricted to the 1*s* He^+ orbital, as has been used with great success recently. We demonstrate its applicability at a range of projectile energies of 5 to 50 eV to scattering from the ground state to $n \leq 2$ states. Generally good agreement with experiments and the other calculations is obtained with the available differential and total cross-sections. On occasion, there is not good agreement with experiments, particularly at the forward and backward angles for projectile energy in the range 30 to 50 eV.