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Four-Parameter Scheme for Ground Level of Helium Atom

HU Xian-Quan,[1] XU Jie,[1] MA Yong,[1] and ZHENG Rui-Lun[2]

[1] College of Physics and Information Technology, Chongqing Normal University, Chongqing 400047, China
[2] School of Physics, Southwest Normal University, Chongqing 400715, China
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Abstract: In this paper, the ground state wave function of four parameters is developed and the expression of the ground state level is derived for the helium atom when the radial Schrödinger equation of the helium atom is solved. The ground energy is respectively computed by the optimized algorithms of Matlab 7.0 and the Monte Carlo methods. Furthermore, the ground state wave function is obtained. Compared with the experiment value and the value with the variation calculus in reference, the results of this paper show that in the four-parameter scheme, not only the calculations become more simplified and precise, but also the radial wave function of the helium atom meets the space symmetry automatically in ground state.

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