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Nonrelativistic ionization energy levels of the helium atom

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The nonrelativistic ionization energy levels of a helium atom are calculated for S, P, D and F states. The calculations are based on the variational method of “exponential” expansion. The convergence of the calculated energy levels is studied as a function of the number of basis functions N . This allows us to claim that the obtained energy values (including the values for the states with a nonzero angular momentum) are accurate up to 28-35 significant digits.

[1] C. Schwartz, Experiment and theory in computations of the He atom ground state. *Int. J. Mod. Phys.E* 15, 877 (2006); C. Schwartz, Further Computations of the He atom ground state. *ArXiv:math-phys/0605018*, (2006).

[2] V.I. Korobov, Nonrelativistic ionization energy for the helium ground state. *Phys.Rev. A* 66, 024501 (2002).

[3] V.I. Korobov, Coulomb three-body bound-state problem: variational calculations of nonrelativistic energies. *Phys. Rev.A.* 61, 064503 (2000).

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