Evaluation of Coulomb Energy Difference for Light Mirror Nuclei Using Slater-Type Orbitals

F. Öner[1] and B.A. Mamedov[2]

[1] Department of Physics, Faculty of Education, Ondokuz May1s University, Amasya, Turkey
[2] Department of Physics, Faculty of Arts and Science, Gaziosmanpasa University, Tokat, Turkey

Abstract: Behavior of the Coulomb energy difference for light nuclei is explained in terms of the different values of the average Coulomb interaction between two particles. Coulomb energy difference according to shell model of light mirror nuclei in the Coulomb and exchange integrals in the formula can be explained with exponential-type wavefunctions. In this study, using the one-center expansion of exponential-type wavefunctions in terms of Slater-type orbitals with the same center, we derived formula for Coulomb energy difference of light mirror nuclei.

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