Comparaison between Coulomb and Hulthén Potentials within Bohr Hamiltonian for γ-Rigid Nuclei in the Presence of Minimal Length

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In this work we solve the Schrdinger equation for Bohr Hamiltonian with Coulomb and Hulthén potentials within the formalism of minimal length in order to obtain analytical expressions for the energy eigenvalues and eigenfunctions by means of asymptotic iteration method. The obtained formulas of the energy spectrum and wave functions, are used to calculate excitation energies and transition rates of γ -rigid nuclei and compared with the experimental data at the shape phase critical point X(3) in nuclei.