

عنوان مقاله:

Analytical Bound-State Solution of the Schrodinger Equation for the Morse Potential within the Nikiforov-Uvarov Method

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خلاصه مقاله:

Abstract The Morse potential has important and significance rule to describe the diatomic molecule energy and structure. However there is no any analytical solution for Schrodinger equation with this potential without approximation, therefore other ways such as numerical, perturbation, variation and so on are taken to deal with this potential. In this work the the Nikiforov-Uvarov method is taken to obtain its energy eigenvalues and eigenfunctions. In the ground state the Schrodinger equation with this potential have exact solution but with arbitrary l-state the Morse potential with centrifugal term have no exact solution therefore it is solved analytically with use the Pekeris approximation. Here in this work we solved the Schrodinger in the space of D dimension and use the Nikiforove-Uvarov method which is based on solving the hyper geometric type second-order differential equations by means of .the special orthogonal functions

کلمات کلیدی:

solving of Schrodinger equation, the Morse potential, the Nikiforov-Uvarov method

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