

Eigen Solutions, Shannon Entropy and Fisher Information under the Eckart Manning Rosen Potential Model

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Abstract

We solved the Schrödinger equation with a certain approximation to the centrifugal term for an arbitrary angular momentum state with the Eckart Manning Rosen potential. The bound-state energy eigenvalues and the corresponding wave functions have been approximately obtained using the parametric Nikiforov Uvarov method. The solutions of the Schrödinger equation for the Eckart potential, Manning Rosen potential, and Hulthén potential have been obtained using a certain transformation. The concepts of the Shannon entropy and the Fisher information of a system under the Eckart Manning Rosen potential are investigated in detail. The behavior of the screening parameter and the quantum number n for Fisher information and the Shannon entropy are also investigated.

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