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Energy States of Some Diatomic Molecules: Exact Quantization Rule Approach

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Abstract : In this study, we obtain the approximate analytical solutions of the radial Schrödinger equation for the Deng-Fan diatomic molecular potential by using exact quantization rule approach. The wave functions have been expressed by hypergeometric functions via the functional analysis approach. An extension to rotational-vibrational energy eigenvalues of some diatomic molecules are also presented. It is shown that the calculated energy levels are in good agreement with the ones obtained previously E_nl-D (shifted Deng-Fan).

Keywords : Schrödinger equation, exact quantization rule, functional analysis, Deng-Fan potential
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