

Transitional Description of Diatomic Molecules in U(4) Vibron Model

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Abstract: U(3)-O(4) transitional description of diatomic molecules in the U(4) vibron model is studied by using the algebraic Bethe ansatz, in which the O(4) limit is a special case of the theory. Vibrational band-heads of some typical diatomic molecules are fitted by both transitional theory and the O(4) limit within the same framework. The results show that there are evident deviations from the O(4) limit in description of vibrational spectra of some diatomic molecules.

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Key words: U(4) vibron model, U(3)-O(4) transitional region, Bethe ansatz, O(4) limit, vibrational spectra of diatomic molecules

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