

Preponderance of Triaxiality in Atomic Nuclei

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The proxy-SU(3) approximation to the shell model [1], based on the highest weight irreducible representation (hw irrep) of SU(3), which are the most symmetric irreps allowed by the Pauli principle and the short-range nature of the nucleon-nucleon interaction [2], predicts [3, 4] non-vanishing triaxiality all over the nuclear chart, in accordance to the results of recent Monte Carlo shell model calculations [5] challenging the collective model of Bohr and Mottelson, as well as with recent experimental work [6]. However, highly triaxial shapes are predicted to occur only within certain regions, in accordance with empirical data [4]. The importance of the next hw irrep in the few cases in which the hw irrep turns out to be fully symmetric has been pointed out [7].

References

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