

Triaxiality in the IVBM

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Recently proposed new dynamical symmetry limit of the two-fluid Interacting Vector Boson Model (IVBM), defined through the chain $Sp(12, R) \supset U(3, 3) \supset U_p(3) \otimes \overline{U}_n(3) \supset SU^*(3) \supset SO(3)$, is applied for the description of nuclear collective spectra exhibiting axially asymmetric features. It is shown that the inclusion of a Majorana interaction to the $SU^*(3)$ model Hamiltonian produces a stable triaxial minimum in the ground state energy surface. The effect of the Majorana perturbation on structure of the γ band is studied in detail as well. It is shown that by taking into account the full symplectic structures in the considered dynamical symmetry of the IVBM, the proper description of the low-lying energy spectra and the γ -band energy staggering in the full range from γ -unstable to γ -rigid nuclei can be achieved. The theoretical predictions are compared with the experimental data for some even-even nuclei assumed to be axially asymmetric.