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Séminaire de Physique Nucléaire Théorique

Triplet Structure of Nuclear Scissors Mode.

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Low energy $M1$ excitations are studied within the Time Dependent Hartree-Fock-Bogoliubov (TDHFB) approach. The solution of TDHFB equations by the Wigner Function Moments method predicts three types of scissors modes. Together with the conventional scissors mode generated by the counter-rotation of protons against neutrons, two new modes arise due to spin degrees of freedom ("spin" scissors). The mean excitation energies and summed $M1$ strengths of two higher states are in rather good agreement with the experimental systematic. The lowest one generates a remarkable $M1$ strength below the conventional energy range. It was observed experimentally only in Dy isotopes. For all the rest Rare Earth nuclei and Actinides the lowest nuclear scissors, found by calculations, is the prediction.

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