

Assigning γ deformation from fine structure in exotic nuclei*

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The nonadiabatic quasiparticle model for triaxial shapes is used to perform calculations for decay of ^{141}Ho , the only known odd- Z even- N deformed nucleus for which fine structure in proton emission from both ground and isomeric states has been observed. All experimental data corresponding to this unique case namely, the rotational spectra of parent and daughter nuclei, decay widths and branching ratios for ground and isomeric states, could be well explained with a strong triaxial deformation $\gamma \sim 20^\circ$. The recent experimental observation of fine structure decay from the isomeric state, can be explained only with an assignment of $I = 3/2^+$ as the decaying state, in contradiction with the previous assignment, of $I = 1/2^+$, based on adiabatic calculations.

This study reveals that proton emission measurements could be a precise tool to probe triaxial deformations and other structural properties of exotic nuclei beyond the proton drip-line.

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