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Wobbling modes in odd-A nuclei in $A \sim 130$ region

Wobbling mode is uniquely related to the triaxial shape of nuclei. Based on the variation of the wobbling frequency with angular momentum of the nucleus, the wobbling motion can be further classified into two types: transverse wobbling and longitudinal wobbling [1]. Recent measurements in ^{135}Pr established a transverse wobbling mode at low spin [2]. In the present work, an effort was made to look for the wobbling motion in ^{133}La ($N = 76$), the isotone of ^{135}Pr using INGA [3]. The longitudinal wobbling nature for ^{133}La nucleus was established from the experimental angular distribution, Directional Correlation from Oriented states (DCO) and polarization measurements and the corresponding theoretical calculations for all the inter-band transitions. A microscopic model, Triaxial Projected Shell Model (TPSM), was employed to explain this transmutation. In addition, the recent experimental results on the angular distribution and polarization measurements for the linking transitions in ^{129}Cs and ^{131}Cs isotopes will be presented for the investigation of the nature of wobbling in these nuclei.

References:

[1] S. Frauendorf, F. Donau, Phys. Rev. C. 89 (2014) 014322.

[2] J.T. Matta, et al. Phys. Rev. Lett. 114 (2015) 082501.

[3] R. Palit, et al. Nucl. Instrum. Methods A 680 (2012) 90.

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