

Frontiers in Gamma Ray Spectroscopy

FIG18



Contribution ID : 8

Multiple facets of level structure in a shape-transitional nucleus

Tuesday 13 Mar 2018 at 14:15 (00h15')

Content :

A shape-transitional nucleus that sits at the limit of nuclear axiality and the onset of nuclear triaxiality has rarely revealed such a wide range of features in its excited level structure as in the case of ^{188}Pt . The medium- and high-spin level structures in this nucleus have been thoroughly investigated using Indian National Gamma Array (INGA) at TIFR, Mumbai. One exotic sequence of energy levels, that results when nucleons in the high- j and low- j orbitals are aligned with the rotational and primary deformation axes of the nucleus, respectively, has now been realized in a nucleus where shape-phase transition and high- K band structure are also evident. The ^{188}Pt nucleus boasts of the unusual coexistence of high- K and shape isomers, which are two different types of energy traps in a single nucleus. The gamma-vibration like structure and the origin of one newly observed high-spin band structure in this nucleus have revealed interesting physics. All these findings have been reported in detail in two recent publications [1,2]. The ^{188}Pt nucleus has been found to be very special, indeed, in the study of medium- and high-spin nuclear structure physics, and it presents a rare opportunity in terms of studying the interplay between nuclear axiality and triaxiality.

References:

- [1] S. Mukhopadhyay et al., Phys. Lett. B 739, 462 (2014).
- [2] S. Mukhopadhyay et al., Phys. Rev. C 96, 014315 (2017).

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Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--