Contribution ID: **83** Type: **Invited Talk**

Investigation of axial and non-axial deformed shapes in nuclei at VECC

Monday, 24 November 2025 12:25 (25 minutes)

The experimental investigation of nuclear shapes remained one of the fascinating field of research in nuclear structure research. Normally, the deformed shapes are expected in nuclei with mid-shell nucleon numbers, away from the magic numbers. However, for nuclei close to either proton or neutron shell closures, interesting structural effects are observed. In addition to axially symmetric prolate and oblate deformation, different manifestations of triaxial shapes are reported in mid-mass nuclei. The triaxial shapes are realised through the observation of gamma band, wobbling bands and chiral doublet bands. In the recent time, we have identified all these three manifestations in nuclei in different mass regions by gamma ray spectroscopic study using the Indian National Gamma Array (INGA) facility with up to 12 clover HPGe detectors at VECC. The wobbling band and gamma bands are identified in the isotopes of Au and Os, the proton Fermi levels of which lie just below the Z = 82 shell closure. The intruder h9/2 and i13/2 orbitals have been found to play important role in inducing triaxial shapes in these nuclei. On the other hand, in the lighter region, axially deformed shapes have been identified in Fe and Mn nuclei, near the doubly-magic 56Ni core. Our recent observation of a magnetic rotational (MR) band in 57Fe extended the systematics of MR bands to the lightest mass region involving only the fp orbitals.

The details of our recent results will be presented in the conference.

Primary author: MUKHERJEE, Gopal (Variable Energy Cyclotron Centre)

Presenter: MUKHERJEE, Gopal (Variable Energy Cyclotron Centre)

Session Classification: Session 2

Track Classification: Invited Talks