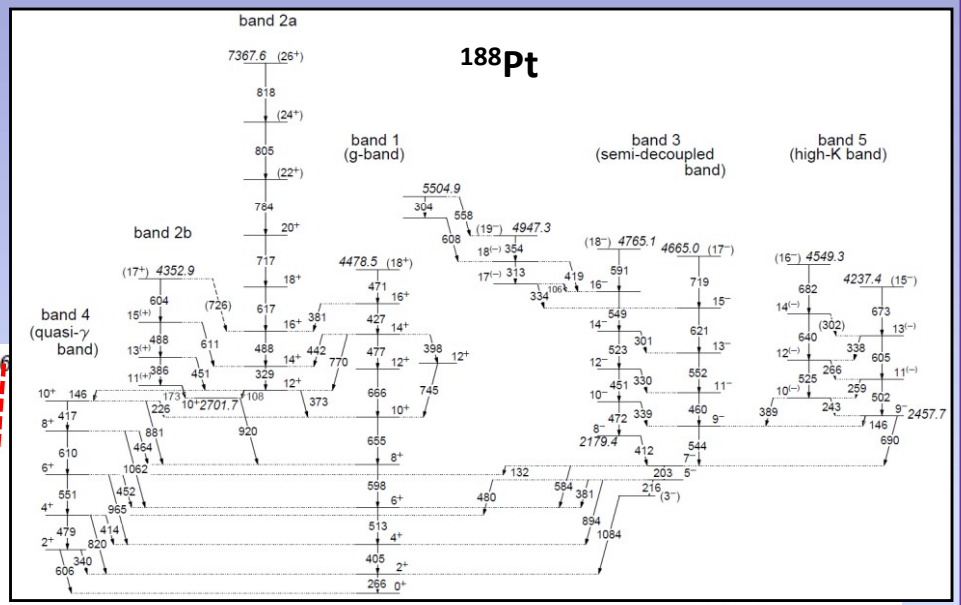
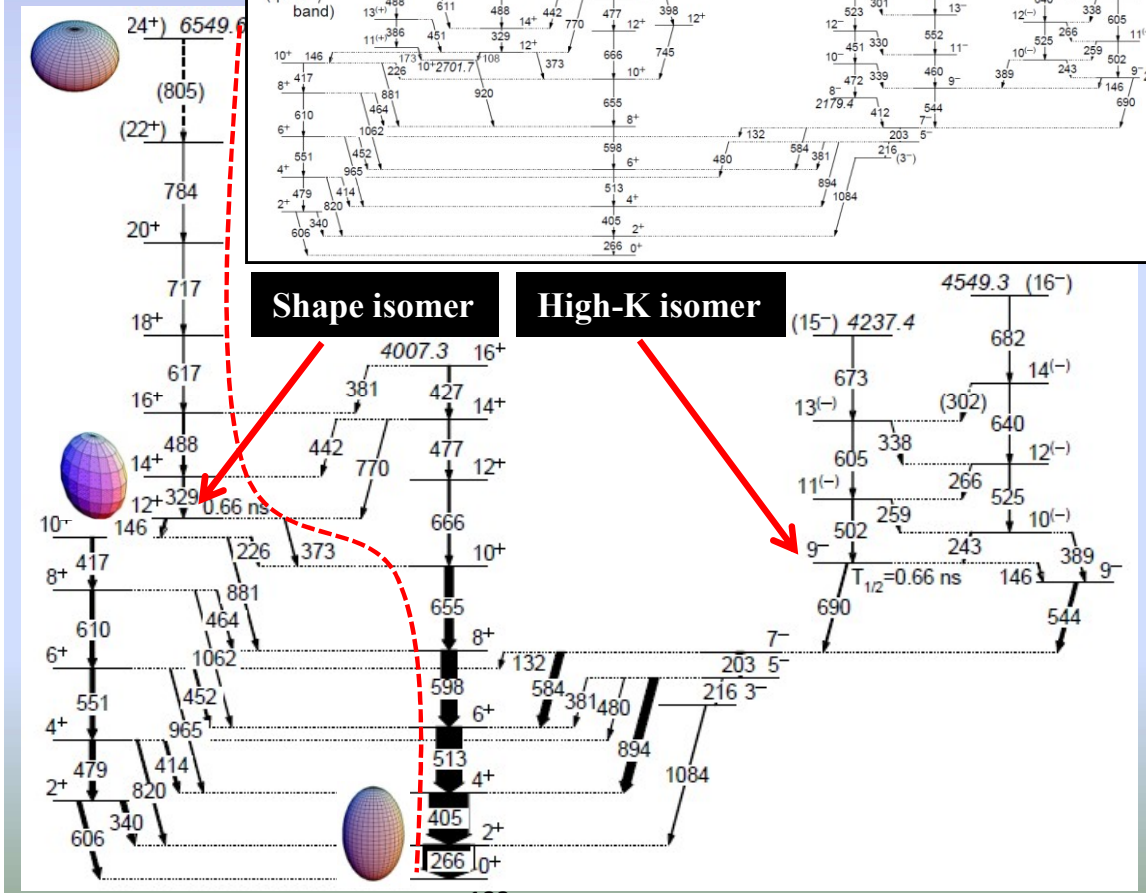
Exploring the shape transition in A~ 180 -190 mass region:

1) Multiple facets of level structure in a shape transitional nucleus.
2) Discovery of unusual co-existence of High-K and Shape isomers.
3) Evolution of exotic nuclear shape along the yrast levels.

S. Mukhopadhyay *et al.*, Phys. Lett. B 739 (2014) 462-467.
S. Mukhopadhyay *et al.*, Phys. Rev. C 96, 014315 (2017).

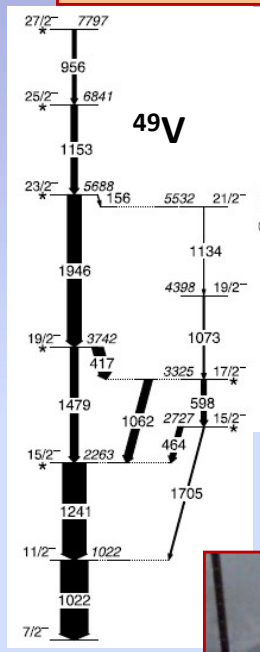


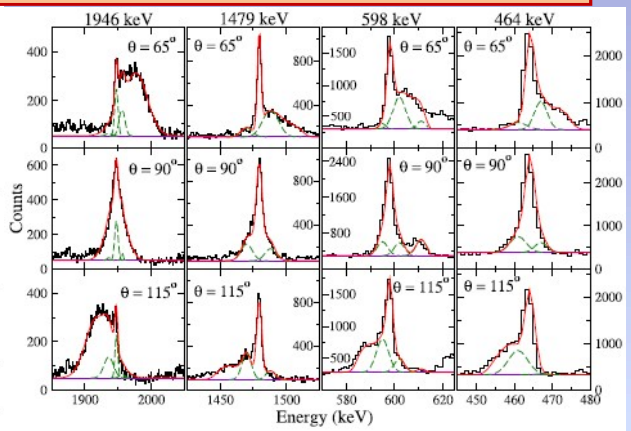


Exploring exotic nuclear excitations in the $f_{7/2}$-shell nuclei (A~50 mass region):

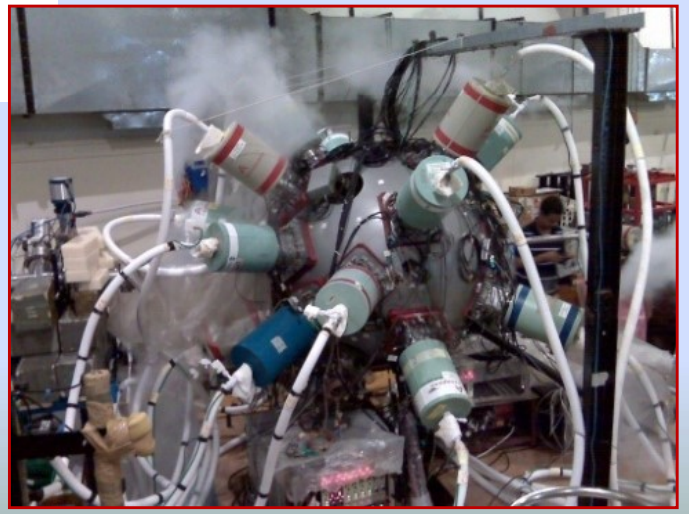
1) Interplay between collective degrees of freedom and single-particle excitations.
2) Lifetime measurements for excited states.
3) Large Scale Shell Model (LSSM) calculations.

S. Mukhopadhyay *et al.*, Nucl. Phys. A 1000 (2020) 121785-121796.





Doppler broadened Line-shape fits following DSAM analysis.



Indian National Gamma Array (INGA) spectrometer at TIFR, Mumbai, India.