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## Tri-axial deformation in even-Xe above Z=50

The diverse structural phenomena in nuclei with few valence protons above Z=50 major shell closure, are interesting to study. In A-120-130 region, the collectivity in the nuclear structures is mainly driven by the valence neutrons, while valence protons promote the single particle excitations. Both the protons and neutrons occupy the same set of orbitals, viz.,  $2d_{5/2}$ ,  $1g_{7/2}$ ,  $3s_{1/2}$ ,  $1h_{11/2}$ ,  $2d_{3/2}$ , . The shape driving effects are promoted by low- $\Omega$  as well as medium to high- $\Omega$  unique parity neutron  $1h_{11/2}$  orbital.

Xe (Z=54) isotopes have valence protons in paired condition outside Z=50 shell closure. These isotopes are good members to depict both collectivity and single particle excitations. Xe- isotopes in A~130 mass region, lie in the transitional region between  $\gamma$ -soft rotor to vibrational nature near the N=82 shell closure [1, 2]. The various structural effects [3,4] like signature splitting, wobbling, chirality,  $\gamma$ -vibrational bands are the fingerprints of tri-axiality, depicted by different Xe isotopes. For quasi- $\gamma$  band, the sequence of  $2_2^+$ ,  $3^+$ ,  $4_2^+$ ,  $5^+$ ,  $6_2^+$  etc states and their decaying transitions to ground state bands are main signatures. The yrast and near-yrast level structures of  $^{128,130}\text{Xe}$  have been investigated via two complimentary reactions using heavy and light ion beams. The experiment to populate  $^{128}\text{Xe}$ , was performed at BARC-TIFR Pelletron LINAC Facility, Mumbai using  $^{124}\text{Sn}(^9\text{Be}, 6n)$  fusion evaporation reaction at 40 MeV beam energy. Indian National Gamma Array (INGA) setup at TIFR, Mumbai in this experiment were consisted of 18 Compton suppressed Clover High Purity Ge (HPGe) detectors. The second experiment was carried out at Variable Energy Cyclotron Centre (VECC), Kolkata, using 43 MeV  $\alpha$ -beam from K-130 Cyclotron to populate  $^{130}\text{Xe}$  on 2 mg/cm<sup>2</sup> thick  $^{130}\text{Te}$  two targets back to back, evaporated on a 600  $\mu\text{g}/\text{cm}^2$  Mylar backing at VECC, Kolkata (India). The de-exciting gamma rays are detected by 11 Compton suppressed HPGe Clover detectors and 1 Low-Energy Photon Spectrometer (LEPS) of INGA setup at VECC, Kolkata coupled to PIXIE-16 based digital data acquisition system [5]. The systematics  $\gamma$ -vibrational band in  $^{128,130}\text{Xe}$  are presented in this work.

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