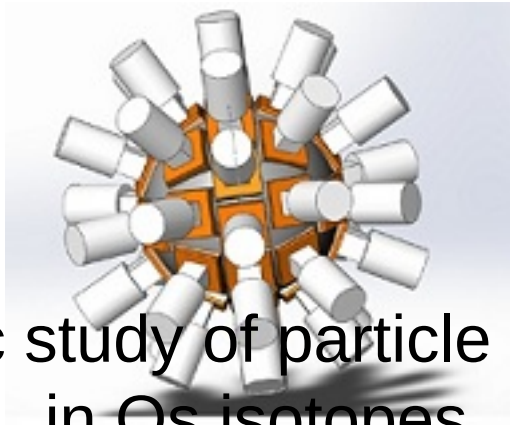
Frontiers in Gamma Ray Spectroscopy FIG18



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Systematic study of particle alignments in Os isotopes

Content :

The nuclei in the mid shell region of A=180-190 have moderate deformation and show rotational-like band structures built on different single particle configurations. Many of these nuclei are also known to have gamma-softness. Prior to the present study, the high spin structure of 187Os was little known although, band structures built on different configurations and band crossings were studied in the neighboring odd-even Os isotopes. These studies show some interesting aspects. For example, the “AB” band crossing for the 7/2-[503] band in 183Os observed at ħ⊠=0.22 MeV, is considerably delayed (ħ⊠⊠= 0.34 MeV) in 185Os. Since the level scheme in 187Os is limited to below the band crossing, so a systematic comparison is not possible. In order to get a clear picture of band crossings in this region, we have studied the medium-high spin behavior of 187Os populated by the reaction 186W (4He, 3n)187Os at 36 MeV beam from K-130 cyclotron at VECC, Kolkata. A stack of three targets each of 300microgm/cm2 on a 12C backing (20 microgm/cm2) was used. The VECC INGA array with seven Compton-suppressed clover HPGe detectors and one LEPS (electrically segmented) detector was used to detect the gamma rays. Two-fold coincidence data were recorded using a PIXIE-16 digitizer based system of UGC-DAE CSR. All the existing bands could be observed in the the preliminary analysis and several new gamma rays were also seen which would extend the bands to higher excitation energies. Interestingly, several new low energy gamma rays have been observed in the LEPS detector. The detail analysis is in progress.

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