Evidence for Shape coexistence and configuration mixing in ^{158}Er via β-decay of Tm isotope

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Nuclei around the rare earth transitional region (N ~ 90) present a variety of interesting nuclear structure features ranging from triaxiality, octupoles and shape coexistence. The neutron deficient-nucleus ^{158}Er (N = 90) lies at the boundary of the phase-transitional region, hence, it is likely to display of both transitional and deformed characteristics [1]. Properties of the low-lying states play a vital role in probing the structure of nuclei. However, the interpretation of the structure of the low-lying states in the rare earth, N ~ 90 region from previous studies was predominantly based on level spacing [1-5]. Although, it has been shown that energy spacings alone can be misleading [6]. Therefore, it has become evident that a larger set of precise experimental data for a variety of model-independent observables is necessary to constrain the interpretation of these excitations.

We shall report on the nuclear properties such as internal conversion coefficients, branching, and mixing ratios deduced from $\gamma - e^-, \gamma - \gamma$ coincident and, $\gamma - \gamma$ angular correlation measurements following the β-decay of ^{158}Tm using the GRIFFIN set up with its arsenal of ancillary detectors.

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