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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 ($N \sim 90$) 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, $N \sim 90$ 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 γ -e, γ - γ coincident and, γ - γ angular correlation measurements following the β -decay of ^{158}Tm using the GRIFFIN set up with its arsenal of ancillary detectors.

- [1] P. Aguer, et al., NP A 249, 239-252 (1975) and references therein
- [2] W.D Kulp, et al., arXiv:0706.4129 (2007)
- [3] C.R. Hirning and D.G. Burke, Can. J. Phys. 55 (1977)
- [4] D.E. Nelson, et al., Can. J. Phys. 51 (1973)
- [5] S.N.T. Majola, et al., Phy Rev. C 100, 044324 (2019)
- [6] P.E. Garrett, M. Zelinska, and E. Clement, Prog. in Part. and Nucl. Phy. 124, 103931 (2022)

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