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Search for Low Spin Collective Structures in ^{158}Er and ^{159}Er

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The nuclei $^{158,159}\text{Er}$ are classic examples of many phenomena in the study of nuclei at high spin. However, although the multi-quasi particle structures of $^{158,159}\text{Er}$ are well established, there is not much spectroscopic information on the vibrational structures in ^{158}Er or how these couple to the odd neutron in ^{159}Er . Additionally, there are several bands where the spins and/or parities are not firmly assigned. The relative lack of information at low spins is probably due to a combination of the low spins of the ground states of the nuclei $^{158,159}\text{Er}$ that β^+/ec decay to $^{158,159}\text{Gd}$, 2- and 5/2+ respectively.

Two experiments were performed in the AFRODITE spectrometer to populate ^{158}Er and ^{159}Er using 1mg/cm^2 $^{150}\text{Sm}(^{12}\text{C},4n)$ and $^{150}\text{Sm}(^{13}\text{C},4n)$ reactions respectively at 65MeV. The intention is to study their yrare states below spin 20h. Preliminary results will be presented.

A Coulomb excitation of ^{155}Gd with 86Kr ions experiment is scheduled for early May at iThemba LABS. The Physics interest is in looking for collective core excitations of ^{154}Gd that are coupled to the ground state neutron in ^{155}Gd . The outcome of this experiment will be presented as well.

Level (Hons, MSc, PhD, other)?

PhD

Consider for a student award (Yes / No)?

Yes

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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