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Analysis of EXP-017 and EXP-022: Challenges, Solutions, and Future Directions

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This presentation explores results from two experiments, EXP_017 (23.015) and EXP_022 (22.096), focussing on high-spin states in $^{136,137}\text{Nd}$ and octupole deformation in uranium isotopes, respectively.

In EXP_017, the investigation centered on the decays out of highly deformed rotational bands in ^{136}Nd and ^{137}Nd . These bands challenge existing nuclear structure theories by persisting in high-energy regions where damping is typically expected. The experiment aimed to utilise the AGATA detector array coupled to the EUCLIDES ancillary device to perform high-statistics measurements, enabling the identification of low-lying states and the determination of spin and parity. Despite challenges with efficiency and background, preliminary results suggest future promise at running this type of experiment with AGATA.

EXP_022 aimed to study octupole deformation in ^{226}U and ^{228}U isotopes, which are predicted to exhibit “pear-shaped” structures. The experiment used the AGATA, PRISMA, and DANTE detector arrays to study these isotopes through multinucleon transfer reactions induced by a ^{129}Xe beam on a ^{232}Th target. Analysis of the experiment is ongoing and preliminary results are to be presented.

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