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# Search for Tetrahedral symmetries in 156Dy

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<p>Negative-parity side bands in nuclei localized in the vicinity of N = 90 are known to have strong electric dipole transitions from each level to the ground-state band, with weak or unseen E2 transitions (E2s) in the medium ( 15h) to low-spin region. These structures have always been regarded as octupole vibrational bands. On the other hand, Dudek et al. recently proposed that these structures might be associated with tetrahedral symmetries, as they have very weak inband E2s.

In this study, data from the 148Nd (12C, 4n) 156Dy reaction, taken with GAMMASPHERE is analysed. Out of 23 rotational bands that have been observed in this present study for 156Dy, there are eleven new bands and more than 266 new transitions. We also report an observation of a band with characteristics of that discussed on the paragraph above i.e. a negative parity band with missing (or weak) inband transitions at low spin. Furthermore, the crossing between this band (tetrahedral candidate) and band 6 around spin 13h has allowed the band mixing calculation to be carried out, so that relative quadrupole moments could be deduced for these bands. However, a non-zero quadrupole moment has been deduced for our tetrahedral candidate, and this is incompatible with the tetrahedral shape. We therefore seek for an alternative description of this band.

## Level (Hons, MSc, <br>   PhD, other)?

PhD

## Consider for a student <br>   award (Yes / No)?

Yes

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

Yes

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