

## Sensitivity of the $\gamma$ -decay of the Pygmy Dipole Resonance to nuclear deformation

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Axial nuclear deformation results in a splitting of the isovector Giant Dipole Resonance into two parts, corresponding to oscillations along and perpendicular to the symmetry axis of the nucleus ( $K$ -splitting). A similar sensitivity is expected for the Pygmy Dipole Resonance (PDR) [1], a low-lying enhancement of E1 strength observed for heavy nuclei that is often attributed to a semi-collective oscillation of a neutron skin.

In recent years, the dipole response in the PDR energy region has been studied for several heavy nuclei using quasi-monochromatic linearly polarized photon beams [2] provided by the High Intensity  $\gamma$ -ray Source (HI $\gamma$ S). In this work, the dipole response of  $^{150}\text{Nd}$  ( $P = 4.4$ ) located close to the critical point X(5) was studied in nuclear resonance fluorescence experiments. The resulting average decay branches and partial photoabsorption cross sections are presented and compared to results for other deformed and non-deformed nuclei in the same mass region.

[1] D. Savran, T. Aumann and A. Zilges, Prog. Part. Nucl. Phys. **70**, 210 (2013).

[2] A. Zilges, D. Balabanski, J. Isaak, and N. Pietralla, Prog. Part. Nucl. Phys. **122**, 103903 (2022).

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