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Deformation dependence of the IsoVector Giant Dipole Resonance: The Nd and Sm isotope chains revisited

The shape transition of the IsoVector Giant Dipole Resonance from the spherical ^{142}Nd to the deformed ^{150}Nd nuclei in the even-even $^{142-150}$Nd chain was established using proton inelastic scattering at zero degrees. Comparisons were made to previous photo-absorption results obtain at Saclay. Some discrepancies that have implications for astrophysical applications were found. It should be noted that a global reanalysis of data taken using the Saclay method indicates that the (γ,n) cross sections are systematically too large and that the (γ,2n) cross sections are too small. Based on this and on the (p,p$'$) results for the Nd isotope chain, ^{144,148,150,152} Sm and ^{154}Sm have been measured to allow for isotone comparisons between the two chains and comparisons to the corresponding results obtained at Saclay with the aim of clarifying the observed discrepancies. The results of the comparisons will be presented and discussed.

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