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The Isovector Giant Dipole Resonance in the transition region of the samarium isotope chain

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The shape transition of the Isovector Giant Dipole Resonance (IVGDR) from the spherical ¹⁴²Nd to the deformed ¹⁵⁰Nd nuclei in the even-even ¹⁴²⁻¹⁵⁰Nd chain has been established using proton inelastic scattering at zero degrees. Comparisons were made to previous photo-absorption results and some discrepancies were found which have implications for astrophysical applications (PLB in preparation). In addition, ¹⁵²Sm was measured to allow for comparisons to its isotone, ¹⁵⁰Nd, to be made. These results will be discussed along with the proposal to perform a coincidence measurement of the IVGDR in ¹⁵⁴Sm via proton inelastic scattering and the observation of the subsequent γ-ray decays with BaGeL (Bagel Array of Ge and LaBr detectors). The ¹⁵⁴Sm data in addition to ¹⁵⁰Sm and ¹⁵²Sm data from a previous experiment will provide insight into the transition region of the samarium isotope chain and will provide an opportunity to test the equivalent virtual photon method in this region.

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