

Abstract Submitted
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Measurement of the Isovector Giant Quadrupole Resonance of ^{124}Sn at HI γ S MARK SIKORA, GERALD FELDMAN, JAMES PARK, George Washington University, HEIKO SCHEIT, Technische Universität Darmstadt, MOHAMMAD AHMED, North Carolina Central University and Duke University, JONATHAN MUELLER, LUKE MYERS, HENRY WELLER, Duke University — The isovector giant quadrupole resonance (IVGQR) is challenging to characterize due to its broad width and low cross section relative to the nearby giant dipole resonance. We have measured the IVGQR of ^{124}Sn via Compton scattering of nearly 100% linearly polarized photons at the High Intensity γ -ray Source (HI γ S). The term representing the interference of the E1 and E2 amplitudes in the ratio of the out-of-plane to in-plane scattering cross sections changes sign when going from forward to backward angles [1]. This provides enhanced sensitivity to the observation of the IVGQR, significantly reducing the errors in the extracted resonance parameters. The out-of-plane to in-plane scattering ratio was measured as a function of beam energy from 20-34 MeV at angles of 55° and 125° using the 8-element HI γ S NaI Detector Array (HINDA). The IVGQR parameters were then obtained by simultaneously fitting the scattering ratios at both angles. This measurement continues our effort to establish the A-dependence of the IVGQR parameters across a wide range of masses. The new results will be presented, and the current status of our ongoing program will be summarized.

[1] S. Henshaw *et al*, Phys. Rev. Lett. **107**, 222501 (2011).

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