

Abstract Submitted
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Enhanced Sensitivity to the Iso-Vector Giant Quadrupole Resonance using Linearly Polarized γ -ray Beams at HI γ S¹ S.S. HENSHAW, M.W. AHMED, N. BROWN, B.A. PERDUE, S. STAVE, H.R. WELLER, Duke U/TUNL, R. PRIOR, M. SPRAKER, NGCSU, R. PYWELL, U. Sask, G. FELDMAN, GWU, A. NATHAN, UIUC, S. WHISNANT, JMU — Data have been collected at the High Intensity γ -ray Source (HI γ S) to investigate the Isovector Giant Quadrupole (IVGQR) Resonance region in ²⁰⁹Bi, $E_\gamma = 11 - 30$ MeV. Linearly polarized $\vec{\gamma}$ -rays were incident upon an isotopically pure (>99.9%) ²⁰⁹Bi target. Angular distributions of the scattered γ -rays both parallel and perpendicular to the plane of polarization were detected using the HI γ S NaI Detector Array (HINDA). An enhancement in sensitivity to the IVGQR parameters is observed in the angular distribution of the polarization ratio of scattered γ -rays. During the 80 hour run, the nearly mono-energetic $\vec{\gamma}$ -ray intensities were $1 - 5 \times 10^7 \gamma$'s/sec on target and statistical accuracies of 1-3% were achieved. Angular distributions of the polarization ratios and subsequent extraction of the IVGQR resonance parameters for the ²⁰⁹Bi nucleus will be reported.

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