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The GEp-2γ Experiment at Jefferson Lab Hall-C MEHDI MEZIANE, The College of William & Mary, THE JEFFERSON LAB HALL-C GEP-2γ AND GEP-III COLLABORATION —

Intensive theoretical and experimental efforts have been made over the past decade aiming at explaining the discrepancy between the data for the proton form factor ratio, G_{Ep}/G_{Mp}, obtained at Jefferson Lab using polarization transfer technique, and the world data obtained by the Rosenbluth method based on cross section measurements. One possible explanation for this difference is a two-photon exchange contribution, where both photons share the momentum transfer about equally. In the Born approximation for a fixed Q^2, the form factors do not depend upon the energy of the incident electron as they are relativistic invariants. We will report the results of the Jlab Hall-C GEp-2γ experiment which was designed to measure a possible kinematical variation of the ratio G_{Ep}/G_{Mp} with statistical uncertainties of ± 0.01 at Q^2=2.5 GeV^2, using the recoil polarization technique. Three kinematics were chosen, corresponding to values of the kinematic factor ϵ=0.15, 0.63 and 0.77. We will describe the new detectors built for both GEp-2γ and GEp-III experiments, the electromagnetic calorimeter BigCal which detected the scattered electron, and the focal plane polarimeter (FPP) which measured the polarization of the recoil proton.

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