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Parity-Violating Asymmetry in the Nucleon to Delta Transition

CARISSA CAPUANO, College of William and Mary, G^0 COLLABORATION — The G^0 collaboration at Jefferson Lab has measured the parity-violating asymmetry of polarized electrons scattered inelastically from the proton. Data were obtained for inclusive pion electroproduction at a beam energy of 687 MeV, with the scattered electrons detected at backward angle ($\theta_e \sim 110°$). These data will be used to extract the axial vector transition form factor $G^A_{N\Delta}$ for Q^2 in the range 0.3 GeV/c^2 $< Q^2 <$ 0.4 GeV/c^2. $G^A_{N\Delta}$ characterizes the intrinsic spin response of the nucleon during the transition to its first excited state, the $\Delta(1232)$. While previous measurements using charged current reactions have indirectly measured $G^A_{N\Delta}$, the G^0 measurement represents the first direct determination of this quantity using a neutral current probe. Preliminary results will be presented.

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