

The G^0 Experiment: Parity Violation in e-N elastic scattering

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The G^0 experiment¹ will measure the parity-violating asymmetries in elastic electron-nucleon scattering. The experiment is being performed in Hall C at the Jefferson Laboratory using a polarized electron beam and a dedicated experimental setup. Measurements of the electron-proton asymmetries will be made at both forward and backward angles, and electron-deuteron asymmetries at the backward angles. These measurements will cover a momentum transfer range of $0.1 - 1.0$ (GeV/c)². From these data the vector neutral weak form factors, G_E^Z and G_M^Z , and the effective axial current of the nucleon, G_A^e , may be extracted. When combined with the known electromagnetic form factors, one will be able to extract the contributions of u , d , and s quarks to the proton's charge and magnetization distributions. The first measurements at forward angles for the full momentum transfer range have very recently been completed. An overview of G^0 experiment and physics will be presented.

References

1. JLab experiment E00-006, D.H. Beck, spokesperson.

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