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The Generalized GDH Sum Rule: Measuring the Spin Structure of ^3He and the Neutron using Nearly Real Photons JAIDEEP SINGH, University of Virginia, JEFFERSON LAB HALL A COLLABORATION — The Gerasimov-Drell-Hearn (GDH) sum rule is one of the most important tools available to study nucleon spin structure. Originally derived for real photon absorption ($Q^2 = 0$), the GDH sum rule has been generalized to finite Q^2 . The goals of Jefferson Lab experiment E97-110 are to measure the Q^2 dependence of the GDH integral between 0.02 and 0.3 (GeV/c) 2 , to study the slope of the GDH integral at $Q^2 \approx 0$, and to extrapolate to the real photon point for ^3He and the neutron. In this domain, the measurement of the generalized GDH integral tests Chiral Perturbation Theory and probes its limits of applicability at low Q^2 . The low Q^2 measurements from this experiment will provide new constraints on understanding the ^3He and neutron spin structure and a better understanding of the effect of nucleon resonances. Data collection was completed in August 2003 using the Jefferson Lab high polarization continuous electron beam and a polarized ^3He target. The status of the data analysis and future perspectives will be discussed.

Jaideep Singh
University of Virginia

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