

Abstract Submitted
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Measurement of the ^3He and Neutron Spin Structure at Low Q^2

VINCENT SULKOSKY, The College of William and Mary, JEFFERSON LAB HALL A COLLABORATION, E97-110 COLLABORATION¹ — The Gerasimov-Drell-Hearn (GDH) sum rule was originally derived for real photon absorption (corresponding to $Q^2=0$) and has been generalized to finite Q^2 . The goal of Jefferson Lab experiment E97-110 is to perform a precise measurement of the generalized GDH integral and the moments of the neutron spin structure functions in order to study their Q^2 dependence between 0.02 and 0.3 (GeV/c)². This Q^2 range will allow us to test the dynamics of Chiral Perturbation Theory, extrapolate to the integral's real photon point for ^3He and the neutron, and will complement a previous experiment at higher Q^2 . The measurement will provide new constraints on the ^3He and neutron spin structure and contribute to the understanding of the nucleon resonances. The acquisition of data was completed using the Jefferson Lab high polarization continuous-wave electron beam, the Hall A polarized ^3He target, and one of the Hall A septum magnets, which allow measurements at forward angles of 6 and 9 degrees. The status and prospects will be discussed.

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