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**Probing the Spin Structure of the Nucleon: New Experimental Results on $d_2$ and $A_1$ for both Neutron and Proton from JLab**

BRAD SAWATZKY, Jefferson Lab

The last several years of Jefferson Lab's 6 GeV physics program saw a wealth of nucleon spin structure measurements run across several Halls. In particular, E06-014 ("$d_2^n$") in Hall A (polarized neutron), and E07-003 ("SANE") in Hall C (polarized proton) took advantage of significant advances in target design and new/upgraded large solid angle detector packages to run precision measurements of neutron and proton spin structure functions over the region $0.2 < x < 0.8$ and $2.5 < Q^2 < 6.5\,\mathrm{GeV}^2/c^2$. Of note, the SSF $g_2$ and associated higher twist reduced matrix element $d_2$ are fundamentally coupled to the quark-gluon interactions and transverse momentum of the quarks in the nucleon, and are among the cleanest higher twist observables we can access. New data on $g_1$, $g_2$, spin asymmetries $A_1$ and $A_2$, and the $d_2$ moment for both the neutron and proton will be presented, and future measurements that exploit JLab's 12 GeV upgrade will be touched on.