

Polarized Structure Function of Nucleon and Orbital Angular Momentum

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We have utilized the concept of valon model to calculate the spin structure function of a constituent quark. This structure is universal and arises from perturbative dressing of a valence quark in QCD. With a convolution method the polarized structure functions of proton, neutron and deuteron are obtained. Our results agree rather well with all available experimental data. It suggests that the sea quark contribution to the spin of nucleon is consistent with zero, in agreement with HERMES data. It also reveals that while the total quark contribution to the spin of a constituent quark, or valon, is almost constant and equal to one, the gluon contribution grows with increase of Q^2 , and hence, requiring a sizable negative angular momentum contribution. This component, as well as singlet and non-singlet parts are calculated in the Next-to-Leading order in QCD. We speculate that gluon contribution to the spin of proton is in the order of 50%. Furthermore, we have determined the polarized valon distribution in a nucleon.