



Contribution ID: 158

Type: **not specified**

# The SANE Experiment and QCD Color Forces

*Tuesday 27 September 2016 11:05 (25 minutes)*

QCD Confinement precludes experiments from resolving colored quarks in order to understand the strong forces between them, however, polarized DIS experiments uniquely provide a clean measurement of observables used in determining an average color Lorentz force on the struck quark. Within the operator product expansion framework, the twist-3 matrix element,  $dp_2 = R x^2 (2g_1 + 3g_2) dx$ , is proportional to the average color Lorentz force on the quark (moving in the infinite momentum frame) the instant after being struck by a virtual photon. The Spin Asymmetries of the Nucleon Experiment (SANE) measured the proton's polarized spin structure functions  $g_1$  and  $g_2$  in a range of Bjorken  $x$ ,  $0.3 < x < 0.8$ , where the  $dp_2$  integral is most sensitive. The data was taken from  $Q^2$  equal to  $2.5 \text{ GeV}^2$  up to  $6.5 \text{ GeV}^2$  allowing for the  $Q^2$  dependence of  $dp_2$  to be studied. In addition to presenting the latest results on spin structure functions, we will discuss the physics impact and extraction of  $dp_2$ .

**Presenter:** ARMSTRONG, Whitney (Argonne National Laboratory)

**Session Classification:** Low Energy

**Track Classification:** E. Low Energy