



Contribution ID: 313

Type: **not specified**

Possible Color Entanglement Effects in $p+p$ and $p+A$ Collisions

Wednesday, 5 April 2017 16:40 (20 minutes)

Due to the non-Abelian nature of QCD, there is a prediction that quarks can become correlated across colliding protons in hadron production processes sensitive to nonperturbative transverse momentum effects. Measuring the evolution of nonperturbative transverse momentum widths as a function of the hard interaction scale can help distinguish these effects from other possibilities. Collins-Soper-Sterman evolution comes directly from the proof of transverse-momentum-dependent (TMD) factorization for processes such as Drell-Yan, semi-inclusive deep-inelastic scattering, and $e+e^-$ annihilation and predicts nonperturbative momentum widths to increase with hard scale. Experimental results from proton-proton and proton-nucleus collisions, in which TMD factorization is predicted to be broken, will be presented. The results show that these widths decrease with hard scale, suggesting possible TMD factorization breaking and color entanglement of partons across colliding protons.

Primary author: Dr SKOBY, Michael (University of Michigan)

Presenter: Dr SKOBY, Michael (University of Michigan)

Session Classification: WG6 Spin and 3D Structure

Track Classification: WG6) Spin and 3D Structure