Abstract Submitted
for the SES14 Meeting of
The American Physical Society

Nucleon Spin and Twist Three Distributions FNU ABHA RAJAN, University of Virginia — I will be talking about the significance of twist three distribution functions in our understanding of spin of protons and neutrons. When the EMC experiment in the 1980s at CERN showed the quark spin contribution to be extremely small, it presented us with the nucleon spin puzzle. I have been working on the angular momentum generated by the motion of quarks and gluons: the orbital angular momentum contribution (OAM). Transverse momentum distributions (TMDs) and generalised parton distributions (GPDs) are theoretical quantities that provide us with the frameowork to study many different properties of the nucleon including the partonic OAM. By looking at the helicity content of these objects we can make the connection to experimental observables. TMDs and GPDs are obtained by parameterizing the quark correlator between hadron states under different kinematical conditions. TMDs include quark transverse momentum while the GPDs involve momentum transfer between the hadron states. At leading order, the so called twist two limit, the correlator only involves two quarks but, at the next order a gluon needs to be included as well. I am trying to understand the physics of this limit and explore the new aspects of partonic OAM that these distributions shed light on.

FNU Abha Rajan
University of Virginia

Date submitted: 02 Oct 2014 Electronic form version 1.4