Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Science opportunities with a Neutral Particle Spectrometer in Hall C at Jefferson Lab.[1] VLADIMIR BERDNIKOV, The Catholic University of America, NPS COLLABORATION COLLABORATION — The two-arm combination of a high-resolution neutral-particle spectrometer (NPS) and a magnetic spectrometer offers unique scientific capabilities for studies of the transverse spatial and momentum structure of the nucleon in Hall C. It makes possible measurements of the basic semi-inclusive neutral-pion cross section to validate QCD factorization, a cornerstone of 3D transverse momentum imaging. It enables precision measurements of the deeply-virtual Compton scattering cross section at different beam energies to extract the real part of the Compton form factor without any assumptions. The combination of high precision calorimetry with NPS allows measurements to push the energy scale of real Compton scattering, the process of choice to explore factorization in a whole class of wide-angle processes, and its extension to neutral pion photo-production. The combination of high precision calorimetry with NPS and a novel compact high intensity photon sources greatly enhances scientific benefit to exclusive processes like wide-angle and time-like Compton scattering with transverse polarized targets. In this talk I will give an overview of the science program and discuss the status of the NPS construction including data from recent prototype tests.

[1]Supported in part by NSF award PHY1714133

Vladimir Berdnikov
The Catholic University of America

Date submitted: 30 Jun 2019 Electronic form version 1.4