

## Deep Inelastic Scattering 2025



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# The Neutral Particle Spectrometer (NPS) in Hall C of Jefferson Lab.

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The Neutral Particle Spectrometer (NPS) in Hall C of the Thomas Jefferson National Accelerator Facility (aka Jefferson Lab) is a standalone electromagnetic calorimeter for detecting high energy photons. The NPS science program is a suite of ten approved precision experiments of small cross sections divided into two run groups. The first run group, RG1A, consists of the measurement of exclusive Deeply Virtual Compton Scattering (DVCS) off both a proton (LH2) and a neutron (LD2) target, Deeply Virtual Meson Production (DVMP) with neutral pions, and semi-inclusive deep-inelastic (SIDIS) with neutral pions, cross sections to the highest  $Q^2$  and a wide range in  $x$ -Bjorken accessible at Jefferson Lab. DVCS and DVMP channels are necessary to map out the 3D structure of the nucleons in the Generalized Parton Distribution (GPD) framework. The SIDIS off the proton (with the neutral pion) channel cross sections aim to access Transverse Momentum Distributions (TMDs) and also seeks to validate the factorization framework that is needed by the entire 12 GeV semi-inclusive deep-inelastic scattering program and beyond 12 GeV. The RG1A experiments ran from September 2023 to May 2024 on both proton (hydrogen) and neutron (deuterium) targets. In this talk, an overview, status, and a brief analysis update of the R1GA experiments will be discussed.

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