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Confirming the potential for nucleon structure studies with neutral final states and the Neutral Particle Spectrometer at JLab Hall C[1]
RISHABH UNIYAL, TANJA HORN, Catholic University of America — The two-arm combination of neutral-particle detection and a high-resolution magnetic spectrometer offers unique scientific capabilities to push the energy scale for studies of the transverse spatial and momentum structure of the nucleon through reactions with neutral particles requiring precision and high luminosity. As example, it enables precision measurements of the deeply-virtual Compton scattering cross section and the basic semi-inclusive neutral-pion cross section, which is crucial to validate a cornerstone of 3D transverse momentum imaging. This science program is enabled by a Neutral-Particle Spectrometer (NPS) and the magnetic spectrometer pair in Hall C at the 12 GeV JLab. In this talk we will discuss the experiment the NPS will be used for and its components, for instance, the crystal array and what properties are desirable from the crystals to meet the specifications of the experiments.

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