

Abstract Submitted
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Event Reconstruction for Diffractive Scattering at the Electron-Ion Collider¹ ATHIRA VIJAYAKUMAR, BARAK SCHMOOKLER, Stony Brook University — Diffractive Deep Inelastic Scattering a colorless exchange between the target nucleus and the incoming electron that manifests in a rapidity gap in the detector is sensitive to the geometric structure of hadrons, and hence can be used as a probe for exploring the mystery of confinement and saturation. We will discuss the complementary event kinematic reconstruction methods for exclusive diffractive events and assess their impact on the physics studied in various kinematic regimes. For the simulation studies, a comparison of Pythia and Sartre event generators was done comparing with HERA data for e-p elastic J/ψ production. As Sartre shows promising agreements to HERA data, the output is passed to a fast simulation package (eicsmear) as well as a full forward spectrometer simulation (EicRoot) to perform the kinematics reconstruction. Pythia generated background studies aided in parametrizing the far forward components such as ZDCs that are crucial in differentiating the elastic from breakup events. Additionally, we will describe how we incorporated the dependence of the angular distribution of the vector meson decay products on the polarization of the virtual photon in DVMP processes, in Sartre.

¹CFNS

Athira Vijayakumar
Temple University, Stony Brook University

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