

Abstract Submitted
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Deeply Virtual Exclusive Reactions in a Polarized Electron Ion Collider¹ CHARLES HYDE, Old Dominion University — An Electron Ion collider is proposed as the next major project for hadronic physics studies at high energy. I briefly review the JLab MEIC proposal, including a full acceptance detector. I focus on the integration of a far-forward spectrometer into the accelerator lattice of the Interaction Point (IP), optimized for detection of the recoil nucleons or nuclei in Deeply Virtual Exclusive Scattering (DVES) reactions. The far forward design features 100% neutron detection in a cone of 25 mrad around 0°, complete detection of beam ions at all angles (down to 0° for momenta $|p - p_0|/p_0 > 0.05\%$, where p_0 is the beam momentum, and detection of beam ions at all momenta, for scattering angles at the IP greater than 3 mrad. The momentum resolution in the far forward region is $\leq 3 \cdot 10^{-4}$, limited by the intrinsic beam momentum spread. Spatial imaging of nuclei via DVES in the coherent peak requires measuring transverse momentum transfers to less than $1/R_A$, where R_A is the nuclear rms radius. For all but the lightest nuclei, mapping the coherent peak requires a special high- β^* tune. I discuss the trade-offs of luminosity, count rate, and spatial resolution for DVES studies on nuclei.

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