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Detailed Study of Event Reconstruction for electron-nucleus Collisions at an EIC BARAK SCHMOOKLER, Stony Brook University — The electron-nucleus (and electron-proton) inclusive scattering cross section is a function of the center-of-mass energy, $\sqrt{s}$, and of two kinematic variables. Therefore, an accurate reconstruction of the event kinematics is vital at a future electron-ion collider. Various methods for reconstructing the event kinematics have been developed for electron-proton collisions. For neutral-current processes, the kinematics can be reconstructed using either the scattered electron, the final-state hadronic system, or a combination of both. For charged-current scattering, reconstruction relies on the hadronic system. The accuracy of a given reconstruction method depends non-trivially on the kinematic regime under study, detector acceptance and resolution effects, and the size of radiative processes. In this talk, we will show new detailed simulation studies of kinematic reconstruction for electron-nucleus collisions at an EIC. These simulations reconstruct the products of e-A Monte Carlo generators using possible EIC detectors with various acceptance and resolution characteristics. Furthermore, we will describe novel methods that we have developed to extend the kinematic reconstruction techniques created for electron-proton scattering to the case of electron-nucleus scattering.

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