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Kinematic Fitting for Inclusive Physics with EPIC at the Electron Ion Collider

Wednesday 29 March 2023 11:50 (20 minutes)

A precise reconstruction of the kinematic variables x, y and Q^2 is essential for the physics program at the future EIC. Conventional reconstruction methods usually rely on two of the four measured quantities (energy and angle of the scattered electron and hadronic final state) with the resolution of each method depending on the kinematic regime under study, detector performance, and initial-state photon radiation. A kinematic fit using all measured quantities can fully exploit the available information to obtain a best estimate of the kinematic variables, as well as the energy of any initial state radiation. A technique applying a Bayesian method with suitable priors has been applied to fully simulated inclusive neutral current EIC data in the context of the planned EPIC detector. The performance of the kinematic fitting method is compared with conventional methods. The impact of the precise kinematic reconstruction on the expected physics output of the experiment is explored.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

Primary authors: NEWMAN, Paul Richard (University of Birmingham (GB)); MAPLE, Stephen; MAPLE, Stephen; MAPLE, Stephen

Presenters: MAPLE, Stephen; MAPLE, Stephen; MAPLE, Stephen

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