Abstract Submitted
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Open heavy flavor and jet studies for the future Electron-Ion Collider[1] XUAN LI, Los Alamos National Laboratory — The proposed high luminosity high energy Electron-Ion Collider (EIC) will provide a clean environment to precisely study the nuclear modification of the nuclear parton distribution functions (nPDFs) and hadronization processes within a wide x-Q^2 phase space. Heavy flavor hadron and jet measurements at the future EIC will allow us to better determine the nPDFs in the poorly constrained high Bjorken-x region and provide enhanced sensitivities to the nuclear transport properties in medium. We propose to develop a new physics program to study the flavor tagged hadrons/jets, heavy flavor hadron-jet correlations and flavor dependent jet fragmentation processes in the nucleon/nucleus going direction (forward region) at the EIC. These proposed measurements will provide a unique path to explore the flavor dependent fragmentation functions and energy loss in heavy nuclei, which can constrain the initial state effects for previous and ongoing heavy ion measurements. A forward (proton/nuclei going direction) silicon tracking detector is essential to carry out these measurements at the EIC. Details of the proposed new physics program, progresses of the detector and physics simulation studies and the status of the detector R&D will be discussed in this presentation.

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