New heavy flavor program for the future Electron Ion Collider
XUAN LI, Los Alamos National Laboratory — The proposed high luminosity high
energy Electron Ion Collider (EIC) will explore the proton/nuclear structure, search
for gluon saturation and precisely determine the nuclear parton distribution functions (nPDFs) in a wide x-Q^2 phase space. Heavy flavor measurements at the future
EIC will allow us to directly study the nPDFs, the quark/gluon fragmentation processes and energy loss in the nuclear medium within the poorly constrained high
Bjorken-x region. 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. The 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
at the Relativistic Heavy Ion Collider (RHIC) and the Large Hadron Collider (LHC).
To realize these measurements, detector R&D and detector design are needed. Details of the proposed physics program and progress on the simulation studies will be
discussed in this presentation.

Xuan Li
Los Alamos National Laboratory

Date submitted: 18 Jun 2019   Electronic form version 1.4