

Light Ion Polarimetry at the EIC

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Polarization of high energy proton beams has successfully been measured at RHIC with elastic proton-proton and proton-Carbon scattering. The analyzing power is not known from first principles and has to be measured.

The observed background to the elastic scattering events needs to be much better understood because of the much shorter bunch spacing at EIC. This background can cause a simple dilution of the elastic scattering events or it can bias the polarization.

It will therefore be very informative to use the existing RHIC facilities in the next few years to assess as much information as possible for light ion polarimetry, namely event rates, both for elastic scattering and for backgrounds (including breakup), and analyzing powers.

A programme of simulations was initiated to prepare the mentioned measurements and to understand the EIC conditions. A first step is to simulate the proton-proton interactions at RHIC, for which the event generator Pythia6 is being used. Dpmjet3 is the event generator of choice to, first, reproduce Pythia6 results and, afterwards, to simulate interactions with light ions, as it is prepared to describe the interactions at low momentum transfer relevant for the polarimeters. The energy loss of the particles in the silicon sensors is to be described by Geant4. Simulation results will be presented and discussed.

Primary author: NUNES, Ana Sofia (Brookhaven National Laboratory)

Presenter: NUNES, Ana Sofia (Brookhaven National Laboratory)