

Abstract Submitted
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Particle Transportation Through the JLab Hall A BigBite Spectrometer¹ SHEREN ALSALMI, Kent State Univ - Kent — The BigBite spectrometer of the Hall A Facility of Jefferson Lab is under refurbishment for use in an experiment (E120-10-103) to measure deep inelastic electron scattering off helium-3 and tritium mirror nuclei in the valence quark region (high Bjorken x range). The experiment will use an 11 GeV upgraded beam to determine the ratio of the neutron to proton F2 inelastic structure functions, and the ratio of the down to up quark, d/u , quark probability distributions in the nucleon. The BigBite spectrometer is based on a custom-shaped dipole magnet, which provides for large momentum and angular acceptances needed for the above measurements. Simulations using a ROOT-based Monte Carlo model for tracking and visualizing scattered electrons passing through the BigBite magnet will be presented. The optics parameters of the dipole magnet have been extracted from a field map produced by a TOSCA magnetostatics calculation. The simulations are necessary to estimate the phase space of the scattered electrons inside the relocated detectors of the spectrometer, and check for electrons which could possibly miss a detector and escape detection. This work is supported by Saudi Arabian Cultural Mission SACM , Kent State University, NSF Grant PHY-1405814, and DOE Contract DE-AC05-06OR23177.

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