

XXVIII International Workshop on Deep Inelastic Scattering and Related Subjects



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A luminosity monitor for the Electron Ion Collider

Many EIC physics goals are based on precise measurements of absolute cross sections, for this a determination of the integrated luminosity is crucial. The design goal for the EIC is to have an uncertainty in the luminosity measurement of about 1%.

In this talk a first study of the EIC luminosity monitoring system will be presented.

The design is based on detecting Bethe-Heitler bremsstrahlung photons, emitted by the electron beam interacting with proton or nuclear beams.

The photons will be detected in a zero degree photon calorimeter and in a pair spectrometer for electron-positron pairs generated in photon conversions on an aluminum exit window in the photon beam.

The presentation will describe a dedicated event generator for bremsstrahlung photons, and a GEANT-4 model of the luminosity system and its performance characteristics will be shown.

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