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Calorimetry for the Electron Ion Collider

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The Electron Ion Collider (EIC) is a new facility that has been proposed in the US to study the structure of nuclear matter in the gluon dominated regime of QCD using Deep Inelastic Scattering (DIS) with precision electromagnetic probes. The project received DOE CD-0 approval in January 2020 and will be sited at Brookhaven National Laboratory. It will utilize the existing RHIC collider to provide beams of polarized electrons in the energy range from 2.5-18 GeV to collide with heavy ions in the energy range from 10-100 GeV/A and protons up to 275 GeV/c. It will require major new detector systems to measure the scattered electron with high precision and full calorimeter, tracking and particle id systems to reconstruct the overall event. The physics and detector requirements were recently summarized in a Yellow Report prepared by the EIC Users Group which includes a conceptual design for a baseline Reference Detector along with many other details. This talk will focus on the calorimeter systems for an EIC detector and describe some of the detector technologies that are being considered, along with results from a generic Detector R&D program that has explored some of these technologies over the past 10 years.

Primary author: WOODY, Craig (Brookhaven National Lab)

Presenter: WOODY, Craig (Brookhaven National Lab)

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