Abstract Submitted
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Simulation Study of Electromagnetic Endcap Calorimeter[1] JIHEE KIM, Argonne National Laboratory — The Electron-Ion Collider (EIC) will be an ultimate experimental facility to explore the gluon-dominated regime in nucleons and nuclei, shedding light on their structure and the interactions within. Among four detector concepts driven by the EIC community, the Timing Optimized PID Silicon Detector for the EIC (TOPSiDE) is introduced as in the ANL concept of an EIC detector. The TOPSiDE detector concept is designed to utilize ultra-fast silicon devices for particle identification in the central detector region with full 4π coverage. In the electron-beam direction, a crystal endcap calorimeter is added for the scattered and decay lepton identification and precision energy resolution focusing on DVMP/DVCS exclusive measurements for the -3.5 $< \eta <$ -2 range. It is composed of lead tungstate ($PbWO_4$) crystals bars with a length of $22.5X_0$, and a transverse size of 2×2 cm^2 which includes the small Molière radius of 2 cm. In this work, I will present the energy resolution performance in the energy range up to 30 GeV of scattered leptons using homogeneous crystal endcap calorimeter in the TOPSiDE detector concept of the EIC detector.

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Jihee Kim
Argonne National Laboratory

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