



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 209

Type: **Invited Speaker** / **Conférencier(ère) invité(e)**

The Barrel Imaging Calorimeter for the ePIC Experiment at EIC

Tuesday 10 June 2025 10:15 (30 minutes)

The Electron-Ion Collider (EIC) is a facility being constructed at Brookhaven National Lab that will enable investigation of gluon interactions and structure in nucleons and nuclei using polarized beams of electrons and atomic nuclei. The Electron-Proton/Ion Collider (ePIC) experiment will be the first to run at EIC. The ePIC detector will be a barrel-shaped hermetic detector comprised of many specialized subsystems (Cherenkov detectors, tracking systems, calorimeters, and time-of-flight detectors), each handling various facets of particle detection and identification in different spatial regions. ePIC collaborators at the University of Regina primarily contribute to the design, simulation, and testing of the Barrel Imaging Calorimeter (BIC), the electromagnetic calorimeter in the barrel region of the detector. This subsystem must accurately gauge the energy and paths of photons passing through it while providing precise measurements of other electromagnetic particle energy and shower profiles in order to distinguish electrons from other particles, such as background pions in deep inelastic scattering processes at high Q^2 .

I will be discussing the design and projected capabilities of the BIC, a hybrid detector system that combines traditional calorimetry using scintillating fibers embedded in lead with imaging calorimetry based on AstroPix chips (low-power monolithic active pixel sensors). Progress in prototyping, testing, and signal readout integration will also be presented.

Keyword-1

Electromagnetic Calorimetry

Keyword-2

High-Energy Collider Physics

Keyword-3

Author: BEATTIE, Tegan

Co-authors: PAPANDREOU, Zisis (University of Regina); Dr TEYMURAZYAN, Aram

Presenter: BEATTIE, Tegan

Session Classification: (DNP) T1-6 Hadrons | Hadrons (DPN)

Track Classification: Technical Sessions / Sessions techniques: Nuclear Physics / Physique nucléaire (DNP-DPN)