Contribution ID: **152**                                                Type: **Oral Presentations**

# The high-performance DIRC detector for ePIC Detector at the future Electron-Ion Collider

*Tuesday, 5 September 2023 12:40 (20 minutes)*

The next frontier project of nuclear physics in the United States will be the Electron-Ion Collider (EIC), planned to be built in the Brookhaven National Laboratory (BNL). Excellent particle identification (PID) is one of the key requirements for the EIC central detector. Identification of the hadrons in the final state is critical to study how different quark flavors contribute to nucleon properties. A detector using the Detection of Internally Reflected Cherenkov light (DIRC) principle, with a radial size of only 7-8 cm, was selected to meet these requirements. The high-performance DIRC (hpDIRC) detector is being developed through multiple R&D programs. It will extend the momentum coverage well beyond the state-of-the-art 3 standard deviations or more separation of $\pi$/K up to at least 6 GeV/c, p/K up to 10 GeV/c, and low momentum e/$\pi$. Key components of the hpDIRC detector are a 3-layer compound lens and small pixel-size photosensors. This contribution will present major developments in the DIRC R&D programs, with a focus on developing and validating the radiation hard 3-layer lens, investigating the reuse of BaBar DIRC bars, and the hpDIRC full system prototype program with Cosmic Ray Telescope at Stony Brook.

**Primary author:**   KALICY, Greg (CUA)

**Presenter:**   KALICY, Greg (CUA)

**Session Classification:**   B3