



Contribution ID: 198

Type: **Contributed talk**

The dRICH detector at the ePIC experiment

Monday, 8 July 2024 15:00 (20 minutes)

ePIC will be a general-purpose detector designed to enable the entire physics program of the Electron-Ion Collider (EIC) at BNL, USA. Several key physics measurements depend on efficient Particle Identification (PID). The PID system of ePIC covers a wide pseudorapidity ($-3.3 < \eta < 3.5$) and momentum range. Several technologies have been identified to serve such purpose.

In the forward region ($1.5 < \eta < 3.5$) a Dual Ring Imaging Cerenkov detector (dRICH) will be employed to provide efficient and continuous hadron PID from 1 GeV/c to 50 GeV/c and to support the electromagnetic calorimeter by pion rejection in the lower momentum region. The dRICH comprises two different radiators, aerogel and gas (C₂F₆), to cover the entire momentum range. SiPM based photosensors are placed in six spherical sectors to detect Cherenkov photons which are focused by six spherical mirrors.

The presentation will introduce the dRICH detector and discuss several results from simulation studies, with a special focus on the separation power for pions and kaons and its dependency with the particle momentum and pseudorapidity.

session

A. Facilities and Detectors

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Session Classification: A. Facilities and Detectors