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## The dRICH detector at the future ePIC experiment

The ePIC detector is designed as a general-purpose detector to enable the entire physics program of the future Electron-Ion Collider (EIC) at BNL, USA. A key feature will be particle identification (PID). A PID system covering a wide pseudorapidity range [-3.3, 3.5] is critical for accurately separating electrons from hadrons such as pions, kaons, and protons.

PID in the forward region will be provided by a dual Radiator Ring Imaging Cerenkov (dRICH) detector. Photons will be focused by spherical mirrors and detected by silicon photomultiplier sensors placed on six spherical tiles.

This presentation aims to provide a concise overview of the dRICH. The latest studies of the achievable pionkaon separation efficiency will be shown, exploring its dependence on particle momentum and selected pseudorapidity intervals. Furthermore, GEANT4-based simulation studies will be presented, with a particular emphasis on one of the two radiators integrated in the dRICH, the aerogel, which enables a detailed investigation of particle behavior at the low-momentum regime. The detector's performance, based on chosen geometries, will also be discussed.

Secondary track

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