

Abstract Submitted
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A Compact, Projective and Modular Ring Imaging Cherenkov Detector for Particle Identification in EIC Experiments¹ MURAD SARSOUR, Georgia State University, EIC PID CONSORTIUM COLLABORATION — Particle identification (PID) of the final state hadrons is a key requirement for the Electron Ion Collider (EIC). In order to meet the challenge of the confined volume of the electron endcap in EIC experiments, a compact, projective, and modular ring imaging Cherenkov (mRICH) detector is proposed for K/π separation from 3 to 10 GeV/c. The mRICH design has a significant potential for e/π identification providing an important capability supplementing the electromagnetic calorimeters and other possible e/π PID systems. The mRICH detector consists of an aerogel radiator block, a Fresnel lens, a mirror-wall and a photosensor plane. A successful prototype test that demonstrated the proof-of-principle was carried out at Fermi National Accelerator Laboratory in April 2016. A second beam test with a few design modifications to enhance PID performance was carried out in June 2018. This presentation will show the results from the second beam test, along with the progress on R&D efforts for the next planned beam test that will have tracking capabilities. We will also discuss the current simulation incorporating an mRICH array into the sPHENIX experiment set-up.

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