

Backward Cherenkov based PID for EPIC Detector

Cherenkov PID

[Greg Kalicy](#)



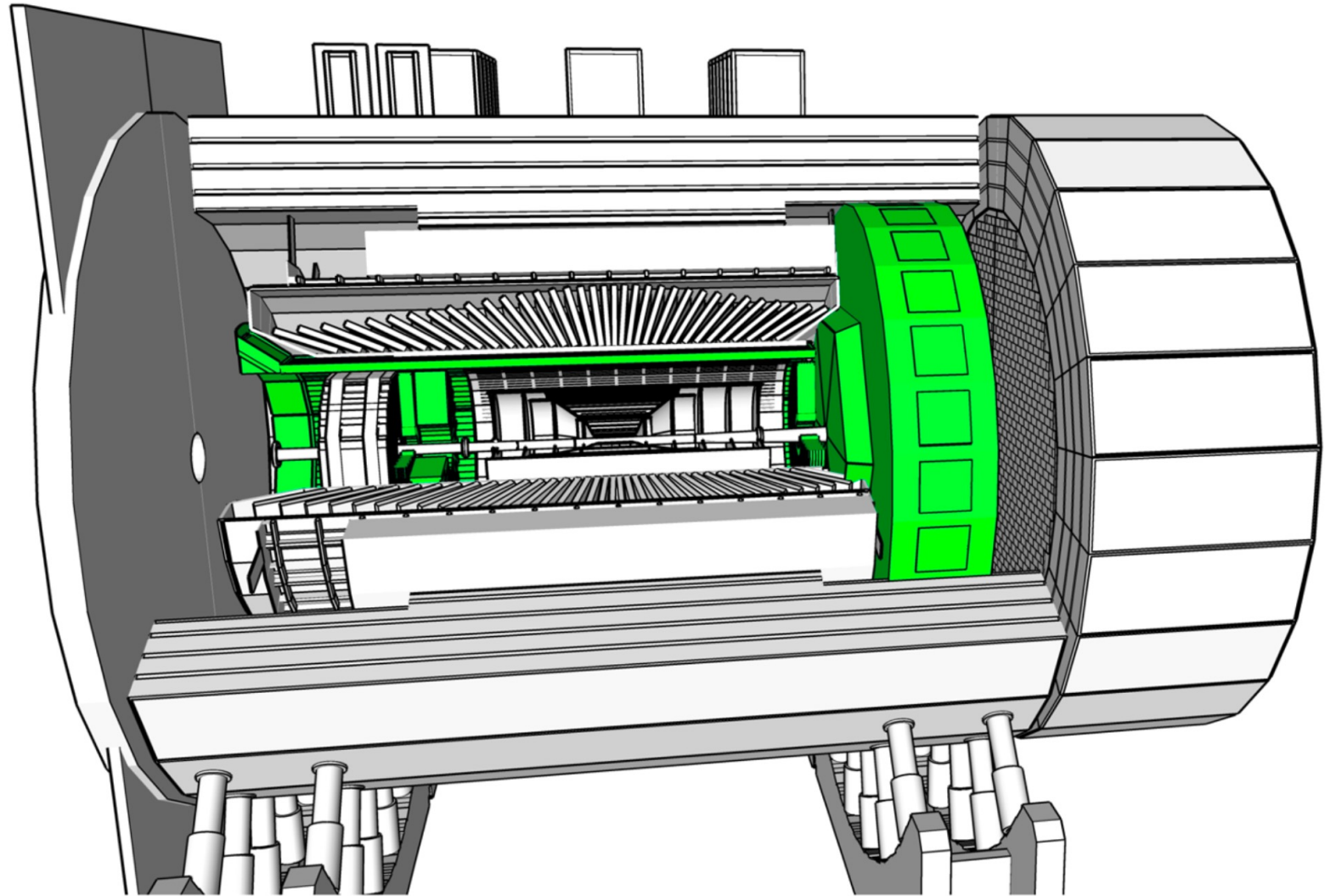
[Roberto Preghenella](#)



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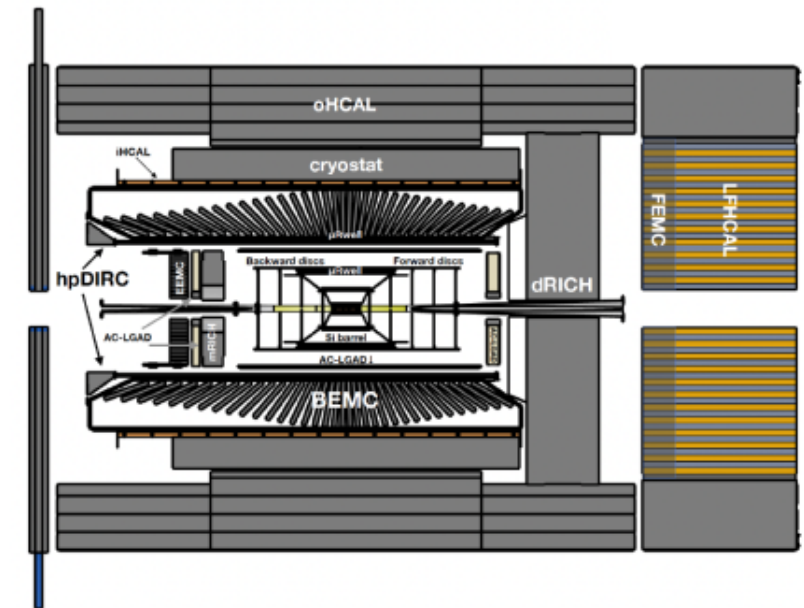
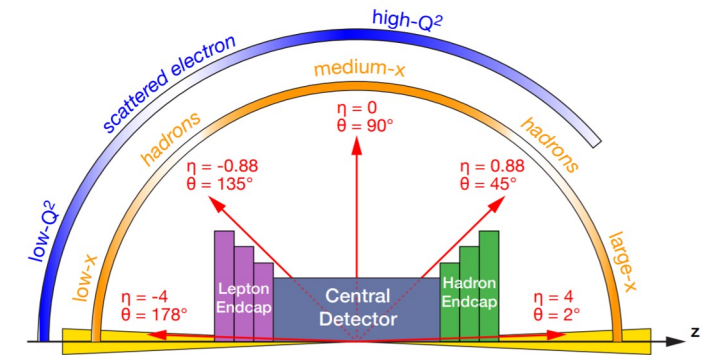
[Xiaochun He](#)



October 3rd 2022

Cherenkov based PID for EPIC Detector meetings

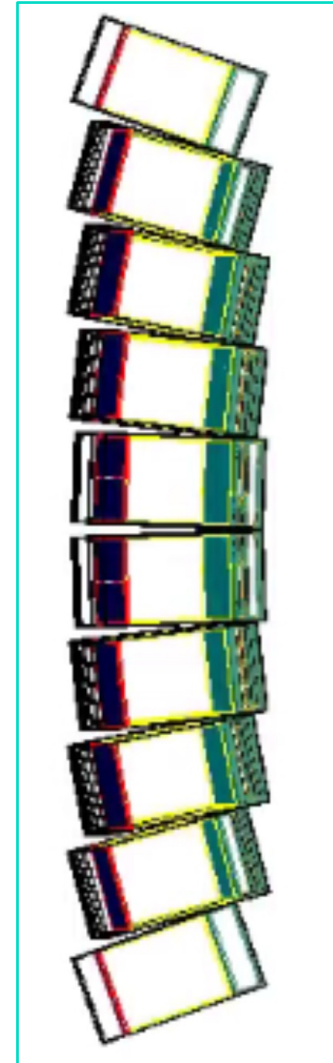
- INDICO space: <https://indico.bnl.gov/category/412/>
- **May 20: 4th meeting**, Murad presented mRICH
 - Slides:
https://indico.bnl.gov/event/15835/contributions/63332/attachments/41064/68724/mRICH_Review_5.20.2022.pdf
 - Recording:
https://cua.zoom.us/rec/share/TR4DVUuG0yMwHzAcTuwqTCzSIbLz6s2Ku0pJRGTV_IJbvyd-h30kJb4u6V95YhQx_NISDyILuY5vosB1
Passcode: YE6\$%6m3
- **May 27: 5th meeting**, Alexander presented pfRICH
 - Slides:
<https://indico.bnl.gov/event/15835/contributions/63524/attachments/41063/68723/ayk-2022-05-20-pfrich-cherenkov-pid-wg-meeting-pfrich.pdf>
 - Recording:
<https://cua.zoom.us/rec/share/yu4v3kp4eMnNuUvfFR50Y6l61hbW4llg8WqIS6xvZrHZxDQrP0zDhj0KNomAomc5.GBK15uN-ABnnyjsA>
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Modular RICH Detector (mRICH)

3-9 GeV/c
 $-3.0 < \eta < -1.5$

- Progress since proposal submission (as of June 13th):
 - Lowering material budget: Investigating use of a thinner 500 μm and shorter ($\sim 1''$) mirrors.
 - Shifting the projection point by 10 cm in z and 1-2 cm in xy off the 0,0,0 IR. (avoiding scenario where a particle goes through the long edge of the mirror with no impact on performance)
 - Investigating usage of thicker Aerogel to increase photon yield without worrying about the emission point systematic due lens focusing
 - Preparing detailed simulation studies with physics based events
- Key ongoing task is SPR determination from test beam data



Proximity focusing RICH Detector (pfRICH)

- Full length around 60cm. Work on integration needed.
- Needs more detailed simulations for full evaluation:
 - Currently one block of aerogel instead of proper segmentation + support frame
 - Proper sensor plan.
(The number of sensors is the driving costs)
 - Figuring out discrepancy between simulated and measured photon yield
- What are the associated acceptance and efficiency within the reference detector constraints?
- Need to identify manpower to do dedicated studies and work on construction

