

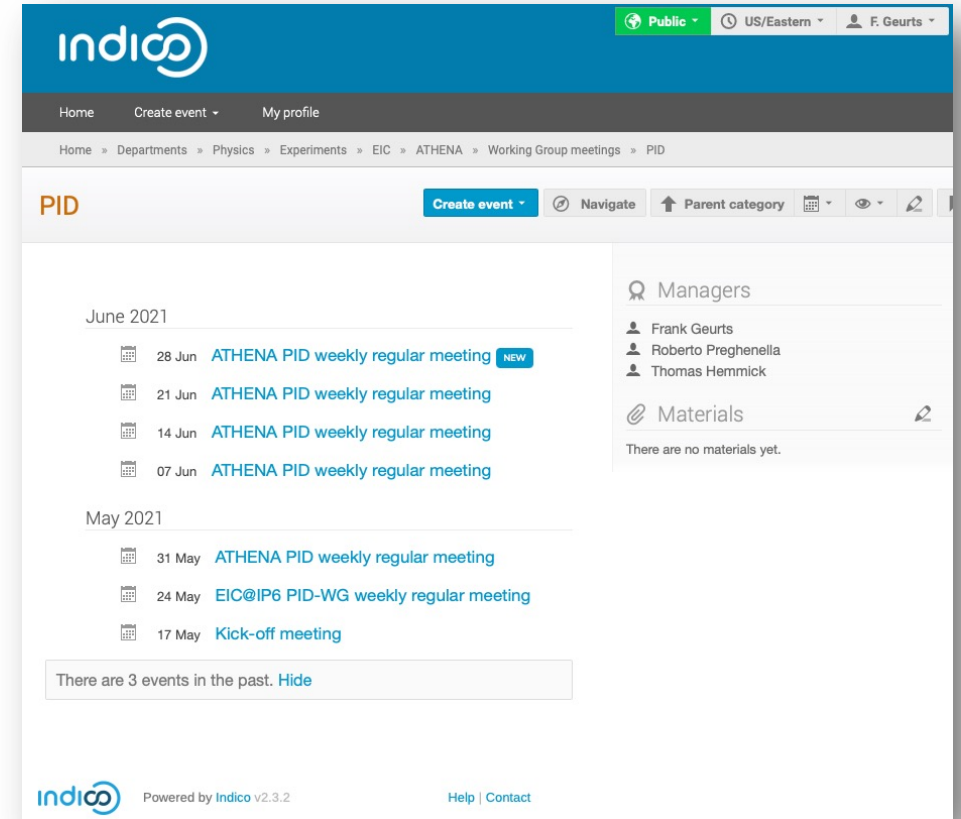
PID WG Update

conveners: Roberto Preghenella (INFN Bologna), Tom Hemmick (SBU), Frank Geurts (Rice Univ.)

ATHENA Monthly Meeting – July 1, 2021

General News

- Reminders:
 - we meet each Monday at 12h - 1 pm EDT
 - tagged a short software meeting past 1pm
 - Slack: <https://eicip6.slack.com/archives/C02133BCQLV>
 - Mailing list archive: <https://lists.bnl.gov/mailman/listinfo/eic-ip6-det-pid-l>
 - Indico: <https://indico.bnl.gov/category/369/>
- PID Working Group assigned contacts
 - cost :: Roberto Preghenella
 - integration :: Frank Geurts
 - drafting :: Thomas Hemmick
 - software contact :: Zhenyu Ye
 - DAQ contact :: TBA



Hardware News

TOF at the ECal: imaging calorimeter with timing layer

[Maria Zurek, ANL]

Simulations of LGAD inside all-Si tracker

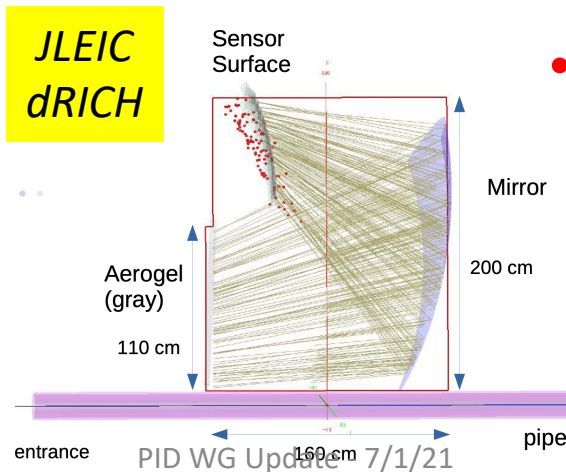
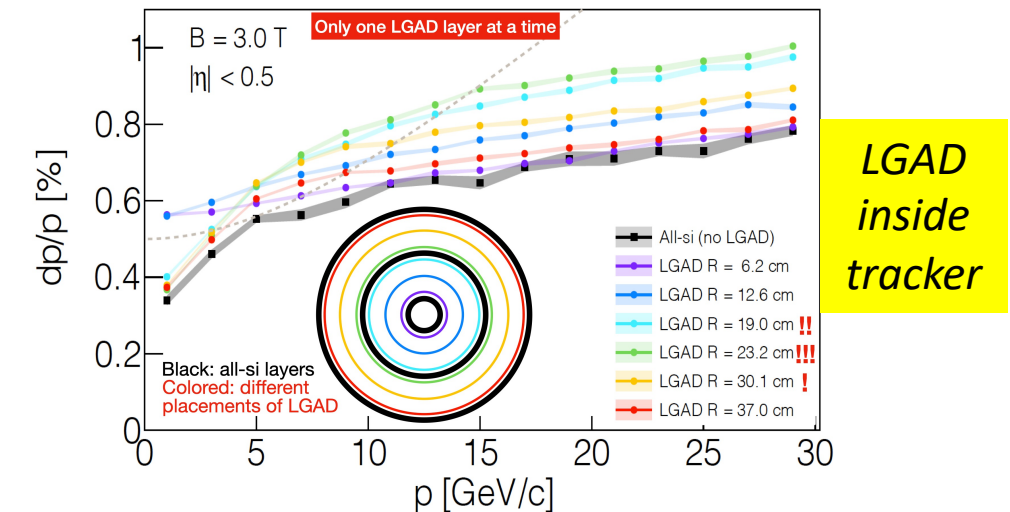
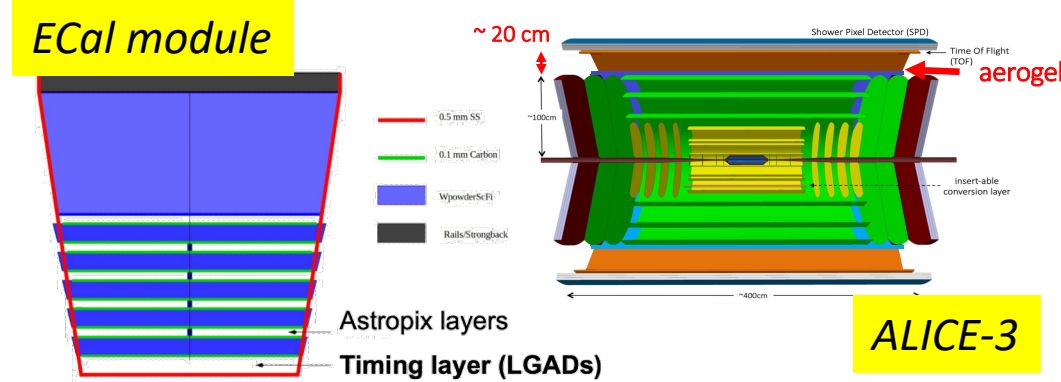
[Rey Cruz-Torres, LBNL]

- most impact on dp/p when placed near central layers
- for smaller radii: significant at smaller low momentum

Aerogel RICH in the barrel

[Antonello Di Mauro, CERN]

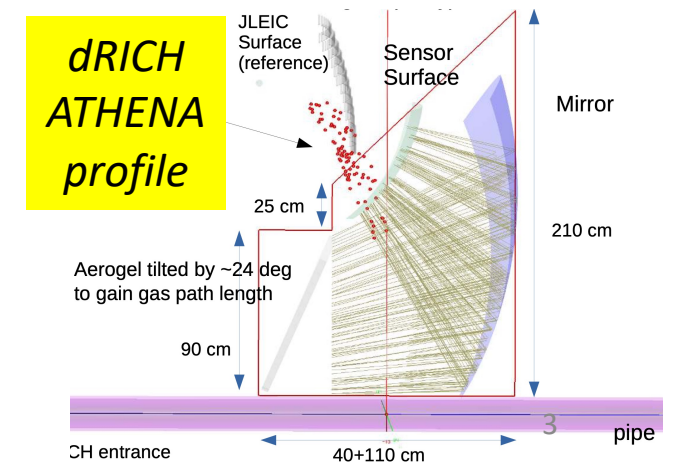
- proposal for ALICE 3: increase radial space of TOF layer by $\sim 20\text{cm}$ to insert aerogel radiator and cherenkov expansion gap
- potential for synergy with CERN on aerogel (Chiba Univ.)



dRICH: a first very tentative porting of the geometry into ATHENA

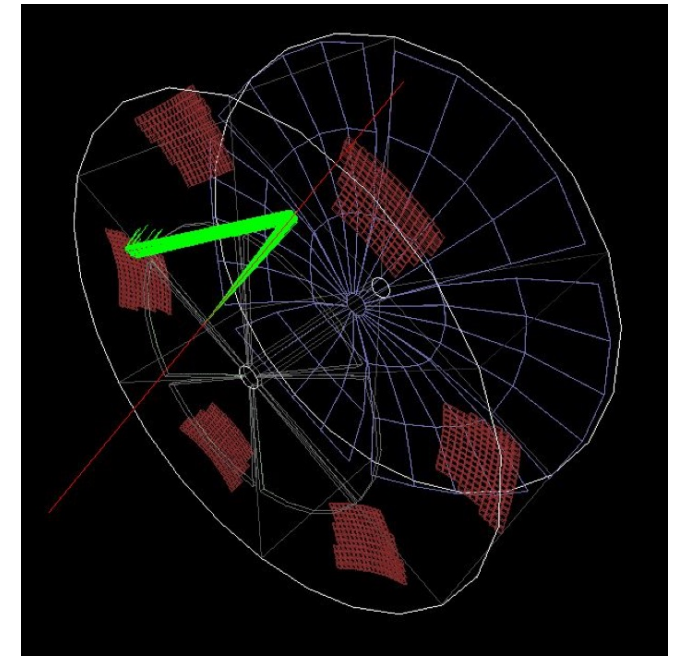
[Evaristo Cisbani, INFN/RM]

- decrease in both longitudinal and transverse size
- challenge to adapt sensor surface to focal region within ATHENA's vessel profile

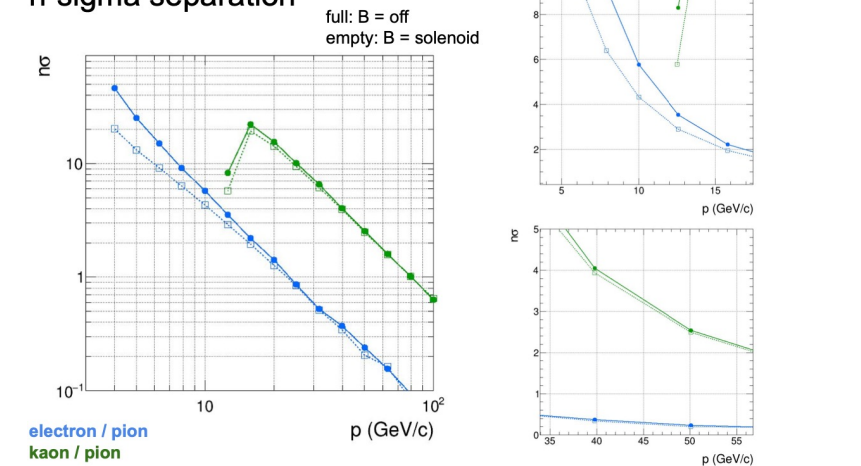


Magnetic Field updates

- Forward RICH: new Helmholtz field map bares no improvement in performance
 - Chandroday Chatterjee, INFN Trieste
- new: first look into dRICH geometry and optical description class; still need to do full phase space and include uncertainties from tracking
- Tracking group studying angular resolution of tracks as those enter PID detectors
 - Matt Posik, Francesco Bossu, *et al.*
 - get best estimate of angles while traversing a radiator is important for RICH
 - see next Tracker WG update



n-sigma separation



Chandroday Chatterjee (June 28)

Software

➤ First meeting on implementation of PID detectors in dd4hep - June 28

- Zhenyu Ye (coordinator for PID WG)

1. Implement PID detectors in ATHENA DD4HEP

- Dual RICH: Chao Peng put in dRICH model in DD4HEP
 - work with Chris Dilks and Sylvester Joosten to get full model for ATHENA in
- DIRC: Dmitry Romanov will first implement a simple model in DD4HEP
 - work with Grzeg Kalicy to get the full model in.
- mRICH: Whit Armstrong will first implement a simple model in DD4HEP
 - work with Murad Sarsour to get the full model in.
- TOF: Zhenyu Ye has implemented a model in DD4HEP.
- GridPix: Sanghwa Park and Prakhar Garg will be in touch

2. Estimate of Computing Resources

- Each PID detector group asked to look at the estimates from other WG.
- Zhenyu will aggregate and update PID estimates for computing resources.

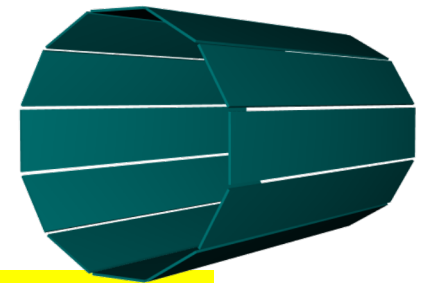
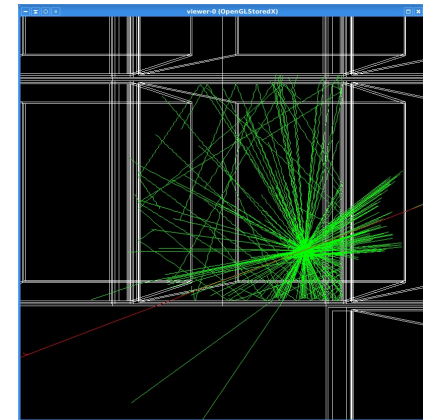
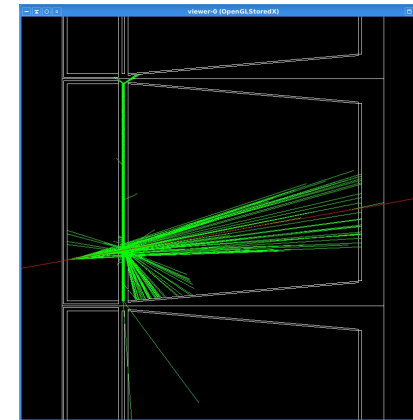
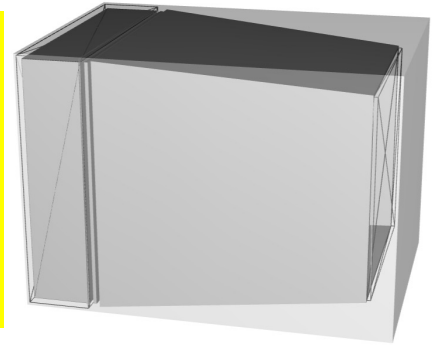
3. Platform for communications

- Status updates on software for each PID detector are encouraged to be presented at PID meeting.
- Technical discussions with software experts will be done by private communications or take place at the software meeting

➤ DAQ Contact: TBD

Example:
mRICH implementation
is near completion
Whit Armstrong

<https://eicweb.phy.anl.gov/EIC/detectors/athena/-/issues/31>



Example: DIRC

<https://eicweb.phy.anl.gov/EIC/detectors/athena/-/issues/32>