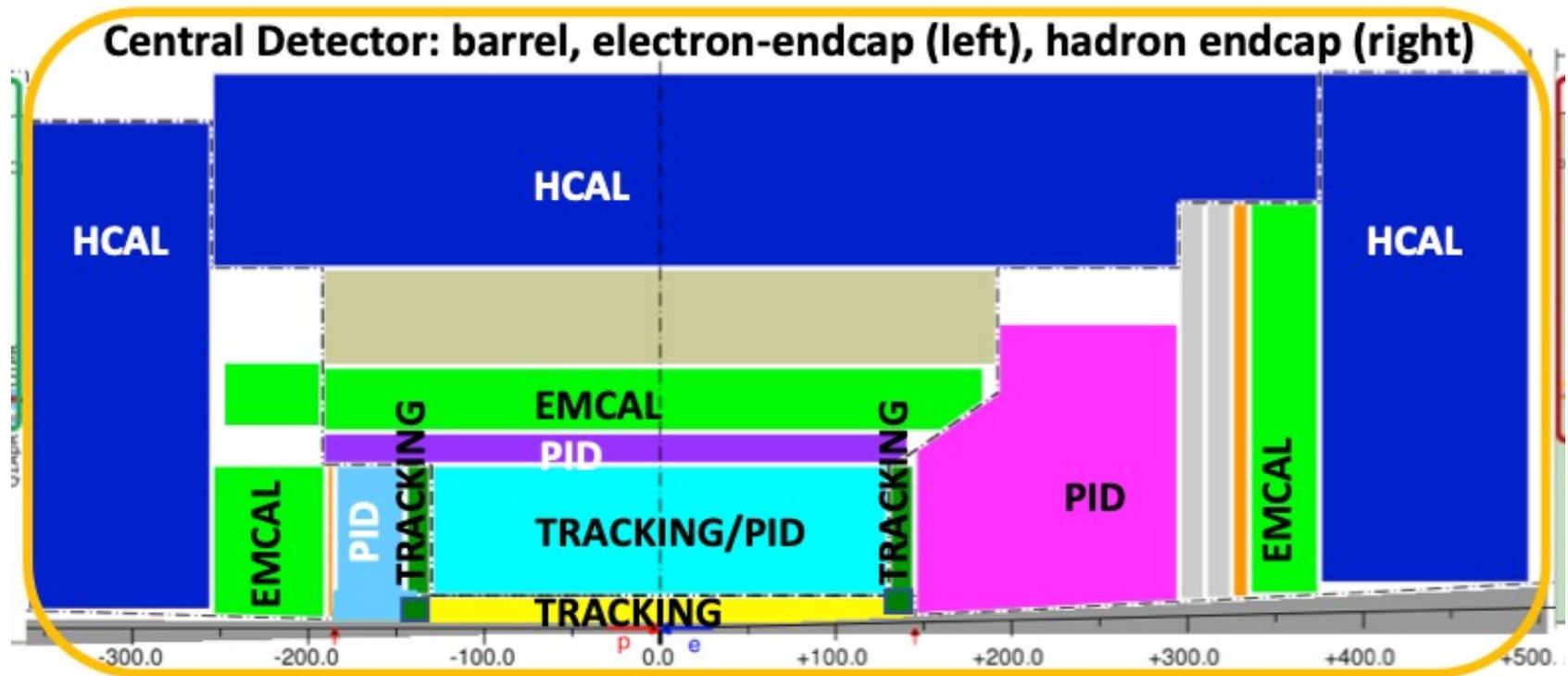


ECCE Tracking Integration plan

Xuan Li (LANL), Nilanga Liyanage (UVA)

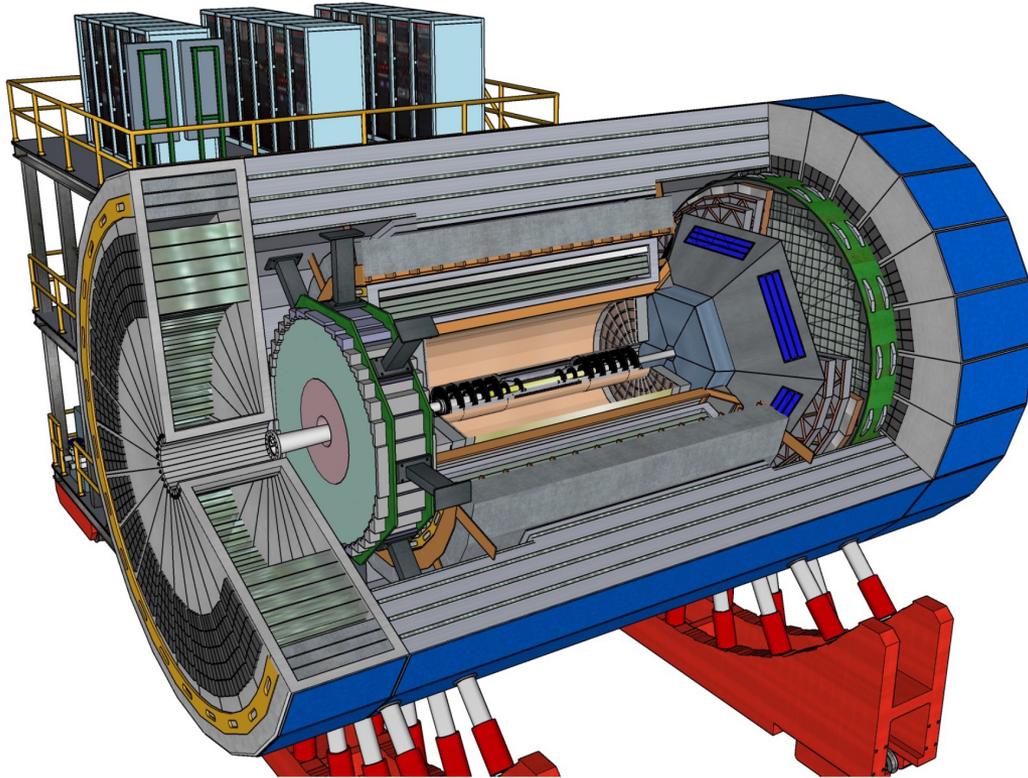
Tracking detector reference

- We are collecting inputs about
 - The tracking detector technologies.
 - Who will work on the corresponding simulation configuration and evaluation.
 - Thoughts on the detector integration.



ECCE General Detector Concept

- Need to provide the first order layout by June 14.



ECCE ELECTRON ENDCAP STRAWMAN

Tracking: MAPS, Micro Pattern Gaseous Detectors (MPGD)

Electron Detection: PWO&SciGlass

- Inner part: PWO crystals (reuse some)
- Outer part: SciGlass (backup PbI)

h-PID: mRICH

- From yellow report

HCAL: Steel from magnet or Pb/Sc or Fe/Sc

- Not instrumented and only serve as flux return?
- Instrumented \w reduced thickness (lower energies)

ECCE CENTRAL BARREL STRAWMAN

Tracking: Silicon barrel tracker (optional Si/GEM hybrid)

Electron PID: SciGlass (backup: W/Sc (Pb/Sc) shashlik)

- SciGlass remains to be demonstrated
- Several backup options – lower resolution though

h-PID: hpDIRC & AC-LGAD

- Compact
- AC-LGAD never been shown for barrel configuration
- AC-LGAD backup: dE/dx (needs more space)

HCAL: magnet steel (reuse) - Fe/Sc

ECCE HADRON ENDCAP STRAWMAN

Tracking: MAPS, Micro Pattern Gaseous Detectors (MPGD)

h-PID: dRICH&TOF

e/h separation: TOF & aerogel

- TRD to separate electrons from high momentum hadrons?

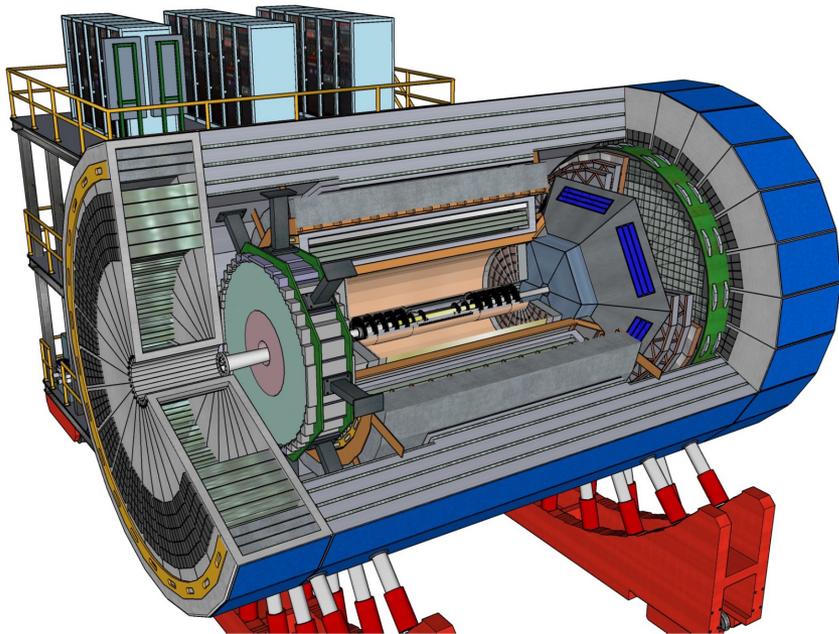
Electron PID: W/ScFi, Pb/Sc or W/Sc shashlik

HCAL: Pb/Sc or Fe/Sc

- Alternative for improved resolution: dual readout, high-granularity

ECCE General Detector Technology candidates

- Need to provide the first order layout by June 14.



- Preferred technologies:
 - Electron endcap: μ Rwell/MPGD, MAPS based silicon, LGAD based ToF (1 or 2 planes).
 - Central Barrel:
 - MAPS based silicon,
 - LGAD based ToF (1 or 2 layers) or **LYSO based ToF (5X5mm², 5cm long bars)?**
 - DIRC
 - **μ Rwell/MPGD?**
 - Hadron endcap: MAPS based silicon, μ Rwell/MPGD, LGAD based ToF (1 or 2 planes).
- Any further inputs?

The most relevant and urgent information for the tracking integration

- Detector technology?
- Detector geometry? Any implementation in Fun4All?
- Tracking performance (momentum/spatial resolutions? Efficiency? ...)
- Detector R&D status? Prototype sensors availability? Readout options?
- Costs and risks?
- ...

For Future discussions

- **MattMost link:**

<https://chat.sdcc.bnl.gov/ecce/channels/ecce-tracking>

- **ECCE Tracking WIKI page:**

https://wiki.bnl.gov/eicug/index.php/ECCE_Detector#ECCE_Tracking

- **ECCE indico page:**

<https://indico.bnl.gov/category/345/>

- Please sign up for [ecce-eic-public-l](#) and [ecce-eic-det-l](#) to receive future meeting announcements and share your thoughts!