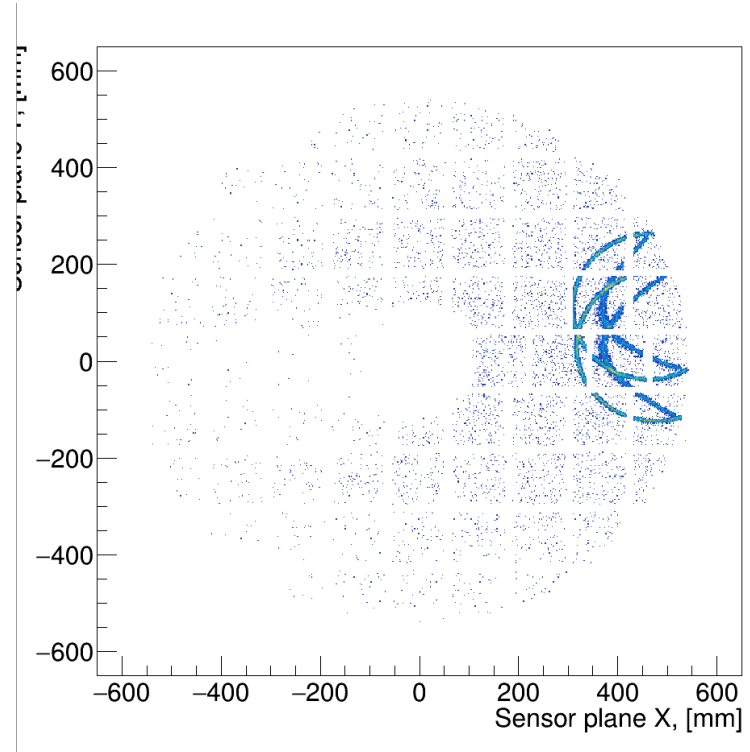


Update on pfRICH GEANT environment

- Geometry pretty much fixed
 - (Except for services behind the sensors)
- HepMC3 input fully functional
- Rather detailed digitization
 - DC-coupled HRPPD, no charge sharing
 - *Spatial* overlap of photons accounted
 - Hit *timing* is estimated as a weighted mean ...
 - ... which would be suboptimal for noise hits
- **Event-level χ^2 -based reconstruction**
 - Complete hit-to-track ambiguity resolution
 - Digitized hit timing incorporated



π and K @ 7 GeV/c: ~5% misidentification rate
(plot accumulated over 1000 two-track events)

Update on HRPPD-to-ASIC interface

- Agreed to proceed with Samtec compression interposers as a lead option

COMPRESSION HARDWARE

ULTRA LOW PROFILE SYSTEMS FOR Z-RAY® INTERPOSERS

- Designed for Z-Ray®, the lowest profile, most flexible high-density micro interposer in the industry (ZA8 and ZA1 Series)
- Precise alignment, compression and retention of interposers with either dual compression (LGA) or single compression with solder balls (BGA)
- Ultra low profile
- Reduces risk of damage to the interposer
- ZSO Series for single compression with solder balls
- ZHSI and ZD Series for dual compression interposers



Provides alignment

Protects solder ball joints when compressed

ZSO

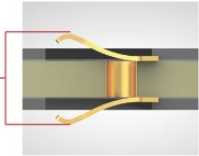
ZD

ZHSI

Provides alignment and compression

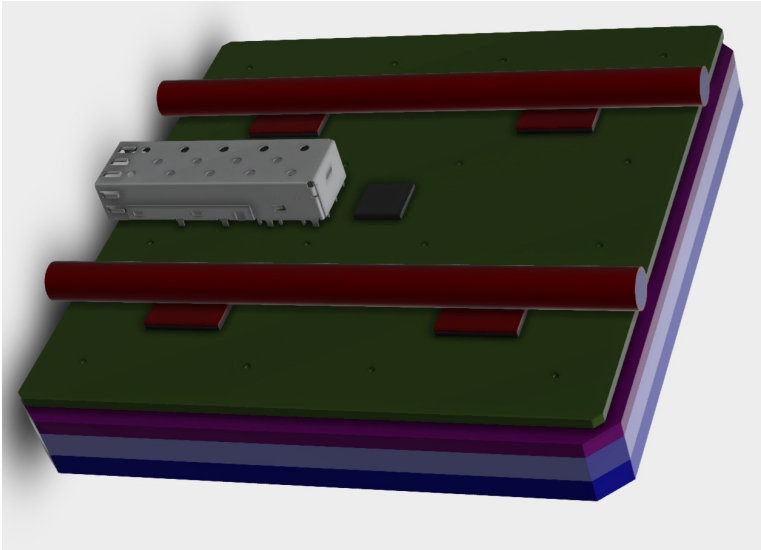
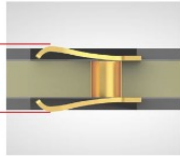
UNCOMPRESSED

1.4 mm standard



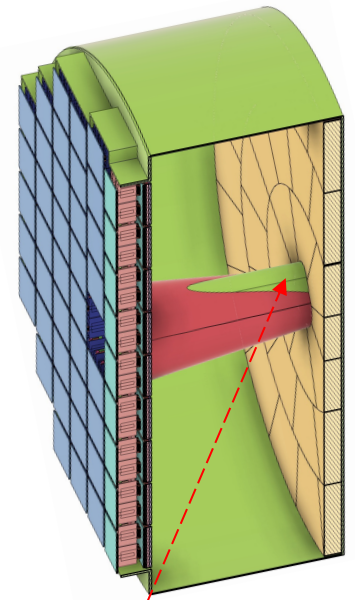
COMPRESSED

1 mm standard



Geometry model

- Verified the boundary conditions with Alex last week
- Vessel walls:
 - Material: carbon fiber
 - Thickness: 5mm outer and rear walls, 3.5mm front plate, 2mm inner wall
- Aerogel: stick to CLAS12 parameterization rescaled to $n \sim 1.044$
- Mirrors:
 - Carbon fiber (inner one 1mm thick, outer one 2mm thick)
 - Do we want to add a cylindrical inner piece covering the hadron beam pipe cutaway?
- HRPPD geometry:
 - Play safe: 1.5mm gaps between sensors, carbon fiber matrix with ~ 1 mm thick separation walls
- Readout and services configuration:
 - 50mm space along the beam line overall for HRPPDs, ASIC boards, cabling & cooling
 - Assume EICROC configuration without vertically mounted ASIC PCBs



Other news

- “EICROC for EIC HRPPD/MCP-PMT photosensors” meeting: converging to March 6th, 2023
 - A definitive “yes or no” assessment
 - If “yes”, work out R&D / PED plan together with eRD109
- LAPPD Workshop #3: converging to April 20th, 2023
 - Special topic: ASIC electronics
- Argonne magnetic field tests: HRPPD measurement week
- eRD110 meeting took place on Monday: <https://indico.bnl.gov/event/18438/>
 - Agreed on providing EIC project with a letter of support for a contract between EIC and Incom
 - Will have these meetings monthly in the future

Important dates, etc.

- February 27th: submit pfRICH geometry to ePIC software WG for validation
- March 6th: software validation at the GD/I meeting

- March ??th: pfRICH CDR sent to the reviewers (say a week in advance)
 - Be aware that Thomas is effectively gone as of March 1st
 - Therefore, as of next week, editing effectively taken over by Kong and AK (other volunteers?)
 - Please build up your own schedules to provide written input well ahead of time!

Review the contents routinely in the next two weekly meetings?

pfRICH presentations at ALL upcoming PID meetings?

- March 21-22: pfRICH / mRICH review