# Update on pfRICH geometry

- Boundary conditions at the IP verified

- Vessel layout for March review purposes frozen

  - CF/HC sandwich a la sPHENIX TPC & aluminum sensor+FEE support plate

  - Fine tuning of the CAD model is ongoing

- Aerogel: for now, stick to CLAS12 parameterization rescaled to $\langle n \rangle \sim 1.044$

- Readout and services configuration:

  - Reserved 50mm space along the beam line overall for HRPPDs, ASIC boards, cabling & cooling

  - Assume EICROC configuration with a flat mounted ASIC PCB

  - Cabling layout is still work in progress

- GEANT model is pretty much synchronized with a CAD one

  - Up to the sensor base plate and the outer conical mirror tilt
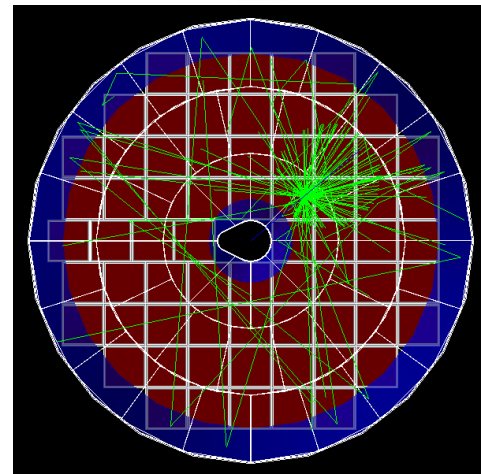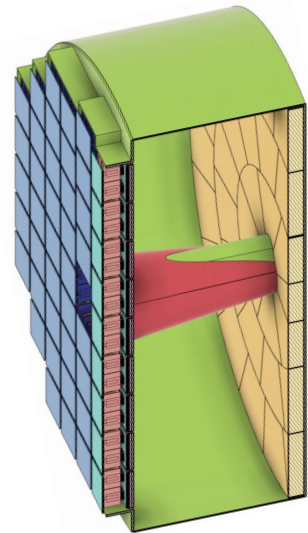
Update on HRPPD-to-ASIC interface

- Proceed with Samtec compression interposers as a lead option

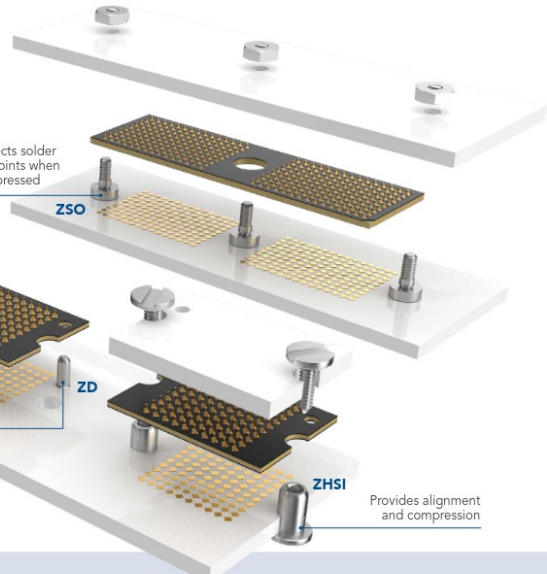- Fallback: conductive epoxy & semi-manual soldering
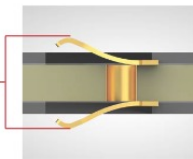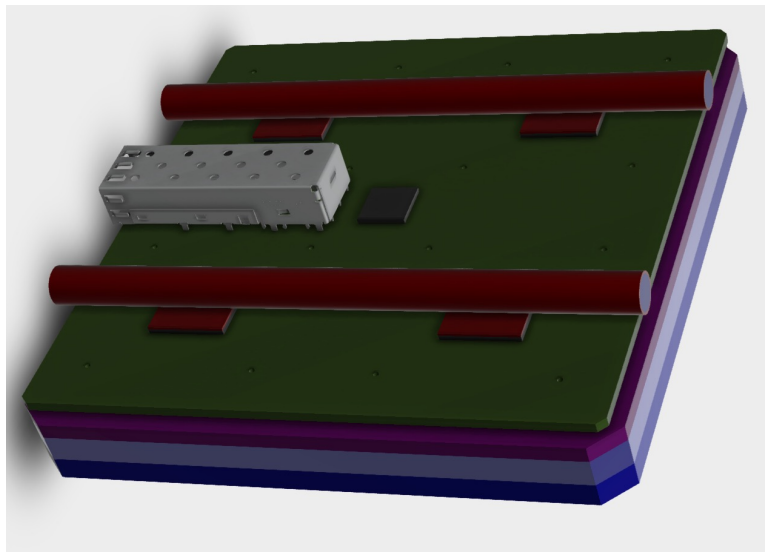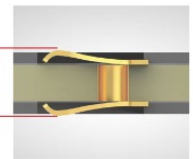
Update on pfRICH GEANT environment

- Simulation
  - HepMC3 input
  - MARCO magnetic field
  - Aerogel, optical photons, HRPPDs, beam pipe cutaway

- Digitization
  - DC-coupled HRPPD, 32x32 pads, no charge sharing
  - *Spatial* overlap of photons accounted
  - Hit *timing* is yet estimated as a weighted mean
  - And yet no noise hits implemented

- Reconstruction
  - Event-level χ^2 -based statistical model
  - More or less realistic configurable ring finder
  - Complete hit-to-track ambiguity resolution
  - Extensions implemented: dual aerogel, pyramid mirrors
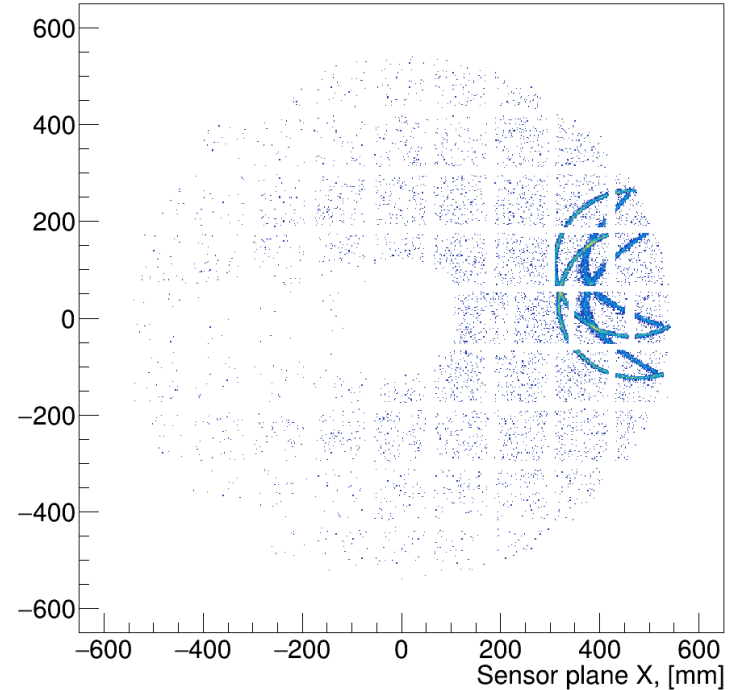
π and K @ 7 GeV/c: ~5% misidentification rate
(plot accumulated over 1000 two-track events)

Upcoming events

- "EICROC for EIC HRPPD/MCP-PMT photosensors" meeting: March 6th, 2023
  - A definitive "yes or no" assessment

February 27	GDML geometry to be submitted to the Software WG
March 3	Detector CAD model presentation to the PID WG
March 6	Software suite presentation at the GD/I meeting
March 10	Detector simulations summary to the PID WG
March 17	Physics simulations summary to the PID WG