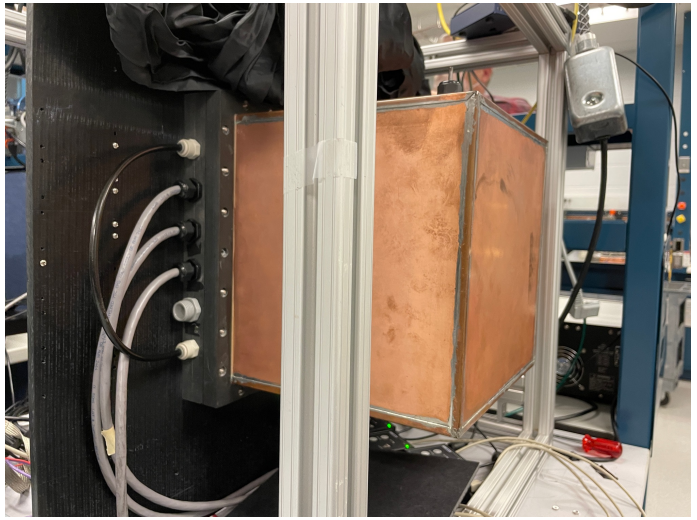
Plan C is now the default

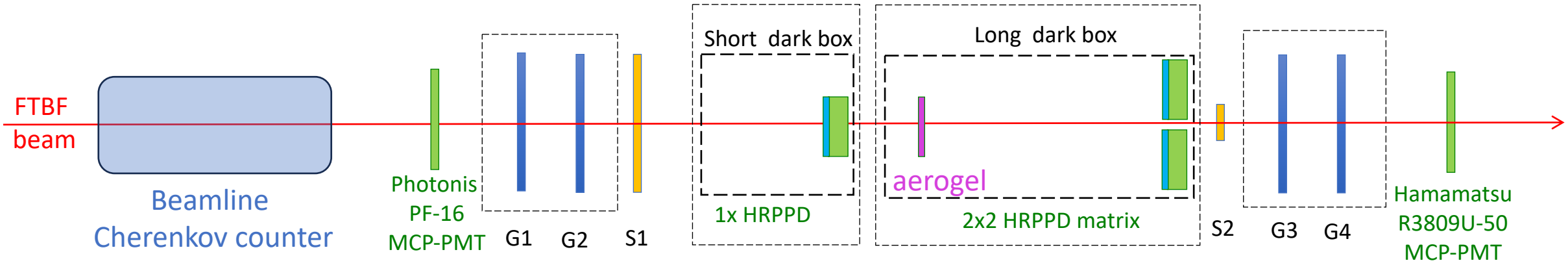
- De-couple the vessel / mirror PED effort and the May 2024 beam test entirely
  - Implies using existing custom dark box(es)
  - Vessel / mirror work can then be comfortably concluded in summer 2024
- Give up porting pfRICH software to dd4hep *for the beam test purposes*



- Two weeks of running
  - First week: 120 GeV primary beam, setting up, ORC, timing, saturated rings
  - Second week: π/K separation at low energy

- Fermilab news:
  - "Internal Readiness Review (IRR) for Accelerator Safety covering the areas of Booster, MI-8 line, BNB, Main Injector / Recycler and NuMI successfully completed"
  - Yet comments need to be addressed, then a sign off is needed to turn on
  - FTBF review happened yesterday

Plan C: test setup @ Fermilab



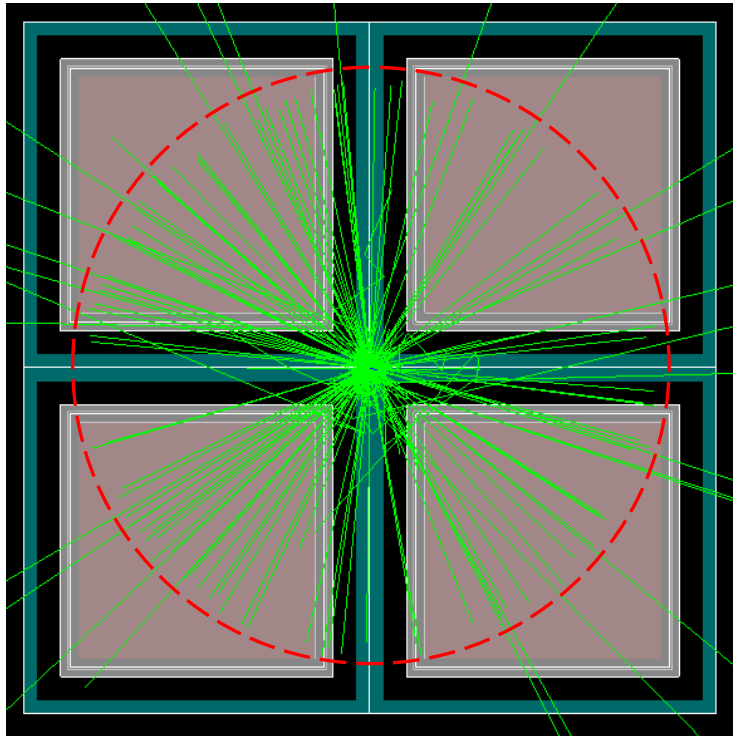
- **Main deliverable** is a direct simultaneous demonstration of
  - π/K separation at ~7 GeV/c via imaging, with and without an acrylic filter
  - HRPPD performance as a t_0 reference sensor for ePIC ToF subsystems
    - <50 ps timing resolution using aerogel Cherenkov photons
    - O(20ps) timing resolution using Cherenkov photon flashes in HRPPD window

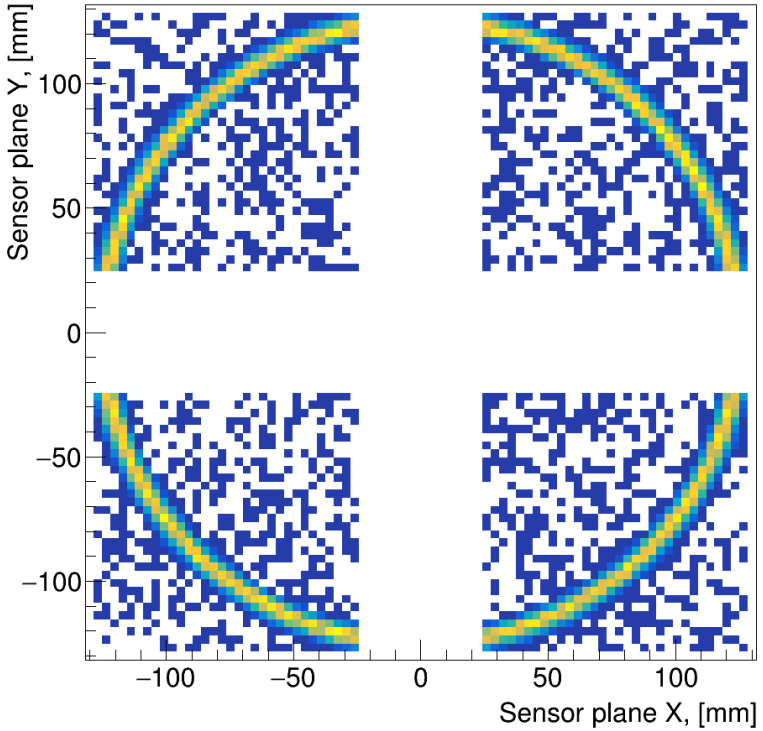
- Optional
  - First mirror pieces (perhaps small flat funneling ones?)
  - Dual aerogel configuration?

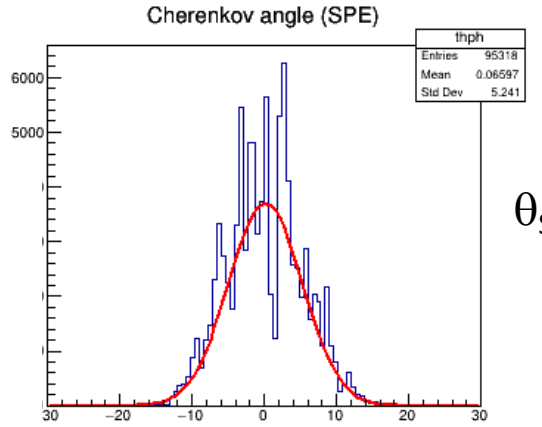
Aerogel Specifications Dated December 8, 2023
To: JLab Manufactured and measured by M. Tabata

Type	TSA1.04	TSA1.04	TSA1.04
Serial number	**TSA114-3**	**TSA120-1**	**TSA120-2**
Refractive index (at 405 nm)	**1.0377**	**1.0404**	**1.0401**
Transmission length (at 400 nm) [mm]	51.2	48.9	49.3
Transmittance (at 400 nm) [%]	61.2	60.6	60.5
Lateral tile size (nominal) [mm]	109.9	109.4	110.4
Thickness (nominal) [mm]	25.1	24.5	24.8
Weight [g]	42.79	42.21	43.12
Density [g/cm^3]	0.141	0.144	0.143
Appearance	Slight damages	Good	Good
File name of transmittance data [.txt]	tsa114-3_ 2023.12	tsa120-1	tsa120-2

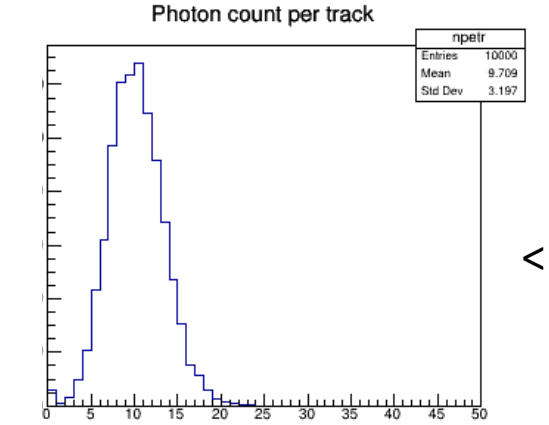
Plan C: expected performance



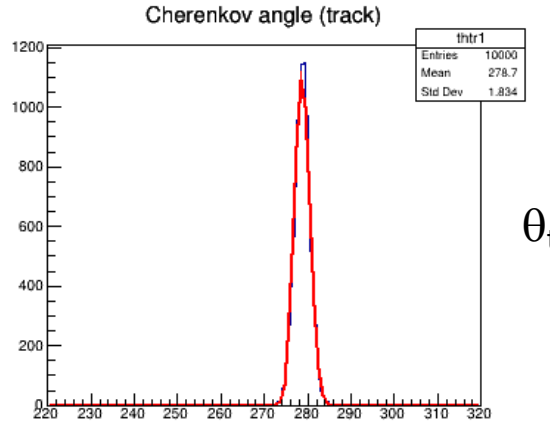




θ_{SPE} ~ 5.2 mrad



$\langle N_{pe} \rangle$ ~ 10

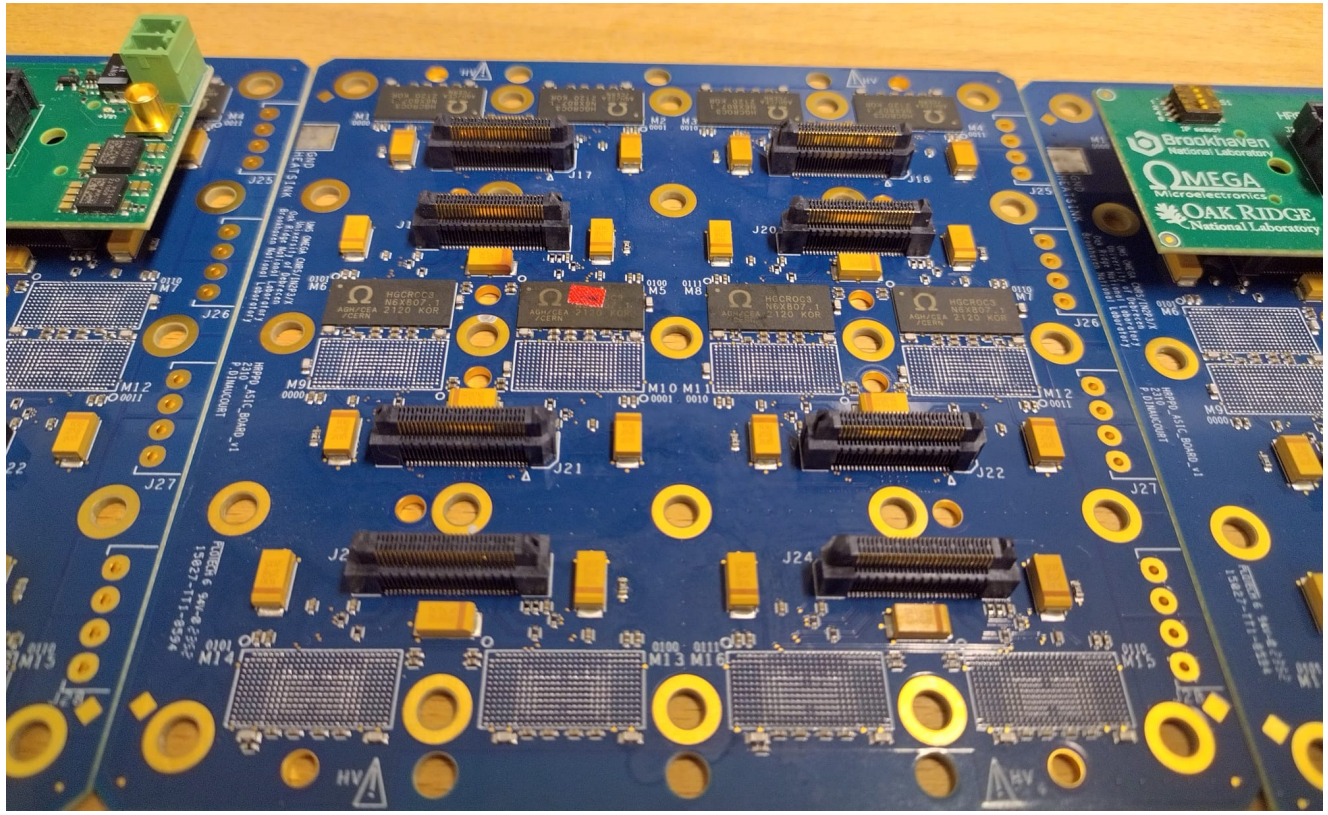


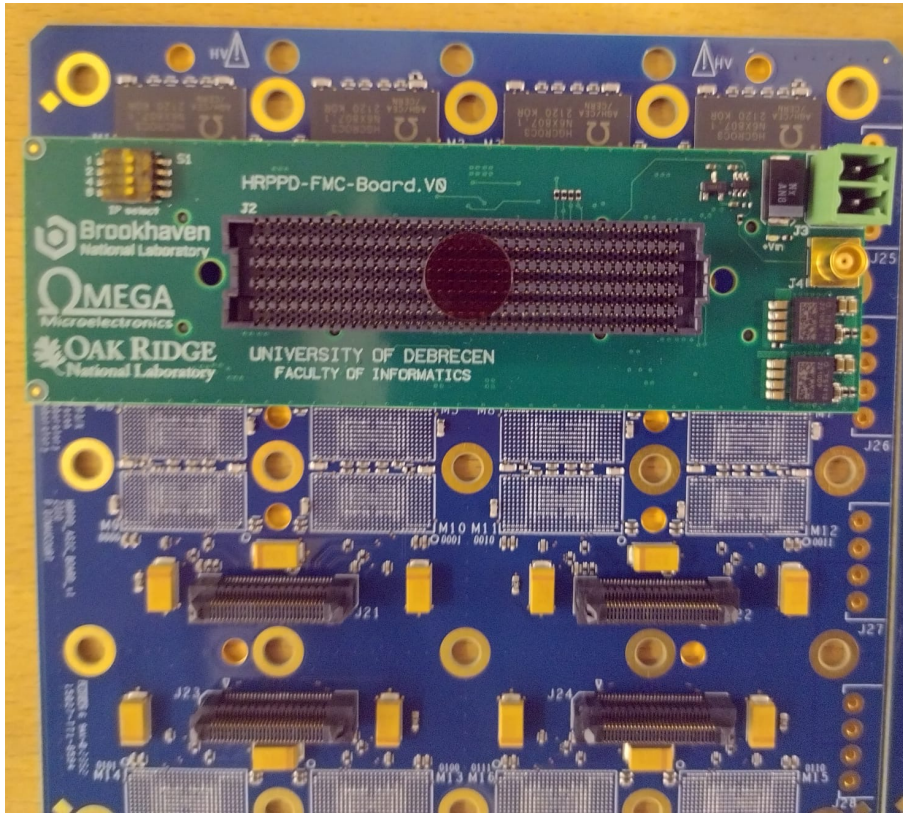
θ_{track} ~1.8 mrad

- A saturated ring barely fits into the box acceptance, but it fits
- $\langle N_{pe} \rangle$ ~ 10, assuming that HRPPD PDE is 0.7 (our safety factor)
- Track-level Cherenkov angle resolution ~1.8 mrad
  - Compare to ~7.5 mrad π/K separation at 7 GeV/c for <n> ~ 1.04

HGCROC3 ASIC / FPGA backplane

IN2P3 [OMEGA] (Pierrick, Damien), Uni Debrecen (Gabor, Miklos)
BNL (Daniel), Oak Ridge (Norbert)





- Four partly assembled ASIC boards are produced and shipped to Debrecen and BNL
- ASIC board + FMC (passive) board + KCU105 FPGA kit debugging @ Debrecen will take ~two weeks
- FPGA bare board production is delayed substantially; expected by March 1st