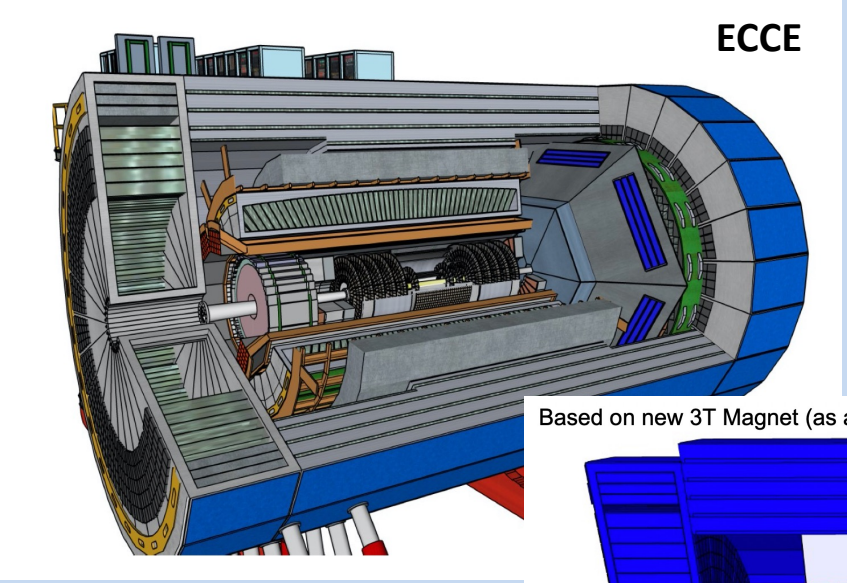
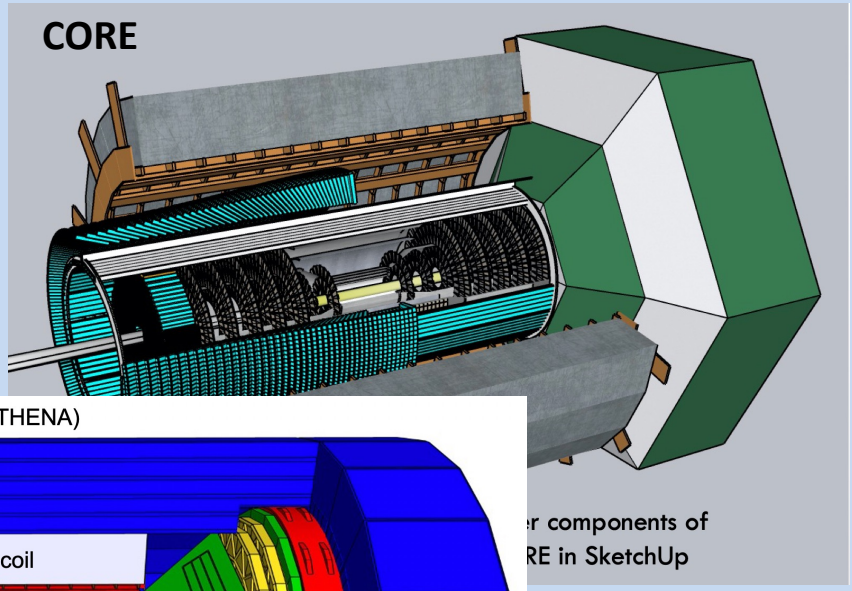
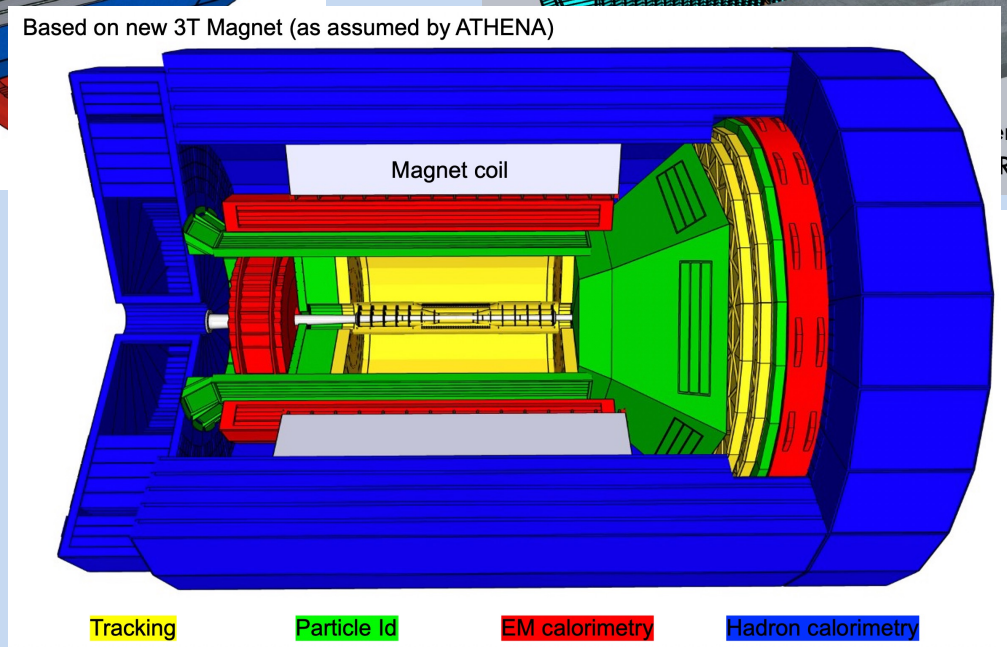
Dual Radiator RICH @ EIC

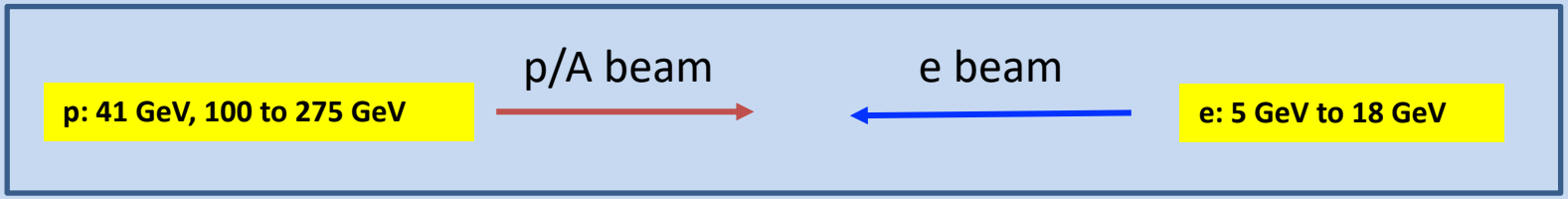






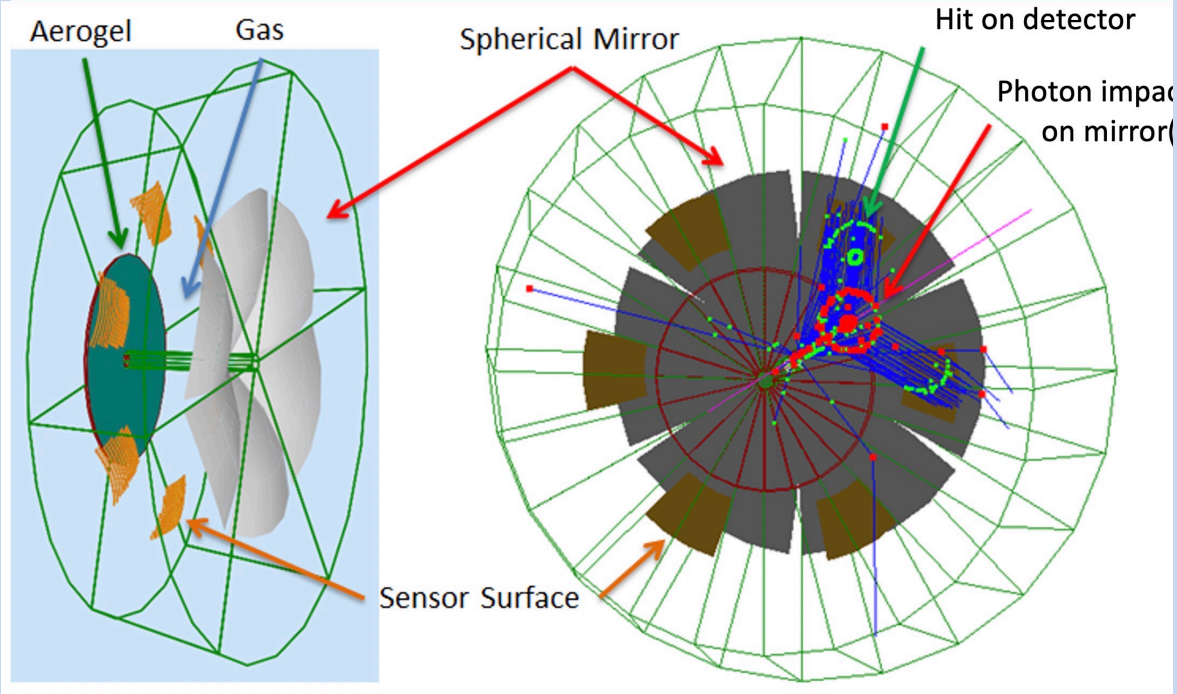
In preparation of "Call for Detector" due December 1st

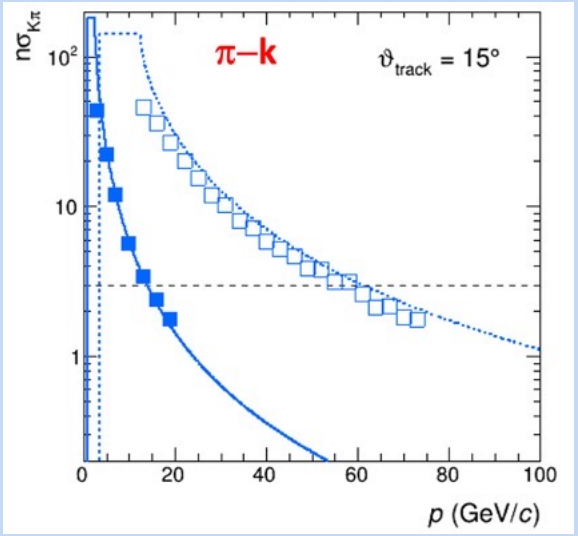
dRICH is a common reference in the forward region

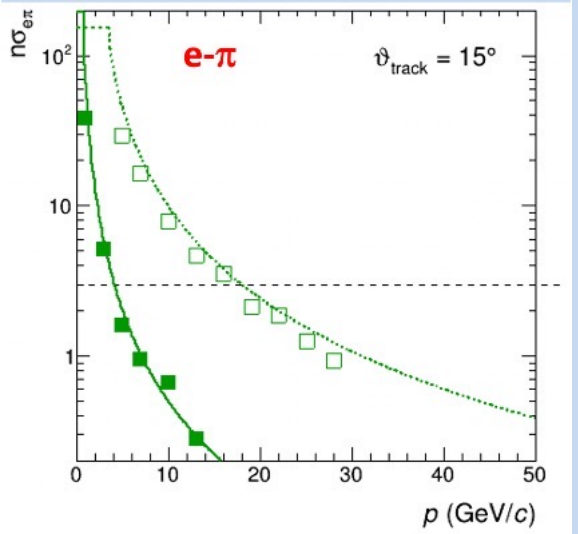


Dual Radiator RICH @ EIC

Two challenges: cover wide momentum range 3 - 60 GeV/c
work in high (~ 1T) magnetic field







dRICH: effective solution, part of EIC reference detector

Radiators: Aerogel (n_{AERO}~1.02) + Gas (n_{C2F6} ~ 1.0008)

Detector: 0.5 m^2/sector , 3x3 mm^2 pixel. → SiPM option

Phase Space:
- Polar angle: 5-25 deg
- Momentum: 3-60 GeV/c

SiPM Irradiation Campaign

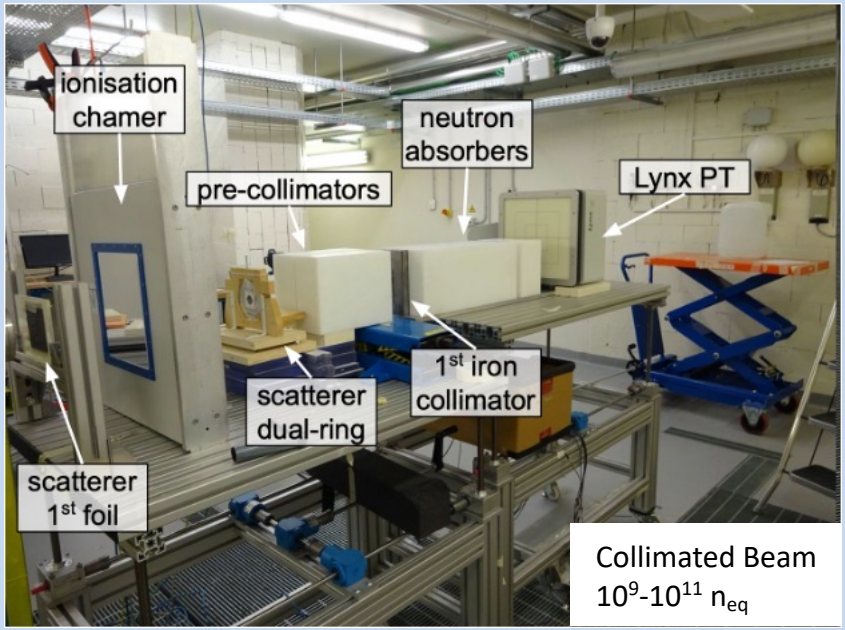
TIFPA Proton Beam Facility

Hamamatsu
FBK

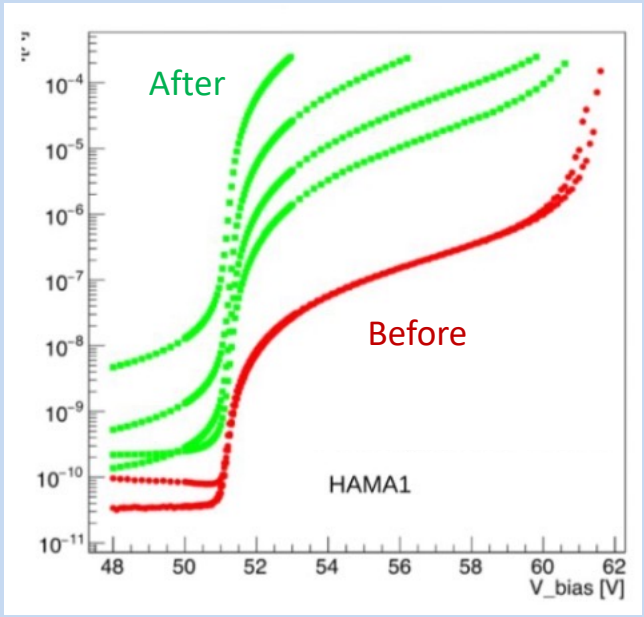
Broadcom
SensL

Protective layer

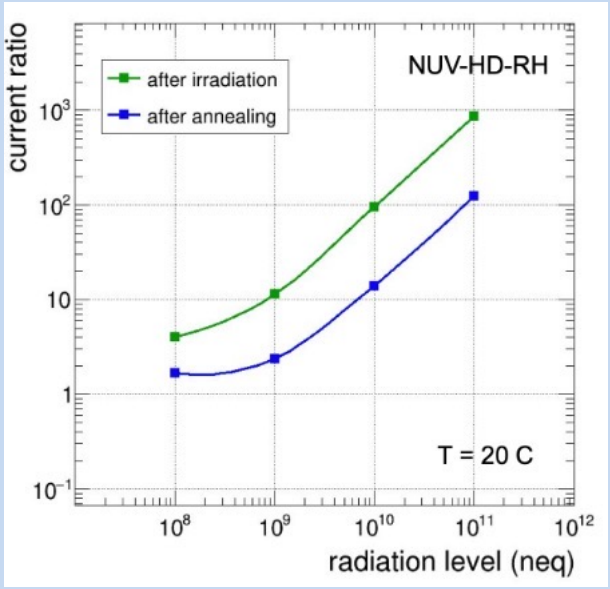
Roberto's talk



Collimated Beam
10^9-10^{11} n_{eq}



Various SiPM



Sensors and DAQ

Alternate sensors

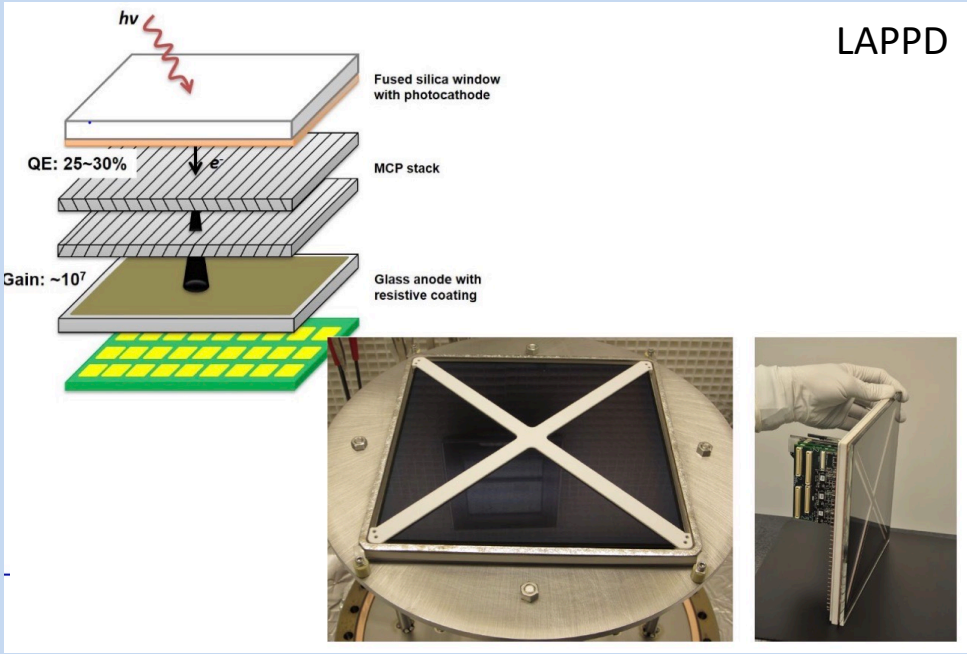
Collaboration with US groups

Streaming readout (+ AI)

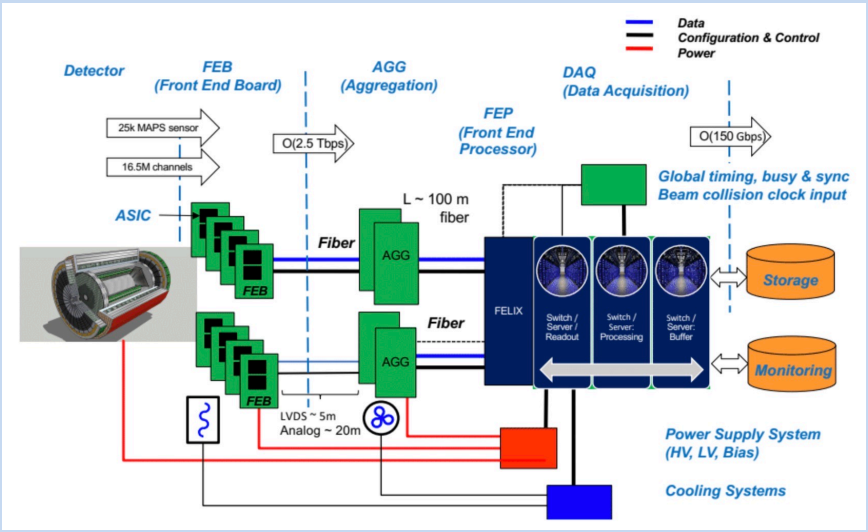
Silvia's talk

Marco's talk

LAPPD



ATHENA DAQ Architecture



MPGD + Nonadiamond powder

SiPM & DAQ

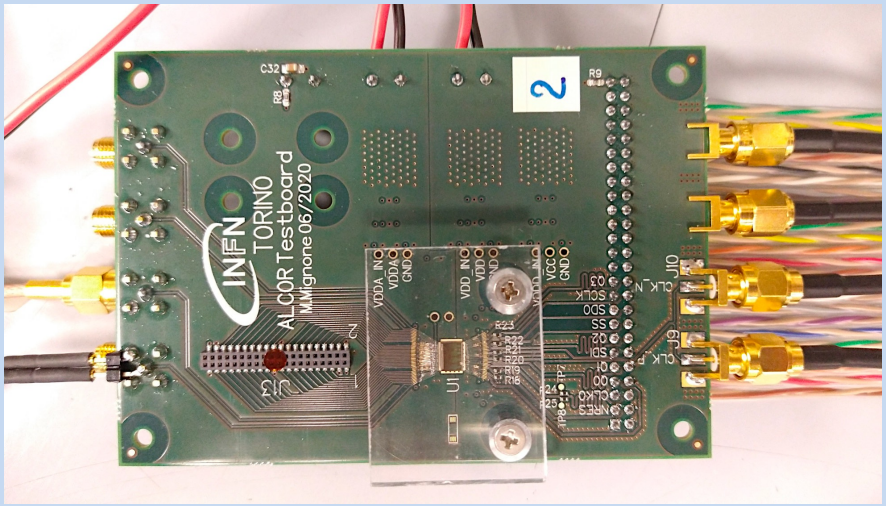
ALCOR v2

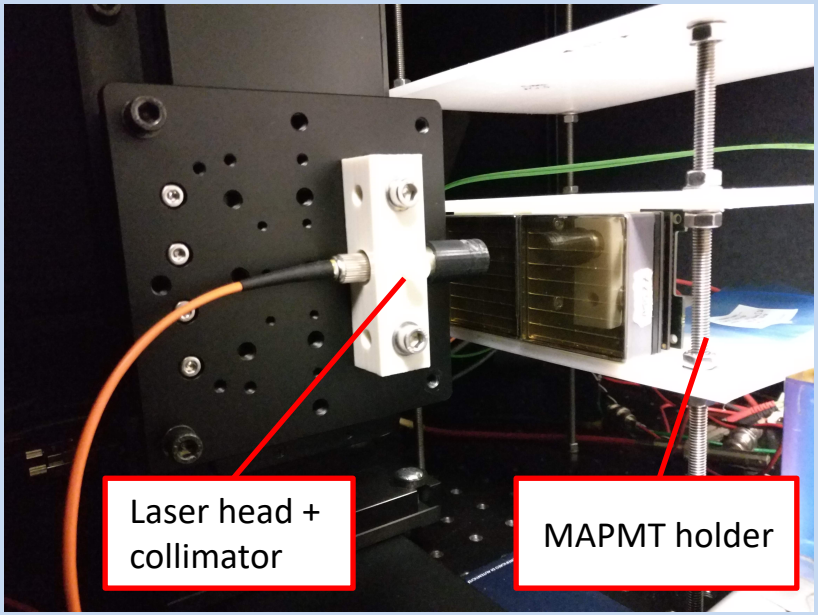
Test stations

Characterization protocols
(oscilloscope, laser/LED, cosmics, ….)

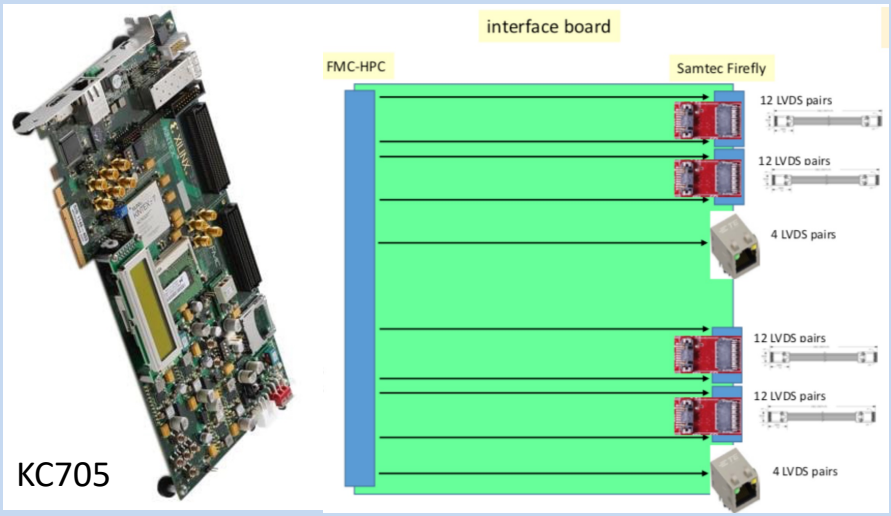
Michela's talk

ALCOR test board

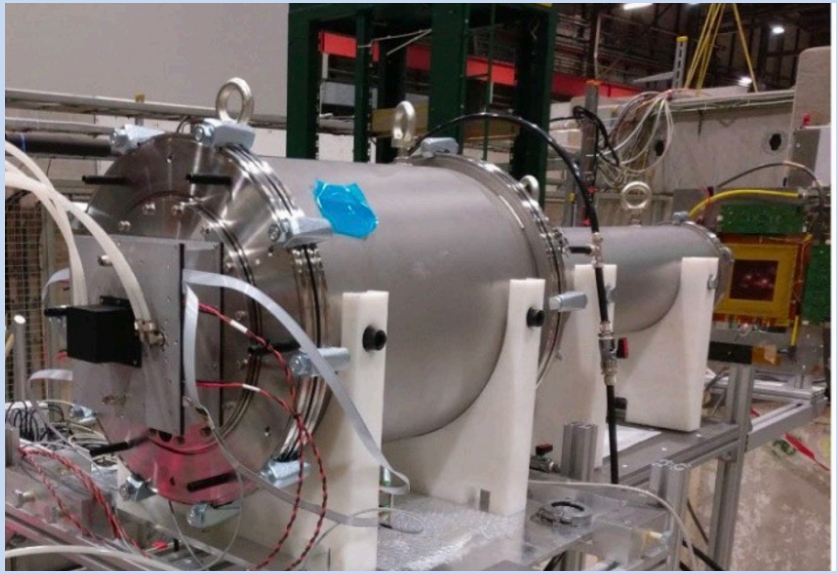


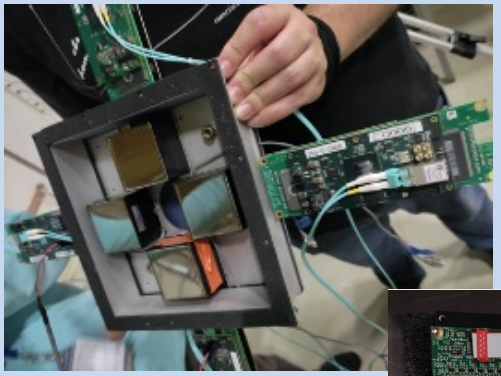


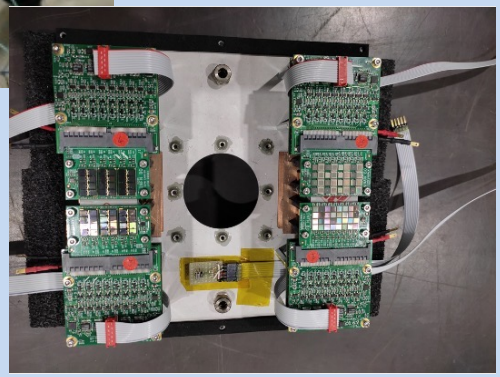
ARCADIA DAQ chain



Test Beams







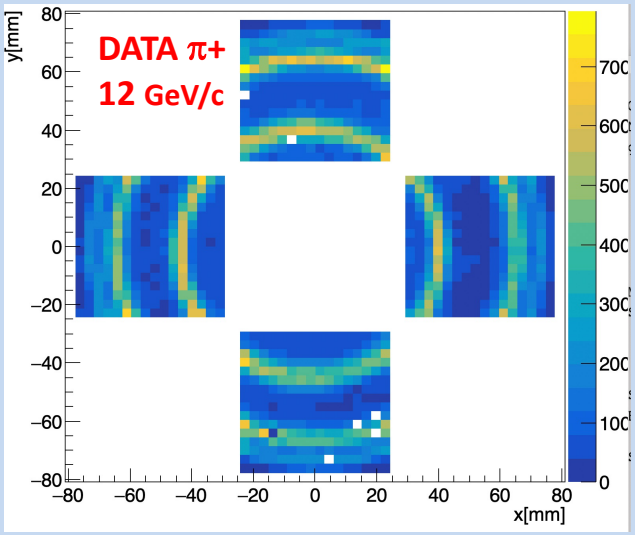
Long commissiong in 2021

Two requests in 2022 as main user

1 week at SPS (> 20 GeV/c)

2 weeks at PS (< 12 GeV/c)

They will likely be approved
(total requests are less than available slots)



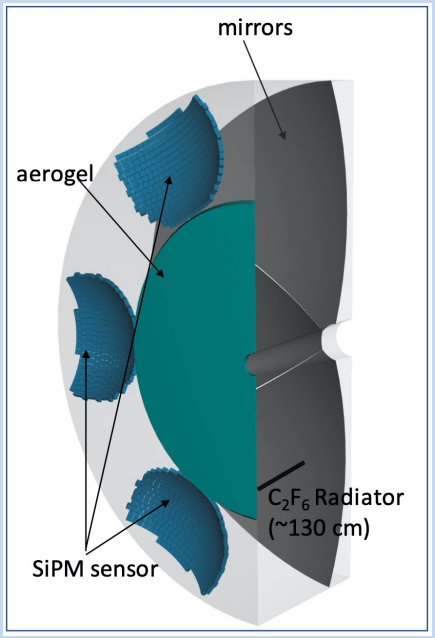
Simulation & Analysis

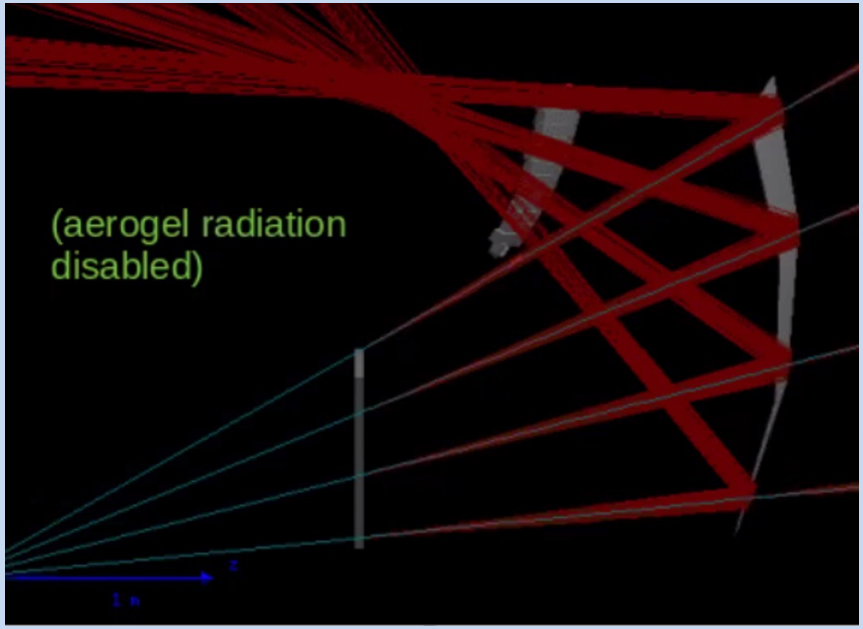
Collaboration with US groups (DUKE, Stone Brooks,…)

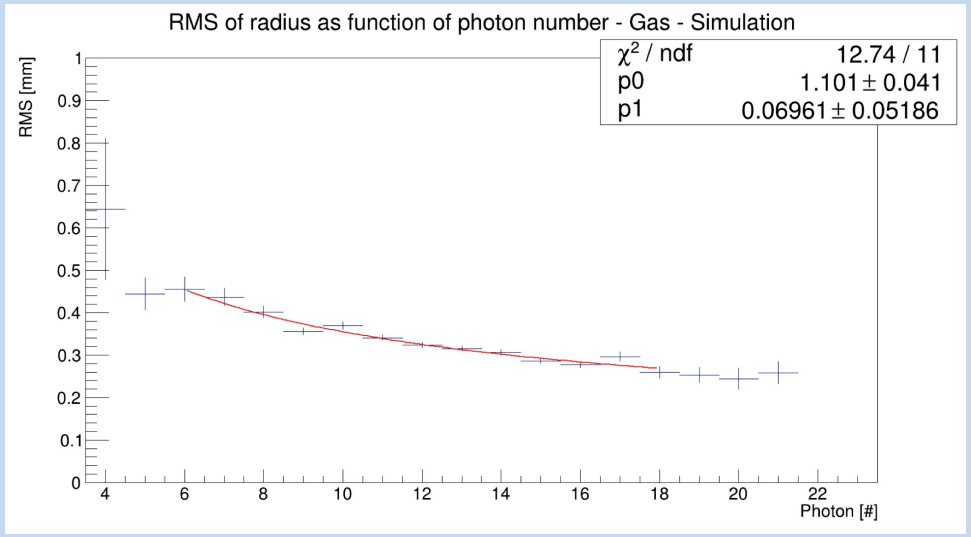
Match ATHENA and prototype Frameworks

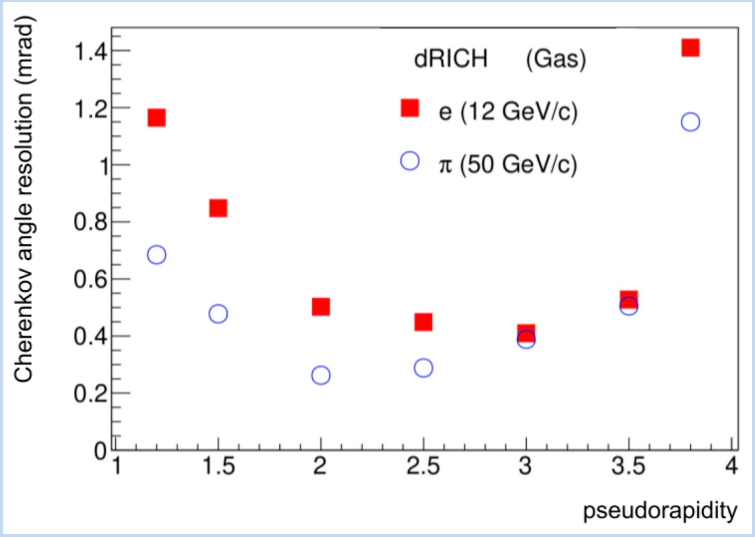
Implement AI algorithms

Chandra's talk









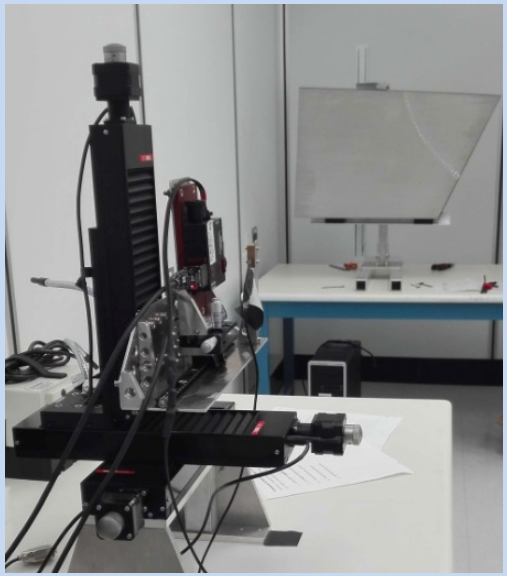
Mechanics & Mirrors

ATHENA constraints

BNL safety regulations

High-pressure for noble gases

Offer of engineering manpower by JLab



Sensors & DAQ