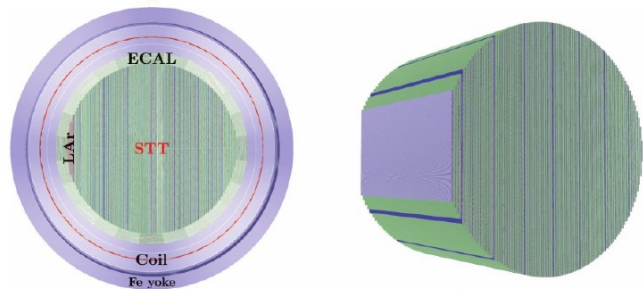


Straw Tracker R&D setup

Motivation:

DUNE Straw Tube Tracker (STT)



Green: polypropylene (CH₂) targets (4.7 t FV) Blue: graphite (C) targets (504 kg FV)

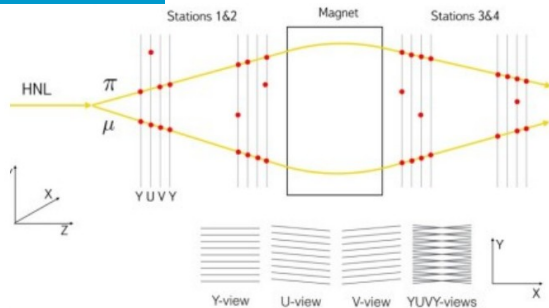
Beam monitoring (with ECAL) and neutrino flux measurements

200k straws in total

Tracking (time) + PID (charge)



Spectrometer
Straw Tracker (SST)



Objective for PS:

Particle Identification

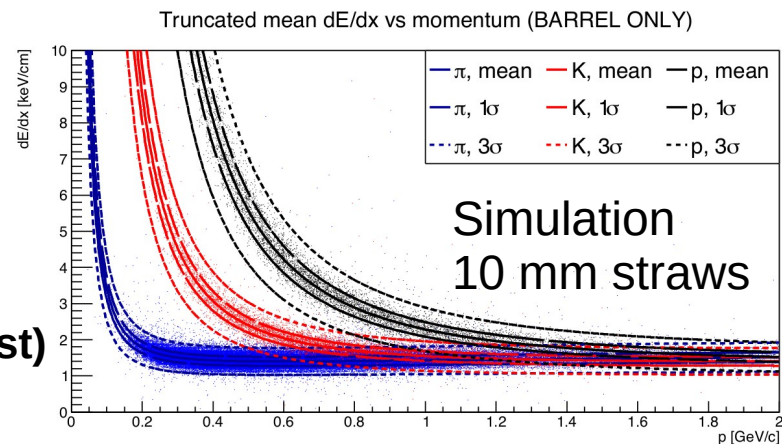
(prototype and electronics test)

Also NA62, HIKE, SPD, COMET...

The same straw technology (ultra-sonic welding) but different geometry/material

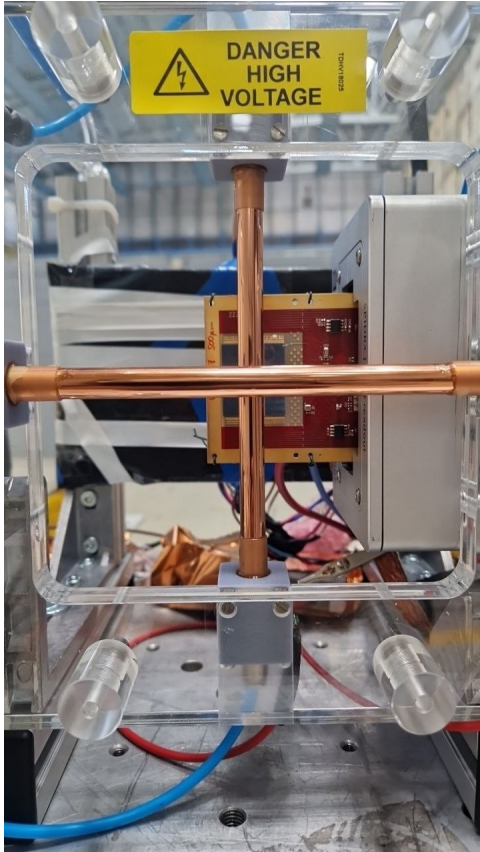
TB measurements supporting

- Tracker prototyping
- Choice of read-out electronics



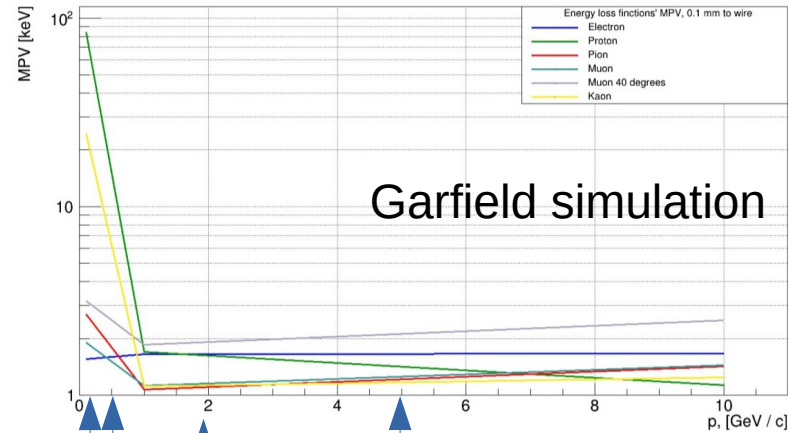
Straw PS setup 1

- Two straws read out with two custom PA
 - APIC (RD51) ~400 ns peaking time
 - JINR ~ 1 us peaking time
- Timepix detector
- scintillator



Goal: to understand PS T09 beam conditions for October measurements

MPV as function of particle momentum. 0.1 mm distance to wire

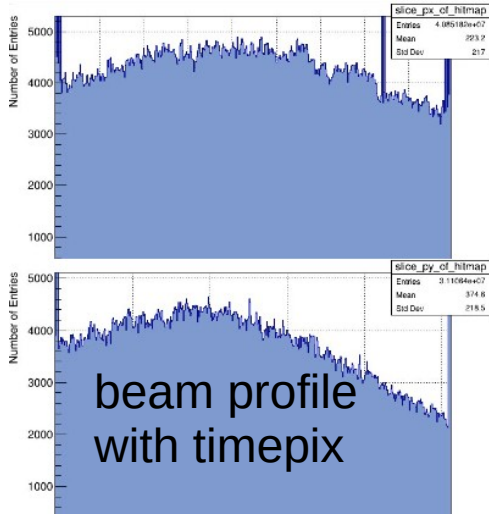


@ T09:
pi+mu+e
(<5 GeV)

Electrons are tagged
with the Cherenkov detector
15 mV threshold

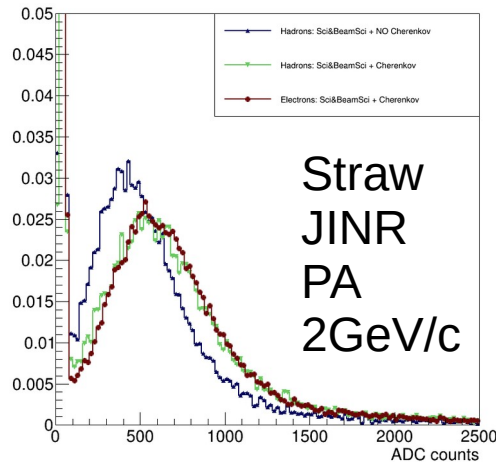
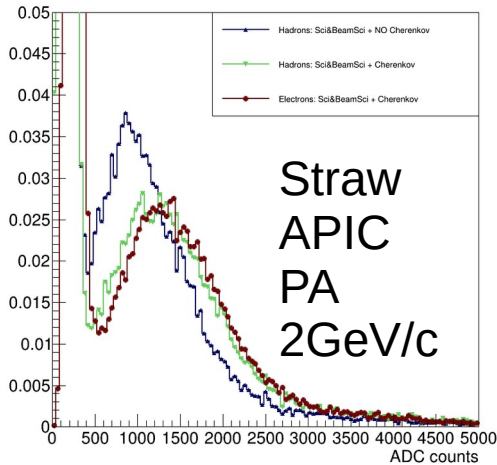
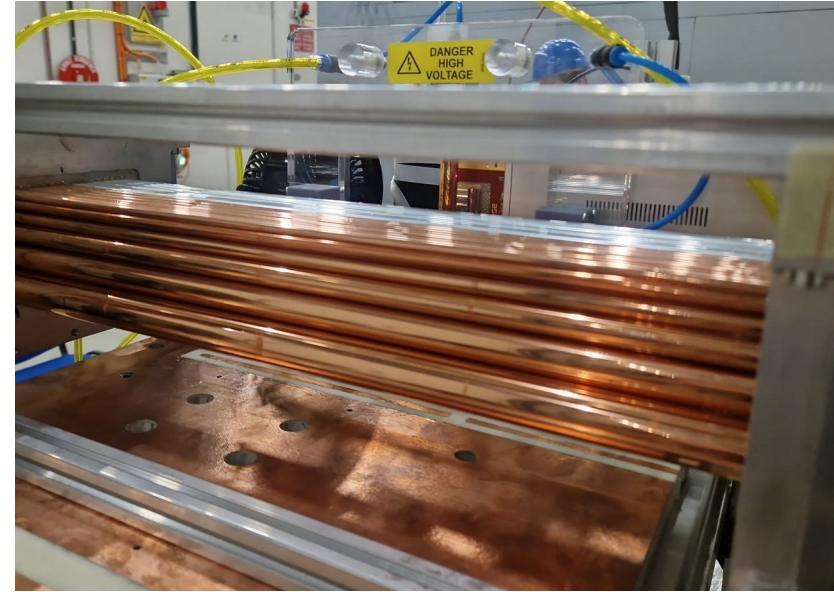
- too low rate for 0.1 GeV/c (60 particles/spill),
- ok with 0.3 and 0.5 GeV/c – but seems not the best region for us
- 1-2 GeV seems promising for charge resolution measurements
- for lower momenta – offline analysis of the collected data started

Data setup 1



Data setup 2 = setup1 + tracker prototype (last night)

- VMM3 readout of the prototype (SPS runs) – not optimal for charge measurements
- but 10 (10mm) or 20 (5mm) straws on the beam axis



Many thanks to Dipanwita, Aboubakr and the gas team

and thanks to HERD for swapping the beam time with us

Straw: careful analysis + comparison to simulation is needed