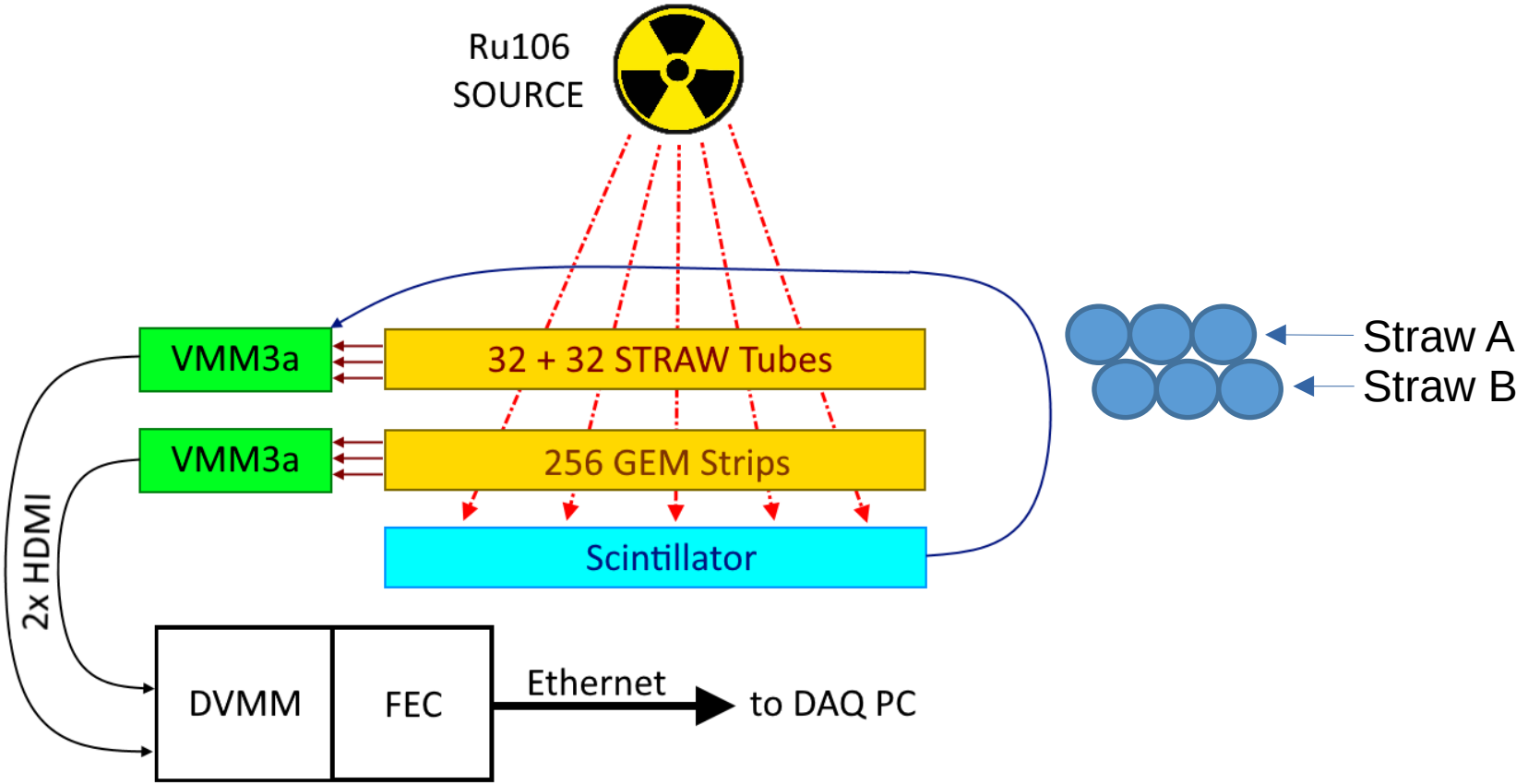
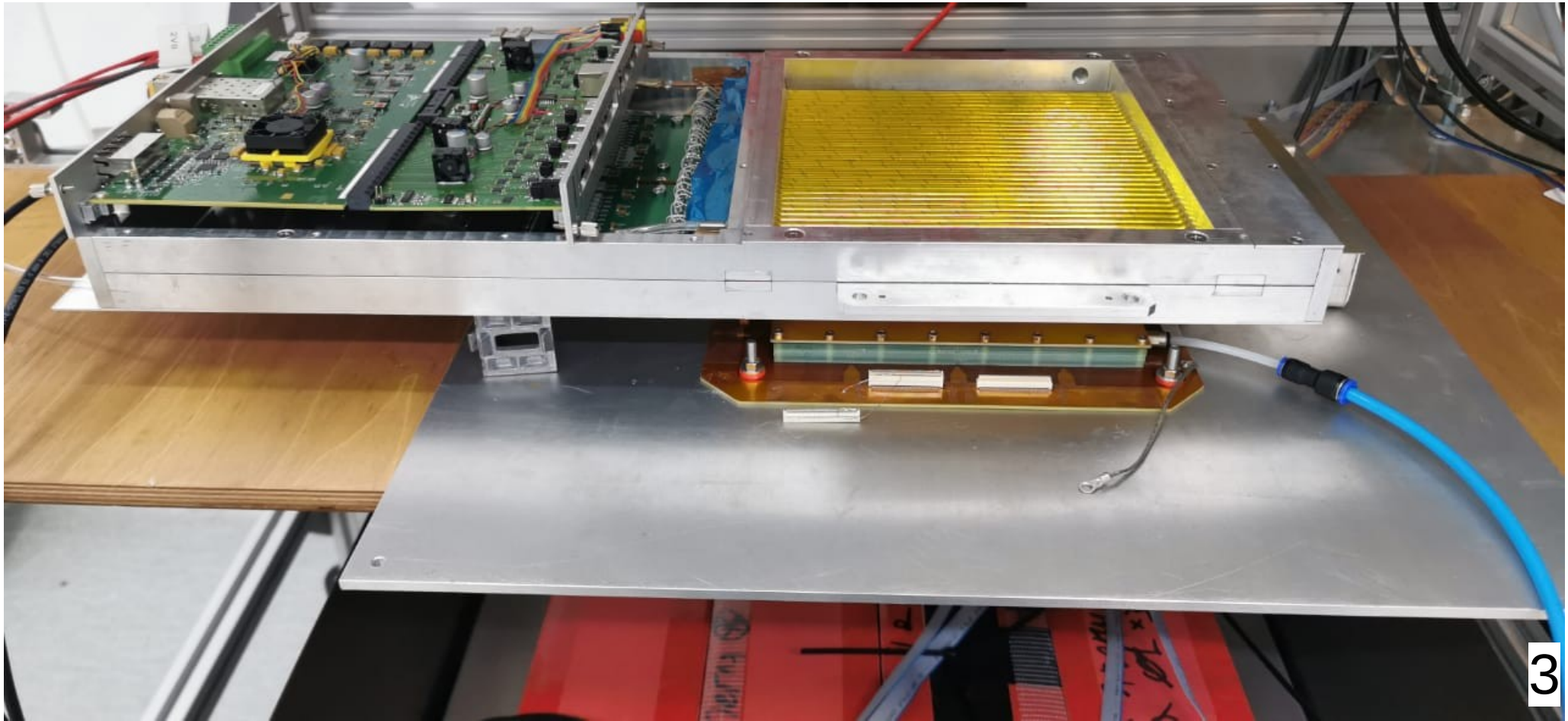
Studies of VMM3a Based Straw Read-Out Prototype

Vitalii Bautin, JINR, Dubna, 23/03/2022

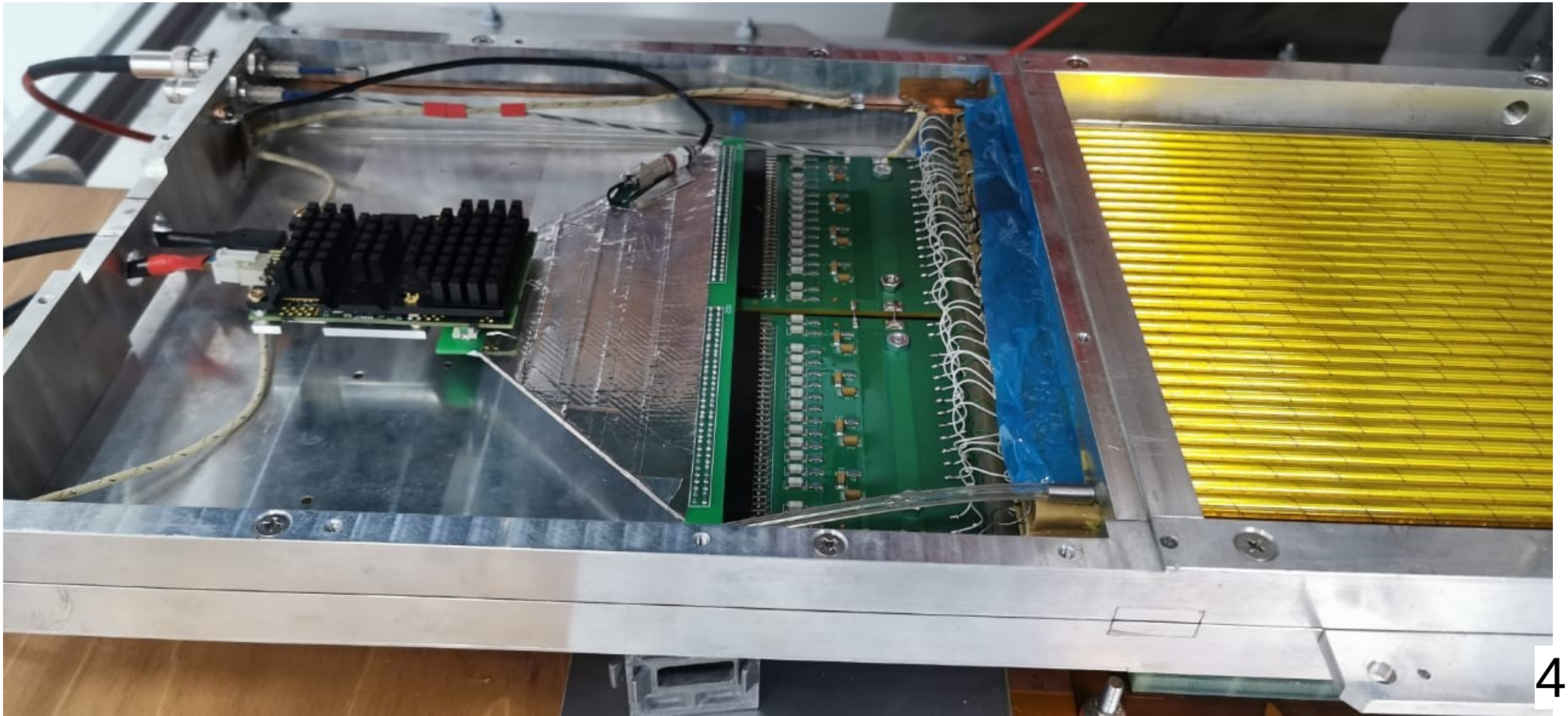
Straw + GEM + Scintillator Concept



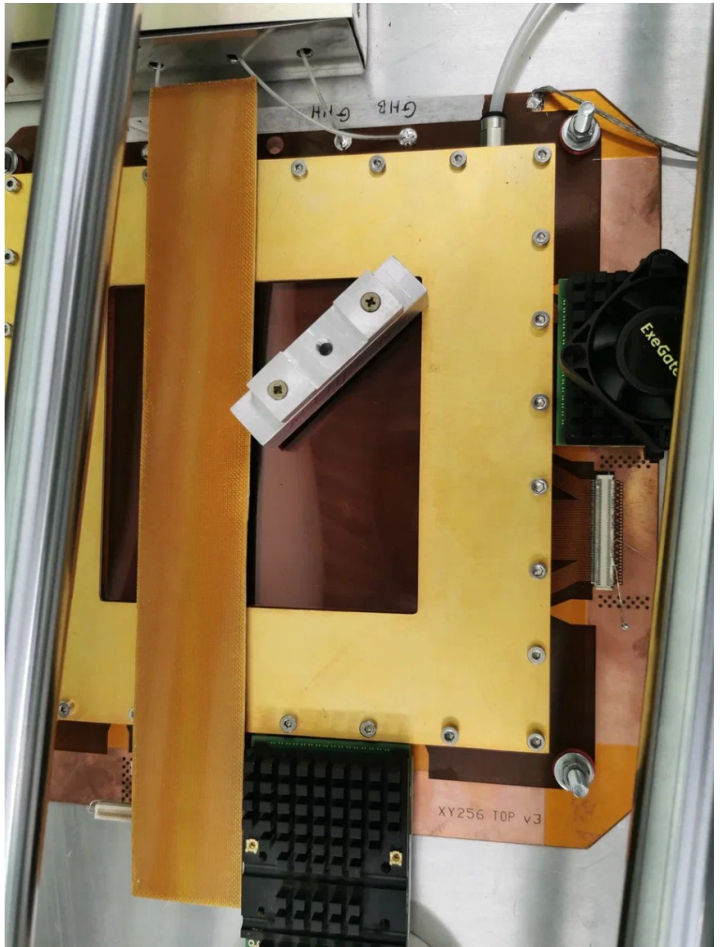
Straw + GEM + Scintillator Concept

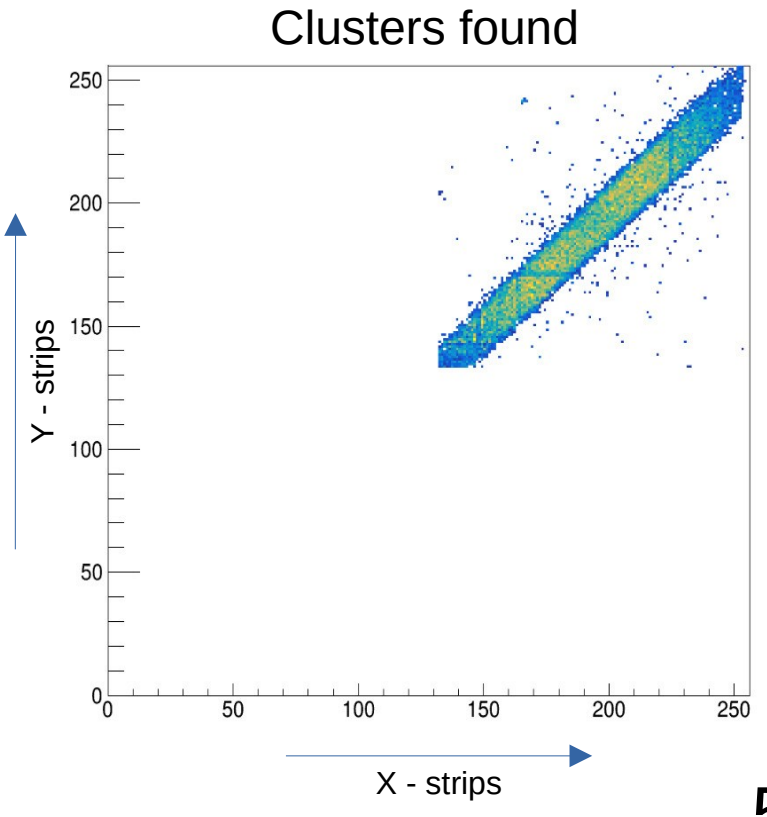


Straw + GEM + Scintillator Concept

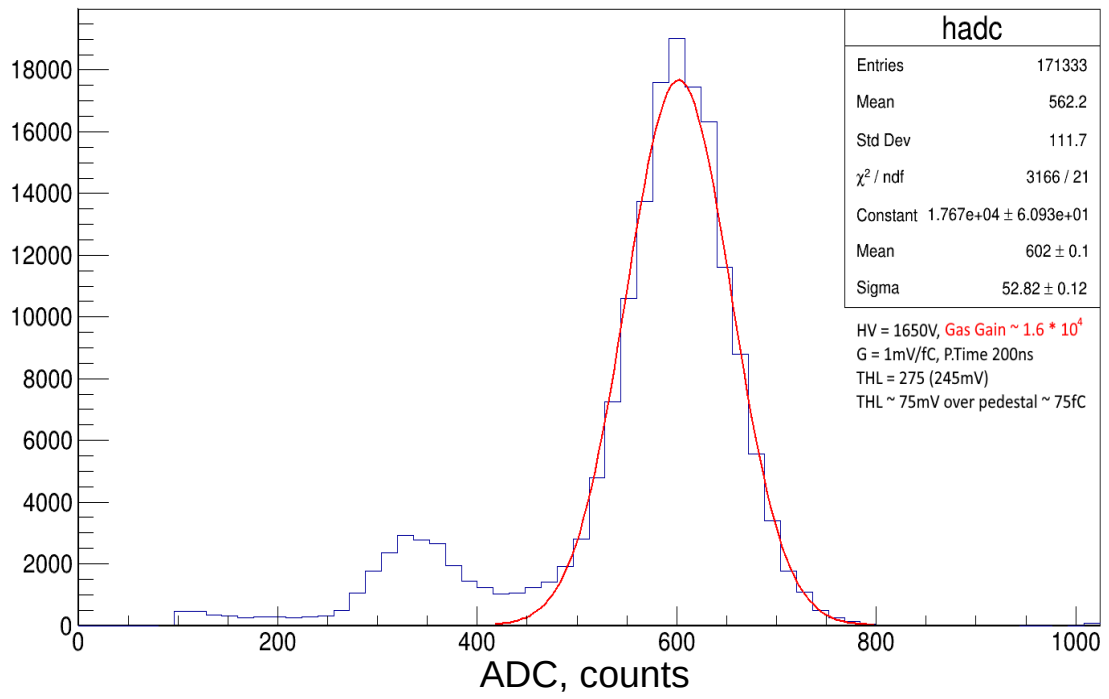


GEM Readout Test

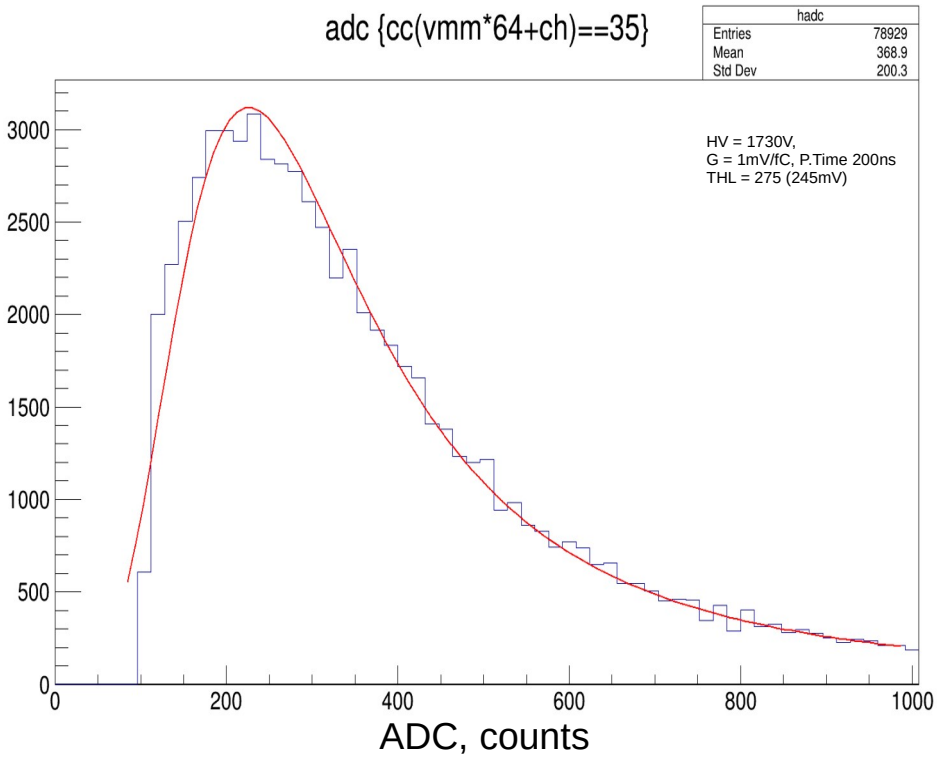




Straws ADC Spectra (Time-at-Peak Mode)

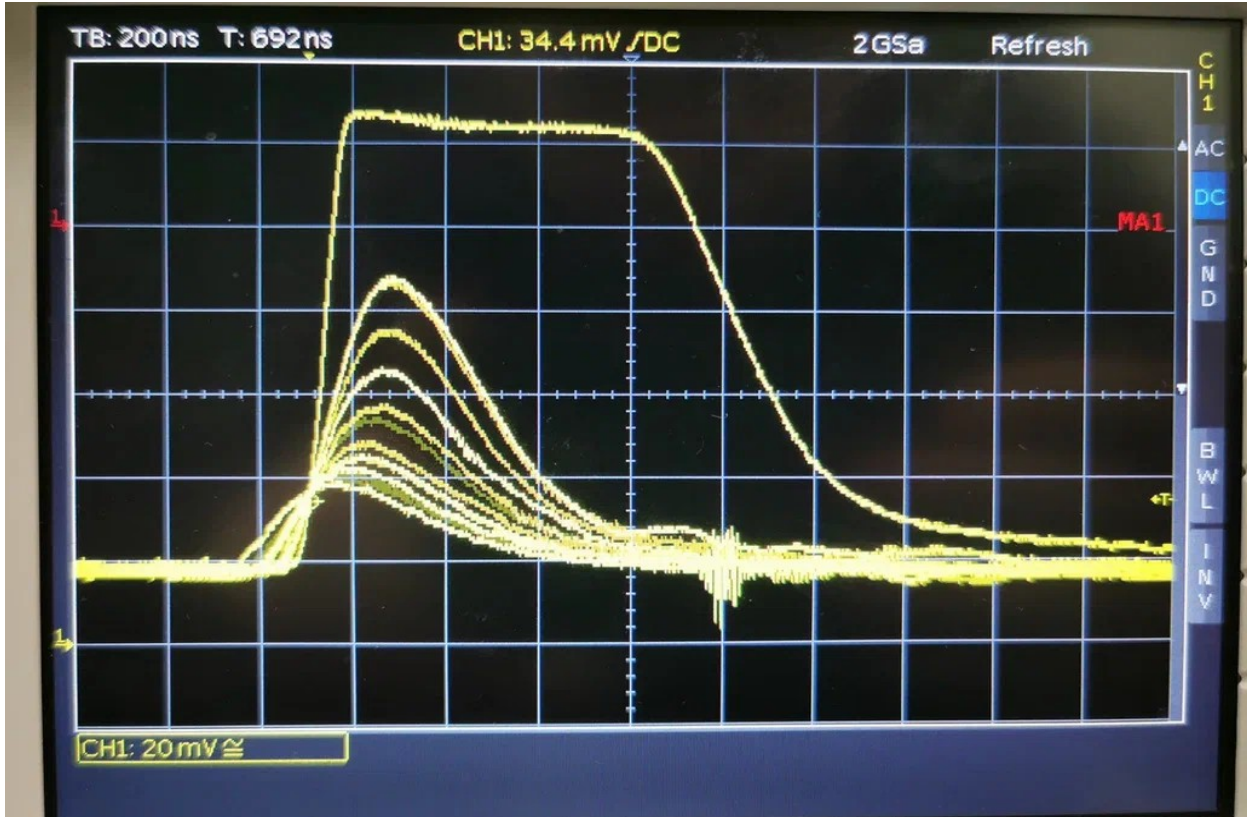


Fe55 Source



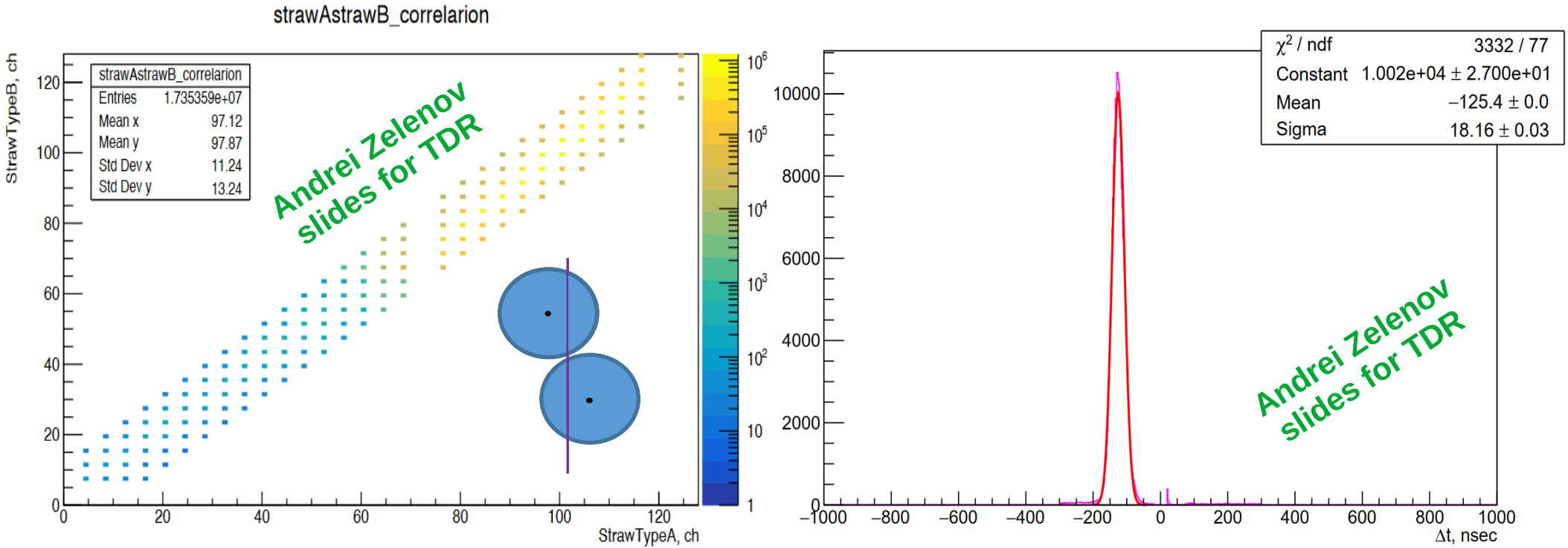
Ru106 Source

Straws Direct Oscilloscope Monitoring



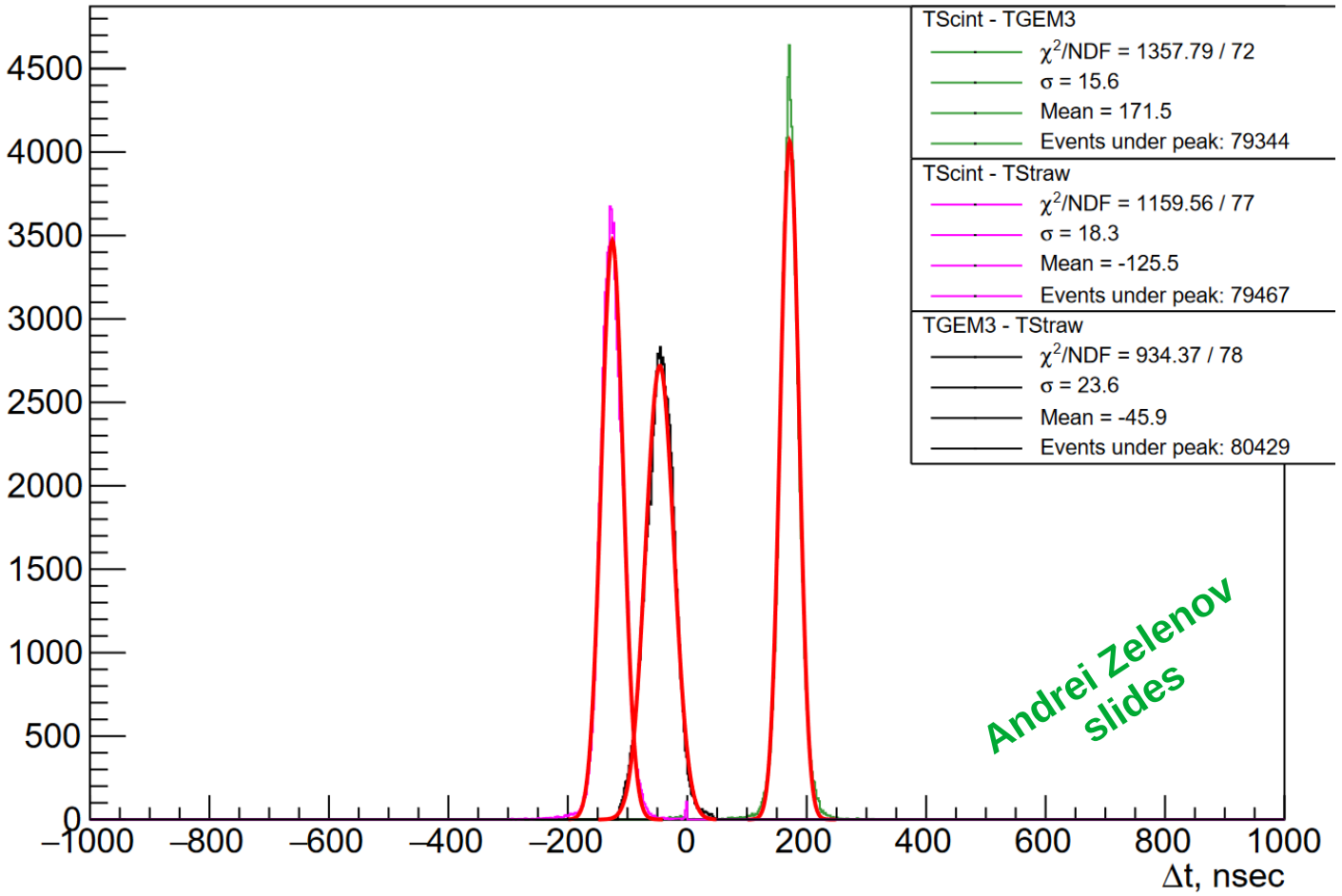
Ru106 Source, T@P mode, 200ns peaking time, 1730V

Straw A & B layer correlation

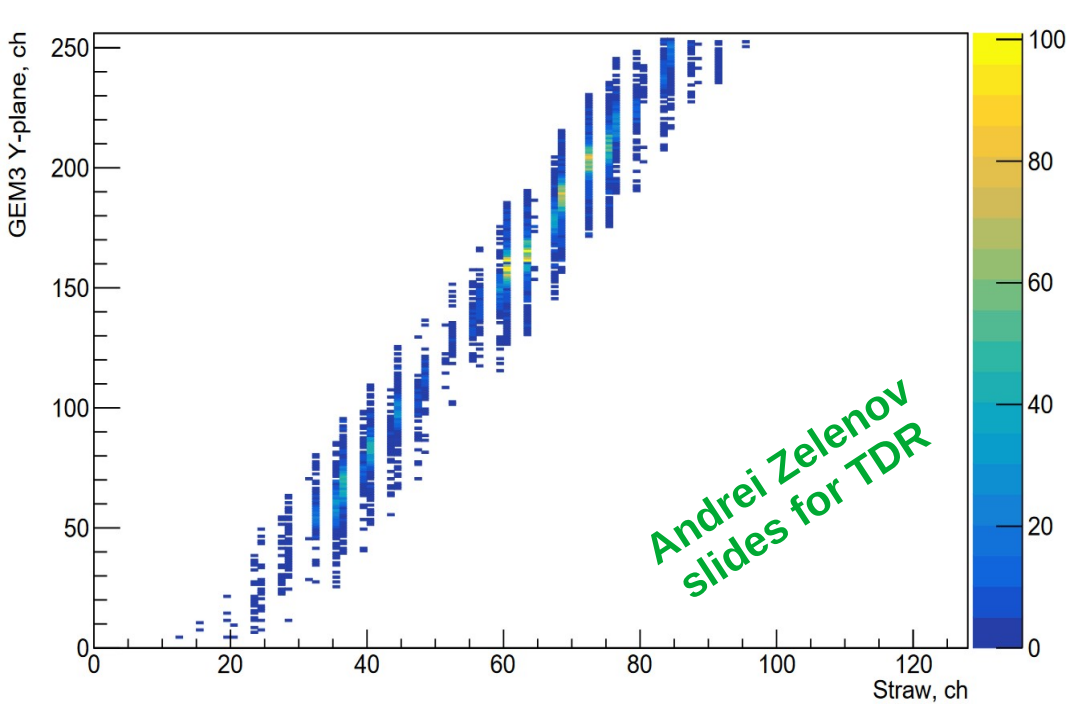


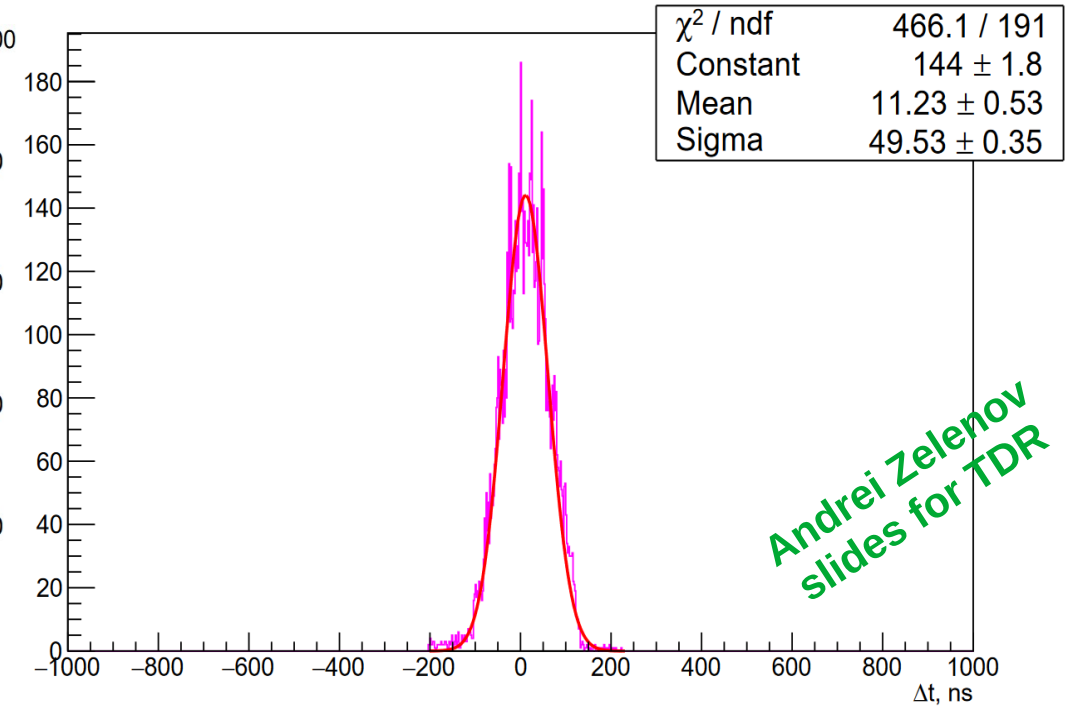
Left: straw chamber hit pairs found in both the top and bottom layers within a time window of 50 ns and 5 cm distance between each other. Right: time difference between the scintillator and straw signal peaks (right). Both for Ru-106 source and time-at-peak VMM3a readout mode.

Time correlation between hits in different detectors



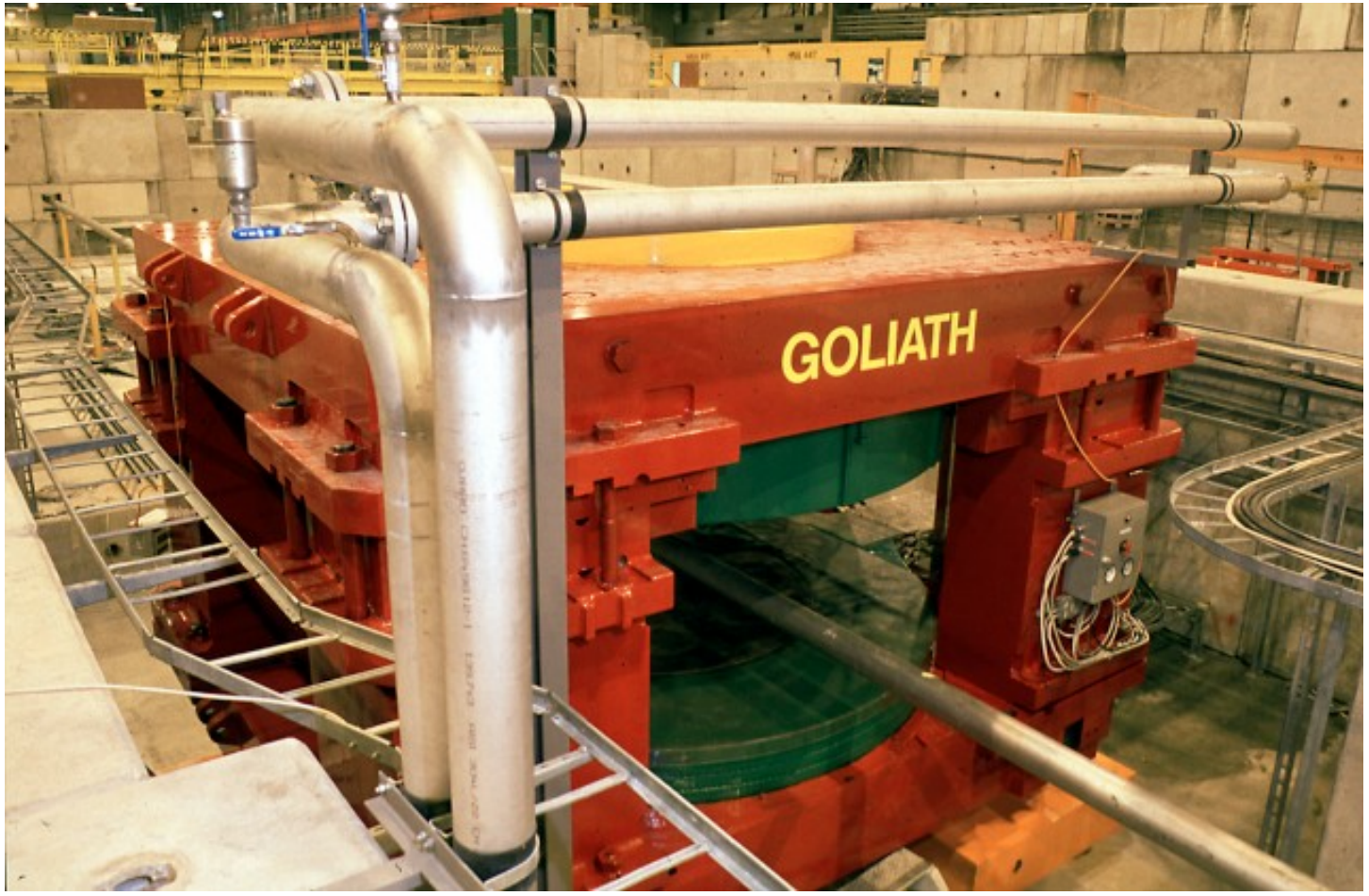
TB21: GEM-STRAW time and coordinate correlations





Left: Hit pairs found in straw tubes and GEM strips within 200 ns time window.
Right: Time difference between the scintillator signal peak and straw time-at-threshold.
Both for muon beam at SPS (CERN), November 2021.

GOLIATH magnet on H4 beamline (up to 1.5T)



Conclusions

- The setup is ready for both the Lab and Testbeam measurements;
- Data analysis software is ready and tested;
- ***SPS H4*** beamline allows to use the GOLIATH magnet with fields up to 1.5T;