

PS-SPS Users Meeting for Week 30 held on July 25th, 2024

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- September 4th: User meeting exceptionally on **Wednesday** on zoom only (05.09 is CERN holiday).
- **Updated user schedule v3.0.0.** It is based on the updated injector schedule.
- Please get in contact, if you want to take one of the weeks without assigned main user - Tanja (tetiana.shulha@cern.ch) is collecting all requests.
- **Exchange Magnet H2 beamline:** planned for 30.7.-1.8.2024:
No Beam to North Area from Tuesday morning until (expected) Thursday afternoon/evening.
- **Upcomming SPS NA target intensity changes:**
<https://codimd.web.cern.ch/grQs-qbsQDa0rwMZbdmc2A>
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News from the PS & SPS Physics Coordinator

E.B. Holzer, M.R. Jäkel

- 2024 injector schedule released [EDMS 2872566](https://edms.cern.ch/document/2872566/2.0)
(<https://edms.cern.ch/document/2872566/2.0>)
- 2024 approved LHC schedule [EDMS 2872429](https://edms.cern.ch/document/2872429/2.0)
(<https://edms.cern.ch/document/2872429/2.0>)

:::success

Proton Run 2024

- AD/ELENA Physics Stop Monday 02.12.2024
- SPS NA Physics Stop protons Thursday 31.10.2024
- PS EA Physics Stop protons Wednesday 27.11.2024

Ion Run 2024

- SPS NA Physics Start 4.11.2024 (maybe earlier if set-up is fast) - Stop Pb ions Monday 2.12.2024 (6h)
 - NA : Week 45-47 high energy
 - NA : Week 48 low energy (no LHC running)
- PS EA Physics Start 6.11.2024 (tbd) - Stop Pb ions Monday 2.12.2024 (6h)
 - CHIMERA: 13.11-2.12
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Reminder: Beam time exceeding the limits of 2 weeks PS beam time and 1 week SPS beam time per year need the approval of one of these CERN committees: SPSC, LHCC, DRDC, INTC, RB or IEF. Consider joining a DRD collaboration, if you require more beam time.

News from the Facilities Operations Meeting (FOM) (M. Jaekel)

Target intensities:

- Change to T4 standard wobbling and 100 mm target head on Wed. 17.07., then also back to the standard 42 units on T4.
- 150 units on T6 on the morning of Friday 19.07. for M2 high-intensity RP test

Upcoming SPS MDs next weeks :

<https://be-dep-ea.web.cern.ch/content/md-planning-north-area>

Dedicated SPS MDs - if not announced differently - are taking place from 8:00 to 18:00

- W31 Dedicated : 30.7 to 1.8 (shadow of magnet exchange)
 - Dedicated: 30/7 → phase space manipulation with sextupoles & octupoles
 - Dedicated: 31/7 → COLDEX
 - Dedicated: 1/8 → vertical instabilities with LHC beam | PC noise
- No dedicated MDs for week 32, 33, 34

PS Machine Report (Y. Dutheil)

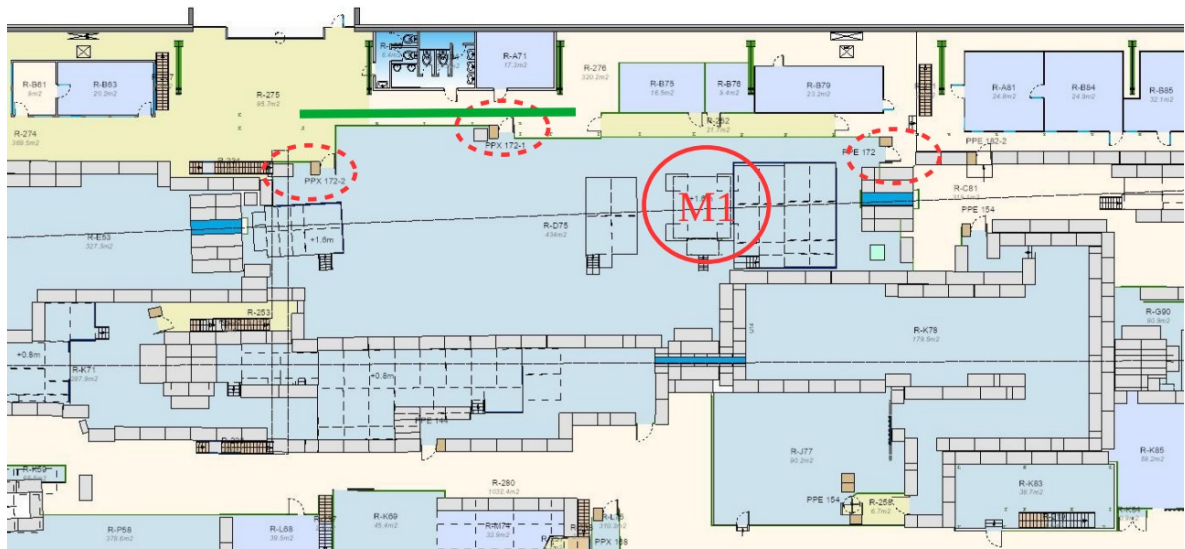
- Availability of 85.6%
- Several long faults (>1h)
 - RF issue on Fri night, not clearly understood but RF system is overdue for upgrade
 - Several beams impacted (not EAST) Beams were restored by ~midnight
 - BSW22 extraction bumper issue on Mon eve prevented TOF, AD and SPS -> EPC piquet repaired power converter
 - No EAST beam until ~noon on Wed due to work on 251
 - Signal issue on one of the door caused a loss of patrol, cannot be further investigated without a beam stop
- plan
 - Nominal beam production
 - Special 100/200ms beams for EAST T09 later this week

SPS Machine Report (T. Levens)

- Overall good availability of SPS during the last week (91.6% for SFTPRO)
- Issues:
 - Issues with the radial loop on Saturday: ~2.5h downtime for NA
 - Further tests by RF experts on Tuesday lead to some instability in delivered beam

Safety (A. Schouten)

- Pathway on Jura side of EHN1 will be partially obstructed from today for 2 weeks.
- General reminder for ISIEC requests.



nToF (M.Bacak and P.M.Milazzo)

Smooth data taking in all experimental areas, beam in standard conditions.

EAR1: $63\text{Cu}(n, g)$ + one day test of a LaBr detector

EAR2: $\text{Ar}(n, g)$ until 31.07

NEAR: Activation measurements

East Area Beam Status (N. Charitonidis)

On call number: **67500**

General: Some FGCs required restart on 24th July.

T09: Good operation. Beam to be checked with CMS bril after their setup is done. 0.2 s spill length to be requested (limit confirmed with STI, **we should not go shorter than 0.2 s**).

T10: Good operation. High pressure Cherenkov reinstalled after brief sightseeing tour of North Area.

T11: No user scheduled.

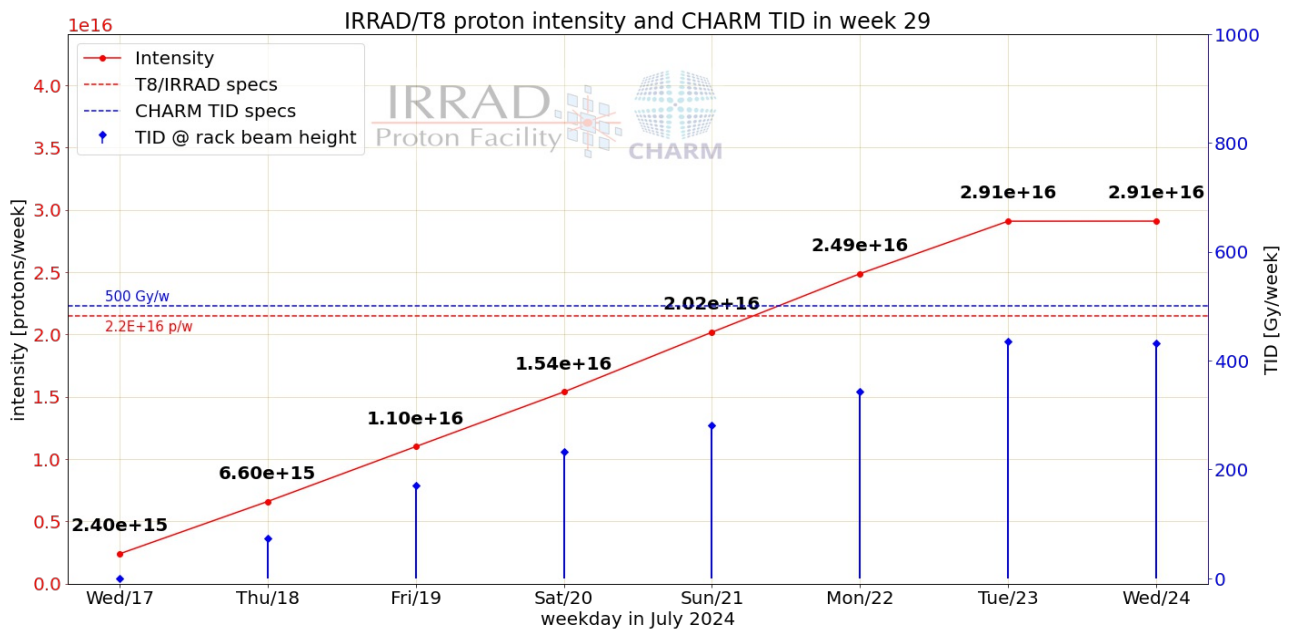
East Area Users Tour de Table

T8 Main: IRRAD/CHARM (S. Fiore)

Good week in terms of delivered protons.

In IRRAD continuing cold irradiation experiment with ATLAS iTk strip modules and all other long-term standard irradiation experiments (TE-MSD, EN-MME). Moreover, before the end of the week another experiment (INFN-LHCb) will start using the IRRAD shuttle system.

In CHARM test by SY-EPC ended, new test by TE-MPE started, BE-CEM modified setups. A couple of quick interventions on CHARM infrastructure yesterday (pressurized air leak and cable tray loosened). TID was not optimal due to thick samples in IRRAD.



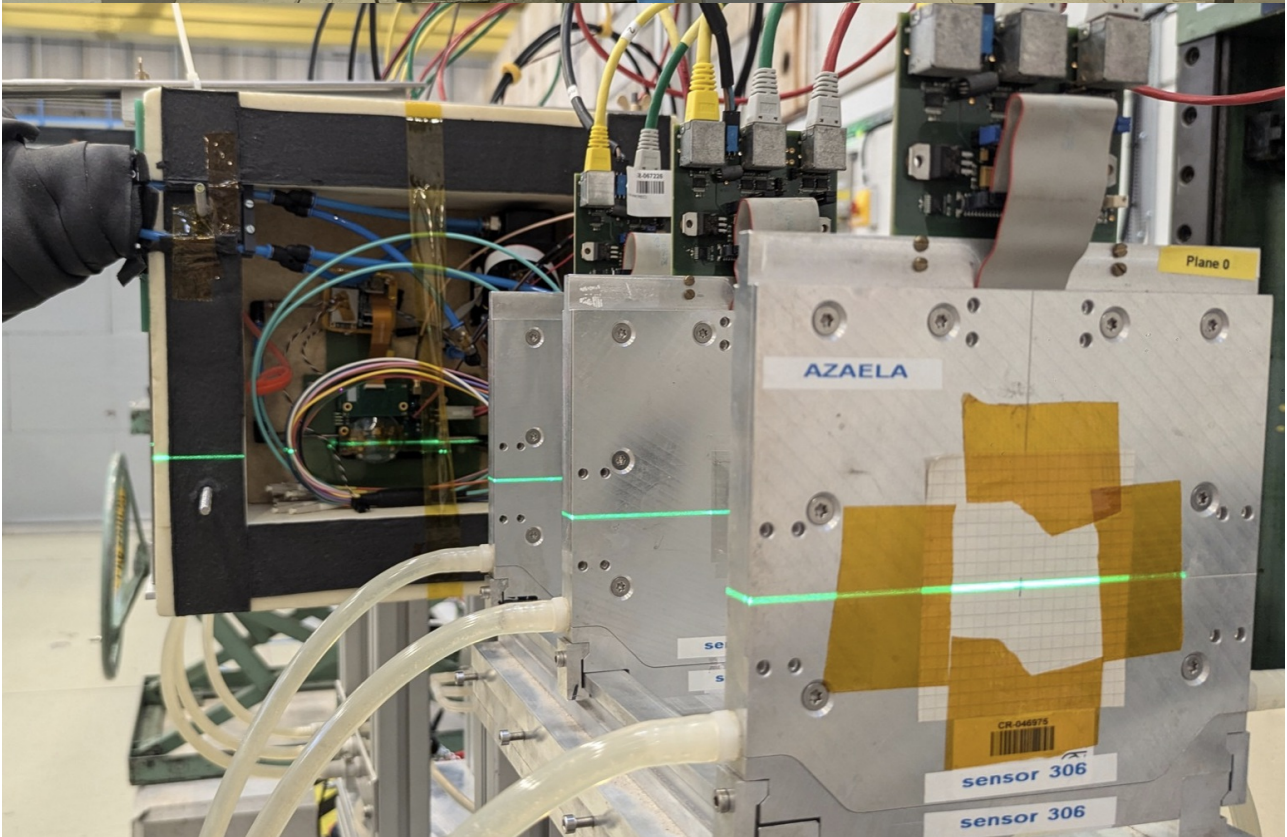
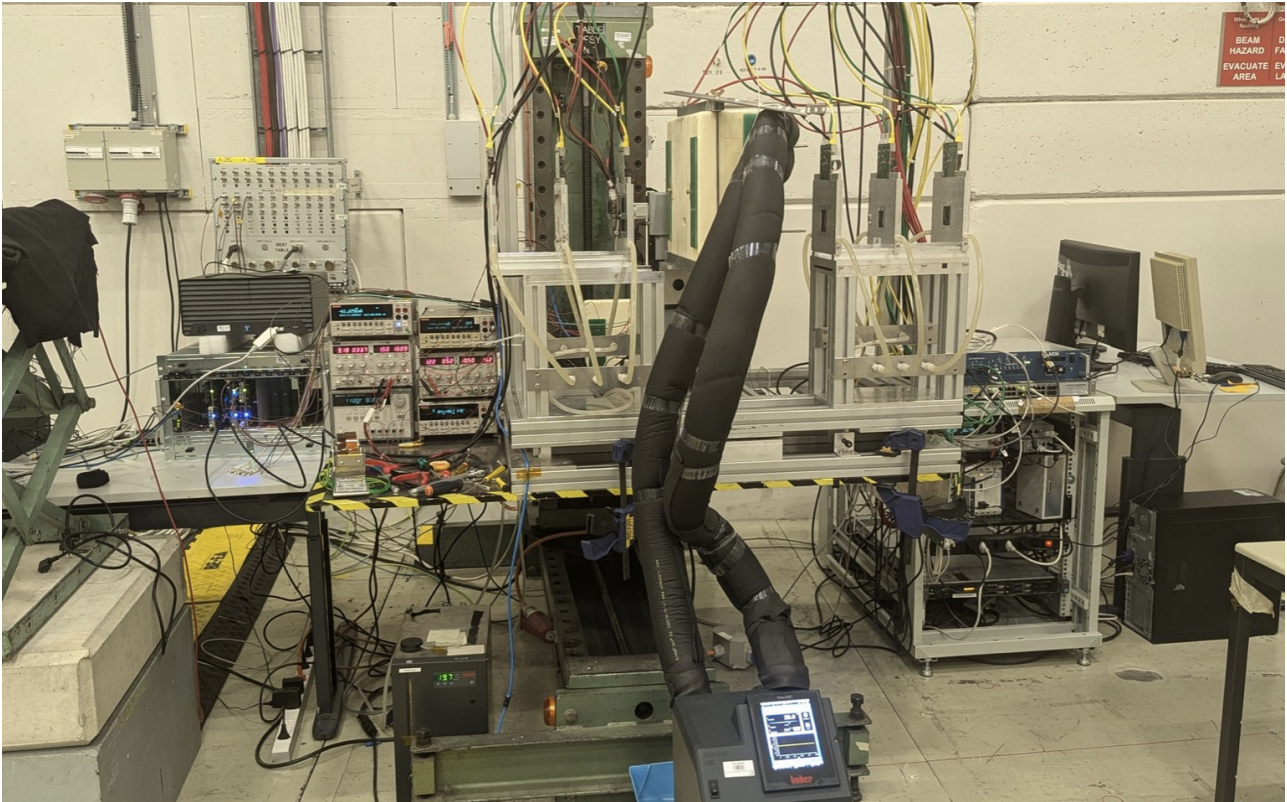
T9 Outgoing Main: MPGDCAL (Anna Stamerra)

- Data taking went smooth
- We performed X&Y scan on the 20x20 pad chambers without absorber moving the desy table
- We included absorbers in the setup and started pion energy scan from 3 GeV to 11 GeV
- We dismantled the setup yesterday and by 9.30 we were out of the area

Thanks a lot for the support!

T9 Main: CMS BRIL (Olena Karacheban)

Setup is mounted. Many thanks to the craning team for help and to Andre and Bane for the telescope assembly.



We are debugging the setup with muon beam, later today will check the beam files for protons and set up the beam with Dipanwita.

0.2 s spill will be needed toward the end of the week, we will call CCC in advance.

We are planning to move out the setup on Wednesday morning, we will talk to next users to agree the time.

T9 Incoming Main: STCF ECAL&PID (Week 31) (Yunlong Zhang)

The detectors are in the airport of Geneva.

T10 Outgoing Main: IDEA CC (Nicola De Filippis)

Experiment completed on July 24. The area was emptied on July 24 at around 8:30. We took data until the last night. Everything was cleaned up at T10.

T10 Main: BL4S (Sarah Zochling)

Experiment set up yesterday (scheme presented last week).

Many thanks to Abou and his colleagues, to the gas team, to Maarten and EA colleagues, and to BI team for their help!

Safety check will take place this morning.

Beam hopefully today.

Main goals are to verify and optimise the measurement principle of the BL4S winning experiments (both teams developed muon detectors).

Stretch Goal is to test the possibility of using a WENDI detector for spallation experiments in future BL4S editions.



Upstream: XCET and Scintillator of T10, BL4S 2x finger scintillator on stand, XSCA for WENDI (stretch goal, tungsten target on tripod not in picture), BL4S 3x DWC (out of which the first one mimics the "DUT") on XSCA



Downstream: BL4S 1x scintillator (paddle) on stand, BL4S 1x scintillator (column-shaped) and 1x calorimeter on DESY table

T10 Incoming Main: ALICE ITS3 (Week 31) (Paolo Martinengo)

Preparing setup in the lab

Will install two telescopes, DESY table with long plate needed or one DESY with standard plate + XSCA

T10 Incoming Parallel: ALICE FOCAL (Week 31) (Please Put Your Name Here)

North Area Beam Status (N. Charitonidis)

On call number: **67500**

For proposed target sharing, see also <https://codimd.web.cern.ch/grQs-qbsQDa0rwMZbdmc2A>

Date	T2	T4	T10	T6
From Wednesday, 24.07.	30 52		21	minimum
Friday, 26.07. (08:00 onwards)	30 52		21	30
Wednesday, 31.07.	30 42		21	30
Friday, 02.08. (NA62 beam dump run)	30 75-85 (as needed)		55	30
Monday, 12.08.	30 42		21	30

H2: Smooth operation, beamline limited to 150 GeV/c. Quadrupole exchange next week.

H4: Smooth operation.

H6: Brief trip of radiation alarm due to collimator settings in file for previous T4 target and intensity. Sometimes a magnet has trouble reaching the correct current within tolerance at the lowest setting (for 10 GeV beams). Otherwise ok operation.

H8: Good operation.

P42/K12: Smooth operation.

M2: NA64mu installation ongoing. Beam to be checked on Friday.

AWAKE (M. Bergamaschi)

Week 29	M	T	W	Th	F	S	S
SPS extractions to AWAKE	240	1102	MD	MD	781	264	543
Hours of beam to AWAKE	1.9	8.4	MD	MD	6.5	1.7	3.3
Hours requested	8.5	9.5	MD	MD	8	5	8.5

Detailed program Week 29:

- Monday: Studies at $4e14$ 1/c plasma density, afternoon no beam from problems with Injectors
- Tuesday: Effective day in term of SPS delivery to AWAKE and AWAKE operation
- Friday: Effective studies of acceleration in plasma at density $6e14$ 1/cc test of new laser dump plungers in the plasma source
- Saturday: Accessed required in TCC4 for reboot of a PLC from 10 to 13, in the afternoon extraction limited by power converter fault of transfer line that required pique
- Sunday: Studies of acceleration in plasma interrupted in the afternoon for failure of ventilation system in TAG41

Week 30	M	T	W
SPS extractions to AWAKE	851	1677	MD

Hours of beam to AWAKE 6.1 11.9 MD
Hours requested 12.5 13 MD

Detailed program Week 30:

- Monday: In the morning CV still working on ventilation issue, not possible to close the area, after 14pm ok.
- Tuesday: Effective day in term of SPS delivery to AWAKE and AWAKE operation
- Wednesday: access, CV repaired the problem on AWAKE ventilation

North Area Users Tour de Table

P42-K12:

Main: NA62 (Jurgen Engelfried & Joel Swallow)

- Since last Wednesday we are taking normal intensity (~21 units on T10) Kaon data. We are very happy with the quality of the beam extraction; the 50Hz component seems to be under much better control now.
- We will stay at this intensity until Aug 2, when we would like to switch over to DUMP mode, with higher intensity, around 45 units. For the exact time of the changeover we are flexible and will agree with Johannes/Nikos a time. We will stay on higher intensity for 10 days, e.g. until Aug 12.
- We noticed (for example this morning) the switch-off of our beamline magnets. Usually, the P0Survey moves our taxes in case of a magnet failure; but this morning nothing moved. Is there now a new condition in P0Survey exldung closing of the taxes in case of the energy-saving switch-off?

M2:

Main: NA64mu (Please Put Your Name Here)

H2:

Main: NA61 SHINE (B. Maksiak, P. Podlaski)

- Relatively smooth data taking last week

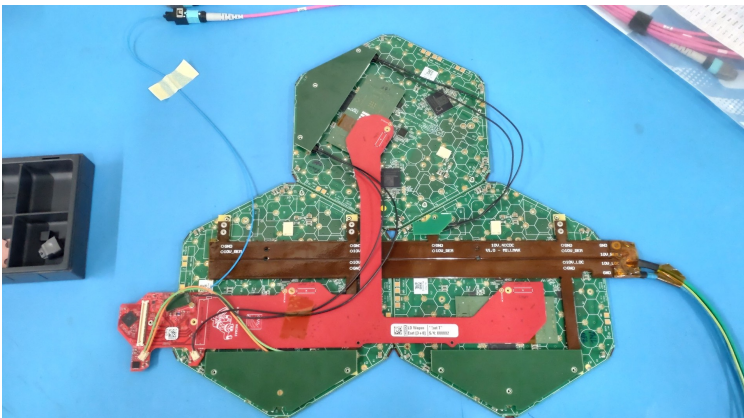
- Beam intensity varies and its position moves frequently:

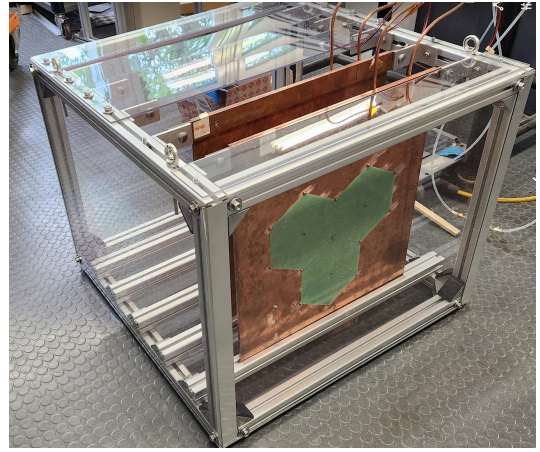


- Fire alarm: On 24.07 our alarm went off in the huts with time projection chambers. Only the verbal alarm went off. No smoke was detected. Firefighters came, assessed that it was false alarm. We continued.
- Data taking until nearest Tuesday.

Incoming Main + No beam: CMS HGAL (Chiara Amendola)

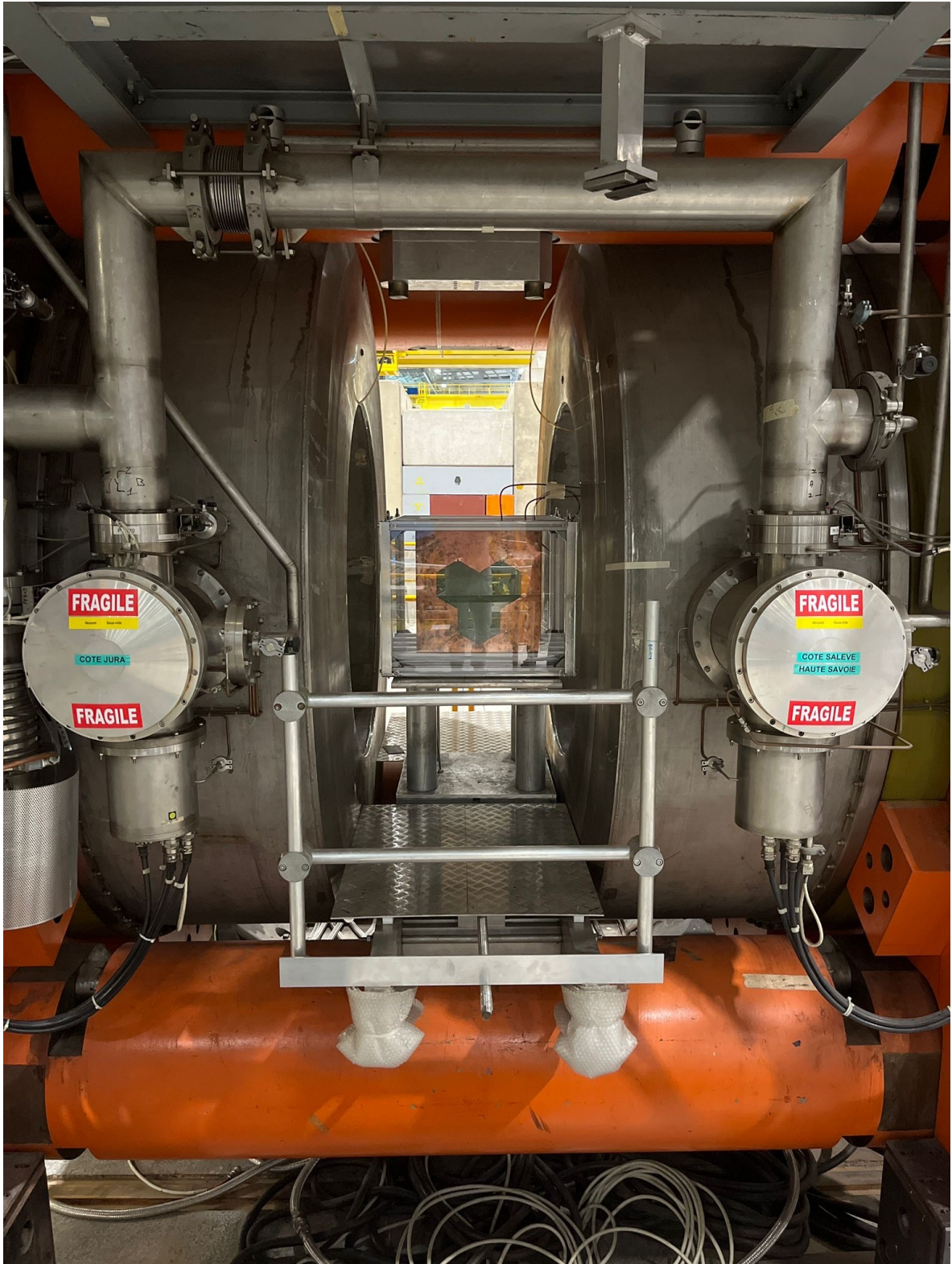
2x assemblies of 3 silicon modules + 2x scintillator tiles boards





Scope of the campaign:

- data-taking with full depth readout (front-end to back-end)
- test within magnetic field at M1 (3T), close-to-final on-detector electronics



Plan:

- installation ongoing since yesterday
 - [x] mechanical and movement tests for box manipulation and modules insertion
 - [x] routing of powering and readout connections
 - [x] safety clearance
 - [] secure magnetic elements of the connections to cooling unit

- tentatively: M1 magnet starting 26/07
 - pending readiness of the back-end devs
- main beam users starting 31/07
 - we will need the scintillators for triggering

H4:

Incoming Main: NP04 (Week 31)(Christos Touramanis)

Weeks 28-29: smooth data taking, collected 1 GeV both polarities for pion-Argon cross-sections as planned.

On Monday 22 July at 2:58am we noticed extra triggers in our TPC and event displays showed increased rate of through-going MIPs, akin to lost muons from primary target. Reported to CCC but got no explanation, apparently there had been no change (?).

Weeks 31 onwards: continue the same, one of our five weeks to be at 5 GeV for kaon-Argon cross-sections.

Nothing special to report or request.

Main: DRD6 OREO (R. Negrello)

- Please, see attached **slides** on **Indico** for **EURO-LABS** questions
- Yesterday we installed our experimental setup. Everything went smoothly
- The installation and pre-alignment required some times, therefore the Physical program will start today
- A special thanks to
 - **Sylvain** for all the support inside the **experimental area**
 - **Nikos** for the assistance about the **beam files**
 - To all the **CERN staff** for making our beamtests possible

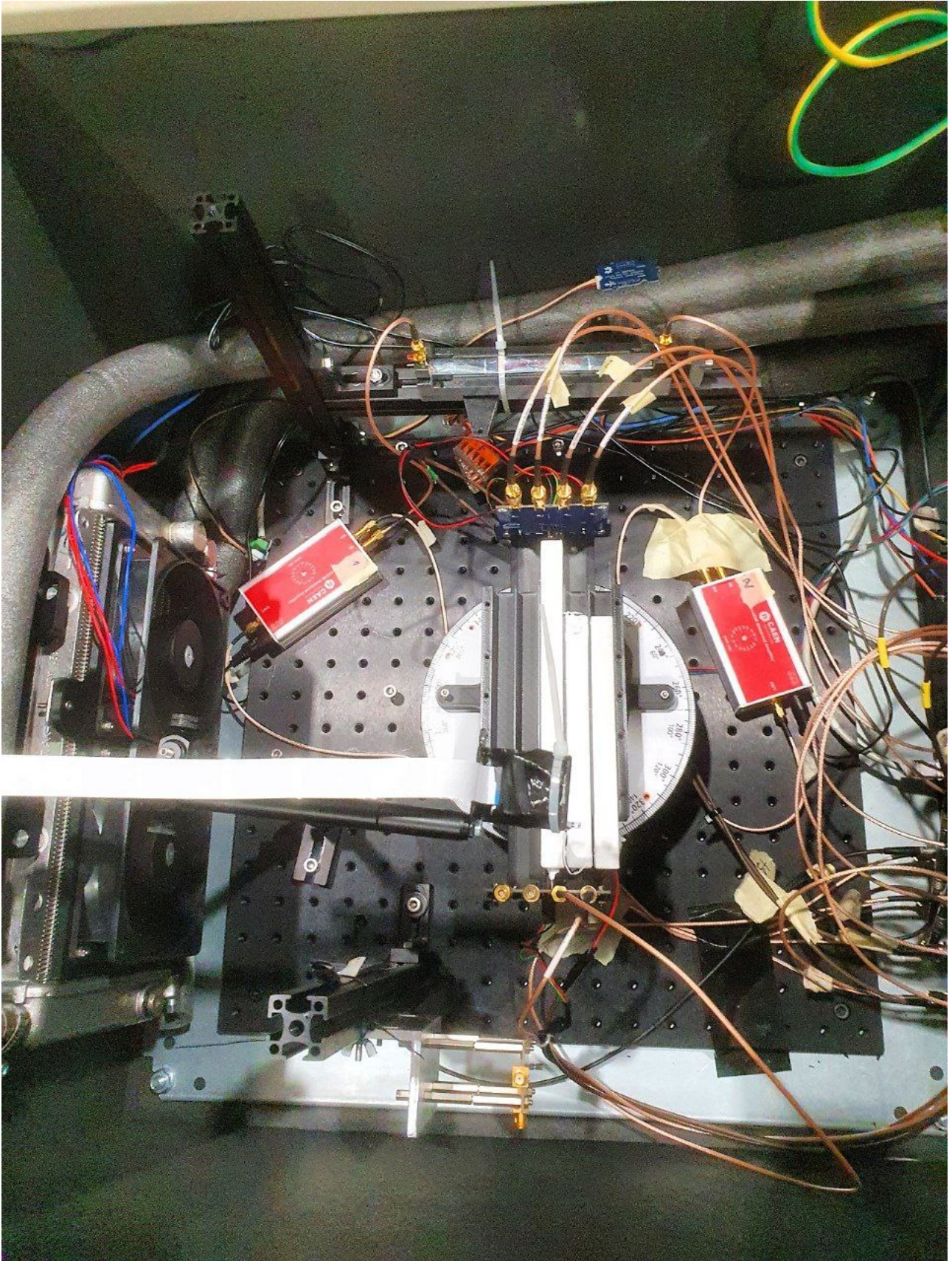
H6:

Outgoing Main: DRD6 MAXICC (Marco Lucchini)

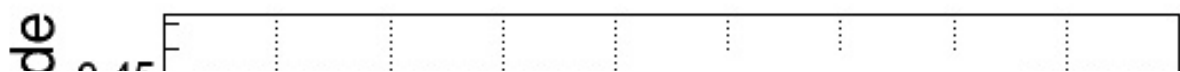
All good besides a few magnet issues and some beam down time. We have run with mixed hadrons 120 GeV beam file for 10% of time, then muon 120 GeV for calibration and electrons from 10 to 100 GeV. Happy with the beam quality and data taken.

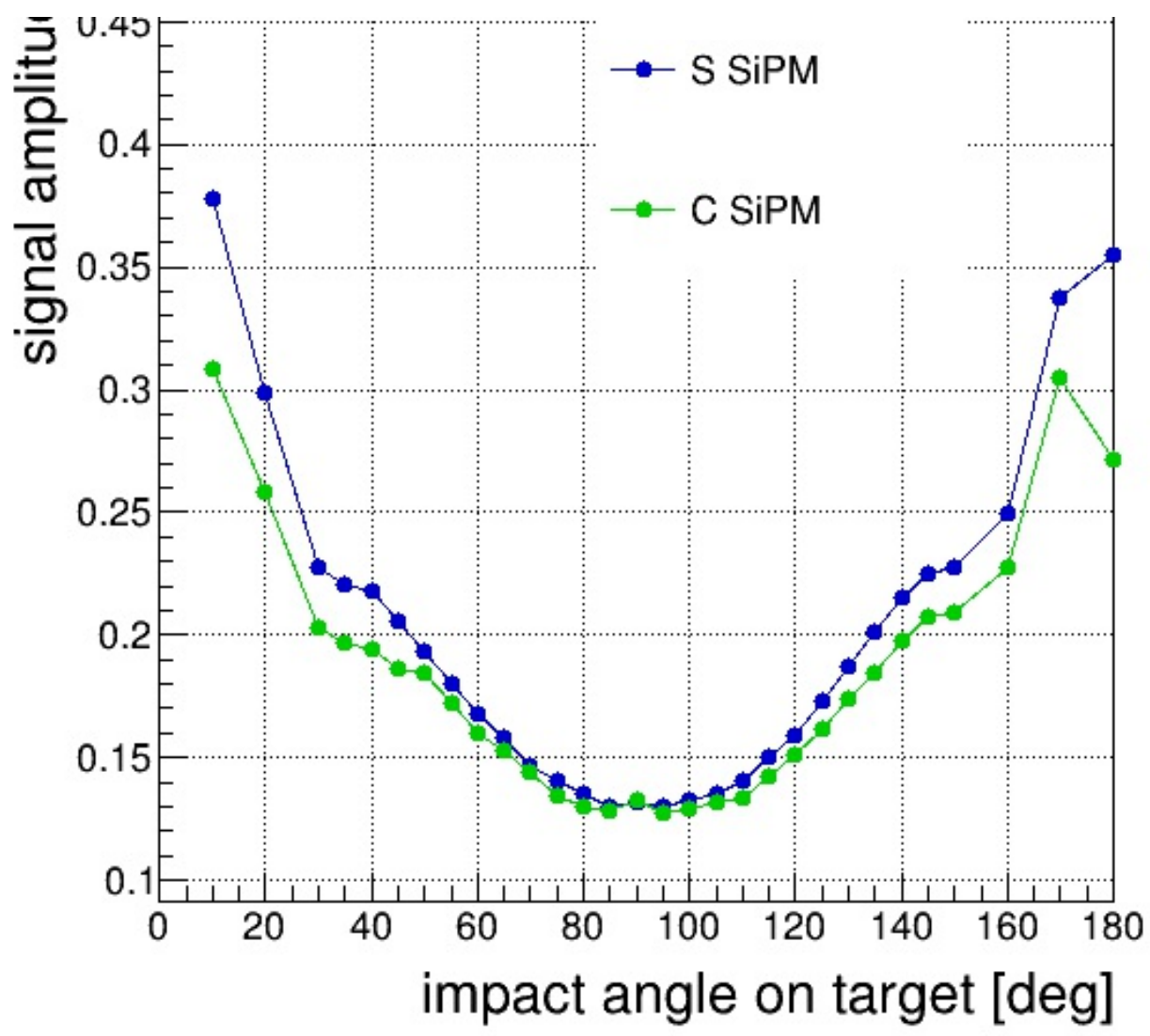
We have characterized our detector response as a function of impact angle and beam energy and completed comparison of various detector technologies.

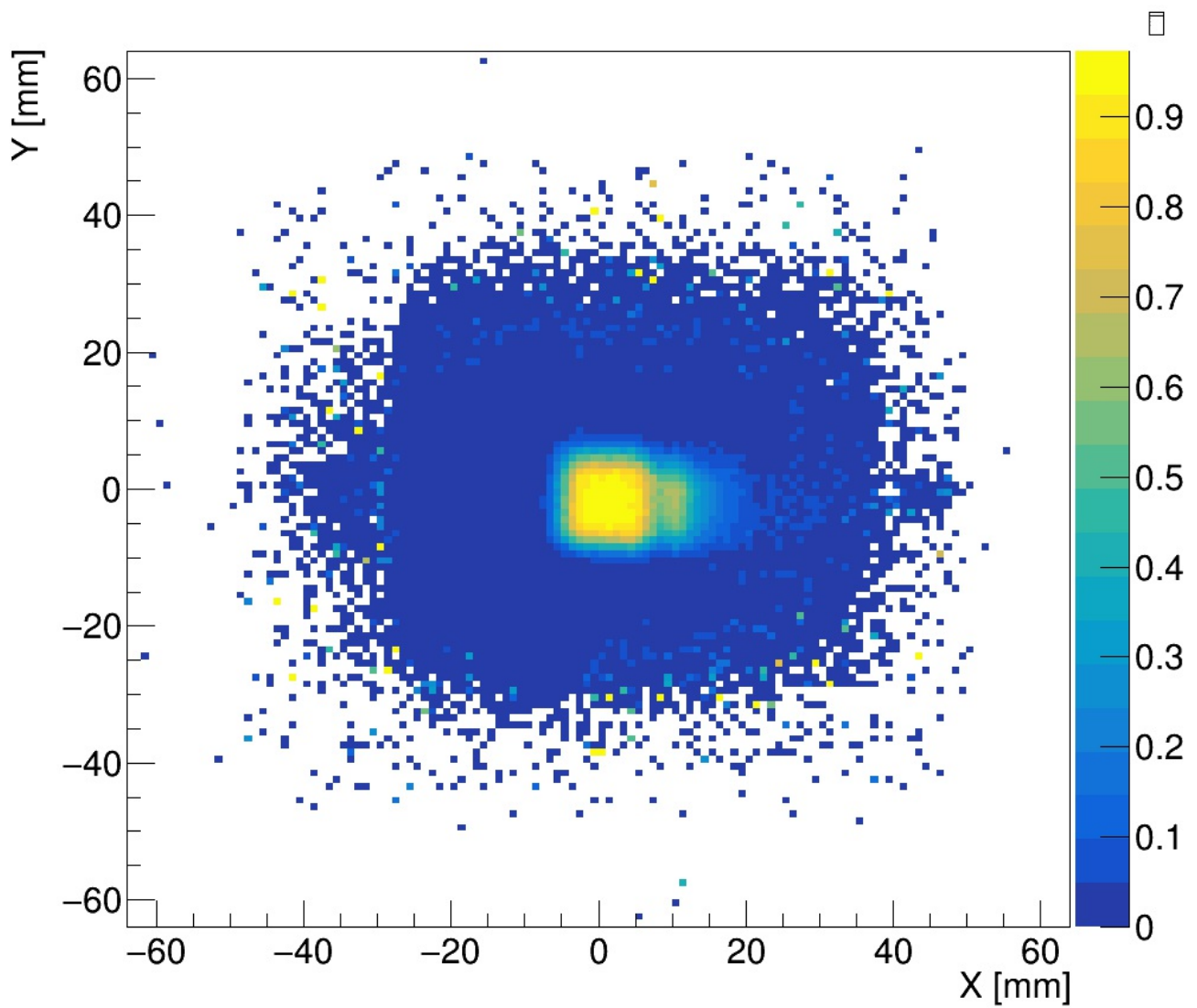
We are grateful to all experts from SPS who made this possible!



10 GeV electrons on DUT







Main: EP FTS (L. Martinazzoli)

- Installation concluded successfully yesterday
- Currently commissioning the set-up
- Starting data taking with crystal calorimeter prototypes
- MIP studies over the weekend

Thanks a lot to Laurence Nevay for the support!



Incoming Parallel: ATLAS ITK PIXEL (Week 31) (Please Put Your Name Here)

Incoming Main: EP PIXEL (Week 31) (Please Put Your Name Here)

H8:

Main: MPGD TRD (Yulia Furletova)

Excellent week! A lot of data! Very stable running!

Many thanks to all! Many thanks to ATLAS TRT team for their help with the trigger and constant support during our running period! In particular: Anatoly Romaniuk, Konstantin Vorobev and Konstantin Zhukov.

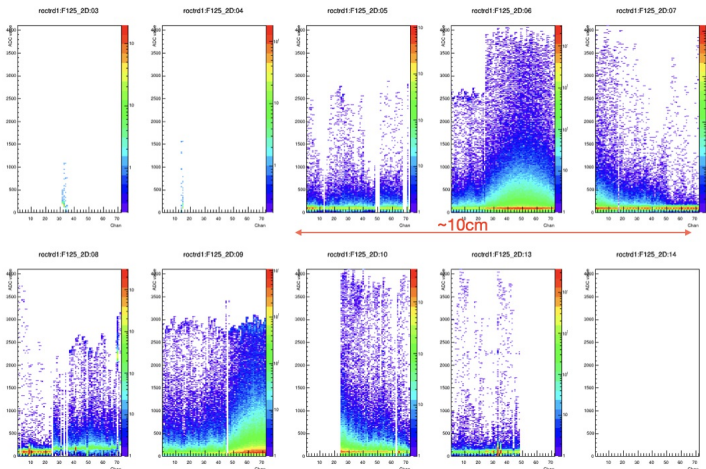
Thanks to SPS coordinators and H8 org team for their help with the beam! Especially to Maarten Van Dijk.

Now- in the process of shipping our equipment back to US (issue with EDH form).

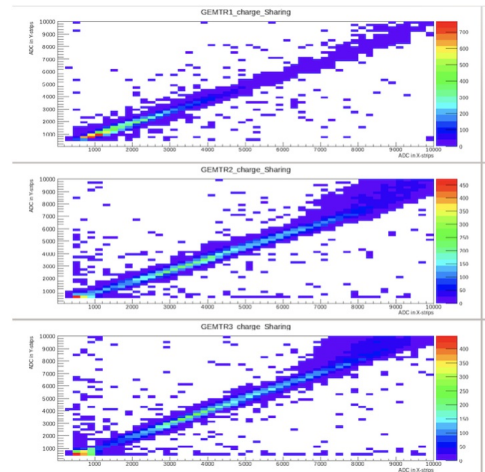
Looking forward to the next test-beam opportunity!

Beam profile

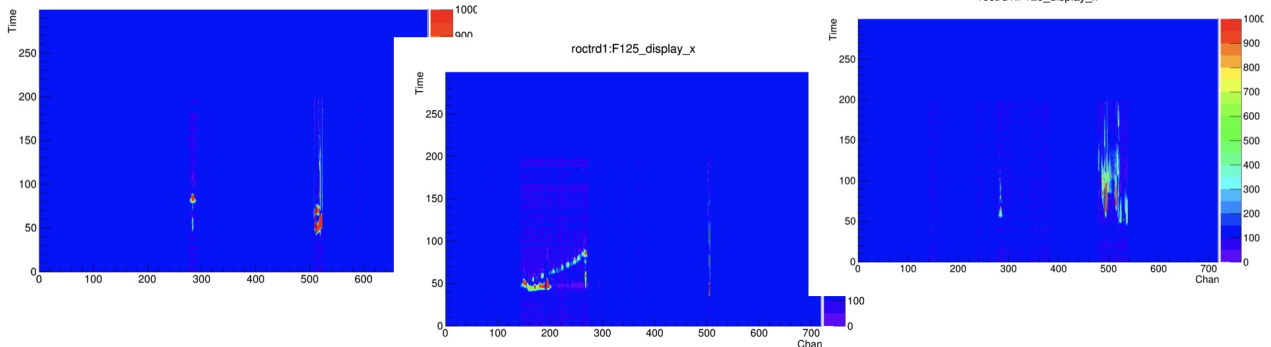
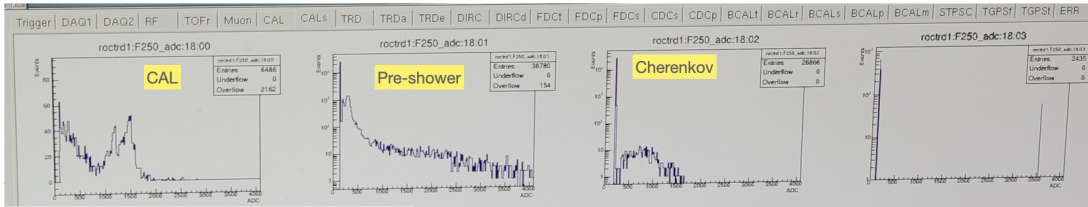
Beam profile



Correlation plots



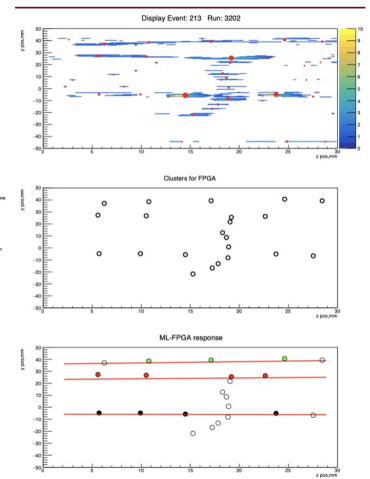
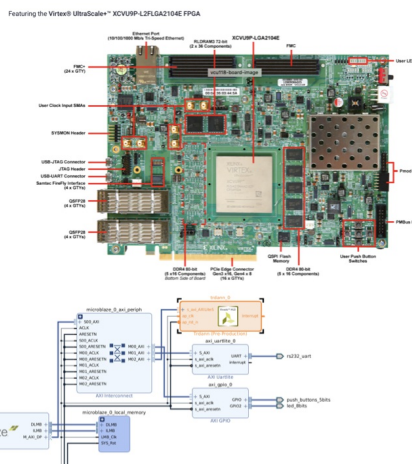
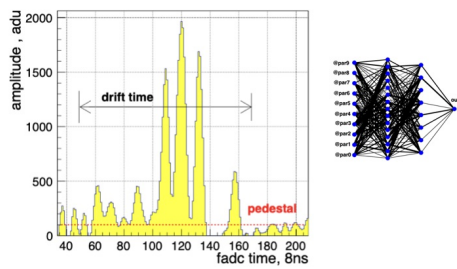
First events



Machine Learning on FPGA

Xilinx Virtex® UltraScale+™

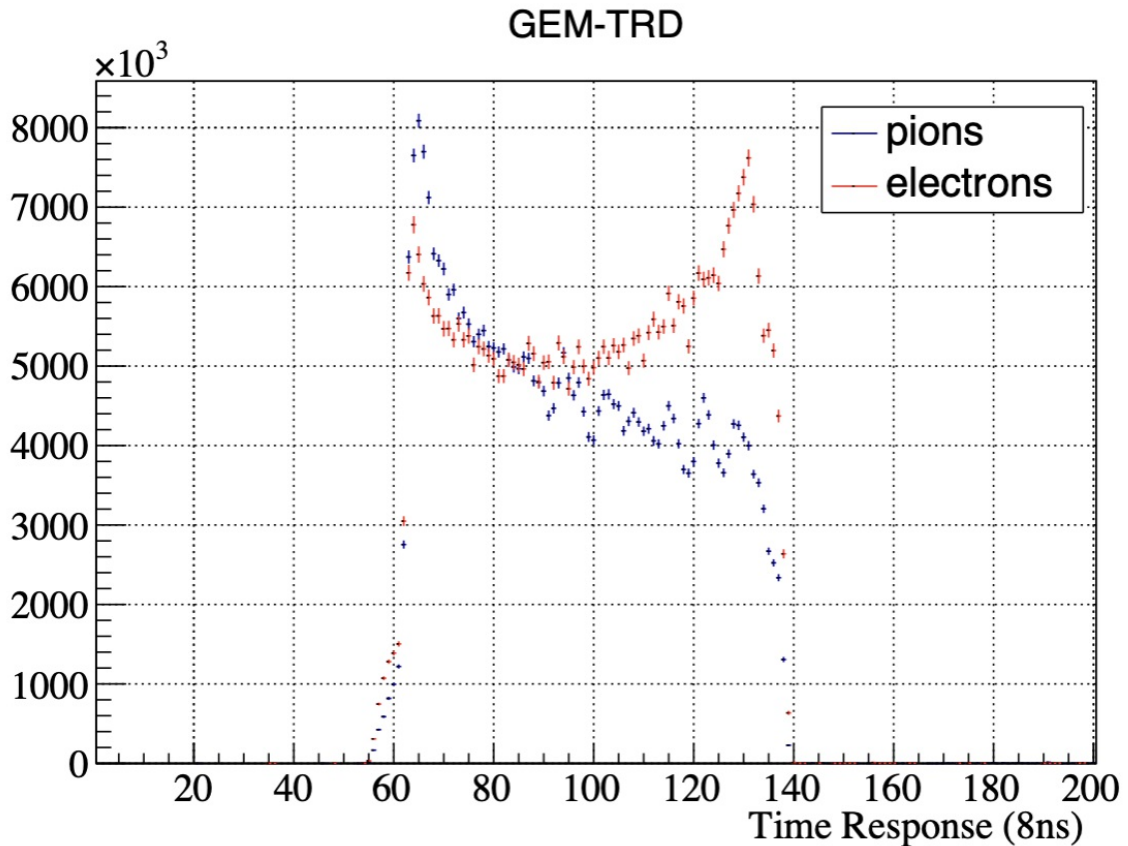
Moving towards
ON-line data
processing



Initial latency estimation:
From 60 ns to 1.5 μ s

Online data processing - online track
reconstruction

Preliminary results



Main: ATLAS TRT (Anatoli Romaniouk)

Taking data. See attached slides.

Incoming Parallel: LHCb (Week 31) (L. Martinazzoli)

Plan to test new Silicon devices in the frame of the LHCb VELO R&D towards Upgrade II (TimePix telescope)

- 1 week of beamtime in PPE 138
- Beam: "usual" H8 mixed hadron beam, larger (~ 10 mm) RMS is better. Rate ideally $\geq 1e6$ /spill
- ISIEC submitted

Incoming Main: CMS PPS (Week 31) (Please Put Your Name Here)

Parasitic Users

H6: ATLAS MALTA (Please Put Your Name Here)

H8: STRAW TRACKER RD (Please Put Your Name Here)

H8: QFIB (Please Put Your Name Here)

AoB

AFP (Tomáš Komárek)

- repeated request to cancel or move weeks 32+33 (August) at H6 that still persist in latest schedule version
- the later the better, if not possible, cancel entirely (HW to be tested will not be ready)
- there were hints of a chance to get week 41 in October, any update?

Minutes by the respective speakers, edited by E. B. Holzer, M. Jäkel, T. Shulha, and M. Schwinzerl