

# PS-SPS Users Meeting for Week 24 held on June 13th, 2024

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## Physics Coordination schedule:

- June 10th to June 20th: E. Barbara Holzer
- June 21th to June 23rd: Martin Jäkel
- June 24th: E. Barbara Holzer
- June 25th to July 7th: Martin Jäkel
- July 8th onwards: E. Barbara Holzer
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- June 13th: User meeting exceptionally on zoom only (for availability of the conference room).
- September 4th: User meeting exceptionally on zoom only (for availability of the conference room).
- Beam time available Jun 19th to July 3rd in H8.
- Updated user schedule soon to be published.
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## News from the PS & SPS Physics Coordinator

E.B. Holzer, M.R. Jäkel

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- **User Schedules v2.0.2** (for most of the lines **until end of August**) released: see [User Webpage \(https://ps-sps-coordination.web.cern.ch/ps-sps-coordination/\)](https://ps-sps-coordination.web.cern.ch/ps-sps-coordination/)
- Please get in contact, if you want to take one of the week still free before June - Tanja (tetiana.shulha@cern.ch) is collecting all requests.
- 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)
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## 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 (added proton and ion beam time!) per year need the approval of one of these CERN committees: SPSC, LHCC, DRDC, INTC, RB or IEFEC. Consider joining a DRD collaboration, if you require more beam time.

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## News from the Facilities Operations Meeting (FOM) (M.R. Jäkel)

Water leak on quadrupole QNL.021.049 (28 h downtime for North Area).

- Mitigation intervention planned for the technical stop; meanwhile spare preparation is ongoing.
- **Exchange to be planned** in the near future, but before the ion run (NA61 needs primary beam).
- H2 beam line momentum limited to 150 GeV/c until further notice (the water leak)

### Upcomming MDs:

- Week 24: start of first Injector Technical Stop (ITS3)
- Week 25 : Dedicated, 19/6 no extraction
- Week 26 : Dedicated: 26/6, extraction TT20

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#### Upcoming Technical Stop

- 12-15.06 : Intervention on Swiss power network. (Planned to finish Friday, with Sat. 15.06 as overflow day)
- Not the main supply for CERN, but electrical perturbations (high harmonic distortions) likely. Risk of trips on SVCs and filters for LHC and injectors.
- TI will confirm the end of the interventions and give go-ahead for restart

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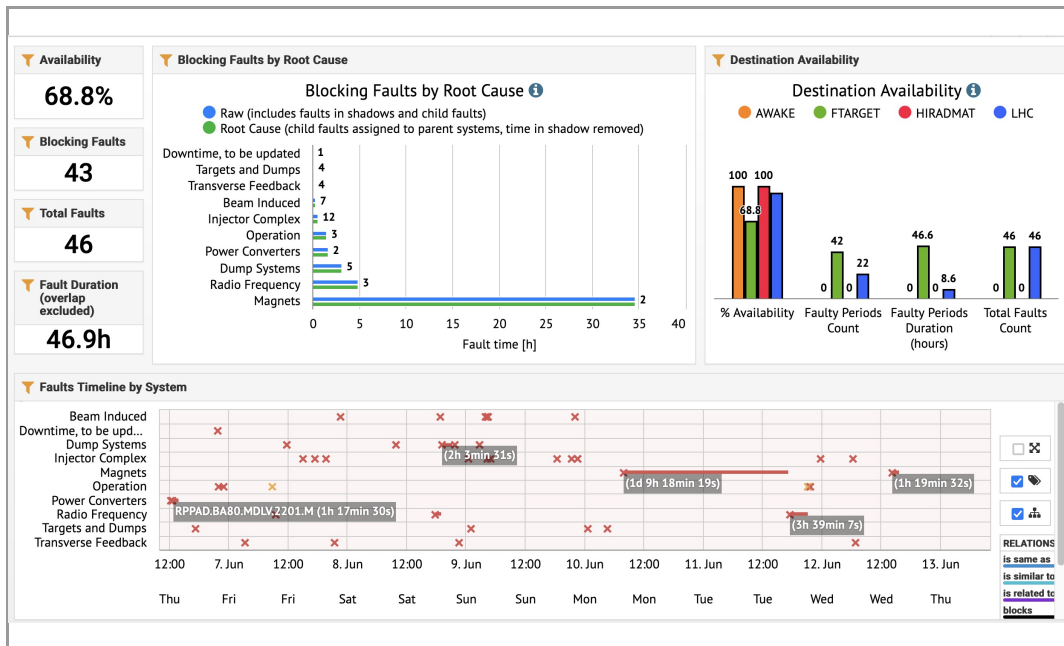
## PS Machine Report (A. Lasheen)

- Excellent availability in W23 (99.6%!) and start of W24 (97.2% from last meeting to Technical Stop)
- Main fault is stripping foil of PSB Ring2, running only with 3/4 PSB Rings
  - PS ran in degraded mode from Tuesday morning until Technical Stop
  - TOF adjusted for production with dedicated cycles only using PSB Ring3
  - Beam produced for SFTPRO at lower intensity, following magnet exchange in SPS
  - AD produced with 4 bunches and asymmetric pattern
- Preparation of TOF beam with 44ns at extraction ongoing (completion at restart)

following stop)

- Optimization of EAST\_N cycle (reduced losses, increased intensity on target), to be propagated on EAST\_T9
- Continuous effort for SFTPRO beam to understand fluctuations of MTE efficiency and tests at highest intensity (3.5-4e13 ppp)

## SPS Machine Report (Kevin Li represented by Giulia Papotti)



### Issues:

- Some minor faults, MKD BEM, BA80 MDLV
- Discovered inter-turn short on MBB.635 on Monday morning, 2 days before start of TS! Went for immediated replacement, to be able to measure orbits before TS, in case re-alignments would be needed
- Upon restart, problem with cavity 2 not pulsing - fault not obvious and took time to diagnose;
- Booster problem with foil revolver in ring 2 led to degraded mode until TS
- Reasons for PC spikes leading to spill spikes probably found; will require an FGC3 upgrade, which is scheduled during the TS
- Still many issues with lost patrols; risk for the post-TS restart - will need to follow this up within AFT

### Plans:

- For the restart: foil irradiation campaign, with LHC cycle in parallel, as LHC will be frequently injecting; best compromise for stability
- Will also need to allocate time for scrubbing after MBB exchange and interventions during TS; will do this in parallel to NA operation;
- Dedicated and long parallel MDs next week; no extraction foreseen for next Wednesday;

## Safety (A. Schouten)

- General reminder for ISIEC requests next week.

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

Profiting of technical stop several interventions in EAR1 and EAR2 have been scheduled for this week.

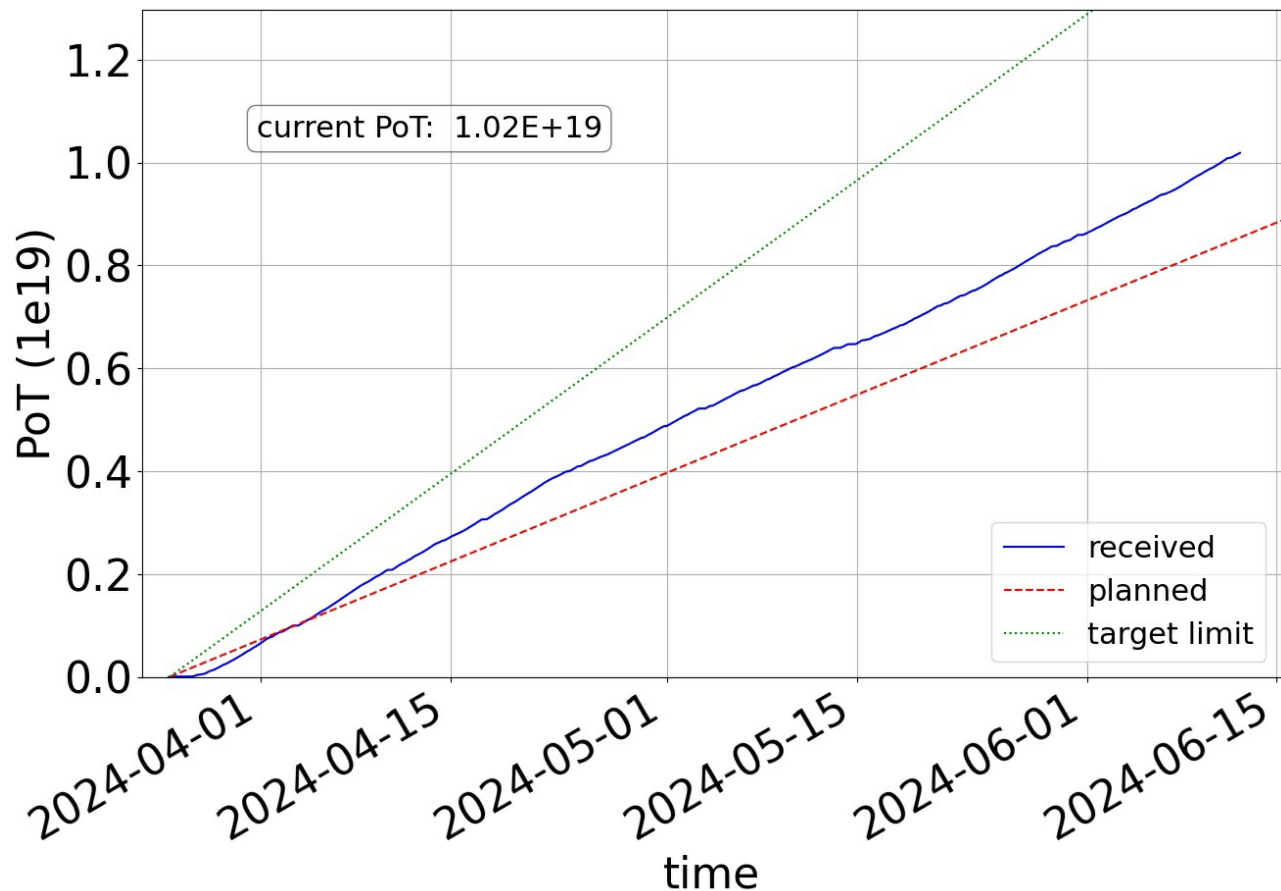
End of data taking on Ce(n, f) in EAR1 and 28,29Si(n, g) in EAR2, with beam in very stable conditions.

From 12.06 an heavy re-organization of EAR1 has started, taking out PPAC detectors, arranging shields and preparing a new campaign of neutron captures measurements; a set of C6D6 scintillators will be used for three measurements in a row on Er, Cu and 238U.

The experimental set-up of EAR2 has been prepared with STED detectors to measure neutron capture on Mo isotopes.

Activation measurements will continue in NEAR.

New measurements can be performed also with the relaxed nominal bunch length of 44 ns.



Protons received up to 12.06

## East Area Beam Status (N. Charitonidis)

Stand by / piquet phone number for out of hours: 67500

T09: Good operation. The oil leak detected last week in the high pressure XCET has been fixed (already last week).

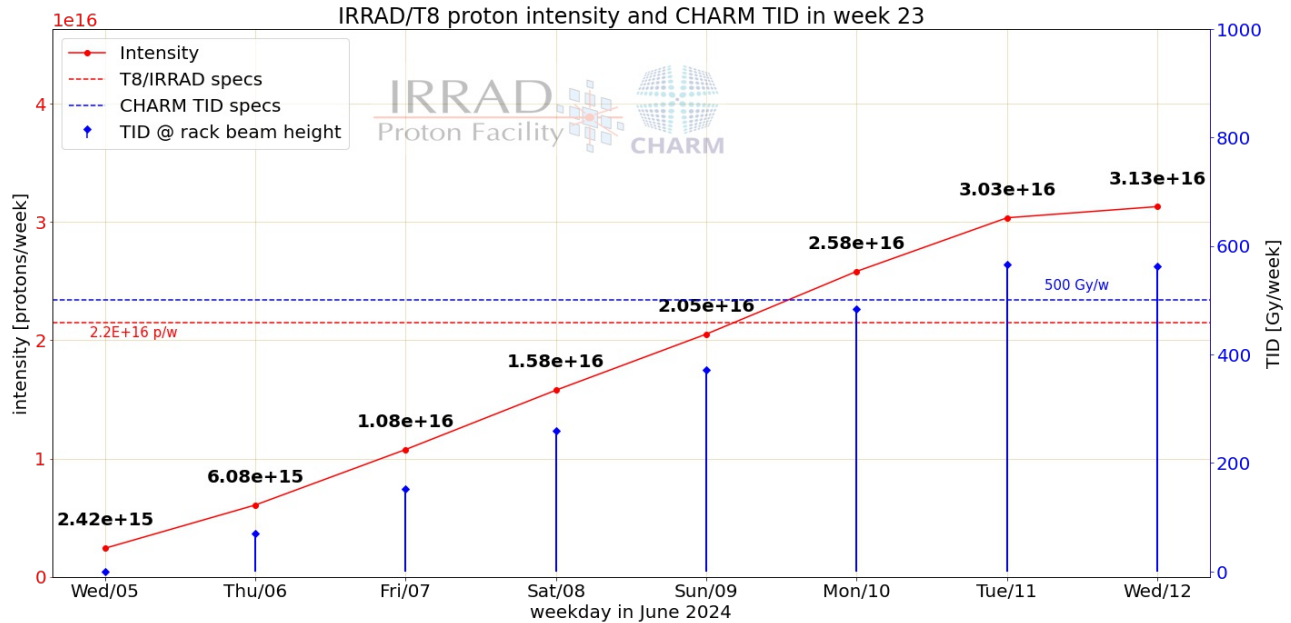
T10: Good operation.

T11: No user.

## East Area Users Tour de Table

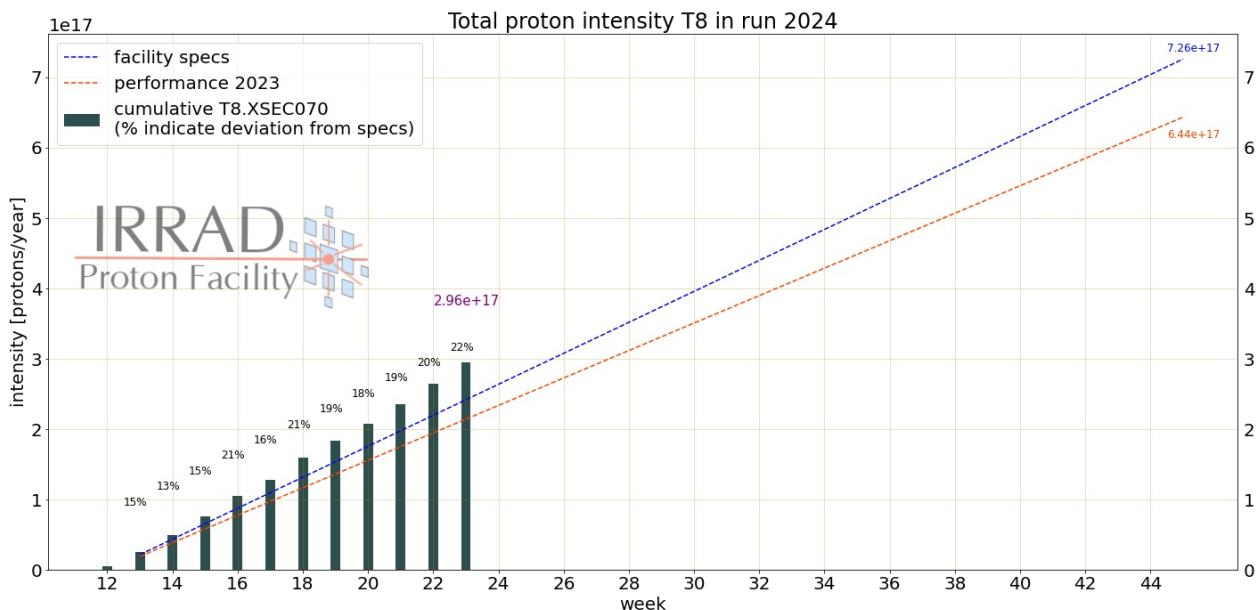
## T8 Main: IRRAD/CHARM (F. Ravotti, S. Fiore)

Regular user operation. Very good week: cumulated  $>3.1 \times 10^{16}$  p/w and reached CHARM TID target in the testing position, see plot below. We run until Wed. 7:30 because of TS1. Beam centering very good (center within  $\pm 2$ mm  $>94\%$  of the time on both axis).



Access during Wednesday morning for CHARM only. In CHARM removed setup by CMS and installed one by ATLAS-CAEN HV PS.

Access in IRRAD will be on Friday lunchtime to exchange samples for the TE-MSX experiment that cumulated high-fluence levels and profit of a longer cool-down. All other long-term experiments continue. We will restart after the TS1 with "reduced" intensity ( $60 \times 10^{10}$  extracted) to accommodate the ATLAS HV Power Supply test in CHARM. When test is completed, we will ask the CCC to go back to nominal intensity ( $80 \times 10^{10}$ ). We continue until next Wednesday.



## T9 Incoming Main: OREO (Week 25) (S. Carsi)

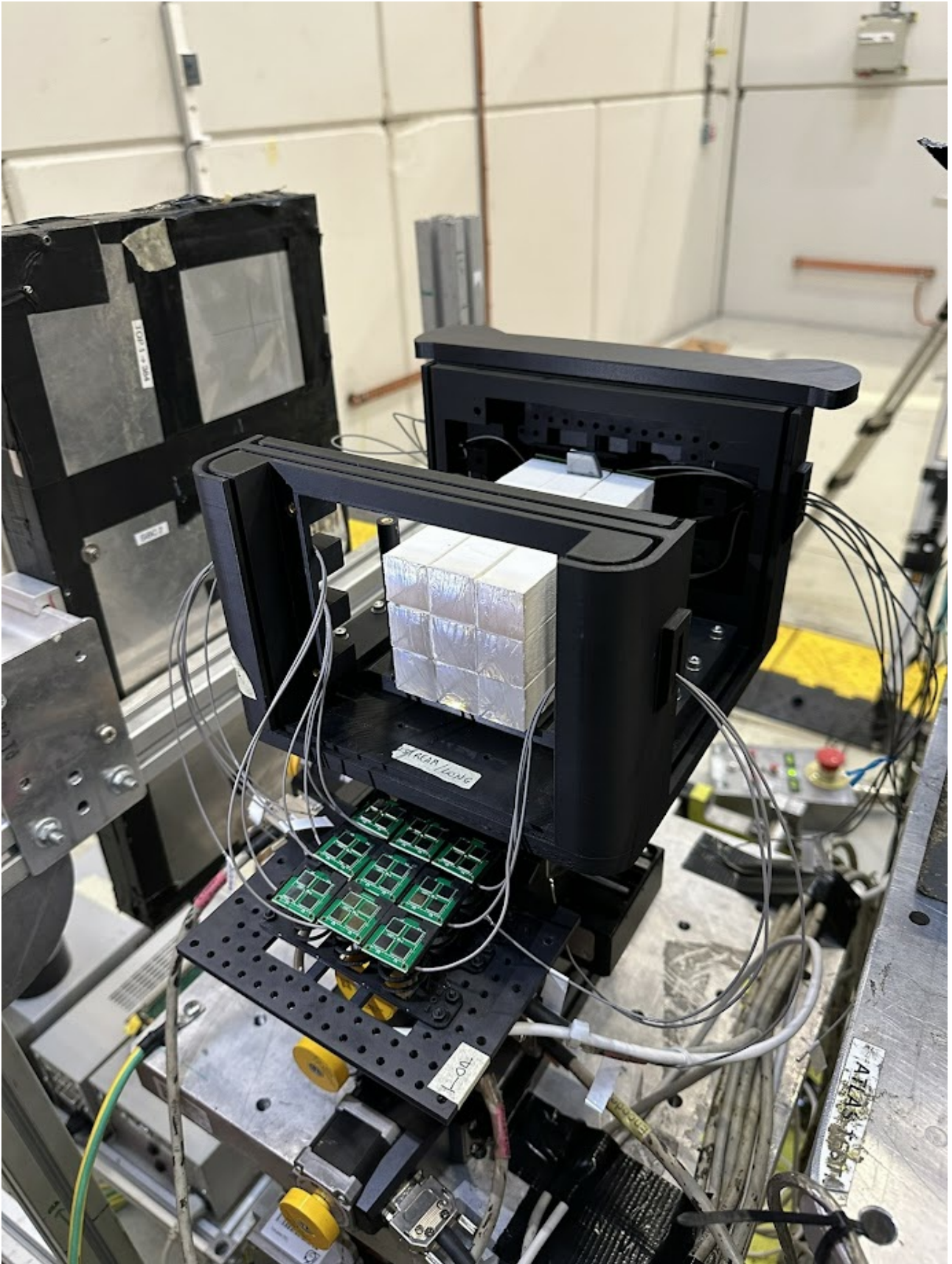
- OREO AND e+BOOST weeks were swapped, as both of them are experiments of the

same team

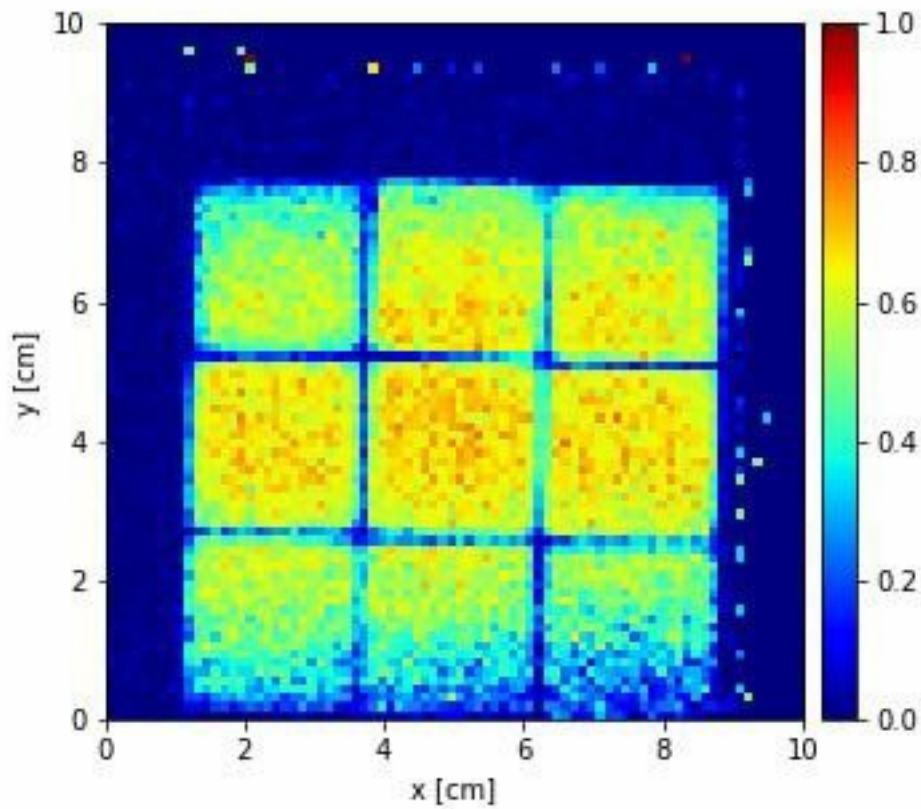
- The installation went smoothly
- The quality of the beam was very good
- During this week we managed to **calibrate** our **calorimeter**
- Our Physics run then started: we centered and oriented our **crystals**

**Photo of our calorimeter**



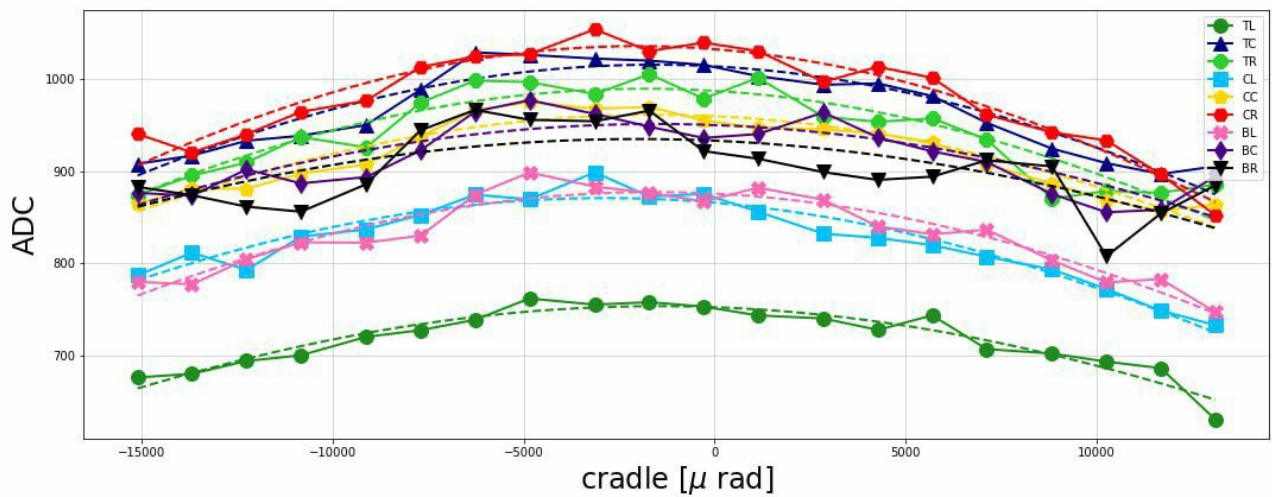


**Efficiency map with reconstructed tracks**



- We verified all the crystals of the OREO calorimeter are automatically oriented when one of them is oriented

### Check of the inter alignment of the 9 crystals



- By the end of the week, we plan to switch to e+BOOST

### T9 Main: E+BOOST (S. Carsi)

See above



## T10 Outgoing Main: ALICE ITS3 (Paolo Martinengo)

We are happy

## T10 Main: ALICE TOF (Y.Baek)

Nothing to report.

We move into the area this afternoon.

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## North Area Beam Status (N. Charitonidis)

Target Sharing as of now:

**T2 T4 T10 T6**

100 42 21 30

From Wednesday, 19.06.24:

**T2 T4 T10 T6**

30 42 21 30

Stand by / piquet phone number for out of hours: **67500**

H2:QNL.021.049 off, beamline momentum limited to 150 GeV/c for the time being.

H4: Smooth operation.

H6: No issues with H6.

H8: AUL pressed by visiting user team by accident, leading to power cut in the area and for GIF++. AULs are scheduled to be removed during the next YETS exactly due to such potential issues. Due to the power cut, also a user table in the zone did not move anymore afterwards. Reminder that no user is allowed to manipulate switchboards of beam line equipment in any circumstance (it is dangerous and will trigger a safety investigation in the best case).

P42/K12: No issues. We plan a calibration of the monitor that measures the T10 target intensity after the beam returns. For this, a metallic foil is being installed in front of T10, which then will be irradiated in a controlled way during some 150 spills. After RP cooldown, we remove the activated foil and then give the beam back to physics. Total duration might be some 3-5 hours depending on the super-cycle composition and beam availability.

M2: Few issues observed with one jaw of collimator 7 that is now fixed. A cooling issue on the SM2 power supply led to some downtime. Otherwise, all beam files are available and tuned for the physics run.

## North Area Users Tour de Table

### P42-K12:

#### Main: NA62 (Lubos Bician)

- Issues with two upstream subdetectors occurred during the weekend; we ran in slightly degraded conditions until the technical stop. Technical stop is being used to address these issues.
- Several other tests and updates are being done on various subsystems during the TS.
- We collected ~2300 spills of data during the night from Tuesday to Wednesday.

- Patrol lost yesterday. Upon investigation, CCC said this morning that it was broken by the works on the red access door in building 918 by the access team. We were told that *theoretically*, the patrol could be done this evening.

## **M2:**

### **Main: AMBER (Thomas Poschl)**

- obtained safety clearance for IH2 target last Friday afternoon
- start of operation of target thereafter
- reached stable target conditions on Sunday 06:00 and start of physics data taking with 250 GeV/c hadron beam
- so far, 80% of first measurement point taken
- remaining time not sufficient for planned measurements --> impact on physics goals
- details see attached presentation

## **H2:**

### **Main: LHC ECAL (L. Martinazzoli)**

Installation in PPE172 went smoothly.

Set-up ready to take beam after the safety visit (Friday 15:00).

- Sat-Sun-Mon:  $\mu$  or hadron beam to characterize the response of a new prototype
- Mon-Tue:  $e^-$  and hadron comparison

### **Outgoing Main: ILC DUMPS (M. Tisi)**

- de-installation from PPE172 and HNA383 completed yesterday around noon.
- Although the beam was not always available during the week, we managed to acquire the needed data.
- We received a lot of technical support along the week (beam, infrastructure, gas and connections, etc.), many thanks!
- Data analysis is ongoing!

## **H4:**

### **Incoming Main: NP04 (Week 25) (Please Put Your name here)**

#### **Main: NA64e (L. Molina Bueno)**

## **H6:**

### **Incoming Main: CMS PIXEL (Week 25) (Please Put Your name here)**

#### **Main: EP PIXEL (Please Put Your name here)**

#### **Parallel: ATLAS ITk PIXEL (Andre Rummler)**

We will be setting up an unirradiated batch likely this afternoon. Goal is to test new software and firmware which will hopefully solve our desynch issues. Waiting for a ITkPixV2 which might still arrive this week; otherwise it goes into beam next Wednesday. Requested safety visit late; I

am sorry about that; asked for Friday 1400; no confirmation yet.

**Outgoing Main: AIDAINNOVA WP6 (Please put your name here)**

**Outgoing Parallel: ATLAS HGTD (Stefano Manzoni - can't connect, sorry!)**

We finished the data taking on Wednesday morning after two weeks. The setup was dismantled immediately afterwards. Overall despite a not too efficient beam overall the data taking was sufficiently successful considering also the other two weeks we had beforehand.

Many thanks to Laurie and those who operated the beam. Thanks also to the Aidalnova colleague for a completely smooth coexistence :).

We might be interested in a few more weeks in August in H6A, that are still available as far as we know, and we are also discussing with ITK for optimal dates sharing/swapping. We will contact the SPS coordinators as soon as we are completely clear on our needs.

**H8:**

**Incoming Parallel: STI (Week 25) (Francesca Galluccio)**

Will use same setup as UA9 week 24

**Main: ATLAS MICROMEGAS (R.Hertenberger, T.Alexopoulos, V.D'Amico)**

We had some problems at the beginning of the beamtime. Therefore there was a debugging phase, mostly due to the change from Centos Linux to Alma 9.

This is solved and we took very successfully 350 runs at about 500k events each.

We measured 64 positions at our ATLAS Micromegas NSW chamber (New Small Wheel Series detector) with a beam diameter of approx. 6cm and got a high statistics scan of a large part of the surface of the chamber with the chamber being tilted by 29 deg against the beam.

At one of the first days of the beamtime an emergency button was hit accidentally by the shoulder of a beam-time member in the control room of the experiment. (Not in the beam area !!!)

The protection of this emergency button against accidental operation was miserable, the emergency button was pressed by less than a mm and executed a power cut.

The protective shield that should have prevented such operations was not sticking above the emergency button.

The power was cut in our control room, in the experimental area PPE 158, but also in the GIF++ and in the control room of the GIF++. Despite being marked as a local emergency button the power cut affected several other regions.

After the power cut the DESY table was no longer operational. When switching on the power, the red fault lamp went on and the table was not movable. It turned out that a plug at the lower surface of the DESY table has been

fallen down and without this plug the DESY table does not work. This should be marked on the front side of the DESY table.

**Outgoing Parallel: MEDIPIX (H. Cintas, P. Burian & P. Smolyanskiy)**

**Status:** We are done with the measurements phase of the test beam campaign. We will now analyze our data.

**Conclusion:** We are happy with the results of the SPS campaign. We were able to measure with 4 different kinds of Timepix detectors.

Thanks to all teams on site for their help, which allowed us to do everything in the short time frame.

## **Parasitic Users**

**H6 Outgoing: RE1 AMS L0 (Please put your name here)**

**H6: ATLAS MALTA (Please Put Your Name Here)**

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

**H8 UA9 (Francesca Galluccio)**

We are installing the tracker now.

We got all the extra furniture we needed. Many thanks to Michael Lazzaroni !!

Will be ready for safety inspection today at 16:00.

After the beam has started, we'll need a few short accesses, to be agreed upon with ATLAS MICROMEGAS.

Communication could possibly go through the Mattermost channel as usual.

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## **AoB**

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