

PS-SPS Users Meeting for Week 37 held on September 12th 2024

Coordinator for this week 37 : E. Babara Holzer

Coordinator Week 38 : M.R. Jäkel

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- **Updated user schedule v3.3.0 on September 11th**
 - Submission period for **beam requests for 2025** is expected to open beginning of next week.
 - **DRAFT Injector schedule for 2025** is available here:
<https://edms.cern.ch/document/3057281/latest>
 - AD/ELENA is installing a new beam line for antiproton / H- test beam called TELEMAX. Call for beam requests for the TELEMAX beamline for 2024 and 2025 is expected to go out soon.
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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)

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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
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.

Target intensities:

See [here](#) or via [ASM \(https://asm.cern.ch/experimental-area/experiments\)](https://asm.cern.ch/experimental-area/experiments) (accessible from within the CERN network).

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

Upcoming SPS MDs next weeks :

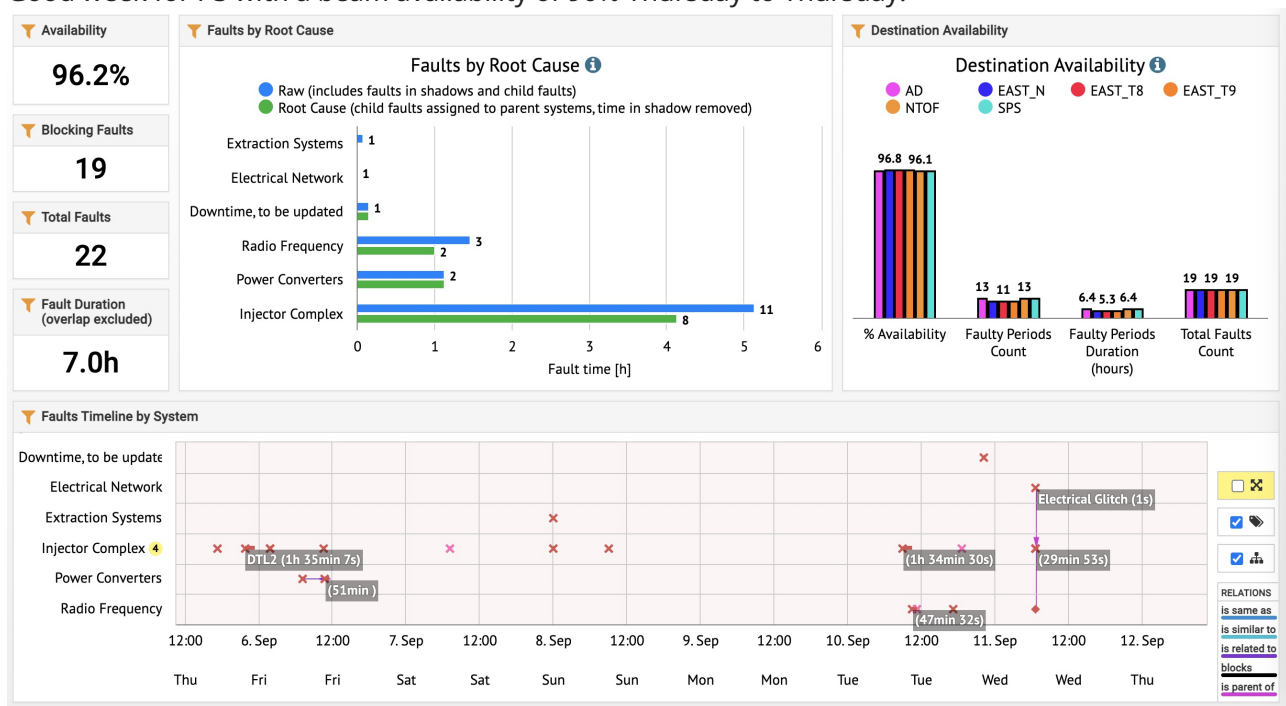
<https://be-dep-ea.web.cern.ch/content/md-planning-north-area>

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

- Previous revious Week 35: Crystal shadowing (beam to TT20 TED) →lost half of the MD
- Week 36: hysteresis compensation MD (no beam to North Area)
- Week 37: Crystal shadowing
- Week 38: No dedicated MD
- Week 39: Slow extraction with transverse noise + TT20 optics (beam to P42)

PS Machine Report (Denis COTTE)

Good week for PS with a beam availability of 96% Thursday to Thursday.



- First ion beam sent to T8 during the night between tuesday and wednesday.
- LN4 stop to change a sensor on DTL2 Tuesday morning.
- Electrical glitch yesterday morning. (30minutes to recover condition for beam)
- High flux for nTOF stopped yesterday morning
 - RP survey this afternoon around 5pm
 - No beam in TT2 (SPS, NA, LHC) during 45 minutes
- MTE : intensity increased to 1500e10 (ongoing setup)

SPS Machine Report (Giulia Papotti)

- intensity step done (Wednesday morning to night)
 - final cleaning up ongoing
- no beam this afternoon at about 17:00 for 45'

- no major faults
 - but having issues with 50 Hz, especially overnight, experts investigating
- MDs:
 - parallel MDs Monday, Tuesday afternoon
 - dedicated Wednesday
 - long parallel Thursday (high intensity LIU beam)

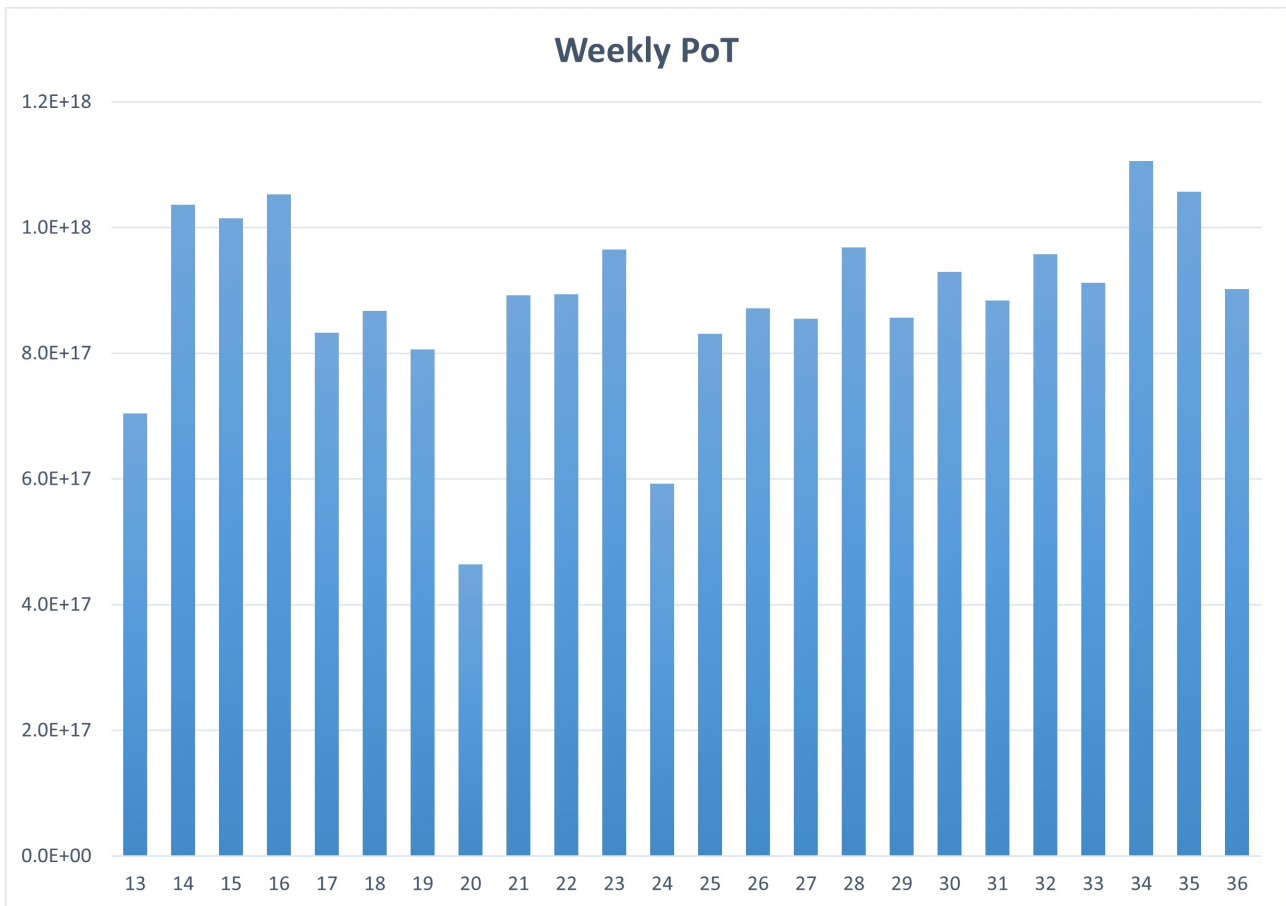
Safety (Please Put Your Name Here)

n_ToF (M.Bacak, P.M.Milazzo)

Experiments in EAR1 (238U(n, g)) and EAR2 (88Zr(n,g)) successfully completed on 11.09.
 Long beam stop (30 h) to:

- FTN RP survey, necessary to confirm if high intensity mode can be maintained in the future as standard condition (item discussed at IPP on 13.09).
- Change of experimental set-ups in EAR1 and EAR2
 - ○ EAR1: LaBr3 detectors for 24Mg(n, n') and 16O(n, n') measurements
 - ○ EAR2: Array of silicon detectors: 40K(n, p, alfa) campaign
- Hardware intervention on all DAQs
- Technical inspection/test of gas lines for November experiment in EAR2 bunker

NEAR: Activation measurements



Protons received

East Area Beam Status (D. Banerjee)

On call phone number: **67500**

T09: No major issues. Good operation.

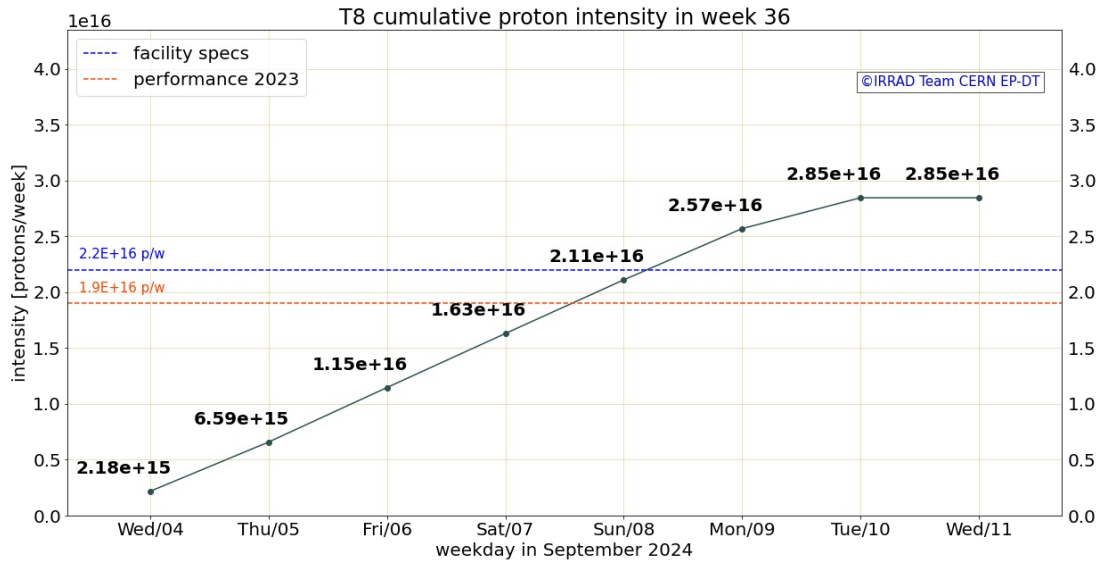
T10: Good operation.

T11: CLOUD setup ongoing in preparation for run.

East Area Users Tour de Table

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

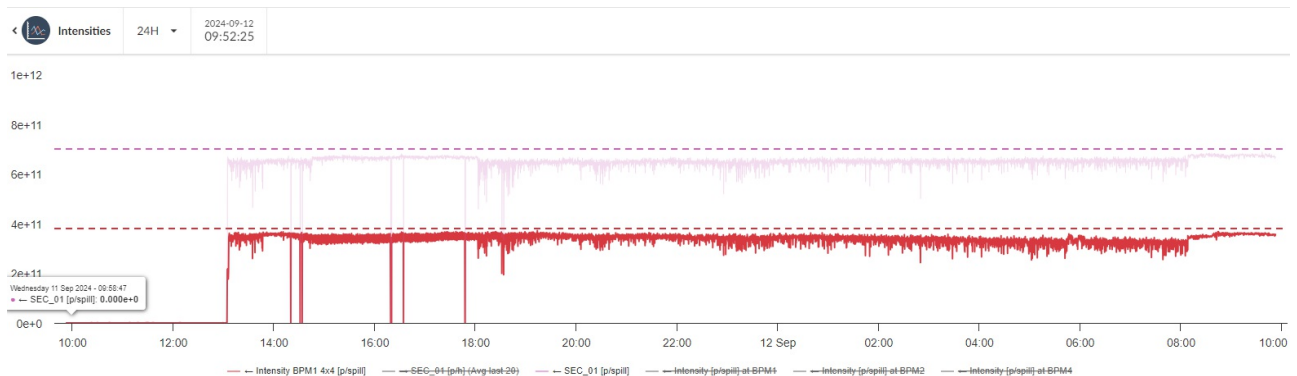
Very good week. POT above the reference intensity for T8 ($>2.8 \times 10^{16}$ p/w, see plot below). The TID generated by the CHARM target was 513 Gy. Since we needed to manipulate samples exposed to very high fluences on Wednesday, all material was removed from the line on Tuesday evening (end of all p+ irradiations) allowing some time from 21:30 for the first ion MD propagating the beam down to T8 (see PS report). The centering of the T8 beam on the horizontal plane was back to the usual values $>90\%$ on both axes.



From yesterday access. In IRRAD, we removed the LHCb setup (WLS fibers), TE-MSc and LHCb PicoCal samples and installed ATLAS ITk FOS sensors and EP-ESE (CMS HGCal samples) for multiple fluence steps. During the week irradiations of nLGAD samples for R&D (DRD3).

In CHARM we modified a test setup by TE-MPE, while SY-EPC and BE-CEM setups continue testing. We continued also the testing several types of RFID tags to assess their radiation tolerance (AIDAInnova project).

After the access, took some time to find setting that delivered us a stable beam. Longitudinal profile unstable (see below) - solved this morning at around 8:00.



The RP week (September 18-25) is confirmed and during this period T8 will request a reduced dutycycle (e.g. we will need less spills than usual, details in the coming weeks). Also the cryogenic run in IRRAD is confirmed from mid-october till the end of the proton run.

T9 Outgoing Main: EIC ePIC LFHCal (Please Put Your Name Here)

T9 Main: SHIP (M.Climescu, C.Delogu)

https://docs.google.com/presentation/d/1SwWWZikiD-_rLx64CDVbDHz9D2AaWqfWnCmm7dQSN8/edit?usp=sharing

SHIP ECAL: sampling calorimeter (Iron/scintillator) read out by Silicon Photomultipliers

Installation completed yesterday, taking first data since yesterday evening.

3 beam modes, 1-5 GeV range

- electron mode: test the pointing capabilities
 - reconstruction of shower direction
 - turn the calorimeter to different angles
- muon mode (muon beam + muon halo): calibration
- pion mode: test the particle identification

T9 Incoming Main: HIKE SAC (Week 38) (Matthew Moulson)

HIKE/SAC (W38) and NanoCal (W39) programs in T9 share same setup.

HIKE SAC main goal: Use CRILIN prototype to measure transverse profile and time resolution for EM showers with and without crystal alignment.

NanoCal main goal: Test new, full scale fine-sampling shashlyk prototype to be used as test bench for NanoCal, intended as MEC prototype for HIKE.

Simple setup used in past: silicon strip tracking for beam, devices under test, backup calorimeter.
Installation est. 8 hours, ready for beam 18:00 Wed

Equipment requested: 1 XCSA + 1 DESY table (or 2 DESY tables)

Beam files requested:

Electrons: 1, 2, 3, 4 GeV, focused

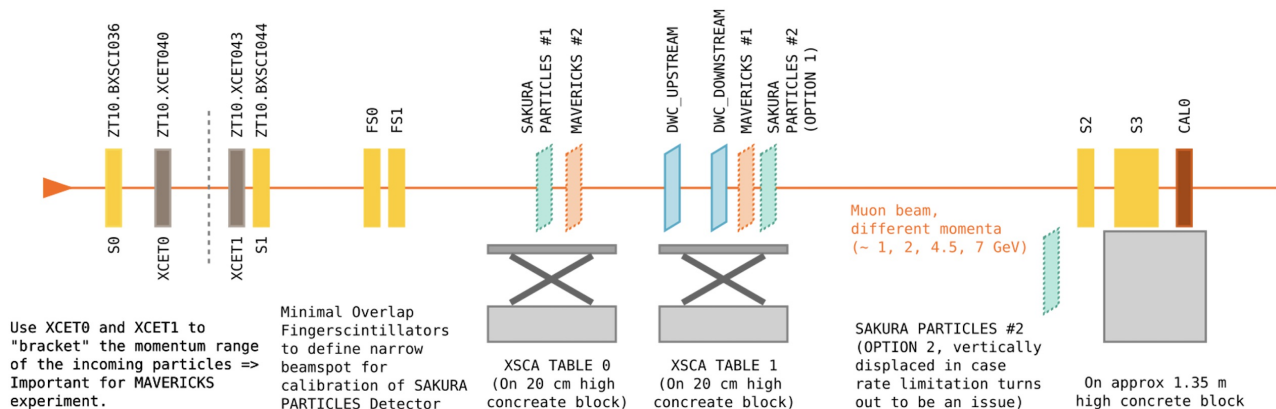
Muons: ~4 GeV, parallel

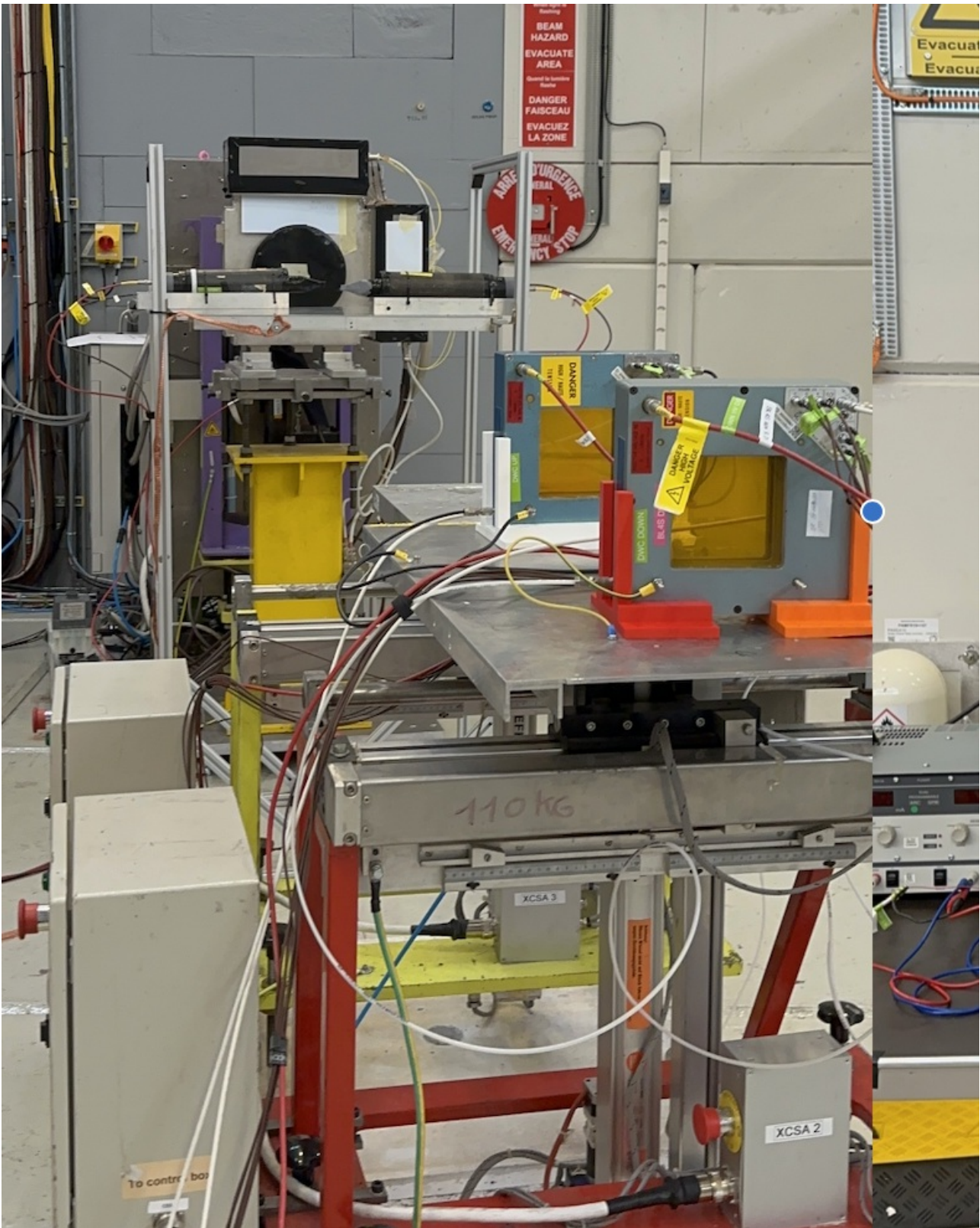
T10 Outgoing Main: ALICE ITS3(Paolo Martinengo)

Test finished, excellent beam conditions, we are happy

T10 Main: BL4S (Week 37&38) (Seyma Esen)

- We have completed to install all detectors to the T10 beam area.
- We have received the safety clearance.
- After including the detectors from the winning teams into the setup tomorrow, we have another safety check appointment.
- Until Sunday; alignment, calibration, readout improvements.
- Our plan is to be able to take the first data on Sunday!







T11 Incoming Main: CLOUD (Week 38) (Please Put Your Name Here)

North Area Beam Status (D. Banerjee)

Target sharing, also in [ASM \(https://asm.cern.ch/experimental-area/experiments\)](https://asm.cern.ch/experimental-area/experiments) (accessible from within the CERN network)

Target	Intensity	Date
T2/T4/T10/T6	30/54/21/150	11.09.2024
T2/T4/T10/T6	30/54/21/30	04.10.2024
T2/T4/T10/T6	30/54/21/150	09.10.2024

On call phone number: **67500**

H2: Smooth operation.

H4: Smooth operation.

H6: Good operation.

H8: Good operation. 8h of poor beam on Tuesday night due to a failed power supply of an upstream quad, reset in the morning.

M2: Deinstallation of NA64mu and installation of MUonE completed on time. Beam to be checked with MUonE later in the week.

P42/K12: Smooth operation.

AWAKE (Please Put Your Name Here)

North Area Users Tour de Table

P42-K12:

NA62 (Ilenia Panichi)

This week we are observing instable beam with several empty spills. Otherwise, smooth operation with good quality of the beam and almost all the protons taken.

Last Friday (06/09) 6h of access were needed to fix a problem with our GTK cooling system.

M2:

Main: MUONE (Carlo Ferrari)

Installation almost done, no issue so far.

Safety inspection scheduled for tomorrow morning.

H2:

Outgoing Main: ALICE FOCAL (Radoslav Simeonov)

Both FoCal-H and FoCal-E pixels performed tests with various beam energies for both electron and hadron beam

Special Runs with muon beam

Calibrations, dedicated scans, validating the system

FoCal-E pixels

- Back Bias successfully used for data taking with ALPIDEs (-1V, -3V, -4V, -5V)
- Large reduction of occupancy with BB
- Large reduction of BUSY violation with BB

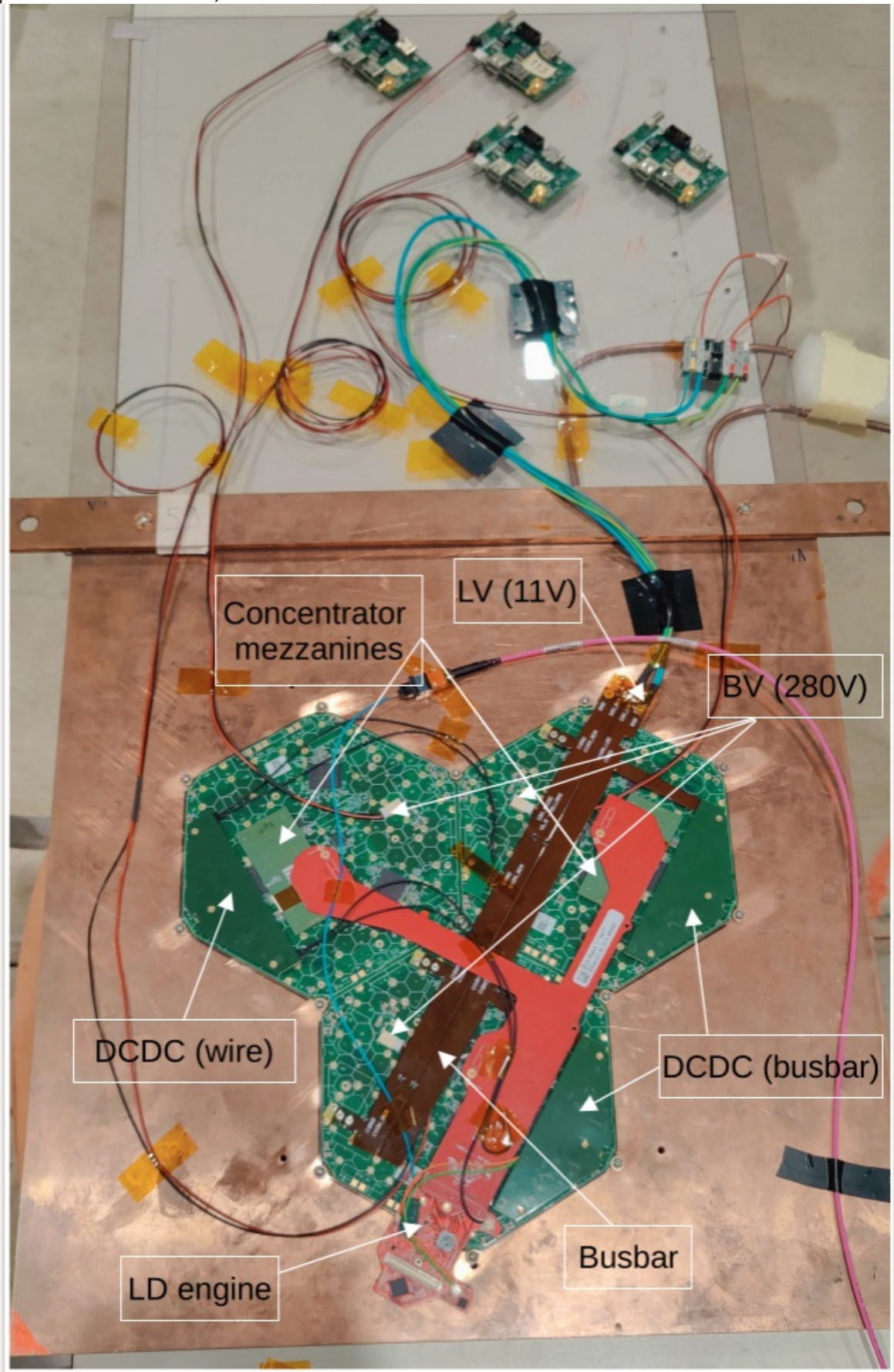
FoCal-H

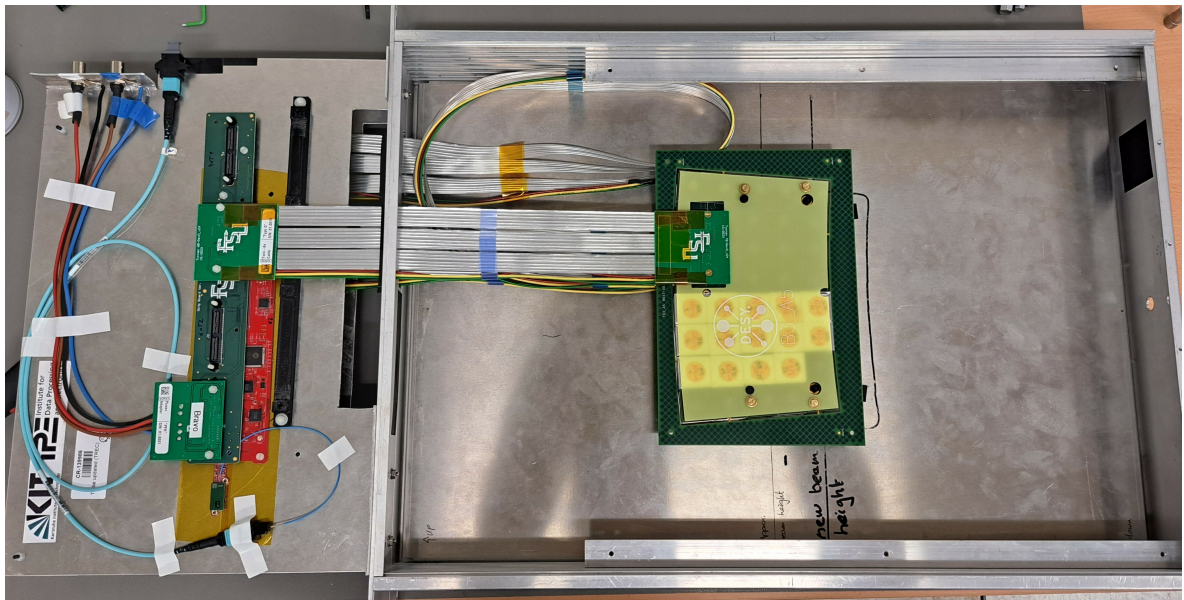
- H2GCROC successful in FoCal-H readout chain (and LFHCal) with continuous trigger
- Preliminary plots look promising
- Tested successfully also with triggered version

Main: CMS HGCAL (A. Steen, K. Kruger)

- 2nd beam test in 2024 after July/August beam test

- Similar setup as in previous slot but with new version of the HGAL electronics (pre-production electronics):





- Started our installation yesterday and finished commissioning of the new electronics .
- Plan to finish our installation in the M1 magnet today.
- Safety visit is scheduled for today at 2PM
- Plan to start with electron beam later in the afternoon and with the M1 magnetic field tomorrow morning.
- Then we plan to acquire data with electron beam and with muon beam

H4:

Main: NP04 (Please Put Your Name Here)

Incoming Main: DRD1 (Week 38) (Yorgos Tsiopolitis, Karl Floethner, K. Kuznetsova)

Setups: 7 setups (see attached slides for more details)

SETUP A: PICOSEC (F. Brunbauer, K. Gnanvo)

SETUP B: uGroove - USTC (Y. Zhou)

SETUP C: STRAW (T. Enik, K. Kuznetsova)

SETUP D: GEM-TPC (F. Garcia)

SETUP E: DRD1 GEM/VMM3a Tracker (L. Scharenberg, K. Floethner)

SETUP F: Saclay

SETUP G: MPGD comp. Studies (Darina Zavazieva)

Beam Conditions: High Rate (as much as permitted by RP) Muons, Potentially few shifts (8h) high rate pions (to be confirmed).

Goliath: Few shifts (4h-8h) with magnet on. 0-1.5T scan, steps of 0.3T, direction does not matter but deflection towards Jura preferred by GIF.

Installation: Tuesday 17 starting from 8am. Beam pipe will be removed already on Monday. Thanks in advance for all the help that we will need.

Flammable gases: same as in April/June test beam (see attached slides for more details).

Survey: Planned for Tuesday 2pm.

Safety Visit: Tuesday 4pm. Safety for Flammable gases to be agreed.

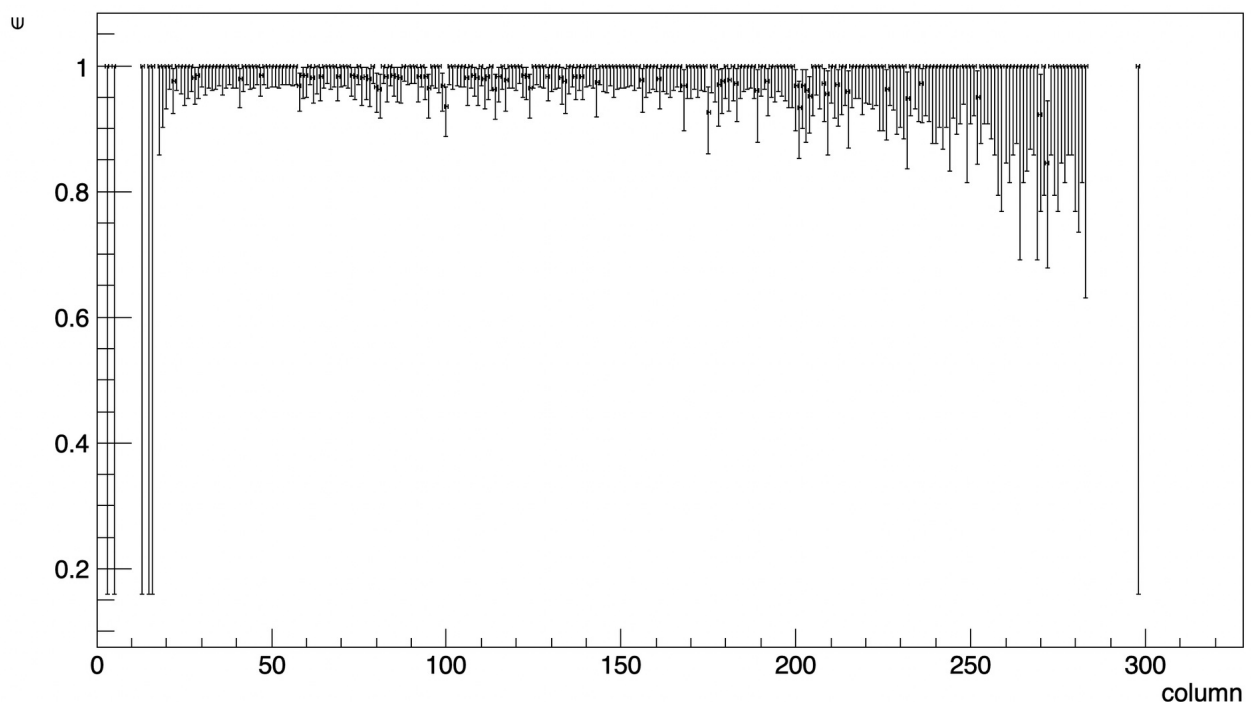
Incoming Main + No beam: GIF++ (Week 38) (Paolo Martinengo)

Continuing irradiation while preparing for beam
Thanks NP04 for giving us access when needed

H6:

Outgoing Main: ATLAS ITK STRIP (John Keller)

Successful data taking throughout the week. Able to complete measurements of our two primary DUTs (irradiated modules from IRRAD) with enough time to take some data on an additional device. Thank you to the beam operators.



Main: ATLAS BCM PRIME (Please Put Your Name Here)

Set up everything yesterday, with minor adjustments to be done. We have not turn on high voltage yet, as we are waiting for the safety clearance visit this afternoon at 14:30. The plan is to have an access around 14:00 to finish adjustments and safety visit later. No run yet.

Parallel + Incoming Main: ATLAS HGTD (Week 38) (Stefano Manzoni)

Two weeks of test beam to test pre-production ASIC (ALTIRCOA) + LGADS, basically continuation of the test done in August

Quick installation yesterday morning, we had safety check in the afternoon and we have already started the data-taking.

Desired beam intensity around ~10K particle/spills to be discussed with BCM prime (but it seems fine)

Incoming Parallel: PICSEL (Week 38) (Please Put Your Name Here)

H8:

Outgoing Main: CMS PPS (Cristóvão B. da Cruz e Silva)

Overall it was a very good week.

Beam conditions were stable throughout and we were able to accumulate a lot of high quality data.

Two minor issues:

- Over night from Sunday to Monday the beam became a bit 'unstable' with the y position of the beam oscillating up and down in successive spills, this effectively pulled the average beam center down and widened the average beam profile
- Over night from Monday to Tuesday, as previously mentioned, one of the Quads failed so the data taking efficiency was not optimal since the beam was no longer centered on our apparatus.

We used gas for 2 different systems:

- Ar + CO₂ for the standard PPS tracker - about 5 l/h
- N₂ for the ETROC tracker (new system in this week) - about 10 l/h

We finished the Bias voltage scan which had been initiated in week 33 in H6 and initial studies of the data show that the time resolution with the pion beam is compatible with the results previously obtained at DESY (electron beam at 4 GeV).

Thank you for all the support

Ongoing Main: DRD6 IDEA DRC (Roberto Ferrari)

- Since we don't have people to run 24/7, we plan to leave data taking running unattended during the nights.
- We almost finished restoring our setup. We run in the night with 160 GeV muons for debugging/control purposes.
- Starting our physics program today in the afternoon (still a few minor stuffs to be restored in the CR).
- A note: about DWCs, as in week 35, we will send and discriminate the raw signals in the CR. If we use the discriminated outputs, strange patterns show up in the DWC scatter plots.

Parallel: BI XBPF (Inaki Ortega)

We are running the same setup we had in T10 during week 35:

- The new XBPF scintillating fiber beam profile monitor
- A set of scintillator tiles for investigating a new beam intensity monitor in vacuum
- A straw detector for investigating a radiation-hard beam profile monitor

Our beamtime in T10 in the East Area was very productive, and in this new beam test, we aim to test the detectors with higher beam rates and energy ranges. We hope to coordinate with the DRD6 IDEA DRC users to secure a few hours of beamtime under conditions favorable to us. We'll need at least 30 minutes of beam access per day to adjust our setup.

We passed the safety inspection yesterday successfully and are already collecting data.

The XBPF monitor is now in vacuum, allowing us to test the in/out motorization. Everything is working satisfactorily.

Incoming Main: ATLAS TILECAL (Week 38) (Tigran Mkrtchyan & Giulio Usai)

- Detector modules currently in the garage position in PPE158 and powered on for initial tests and maintenance.
- Table mechanics repaired, planned movement tests on Wednesday next week when primary user.
- ISIEC form submitted, Cherenkov gas request to be done today, fence removal and vacuum beampipe installation to be requested.
- We will check the beam elements signal routing, if all required signals arrive in our counting room barrack.
- Latest versions of Phase2 upgrade back and front-end electronics to be equipped and tested during this campaign.
- Physics plan similar to last campaign, first positron beams, muons and hadrons in the second week. Same energy ranges and intensities.
- Availability of Week 41 for potential beam time/data-taking?

We also would like to express our immense gratitude to the SPS coordination, physicists and technicians for their availability and support of our activities.

Parasitic Users

H6: Incoming ATLAS MALTA (Week 38)(Please Put Your Name Here)

H6: Outgoing CMS MTD ETL (Murtaza Safdari)

Very fruitful test beam here at H6, as well as at H8 in collaboration with PPS. We were able to study the connections of new assemblies at H6, as well as study the time resolution of a chip of the latest version of ETROC2 at H6. And at H8 we were able to complete the bias scan that started in Week 33 and verify the time resolution results for the scanned ETROC2 chip + LGAD assembly. See slides 4+5 of the attached slides on Indico for a couple of summary plots.

Many thanks for the continued support from the test beam coords in accomodating our requests and timelines.

H8: Incoming STRAW TRACKER RD (Week 38) (Temur Enik, Katerina Kuznetsova)

- All three parts (main setup, sMDT tracking and AZALEA telescope) are at H8 and operational
- Many thanks to Andre Rummler!!
- Work on synchronization ongoing
- Preliminary measurements of straw with ASD readout and custom PA + Sampic readout are done
- Preparing to move to H4 on 16-17 September

H8: Outgoing BI XBPF (Please Put Your Name Here)

AoB

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

