

# Minutes of the PS-SPS Users Meeting held on November 24th, 2022

## News from the PS & SPS Physics Coordinator (E. B. Holzer)

Next User Meeting: Thursday, December 1st, 2022 at 11:00

### Injector Schedule Updates

### User Schedule Updates

## Supercycles, Wobbling, Target intensities, Beam Availability

see slides for planning and supercycles.

## PS Machine Report (A. Lasheen)

- Good availability (94%) and small number of faults, mostly affecting the ion chain
- All ion beams operational
  - Single bunches sent to SFTION, mitigation of longitudinal instability at transition by increasing the longitudinal emittance.
  - Spill at variable energies sent for the CHIMERA run (EAST), three cycles prepared at 0.65, 0.75 and 1 GeV/u.
- Optimization of TOF bunch for short bunch extraction
  - Optimization of the gamma jump at transition crossing to mitigate transverse instability with small longitudinal emittance
  - 28ns bunch length at extraction, horizontal beam size OK, smaller vertical beam size
  - Bunch rotation adjusted for sharper rising edge of the bunch
- Cavity C10-51 in spare until the end of the run (available in degraded mode)
  - Mostly affects production of high intensity beams such as AD.
  - Can be used in case of trip of a cavity for low intensity beams (OK for ions).

## SPS Machine Report (Giulia Papotti , Arthur Spierer)

- SPS availability since last Thursday: 88.4%; main faults:
  - few hours over the week: injector complex (esp. LEIR and LN3 RF)
  - 3h Wed. mo.: false trigger of BA3 fire alarm, access and patrol
- beams
  - SFTION ok since last Wednesday
  - AWAKE: 1-2-3e11 ppb provided
    - reduced availability on Sunday due to frequent LHC fills
  - LHC: physics and last MDs
  - last SPS MDs of the year
  - short parallel on Mon. (and 3 hours Tue.: thanks!!!)

- unfortunately long parallel on Wed. to study limitations for LHC protons beams in 2023 could not be completed due to equipment installation problem
  - stopped early to continue on Fri. 25, ideally after access to fix installation
  - request for beam stop on Fri. 25 from 8:00-9:00 (30' cool-down + 30' access)
  - then recuperate LHCMD1 measurements (9:00-10:00)
  - discussion for approval foreseen Thu afternoon

## Safety / Radiation Protection (J. Devine)

Thank you to all the test beam experiments for submitting your ISIEC forms throughout the year.

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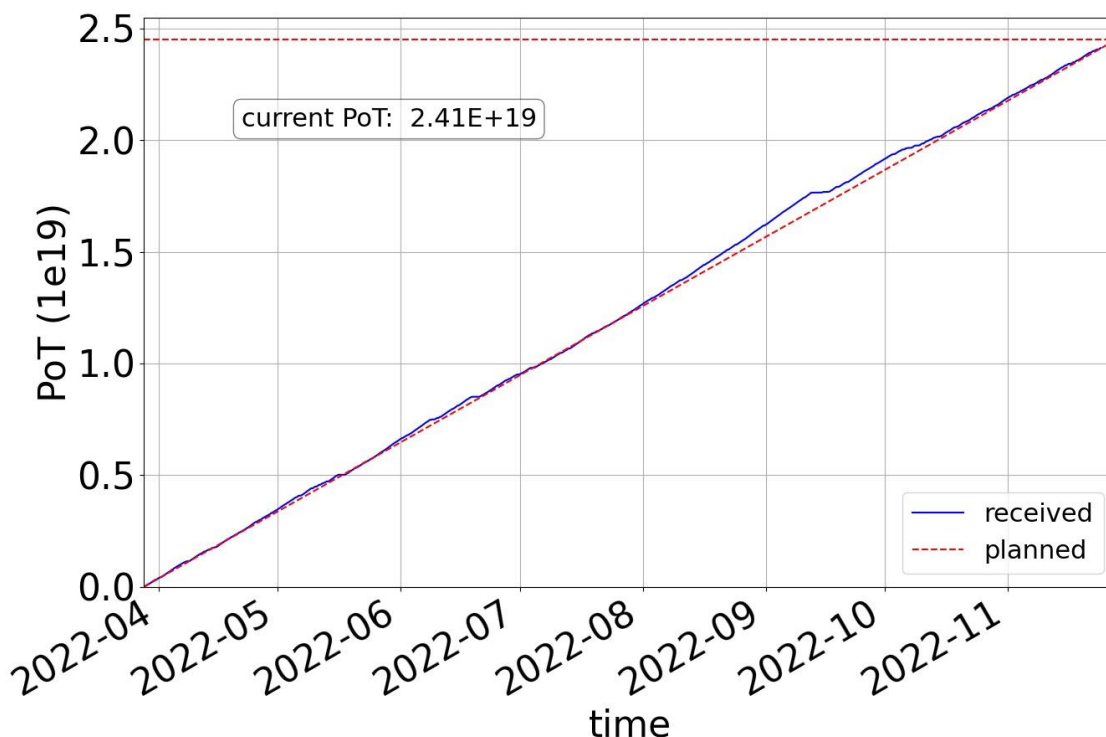
## n\_TOF (M. Bacak)

Busy week of Physics due to squeezing in many things at the end of the run22:

- EAR1: detector developments for (n,cp), (n,inel) - last swap of experiments on Friday
- EAR2: detector developments for (n,f) - running until Monday
- NEAR: busy Wednesday because of last minute ideas. I.e. short term irradiation (2 minutes of beam, ~20 pulses) of dosimeters for characterization of the off-beam neutron field

Beam:

- 28 ns bunch was delivered this week perfectly in time. So far it looks clean in our detectors - more test to be done (2022 or 2023). Great job from the PS team!
- Run22: so far ;- ) only gratitude to the machine's teams and specifically to the PS-team for matching all our requests in the last days and throughout the whole run.



# East Area Beam Status (D. Banerjee, M. van Dijk, J. Bernhard)

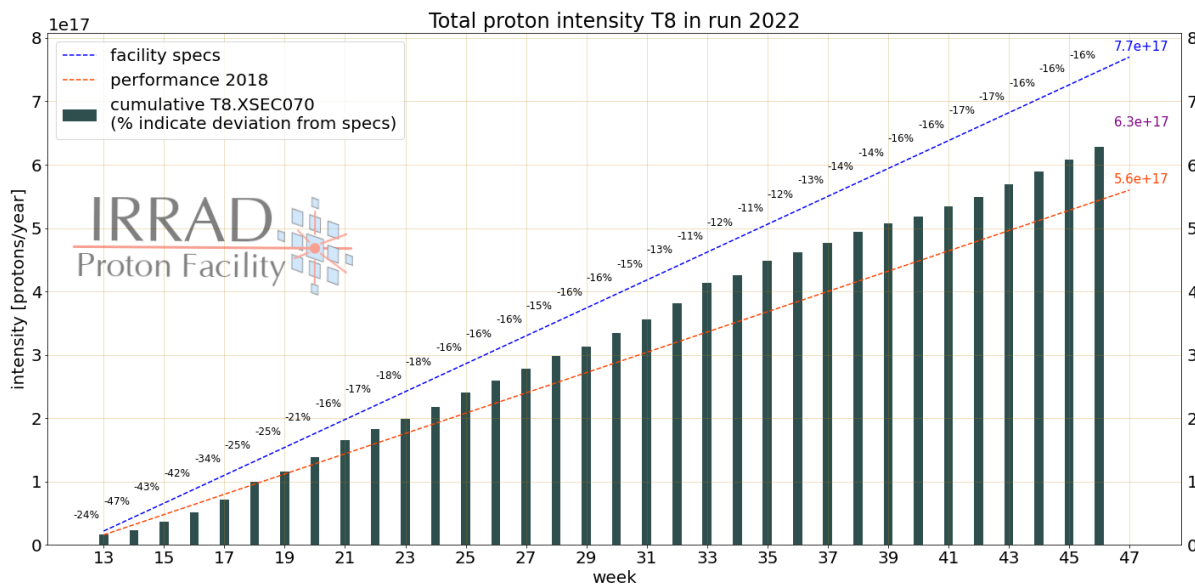
T09: All ok.

T10: PMT replaced on high pressure XCET, analysis ongoing.

## East Area Users Tour de Table

### T8 Outgoing: IRRAD/CHARM (F. Ravotti)

Quiet last week: proton beam stop around 4h40, end of the run 2022. The access (from 9:00) has been used to remove the samples that needed to be stored at low temperature (IRRAD), to remove the last user setups (CHARM) and to setup both areas (install measurement devices) for the CHIMERA ion run. Also in the last week, we approched  $2E16$  p/w (1.95) and the final plot of the cumulated intensity is shown below.



The slides in INDICO give a brief summary of the IRRAD/CHARM user run 2022.

### T8: Chimera (Federico + CHIMERA team for more info)

Ion beam started at around 14:30 and will go on until monday morning when the accelerator complex stop. A plan of the CHIMERA activities is available here: [PS Coordination Meeting #74](#)

### T9: LHCb TORCH (Thierry Gys)

TORCH data taking on-going smoothly with millions of events collected at 3, 5, 8 and 10 GeV/c. See slides attached to the Indico agenda illustrating the TORCH and telescope data. Deinstallation of TORCH setup in preparation...

### T10: ALICE TOF (Please Add Your Name Here)

### T11 Outgoing: CLOUD (Eva Sommer)

CLOUD has successfully finished its campaign CLOUD15. We are currently doing last instrument calibrations and are in the process of packing.

We want to sincerely thank the PS team and everybody involved for their help and invaluable support!

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## **AWAKE (Giovanni Zevi Della Porta)**

- Week 46
    - Monday, Tuesday, Wednesday: access
      - Realignment of Rb diagnostics
      - Plasma light diagnostic tests with ionizing laser - Realign laser marker line and laser virtual line
    - Wednesday: MD until 8pm, then received protons (1E11p) until 10.30. Observed micro-bunches on both streak cameras, confirmed that laser contrast issue was fully resolved
    - Thursday: protons (1E11p) from 9.30am to noon (then LHC ions). Aligned proton trajectory to vapor source (iris scan)
    - Friday: difficult SPS set up for 3E11p, all problems solved around 11pm, then beam until 8pm with few LHC fills. Proton/laser timing scans for plasma light diagnostic and a short dataset with wide-bunch proton optics
    - Saturday: stable beam (1E11p) between LHC fills, from 10am to 5pm. Electron/proton timing scans to study plasma density ramp at entrance
    - Sunday: continuous attempts to fill LHC, only a few <1hour periods for AWAKE
  - Plan for week 47: physics, with access on Wednesday during MD
    - LHC issue resolved Monday around noon. Beam for AWAKE started around 1pm.
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## **North Area Beam Status**

### **H2, H4, H6, and H8 Beams (B. Rae, N. Charitonidis, D. Banerjee, A. Baratto Roldan, M. van Dijk, J. Bernhard)**

H8: Testing different optics for NA60+. Microcollimator was successfully installed on Wednesday morning.

### **Other Beams P42, K12, and M2 (Please Add Your Name Here)**

## **North Area Users Tour de Table**

### **H2**

#### **H2: NA61 SHINE (P. Podlaski)**

- We successfully finished commissioning of the NA61/SHINE detector with high intensity Pb beam
- Since Monday evening we are collecting physics data
- Up until now we accumulated 27M Pb+Pb events
- We are happy with the quality of the beam we are receiving

## **H4**

### **H4 Outgoing: Medipix (Please Add Your Name Here)**

#### **H4: PAN ( Please Add Your Name Here)**

#### **H4: HERD (Nicola Mori)**

- Setup and commissioning while parasiting Medipix last week
- Data taking with PAN and air in front showed quite a low amount of high Z particles on our setup ( $Z_{\max} \sim 13$ )
- Beam monitoring at beam pipe exit shows a good beam composition and compatible with Nikos' expectations -> upstream fragmentation issue
- PAN has been dismantled this morning and a beam pipe has been mounted to transport ions in vacuum down to HERD
- First run in this configuration is currently ongoing

## **H8**

### **H8 Outgoing Main User: R2E (Mario Sacristan Barbero)**

- More than 4 days of very stable heavy ion beam.  $5E5$  counts/spill in scintillator. Roughly  $5E4$  heavy-ions/spill from our detectors, to be completed with low-energy events.
- Very broad beam (3-4 cm diameter) with reasonably low fragmentation. Slow-extracted beam (10s duration).
- All foreseen measurements could be performed!
- Most of the R2E detectors (silicon diodes, ESA Monitor, Timepix) could be successfully used to characterise both the primary ion beam and the secondary fragment field generated by PMMA fragmenters.

### **H8 Main User: NA60+ (E. Scomparin)**

- Installation performed on Monday, first beams on Monday afternoon
- Tests with beam optics on Mon/Tue, up to  $10^4$  Pb/spill, beam size about 300  $\mu\text{m}$  ( $\sigma$ )
- Installation of microcollimator on Wed, more data taken. Iterations still in progress
- End of the week: measurements with 0.5 cm Pb target and 0.7 small dipole

## **AOB**

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