

Minutes of the PS-SPS Users Meeting held on 21 April 2022

PS Machine Report (B. Mikulec)

- Slightly lower availability due to a few longer faults last week
 - PI.SMH42 vacuum incident on Monday 18/04 and Tuesday 19/04: same signature as event on the 8/04; injection septum under close surveillance and spare septum available for installation in the worst case
- LHC-type cycles provided to the SPS (LHC25, BCMS25, basic HiRadMat cycle)
- TOF: Parasitic TOF cycle set up on EAST cycles; ready from the PS side @300e10 ppb
 - To be validated next week by STI specialists and n_ToF team
- EAST beam provided to the different targets
 - New version available: late extraction to leave time for prior ramp-down of figure-of-eight loop; spill length 300-400 ms
 - Compensates horizontal sweep of beam --> nice round beam measured with foils in T8
 - Also less dependent on supercycle composition

SPS Machine Report (Speaker)

- SFTPRO almost ready with 1e13 ppp - sharing to be adjusted when TT20 will be ready
 - Issue on wobbling magnet still to be fixed
 - Commissioning stopped for this complete week. Still optics measurements missing and crystal alignment
- AWAKE ready at 1e11 p/b and 1 ns bunch length
- HiRadMat ready with 4 batches at 1.2e11 p/b at flat top

SAFETY (Speaker)

East Area users tour de table

EA beams status (B. Rae, D. Banerjee, J. Bernhard)

LDMX run is ongoing in T09. Beam files are prepared and available. No relevant beam issues to report for T10 and T11. Next week is without a user in T10. Interested users are very welcome to contact us in case they would like to make use of the free slot.

T8: IRRAD and CHARM (F. Ravotti)

We run irradiation experiments during the long Easter Weekend with intense and stable beam and on Tuesday (once the CHARM target and IRRAD samples out) we performed verifications of the beam profile with films to cross-check the improvements on the extraction implemented over the weekend (late extraction, see Bettina's slides). Then access on Wednesday to replace experiments and we did the new dosimetry reference measurements (second access when also a door in CHARM was forced and required re-patrolling the area). Now running irradiations until next week. Probably with stop already on Tuesday for some complementary dosimetry measurements (to be confirmed by e-mail) and then regular access on Wednesday.

T9: LDMX (T. Akesson)

With the detector prototype fully operational with all major data quality steps taken, we started data taking Run-1 at the start of period "LDMX" and recorded large data sets of hadrons, electrons and muons at various energies until last Sunday. In the meanwhile further data quality measures derived from the first data were prepared and implemented after Run-1, and we started Run-2 with these improved conditions last Monday this week. All indications are that the data are good.

Dipanwita prepared a defocussed muon beam, and Inaki and Stephane found a large scintillator to replace Scint2, the second beam instrumentation scintillator, for a dedicated such muon run. This large scintillator is mechanically in place since yesterday, and was temporarily connected this morning replacing Scint-2. We take this dedicated muon run now this morning. This large scintillator will be removed once this is done.

We plan to continue take data to complete Run-2, and if there is time and we find further data quality improvements, we could make a short break to introduce those and conclude with a short Run-3.

We make sure to contact the PS control room to release the beam request when we don't need it.

We express our thanks to the CERN staff Dipanwita, Aboubakr, Bastien, Inaki, Stephane and their colleagues for their excellent help.

T10: ATLAS ITK PIXEL (A. Rummler)

Data taking continued until Wednesday noon and was very successful in the end. DAQ was better understood and baseline program measurement with two RD53b single chip 3d modules necessary for upcoming module FDR was concluded. Results of the first analysis look promising but need more work. Next steps both for measurement as well as DAQ development (RD53b quads, etc.) are defined and will be continued next week in H6A.

ITk pixel setup as well as the ACONITE telescope were dismantled and packaged Wednesday afternoon. The transport is scheduled for Thursday afternoon. Special thanks to RP for their flexible handling of the measurement which allowed this tight transport schedule and to our ATLAS cooling/EP-DT colleagues who lent us replacement chillers and set them up for us.

T11: CLOUD (Eva Sommer)

CLOUD has now been fully re-commissioned after its rebuild during the East Area renovation over the last 2.5 years. We are currently studying marine new particle formation with methanesulphonic acid, and the influence of galactic cosmic rays at ground level, as well as at the top of the atmosphere. First results look very promising and everything is working well.

n_TOF (M. Bacak)

Running smoothly and on track with expected number of protons.
Parasitic bunches by early next week.

North Area users tour de table

Update On Magnet Situation in North Area (J. Bernhard)

Since Wednesday evening, there is an interlock fault on one of the wobbling magnets that is located just downstream of the T4 target. A repair attempt was tried on Thursday, but had to be stopped as the magnet team intervening took a substantial dose. Since then, several possible solutions have been identified. The most promising seems to be adding of new interlock elements to the magnet, which is prepared at the moment. The intervention is planned for Friday. If the intervention would fail, the magnet might need to be replaced entirely. We expect currently no delay or only a small delay for the physics start on Monday and will know more on Friday evening, then informing everybody on the outcome. Most beam commissioning is completed, leaving only NA62 with up to one week of delay to finish the P42 and K12 commissioning. We apologise for the inconvenience. All teams are trying their best to be ready in time.

H2 and H4 Beams (B. Rae, N. Charitonidis)

H2: NA61 SHINE (S. Kowalski)

We are in the preparation phase for our first beam (test) period. Mostly the installation of the detectors is done – a few parts will be installed in the next few days. We want to mention the freon gas situation–there was a break in the delivery, and we didn't receive any warning. Because of that, our gas flow was stopped. Is it possible to get information about the breaks of the gas in advance?

H4: GIF (M.Jäkel)

Most setups already installed and ready. Last few installations ongoing, to be finished today/tomorrow. Beam pipe has been removed yesterday, setups moving into beam position. We are ready to take beam as soon as it is available. Work on control room (starting today)
Request from RD51 : Two setup will run parasitically in upstream area (PICOSEC/timing MCP-PMT characterization and straw/VMM3A readout capabilities validation). Will depend on usage of pre-dump for muon production.

Questions : Date for installation of Pre-Dump ?

(RD51) Thanks to GIF++ colleague for allowing our groups to use the beam parasitically. Really appreciated.

H6 Beam (D. Banerjee)

Most of the beam configurations have been tested except the electron configuration. This will be checked as soon as beam is available. A CEDAR-N is installed in PPE136 and will be tested with beam in the coming weeks parasitically to have it available for operation if/when needed.

H6: ATLAS ITK PIXEL (A. Rummler)

Transport of the telescope and the ITk pixel equipment foreseen for Thursday afternoon. Setup will hopefully start on Friday afternoon (assuming there is access) and will continue on Monday. Goals are: repair measurement with RD53b single chip at higher energies; implement necessary software changes for RD53b quad operation and operate it; eudaq2 producer development.

H6 CMS PIXELS (B. Ristic)

- Goals
 - First testbeam with new readout chip CROC
 - Efficiency and resolution measurements of non-irradiated and up to EOL HL-LHC fluences irradiated sensors
- Infrastructure
 - Will use EUDET type telescope AIDA and own cold box
 - Chiller kindly provided by ATLAS
 - In contact with safety to use Ethanol as coolant
- Installation next Monday, without cooling
 - Transport of chiller and coolants on Wednesday during MD
- 120 GeV/c π^+ beam, intensity limited to $<1e5$ due to telescope occupancy

H8 Beam (A. Gerbershagen)

Microbeam has been successfully commissioned. On Thursday the 14th the Microcollimator has been removed from the beam path and the safety system has been changed for the secondary beam mode. Secondary and tertiary beams have been commissioned and optimized in H8Z and H8A (going to downstream zones was not possible, since MADMAX was installed in H8B). MADMAX has finished data taking and has uninstalled their setup in H8B on Friday the 15th.

When the beam is back we need to perform 2 steps to finalize commissioning: Provide stable beam for BI commissioning of beam diagnostics and tune secondary and tertiary beam in H8B and H8C.

H8: CMS RPC (Speaker)

PA42 and K12 Beams (J. Bernhard)

The initial steering of P42 was completed on Wednesday, shortly before the wobbling magnet failed. We would now need to continue with verification of the vertical plane and the focusing on T10 before starting the setting-up of the K12 beam. We expect some 5 days more at least for finishing the beam commissioning.

K12: NA62 (C. Parkinson)

Detector preparations are ongoing, with no set-backs anticipated. We are ready to give feedback on the improved spill quality. Then we look forward to the production beam.

M2 Beam (D. Banerjee)

All beam configurations needed for the 2022 beam time have been tested over the Easter weekend thanks to the beam availability to T2 and T6. The finer tuning with the experiment setup will be done next week to be ready for physics data taking.

M2: COMPASS (Michael Pesek)

- Started PT TE calibration on Thursday
- 1.5 K finished on Sunday, 1.3 K to be finished today
- 1K until Sunday
- Progress on detectors - Straws, MM, DCs
- Problem with LN2 cooling for silicones - investigating

M2: NA64mu (L. Molina)

This week we finished installation and commissioning of the detectors. We got safety clearance on Tuesday.

Supercycles, Wobbling, Target intensities

AOB

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