



Week Summary Report

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A. Overall Summary

Week type: Cherenkov Diffraction Radiation BPM and Electro Optical Pick Ups

Date/Week Number: 27/06/2022 to 02/07/2022 (Week 26)

EDMS number: - <https://edms.cern.ch/document/2712936/1>

Beam time: 3 days
Fatal Failure time: 2 days
Installation time: 1 day
Number access: 6

#	Experiment Name	Responsible	Institute	Installation time (h)	Access number	Beam time (h)
1	ChDR BPM	Collette Pakuza	CERN/ JAI	6	5	24
2	EO PU	Alberto Arteche and Andreas Schloegelhofer	CERN/ RHUL	2	1	18

Weekly activity

The week was dedicated to Cherenkov Diffraction Radiation Beam Position Monitor for AWAKE and to Electro Optical Pick Ups.

B. Day by day report

Monday

- Laser problems, RF distribution failure.
- 2 distribution racks were changed: 750 MHz and 1.5 GHz taken on SHB 1.5.
- Visit of Pierluigi to discuss about testing a dosimeter that they are developing at UniBern.
- Beam for ChDR BPM.
- Lost the laser around 18:30.
- Pulse pickers were replaced but the problem persisted. Eventually we found that the input trigger for the pulse pickers was a random train of pulses instead of a single pulse at 0.833 Hz, this cannot be handled by the pulse picker power supplies. We traced back the problem to the counter CNT7 and CNT8 rack in the klystron gallery, which generate the random train.



Access: 1

Tuesday

- The counters power supply was broken in the rack and was changed. This fixed the trigger issues with the laser.
- Beam finally sent to both experiments.
- First scans of bunch charge and bunch numbers.
- Signals measured by the ChDR BPM not conclusive.

Access: 1

Wednesday

- The two cameras on the in-air test stand were re-plugged and are now working again.
- Beam was delivered to both the ChDR BPM and the EO PU experiments.
- Scans of the beam charge for one bunch: 80, 160, 300, 600, 1200, 1400 pC with the beam centered at the BPM.
- Scans of the horizontal beam position: -3.0, -2.0, -1.0, 0.0, 1.0, 2.0, 3.0, 4.0 mm for 1 bunch, 80 pC.
- Scans of bunch numbers: 1, 2, 3, 4, 5 and 6 bunches, 60 pC/bunch.
- Laser attenuator doesn't respond anymore.

Access: 2

Thursday

- Issue with the laser attenuator was fixed.
- "Replacement of the 66 kV EHC102*59 protection relay on Meyrin's site (start at 7:00, finish before 15:00) – risk of breaking resulting in an unscheduled stop".
- Power cut at 11:45.
- Spent the whole afternoon restarting everything (pumps, magnets, klystrons, etc.).
- Realized that MKS15 had a "air flux" error, coming from the Thyatron.
- The fan, the relay and finally the PCB controlling the cooling fan of the Thyatron were changed. This fixed the error and we were able to restart the klystron.

Access: 0

Friday

- Finally restarted the computer for Solenoid SNI120.
- We realized with Davide that the key (PG55?) used for the CLIC showroom and for building 2009, where the controllers for SNI120 are, disappeared from the Key cabinet in the CLEAR control room.
- A few charge and number of bunch charge scans were done for both ChDR and EO PU experiments (1 to 5 bunches, 100 to 1200 pC per bunch).

Access: 2



Saturday

- Intensity scans : 0.50, 0.75, 1.00, 1.25, 1.50 pC with beam centered at the ChDR BPM.
- Position scans for 1 bunch, 1.0 nC charge: -2.5, -2.0, -1.5, -1.0, -0.5, 0.0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 and 4.0 mm horizontal position on BTV730.
- Scans of bunch number: 1, 2, 3, 4, 5, 10 bunches
- Finally some clear (and conclusive?) signals on the ChDR BPM.
- Bunch length measured: 3.11 ps.

Access: 0

Other business

Additional resources

C. Main issues

The power cut lead to a long list of issues (laser, klystrons, magnets, BPMs, pumps, etc.).
A big thanks to the RF engineers, laserists and CLEAR operating team.
They helped us to restart everything in a really fast and efficient way
A really stable and high quality beam was obtained less than 20 after the power cut.

D. Action needed to be followed up

One would have to investigate on the disappearance of the CLIC showroom key.