Minutes of the HSC section

55th meeting on Monday 07/09/2015 (14:00, 6/R-012)

HSC members: Olav Berrig (OB), Christian Carli (CC), Elias Metral (EM), Giovanni Rumolo (GR), Frank Schmidt (FS), Elena Wildner (EW), Elena Benedetto (EB), Michael Bodendorfer (MB), Kevin Li (KL), Tatiana Pieloni (TP), Benoit Salvant (BS), Guido Sterbini (GS), Daria Astapovych (DA), Nicolo Biancacci (NB), Alexander Huschauer (AH), Giovanni Iadarola (GI), Adrian Oeftiger (AO), Tatiana Rijoff (TR), Letizia Ventura (LV), Claudia Tambasco (CT), Magdalena Kowalska (MK), Andrea Passarelli (AP), Annalisa Romano (AR), Michael Schenk (MS), Vincenzo Forte (VF), Javier Barranco (JB), Aaron Paul Axford (APA), Malte Titze (MT), Francesco Paciolla (FP), Mario Stefan Beck (MSB), Stefan Hegglin (SH), Alpo Valimaa (AV), Hannes Bartosik (HB), Lee Robert Carver (LRC).


1) Newcomers / visitors

- None.

2) Comments on the minutes of the previous 54th meeting + Actions

- The minutes should come soon…

3) General infos

- SL meeting: nothing special to report.

- BBQ: ChristianC, AdrianO and DariaA volunteered. Many thanks!

- SC meeting and talk from AndreaL about his new space charge code. Could be interesting to link this space charge module to pyHEADTAIL (to be followed up with KevinL).

- The review of the BB activities will be discussed in the HSC section meeting on 12/10/15.

- Web meeting with WolfgangH, John Fox (SLAC) et al. to plan the next SPS MDs on high bandwidth feedback => Some tests are needed to see if/how we can drive a single bunch unstable in the SPS cutting his transverse tails, as seen for instance during the last SLAC
collimator MD.

- LBOC => We reviewed all the LHC instabilities observed so far: https://indico.cern.ch/event/440271/.

- LIU SPS scrubbing review tomorrow with talks from several people from the team (https://indico.cern.ch/event/433608/).

4) Brief performance reports for the different machines

- PSB (VincenzoF)

  - Picture of the week (+ some more explanations): https://espace.cern.ch/be-dep/ABP/HSC/Meetings/PSBWEK36.pdf.

- PS (GuidoS)

  - Picture of the week: https://espace.cern.ch/be-dep/ABP/HSC/Meetings/PS_07-09-15.pptx.

  - It was a week dominated by the technical stop. The operation was smooth before the TS and was eventful after it.

On Monday afternoon the cavity C86, C91 and C96 went down and were not resettable (it was solved by the specialist, 1 h downtime).

On Tuesday, the high intensity beams were off as scheduled at 15h00 and on Wednesday all beams were off at 04h00.

During the TS the main interventions were on the ITH. BSG15 (the SEM grid between LEIR to PS transfer line) and the water leak on the octupole on SS70. During the blind access for octupole replacement an access door was forced and the PS patrols needed to be redone.

On Thursday afternoon, following a problem with POPS the machine could be restarted only at 14h00. But the operation was perturbed by the unavailability of the PSB R3 (24 h perturbation) and an access needed to be done for the C10-86 (1 h downtime).

On Friday the PSB was down for 1 h (MPS), and 1 h access had to be organized for an inspection to the hydraulic system of KFA4.

On Saturday there was 1 h downtime due the Linac2.

During the rest of the week-end the LHCINDIV and the 25 ns 12,48 and 72 bunches were sent to the SPS, together to the other physics beam.
- SPS (BenoitS)

- Picture of the week: https://espace.cern.ch/be-dep/ABP/HSC/Meetings/BA1SPS.JPG.

- The week was dominated by the technical stop and the repair works of the false floor in BA1, which collapsed on Thursday morning at the end of the technical stop.

On Monday morning the SPS was put into magnet patrol for about 4 hours to perform a vacuum leak detection in sector 308 in preparation for the magnet exchange in the technical stop. As planned, the North Area beam was stopped during the night on Monday to allow for the dedicated 24h COLDEX run with LHC beams. Unfortunately the COLDEX run resulted in elevated radiation levels in LSS1 in the region around the TIDH low energy beam dump. Therefore interventions in LSS1 originally scheduled during the technical stop on Wednesday were postponed to Thursday morning to gain additional cool-down time. In addition to the planned interventions, water leaks on a quadrupole and a dipole magnet in BA2 were repaired and 4 dipole magnets in sector 3 were re-aligned. Just before the end of the technical stop for the SPS on Thursday midday, the metallic false floor structure in BA1 supporting power converters for the TT10 transfer line collapsed. No activities were in progress close to the affected area at that time. In parallel to the repair works of the false floor by EN-MEF, the other BAs were inspected by GS without revealing structural defects that would require imminent intervention. However, further consolidation works are to be done during the christmas shut-down in particular in BA1. After TE-EPC reconnected the TT10 power converters on Friday afternoon the machine was handed over to operations. Minor issues mainly related to faulty power converters slightly delayed the startup but the beam was back to normal operation on Friday evening. No major problems were encountered during the weekend.

Miscellaneous:

BI performed two interventions on the recently broken BLM at the extraction septum ZS3. Since the spare BLM installed on Thursday did not work, another spare BLM was installed on Friday which however also does not work. BI is investigating.

The 24h UA9 run originally planned to start on Thursday after the technical stop had to be cancelled because of the BA1 incident. It needs to be re-scheduled.

No more spurious dipole kicks are observed on the closed orbit along the ramp after the exchange of the dipole magnet 53490 with the inter-turn short.

Further progress was made on the setting up of the MTE cycle SFTPRO2. The work concentrated on the optimisation of the working point and the chromaticity on the flat bottom and along the ramp. The next step is the setup of the extraction during the dedicated MD planned for Wednesday.

- LHC and HL-LHC (EliasM)


- Francesco reviewed in detail the different steps / approximations in the derivation of the Panofsky-Wenzel (PW) theorem, linking the longitudinal and transverse impedances (wake functions / wake potentials), with the aim of improving the derivation. Please have a look in detail and don’t hesitate for any comment/suggestion to FrancescoP.

- As discussed during the meeting, this theorem is very useful in particular in the case of cylindrical geometry (as often the case with RF structures for instance). However, in the case where there is an asymmetry between H and V planes, the “transverse” impedance from PW is the “generalized (total)” one, i.e. in particular the driving and detuning impedances are not disentangled. To be followed up.

6) Actions to be taken for the next meeting

- List of all actions: [https://espace.cern.ch/be-dep/ABP/HSC/SitePages/Actions.aspx](https://espace.cern.ch/be-dep/ABP/HSC/SitePages/Actions.aspx).

7) Miscellaneous

- The next (56th) meeting will take place on 14/09/2015 => Agenda:

  1) General info and follow-up (EliasM)

  2) Performance reports for the different machines (PSB, PS, SPS, LHC and LEIR) => With ideally a picture of the week!

  3) Longitudinal impedance simulations for the slots in the LHC beam screen and first applications to the HL-LHC (Fabrizio Rimunicci)

- Important events and dates for HSC: [https://espace.cern.ch/be-dep/ABP/HSC/SitePages/EventsAndDates.aspx](https://espace.cern.ch/be-dep/ABP/HSC/SitePages/EventsAndDates.aspx).

- Preliminary agendas for the next meetings: [https://espace.cern.ch/be-dep/ABP/HSC/SitePages/MinutesOfMeetings.aspx](https://espace.cern.ch/be-dep/ABP/HSC/SitePages/MinutesOfMeetings.aspx).


Minutes by E. Metral, 14/09/2015.