Minutes of the HSC section

21st meeting on Wednesday 03/09/2014 (09:00, 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), Adriano Garonna (AG), Meghan McAteer (MM), Nicolas Mounet (NM), Carlo Zannini (CZ), Nicolò Biancacci (NB), Xavier Buffat (XB), Alexander Huschauer (AH), Giovanni Iadarola (GI), Adrian Oeftiger (AO), Serena Persichelli (SP), Tatiana Rijoff (TR), Letizia Ventura (LV), Claudia Tambasco (CT), Magdalena Kowalska (MK), Andrea Passarelli (AP), Annalisa Romano (AR), Michael Schenk (MS), Vincenzo Forte (VF), Danilo Banfi (DB), Javier Barranco (JB), Joseph Kuczerowski (JK).

**Present/Excused:** OB, CC, EM, GR, FS, EW, EB, MB, KL, TP, BS, GS, DA, AG, MM, NM, CZ, NB, XB, AH, GI, AO, SP, TR, LV, CT, MK, AP, AR, MS, VF, DB, JB, JK, LottaM, HannesB.

1) **Newcomers / visitors**

- Aaron Paul Axford is a new technical student who will work on the pyheadtail simulations for the quadrupoles (with Gianni) => I added him to the mailing list.

2) **Comments on the minutes of the previous 20th meeting + Actions**

- None.

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

3) **General infos**

- No particular comment from anyone.

- SL meeting:

  - ABP BBQ next week => Many thanks for the volunteers!

- A new injector schedule (v1.7) has been published:
The changes affect the SPS program. The conditioning of the SPS kickers are delaying the restart. Therefore the scrubbng run foreseen week 39 has been canceled. This allows to maintain the start of physics date on October 6th. However it is important to maintain 2 scrubbng runs on the schedule. Two days have been taken from the physics program week 50, to perform the 2nd SPS scrubbng run.

- LSWG day yesterday => https://indico.cern.ch/event/331020/.

4) Brief reports for the different machines

- PSB (ElenaB)

A lot of work by the RF colleagues on the new Digital LL-RF, trying to go as deep in the understanding of their new system to be able to optimize the high-intensity beams (after LS1, they successfully re-created all the beams from scratch for what concerns RF, however optimization is painful). The week was mainly devoted to the production of SFTPRO with h2. Still instabilities before extraction on Ring4, for SFTPRO beams but also for the h1 beams, where most likely the C16 emittance blowup should be optimized. On Friday they observed that the gap relay for Finemet cells 9&10 was not working; when closed there were ~700 V induced. Still they believe that this is not the cause of the ring 4 problems; they will intervene at the next access possibility.

Presently SFTPRO is produced with 400e10 p per ring in Rings1,2,3, while only ~200e10 p per ring available from Ring4.

LHC25ns has been prepared, in all the rings. The sum of the emittances is ~5.5um with 2.5 turns injected.

This week, LHC50ns will be prepared.

Thanks to the work of GianPiero Di Giovanni and Olav, the model in YASP for the injection steering has been updated and previous discrepancies with the measurements have been solved. Pick-ups with inverted polarities have also been fixed in the line.

- PS (GuidoS)

Issue with extraction kickers => 2 weeks of delay. It has been thus decided to start SPS beam with classical CT and to move to MTE at later stage.

- SPS (BenoitS)

Dump kickers MKDH/V and injection kickers MKP conditioning will not be finished for 8th of September. And the energy tracking system commissioning can only take place afterwards. Final voltage for MKDV will be 44 kV (more than in 2012: 41 kV, but less then nominal 47 kV). Sufficient with margin for Q20. Estimate for first beam: 12th of September.
DSO test of chain 2,3,4,5 and 1 was successfully carried out on Wednesday and Thursday last week. The DSO has signed the beam permit.

It has to be mentioned however, that the DSO test had to be interrupted to provide a missing cable between chain 1 and BHZ in TT2. Consequence of cabling campaign in LSS1, TT10.

There are also other problems with cables for ring BLMs and special BLMs in LSS1. Still need cabling intervention next week.

Despite a large number of access during last week for cleaning, RP, BI, vacuum, CV, etc, there are still a few remaining tunnel interventions for next week (floor painting, BLMs, etc.).

We could pulse the main circuits from the control room in different configurations for first time. Big step ahead. The system is however not fully debugged yet. The main circuits still trip after a few hours of operation due to "dV/dt errors", mainly the main quadrupole circuits. Also the acquisition card for the main circuits is not working yet.

We also started to debug the various inputs to the BIS around the ring (collimators, BLMs, FEI of mains, …). We found already several issues within the tested inputs. Debugging will continue next week.

Next week:

- EPC will continue debugging of main circuits and work on MST in LSS2 (and other circuits).
- Test of all operational cycles
- Test of coast
- Test of all beam interlock system inputs (also vacuum valves). Start debugging software interlock system

- LHC (EliasM)

LMC talk this afternoon.

- LEIR (MichaelB)

LEIR restarted on Monday 25/8 in the afternoon after Linac3 leak detection following the pepper pot installation. Beam was accelerated with A.Findlay's help. Extraction to PS was not possible because of a controls problem in ETL & ETP transfer lines (several magnets prohibited from changing values). The issue was solved the next day.

On Monday 25/8 and Tuesday 26/8, A.Blas and team fixed some electronics cards in the transverse feedback. To be continued.

The Ar beam started to be delivered to the PS on Tuesday 26/8 afternoon, with a usable intensity (1.5E10 charges/pulse).
On Wednesday morning M.Cattin changed all control cables to the main magnet power supplies. The problem of the power supply instabilities persists however. It is now at section leader level in EPC. J.Axensalva is supervising the solution in our LEIR team.

Beam was stopped on Thursday morning due to PS access. This stop was used by EN/STI to access the ETL line inside the PS switchyard, to investigate the feasibility of installing a new beam dump for LEIR in ETL.BHN10.

On Friday morning, LEIR was decoupled again in order to perform the radio protection measurements aimed at deciding whether to reopen the visitors platform during argon operations. LEIR is now reclassified as Supervised Radiation Area, so that the visits are authorized again, as from today September 3rd. Important: The usual restrictions still apply - no food, no drinks, no smoking, no high heels, no sandals, maximum 12 visitors/guide, minimum visitor age 16, guide has to wear an operational dosimeter, etc...

On Friday afternoon the extraction transformers were recalibrated by BI, showing practically 100% transmission between LEIR and the PS, but it currently looks like the PS is only injecting half of it.

LEIR still suffers from inconsistencies between the LSA settings and the hardware, making trims hazardous and irreversible. We need to find a long term strategy to get rid of these problems. We consider a complete update of LEIR LSA to the software level of a more modern machine, like the SPS for instance.

Some LSA problems were solved by removing legacy devices from the LSA data base, but removed or updated devices which have changed names. Such legacy names in the LSA data base cause confusion in error messages which were not understood by the operators and the super visors who were not informed about the legacy change. We call for better clean-up and more diligence after updating systems.

5) DA BB studies with ATS optics (DaniloB): [https://espace.cern.ch/be-dep/ABP/HSC/Meetings/ATS_optics.pdf](https://espace.cern.ch/be-dep/ABP/HSC/Meetings/ATS_optics.pdf)

Conditions:

1) Standard simulations for LHC, using ATS optics HL,

2) Test done with IP1 and IP5 only, no IP8,

3) No multipolar error taken into account,

4) Comparison with standard LHC 55 cm optics are shown,

5) Two extreme emittance are show: 3.75 and 1.9 microm.

Conclusion: the 2 optics (ATS and standard 55 cm LHC optics) are similar.
6) Discussion about the LMC talk in the afternoon (EliasM): [https://espace.cern.ch/be-dep/ABP/HSC/Meetings/LMC_EM_03-09-14_Final.pdf](https://espace.cern.ch/be-dep/ABP/HSC/Meetings/LMC_EM_03-09-14_Final.pdf)

EliasM reviewed the talk he will give at the LMC in the afternoon. Many thanks for the comments!

7) 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).

8) Miscellaneous

- The next (22\textsuperscript{nd}) meeting will take place on **10/09/2014** (BE CAREFUL: room 6/2-004!) =>

  Agenda:

  1) General info and follow-up (EliasM)

  2) Reports for the different machines (PSB, PS, SPS, LHC and LEIR)

  3) AOB (EliasM)

- 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).

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


Minutes by E. Metral, 16/09/2014.