

Minutes of HSS meeting held on 25/4/2018

Presents: A. Bloch, H. Burkhardt, L. Deniau, J. W. Dilly, D. El Khechen, H. Garcia, M. Giovannozzi, M. Hofer, A. Huschauer, M. Kaitatzi, E. Maclean, L. Malina, J. Molson, S. Ogur, F. Plassard, M. Schenk, M. Schwinzerl, P. Skowronski, R. Tomas, F. Van der Veken. A. Wegscheider.

- Report from meetings
 - General information (Massimo Giovannozzi)
 - This meeting overlaps with a CERN-UK HL-LHC meeting, which explains the absences.
 - Welcome to the HSS newcomers
 - Myrsini Kaitatzi working on PS studies with Alexander.
 - Martin Schwinzerl working on SixTrack, use of GPUs, with Riccardo.
 - Ewen continues, now as project associate working on SixTrack.
 - Thanks for the efforts devoted to IPAC preparation. All people signing an article should feel responsible for the content and hence read it carefully.
 - Save the date: ABP BBQ on 28 June.
 - 16L2 is back, Daniele is observing the situation.
 - Beam commissioning is officially finished.
 - The deadline for fellow's requests is 2 May. There are four approved requests for the section.
 - Stephane got the mandate to organise a working group to propose configurations and performance reach for the LHC during Run 3.
 - LBS meeting (Helmut Burkhardt)
 - Next meeting will be held in May.
 - Commenting on special runs:
 - High-beta at injection - improve backgrounds with existing optics, 1st test foreseen 8 May, if failing need for new optics at 2x higher energy.
 - New de-squeeze to 90m ALFA, 45m/90m TOTEM, for top energy, goal higher luminosity. The new 45m/90m for TOTEM requires 563A on RTQX1, designed for 600A but currently limited to 550A. Helmut will provide an alternative 45m/90m optics that remains within current limits (at reduced performance in term of Ly) and in parallel see that the full 600A will become available.
 - Collimation status (Hector Garcia)
 - Aperture checked, at injection ok - small differences with respect to last year will be studied.
 - Validated down to 25 cm, smallest 9-9.5 sigma at beta* = 25 cm.
 - OMC activities (Ewen Maclean)
 - Optics measurements and corrections in LHC start-up (from injection down to low beta*) have been successfully carried out. This included also measuring beta* waist position and linear coupling.

- Still to do is detuning with amplitude along the LHC cycle (hopefully to get beam time soon).
 - Massimo proposes a summary talk on this for LMC.
 - PS studies (Alexander Huschauer)
 - LIU is asked to study possible savings, which is not easy at this stage. The policy for spare parts will be re-considered.
 - The PS Landau cavity will be studied, but any constriction might take place only later.
 - Concerning the new PS internal dump, the impedance is non-negligible and the RF group proposes HOM couplers.
 - The MD period has started, the first studies including rematched injection, loss maps.
 - Improving the optics model is one of the key activities of this year, including also linear coupling measurements and corrections (more local).
 - An important activity is the study of intensity limits for the nTOF beam, essentially at transition crossing.
 - MAD-X status (Laurent Deniau)
 - The release of the new MAD-X version 5.04.00 is waiting for end of LHC beam commissioning. Massimo says that the commission is now finished and the new version could be finalised by mid-May.
 - New request by Riccardo to allow to specify aper_offset directly after MAKETHIN to help on-line aperture checks in SixTrack. At present MAKETHIN is (on purpose) restricted to translate only attributes specified in the original thick sequence. Adding extra information requires to first save the sliced sequence. Helmut looks into the possibility of enabling access to all attributes of MAD-X dictionary directly after MAKETHIN and finds it requires a review of memory handling and major modification of MAKETHIN.
 - Laurent will add the bv flag to the TWISS table header as well as extra information required for beam-beam.
- Optics experience with the Q'' knob (Lukas Malina)
 - Negative Q'' proposed for both transverse planes as a means to provide Landau damping and single bunch stability.
 - Knob to introduce Q'' tested in MDs last year, leaving other parameters mostly unchanged.
 - Tested with horizontal orbit bumps at sextupole families.
 - Detuning with dp/p measured with Q'' knob.
 - Q'' distorts linear optics via feed downs, measured and corrected.
 - Hence, with the second version of the Q'' knob the optics is under control and the behaviour is that expected.
 - The remaining issue is the off-momentum beta-beating, which is unavoidable, and its impact on the off-momentum loss maps. Currently, it is not possible to validate the off-momentum loss maps measured with the Q'' knob, which in turns prevents injecting nominal bunches to verify the impact on beam stability of the large Q''. These aspects will need to be followed up with collimation team.