

Status of the machine studies

MSWG meeting, 04/09/09

1) Instabilities at PS transition (S. Aumon)

- MD performed on August 27th-28th, 2009.
- Some problems with OASIS.
- Setting-up of the instrumentation and few measurements: tuning of the phase jump and we made a short plateau with the PFW around transition where the chromaticity stays close to zero to avoid HEADTAIL instability. The new spectrum analyzer from Joseph was used. Since last time, the low intensity measurements were not fully satisfactory, they were redone and nice results were obtained this time. We can see that the minimum bunch length is at transition. So either, the phase jump is not well tuned or the effect of the impedance is observed.
- The threshold of the TMCI was found to be between 1E12 and 1.6E12.
- Next steps: Transverse and longitudinal measurements at 1E12.
- New requirements: The same as last time (// MD).

2) LHC collimation MD (R. Assmann)

- MD performed on August 12th, 2009.
- One hour was lost in the beginning due to beam non-availability. Beam was lost twice in the middle of measurements. Also, the RF tripped at some point and the measurement had to be completed without RF.
- Several sets of measurements for beam lifetime and losses versus collimator setting, for both jaws were done. Several data sets incomplete but one data set complete, thanks to 40 min time extension. Will allow analysis for different cases: 120 GeV with and without RF, 120 GeV with one or the other jaw, comparison to 270 GeV data from 2008.
- Next steps: Complete data analysis. Repeat a complete data set for lifetime versus collimator settings for two jaws to test reproducibility. Test fast BLM reading during collimator movements.

3) Excitation and compensation with the SPS wires in coast (G. Sterbini)

- MD performed on July 15th, 2009 => We did a compensation experiment in coast with a separation beam-wire of 8 sigmas and we tried two different tunes (.31, .32) and (.31, .24).
- MD performed on July 16th, 2009 => We did a compensation experiment in coast with a separation beam-wire of 5 (.13, .18), 7 (.13, .18) and 9.5 (.31, .32) sigmas.

4) Compatibility low and high intensity LHC p+ beams in the PS (H. Damerau)

- C40-78 is equipped with a prototype automatic tuning and allows to work with low and high intensity LHC-type beams within the same supercycle.
- C40-77 will soon be equipped with the same automatic tuning as C40-78, but we are waiting for a missing module to be returned to CERN. If properly tuned by the specialists (A. Marmillon, M. Morvillo), this cavity may also work with low and high intensities simultaneously (as in previous years), but less reliably than C40-78.
- According to our experience, the 80 MHz cavities have a sufficiently large bandwidth to pass low and high intensity beams. They only start tripping as a consequence of a problem with the 40 MHz cavity, which is normal since the RF signals to both systems are directly coupled (open h84 phase loop when 40 MHz voltage is cut).

5) 50 ns beam for SPS studies

- The 50 ns beam will not be ready for the next Long Injector MD of week 38 and will be used in week 41 (Decision with Heiko, Steve and Rende, 01/09/09).

6) Single-batch transfer studies between PSB and PS => See today's talk of A. Findlay and S. Hancock.

7) TMCI studies in the SPS for single-bunch feedback (W. Hofle)

- This MD should have been performed yesterday and was cancelled due to the earth fault on a busbar between two PS magnets (SS22 and 23).
- It is rescheduled for the moment next week on 10/09/09 (Jeune Genevois).

8) SPS BLM in LSS5 (J. Emery)

- During the stop of yesterday, we took the opportunity to make some interventions/accesses.

- In particular, some work was done to improve the quality of the SPS BLM in LSS5, which are of paramount importance for the UA9 studies.
- BA5 and BA6 were done => We see a clear improvement for LSS5 and a bit worst for LSS6 (the 2 crates were exchanged).
- Now we should see over time if this result can be confirmed and think of the next steps.

9) SPS scraper (J. Wenninger)

- Fast scraper was tested and is OK without perturbing high-intensity beams.

10) Early ion beam (E. Metral)

- All possible days of // MDs were required (D. Manglunki) and the MD planning was adapted accordingly (almost all days in weeks 36 and 37).

11) Nominal ion beam in the PS (S. Hancock)

- It is ready as far as the longitudinal is concerned => Transverse still to be checked.

12) MTE in the SPS (S. Gilardoni and E. Metral)

- Looking at TT10 FBCT it seemed there was more than a factor 10 between the core and the islands, while looking at TT2 it was closer to a factor 6. Furthermore, the losses at PS extraction were bigger than usual, and might be explained by the 40 MHz RF cavities used for LHC beams in the PS. This issue should be followed-up.
- We injected the MTE on the 4th CNGS (CNGS2) on Wednesday 02/09/09 with only the 4 islands (i.e. the core is dumped on the PS internal dump).
- The trajectory of each island (in TT10 and SPS 1st two sextants) was studied scanning the SPS MOPOS delay and the data analysis is ongoing.
- During this MD, the old optics for both TT2 and TT10 were used. Since then, the new optics were implemented. To be redone.