

Status of the machine studies

APC meeting, 04/07/08

1) Optics and matching measurements in BT-BTP line (S. Aumon)

- The passerelle between the CODD and the Excel program for orbit measurements didn't seem to work. The Wire Scan for emittance measurements in the PS didn't work either.
- Next steps: New dispersion measurements in the ring 3 are required since they failed during the dedicated MD. Should be done on the 25 of June after 17h in the ring 3 and 2 in the BT-BTP line, and could be done in parallel.

2) Low intensity (10% of nominal) LHC multi-bunch (25 ns) beam in PSB and PS (H. Damerou)

- With a single bunch of $15E10$ protons (resulting in 12 bunches of 10% nominal intensity at PS extraction), the radial loop pick-ups (high intensity pick-ups) give a signal that is too noisy to close the radial loop right at injection (h7) and to keep it closed during the triple splitting. However, starting the radial loop after the triple splitting (h21) seems to help.
- At PSB extraction: Giovanni Rumolo has set-up all four rings to an intensity of $\sim 15E10$ ppb (per ring) while keeping longitudinal parameters almost constant compared to nominal intensity. In the booster, this intensity seems to be the lower limit. At PS extraction: 48 bunches and 12 bunches with 10% of the nominal intensity ($\sim 10E10$ ppb) have been successfully produced with the LHC beam control. Bunch length and long. emittance are essentially the same as for nominal intensity. Most of the parameters that needed to be tuned during the MD were the same as those during the beam test in 2007. The radial loop has been identified as the limiting element in the PS to reduce the intensity even further.

3) Measurement of the SPS longitudinal impedance (E. Chapirochnikova)

- Several measurements were performed (on several days) but they are not fully satisfactory yet. Some discussions are ongoing on the production of this beam in the PSB. Furthermore for very low longitudinal emittance (~ 0.15 eVs) there is a range of intensities where the bunch is unstable in the PS (between ~ 4 and $7E10$ p/b). To improve this situation some HW modifications are needed (Reminder: the sensitivity of the PU was changed from 2006 and 2007...).

4) Measurement of the SPS transverse impedance (H. Burkhardt)

- The tune data looks reasonably good.
- The detailed analysis remains to be finished (in particular for the bunch lengths) but results similar to last year seem to be obtained.

5) Rephasing of the LHC beam at flat top in the SPS on the LHCFast1 cycle (P. Baudrenghien)

- Parallel MD time used to prepare the dedicated MD during the Long Injector MD of week 28.