Minutes of the 8th meeting of the SPS Upgrade Study Team on 23 October 2007

Present: G. Arduini, F. Caspers, P. Chiggiato, K. Cornelis, R. Garoby, J. M. Jimenez, T. Kroyer, G. Rumolo, E. Shaposhnikova, M. Taborelli

• Preliminary results of simulations for e-cloud build-up with different bunch spacing - G. Rumolo

First results of simulations of the e-cloud build-up performed for variable SEY and bunches with fixed intensity spaced at 25, 50 and 75 ns were presented. They show that the e-cloud build-up for beam with 25 ns spacing and SEY of 1.2 becomes comparable to the case with 50 ns bunch spacing for SEY of 1.6. The next step could be to investigate the intensity dependence for fixed values of SEY and different beam structure (present with 25 ns spacing and future with 50 ns).

• Programme of e-cloud measurements in the SPS in 2008

F. Caspers suggested applying again in the SPS the μw diagnostics (at 2-3 GHz - above beam pipe cut-off frequency) for e-cloud detection after its successful tests in SLAC. The antenna and transmitter will be installed in two pumping ports which are not used anymore. This tool can be used in conjunction with other e-cloud measurements. It should give much better time resolution and allow the effects in the gaps between batches to be studied in detail. Tom added a requirement for the test region to have the possibility of switching the magnetic field on and off for signal calibration.

M. Jimenez presented his proposal for tests in the SPS. There are 4 dipole magnets available at position 518. Two of them, equipped strip detectors, could be used for two samples with different coatings prepared by Paolo's team (e.g. TiN and graphite) and one for a calibration test and simulation code benchmarking (SEY) with the NEG coating. One more magnet will be used for a different type of monitor measuring the electron flux (R. Macek design). For these measurements the electronics produced for e-cloud measurements in LHC by BI can be installed on the surface in BA5 and tested as well (with their agreement).

K. Cornelis reported about the progress with C-type magnets. He proposed to install in a different location (where exactly?) two C-type magnets: one for the exchangeable set of samples (under UHV) and the second one (needed in any case for compensation) for a chamber with cleaning electrodes. The third existing C-magnet will be kept as a spare.

It looks like, in this arrangement, one place is still missing for a test of a chamber with grooves.

G. Arduini informed the meeting about the latest results of simulations for grooves done at SLAC. They suggest that the depth of modulation for the SPS vacuum chamber should be 2.5-5mm which would give unacceptable vertical aperture reduction.

On the other hand, according to Miguel, some successful tests (without magnetic field) were done in the laboratory in the past for the grooves with as small as 0.1 mm depth. It was decided to ask Miguel to follow up their production in Novosibirsk or at CERN so that they can be tested

by Paolo's team in the laboratory and then installed later in one of experimental set-up in the SPS (replacing, for example, the electrodes).

Deadline for any samples to be ready - the last week of March.

There is a proposal to LARP (from SLAC and LBL people) to study a high frequency feedback system for the e-cloud effect in the SPS based on design for the PSR (Los-Alamos).

R. Garoby informed the meeting about recent discussions on revised WP resources. Money requested for the SPS Upgrade studies (1.05 MCHF) is now included in the 4-year planning presented to the DG at the two last extended PAF meetings. After approval by CERN Council more iterations for detailed and careful plan should be performed.

• The next meeting (TBC) will be on **20 November 2007** at 16:00 in the JBA room (bld. 864).

Tentative agenda:

- Further results of e-cloud simulations for different bunch spacing - G. Rumolo
- Beam loss and radiation in the SPS for higher intensities and injection energy - G. Arduini
- News from around the table - everybody

Elena Shaposhnikova, 29.10.2007