

Minutes of the 3rd meeting of the SPS Upgrade Study Team on **1 June 2007**

Present: G. Arduini, S. Calatroni, P. Chiggiato, R. Garoby, S. Hancock, M. Jimenez, G. Rumolo, E. Shaposhnikova, F. Zimmermann

Excused: F. Caspers

• **Talks at Workshop BEAM'07 and a.o.b. - E. Shaposhnikova**

It was suggested to have more than one talk from other labs (Fermilab and BNL) relevant to the SPS upgrade. A talk from GSI could be also included if this is not presented in the CERN-GSI workshop the week after (8-9 October).

⇒ Contact Fermilab and BNL to find out possible relevant subjects (and speakers) - Elena

• **LHC upgrade scenarios and consequences for the SPS - F. Zimmermann**

There are two main scenarios which could provide significant increase of LHC luminosity. One, practically transparent to the SPS (ultimate bunch intensity with 25 ns spacing), where main challenges are in the LHC itself (IR). The second one, which is in fact the main scenario at the moment, requires bunch intensity of 5×10^{11} and 50 ns bunch spacing. At the moment the SPSU study team should concentrate efforts on this option which is very difficult for the SPS. The experience of running LHC will give more clear ideas about future possibilities.

⇒ Scenarios for production of required LHC beam should be analysed - Elena

• **Electron cloud instrumentation - M. Jimenez**

The strip line detectors seem to be the most interesting diagnostics for comparison of different solutions for the SPS vacuum chamber upgrade. There are two set-ups available for SEY measurements. With four magnets already installed we should be able to have four detectors in 2008 (AT/VAC will take care) to compare two different TiN options, one sample with grooves and one with electrodes. In the last case one should check that this type of measurement still make sense in the presence of cleaning voltage.

Ideally samples should cover all surfaces to avoid confusion with interpretation of results for different surfaces. Minimum coverage should include top and bottom plates of 152x800mm. We can leave them in the ring for one year to see the longterm effect of conditioning and venting.

⇒ Two additional detectors to be installed in the SPS during 2007/2008 shutdown - Miguel

⇒ Two samples with different TiN coating and one with grooves should be produced at the end of 2007 - Paolo, Sergio,...

• **Update on code-code benchmark - G. Rumolo**

The dependence of the e-cloud instability threshold obtained with HEADTAIL simulations have been confirmed now by the independent code PEHTS written by Ohmi and run by his student H. Jin (KEK, Japan). The previous discrepancy in absolute values has been eliminated after careful check of parameters used in their simulations. The new results predict (for matched voltage and constant bunch length and emittance) the threshold of 7×10^{10} at 40 GeV/c and 2×10^{10} 270 GeV/c.

Now the experimental check becomes even more important. First measurements can be performed at the end of week 23, before the scrubbing run. A difference around 20%, expected for

thresholds at 26 and 37 GeV/c, should be detectable even for unmatched RF voltages (2 or 3 MV).

⇒ Verify the threshold dependence for high RF voltages before MD - Giovanni

- A.o.b.

- The next meeting will be on 10 July 2007 at 16:00 in the JBA room (bld. 864).

- The SPSU website can be found at:

<http://paf-spsu.web.cern.ch/paf-spsu>

Elena Shaposhnikova, 5.06.2007