

LHC Beam Operation Committee

Notes from the meeting held on 25th October 2011

Participants

1. TS#5 & Christmas break: Activities foreseen – K. Foraz ([slides](#))

K. Foraz presented the list of interventions, foreseen for the next technical and Christmas stop, on the equipments of the different groups as well as survey and civil engineering activities. She highlighted mainly the non recurrent activities (in black) and the activities which still need approbation and will be presented at the next LMC (small red hand, see slides for details). A main intervention on PM45 lift will occur in the period from November 1st and December 15th and this could have an impact on the accesses and safety procedures. A new biometry system will be installed in point 1, during TS5, but will not require another eye scan. K. Foraz reminded that 2 hours were required, out of the foreseen TS time, to perform optics fiber measurements.

Christmas stop will last 13 weeks and powering tests of each sector are foreseen for the end of February.

Discussion:

M. Solfaroli commented that, in order to perform splice measurements in Q7R3 during TS5, cryo in point 4 should be back on Thursday, November 10th.

P. Baudrenghien asked when cryo reconditioning in point 4 will be possible.

K Foraz answered that this will be done just before the powering tests at the end of the Xmas stop.

P. Baudrenghien commented that this means that only 2 weeks will be available for cavities reconditioning and this is not a favorable situation.

J. Jowett asked about the changes foreseen in IR2 (new vacuum chambers, TCTV, reallocations).

K. Foraz confirmed that this will be done during the Xmas stop partly in December and partly in January.

2. Investigation of the Time Evolution of the hump Frequency observed at the LHC run 2010 – C. Alabau Pons ([slides](#))

C. Alabau Pons presented the last results on hump studies and in particular on time evolution. She defined the hump as a vertical oscillation of few micrometers amplitude caused by an unknown source. She explained that the main problem is the drift of the humps toward the tune frequency that causes emittance growth and luminosity loss. The transverse feedback system was used to mitigate the effect but the hump is always present. During 2011 the hump showed to be less intense and more stable in frequency than during 2010 operation.

Studies were dedicated to the analysis of abrupt changes of the frequency time evolution over a period of about 3 months. The occurrence of these sudden changes, normalized with respect to the beam presence, is quite reproducible. Events are mainly concentrated in the morning and disappear completely during the night. No evident variation could be observed during the week. Up to now, no correlation could be found with external or internal factors and with any machine system. Investigation goes on.

Discussion:

J. Wenninger pointed out that the lower hump intensity in 2011 could be due to a different setup of the BBQ gain.

Offline discussion G. Arduini and C. Alabau Pons: the hump peak signal was compared to the tune peak intensity and the change in intensity is indeed real.

M. Zerlauth commented that a similar problem was observed at the BNL and that the cause was a bad high voltage connection of the dump kickers. This would not explain the dependence of the sudden changes on the day hours but could be anyhow investigated.

E. Metral reminded that a similar behavior was observed and never explained during UA9 experiment in the SPS (crystal collimation).

3. 1380b 50 ns Schemes – M. Ferro-Luzzi ([slides](#))

M. Ferro-Luzzi introduced Benedetto Gorini and Emilio Meschi who, next year, will take over his role.

He then presented the filling scheme actually used for LHC physics explaining that this foresees 0 collisions in ALICE. Collisions in IP2 happen, anyway, between the main bunches and satellites at 25 ns. He showed that the option of main-satellites collisions has many small benefits both from the point of view of operation and physics. He showed the results of LDM data analysis (E. Bravin) on satellite distribution and calculated the luminosity of satellite-main collisions in ALICE for 10 fills. Results are close to those for main-main collisions with a target luminosity of $2e30 \text{ Hz/cm}^2$ (minimum pile up). The plan is then to inject in a controlled way (1%-2%) 25ns satellites in the LHC. This has already been approved at the LMC and a test will be performed next Thursday afternoon (October 27th).

Discussion:

T. Bohl pointed out that “satellites of the satellites” will be also injected in the LHC. He added that it is not possible to have a perfect control of the satellites like, for example, on the transverse emittance.

M. Ferro-Luzzi commented that ALICE could measure the emittance of the satellites.

4. Next meeting

Tuesday, 8th November: **LSWG meeting (15:30 in 874-1-011).**

Tuesday, 15th November: **LBOC meeting (15:30 in 874-1-011).**