

Minutes of the HL-LHC WP2 Task 2.4

**27th (VIDYO) meeting on Wednesday 02/09/2015
(11:00-12:30, 18/3-008)**

Task 2.4 members: Alexey Burov (AB), Alessandro Drago (AD), Alessandro Gallo (AG), Andrea Mostacci (AM), Alessandro Vivoli (AV), Benoit Salvant (BS), Bruno Spataro (BrunoS), David Alesini (DA), Deepa Angal-kalinin (DAK), Elias Metral (EM), Elena Shaposhnikova (ES), Fabio Marcellini (FM), Fritz Caspers (FC), Frank Zimmermann (FZ), Gianluigi Arduini (GA), Giovanni Rumolo (GR), Hugo Alistair Day (HAD), John Jowett (JJ), Kevin Li (KL), Luigi Palumbo (LP), Mauro Migliorati (MM), Michel Martini (MM), Mikhail Zobov (MZ), Nicolas Mounet (NM), Nicolo Biancacci (NB), Oliver Boine-Frankenheim (OBF), Olga Zagorodnova (OZ), Oscar Frasciello (OF), Paul Goergen (PG), Rainer Wanzenberg (RW), Uwe Niedermayer (UN), Wolfgang Hofle (WH).

Present/Excused: AB, AD, AG, AM, AV, **BS**, BrunoS, DA, DAK, **EM**, ES, FM, FC, FZ, GA, GR, HAD, JJ, **KL**, LP, MM, MichelM, MZ, NM, **NB**, OBF, OZ, OF, PG, RW, UN, WH, **Na Wang, GianniI, LeeC**.

1) General information (EliasM):

- See all the actions from the previous meetings (since 23rd meeting on 17/06/15: https://indico.cern.ch/event/399555/attachments/800233/1096755/MinutesOfThe23thmeeting_17-06-15.pdf):

1) TatianaP => 8% increase in beta* during the squeeze? TatianaP reminded us that the simulations have been done with fake betas and that she is still discussing with the optics team on the real implementation.

2) KevinL => He has some results of simulations but some time still needed for the analysis.

3) GianniI

1) LHC simulations => Solid at injection but at flat top the beam is very small and this might lead to issues. AaronPA did a detailed analysis and he will present the results soon. pyHEADTAIL is working and AnnalisaR will start all the detailed analyses of beam instabilities.

2) Study of the baffles: ongoing (some modifications of the code were needed and they have been implemented).

=> A talk could be given in ~ 1 month (at the earliest).

4) BenoitS => Action with vacuum as they have some ideas for the triplets: having 1 or 2 welds would be acceptable. BenoitS will perform soon the simulations with the 2 welds.

5) NicoloB presented 2 slides about his DELPHI analysis of the HOMs of the Crab Cavities vs. frequency, identifying the few most critical HOMs => To be finalized.

6) Etc.

- Idea today was to make a round table to review the status of the different activities (everybody): impedance, feedback, e-cloud, interplay with beam-beam, beam stability, etc. => The status will finally be presented at the next meeting (16/09/15).

- Reminder of the first experience with the LHC (25 ns) in 2015: we are already running (with ~ 400 bunches) with high octupoles current (at injection => + 20 A and then increasing up to 550 A at flat top), high chromas (at injection => ~ 15 /10 and the ~ 15/15 at flat-top and after), and high damper gain (~ 100 turns damping time)... There are some hints that e-cloud could play an important role in these values (at FT. At injection it was already clear as well as the positive effect of the scrubbing) and some studies are planned to try and disentangle between 1) pure impedance effects, 2) pure e-cloud effects and 3) interplay(s) between the 2.

- REMINDER and "NEWS" (as sent in the email):

1) Please remember that we should use the parameters and beams (standard and BCMS) discussed in our operational scenarios (https://espace.cern.ch/HiLumi/WP2/task4/Shared%20Documents/FinalNote_v2.pdf).

2) In the operational scenarios, we put LOF = - 20 A at injection (increasing up to - 570 A at top energy) and chroma = + 3 all along the cycle. Based on the 2012 experience and the first experience from 2015, we see that we now run at chroma of ~ 15 all along the cycle. Might be wise to study also this case (as we did initially in fact, from the 2012 experience...).

3) Might be wise also to include in our analyses the 8b+4e scheme (see for instance <https://cds.cern.ch/record/1972603/files/CERN-ACC-2014-0299.pdf>) in case e-cloud severely limits the beam current with 25 ns.

- Some updates are needed to write the TDR v0 => I will contact some of you. Many thanks!

2) Next meeting

- The next (28th) Task 2.4–2.7 VIDYO meeting will take place on Wednesday 16/09/2015 from 11:00 to 12:30 in the room 6/R-018 for the CERN

people. The agenda is

1) General information (EliasM)

2) Round table (everybody) to discuss the status of the different activities (impedance, feedback, e-cloud, interplay with beam-beam, beam stability, beam-induced RF heating, double RF system, etc.) => Please try and prepare few slides for the different subjects to summarize where we are (reminding briefly all the results obtained so far for HL-LHC, confirming them or not, showing the relevant pictures, etc.), using the HL-LHC operational scenarios with the additional info I sent you recently.

Minutes by EliasM, 14/09/2015.