



Points emerging for the US-LARP meeting

G. Arduini with input from: R. De Maria, M. Giovannozzi,
E. Métral, Y. Papahilippou, R. Tomas

69th WP2 Meeting – 07/06/2016

Field quality

- Consider latest error table including fringe fields and update dynamic aperture
- Impact of field quality on both beams and correctability of both beams
- Include the correction of the D2 field errors
- Evaluate margins
- In general define the strategy for the correction of non-linearities during commissioning
- → **Massimo, Frederik**

Optics measurement and correction

- Precision in the measurement of the transfer function is 0.1% → impact on correctability?
- Do we need trim between Q2a and Q2b? What would be the maximum tolerable transfer function difference between the two without trim? → **Impact in optics of that → Riccardo**
- “Waviness” of the triplet coil and the relative alignment of the magnet Q1a – Q1b (the same for Q3) need to be specified in the next couple of month as part of the specifications for the construction of the triplets. The same applies for Q2a and Q2b. **Jaime looking into that**

Optics measurement and correction

- Need to provide complete specification table for the power converters (similar to LHC Design Report – Section 10.2) including acceleration and ramp rate **updated with latest estimates on power converters performance from WP6b and taking into account more realistic transfer functions $B(I)$. Need input from WP6b and WP3.**
- Aim for end of August for a note provided we get information? **→ Davide with help input from Rogelio, Massimo, Riccardo**

Powering requirements – Ramp / Acceleration rates – dipole correctors

- Mostly determined by required speed for collapsing the separation bumps

Separation knob	MCBXFB	MCBXFA	MCBRD	MCBYY
Strength [$\mu\text{rad}/\text{mm}$]	16	30	13	5
Integrated field [Tm]	2.5	4.5	5	5
Power converter rating [A]	± 2000	± 2000	± 600	± 600
Ramp rate [A/s]	9	9	1	1
Acc. Rate [A/s ²]	0.75	0.75	0.4	0.4

- Need to evaluate:
 - Additional requirements coming from orbit correction (orbit feedback)
 - Ripple, resolution, reproducibility characteristics

Beam Stability and Electron Cloud

- Main motivation for 200 MHz system in the LHC is electron cloud if we do not manage to suppress electron cloud in the dipoles with scrubbing. This scheme provides more luminosity than 8b+4e scheme and could help to speed-up the intensity ramp-up after a major intervention in the machine (venting of the arcs). Brightness gain for the injected beam to be clarified with LIU → Oliver organizing that.
- Impedance of crab cavities: great progress but still need to damp the 920 MHz HOM on DQW cavity → WP4.
- Is TMCI in LHC/HL-LHC a non-issue?
- Is a wide band feedback of interest for HL-LHC? What are its characteristics?
- Aim for September review
- → **Elias**
- Nominal injection working point: update to the present LHC one more tolerant to operation with e-cloud? I think we should → Update of the operational scenario

Beam-beam and luminosity

- Evaluation of DA in the presence of beam-beam and magnetic errors for different classes of bunches (different number of long ranges and head-ons) for the nominal/ultimate and High luminosity LHCb → Yannis
- Expected distributions in the presence of multiple-single scattering: are these Gaussian?

