Review of pending actions

G. Arduini

- Layout
  - Follow-up of KEK:
    - Need to understand the proposed changes resulting from integration studies and from magnet review ➔ Discussion with Paolo possibly before Christmas or at the beginning of January (Massimo, Riccardo, Gianluigi)

- Optics:
  - Pending items for HL-LHCv1.0/v1.1:
    - tools for HL-LHCv1.0 Beam 2
    - Squeeze transitions, VdM optics in IP2/8, tools for HL-LHCv1.1
  - Mid January (Riccardo)

  - Requirements for optics measurements and correction including strategies for β^* levelling in IP1/5/8:
    - BPM accuracy
    - K-modulation
  - ➔ Aim for end January (Rogelio)

  - Constraints from aperture at the TAXS (injection and maximum transverse IP displacement) and definition of the criteria used for aperture calculations at injection ➔ End of February (Massimo, Riccardo, Roderik)

Optics and Layout

- Powering and tolerances:
  - Input provided at the KEK meeting. Discussions ongoing with WP3/6. Need a joint meeting to finalize the proposals and requirements on our side, including k-modulation ➔ Mid February? (Massimo, Miriam, Riccardo)
  - Specification for tolerances for tilt-angle of the triplet/matching section elements (Massimo, Miriam)

Field quality

- Field quality and impact of multipolar errors evaluated for HL-LHCv1.0 without beam-beam

- Impact of field errors with beam-beam small but not negligible for HL-LHCv1.0 ➔ identify those that have the largest effect ➔ Mid January? (Danilo, Tatiana)

- Effect of large chromaticity and octupoles on dynamic aperture without and with beam beam ➔ Mid March? (Massimo, Danilo, Tatiana)

Field quality

- Effect of Crab cavities field quality:
  - Review of the tools available in Sixtrack: joint Task 2.3/2.5 Meeting
  - Are we happy with the crab cavity field quality? Is the criterion of 4% emittance blow-up rate per hour reasonable?

- Carb Cavities:
  - Impedance reduction measures for crab cavities
    - ➔ Meeting on 10/12/2014
      - What can we gain from spread of the modes?
      - Tolerances for mode control
      - Is mode damping the right solution?
      - Evolution of the stability limit as a function of the squeeze
      - What can we learn from SPS experiment on that?

Impedance/e-cloud/Intensity limits

- Electron Cloud Effects
  - Heat loads:
    - Provided estimates for heat loads in the triplets and matching sections for IP1/2/5/8
    - Triplet in IP1 and 5 require SEY reduction measures
    - Triplets in IP2 and 8 require SEY reduction measures if cooling capacity limits confirmed
    - The situation of the matching sections is less evident and the requirements will depend on the SEY that we will be able to achieve in 2015
    - Summarize the various contributions for the beam screens in tables for the e-cloud and for the resistive terms. ➔ Elias, Nicolo
    - On general it might be good to have a comparison heat loads vs. cryogenics limits, including heat deposition ➔ Ready for a possible discussion on a TC meeting?

Impedance/e-cloud/Intensity limits

- Electron Cloud effects:
  - Instability threshold resulting by electron cloud in areas where SEY threshold < 1.2-1.3 ➔ End of March 2015 (Giovanni)
  - Effect of beam screen baffles on electron cloud-build-up and cold bore heat load. Difficult geometry ➔ End of April 2015 (Giovanni)?
- Synchrotron Radiation in the HL-LHC:
  - Should we review the situation in the matching sections. Adriana Rossi did it for the LHC. WE could ask her to review the situation for HL-LHC

- Impedance related aspects:
  - Update on BPMs design and impact on impedance
  - Update on Beam screen design and impact on impedance
    - Soldering of W and Cu

- 11 T dipoles: Vacuum valves at the cold-warm transition
    - Difficult to install RF-shielded gate valves at the extremity of the cold to warm transitions. Can we install valves without RF shielding?
- Update by the end of February (Elias, Nicolo')

Beam-Beam

- Implementation of Beam-Beam module in the Sixtrack and documentation ➔ Beam-beam meeting end of the year/mid January (Tatiana, Javier)

- Pacman effects in HL-LHC:
  - Asymmetry IP1/5 observed with TRAIN code to be understood ➔ Benchmarking ➔ End of March (Tatiana)?

Beam-Beam

- Effect of IP2 and IP8 and definition of their minimum crossing angles to remain on the shadow of IP1 and 5:
    - Pacman
    - Effect of dynamic aperture
    - End of March (Tatiana, Danilo)?
- Minimum normalized crossing angle for round (15/15) and flat (30/7.5) beams.
    - When do we start to see core emittance blow-up and impact on luminosity lifetime
    - What is the corresponding dynamic aperture
    - Can we use that for Halo control
    - End of February (Sasha)?

Beam-beam

- BBLR:
  - Beam Beam compensator in Sixtrack. End of January in a Beam-Beam Meeting (Yannis, Andrey)?

- BBLR (LHC test):
  - Update Simulation for LHC tests with latest information on BBC installation (wire embedded in the TCT at 3 mm from the jaw face)
  - Required current settings and set-up of the experiment
  - End of February (Yannis)?

- BBLR (HL-LHC):
  - Do we have a set-up that is compatible with TCTs at 9 or 10 (3.5 um) sigma?
    - Take into account that:
      - The wire is embedded in the TCT at 3 mm (i.e. additional 3 to 4 sigmas)
    - What is the current required?
    - How far can we reduce the crossing angle with an optics 30/7.5 cm without crab cavities?
  - What could be configuration with an electron lens-type
  - End of February (Sasha)?

Pending items with other work packages

Imperfection models for the BPMs	Thibaut Lefevre	WP13
Update on correctors D2 and Q4	Ezio Todesco	WP3
Spread of transfer function errors among triplets	Ezio Todesco	WP3
Difference in field quality between MQXFA and MQXFB	Ezio Todesco	WP3
Crossing angle orientation and protection		WP5/7/10