STATUS OF TASK 2.4

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- See https://espace.cern.ch/HiLumi/WP2/task4/SitePages/Home.aspx

- Reminder on milestones & deadlines
- Status
- Next steps

REMINDER ON MILESTONES & DEADLINES

- **Milestones**
  - **01/11/2013 => Initial estimate of machine impedance: DONE** (final version of the milestone report sent to Agnes Szeberenyi on 22/11/2013)
  - **01/05/2014 => Initial estimates of intensity limitations:** Agreed with GA to have the milestone report for 2nd or 3rd week of May => EM will send it on FR 16/05/2014
- **Deadlines**
  - **01/11/2014 => Final report on "Beam intensity limitations & Specification of machine and beam parameters"** => EM will send it before, on 31/10/2014

STATUS

- **LHC data analysis: Lessons learned from LHC for HL-LHC**
  - LPL review: 2-day internal review of LHC performance limitations (linked to transverse collective effects) during Run I => https://indico.cern.ch/conferenceDisplay.py?confId=267783
  - Main lesson (for me): interplays not studied enough!
  - Next steps discussed and under publication by EM (< Xmas)
- **Presentation at the 3rd Joint HiLumi LHC-LARP Annual Meeting, Daresbury, 11-15/11/2013**
  - Transverse impedance in the HL-LHC era (NM) => https://indico.cern.ch/getFile.py/access?contribId=27&sessionId=11&resId=0&materialId=slides&confId=257368
  - Heat load from impedance on existing and new hardware in the LHC era (BS) => https://indico.cern.ch/getFile.py/access?contribId=33&sessionId=11&resId=1&materialId=slides&confId=257368
  - Present understanding of the instabilities observed at the LHC during Run I and implications for HL-LHC (EM) => https://indico.cern.ch/getFile.py/access?contribId=26&sessionId=11&resId=0&materialId=slides&confId=257368
  - Electron cloud effects at the HL-LHC (GI) => https://indico.cern.ch/getFile.py/access?contribId=32&sessionId=11&resId=11&materialId=slides&confId=257368

NEXT STEPS (1/2)

- **Freeze the impedance model as it is now (< Xmas) and then split in 2 activities**
  - **Reminder: No error bar studies and no safety factor included!**

- **1) Take this model as input and make all the intensity limitations studies**
  - **Vs. chroma, damper gain, octupoles etc.**
  - **Effect of a 2nd RF system => 800 MHz. What about 200 MHz?**
  - **Interplay with beam-beam etc.**

  => Milestone on 01/05/2014 on first intensity limitations (with current impedance model)

- **2) Some people will continue and work on the impedance model (and the error bars), which we will update after the milestone of May**

  => If significant changes in the impedance model => Redo all the intensity limitations estimates during summer to be ready for the final report on 01/11/2014

NEXT STEPS (2/2)

- **In parallel**
  - Continue the studies on e-cloud for the
    - Cold elements of the matching section in IR1 and 5 (for which if needed we can still consider mitigation measures like coating and/or clearing electrodes as for the triplets)
    - Cold D1s (in the future we will have single bore, superconducting D1 magnets in all experimental IRs: 1 and 5 but also 2 and 8)
  - Study the RF quadrupole option (to provide more Landau damping)
  - Study the effect of SC and impedance at injection? Etc.

  => Milestone on 01/05/2014 on first intensity limitations

- **Workshop on "Electromagnetic Wake Fields and Impedances in Particle Accelerators", Erice (Sicily, Italy), 23-29/04/2014 (Organisers: V. Vaccaro and E. Métral)**