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
- Plan for 2013
- Newcomers
REMINDER ON MILESTONES & DEADLINES

◆ Milestones
  ▪ 01/11/2013 => Initial estimate of machine impedance
  ▪ 01/05/2014 => Initial estimates of intensity limitations

◆ Deadlines
  ▪ 01/11/2014 => Final report on “Beam intensity limitations & Specification of machine and beam parameters”
STATUS (1/2)

- IBS (with ATS optics and HL-LHC parameters) studied last year => Done (and published)
- E-cloud studies
  - Experience from DAFNE with clearing electrodes => Published
  - Follow up in the e-cloud WG (FZ) and in ICE => Some publications already
- HHRF (Higher Harmonic) cavities studies => 1st meeting organised by Elena Shaposhnikova on 01/02/2013 to see what could be the need as very short bunches might be an issue (https://indico.cern.ch/conferenceDisplay.py?confId=231528)
- Alternative scenario proposed with circular modes and flat beams => AlexeyB (followed up in the Task 2.5)
- RF fingers task force in 2012 (http://emetral.web.cern.ch/emetral/LRFF/LRFF.htm)
  - Conclusions and recommendations (27/11/12)
  - Summary presented at the TE-TM meeting (11-12-12)
  - Summary presented at the LMC meeting (12-12-12)
  - Final report to be written in 2013
- RF heating issues: follow up and recommendations for future
STATUS (2/2)

- LHC data analysis to benchmark models for HL-LHC predictions
- Presentation at the 2nd Joint HiLumi LHC-LARP Annual Meeting, Frascati, 14-16/11/2012
  - Collective effects: status and plan by EliasM: https://indico.cern.ch/getFile.py/access?contribId=13&sessionId=1&resId=0&materialId=slides&confId=183635
  - Where are we on the impedance model of HL-LHC? by BenoitS: https://indico.cern.ch/getFile.py/access?contribId=14&sessionId=1&resId=1&materialId=slides&confId=183635
- Some publications
  - M. Schaumann et al., Intra-Beam Scattering and Luminosity Evolution for HL-LHC Proton Beams, CERN-ATS-2012-290, 22/10/2012
  - R. Wanzenberg and O. Zagorodnova, Calculation of Wakefields and Higher Order Modes for the New Design of the Vacuum Chamber of the CMS Experiment for the HL-LHC, CERN-ATS-Note-2013-018 TECH, April 10th, 2013
PLAN FOR 2013


- Ecloud studies (FZ et al.) => See plan at http://emetral.web.cern.ch/emetral/ICEsection/2013/2013-02-13/Ecloud_FZ.pptx
  - Extremely short bunch spacings (recent proposal by S. Fartoukh): 5 ns, 2.5 ns, 1.25 ns
  - 3D photon simulations => Synrad3D (developed at Cornell and now able to simulate LHC-like machines)

- In //, improve our model of beam stability analysis, which will be applied once we have an impedance model for HL-LHC (i.e. between 01/11/13 and 01/05/14)
  - NHTVS (analytical) code (Alexey Burov) => With BuByBu transverse damper
  - DELPHI (analytical) code (Nicolas Mounet) => With BuByBu transverse damper
  - HEADTAIL (tracking) code (Nicolas Mounet) => Transverse damper already included (BuByBu) and also intra-bunch damper included in the ecloud version (Kevin Li) => Damper studies to be finalized
  - Longitudinal stability (Elena Shaposhnikova)
  - Interplay between the different mechanisms…
NEWCOMERS

* Daria Astapovych: oPAC fellow at CERN; started on 01/02/13 for 3 years; work on “Longitudinal-to-Transverse Landau Damping for HL-LHC” (to extend NHTVS code); supervisors: Alexey Burov / EliasM

* Oscar Frasciello: Email yesterday from Mikhail Zobov that INFN approved a Research Scientific Grant (assegno di ricerca tecnologica) for this PHD student => Will study wake fields and impedances for HL-LHC project (100% FTE). Officially he will start working on June, 1st

* Uwe Niedermayer (TUD) is at CERN from 07/04/13 to 05/05/13 => Impedance studies

* Andrea Mostacci (La Sapienza) will be at CERN from 10/06/13 to 05/07/13 => Impedance studies