

# **LIU Beam Studies Review**



LHC Injectors Upgrade

## **Report of Contributions**

Contribution ID: 0

Type: **not specified**

# Welcome and introduction

*Tuesday 28 August 2012 08:30 (10 minutes)*

Goals of mid-run review

**Presenter:** GAROBY, Roland (CERN)

Contribution ID: 1

Type: **not specified**

## Setting the scene

*Tuesday 28 August 2012 08:40 (20 minutes)*

- LHC expectations and injectors' potential performance after LIU
- LIU MD activities: initial goals, where we are standing, which additional MDs do we need?  
Which additional hardware would help (instrumentation, RF, damper...)?

**Presenter:** RUMOLO, Giovanni (CERN)

Contribution ID: 2

Type: **not specified**

## Performance reach of LHC beams

*Tuesday 28 August 2012 09:00 (30 minutes)*

- From the PSB with different PS schemes
- Preservation of emittances along the chain: importance of transverse damper?
- PSB with Linac4 in case of Linac2 failure: do we need PSB MDs?

**Presenters:** GUERRERO OLLACARIZQUETA, Ana (CERN); Dr MIKULEC, Bettina (CERN)

**Session Classification:** PSB

Contribution ID: 3

Type: **not specified**

## Space charge studies at 160 MeV in the PSB

*Tuesday 28 August 2012 09:30 (20 minutes)*

- Which brightness can we expect?
- Impact of painting scheme?
- Spotted resonances that need compensating? Which tools do we need to optimize the compensation (instrumentation, multipoles)?

**Presenters:** MOLODOZHENTSEV, Alexander (High Energy Accelerator Research Organization (JP)); CARLI, Christian (CERN); BENEDETTO, Elena (CERN); SCHMIDT, Frank (CERN); MARTINI, Michel (CERN); FORTE, Vincenzo

**Session Classification:** PSB

Contribution ID: 4

Type: **not specified**

## RF & transverse feedback aspects

*Tuesday 28 August 2012 09:50 (20 minutes)*

- What else do we need to know to definitively adopt Finemet cavities? When the decision can be made?
- What is left to demonstrate with the digital LLRF (e.g. synchronization before transfer, different intensity ranges, test more than one ring)?
- Are RF by-passes an issue?
- Can some of the new hardware for the transverse damper tested this year?

**Presenters:** FINDLAY, Alan James (CERN); BLAS, Alfred (CERN); ANGOLETTA, Maria Elena (CERN); PAOLUZZI, Mauro (CERN)

**Session Classification:** PSB

Contribution ID: 5

Type: **not specified**

## Space charge studies and impact on performance

*Tuesday 28 August 2012 10:40 (20 minutes)*

- Is a higher brightness/ $\epsilon_Q$  achievable at 1.4 GeV? Perspective at 2 GeV?
- Are the tunes enough optimized? Potential of further progress? Need for resonances compensation?
- Importance of transverse damper?

**Presenters:** HUSCHAUER, Alexander (Vienna University of Technology (AT)); SCHMIDT, Frank (CERN); FRANCHETTI, Giuliano (Gesellschaft fuer Schwerionenforschung mbH (GSI)); WASEF, Raymond (Institut National Polytechnique de Grenoble (FR))

**Session Classification:** PS

Contribution ID: 6

Type: **not specified**

## Longitudinal plane

*Tuesday 28 August 2012 11:00 (30 minutes)*

- Stability & feedback: what else do we need to know to specify hardware (damper, cavities feed-backs...)?
- Impedance measurements: Impact of future additional devices (kickers, cavities, damper...)? Are RF by-passes an issue?
- Alternative production schemes
- Can we set scenarios to reasonably estimate performance after LS1?

**Presenters:** DAMERAU, Heiko (CERN); MIGLIORATI, Mauro (Universita e INFN, Roma I (IT)); HANCOCK, Steven (CERN)

**Session Classification:** PS



Contribution ID: 7

Type: **not specified**

## Transverse plane

*Tuesday 28 August 2012 11:30 (30 minutes)*

- Stability & feedback: what else do we need to know to specify hardware (damper, kickers, correctors, e-cloud mitigation...)?
- Sources of losses, emittance growth and instability
- Impedance measurements (global and local)

**Presenters:** BLAS, Alfred (CERN); IADAROLA, Giovanni (Universita e INFN (IT)); RUMOLO, Giovanni (CERN); STERBINI, Guido (CERN); Dr PIVI, Mauro (SLAC); BIANCACCI, Nicolo (Universita e INFN, Roma I (IT)); AUMON, Sandra (Ecole Polytechnique Federale de Lausanne (CH)); PERSICHELLI, Serena (Universita e INFN, Roma I (IT)); Dr GILARDONI, Simone (CERN); KORNILOV, Vladimir (GSI - Helmholtzzentrum fur Schwerionenforschung GmbH (DE))

**Session Classification:** PS

Contribution ID: 8

Type: **not specified**

## PS-SPS transfer studies

*Tuesday 28 August 2012 12:00 (20 minutes)*

- How much can we gain?
- With Q20?
- What else do we need to know to decide upon additional RF hardware?

**Presenters:** DAMERAU, Heiko (CERN); TIMKO, Helga (CERN); HANCOCK, Steven (CERN)

**Session Classification:** PS-SPS

Contribution ID: 9

Type: **not specified**

## Performance and reach of Q20 optics (wrt Q26)

*Tuesday 28 August 2012 14:00 (30 minutes)*

- Single bunch (space charge and TMCI) & Multi-bunch operation: are the tunes enough optimized? Potential of further progress? Do we understand the present limits? Would it help to test with a better LLRF at 800 MHz?
- Deployment of extraction to LHC: what is left to understand?

**Presenters:** GIANFELICE, Eliana (Fermi National Accelerator Lab. (US)); VANBAVINCKHOVE, Glenn (NIKHEF (NL)); BARTOSIK, Hannes (Physics Division); RF TEAM; PAPAPHILIPPOU, Yannis (CERN)

**Session Classification:** SPS

Contribution ID: **10**

Type: **not specified**

## **Electron cloud status @ SPS in 2012**

*Tuesday 28 August 2012 14:30 (30 minutes)*

- Observations (beam, pressure)
- ECM studies for scrubbing and modeling: what is left to understand?
- Progress on a-C coating: what is left to demonstrate? What are the questions?

**Presenters:** CASPERS, Fritz (CERN); IADAROLA, Giovanni (Universita e INFN (IT)); RUMOLO, Giovanni (CERN); BARTOSIK, Hannes (Physics Division); NEUPERT, Holger (CERN); TABORELLI, Mauro (CERN); HOLZ, Michael Rolf (Hochschule Karlsruhe, Technik und Wirtschaft); FEDERMANN, Silke (University of Vienna (AT))

**Session Classification:** SPS

Contribution ID: **11**

Type: **not specified**

## Longitudinal stability in the SPS: RF studies

*Tuesday 28 August 2012 15:00 (30 minutes)*

- Requirements for the 800 MHz system
- Known instabilities and thresholds
- What else do we need to know to estimate performance after LIU?

**Presenters:** CHAPOCHNIKOVA, Elena (CERN); ESTEBAN MULLER, Juan Federico; ARGYROPOULOS, Theodoros (National Technical Univ. of Athens (GR)); BOHL, Thomas (CERN)

**Session Classification:** SPS

Contribution ID: **12**

Type: **not specified**

## Longitudinal stability in the SPS: beam quality

- Known instabilities and thresholds
- What else do we need to know to estimate performance after LIU?

**Presenters:** CHAPOCHNIKOVA, Elena (CERN); ESTEBAN MULLER, Juan Federico; BOHL, Thomas (CERN)

Contribution ID: **13**

Type: **not specified**

## High Bandwidth Feedback system

*Tuesday 28 August 2012 16:00 (30 minutes)*

- Which tests can be done before LS1? On which hardware does this depend?
- Can we envisage extending it to PS/LHC?

**Presenters:** FOX, John D (SLAC National Accelerator Laboratory (US)); CESARATTO, John Michael (SLAC National Accelerator Laboratory (US)); LI, Kevin Shing Bruce (Eidgenoessische Tech. Hochschule Zuerich (CH)); HOFLE, Wolfgang (CERN)

**Session Classification:** SPS

Contribution ID: **14**

Type: **not specified**

## Summary (collective)

*Tuesday 28 August 2012 16:30 (1 hour)*

- Key pending questions
- Which ones can be addressed before the end of the run?
- What is required (MD time, machine conditions, equipment...)?

**Authors:** HUSCHAUER, Alexander (Vienna University of Technology (AT)); TIMKO, Helga (CERN); AU-MON, Sandra (Ecole Polytechnique Federale de Lausanne (CH)); RAGINEL, Vivien (CERN); BART-MANN, Wolfgang (CERN)