MINUTES

LIU-SPS BD WG  
MEETING No. 10/19

19 December 2019

**Present:** K. Li, L. Medrano, A. Farricker, W. Hofle, M. Schwarz, E. Shaposhnikova, G. Papotti, H. Timko, I. Karpov, T. Argyropoulos, P. Kramer, A. Lasheen, C. Zannini, H. Bartosik, R. Calga, G. Rumolo, B. Salvant, F. Caspers

# Matter Arising and Follow-up of Actions

* **M. Schwarz**: Include the momentum acceptance limitation in simulations.
* **M. Schwarz**: Is it possible to understand if the instability observed with the radial-loop is real or only related to numerical problems?
* For the slip-stacking cycle, determined the aperture needed for the collimation system.
* A list of the key moments in the various cycles (slip-stacking!) is necessary to adjust the design of the collimation system.
* Measurements of the beta beating to include optics errors in simulation of the collimation system.
* Check the impedance of the new collimation system.
* **M. Schwarz**: Quadrupole oscillations are observed at flat bottom with the feedforward activated. Study where this is coming from.
* **A. Farricker**: Check with C. Zannini for the discrepancy in MKEs impedance.
* **C.** **Vollinger:** Check how many cross section step-like changes are in the SPS
* **M. Schwarz:** Organize meeting to discuss issues with bunch length measurements
* **T. Argyropoulos:** Include intensity effects in emittance calculations
* **C. Zannini**: Simulate what happens if the 460 MHz couplers were removed (to make room for potential 915 MHz couplers)

**New:**

* **M. Schwarz / I. Karpov**: Simulate 4x72 bunches along entire cycle with four injections and blow-up during ramp.

# General News

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# Presentations

## **Update on 915 MHz HOM – M. Schwarz**

As a follow-up to last meeting, the resonance frequency of the 915 MHz HOM was scanned within a few-kHz range. The threshold significantly decreased/increased when the resonance frequencies of the two modes were at/between multiples of the revolution frequency. Different models for the HOM yield nearly identical thresholds, when simulating with a V800/V200 ratio of 16% and power limitation included. A beam with target LIU parameters is stable, but shorter bunches are close to the threshold.

## **Past experience with electron cloud and scrubbing in the SPS – H. Bartosik**

The SPS relies on scrubbing runs to obtain pre-LS2 nominal intensity for LHC beams. Electron clouds were observed to move outward with increasing beam intensity, as expected from simulations. In 2015, the beam intensity could no longer be improved by scrubbing, and is (hopefully) due to beam loading, which will improve post-LS2. High intensity beams show significant tune shift along the batch, which is likely due to electron cloud.

The temperature of the MKLP must remain below 60 ℃, which is almost reached for LHC beams with pre-LS2 intensities. Calculation of the power loss for LIU intensities show a significant increase that can be an obstacle in reaching the design beam intensities!

## **End-of-Year Summary – E. Shaposhnikova**

# Next Meeting 16 January 2020

Minutes written by M. Schwarz