

# MSWG Meeting 21-March-2014

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## *Present:*

Y Papaphilippou, G Rumolo, V Kain, G Papotti, F Follin, D Manglunki, U Wehrle, A Radeva, M Barnes, A Blas, S Hancock, H Bartosik, M Jaussi, A Butterworth, K Cornelis, W Bartmann, W Höfle

## *Agenda:*

- Approval of minutes
- Main presentations:
  - Digitizers in CCR for transverse wide-band pick-ups, Wolfgang Höfle
- AOB

The MSWG minutes of the last meeting were approved.

## [Digitizers in CCR for transverse wide-band pick-ups, proposal for new SW](#) - Wolfgang Höfle

In the SPS there are four exponential couplers (BPW) installed. Wolfgang motivated their potential as intrabunch instability diagnostics tool with measurements from 2008/2009. An electron cloud instability could be clearly detected from the difference signal.

During LS1 two of the four monitors shall be moved, from 319 to 311 and 315. The change in signal delay has been taken care of by the cabling.

Presently the monitors are connected to OASIS which presents some limits in data handling. The idea is to develop a dedicated software tailored to digest 4x32 Mpoints, equalize the data and display it in a sort of fixed display.

A Radeva commented that 32 Mpoints cannot be transferred with the existing HW but provided for local data processing. A separate crate is not needed to keep the longitudinal system operating on OASIS but a new CPU could improve the situation.

Concerning the trigger jitter, presently a graphical alignment is done in the display.

As a follow up the amount of data needed by the users and its logging policy needs to be defined.

G Papotti suggested a first iteration with the users to understand better the requirements on the data transfer.

K Cornelis asked whether the signal is degraded in bandwidth due to longer cables after moving the monitors. U Wehrle answered that the change in delay is taken care of, W Höfle added that new cables which are better in terms of dispersion than the corrugated ones; but the signal might be degraded at higher frequencies.

KC was asking how the system will correct for the trigger jitter. For the head tail monitor the longitudinal sum signals are overlapped; if the longitudinal motion is taken out, is there another way of compensating for the jitter. WH answered that also for this system one can use the longitudinal centre of the bunch to correct at each turn. This can also be done in the signal processing.

GP commented that for the BQM an interpolation in the time domain is done.

KC commented that the head tail monitor has a reflection. WH answered that due to tapering, the coupling changes along the electrode of the BPW, the reflection is still there but spread out. As a calibration, one can measure the signal from the pick-up, then a very good bunch profile and then get the transfer function in the frequency domain. Karel commented that this would present an interesting crosscheck for the head tail transfer function. It could also be used as a head tail monitor reserve for impedance and ecloud studies.

In terms of data handling software, a follow up discussion is required on who is providing the analysis algorithm and the programming of a fixed display.

V Kain suggested to not only log the raw data but also a corrected data or the up-to-date transfer function. WH commented that the transfer function, once measured, does not change, but one has to put some effort during the first commissioning to measure it carefully and correct the calculated one. KC commented that if there is a way to parameterize the function, this information should go into the logging as well. WH suggested having an online monitoring display for MDs.

#### *Recommendations and follow-up:*

K Cornelis recommended the deployment of the BPW as intrabunch motion diagnostics in the SPS.

Follow-up: Define the data collection (Scrubbing team, G Papotti and W Höfle)

#### *AOB:*

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*Next meeting:* 2<sup>nd</sup> May, 2014 (SPS FGC upgrade, crab cavities in the SPS)