Minutes *SLS 2 – xBPM working group, kickoff* Mar 8, 2019

U. Flechsig March 11, 2019

where/when: WBGB/020, Mar 8, 2019, 15:00 to 16:30
present: V. Schlott, P. Juranic, D. Just, U. Flechsig, P. Willmott, M. Böge, D. Grolimund, J. Krempasky, M. Camarda, M. Birri, C. Pradervand, W. Glettig
cc: B. Keil

Subject: We want to setup a working group related to x- ray Beam Position Monitors xBPM for SLS 2. The first issue is the specification of generic xBPM diagnostics in the front ends and summarize it in a TDR (Technical Design Report) chapter. Second, provide toolbox like standardized solutions which can be taken over by beamline managers when writing their beamline specific TDR. The goal of the meeting was to define who will be in the working group and the basic questions.

Details:

- *why we need xBPMs?* provide input signals for a) feedback to operate the storage ring with IDs, b) on demand feedback for beamlines, c) diagnostics for operation, commissioning, debugging.
- xBPMs belong to the photonics project under project leader Phil Willmott with support from Thomas Schmidt and U. Flechsig
- working group, meetings every 2 to 3 months or on request, moderator: U. Flechsig, we distinguish between core members (contributors) and followers (people who want to be informed and provide input), features which *must* be reached and *nice to have (n2h).*
- core: a) M. Böge, V. Schlott, B. Keil (requested by Volker) for electron diagnostics, x-ray to electron feedback and electronic issues, b) D. Just, C. Pradervand for front end c) J. Krempasky, M. Camarda, P. Juranic for diagnostic devices and solutions
- the other attendees are followers, we may invite other followers in the future

Basic questions:

- *do we want blade xBPMs in the FE of SLS 2?* common agreement: YES, they work reasonable, they are in regular use for 4 ID BLs at SLS (0.5 Hz) and 1 BL

on demand, at the current SLS we typically have two in sequence– SLS 2: one is sufficient, the head geometry must be adjusted to match the new beam properties, some improvements on minor details, no change of principle

- *do we want quadrant xBPMs in the FE of SLS 2?* UF: some BL perhaps yes – but retractable, the absorption and/or phase shift is not always tolerable, we learned: MC is working on a new SiC detector device with a hole- interesting R & D project- we should look into the details and potential use case in the next meeting.
- *do we want gas based xBPMs in the FE of SLS 2?* common agreement: NO
- *do we want blade xBPM at bending magnet beamlines in the FE of SLS 2?* no strong opinion whether it is must or n2h – we postpone a decision but keep the question on the list
- *pinhole/slit scans* pinhole/slit scans are a demonstrated method to measure the beam position, and cross calibrate xBPMs, for the new FEs we should put some efforts to improve such scans- key words: speed, automatized, reliable, user friendly

Other subjects:

- VS: EEHG will need diagnostics for laser e-beam interaction, keywords: terahertz, timing ..., — the EEHG BL will be special but we have to keep this on the list of open issues
- DG: BLs not just need xBPMs — we should also look into other diagnostics — message has been taken, keyword: diagnostics toolbox, standardized solutions
- MB: SLS 2 will be as stable as current SLS, so far xBPMs used in feedbacks to make beam more stable, n2h in future: destabilize machine on purpose to compensate drifts etc. in the beamline

Open issues:

- EEHG diagnostics
- bending magnet blade BPMs