

# BI WP13 Meeting #1 2019

08/03/2019

<https://indico.cern.ch/event/802127/>

- 14:00 → 14:05 Approval of minutes and previous actions **Speaker:** Rhodri Jones (CERN)
- 14:05 → 14:20 Coronagraph layout for optimized system (10+5) **Speaker:** Georges Trad (CERN)
- 14:20 → 14:45 Cryo-BPM: status and update on delivery plan (20+5) **Speaker:** Michal Krupa (CERN)
- 14:45 → 15:00 Cryo-BPM: plans for outsourcing (10+5) **Speaker:** Gerhard Schneider (CERN)
- 15:00 → 15:15 BLM: plans for outsourcing (10+5) **Speaker:** Christos Zamantzas (CERN)
- 15:15 → 15:30 HEL: plans for outsourcing (10+5) **Speaker:** Adriana Rossi (CERN)

## Follow-up of Last meeting & matters arising

Request that meeting held in a regular slot but not Friday afternoon

- **ACTION: Rhodri & Adriana to schedule a set of possible slots in 2019**

A review on beam size measurement techniques promised for summer or fall.

Agenda to be defined by end of June.

ABP at LHC emittance preservation working group will define needs for HL at workshop in June (see ELIAS's presentation at Evian's Workshop)

- **ACTION: Rhodri**

## BLM Production - Possible Russian contribution (C. Zamantzas)

~1200 monitors to be built: LHC type 900 (200 for SPS) and 300 different types.

Proposal has officially reached Protvino - who are now asking for clarifications

Material costs are ~80% of total cost - still to be fully accounted

Specifications can be produced by Protvino & could be part of the contract. As done for BPM, CERN CERN could provide some critical components or material qualified by CERN.

**ACTION:**

- **Christos to finalise costing & provide figures to Rhodri (Beniamino)**

## Coronagraph - Status & Plans for LS2 (G. Trad)

Three stages:

1. First tests with recuperated KEK coronagraph
  - a. Installed & tested with beam
2. Second phase - optimised telescope
3. Final HL systems

Observations to date

- At 450GeV qualified coronagraph design, giving what was expected
- At 6.5TeV qualified in V but issues with parasitic spot in H

Spot found to come from edge/undulator light

- Need to move deeper into D3 light to cut out contribution at zero angle
- Requires moveable extraction mirror for HL (or allowed to go in closer to beam at injection)

Simulations required to allow design to take into account all aspects e.g. incoherent depth of field. Final position will be next to D4.

Q4 - complete new telescope @ CERN

Q1-Q2 2020: tests in lab with full coronagraph (needs 30m line)

- Space to be found (**ACTION: Enrico & Rhodri**)

- Possible CTF tunnel?

Q3-Q4 2020: installation on B2 replacing KEK coronagraph for Run3

SuperKEKb has similar parameters & will have optical line - could test the design there

Undulator?

Still a useful option - need to have a pre-study (new fellow could look at this)

Does not need to be as strong as current undulator but with damage observed on current LHC system needs to be capable of being switched off at high energy

Moveable permanent magnet undulator could be an option

### BPM status & Plans (M. Krupa)

Design Status:

- For stripline very advanced
- New is the agreement to move the warm button BPMs in front of D2 into D2 - requires design of new cryo button BPMs

Procurement

- Feedthroughs - 370 units required
  - Price enquiry complete - need to decide on procurement strategy with purchasing
    - How many companies & how many prototypes?
- Cryostat cables
  - No clear supplier at the moment
  - Aim for technical spec by June 2019 to have MS by Dec 2019
  - KT collaboration with French company for cryocable manufacture
- Button electrodes
  - 40-50 required
  - Button BPM workshop at Diamond in May will give input
  - Aim to tender by end 2019, early 2020
- Raw material - to be purchased in next months
  - Russian contribution?
- Tungsten absorbers
  - By VSC - pre-series Feb 2020 & series by Sept 2020
- Cooling tubes
  - 112 tubes & connections - to be purchased soon

Infrastructure

- New equipment codes defined for all sub components (BPMQ is the new acronym for BPM @ LHC)
- Pre-DICs/DIF prepared
  - 260 cables
  - 240 optical
  - 40 TN connections
- Rack requests
  - 26 racks requested (16 already exist)
    - Need to add one rack in USC55 for BRAN (current rack proposed for new BPMs)
      - **ACTION: Enrico & Christian/Michal**
  - Radmons at all locations
- Budget breakdown
  - Mechanics 571kCHF
  - Coating & VSC 184kCHF
  - Tungsten 44kCHF
  - RF components 478kCHF

- Installation 103kHCF
- Prototype
  - Pre-prototype produced
  - Optimisation under study
    - Stripline in particular is currently tricky
- Planning
  - To be clarified with meeting organised with HL planning team on 23rd March

BPM - Possible Russian Contribution (G. Schneider)

Action on Gerhard: Clarify costs on Vacuum so that WP13 can transfer money to them (Cedric)

Many skills required - BINP to be qualified for all:

- Precision machining in particular knife edges
- Gold plating
- Copper plating without organic additives (100 microns)
- Electron beam welding
- Laser welding
- Brazing to tungsten
- Precision tube bending
- Precision metrology
- UHV Cleaning

Ray comments that they may not be able to electron beam weld - might need to consider brazed option

HEL - Possible Russian Contribution (A. Rossi)

RJ: we know by September if UK interested in in-kind for BGC, if not to Russian  
Manpower for HEL at CERN to be made available. Same for BGC