

## Minutes of the Linac4 Diagnostics Working Group Meeting held on 23 June 2008

**Present:** U.Raich, J.Tan, C.Dutriat, C.Vuitton, M.Pasini, K.Hanke, B.Mikulec.

### Agenda:

1. Communications
  2. Follow-up of open actions
  3. Status of the movable diagnostics bench
  4. Diagnostics for the Linac4 to Linac2 transfer line
  5. AOB
- ### 2. Follow-up of open actions

*Slit for emittance meter:* U.Raich will follow up the situation and will check if BT can contribute (maybe with Fluka simulations?).

*Emittance scanner application:* Specifications, timescale and responsibilities have been clarified (see minutes 9 June 2008), but the budget code for the Russian collaborator still has to be negotiated. It has been confirmed after the meeting that I.Kozsar is the new CO contact person for Linac4 software applications (replacing J.Serrano).

### 3. Status of the movable diagnostics bench

The following measurements will be possible with the movable bench (see also minutes 7 April 2008):

- **Position:** 2 pickups (also used for time-of-flight measurement)
- **Transverse beam profile:** SEMgrid (same SEMgrid used for transv. emittance measurement)
- **Transverse emittance:** slit + SEMgrid
- **Beam intensity:** 1 beam current transformer
- **Beam energy:** 2 pickups with time-of-flight method
- **Energy spread:** done using the spectrometer (with energy degrader and Faraday cup); first rough calculations have been presented by U.Raich in one of the last meetings (<https://twiki.cern.ch/twiki/bin/view/SPL/Minutes05May2008>). Now more detailed optics simulations are needed to finalise the design. U.Raich will contact A.Lombardi for this purpose. He also has to identify a suitable magnet with the help of T.Zickler as this magnet is not included in the budget (see open actions).
- **Longitudinal profile measurement and phase spread:** the plan is to use a Feshenko monitor. After usage on the movable bench it will be installed after the PIMS exit and before the first horizontal bending (the wire is retractable). The Feshenko monitor will be constructed to our needs, but there is no offer yet available from Feshenko.

In general, the type of measurements and measurement devices are agreed for the diagnostics bench, but not all of them are well defined yet. BI is working to gather measurement resolutions for all the devices, but input from ABP is sometimes required for this purpose. Once clarified, the results should be presented in one of the upcoming meetings.

Assigned to	Start date	Description	State	Result	
U.Raich	2008-06-25				edit

Contact A.Lombardi for detailed optics simulations for the spectrometer design and in general for the open issues concerning the movable diagnostics bench.

Done. G.Bellodi will take care of this task.

U.Raich 2008-06-25 Obtain information about the Feshenko monitor: offer, timescale for production, design details.

closed 18/12/08; an offer from INP is available; BI is following up the procurement edit

#### 4. Diagnostics for the Linac4 to Linac2 transfer line

Starting point for this discussion was a meeting organised by S.Maury on 17 June 2008 where he explained that a Pakistani team will come to CERN in September to start working on the layout of the new transfer line (and later on the supports). For this purpose information is also required on the physical size of the BI equipment.

Until now the location and final number of the beam instrumentation devices has not been fixed for the transfer line. The only available information are the figures quoted in the Linac4 design report (which were still based on the old location of Linac4 in the south hall): 12 beam position monitors, 7 transformers, 6 profile monitors, 1 phase space scanner and 17 BLMs.

Only for the BLMs the information is already available: for the new transfer line at least 5 BLMs have to be installed (for more details see <https://twiki.cern.ch/twiki/bin/view/SPL/Minutes09June2008>). The drawings of the box are available on EDMS under 'LHCBLM\_\_0001' and 'LHCBLM\_\_0040' yielding a length of 494 mm and a diameter of ~11 mm.

What concerns the pickups and transformers, one will have to chose between individual instruments or the combined solution.

It was proposed to use both SEMgrids and beam monitors as profile monitors (beam monitors being cheaper). The number of the drawing for the SEMgrid standard tank is SI\_3\_19\_1455\_0, and for the MTV tank 'type BTY' it is SI.3.81.1097.1.

For the Feshenko monitor it will only be possible to deliver a rough estimation of its size within the delay of July 15th.

It was decided to schedule a detailed discussion of the location and required number of BI equipment for the transfer line for the next working group meeting with ABP representatives. The beam size along the transfer line is needed to determine the resolution of the SEMgrids.

#### 5. AOB

The question has been raised which measurement resolution can be obtained with the wire scanners. The step for the wire displacement is 0.1 mm and therefore the max. attainable resolution will be smaller than this value. Nevertheless it has to be mentioned that the resolution is linearly dependent on the measurement time.

For planning purposes it should be clarified when the wire scanners will be required for installation in the chopper line.

Assigned to	Start date	Description	State	Result
K.Hanke	2008-06-25	Contact C.Rossi to find out when the wire scanners have to be installed in the chopper line and		The EDMS document has been forwarded to C.Vuitton and a link has been added at the <span style="float: right;">edit</span>

inform C.Vuitton.

Minutes summary page.

**Next meeting: 7 July 2008 9am.**

-- BettinaMikulec - 25 Jun 2008

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