

Minutes of the Linac4 Diagnostics Working Group Meeting held on 24 September 2007

Present: E.Bravin, Y.Cuvet, D.Gerard, K.Hanke, F.Lenardon, M.Pasini, U.Raich, R.Scrivens, G.Tranquille, C.Vuitton

Excused: L.Soby

Agenda:

1. Communications
2. Follow-up of the last Meeting
3. Profile Monitor Design
4. Emittance Meter Specifications
5. AOB

1. Communications

K.Hanke announced that this is the first meeting of a newly created Linac4 Diagnostics Working Group (link to organigram). This working groups in a more formal way continues the series of meetings already held during the past years.

K.Hanke explained that a preliminary file with the (longitudinal) linac positions and lengths including an up-to-date inventory of all diagnostics foreseen in Linac4 has been put together by F.Gerigk **Linac4 lengths - draft** [↗](#).

K.Hanke showed a sketch and inventory of all diagnostics foreseen in Linac4 after the latest design changes **Linac4 diagnostics overview** [↗](#).

K.Hanke underlined that it is now very important and urgent to find out the real space requirements of magnets and diagnostics in order to freeze the design. Y.Cuvet has been invited to the meeting in order to put him in contact with the equipment specialists.

In the same context, K.Hanke reported that there will be a meeting with T.Zickler on the design of the combined quadrupole/dipole magnets with (partly) integrated pick up on Tuesday (25 September). L.Soby will attend this discussion.

2. Follow-up of the last Meeting

Action for U.Raich to provide working drawings for profile monitors (SEM grids and slow wire scanners) in the linac. Nothing has been done. C.Vuitton has not contacted the drawing office. Y.Cuvet and C.Vuitton will get together and advance on this.

Assigned to	Start date	Description	State	Result
C.Vuitton, Y.Cuvet	2007-09-26	Working drawings for CCDTL inter-module regions including diagnostics and magnets		first version available Jan 2008 edit

Action for K.Hanke and M.Pasini to provide the beam size at different locations along the linac. M.Pasini has collected the information:

half widths, [mm]

End DTL $x=2.8, y=5.2$

End CCDDT module 1 $x=6.3, y=2.9$

End CCDTL module 2 $x=3.2, y=6.8$

End CCDTL module 3 $x=6.3, y=2.9$

End CCDTL module 4 $x=3.5, y=5.7$

End CCDTL module 5 $x=6.2, y=3.0$

End CCDTL module 6 $x=3.0, y=6.3$

End CCDTL module 7 $x=5.0, y=3.4$

End PIMS cavity 3 $x=3.2, y=6.7$

End PIMS cavity 6 $x=6.9, y=3.2$

End PIMS cavity 9 $x=3.3, y=6.4$

End PIMS cavity 12 $x=6.9, y=3.5$

Action for K.Hanke to advance on rmittance meter specifications for 3 and 12MeV; see below.

Action for U.Raich to advance on control and read-out for the slow wire scanners in the chopper line. U.Raich has discussed the matter with T.Lefevre. C.Dutriat was expected to have bought a PLC based system. This has apparently not been done. As for the signal read-out, the type of ADCs to be used needs to be defined. To be followed up.

Assigned to	Start date	Description	State	Result
U.Raich	2007-09-26	decision on controls and read-out for chopper line wire scanners		reported 18 February 2008 edit

Action for U.Raich to communicated the rack space needed for the slow wire scanners in the chopper line. Not completed.

Assigned to	Start date	Description	State	Result
U.Raich	2007-09-26	communicate rack space needed for chopper line wire scanners		reported 22 October 2007 edit

Discussion whether a special design for the SWS in the linac (w.r.t. the ones in the chopper line) is needed. Probably not; in any case there should be only one family.

3. Profile Monitor Design

No progress (see follow-up of the last meeting). C.Vuitton will follow-up the matter with Y.Cuvet.

4. Emittance Meter Specifications

K.Hanke has extended a table with specifications for an emittance scanner at 45 keV (LEBT) to 3 and 12 MeV.

To be defined:

Slit thickness; depends on material choice.

Slit aperture: depends on slit thickness, heat load.

Type (material and dimensions) of SEM grid wires: to be confirmed.

Wire spacing to be defined (0.5 or 0.75mm). Both is technically feasible. For 45keV 0.75 is needed according to R.Scrivens. At higher energy it needs to be confirmed if 0.75 is appropriate or if a finer resolution is needed. In that case one would need 2 grids. The space between slit and SEM also enters into this consideration.

For the profile monitors in the linac U.Raich proposed to stay with 0.5mm spacing and use 48 wires. Not all of them need to be connected at every position. This ensures that even with changing beam optics parameters a good measurement is possible.

The distance slit-SEM grid needs to be defined.

Motor resolution and precision need to be confirmed.

The entry distance (presently 100mm) needs to be confirmed to be OK for the RFQ exit.

The parameters need to be frozen this week and communicated to D.Gerard.

Assigned to	Start date	Description	State	Result
K.Hanke, M.Pasini	2007-09-26	collect the missing information for the emittance meter specs		https://edms.cern.ch/cedar/plsql/doc.info?cookie=6972219&docume

AOB

F.Lenardon reports that there are delays to produce working drawings for the LEBT transformers. A time delay of 1-1.5 years needs to be accounted from the design until delivery. That would mean that if work starts immediately the transformers are at the earliest available by the end of 2008, more likely mid 2009.

R.Scrivens says that mid 2009 is sufficient and that the design of the emittance meter has priority. The planning for all designs on the low energy section is being reviewed (in light of BI now being ready to start the studies for the emittance meter, SEMGrid and also the transformer). Along with the priorities (which have changed due to the change of RFQ), this information will be used to make a schedule. Rosario Principe is assembling the information at present.

Y.Cuvet will check the planning with Bourquin.

R.Scrivens asked U.Raich about a realistic schedule for the emittance scanner, taking into account the electronics, controls and application. The present "Wish" date was for April 2008, which would allow some measurements of the beam before freezing the RFQ vane design. U.Raich replied this is best addressed by Enrico.

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Assigned to	Start date	Description	State	Result	
E.Bravin	2007-09-26	draft a time planning for emittance meter		D.Gerard reported 19 November 2007.	edit

Next meeting on Monday, 8 October at 09:30 t.b.c.

-- KlausHanke - 24 Sep 2007

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