



## Minutes of the 12<sup>th</sup> CTF3 Committee

Thursday 18<sup>th</sup> June 2009

### Participants at CERN:

R. Corsini, J.P. Delahaye, S. Doebert, T. Ekelöf, W. Farabolini, G. Geschonke (Chairman), K. Lekomtsev, A. M. Micheler, M. Petrarca, L. Rinolfi (Secretary), R. Ruber, K. Schirm, I. Syratchev, F. Tecker, V. Ziemann

### Participants via Webex:

IFIC: A. Faus-Golfe

JAI: K. Peach

### Comment on Minutes of the 11<sup>th</sup> CTF3 Committee:

The Minutes are approved.

### 0. News about CLIC (J.P. Delahaye)

Jean-Pierre reported about a recent meeting held for the first time between the CLIC Steering Committee, the ILC Executive Committee and the CERN management aiming at strengthening the collaboration between the two alternative studies of Linear Collider namely CLIC and ILC. Building on the presently successful collaboration on technical subjects, a statement of common intent is being prepared to “define a common strategy to promote and develop scientific and technical preparation for a Linear Collider and to exploit wherever possible synergies to enable the design concepts for the CLIC and ILC to be prepared efficiently”. Any interested laboratory is invited to join the effort.

In addition an important decision has been taken to merge, from next year, the CLIC and ILC specific workshops in a single "LC workshop" involving both accelerators and detectors. A tentative date of 20-24 September 2010 is envisaged.

K. Peach said that is important to define a common program. It will help to rationalize decisions.

T. Ekelöf asked for clarification about the interference of this statement with the present existing collaborations. J.P.Delahaye and K.Peach answered that the statement does not correspond to a new collaboration but constitutes an "umbrella" for a common Linear Collider effort.

## 1. Update on CTF3 operation (F. Tecker):

Frank mentioned the study of the beam optics (Energy spread optimization, quads scan,...) for the Linac, Delay Loop, Combiner Ring and TL2 line.

The set-up of the 1.5 GHz beam was done with an optics close to the optics used for 3 GHz beam.

Energy spread in the bunch of  $\Delta E/E < 2\%$  in spectrometer line 10 was found good.

A problem of consistency between 2 consecutive screens in the CT line was found which can be avoided by very careful quad scans paying special attention to small beam sizes.

Emittances were measured around 50 mm.mrad.

A disagreement was found in vertical plane of TL1 for MAD model.

In TL2 line, quad scans were performed => High alpha and beta. Emittances of 210 mm.mrad were found. With new re-matching, the emittances went down to 50 mm.mrad.

A list of various issues was discussed:

MKS03 HV diodes broken.

30 GHz operation with mixed success => request for another week-end.

Today MKS11 klystron tube broken.

Frank showed an updated Schedule with what could be achieved before Summer 2009.

No stop (or shut-down) foreseen before mi-September.

R. Corsini mentioned that from next week TBTS and CALIFES would run half of the time for a couple of following weeks. At the beginning of August, a full recombination in the DL is foreseen which should deliver 6A to PETS.

The pulse lengths are expected to be between 300 and 400 ns.

R. Ruber and V. Ziemann asked for a beam into TBTS, and for debugging even low beam intensity would be fine.

However R. Corsini wants to have some time to fix the remaining optics problem in TL1 because it is still difficult to match the beam properly.

## 2. Laser Status (M. Petrarca):

Massimo presented the laser status:

Main work took place on the second amplifier and the conversion stages.

In the specification, 10  $\mu\text{J}$  were requested and now 6  $\mu\text{J}$  have been produced.

The image of the first passage gave large Horizontal spot size and small Vertical spot size. There was diffraction due to the rod. The goal was to use the top and bottom part of the rod which is not an easy task.

Concerning the harmonic conversion, KDP and ADP crystals have been tried.

PHIN specifications required 370 nJ/pulse on the photo-cathode. During the last PHIN run, at the beginning of 2009, 340 nJ were reached on the Laser table and 235 nJ on the photo-cathode. With this energy for PHIN, 1.6 nC/bunch were measured with the present photo-cathode. With a new one installed, the nominal PHIN beam charge of 2.3 nC/bunch would be possible.

The actual energy, now after the modifications made on the 2nd amplifier and the energy conversion scheme, is  $\sim 800\text{nJ}$  per micro bunch of UV on the laser table (pulse picker are bypassed). Considering the losses due to beam line transportation in the PHIN photo injector, the expected energy onto the cathode in the best case is  $\sim 500\text{nJ}$  (38% of losses).

For CALIFES, there is a problem with the pulse picker. It gives only 64% transmission. Therefore only 364 nJ are available on the photo-cathode.

Massimo mentioned the necessary further work for the phase coding. L. Rinolfi recalled the Milano University results, in the framework of CARE-PHIN, where the phase coding has been demonstrated experimentally based on fibers system. Unfortunately the losses were too high in the various interconnections.

J.P. Delahaye requested to set-up a program for future system of phase coding.

### **3. Status of CALIFES (W. Farabolini):**

Wilfrid presented the third phase of commissioning. A charge of 0.2 to 0.3 nC/bunch has been achieved but the number of bunches is still difficult to know.

The Power phase shifter between the first accelerating section and the following ones is under low RF power tests at Saclay.

Wilfrid mentioned the work related to the 12 GHz test stand. It will use the same modulator (MDK) that at PSI.

The 12 GHz vacuum valve has been rescaled and the dimensions are ok.

V. Ziemann asked when he can get beam into TBTS. Wilfrid said next week would be possible. Claire Simon + Daniel Bogear (Saclay) will come next week at CERN. If RF deflector works as expected, bunch length measurements will be performed on CALIFES line.

### **4. TBTS (R. Ruber):**

Roger mentioned activities since last month:

- At EPAC conference, the PETS results were presented.
- The new cabling is now completed for stepping motors (phase shifter and attenuators).
- The new electronic is installed and calibrated => ready to start the run.
- New ADC's have been received for vacuum measurement (look at ns resolution).
- Two new MTV are foreseen to be installed (from Saclay) for emittance measurements.

Then discussion took place about the support from experts:

- Laser expert absent: 17<sup>th</sup> July to 10<sup>th</sup> August 2009.
- Wilfrid absent from 6<sup>th</sup> July until mi-August 2009.
- Roger is here and ready to take beam at any time. He is available in July and August.
- V. Ziemann is available in August, not in July.

### **5. IFIC (A. Faus-Golfe):**

Angeles mentioned the schedule for the BPS:

-BPS supports are in production; the delivery is scheduled on week 30.

One should decide if we need to have all at the same time or if we prefer to have some of them in advance.

-BPS welding and integration is ongoing. The production will finish on week 29.

- IFIC is re-calibrating the Low Frequency set up for the calibration of the series. This calibration will finish on week 31.

Same decision should be taken for the BPS: all at the same time or get some of them in advance.

### **6. CDR (M. Micheler):**

Max presented an update of the CRM line.

A large background has been observed. To cut off these backgrounds, an off-center adapter flange is under design.

Initial studies of the interferometer show variations not yet understood. They need more investigation.

Pretty coherent light has been observed (CDR signals).

Roberto proposed next week to perform some measurements.

### **7. A.O.B.**

S. Doebert announced that a call for tender has been published for 7 PETS. An agreement has been found with Ciemat: some PETS will be assembled in Madrid and some at CERN. Steffen mentioned that is waiting for beam into TBL.

Roger proposed to display a poster about "How klystron works?" in the CLIC Show Room.

### **8. Next meeting**

The meeting foreseen for the 16<sup>th</sup> July 2009 is cancelled.

The next meeting will take place at CERN 20<sup>th</sup> August 2009.

The following ones are:

17th September

19th November

17th December

*L. Rinolfi*