

DRAFT Minutes of the CLIC project meeting 31.08.2012

The program and transparencies can be found here:

<https://indico.cern.ch/conferenceDisplay.py?confId=200468>

Steinar presented the minutes from the previous meeting, followed by a list of updates/news concerning CDR volume 1 and CDR volume 3 – both now essentially completed, the Strategy Input Paper submitted end July, as well as the combined ILC/CLIC physics paper also submitted end July to the Strategy process. The CDRs are available at: <http://clic-study.org/accelerator/CLIC-ConceptDesignRep.php>.

He also reminded about the LC organization work, where Lyn Evans has been appointed overall director starting in 2013. He briefly reviewed the agendas for LCWS2012 in Arlington as well as the agenda for the IEEE Linear Collider Event in Anaheim and highlighted the CLIC specific talks.

It was asked (Andrea) if CLIC had submitted slides to the Krakow accelerator speaker (Biscari). Steinar confirmed this was done.

It was mentioned that presentations of the CDR in collaborating - and other - institutes will be important in the coming months to make the CDR studies known.

Roberto discussed the progress in CTF3.

Highlights are the achieved stability of combined beams where the factor four combination is showing good results, demonstrations that the accelerated beam looks as the non-accelerated beam, breakdown rate and kick studies, higher rep-rate operation, TBL measurements with 13 PETs, feedback studies for increased stability and finally re-calibration of BPM/BPIs. A new TBTS tank for two structures is installed, as well as a drive beam phase monitor at the end of the linac and an improved temperature stability system. The LS1 shutdown schedule was presented including running until May with a short shutdown over Christmas. Next steps are related to commissioning of new equipment, factor 8 combination and some further beam improvements.

Tord asked for clarification of a plot related to the kick measurements, and the schedule for autumn 2013. There will be running in the autumn 2013 and modules will be installed late 2013.

Andrea asked about non-linearities in the current measurements and it was discussed how and what can/could be corrected.

Igor showed the progress on RF test stands at CERN. He summarised the RF test-stand situation "world-wide", and moved on to show the plans for test-areas at CERN both for single and multi-klystron systems. Space at CERN is major concern. The dog-leg experiments planning was also shown, the goal is to install main components in the winter showdown (over Christmas).

He moved on to present, with the slides of **Jan**, the progress on the installed klystron from SLAC which is now operating, and a T24 structure has now been commissioned for 100 hours. The main problem is linked to the pulse compressor commissioning where modifications are being made.

Hermann asked what is measured in the dog-leg experiment; answer: breakdown rates and distribution (depending on beam-loading). Several months

will be needed. Erk commented on the urgency for space and what has been done to solve this at management level.

Tord asked for the difference between the existing test-stands, and new being planned. The differences reflect gradual improvements and, as a result, bulkiness of equipment/setup.

Roger showed the progress in Uppsala, also how they profit from investment made for ESS, concerning the possibilities for RF measurements for CLIC. An application for RF breakdown research has been made to the Research Council, where a contribution from the collaboration is expected, for example the klystron and structures.

Information about this application is expected shortly, while the formal decision will be in November.

Nuria summarised the discussions with Saclay and the progress presented by the Saclay team in several follow up meetings during the summer. A complete plan for equipment and cost sharing has been discussed and a good basis for co-operation has been established.

Erik showed the results from the FACET BBA runs this year were the main results are as follows: demonstrated automatic machine identification, converged orbit correction on 500 m of linac (repeatable with day-old machine identification) and feed-forward to keep downstream machine in place worked perfectly. The run also demonstrated the principle of dispersion correction, however, did not manage to improve the present dispersion over the whole 500 m test-section of the linac. The main reasons are understood and a new run is planned in Spring 2013.

Hermann asked if the requirements for BPM are sufficient or one can extract results were the correlation between BPM specifications and success of these methods can be established. The answer is partly but the parameters are quite different - however Erik promised to look into this. Roberto asked about the possible impact on the linac emittance and if this would interest the LCLS; Erik answered that the emittance performance was limited for several other reasons and was unsure whether linac emittance performance could be improved within the limited time available for this experiment.

Eduardo discussed replacement of current QF1 magnet in ATF by the LER quadrupole magnets. With these satisfactory results are obtained for the ATF2 Nominal lattice, while also results regarding the ATF2 Ultra-low β_{\perp} lattice are improving. One considers alternative solutions that minimize the impact of the remaining multipole components for the ATF2 Ultra-low β_{\perp} lattice. The weight of the magnet(s) is higher than the present, and this is being looked into. Eduardo commented when asked that in case of problems with this alternative supports could be developed.

Kenneth described a possible CLIC-focused multi-ITN on R&D for Normal Conducting (NC) accelerator technology. It would cover: RF: high efficiency power sources & modulators, high precision machining & assembly, materials, ceramic absorbers, coatings & surface preparation. It will also cover applications

of NC accelerators (medical: isotope production (^{99m}Tc), hadron therapy, FELs, Compton sources). The CLIC focused areas are: breakdown: simulation & experiment, RF design & testing.

This led to extensive discussion with several comments and questions. The discussion can be summarized in three bullet points:

- One need to watch overlap with other proposals and some examples were given (for example RF power sources that is foreseen to be covered in another ITN).
- Other CLIC technology related MC ITN can be considered, for example for stability/alignment and also damping rings.
- Groups interested in this specific network are asked to contact Kenneth.

Kenneth will also follow up the other points brought up in the discussion.

The next CLIC project meetings will be **Wednesday 24.10 during the Arlington workshop (around 15:00-20:00 European time)**, followed by a meeting **Friday 30.11 at the normal time 9:00-13:00**.

Steinar Stapnes, 2012