

Actions from the CLIC Collimation Meeting held at the Cockcroft Institute on 15th January 2009.

Meeting was attended by:

Nigel Watson, Javier Resta-Lopez, Frank Jackson, Luis Fernandez-Hernando, Adina Toader, Deepa Angal-Kalinin, J.D.A. Smith

By webex : Rogelio Tomas, Daniel Schulte, Steve Malton, Andrei Seryi

The discussion slides and the agenda are available at the meeting web page: <http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3258>

The agreed actions from the meeting are as follows:

-Priority of the 500 GeV option.

Highest priority for CLIC is the 3TeV option.

However we need a design at 500GeV to at least conceptually demonstrate feasibility and wake-field scaling.

-L*, 8m, 3.5m?

We remain flexible in the L* choice.

Some decision or work plan should happen soon.

-Transverse collimation a bit less effective than for the old lattice.

Most likely reason is the energy spread and energy collimation energy bandwidth.

Javier will look into efficiency of monochromatic beams. One solution could be swapping energy and transverse collimation sections. This would require the use of consumable collimators -> need specification or estimate of how often damage will occur, to be looked at by Daniel and Rogelio. Javier/Frank will verify whether swapping the order increases efficiency. Frank will crosscheck results with Merlin. Steve is presently running CLIC collimation simulations with BDSIM (this has a large potential concerning energy depositions, secondaries and radiation fan at QD0). Andrei mentioned the use of pre-radiators in TESLA design.

-Collimator wakefields have increased compared to old lattice.

This is due to having considered 1mm thickness for the QD0 beam pipe and having consequently reduced the collimation depth to $44\sigma_{\text{y}}$.

The level of the wakefields seemed to large and the obvious solution is to remove the beam pipe in QD0 and make it in-vacuum magnet (collimation depth will go back to $64\sigma_{\text{y}}$ as in the old parameter sets).

However Javier simulated a jitter of $0.5\sigma_{\text{y}}$ without showing a dramatic loss in luminosity. Javier will redo this simulation at $0.2\sigma_{\text{y}}$ since luminosity loss could still be tolerable.

-Feedback on QD0 from Detlef Swoboda.
(Daniel, Rogelio)

-Octupole tail folding.

This was looked at in the past with the conclusion that new optics would be required.

-Is fracture a problem? material option?

Luis will look at this, also using spoiler length 17cm (half rad. length Be) instead of 2cm (half rad length Ti). Steve to check the difference of having that length in his simulations with BDSIM.

-Is it easy to change bunch length in CTF3 Calife probe beam? and what is the energy range?

(to be found out by Rogelio)

-CTF3 wakefields simulation with GDFIDL? for later

Daniel mentioned that the wakefield tests at CTF3 may not be possible till 2010.

-CTF3 crystal collimation?

-How could the damage studies in ATF2 extrapolate to CLIC?

The studies are already relevant to the CLIC project.

After planned tests this year are carried out, the possibility of using parameters closer to CLIC can be considered.

-Need a theoretical model of material damage for short bunches.

Daniel will look for an expert, which then can be followed up by Rogelio and/or Andrei.

-Set up a CERN Twiki on CLIC, with at least the CLIC collimation area.

(Rogelio)

- Next meeting to be organised when some of these results of cross-checks etc will be available. (follow on the progress and arrange for another short meeting in about 2-3 months time).