Minutes of the 14th "ILC-CLIC e+ studies" meeting

Date: June 24th, 17:00(JST) 10:00(CET), 2010

A part of Attendees (whom Omori was able to hear the voices):
Louis(CERN), Frank(CERN), Vivoli(CERN), Eugene(NSC-KIPT),
Chehab(IPNL/LAL), Chenghai(IHEP/LAL), Chaikovska(LAL),
Andreas(DESY), Takahashi(Hiroshima), Urakawa(KEK),
Suwada(KEK), Yokoya(KEK), and Omori(KEK)

Agenda:

1. Conceptual Design Report for CLIC: Louis-san
2. CLIC stacking ring simulation update: Frank-san

Presentations:

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100624/
20100624_CLIC_CDR_Injector-Louis.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100624/
20100624_Stacking_Sim_Uupdate-Frank.pdf

1. Conceptual Design Report for CLIC:

   Louis-san reported the status of the preparation
   of the Conceptual Design Report (CDR) for CLIC.

   Please look at "20100624_CLIC_CDR_Injector-Louis.pdf".

   The CLIC CDR will consist of three volumes.
     * Volume 1: Executive Summery
     * Volume 2: Accelerator Design
     * Volume 3: Physics and Detector

   The followings are the important dates related to
   the volume 2.
     * information to the authors   : late May 2010
     * deadline for contributions   : end September 2010
     * draft (w/o detailed cost) ready: early December 2010
     * vol. 2 (w/ detailed cost) ready: end April 2010 (dpnds CTF3)

   Louis-san says that we are warmly welcomed to contribute to
   any chapter of the CDR. For those who are willing to
   participate, please contact Louis-san and say which part of
   the CDR you would like to contribute.

2. CLIC stacking ring simulation update:

   Frank-san presented the update of the stacking ring

simulation for CLIC.

Please look at "20100624_Stacking_Sim_Uupdate-Frank.pdf".

The talk was focused on the "two stacking rings scheme" of CLIC. About the concept of the "two stacking rings scheme", please look at the minutes of the phone meeting on 14-May-2009.

About the initial e+ parameters, which are determined by the capture and injector sections, Frank-san employed Vivoli-san's simulation for ILC (2008).

In the past studies, he knew the following points were important.

 * energy pre-compression (R. Chehab)
 * additional wigglers for faster damping
 * larger RF voltage

For the "two stacking rings scheme", Frank-san again employed the three points.

As a parameters of the stacking ring, Frank-san chose the SLC damping ring as an example/model according to Urakawa-san's suggestion, because the SLC damping ring (E ~ 1.2 GeV and circumference ~ 35 meters) and the proposed stacking ring have similar energy and circumference.

However Frank-san found that the stacking ring should be very much different from the SLC damping ring in the two parameters; longitudinal damping time and RF voltage. The stacking ring must have very small longitudinal damping time and very large RV voltage.

Frank-san's slimulation showed that such stacking ring can achieve 2000 times of the stacking in a same bucket efficiently in 20 m sec.

Conclusions:

  * CLIC stacking rings must have much shorter damping times ~50 micro seconds and higher RF voltage (35 MV) than SLC damping ring.

  * large off-momentum dynamic aperture up to delta_inj ~ 9% (!) is also required

  * preliminary simulations with semi-optimized parameters indicate >95% stacking efficiency

  * numbers need to be slightly refined

Open questions:

  * lattice design for stacking ring

* wiggler and RF for stacking ring

* impedance & stability for 35 MV RF (Q by K. Yokoya)

* nonlinear wigglers to damp large amplitude particles
  more efficiently?

The date of the next phone meeting will be on July/22nd.

Reported by T. OMORI
