Minutes of the 2nd "ILC-CLIC e+ studies" meeting (corrected)

Date: March 5th 17:00(JST)  9:00 (CET), 2009

A part of Attendees (whom Omori was able to hear the voices):
Louis(CERN), Frank(CERN), Vivoli(CERN), Variola (LAL),
Olivier Dadoun(LAL), Eugene(NSC-KIPT), Andreas(DESY),
Sabine(DESY), Andriy(), Clarke(CI), Wanming(ANL),
Takahashi(Hiroshima), Yokoya(KEK), Urakawa(KEK), and Omori(KEK)

Agenda:

1. Advanced target tests at KEK : Urakawa-san
2. e+ generation based on bremstralhung & channeling : Olivier-san
3. Upcoming meetings

Presentations:

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20090305/
20090305-Urakawa_PosiR&D.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20090305/
20090305-Olivier_PPSim.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20090305/
20090305-UpcomingMeetings.pdf

1. Advanced target tests at KEK:

   Urakawa-san explained the plan of the advanced target tests
   at KEK.

   Please see "20090305-Urakawa_PosiR&D.pdf"

   The tests will be performed by the collaboration of
   BINP, Hiroshima, Osaka, IPNL, LAL, CERN, and KEK.

   They will test two advanced target systems.
     * Liquid Lead Target System
     * Hybrid Target System

   Urakawa-san asked the KEK directorate the budget of
   e+ and e- sources studies as a part of the KEK to
   universities technology-transfer program.

   Also, they will test/consider advanced capture systems:
     * Flux Concentrator magnet (FC)
       Ongoing with the collaboration of KEKB and BINP.

* Liquid Lithium Lens
  Before considering the tests, we need a design work for ILC positron beam by BINP.

Location of the tests:
* Window tests -> the abort line of KEKB ring.
* Liquid lead target tests -> the end of ATF linac.
* Hybrid target tests-> the test beam area of KEKB linac

Schedule
* BINP starts the manufacturing of windows (BN, BC and Be) for test at KEKB ring in 2009.
* Until early 2010, systematic experimental studies on the liquid lead target system with BN window and the hybrid target system.

Comment by Louis-san:
What is the thicness of the BN windows:
Answer by Urakawa-san and Omori:
It is around 3 - 5 mm, but we don't remember the exact value.

Comment by Louis-san and Frank-san:
We need the table to compare,
the ILC requirements on the target(s),
the CILC requirements on the target(s),
the requirements of LHC based ep collider,
the possible beam parameters at the ATF test, and
the possible beam parameters at the KEKB test.

Question by Clarke-san:
When the KEK directorate made the decision of the budget?
Answer by Urakawa-san:
It will be mid-March or end-March.

Comments by Yokoya-san:
Even the KEK directorate will not give the special budget, this program will be supported by the budget of the KEK LC office. However to make such a decision, yokoya-san have to get much clear plans of R/Ds.

2. Positron generation based on bremstralhung and channeling:

Olivier-san discussed the positron generation based on bremstralhung and channeling.

Please see "20090305-Olivier_PPSim.pdf".

Olivier-san explained the positron production simulation program, PPSim, which was based on GEANT4. The PPSim had capability to treat heat problem of the target by introducing segmentation of the target for power deposition calculation. It treated the magnetic field at the exit of the target by the analytic function $B(z) = B0/(1+a*z)$. It also had capability to make a Root output file. Currently, the PPSim simulated only EM

processes. So we can not estimate activation of the target by neutron processes.

Using the PPSim, Olivier-san studied the polarized positron generation using bremstralhung from polarized electron. The energies of the electron beam in the bremstralhung study were 80 MeV and 50 MeV. Polarized positron generation using bremstralhung process was interesting for CLIC e+ source (not for ILC).

He also studied the positron generation through channeling with the hybrid target. The energy of the electron beam in this study was 5 GeV. Olivier-san studied Ne+/Ngamma as functions of the conversion target thickness and the distance between the thin radiator and the thick conversion target.

Question by Eugene-san:
  In the hybrid target, what was the spot size of the gamma-ray beam on the conversion target?
Answer by Olivier-san:
  It depended on the distance between the thin radiator and the conversion target. If the distance was 1 m (2 m), the spot size (sigma) was 5 mm (10 mm).

Omori's comment:
  5 GeV was little smaller for the hybrid target.

3. Upcoming meetings:

Here is the list of the upcoming meetings.

(i)   GDE meeting, 17th-21st April 2009 at Tsukuba
(ii)  FJPPL meeting, 20th-22nd May 2009 at KEK
(iii) POSIPOL workshop, 22nd - 25th June 2009 in Lyon
(v)   CLIC workshop, 12th -16th October 2009 at CERN

* Clarke-san explained the e-/e+ activity in the coming GDE meeting at Tsukuba. In the the GDE meeting at Tsukuba, we will have the AAP (accelerator advisory panel) sessions. In the AAP sessions, a 30-minutes session for the e+ issues is scheduled (only 30 minutes!). Clarke-san will make a presentation in the AAP session. We also will have a one-day parallel session dedicated to the e+/e- issues. Two - three weeks before the GDE meeting at Tsukuba, we will have a WebEx meeting of e+ group.

* Information about possible meetings related to e+/e- issues in near future. Followings are the informations from Yokoya-san and Clarke-san. But be carful, non of those meeting were decided yet.
  (i)   Regular GDE meeting in Dec/2009 or Jan/2010.
  (ii)  GDE meeting at Albuquerque in late 2009.
  Also Louis-san pointed out,
  (iii) The GDE report of ILC-TDP1 and the CLIC report of the CDR is planned in ICHEP conference at Paris in July 2010.

The date of the next meeting will be on April 9th.

Reported by T. OMORI

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Note : Old minutes:
You can get the materials of the old "Euro-Japan meeting"
from the address shown below.
http://www-jlc.kek.jp/~omori/EuroJapanMeeting/

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