Minutes of the 8th "ILC-CLIC e+ studies" meeting

Date: October 6th, 17:00(JST) 10:00(CET), 2009

A part of Attendees (whom Omori was able to hear the voices):
Louis(CERN), Vivoli(CERN), Eugene(NSC-KIPT), Chehab(IPNL/LAL),
Sabine(DESY-Z), Andriy(DESY-Z), Andreas(DESY-Z), Norbert(STFC),
Stefan(DESY), Takahashi(Hiroshima), Suwada(KEK), Urakawa(KEK),
and Omori(KEK)

Agenda

1. Preparation of the BN window test : Omori
2. Pilot running results of the hybrid target exp. : Takahashi-san

Presentations:

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20091006/
20091006-Omori_BNwindow.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20091006/
20091006-Takahashi_HybridPilotRun.pdf

1. Preparation of the BN window test:

   At the abort dump of the KEKB high energy ring,
   a preparation of the experiment to test BN window is
   ongoing.

   Omori reported the status of the preparation.

   Please see "20091006-Omori_BNwindow.pdf".

   The liquid lead target is a candidate of the target
   of the 300 Hz e+ generation option. At the head of the
   target where the drive e- beam is going through, liquid
   lead was shield by the BN windows.

   Heating issue of the target was simulated by ANL people.
   The simulation showed that the BINP liquid lead target
   was able to survive the heating caused by shower in
   the 300 Hz scheme. We thought that the simulation was
   reliable to evaluate the heating issue which had
   relatively long time constant, ~ 1 ms.

   On the other hand, the shower also generated acoustic
   shock wave in the target. The time constant of this effect
   is short, about 100 n sec. Survivability of the BN window
   against the shock wave is important.

   The test at the abort dump was planed to check the

shock wave issue. The beam parameters at the abort dump is well matched to that of the 300 Hz scheme.
A sample is a sandwich which consists of BN, solid lead plate, and BN.

The preparation of the experiment is ongoing.
There will be four short beam time in October-December.
The first experiment is scheduled on October 22nd.

After Omori's presentation we made discussions.

Question by Chehab-san:
  Beam size?
Answer by Omori:
  About 0.2 mm in vertical and 0.7 mm in horizontal.
Question by Chehab-san:
  Can we change the beam size?
Answer by Omori:
  No.

Question by Louis-san:
  Why the time constant of shock wave effect is
  100 n sec ?
Answer by Omori:
  This is very rough value. It could be 50 n sec
  or could be several 100 n sec.

Question by Louis-san:
  Do you agree that we need a spare target in a LC design?
Answer by Omori:
  Yes, I agree.

2. Pilot running results of the hybrid target experiment:

The pilot running of the hybrid target experiment at KEKB linac was performed in the end of September.

Takahashi-san reported the results.

Please see "20091006-Takahashi_HybridPilotRun.pdf".

The hybrid target is a candidate of the target of the 300 Hz e+ generation option. It is expected that both heat and shock wave problems can be significantly reduced by employing the hybrid target.

The test at the end of the KEKB linac was planed to confirm the effectiveness of the hybrid target.

In the last summer major equipments, the sweep magnet, the detector (analyzer), the beam dump, and the targets, have installed at the end of KEKB linac. The computer control of the targets was not installed yet.

Pilot running was done on September 21st-23nd.
Background was measured and it was low.
Rocking curves were measured.

Takahasi-san showed the very preliminary results
of the analysis.

After Takahshi-san's presentation we made discussions.

Especially, Suwada-san pointed out that we had possibility
to be trapped at a local maximum. Suwada-san and
Chehab-san pointed out that there were several channeling
axes. Chehab-san also pointed out importance of an
accurate initial alignment of the crystal by using a
laser.

The date of the next phone meeting will be November 10th.

Reported by T. OMORI
