

Minutes of the 10th "ILC-CLIC e+ studies" meeting

Date: January 14th, 17:30(JST) 9:30(CET), 2010

A part of Attendees (whom Omori was able to hear the voices):
Louis(CERN), Chehab(IPNL/LAL), Dadoun(LAL), Xu Chenghai(IHEP/LAL),
Freddy Poirier(LAL), Sabine(DESY-Z), Andriy(DESY-Z),
Andreas(DESY-Z), Stefan(DESY), Norbert(STFC), Takahashi(Hiroshima),
Kamitani(KEK), Urakawa(KEK), and Omori(KEK)

Agenda

1. Brief Report on Hybrid tgt exp. at KEK-LINAC: Takahashi-san
2. Date of Posipol 2010 : Omori

Presentations:

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100114/20100114-Takahshi_HybridTest.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100114/20100114-Omori_POSIPOL2010.pdf

1. Brief Report on Hybrid target experiment at KEK-LINAC:

Takahashi-san presented a brief report on the hybrid target experiment at KEK-LINAC.

Please see "20100114-Takahshi_HybridTest.pdf".

The experiment was done on January 10th-11th.
This was the 2nd second experiment of the series.

The experiment was performed at the end of the KEK 8 GeV linac. (the injector to the KEKB ring and the KEK photon factory rings)

- * E(beam) : 8GeV
- * Bunch Charge: ~nC
- * Repetition : up to 50Hz

Purposes of the 2nd experiment:

- (a) confirm results of the first experiment (Sep 2009).
- (b) measure temperature of amorphous targets.
 - * 8mm tungsten with hybrid configuration
 - * 18mm tungsten with conventional configuration
 - * changing beam repetition rate

In the 2nd experiment, we installed the thermocouples and a camera for infrared thermography to observe temperature change of the targets.

Two thermocouples were pasted on the back surfaces of the amorphous tungsten targets, 8mm and 18 mm targets.

The camera observed the back surface of the amorphous tungsten target through infrared mirrors.

However, actually, soon after starting the experiment we found the camera was dying due to radiation damage. So we dismantled the camera. Thus only thermocouples were available in the experiment.

Rocking curves were measured. In the measurement, the 8 mm target was used as a converter. (In the September experiment, 0.4 mm and 8 mm amorphous targets were used as converters.) The enhancement by the channeling effect was measured to be ~ 3 .

In the previous reports of the September experiment, it was reported that the enhancement factor measured by the 8 mm converter was about 1.2. We found that the previous reports were wrong. We found that in the September experiment the HV setting of the detector was too high. The detector was saturated at the peak of enhancement when we used the 8 mm converter in the September experiment. In the 2nd experiment, we set the HV at proper point.

List of the runs was presented, but no results of temperature measurements and of momentum distribution measurements were presented.

Summary and prospect:

- (a) Accumulate more data for
 - * hybrid configuration
 - * conventional configuration
- (b) with various combination of
 - * 1 mm crystal
 - * 8mm and 18 mm amorphous targets
 - * sweeping magnet on/off
- (c) temperature of amorphous target were measured
- (d) momentum distribution
- (e) data analysis going on
- (f) comparison with simulation is important
 - * Geant4 sim. for amorphous is being ready at Hiroshima
 - * need crystal part with realistic beam condition
- (g) Results will be presented in LCWS10, Mar/26-30, at Beijing.
- (h) next beam time expected in beginning of July

After Takahashi-san's presentation we made discussions.

Question by Louis-san:

Did you measure temperature?
You did not show temperature data.

Answer by Takahashi-san:

We measured temperature. But, the data was taken a few days ago. We need time to understand the data.

Question by Chehab-san:

Did you make pre-alignment of the crystal?

Answer by Takahashi-san and Omori:

We tried to make the pre-alignment. We irradiated the back surface of the crystal with a laser beam and observed the position of the reflected beam. However it seemed that the back surface of the crystal was not polished. The spot of the reflected laser beam was very blurring. So we were

not able to make the pre-alignment with reasonable accuracy.
Very coarse pre-alignment was done.

2. Date of Posipol 2010:

Please see "20100114-Omori_POSIPOL2010.pdf".

Omori proposed May/31st - June/2nd for the date
of Posipol 2010. The proposal was approved.

The date of the next phone meeting will be February 18th.

Reported by T. OMORI