Minutes of the 10th Euro-Japan Compton capture&stacking meeting

Date: May 13rd 17:00(JST) 10:00 (CET), 2008

A part of Attendees (whom Omori was able to hear the voices):
Vivoli(LAL), Eugene(NSC-KIPT), Frank(CERN), Ian(Cockcroft),
Takahashi(Hiroshima), Kamitani(KEK), Li(IHEP), and Omori(KEK)

Agenda:
1. Discussion, Upcoming Meetings
3. Capture simulation update : Vivoli-san
4. Stacking simulation update : Frank-san
5. Rod target update : Eugene-san
6. General Discussions

Presentations and materials:

Upcoming Meetings:
http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080513/
20080513-Discussion_UpcomingMeetings.pdf

A. Vivoli: Capture Simulation Update
http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080513/
20080513-Vivoli_Table.pdf

F. Zimmermann: Staking Simulation Update
http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080513/
20080513-Frank_StackingSimulationsUpdat4.pdf

E. Bulyak, Rod target update:
http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080513/
20080513-Eugene_CT-pres13.pdf

Summary of the discussions:

1. Towards Upcoming Meetings:

   (a) FJPPL at Paris (May 14-16)

       Fabian-san and Urakawa-san will attend the meeting.

   (b) Nano-Beam WS at at BINP (24-29/May)

       The Nano-Beam WS at BINP will include advanced
       accelerator technonogies, such as beam handling by
       crystals, advanced positron generation methods,
       gamma-gamma colliders.

       Chehab-san, Urakawa-san, Takahashi-san, Kamitani-san
       and Omori will attend the WS.

In this occasion we will have the meeting with BINP
people to discuss positron generation R/Ds.
The date of the meeting will be afternoon of 25th.

(c) GDE meeting at Dubna (4-6/June)

Kuriki-san will attend the GDE meeting.
Positron source will be discussed in the meeting in
the view point of the cost reduction.

Please see "20080513-Discussion_UpcomingMeetings.pdf"
for other meetings.

2. Capture simulation update

Please see "20080513-Vivoli_Table.pdf"

Vivoli-san reported a significant progress.

The top table of the page-2 showed the results of the
previous simulation.

This time, he newly put a bunch compressor just before at
180 MeV. The results of this new simulation were shown in the
middle table of the page-2. The bunch compressor made the
bunch length about half but the energy spread about twice.
Then he accelerated the bunches up to 1.129 GeV.
(Due to lack of time, he did not make simulation up to 5 GeV.)
Then he compared the results of the new simulation and the
results of the previous simulation at 1.129 GeV, especially
bunch length and energy spread.

Table of the comparison

new simulation	previous simulation
sig_z = 0.30 cm	sig_z = 0.53 cm
sig_E = 10.36 MeV	sig_E = 18.74 MeV

The new simulation showed significantly smaller values in
both sig_z and sig_E.

He will continue the optimization.

Frank-san pointed out that the energy compressor at 5 GeV
will make further improvement because small sig_E is
important for the stacking in a DR.

Vivoli-san made estimation of number of positrons in
various energy ranges.

3. Stacking simulation update

Please see "20080513-Frank_StackingSimulationsUpdate4.pdf"

(a) ILC

Frank-san reported the first result of the unstable-point injection. He tried 20 MHz continuous injection at an unstable-point. (20 MHz = inject every 6th turn)

The best results so far was 37% stacking loss.

The previous simulation of continuous injection, witch was NOT unstable-point injection, gave us 80% stacking loss.

The unstable-point injection gave us a significant improvement.

Frank-san will continue the optimization.

(b) CLIC

As the preparation to start the stacking simulation for CLIC, Frank-san made the summary of CLIC beam parameters with help from Louis-san.

The sig_delta at the exit of the linac seemed large. We need check.

Now the repetition rate of CLIC is 50 Hz (it was 150 Hz in old design). This slow repetition rate is favorable for a stacking.

Frank-san pointed out that we were able to employ a pre-DR in CLIC. This is the big advantage of CLIC in the stacking.

5. Rod target update:

Please see "20080513-Eugene_CT-pres13.pdf"

Eugene-san made optimization of the length, the radius, and the total thickness (radiation length) of the sliced-rod targets.

He found that maximum yield was obtained when length = 100 cm radius = 10 mm and total thickness = 3.5 rl.

The improvement of the yield from the results in the last meeting was about 20%.

The date of the next meeting is 2nd June, 17:00 JST (10:00 CET).

Reported by T. OMORI