

## Minutes of the 12nd Euro-Japan Compton capture&stacking meeting

Date: July 15th 17:00(JST) 10:00 (CET), 2008

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

### Agenda:

1. Discussions, Upcoming Meetings
2. Agenda of e+ Web meeting (22nd/July) : Kuriki-san
3. Capture simulation update : Vivoli-san
4. Advanced Conventional Source with Hybrid Target : Chehab-san/Omori
5. Pre-damping ring option of Ring Compton scheme : Omori
6. Large Compton Ring Option : Omori

### Presentations and materials:

#### Upcoming Meetings:

[http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/  
20080715-Discussion\\_UpcomingMeetings.pdf](http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/20080715-Discussion_UpcomingMeetings.pdf)

M. Kuriki: Agenda of e+ Web meeting (22nd/July)  
[http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/  
20080715-Kuriki\\_AgendaE+Meeting](http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/20080715-Kuriki_AgendaE+Meeting)

A. Vivoli: Capture Simulation Update  
[http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/  
20080715-Vivoli\\_Update.pdf](http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/20080715-Vivoli_Update.pdf)

R. Chehab: Advanced Conventional Source with Hybrid Target  
[http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/  
20080715-Chehab\\_HYBRID.pdf](http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/20080715-Chehab_HYBRID.pdf)

T. Omori: Pre-damping ring option of Ring Compton scheme  
[http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/  
20080715-Omori\\_EntireSystemPreDR\\_YAG\\_ver2.pdf](http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/20080715-Omori_EntireSystemPreDR_YAG_ver2.pdf)

T. Omori: Large Compton Ring Option  
[http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/  
20080715-Omori\\_EntireSystem\\_LargeCR.pdf](http://www-jlc.kek.jp/~omori/EuroJapanMeeting/20080715/20080715-Omori_EntireSystem_LargeCR.pdf)

### Summary of the discussions:

#### 1. Towards Upcoming Meetings:

- (a) e+ WebEx meeting (July/22)

The meeting will be held on 22nd/July.  
Kuriki-san explained the agenda of the meeting.

(b) Compton WS at Sardegna (Italia) (September 8th-12nd)

This is the first WS which covers all Compton activities.  
The subjects will be various Compton applications in all areas.

From ILC e+ community, Fabian-san, Variola-san, Urakawa-san, Yakimenko-san, and Omori will attend.

(c) GDE meeting at Chicago (16-20/Nov.)

Positron source will be discussed in the meeting in the view point of the cost reduction.

Please see "20080715-Discussion\_UpcomingMeetings.pdf" for other meetings.

2. Agenda of e+ Web meeting (22nd/July)

Please see "20080715-Kuriki\_AgendaE+Meeting".

Kuriki-san explained the agenda of the meeting.  
The concept of the Minimam Machine will be explained in the meeting by Clarke-san.

3. Capture simulation update

Please see "20080715-Vivoli\_Update.pdf".

He studied the progress of the energy, the energy spread, the phase space (E-T) distribution of the positron beam from the target to the end of 5 GeV linac (from 0 to 3400 meters).

His study showed that a banana like shape of the phase space (E-T) distribution is a potential cause of the loss in the injection into the DR.

4. Advanced Conventional Source with Hybrid Target

Omori made a presentation for Chehab-san.

Please see "20080715-Chehab\_HYBRID.pdf".

Chehab-san studied the usage of the crystal-amorphous hybrid target. His study showed that the peak energy deposition density (PEDD) in the hybrid target was about 1/5 of PEDD in a purely amorphous target. Also, PEDD in the hybrid target was about 1/5 of PEDD in a purely crystal target.

However, we still have the target problem even employing the hybrid target, if we produce 3000 bunches at once.

In order to cure this problem, 100-m-sec-generation was proposed. If we produce 3000 bunches in about 100 m sec (we generate mini-trains in 300 Hz), the hybrid target can survive from thermal shock wave.

#### 5. Pre-damping ring option of Ring Compton scheme

Omori presented the pre-damping/stacking ring option of the Ring Compton scheme.

Please see "20080715-Omori\_EntireSystemPreDR\_YAG\_ver2.pdf".

In this scheme a small pre-damping/stacking ring (1/10 of the main DR) was assumed. All stacking is done in the pre-damping/stacking ring. So, no stacking is necessary in the main DR.

We need a stacking simulation to evaluate this scheme.

#### 6. Large Compton Ring Option

Omori presented the Large Compton option.

Please see "20080715-Omori\_EntireSystem\_LargeCR.pdf".

In this scheme we employ a large Compton ring. For simplicity, Omori assumed the circumference of the Compton ring was as same as that of the main DR.

Large circumference allows large number of bunches in the Compton ring. Omori assumed that the Compton ring and the DR have the same number of bunches.

By employing the large number of bunches in the Compton ring, we can reduce  $N_g/N_e$  in the laser-electron collision. This ease the beam dynamics issues in the Compton ring.

Omori was afraid of the cost of the large Compton ring.

The date of the next meeting will be decided later.

Reported by T. OMORI