

## Minutes of the 16th "ILC-CLIC e+ studies" meeting

Date: September 2nd, 17:00(JST) 10:00(CET), 2010

A part of Attendees (whom Omori was able to hear the voices):  
Louis(CERN), Vivoli(CERN), Peter(NSC-KIPT), Chehab(IPNL/LAL),  
Chenghai(IHEP/LAL), Chaikovska(LAL), Freddy(LAL), Zus(LAL),  
Fabian(LAL), Sabine(DESY), Andreas(DESY), Andriy(DESY),  
Gudi(Hamburg), Stefan(DESY), Norbert(CI), Pei(IHEP),  
Takahashi(Hiroshima), Suwada(KEK), and Omori(KEK)

### Agenda:

1. Discussion, Date of POSIPOL 2011: All
2. Installation of the French 4-mirror cavity at ATF: Fabian-san

### Presentations:

<http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100902/20100902-DateOfPOSIPOL2011.pdf>

[http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100902/20100902-Zomer\\_4M\\_Cavity\\_Installation.pdf](http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100902/20100902-Zomer_4M_Cavity_Installation.pdf)

### 1. Date of POSIPOL 2011:

#### (a) Date of POSIPOL 2011:

First, Omori presented the summary of IHEP's preference (the summary made from Gao-san's mail).

About IHEP's preference, please look at "20100902-DateOfPOSIPOL2011.pdf".

Then we made discussions on the date of POSIPOL 2011 at Beijing. We consider that the convenience of the people who have teaching duties in universities.

Then we reached the consensus.

We selected two candidate dates.

- (1) late September (before Oct. 1st)
- (2) very end of August (before Sep. 1st)

The most preferable candidate is (1), because if we choose (2) some people may be still in vacation.

#### (b) POSIPL 2012:

We also made some discussion on POSIOPOL 2012.

The POSIPOL 2012 will be hosted by DESY as the decision of IPC.

About the actual venue of POSIPOL 2012, our consensus is that the venue will be either Hamburg, around Hamburg, Berlin, around Berlin, or somewhere in Germany.

## 2. Installation of the French 4-mirror cavity at ATF:

Fabian-san reported development of the French 4-mirror cavity and its installation into ATF.

Please look at "20100902-Zomer\_4M\_Cavity\_Installation.pdf".

### (a) Two step R/D.

Step 1: 25 kW in cavity.

Step 2: 500 kW in cavity.

Goal : ~ MW in cavity.

### (b) Why 4-mirror cavity?

Two-mirror cavities are unstable against transverse misalignments. The 4-mirror cavities can solve the problem.

### (c) Why non-planer cavity?

The planer 4-mirror cavities are astigmatic. They have linearly polarised eigen-modes, and are unstable at high finesse.

The non-planer 4-mirror cavities have circularly polarized eigen-modes and are stable.

### (d) Prototype cavity.

The tests using the low finesse prototype cavity in air were performed to check astigmatism and mode shape/propagation.

(Arnaud, Bell Syst. Tech. (1970)2311)

### (e) The non-planer 4-mirror cavity.

The non-planer 4-mirror cavity for ATF was designed and constructed by the LAL-CELIA-LMA collaboration in France.

### (f) The laser amplification R&D.

The laser amplifier was developed. A Ytterbium doped photonic crystal fiber was adopted.

### (g) The movable stage.

The movable stage of very fine horizontal and vertical movements, ~ 1 micron, was developed and prepared by KEK.

(h) Feedback system.

The digital Pound-Drever-Hall feedback was developed to lock the laser oscillator to the cavity.

(i) Installation to ATF.

The French team (9 persons in total) visited KEK in July-September to install the cavity in ATF with KEK team.

After Fabian-san's presentation, we made discussion.

Question by Louis-san:

Do you change the optics of ATF ring for the experiment.

Fabian-san's answer:

No, I don't think so.

Omori's comment:

No, we don't change the optics.

In principle, we can change the optics to make smaller e-beam spot size at laser-electron collision point.

If we do so, we can get larger amount of gamma-rays.

However, changing optics requires very long time for the tuning for the new optics. Then it also requires

very long time of tuning to go back to the normal optics for other experiments. So in practical view

point, the new ring optics for the collision

experiment is not possible in the current ATF programs.

The date of the next phone meeting will be on October/14th.

Reported by T. OMORI