

Minutes of the 7th "ILC-CLIC e+ studies" meeting

Date: September 3rd, 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), Dadoun(LAL),
Poirier(LAL), Chehab(IPNL/LAL), Sabine(DESY), Andriy(DESY),
Andreas(DESY), Takahashi(Hiroshima), Kuriki(Hiroshima),
Suwada(KEK), Kamitani(KEK), Urakawa(KEK), and Omori(KEK)

Agenda

1. Talk foreseen for PST 2009 : Louis-san
2. Preparation of hybrid target test at KEK : Suwada-san
3. Continuous (top-up) injection of KEKB : Kamitani-san

Presentations:

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20090903/20090903-Louis_CLIC_PST2009.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20090903/20090903-Suwada_Ee+ExpSetUp.pdf

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20090903/20090903-Kamitani_InjectionSchemeKEKB.pdf

1. Talk foreseen for PST 2009:

Louis-san presented a draft of his talk foreseen for PST 2009 (Polarized Sources & Targets; September 07-11, 2009 Ferrara, Italy).

Please see "20090903-Louis_CLIC_PST2009.pdf".

His talk was a full review of electron and positron sources of CLIC, including the baselines and the options.

The CLIC beam generation studies were focused on three configurations.

- (1) Base Line configuration:
3 TeV (c.m.) -polarized e- and unpolarized e+.
- (2) Polarized positron configuration:
3 TeV (c.m.) -polarized e- and polarized e+ with the same charge as (1).
- (3) Double charge configuration:
500 GeV(c.m.) -polarized e- and unpolarized e+ with double charge as (1).

For each configuration, Louis-san presented the design and points of challenge.

- (a) Polarized electron source:
Photocathodes and lasers (CW and pulsed) were discussed.
- (b) unpolarized positron source:
Conventional positron source with the hybrid target was discussed.
- (c) Polarized positron source:
Undulator scheme and Compton scheme (Ring-, ERL-, and Linac-base) were discussed.

2. Preparation of hybrid target test at KEK:

In the switchyard at the end of the KEKB injector linac, a preparation of the experiment to test validity of the hybrid target concept is on going.

Suwada-san reported the status of the preparation.

Please see "20090903-Suwada_Ee+ExpSetUp.pdf".

Here is a summary of the status.

- (1) Setup of the sweeper magnet with a precise alignment and the lead - block shielding was finished (Sep 03).
- (2) Setup of the positron momentum spectrometer was finished with a precise alignment (Aug 28).
- (3) The cabling and cooling - water piping for the sweeper magnet was finished (Sep 03).
- (4) Setup of the goniometer for the crystal target and the linear stage of the amorphous target will be finished on Sep 04.
- (5) The DAQ system and signal check are underway.
Maybe the next week.

3. Continuous (top-up) injection of KEKB:

Positron stacking is a key to realize the ERL/Ring Compton scheme. As a case study, Kamitani-san reported the methods used and considered for KEKB top-up injection.

Please see "20090903-Kamitani_InjectionSchemeKEKB.pdf".

(1) Present scheme:

The present injection scheme uses transverse phase space. The energy of the injected beam is as same as that of the ring. But the beam is inject to the ring with shifted transverse momentum. After transverse oscillation in many turns, the injected beam merged to the beam in the ring.

(2) Synchrotron injection scheme:

This scheme is now considered for KEKB upgrade. This uses longitudinal phase space. The energy of the injected beam is sifted from that of the ring. But the beam is inject to the ring with no sifts in transverse position, in transverse momentum and in longitudinal position. After longitudinal oscillation in many turns, the injected beam merged to the beam in the ring.

There is no transverse oscillation in this schem. Since aperture near IP is limited, by employing this scheme they has possibility to reduce beam loss near IP.

The date of the next phone meeting will be October 6th.

Reported by T. OMORI
