Minutes of the 12th "ILC-CLIC e+ studies" meeting

Date: March 18th, 17:30(JST) 9:30(CET), 2010

A part of Attendees (whom Omori was able to hear the voices):
Eugene(NSC-KIPT), Chehab(IPNL/LAL), Chenghai(IHEP/LAL),
Irina(LAL), Sabine(DESY-Z), Andriy(DESY-Z), Stefan(DESY),
Norbert(STFC), Takahashi(Hiroshima), Kuriki(Hirosima),
Suwada(KEK), Urakawa(KEK), Yokoya(KEK), and Omori(KEK)

Agenda

1. Revisit conventional parameter space: Takahashi-san:

Presentations:

http://www-jlc.kek.jp/~omori/ILC-CLIC-e+Studies/20100318/
20100318-Takahshi_survey.pdf

1. Revisit conventional parameter space:

Takahashi-san reported results of the systematic study
of the parameter survey of the conventional positron source.

Please see "20100318-Takahshi_survey.pdf".

Motivation:

* Preparation of positron sources by;
  − well established scheme and/or developable with
    existing resources.

* 300Hz scheme:
  − relaxes thermal problem on targets.
     --> lower speed rotation target will do.
  − but still have the shock wave problem.

--> survey (again) parameters of conventional targets
    in the "drive beam energy"−"target thickness" plane.

--> See if conventional sources survives the ILC criteria.

Methods:

* Simulation by Geant4 with Tungsten target.
  − total positron yield.
  − accepted positron yield with AMD acceptance.
       acceptance: T.Kamitani and L.Rinolfi,
                   CLIC note 465

- Peak Energy Deposit Density (PEDD).
- Total Energy Deposit (TED).

* In the space "Beam Energy"–"Target Thickness"
  - beam spot size at 1.0mm, 2.5mm, 4.0mm

Results:

Please see the plots in "20100318-Takahshi_survey.pdf".

Takahashi-san presented the results of general analysis in which the contours of PEDD/e- and TED/e- were plotted.

Then, he discussed the way to convert the results of the general analysis to the values in the 300 Hz scheme. Takahashi-san presented the contours of J/g, kW and target temperature in the 300 Hz scheme.

Summary:

* Conventional target might have solution for ILC with 300Hz scheme.

* to go forward,
  - need detail study for capture section as relatively large beam size is preferred.
  - heating has to be studied including cooling system.
  - shock wave threshold has to be understood particularly under multi bunch condition.

The date of the next phone meeting will be April 15th.

Reported by T. OMORI