

Activities for ILD1

T. Tauchi, 18th February, 2008

First ILD workshop, DESY, Zeuthen

14-16 January 08 ; Brief summary of MDI/I has been distributed

MDI/Integration (FFIR) meetings

29 January 08 ; Task assignment and

B-field issues for next Webex meeting

14 February 08 ; Permanent QD0, loss factor at

step/cone beam pipe, 3D GLD sol.

and plan at TLC08, Sendai

Task assignment from the ILD workshop

H. Yamaoka: The technical coordinator at KEK

Overall structure of ILD1 (GLD')

- design of solenoid-cryostat for the CMS style assembly
- strength of 12-shape iron structure and assembling method with supporting structure of HCAL with respect to the 12 shape
- support tube with canti-lever system

Update on the design of coil and cryostat

- ID/OD of the cryostat=3.3/3.85m, $z=3.75\text{m}$, $E/M=12$
- stray field=100G at 10m from IP, $dB/B < 0.0004$ for $R < 1.75\text{m}$, $Z < 0.5\text{m}$

Y. Suetsugu: Beam pipe design

Estimation of wakefield in the LDC cone beam pipe

- its strength and possible location of vacuum pumps

M. Kawai: 3D magnetic calculation of solenoid

- 3D B-field with and without anti-DID, especially at the pair monitor

T. Sanami: Self-shielding property of ILD

Next MDI Webex meetings

We have asked TPC contacts and the optimization WG conveners, 1/30 ;

Before setting up the meeting, the issues should be nailed down.

Relevant issues might be listed below;

- (1) field uniformity ; LCTPC
- (2) stray field ; institutes in the world
- (3) TPC structure ; sensitive volume and actual overall size; LCTPC
 - (i) especially the inner "physical radius" and z-boundary
 - field cage, endcap with water cooling system
 - (ii) support system -
- (4) B-field strength ; physics performance ; ILD optimization group
, where background will be controlled by B-field

As indicated above, LCTPC group is expected to contribute for (1) and (3), and the optimization working group is expected to contribute for (4).

Also, we would like to gather information on tolerance of stray magnetic field around the detector (in experimental hall) from your institutes, universities as much as possible.

TPC R&D for a ILC Detector by LCTPC group

(a) Magnetic field.

Non-uniformity of the magnetic field of the solenoid will be by design within the tolerance of $\int_{\ell_{\text{drift}}} \frac{B_r}{B_z} dz < 2\text{mm}$ as used for previous TPCs. This homogeneity is achieved by corrector windings at the ends of the solenoid. At the ILC, larger gradients will arise from the fields of the DID (Detector Integrated Dipole) or anti-DID, which are options for handling the beams inside the detector at the IRs with 14 mrad crossing-angle (as has been decided for the ILC). This issue was studied intensively at the 2005 Snowmass workshop[22][23], where it was concluded that the TPC performance will not be degraded if the B-field is mapped to 10^{-4} relative accuracy and the calibration procedures outlined in the next point (Sec. 3.8) are followed. These procedures will lead to an overall accuracy of 2×10^{-5} which has been shown to be sufficient[23] and was already achieved by the Aleph TPC[22]. Based on past experience, the field-mapping gear and methods should be able to accomplish the goal of 10^{-4} for the B-field. The B-field should also be monitored during running since the DID or other corrector windings may differ from the configurations mapped; for this purpose the option of a matrix of Hallplates and NMR probes mounted on the outer surface of the fieldcage is being studied.

Field uniformity of $\int B_r/B_z < 2\text{mm}$ will be achieved by corrector windings ?

B field mapping of 10^{-4} accuracy will guarantee the TPC performance ?

The non-uniformity can be allowed.

ILD-MDI plan at TLC08

Meetings with engineers as much as possible

Tasks of the technical coordinators

Should they collect engineering studies of each detector ?

What is the integration task ?

- structure of sub-detector
 - for the sub-detector groups
- support structure for MDI/I WG

So, all the engineering studies will be coordinated by the technical coordinators ?

Subdetector Contacts and Engineers

Candidates will be nominated by each R&D group.

ECAL -

HCAL -

TPC - R.Settles, K.Fujii

VTX -

FCAL - W.Lohmann

SiLC -

Muon - nobody. Structure is covered by MDI

Solenoid -

Pacman -

Integration (including support structures of sub detectors) -

M.Jore (LAL), C.Clerc, M.Anduze(LLR)

K.Sinram, N.Meyners(DESY)

H.Yamaoka, Y.Higashi, N.Higashi (KEK)

Andrei's Proposal of BDS-MDI sessions at TILC08, Sendai

15 February, 2008

discussion aimed to answer critical or strategic questions

	GDE BDS /MDI/ATF	ACFA MDI	Det.Con cepts	GDE BDS Joint with?	Program GDE BDS (ACFA MDI)	Talks / lead discussions
4th, 9:00-10:30	yes	no	no	no	Strategy, program and planning	
4th, 11:00-12:30	yes	yes	no	yes w ACFA MDI	IR	Brett -- Update on FD Markiewicz -- SiD MDI etc IDAG -- LOI schedule TBD-- how L* dep. included in det optimiz Grah -- FCAL beam diagnostics
4th, 14:00-15:30	yes	yes	no	yes w ACFA MDI	CLIC-MDI	Schulte -- CLIC IR & MDI TBD-- CLIC pars & E and what to keep common TBD -- what should we do for CLIC MDI Abe -- GLD background
4th, 16:00-17:30	yes	no	no	no	CLIC-non-MDI	Schulte -- CLIC BDS design Schulte -- CLIC extract. & dump Kaefer -- BDS polarimetry
5th, 9:00-10:30	yes	yes	no	yes w ACFA MDI	ATF and yy	Parker -- ATF2 SC FD Suehara -- Shintake IR mon. Takahashi -- yy challenges
5th, 11:00-12:30	yes	no	no	no	IR integration plans	TBD -- what IR integ we do & when
5th, 14:00-15:30	yes	no	no	no	CLIC-ILC work planning	Draft a work plan
5th, 16:00-17:30	yes	no	yes	yes w concepts for 30min	Work out suggn for Concepts	Finalize IR integration work plan Show plan to concepts