MDI / Integration W.G. Plan

T. Tauchi, 7th March, 2008

IR integration times scale

May-June 2008

GDE meeting, Dubna

June 2008

ECFA workshop

EPAC workshop

LCWS 2008, November. 2008

- Interface document, draft

LoI, April 2009

- Interface document

April 2009 to May 2010 (TDP-I)

- design according to interface doc.

May 2010: LHC and start of TDP-II

- design according to interface doc and adjust to specific configuration of ILC

1. Items which interface each concept to the BDS

push-pull time constraints	
baseline IR hall model (dimension, crane, shafts etc)	ILC CFS
QF1 support model	
QD0 alignment specification	
where is detector v.s. BDS dividing line	
Pair monitor input to luminosity feedback system	
Machine/detector DAQ compatibility	
DID or Anti-DID or nothing?	

2. Items which are unique to each detector concept and which must be mutually compatible for push pull

QD0 magnetic system (cryostat & feed boxes) for each L*	
Shielding schemes : walls, PACMAN	ILC/ILD team, Dubna
Motion system; platform versus rollers/air pads on floor	Dubna
Cryogen distribution system	Emmanuel Tsesmelis
Vacuum requirements and solutions	Emmanuel Tsesmelis

3D CAD, 1st ILD meeting, Zeuthen

1. CAD master :Matthieu Joré (LAL, French technical coordinator)
   to integrate iron structure and sub-detectors for an ILD detector
   to coordinate a common file such as STEP and files of material properties
   to prepare a web-site where the files can be uploaded and downloaded

2. CATIA possibility at KEK will be considered, if it is cheap !

3. Common data base
   We will use the ILD homepage; STEP files and material property files

4. Present CADs and engineers for ILD group

Solid Edge(H.Yamaoka) and OneSpace Modeling 2007 (KEK machining center);
2 engineers at KEK
- suggestion to use AUTOCAD and STEP common file for 3d-CADs
- e.g. magnetic field calculation needs detailed information from CAD-data.
- need a cheap CAD as a common tool especially at universities

Inventor for 3d-CAD of Lumical; 1 engineer in Poland
CATIA and Inventor; 5 engineers in France
EDMS (I-DEAS) is used in CALICE, which is not easy.
I-DEAS and Solid Edge; 2 engineers at DESY
- Since I-DEAS is complicated, we must use it on a daily basis.

Detector Solenoid

Coil - stray field max. 200G both in z and R

- TPC field uniformity = “2mm”-conventinal value

Anti-DID will be designed by M.Kawai with B.Parker.

Cryostat strength for supporting HCAL and ECAL

B-field 4 Tesla max. (4 layers with coils a la CMS)

ID/OD = 3.3m/3.85m , Z=3.75m (3.79m at ILD2)

10cm = the space between the cryostat and endcap

- Sacray F. Kirchre
- KEK H. Yamaoka (Technical coordinator at KEK)

Iron Structure

iron - shape

- thickness of iron-plate

3-rings for surface assembly a la CMS

gaps : 5cm between rings, 2.5cm at both end

(15cm in CMS)

endcaps

overall thickness

muon chambers : no. of layers for tail catcher?

square hole (ILD2)

PACman

- T. Sanami will estimate the self-shielding with gaps.
- DESY will design the endcap, PACman and opening.

Forward Region

Support tube

for Lumcal, Lhcal, QD0, BPMs, pumps, beam pipes

- KEK (H.Yamaoka) : cylinder -
- France : square - 70cm x 70cm

IP beam pipe

cone or straight

- FCAL collaboration : forward calorimeters, pair mon.
- Y. Suetsugu : wakefield, FEA analysis, pumps

Others

TPC　inner radius　by LCTPC

Silicon inner detector - barrel and forward discs:

- France　: how to support them for integration

Calorimeters

12 or 8　shape in the barrel

(SiD prefers 12　and　cost more for 8)

ILD2 : 8 is simpler structure

- Ask　calorimeters and　the optimization groups for the shape

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 - F. Kirchre, H.Yamaoka

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)