

Workshop Charge


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LCWS08, Nov. 16, 2008, Chicago

Detector Timeline

- Detector Design Phase I : ends 2010
 - Focus on critical R&Ds
 - Detector LOI validation by IDAG
 - Update physics performance
 - Prepare for LHC physics

(PAC: interim progress report at the end of DDP1)
 - Detector Design Phase II : ends 2012
 - Respond to LHC results
 - Confirm physics performance
 - Complete necessary R&Ds
 - Complete technical designs with costing
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Focus on Critical R&Ds

Detector R&D Common Task

- Members (Convener, Deputy, Not LOI-selected)
 - Marcel Demarteau, Franco Giancagnolo, Jan Timmerman, Tohru Takeshita, Dhiman Chakraborty, Andy White, Robert Carosi, Yury Tikhonov, Aurore Savoy-Navarro, John Hauptman, Ron Lipton, Jean-Claude Brient, Wolfgang Lohmann
- LCWS08
 - Special focus meeting : Mon 13:30 SCE 713
 - ‘Monolithic and vertically-integrated pixel detectors’
- Replaces the R&D panel of WWS.
- Coordinates and keeps track of worldwide ILC detector R&Ds. Review them when needed.
- A link to R&D collaborations.

LOI Validation by IDAG

LOI Validation Means:

- Are the physics goals convincing ?
- Is the detector concept suited and powerful enough for them?
- Does push-pull work OK ?
- Is the detector feasible ?
 - Are the necessary R&Ds progressing fast enough ?
 - Is the cost estimation reasonable ?
- Is the group powerful enough for the **design phase** ?

If the answers are all 'yes', then the LOI is "validated."

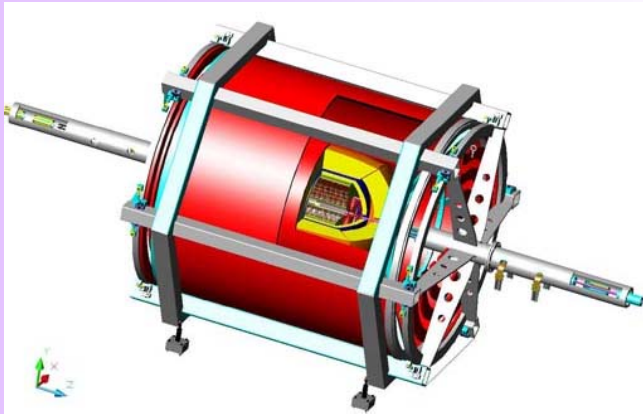
We will hear more from IDAG.

IDAG-LOI Meetings at LCWS08

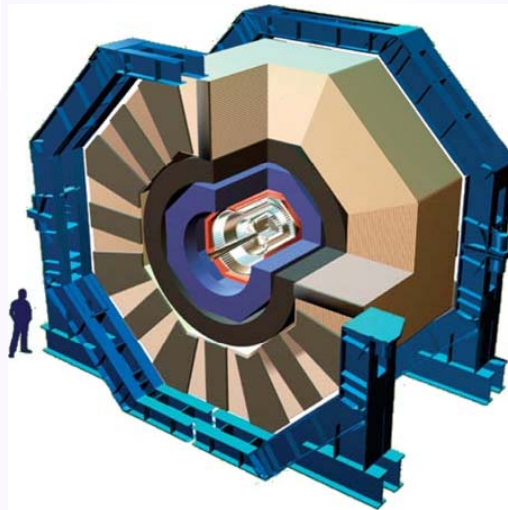
- LOI group presentations
 - Right after this talk (Main Hall B)
- IDAG interview with LOI reps (closed)
 - Mon (17) morning
- Closed IDAG meeting
 - Last face-face meeting before the submission of LOI
- IDAG report
 - Wed (19) 17:10, Main Hall C
- LOI group meetings
 - SiD : Sat (15) 13:00-18:00 in D
 - 4th : Sat (15) 17:00-19:00 in H
 - ILD : Sat (15) 17:00-19:00, Thu (20) 13:30-16:00 in F

Update Physics Performance (LOI group based)

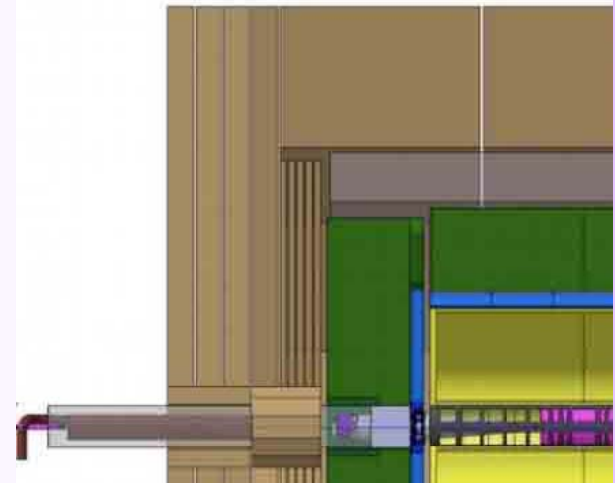
LOI Groups



4th



SiD



ILD
(union of GLD and LDC)

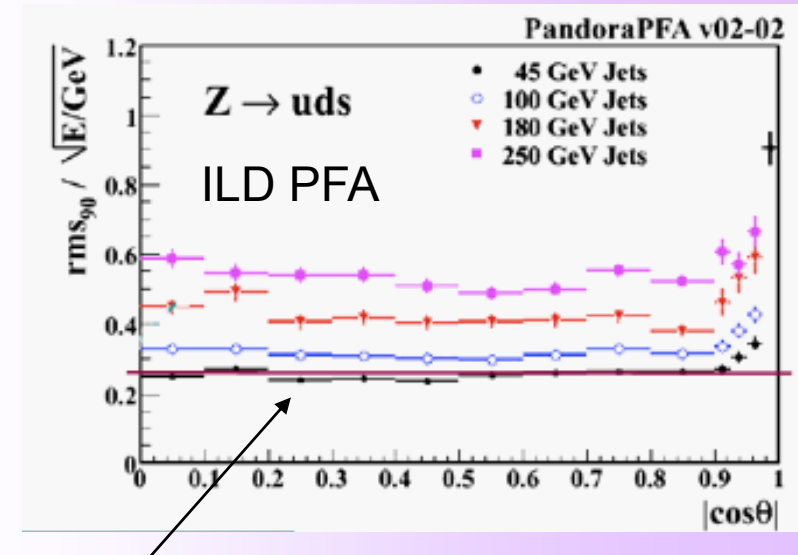
Detector Concepts

	ILD	SiD	4th
Tracker	TPC + Si-strip	Si-strip	TPC or Si-strip or DC
Calorimetry	PFA	PFA	compensating
B	3.5 T	5 T	3.5 T
ECAL Rin	1.84 m	1.27 m	1.5 m
Rmax	6.7 m	6.45 m	5.5 m
Zmax	6.6 m	6.45 m	6.4 m

Rmax, Zmax : Return yoke or outer coil.
 Numbers are preliminary.
 The detector sizes are approximately the same.

Jet Reconstruction Performance

- PFA-based
 - SiD, ILD
- Compensating
 - 4th
- Calorimetry Review (WWS RD panel)
 - ‘PFA and compensation may both be needed’
 - ‘Esp. Forward region’
 - PFA :
 - ‘Extremely promising, but simulation alone cannot be trusted.’
 - ‘Use a large-scale physics prototypes’
 - Compensating
 - ‘Needs more people’ ‘The approach could be the outright winner particularly in the ... forward region’
- Full-simulation results on physics modes are emerging
 - Simulation/reconstruction sessions.



26% $E^{-1/2}$ achieved on Z pole
Full simulation
No cheating
(Goal was 30% $E^{-1/2}$)

Prepare for LHC Result

- Physics common task group
 - Members : (Convener, Deputy, Not LOI-selected)
 - Michael Peskin, Keisuke Fujii, Georg Weiglein, Klaus Desch, Andrei Nomerotski, Tim Barklow, Franco Bedeschi, Aurore Savoy-Navarro, Stewart Boogert, Seong Youl Choi, Yuanning Gao, Jae Yu
 - Geared up and ready to tackle the problems.
 - Physics scenarios in view of LHC results
 - Gamma-gamma physics
- LCWS08
 - A talk 'From LHC to ILC and Beyond' by J. Bagger.
 - In the plenary session this morning.
 - Physics sessions
 - 'SUSY and New physics session' etc.

Machine-Detector Interface

MDI Issues

- Push-pull
 - Stability and speed of switch
- Detector assembly and integration
 - Surface assembly, etc.
- IR components and support structures
 - Beampipes, final quads, support tubes, etc.
- Forward detectors
 - FCAL, BCAL, GAMCAL, LCAL, etc.
- Energy-Luminosity-Polarization
 - Upstream and downstream measurements
- Beam diagnostics near IP
 - Beam profile measurements, etc.
- Machine backgrounds
 - SR, pairs, beam particles, neutrons, muons, EMI...

- LCWS08 on MDI issues
 - Joint sessions
 - BDS: machine, MDI: detector
 - Mon (17) 13:30-15:30, BDS+MDI
 - Tue (18) 10:30-12:00, BDS+MDI+gamma/gamma
 - Wed (19) 8:30-10:00, BDS+MDI
 - Wed (19) 10:30-12:00, BDS+MDI
 - Wed (19) 13:30-15:30, BDS+MDI
- MDI common task group
 - Members: (Convener, Deputy, Not LOI-selected)
 - Karsten Buesser, Phil Burrows, Toshiaki Tauchi, Marco Oriunno, Bill Ashmanslas
 - Liaise with the machine effort on MDI issues

Minimum Machine machine-detector communication

- ◆ No change in luminosity&energy ('for now')
- ◆ Possible saving items:
 - Single tunnel, Smaller dumping rings
 - Low-P parameter, Shallow site, TeV upgrade path
 - Push-pull scheme, etc.

Possible implications for detectors

- Low-P : larger backgrounds
 - Shallow site : detector assembly scheme
 - Energy/Luminosity of machine : need LHC results.
 - Push-pull
- ◆ GDE: Done 'openly in full coordination with experimentalists'
 - ◆ Better machine-detector communication is being worked out

CLIC-ILC Collaboration

- CLIC-ILC working groups established.
 - Machine
 - CFS, BDS, Cost&schedule, Beam dynamics
 - Detectors
 - Conveners:
 - L. Linssen, D. Schlatter (CERN)
 - F. Richard, S. Yamada (ILC research directorate)
 - Frequent contacts after Feb. 2008.
 - CLIC can use the large accumulation of ILC software (e.g. jet reconstruction by M. Thomson)
 - ILC can have access to large-scale engineering of CERN
 - Common subdetector R&Ds
- CLIC-ILC collaboration is essential for realizing a LC with a unified front of the community.

WWS

- Established in 1998
- Has coordinated experimental efforts of LC
 - Organized International LC workshops (LCWS)
 - Panels
 - MDI, R&D, physics benchmark, cost, ...
- WWS panels are superceded by those under the research directorate
- WWS continues to represent the wider community interested in LC
 - e.g. continues to organize LCWS

Workshops on ILC Phys&Det

- → Two per year
 - Including both international and regional workshops
 - Rotate three regions
- Hopefully together with GDE meetings
- Plan
 - 2009
 - Apr 17-21 : ACFA (Asia, KEK)
 - Fall 2009 : ALCPG (North America)
 - 2010
 - Spring 2010 : ECFA (Europe)
 - Fall 2010 : LCWS (Asia)

Summary

- Roadmap for the detector design phase 1 is set.
- This is the last ILC phys&det workshop before the LOI deadline.
- LOI groups are making good progresses toward submitting LOI.
 - Time is, however, quite tight.
- R&D collaborations are active as ever.
- Frameworks are mostly in place for
 - Management of the experimental program
 - Validation of LOIs
 - Machine-detector interface and communication
 - CLIC-ILC collaboration

So, let us get to work on all those fronts!