

# ILD meeting

20.7.2016

# Agenda

- News
- Optimization
- Report from the technical coordinator
- Report from the physics coordinator
- Report from the Software coordinator

# News from ILD

Since Santander:

- New ILD structure (after being approved by IA) has started its work
- (short) LC newswire report on the re-structuring of ILD
- We will start (first meeting today) regular ILD meetings by Vidyo about once a month

# Publication/ Speakers Bureau

Propose one common body for publications and speakers bureau

Publications:

- **Papers:** Papers published in the name of the ILD group, such as reviews, papers concerned with central aspects of the ILD detector, etc.
- **Topical papers** with single / multiple authors, reporting results from specific studies, analyses etc which are based on ILD.
- Internal notes, which are not meant for publication, but which will be publicly available through the ILD Web page.
- Conference proceedings, typically single author write-ups of ILD related talks at conferences.

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- Internal notes, which are not meant for publication, but which will be publicly available through the ILD Web page.
- Conference proceedings Next week: rehearsal for ICHEP talks of ILD related talks at conferences.

Speakers Bureau (similar to existing LCC speakers bureau, close cooperation needed)

# Information within ILD

Regular management meeting (every two weeks)

- ET members plus deputy coordinators plus IA chairs
- Minutes are written, distributed to ET + Conveners + Institute contacts

Regular ILD meeting (phone)

- Everyone invited
- By Vidyo
- About once/ month

Topical meetings

- Regular software/ optimization meetings
- Convener etc meetings as needed

# Z-running

ILD has been asked by the parameter group to formulate its position on Z-running

A note has been produced and circulated to the ET and the conveners, making the case for Z-running

(see presentation by Graham on May 25, and at Santander)

(will be made available on our new WEB system soon)

In a nutshell: IF machine can deliver few  $2 \times 10^{32}$ , THEN Z-running is very much desired

After comment period, the note will be send to the parameter group.

In parallel an effort will be started to extend the note with more quantitative numbers (list of questions is bering prepared)



# ILD Web presence

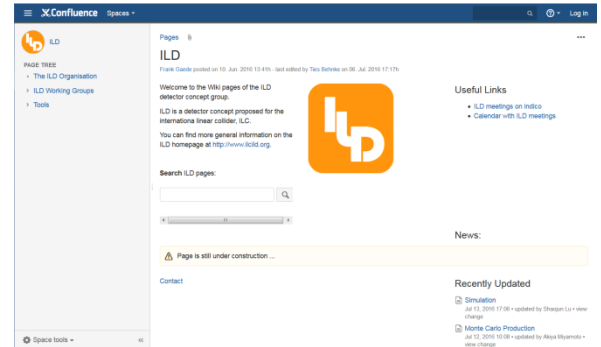
Our old WEB page is very much out-of-date ([www.ilcild.org](http://www.ilcild.org))

We propose to move the page to a new system.

- Hosted at least partially by a confluence like system
- Hosted at DESY
- Can be maintained by everyone

<http://confluence.desy.de/display/ILD/ILD>

- We are looking into a system to host and manage notes etc



System under evaluation  
and test, watch for  
further news

# Call for Logo Competition

ILD needs an official logo:

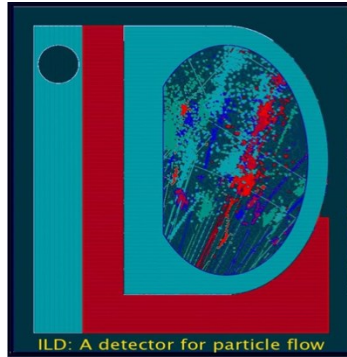
We started an “official” competition for an ILD logo:

- Please send proposals to the ET ([ild-et@desy.de](mailto:ild-et@desy.de)) until August 30, 2016
- After this all logos will be presented on the new ILD Web page
- We will organise some kind of vote (exact details to be defined) between possibilities (after some pre-screening by the ET to exclude – if any – proposals which might present legal problems)
- Please participate!

# Current logos for ILD (and others)

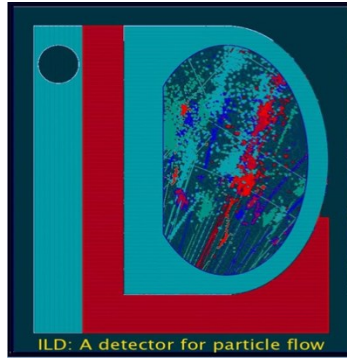


Source: Kyushu  
ILD meeting)



Source: Henri  
Videau

# Current logos for ILD (and others)



Some other logos (to fire your imagination)

LOGO

ILD?

Please participate!

# The optimization process

## Philosophy:

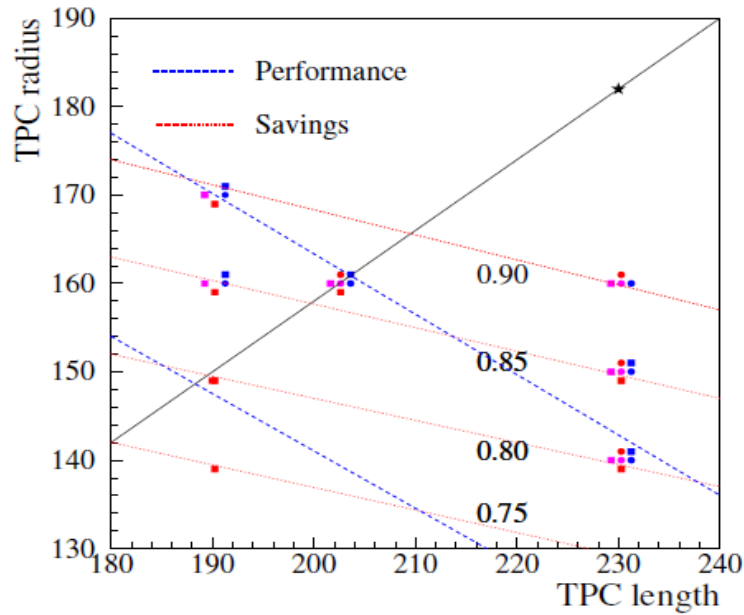
- Compare two detector sizes: big and small
- Try to make things as similar as possible otherwise
- Try to de-couple overall optimization (size dependence) and internal optimization as much as possible.

# ILD-S

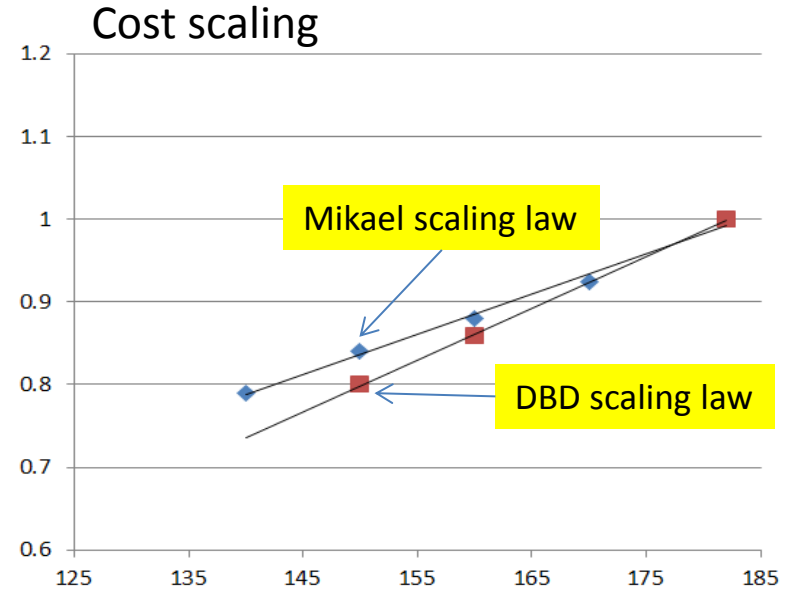
- Based on discussions at Santander ILD meeting:
- Comparable to ILD-L
- Comparable to CLIC
  
- Since the TPC length is the same, all z-values remain unchanged between ILD-S and ILD-L

Detektor	DBD (ILD-L)	Small ILD (ILD-S)
B-Field	3.5 T	4 T
VTX inner radius	1.6 cm	1.6 cm
TPC inner radius	33 cm	33 cm
TPC outer radius	180 cm	146 cm
TPC length (z/2)	235cm	235 cm
Inner ECAL radius	184 cm	150 cm
Outer ECAL radius	202.5 cm	168.5 cm
Inner HCAL radius	206 cm	172 cm
Outer HCAL radius	335 cm	301 cm
Coil inner radius	344 cm	310 cm

# Scaling

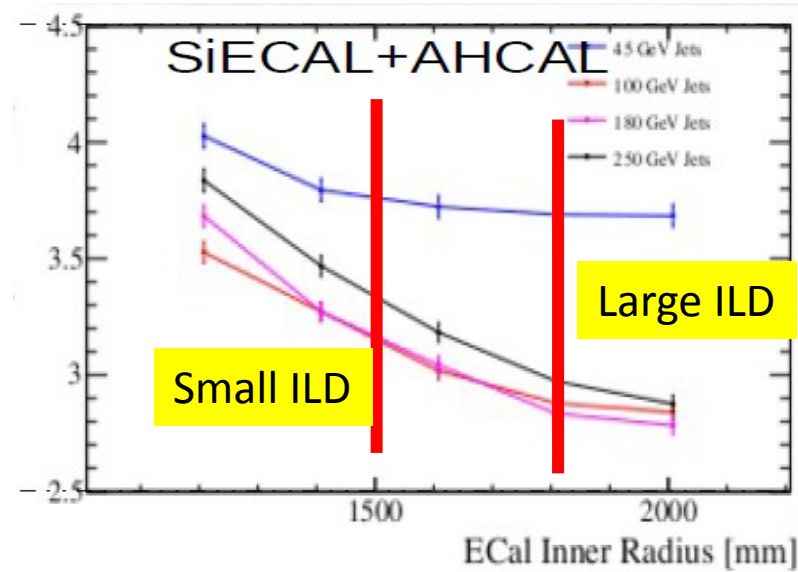


Scaling of tracking focussed performance





# Large vs. Small



# Optimization strategy

There are two aspects to the optimization:

- Detailed studies on particular issues (hardware, physics, single particle ...) to understand what is driving what, and to understand dependencies
- “Global” study to see the overall impact on a menu of physics observables to demonstrate that our detector (whichever) can deliver a broad physics program.

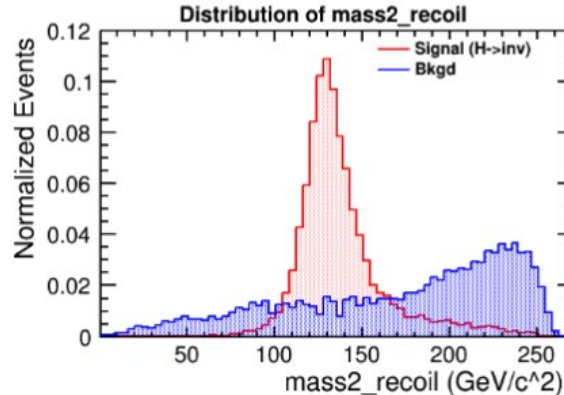
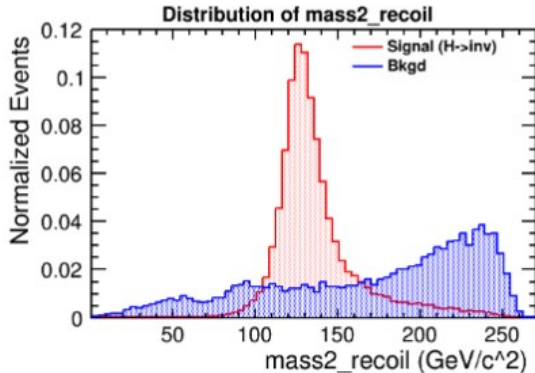
# Connecting to Physics

An example: Connecting the cell size to Jet energy resolution and physics performance:

Study of the invisible higgs decay, recoil mass distribution.

SiW: 5X5 mm<sup>2</sup>

SiW: 15X15 mm<sup>2</sup>



Ecal Cell Size	5x5 mm SiW	15x15 mm SiW	Ratio
$\Delta\sigma$ (H-> inv)	.430%	.447%	+3.9%
Jet Energy Resolution	2.96	3.31	+11.8%

Study by Kelvin Mei, Cambridge

See in

<http://agenda.linearcollider.org/event/6435/>

# Optimization strategy

There are two aspects to the optimization:

Needs dedicated samples  
tuned to the specific question.

- Detailed studies on particular issues (hardware, physics, single particle ...) to understand what is driving what, and to understand dependencies
- “Global” study to see the overall impact on a menu of physics observables to demonstrate that our detector (whichever) can deliver a broad physics program.

Needs large samples, full SM  
backgrounds

# Steps

Envelopes for the detectors are defined, some details still need clarification

Define the sub-detector details for the ILD-L and the ILD-S model:  
see presentation by Claude after this

Decide how to deal with options in subdetectors.

Work in two task forces (Anti-DID, Geometry) has started.

Validate the subdetector models in simulation.

Validate the reconstruction performance