

THE QUANTUM UNIVERSE

BIG BANG OCEAN

SUPERSYMMETRY
REEF

DARK
MATTER
LANDMASS

Spanish Network on Future Linear Colliders

HIGGS
ISLAND

RUNNING
PASSAGE

Sevilla, 10-February-2014

A. Ruiz (IFCA)

LAND OF
ULTIMATE
UNIFICATION

EXTRA
DIMENSIONS
ARCHIPELAGO

DARK ENERGY
MAELSTROM

SEA OF THEORIES

SEA OF SMALL
MYSTERIES

QUARK
SEA

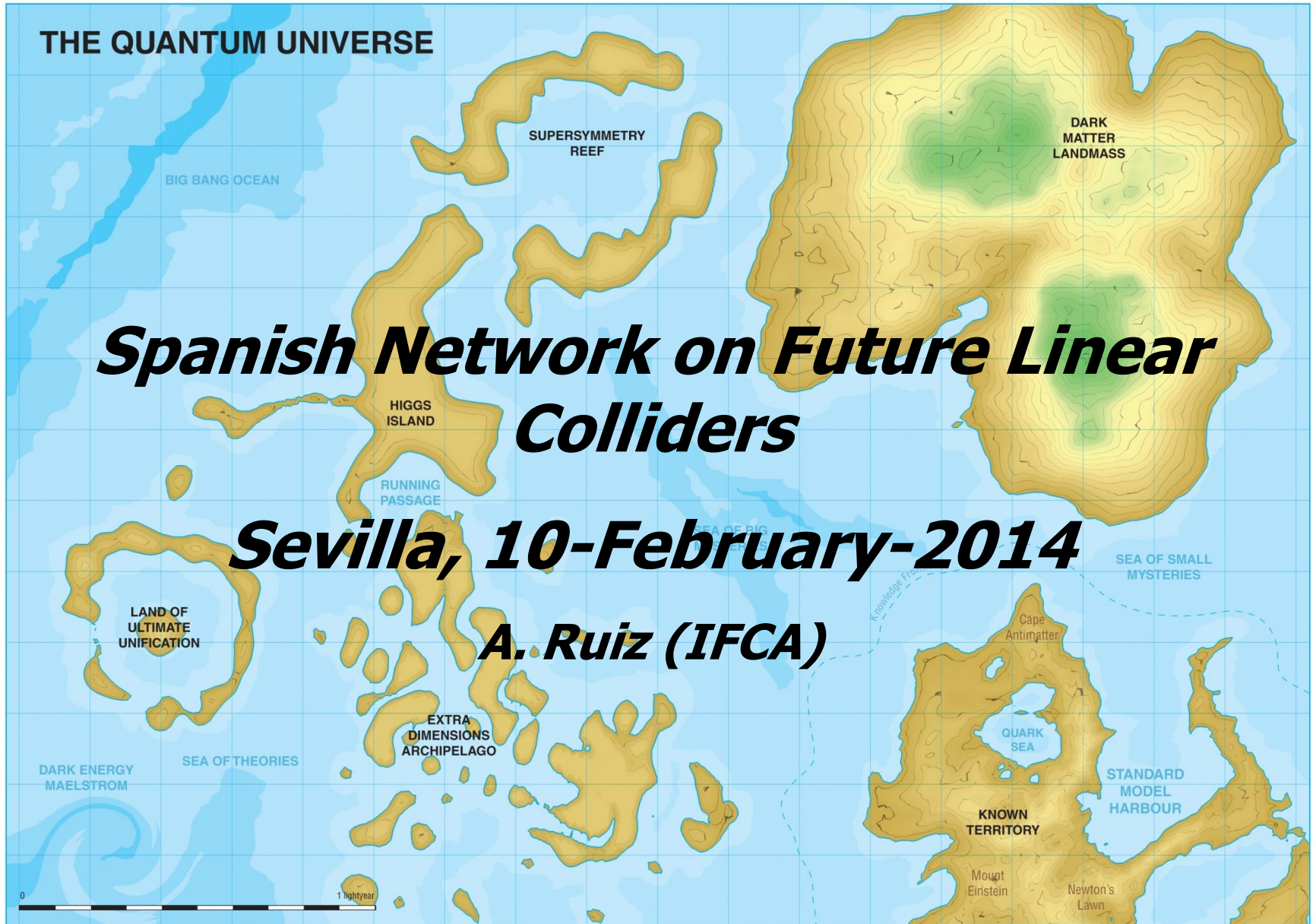
KNOWN
TERRITORY

STANDARD
MODEL
HARBOUR

Mount
Einstein

Newton's
Lawn

0 1 lightyear



Many activities since last Meeting in Valencia

➤ ***Introducing : An overview of ILC/CLIC related activities of Spanish FLC network***

In this meeting:

Accelerators → J. Resta (IFIC), L. García-Tabarés (CIEMAT)

CALICE → Electronics (A. Vedugo, CIEMAT), Mechanics (E. Calvo, CIEMAT)

Silicon tracking, optimization → I.García (IFIC), M.J. Boronat (IFIC)

R&D on detectors → S. Hidalgo (IMB-CNM), I. Vila (IFCA)

Power → F. Arteché (ITA), J. Deltoro (IFIC)

Monitoring → I. Vila (IFCA)

Electronics → O. Alonso (UB), B. Schumm (UCSC)

Coordinated project and H2020 discussions

AIDA-2 and ILD Optimization

THANKS to Rogelio Palomo for his splendid organization!!

Proposed Update of the European Strategy for Particle Physics

High-priority large-scale scientific activities

e) There is a strong scientific case for an electron-positron collider, complementary to the LHC, that can study the properties of the Higgs boson and other particles with unprecedented precision and whose energy can be upgraded. The Technical Design Report of the International Linear Collider (ILC) has been completed, with large European participation. The initiative from the Japanese particle physics community to host the ILC in Japan is most welcome, and European groups are eager to participate. *Europe looks forward to a proposal from Japan to discuss a possible participation.*

Organisational issues

1) Future major facilities in Europe and elsewhere require collaboration on a global scale. *CERN should be the framework within which to organise a global particle physics accelerator project in Europe, and should also be the leading European partner in global particle physics accelerator projects elsewhere. Possible additional contributions to such projects from CERN's Member and Associate Member States should be coordinated with CERN.*

February, 2013, ILC-DBD edited

Volume 1: Executive Summary

Volume 2: Physics

Volume 3: Accelerator

Part I: R&D in the Technical Design Phase

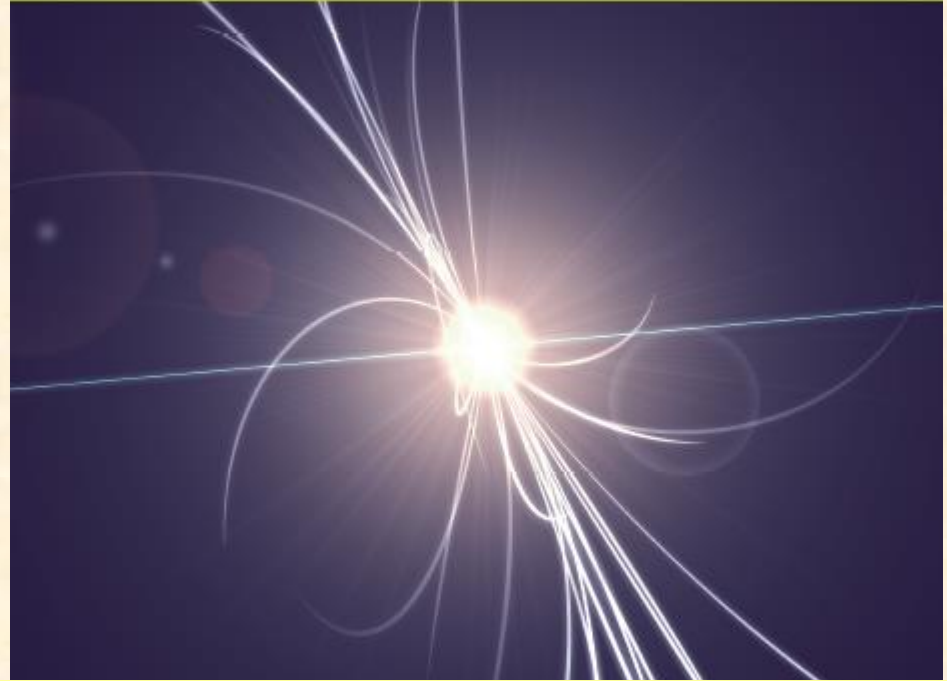
Volume 3: Accelerator

Part II: Baseline Design

Volume 4: Detectors

THE INTERNATIONAL LINEAR COLLIDER

TECHNICAL DESIGN REPORT | VOLUME 4: DETECTORS



Editors

Ties Behnke, James E. Brau, Brian Foster, **Juan Fuster**, Mike Harrison, James McEwan Paterson, Michael Peskin, Marcel Stanitzki, Nicholas Walker, Hitoshi Yamamoto

ISBN 978-3-935702-78-2

Argonne National Laboratory: ANL-HEP-TR-13-20
Brookhaven National Laboratory: BNL-100603-2013-IR
CEA/irfu: IRFU-13-50
CERN: CERN-ATS-2013-037
Cockcroft Institute: Cockcroft-13-10
Cornell University: CLNS 13/2085
DESY: DESY 13-062
Fermilab: FERMILAB TM-2554
IHEP: IHEP-AC-ILC-2013-001
ILC report: ILC-REPORT-2013-040

INFN: INFN-13-04/UNF
JAI: JAI-2013-001
JINR: JINR E9-2013-35
JLab: JLAB-R-2013-01
KEK: KEK Report 2013-1
KNU: KNU/CHEP-ILC-2013-1
LLNL: LLNL-TR-635530
SLAC: SLAC-R-1004
ILC HiGrade: ILC-HiGrade-Report-2013-003

Spanish participation in several items

Vol. 4: Detectors

Chapter	Subchapter	Section	Contacts	Authors
Subsystems	Silicon tracking	Forward (FTD)	Alberto Ruiz	Ivan Vila Marcel Vos
		Calorimetry		
	hadronic		Imad Laktineh Felix Sefkow	MaryCruz Fouz Imad Laktineh Felix Sefkow Frank Simon
		Calibration and Alignment		Felix Sefkow Marcos Fernández Ties Behnke



The International Linear Collider – A Worldwide Event

From Design to Reality

Programme

17:00 – 19:15 Scientific Symposium

Venue: Main auditorium

17:00 Welcome and handover from Japan

17:10 Physics of the ILC

Sven Heinemeyer, Santander, Spain

17:40 The ILC accelerator complex

Nick Walker, DESY, Germany

18:10 The ILC detectors

François Richard, CNRS-IN2P3, Orsay, France

18:40 The industrial & societal impact of the ILC

To be announced

19:10 Handover of *Technical Design Report* to

Professor Rolf-Dieter Heuer, ICFA

19:30 – 22:00 Public talk and concert

Venue: Main auditorium

19:30 Particle physics: a personal perspective

Professor Brian Cox, Manchester, UK

20:15 Classical concert

Jack Liebeck (violin), Jamie Walton (cello),

Katya Apekisheva (piano) playing works by

Johannes Brahms, Maurice Ravel and

Felix Mendelssohn

from 22:00 Reception and handover to the United States

CERN Restaurant 1 / Salle des pas perdus

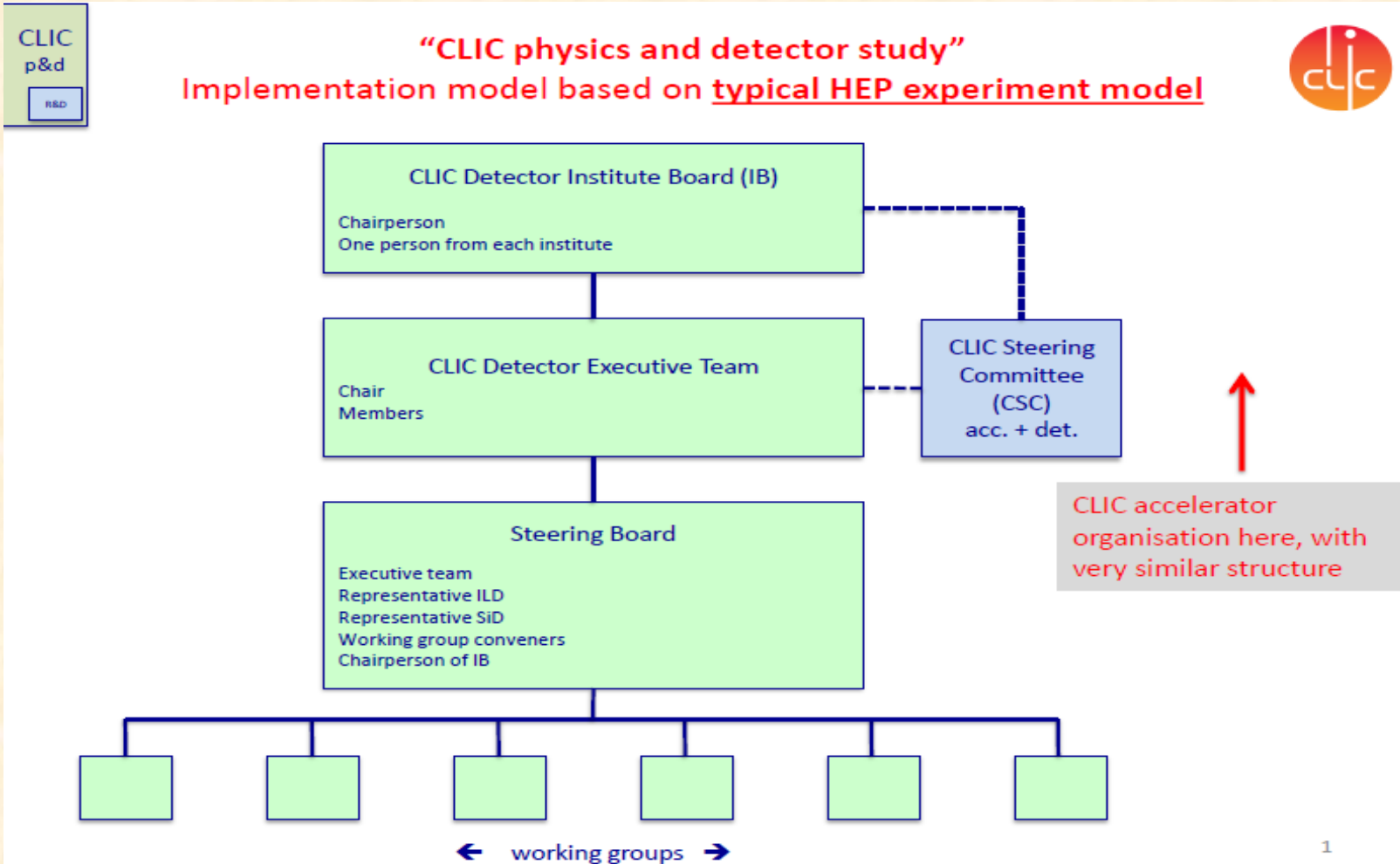


A. Ruiz (Spanish Network FLC, Sevilla. Febr.-2014)

Informal Institute Board meeting during the CLIC 2013 workshop

Tuesday, 29 January 2013 from **18:00** to **19:30** (Europe/Paris)

at CERN ([4-1-021](#))



.....Proposed input to the Snowmass process

A. Ruiz (Spanish Network FLC, Sevilla. Febr.-2014)

Update on the organisation (October 2013)

The MoC mentions the following bodies:

- **The Institute board** (one member of each Party:
Spain: A. Ruiz, as delegate of the Spanish Thematic Network on Future Linear Accelerators)
- **The CLICdp executive team**
 - The Spokesperson (*Lucie Linssen (CERN)*)
 - The Technical coordinator (based at CERN) *Konrad Elsener (CERN)*
 - Other member(s) *James Wells (University of Michigan)*, *Mark Thomson (Cambridge University)*
- **The Steering Board**
 - The ET members
 - The IB chairperson (**Frank R. Simon (DESY)**)
 - The conveners of the working groups
 - Representatives of major stakeholder study groups

- **WG on analysis** (including benchmark studies, software tools, polarisation)
 - *Chaired by Philipp Roloff (CERN), Mark Thomson (Cambridge)*
- **WG on physics potential**
 - *Chaired by James Wells (CERN => Ann Arbor), Gian Giudice (CERN)*
- **WG on CLIC vertex detector R&D**
 - *Chaired by Dominik Dannheim*
- **WG on engineering** (incl. layout, solenoid and cost)
 - *Chaired by Konrad Elsener (CERN), Hubert Gerwig (CERN)*
- **WG on CLICdp detector optimisation** (stablishing a new detector model)
 - *Chaired by Frank Simon (MPI Munich), Christian Greife (CERN)*

Publication Committee

Aharon LEVY, chair (Tel Aviv Univ.)

Philip BURROWS (Oxford Univ.)

Dieter SCHLATTER (CERN)

Ulrik UGGERHOJ (Aarhus Univ.)

Speakers Committee:

Ivanka BOZOVIC-JELIZAVCIC, chair (Vinca Belgrade)

Max CHEFDEVILLE (LAPP Annecy)

Erik VAN DER KRAAIJ, (Bergen Univ.)

Other study groups

Other study groups/entities with strong connection to CLICdp:

- *ECAL studies*
 - *Optimisation studies, of interest for ILC/CLIC*
 - *Chaired by John Marshall (Cambridge), Andre Sailer (CERN)*
- *Linear Collider Software*
 - *Regular contacts and typically 1 annual expert meeting (ILD+SiD+CLIC)*

R&D collaborations with strong connection to CLICdp:

- *CALICE*
- *FCAL*

Concept groups

- *ILD + SiD*

The MoC document.....

“the MoC”

***Base text
(generic and
flexible)***

***Annex 1
List of institutes***

***Annex 2
Objectives of the study***

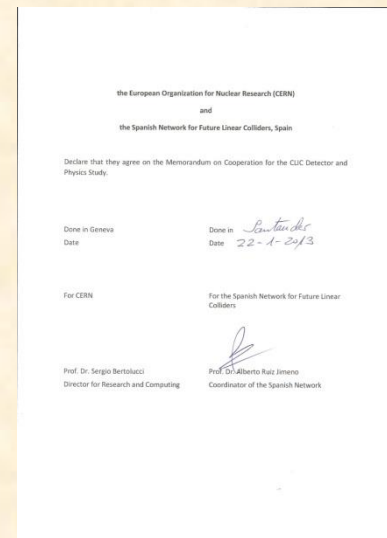
***Annex 3
Organisation***

***Annex 4
Publications / talks***

***Annex 5
CERN host***

***Annex 6
Signature template***

***Defined and
updated
by the IB***



Update on MoC partners

+Glashow (A. Robson)
+ Michigan Ann Arbor (J. Wells)



21 partners have signed

B meeting, June 11th 2013

12

Country	Partner	Representative in the IB	MoC signature
Australia	Australian Collaboration for Accelerator Science (ACAS)	M. Boland	pdf
Belarus	NC PHEP, Belarusian State University, Minsk	K. Afanaciev	pdf
Chile	The Pontificia Universidad Católica de Chile, Santiago		pdf
Czech Republic	Institute of Physics of the Academy of Sciences of the Czech Republic, Prague	T. Lastovicka	pdf
Denmark	Department of Physics and Astronomy, Aarhus University	U. Uggerhoj	pdf
France	Laboratoire d'Annecy-le-Vieux de Physique des Particules (LAPP), Annecy	Y. Karyotakis	pdf
Germany	MPI Munich	F. Simon	pdf
Israel	Tel Aviv University	A. Levy	pdf
Norway	University of Bergen	G. Eigen	pdf
Poland	Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Cracow	M. Idzik	pdf
Poland	The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences, Cracow	L. Zawiejski	pdf
Romania	Institute of Space Science	T. Preda	pdf
Serbia	Vinca Institute for Nuclear Sciences, Belgrade	I. Bozovic-Jelisavcic	pdf
Spain	Spanish Network for Future Linear Colliders	A. Ruiz	pdf
Switzerland	CERN	K. Elsener	
United Kingdom	The School of Physics and Astronomy, University of Birmingham	N. Watson	pdf
United Kingdom	University of Cambridge	M. Thomson	pdf
United Kingdom	University of Oxford	Ph. Burrows	pdf
USA	Argonne National Laboratory, High Energy Physics Division	H. Weerts	pdf

CLIC Publications:

[https://cds.cern.ch/collection/CLIC Detector and Physics Study](https://cds.cern.ch/collection/CLIC%20Detector%20and%20Physics%20Study)

Publication Rules (CLICdp-Note-yyyy-nn, CLICdp-Pub-yyyy-nn and CLICdp-Conf-yyyy-nn.)

Collaboration-wide papers, journal papers such as reviews summarizing broad areas of physics at CLIC or the design of the overall CLIC detector

Single/multiple author papers, journal papers bases on a specific study

Notes (which are not submitted to a journal) but are publicly available;

Conference proceedings.

Internal Notes that will not be reviewed or made publicly available. CLICdp-Int-yyyy-nn.

Theses (PhD and Master) These are not reviewed by the collaboration. CLICdp-Thesis-yyyy-nn.

CLIC Publications:

Collaboration Author List

The PC will maintain the official collaboration author list and ensure that it is updated every six months.

On collaboration wide publications, authors will be listed alphabetically;

It is the responsibility of the IB representatives to provide a list of authors from their institute to the PC. Authors should have made some contribution to the CLIC detector and physics study over the course of the proceeding year;

It is the responsibility of the PC to ensure that the list is reasonable and to iterate with the IB representatives.

CLIC physics white paper for Snowmass.

<http://arxiv.org/abs/1307.5288>

Physics at the CLIC e+e- Linear Collider -- Input to the Snowmass process 2013

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DESY2013, ECFA European Linear Collider Workshop

Novel sensor technologies for tracking and vertexing:

A 2D position sensitive microstrip sensor with charge division.

A segmented p-type sensor with low-gain charge amplification.



Ultra Low Mass Cooling for Fine Pixel Detectors

J. Lacasta, J. Mazorra de Cos, A. Oyanguren, P. Ruiz-Valls*
IFIC (CSIC-UV)
E. Currás, D. Moya, I. Vila, A. L. Virto
IFCA (CSIC-UNICAN)
May 28th 2013



ECFA Linear Collider Workshop 2013



ECFA European Linear Collider Workshop 2013, Hamburg, Germany

Engineering studies for the inner region of the CLIC_ILD detector concept

F. Duarte Ramos, H. Gerwig, M. Villarejo Bermudez

Esteban Currás

Instituto de Física de Cantabria(CSIC-UC)



FIBER BRAGG GRATING SENSORS FOR SMART-TRACKERS Application to Belle II Vertex Detector

LC2013 ,Tracking Vertex session, Desy May 30th 2012



D. Moya, I. Vila, A. L. Virto, E. Curras, A. Ruiz

Instituto de Física de Cantabria

M. Frovel, J.G. Carrión

Instituto Nacional de Técnica Aeroespacial

A. Oyanguren, C. Lacasta, P. Ruiz

Instituto de Física corpuscular



IFCA

David Moya Martín, IFCA (CSIC-UC)

Forward tracking

LC2013,
DESY, May 28th 2013

Marcel Vos – IFIC Valencia

Super-capacitor characterization system for FTD-ILD sub-detector power distribution system (Rad Test)

F. Arteché, C. Marinas*, A. Pradas,
M. Iglesias, I. Echeverría, F.J. Piedrafita, I. Vila**

* University of Bonn, Germany
** IFCA, Santander, Spain



DEPFET detectors for future e⁺e⁻ colliders

Carlos Marinas
University of Bonn

On behalf of the DEPFET Collaboration

Tracking and vertexing in the linear e⁺e⁻ collider

Carlos Marinas
University of Bonn

NNLO non-resonant contributions to $t\bar{t}$ production at threshold: endpoint-singular terms

Pedro Ruiz-Femenía
Instituto de Física Corpuscular (IFIC)

in collaboration with B. Jantzen

A precise determination of top quark
electroweak couplings at the ILC

I. García, E. Ros, P. Ruiz, M. Vos
IFIC (UV-CSIC)

M.S. Amjad, T. Frisson, R. Pöschl, F. Richard, J. Rouëné
LAL (Orsay-Paris)



**Precision QCD and top quark
physics at a linear e^+e^- collider;**
summary of the top, QCD and Loopverrein WG

Marcel Vos
IFIC (U. Valencia/CSIC), Spain

Sven Heinemeyer, IFCA (CSIC, Santander)

- *LC precision in the MSSM: getting it under control*
- *Implications of SUSY and Higgs Searches for the ILC*
- *Impact of m_t measurements on precision tests of the SM and the MSSM*
- *Higgs Production from SUSY Decays at the LC*
- *Impact of LHC bounds on the W-boson mass prediction in the MSSM*

CLIC DR EXTRACTION KICKER DESIGN, MANUFACTURE AND EXPERIMENTAL PROGRAM

C. Beller-Aguilar (IFIC)

On behalf of:

A. Faus-Golfe (IFIC), F. Toral (CIEMAT),
M.J. Barnes, J. Holma, Y. Papaphilippou (CERN),
D. Gutiérrez (TRINOS V.P.)

<http://gap.ific.uv.es>

m-OTR application to the RTML at ILC and CLIC

A. Faus-Golfe and J. Resta-Lopez
IFIC Valencia

Draft Proposal for Halo Collimation in ATF2

A. Faus-Golfe, J. Resta Lopez (IFIC)
P. Bambade (LAL)

CLIC and ILC Final Focus System:
optimization and limitations

Hector Garcia Morales^{1,2}, Rogelio Tomas Garcia²

¹ Universitat Politècnica de Catalunya, Barcelona
² CERN, Geneva

Krakow 2013 ILD Workshop, September 2013

R&D for Silicon

2013 ILD Workshop
Institute of Nuclear Physics , Cracow



I. Vila

Instituto de Física de Cantabria (CSIC-UC)



Powering a low mass detector (FTD- ILD power system)

Dr. Fernando Arteché

ILD meeting,
Institute of Nuclear Physics PAN, Cracow
September 2013



TRACKING IN ILD: A REVIEW



A. Ruiz-Jimeno, ILD-Krakow-Sept2013

Innovative low material vertexing and tracking technologies

David Quirion, G. Pellegrini, S. Hidalgo, P. Fernández, M. Baselga, D. Bassignana, M. Lozano (IMB-CNM)
I. Vila, F.J. Muñoz, M. Fernández, R. Jaramillo (IFCA)

October 1st, 2013

Integration and material budget studies of the CLIC_ILD inner region

Miguel Ángel Villarejo Bermúdez
Hubert Gerwig
Fernando Duarte Ramos



FIBER BRAGG GRATING SENSORS MONITORING
Application to Belle II Vertex Detector

CLIC detector and physics collaboration meeting, CERN Oct. 1st 2013



D. Moya, I. Vila, A. L. Virto, E. Curras, A. Ruiz

Instituto de Física de Cantabria



M. Frovel, J.G. Carrión

Instituto Nacional de Técnica Aeroespacial

A. Oyanguren, C. Lacasta, P. Ruiz



Instituto de Física corporcular

FORWARD TRACKING AT CLIC

A. Ruiz-Jimeno, CLIC-CERN_1Oct2013

LCWS13, Tokyo, Nov. 2013 (towards a new ILD organization...)

Emittance Growth in ATF EXT

A. Faus-Golfe (IFIC CSIC-UV), S.Kuroda(KEK)



Non-resonant production of $b\bar{b}W^+W^-$ at the top-antitop threshold

Pedro Ruiz-Femenía

Instituto de Física Corpuscular (IFIC)



A. Hoang, C. Reisser, PRF arXiv:1002.3223 [hep-ph]

M. Beneke, B. Jantzen, PRF arXiv:1004.2188 [hep-ph]

B. Jantzen, PRF arXiv:1307.4337 [hep-ph]



VNIVERSITAT DE VALÈNCIA

Precision top physics at a linear e^+e^- collider; prospects for the measurement of the electro-weak couplings of the top quark



Marcel Vos
IFIC (U. Valencia/CSIC)



M.S. Amjad, R. Poeschl, F. Richard, J. Rouëné, LAL Orsay, France
I. García García, E. Ros, P. Ruiz Femenia, M. Vos, IFIC Valencia



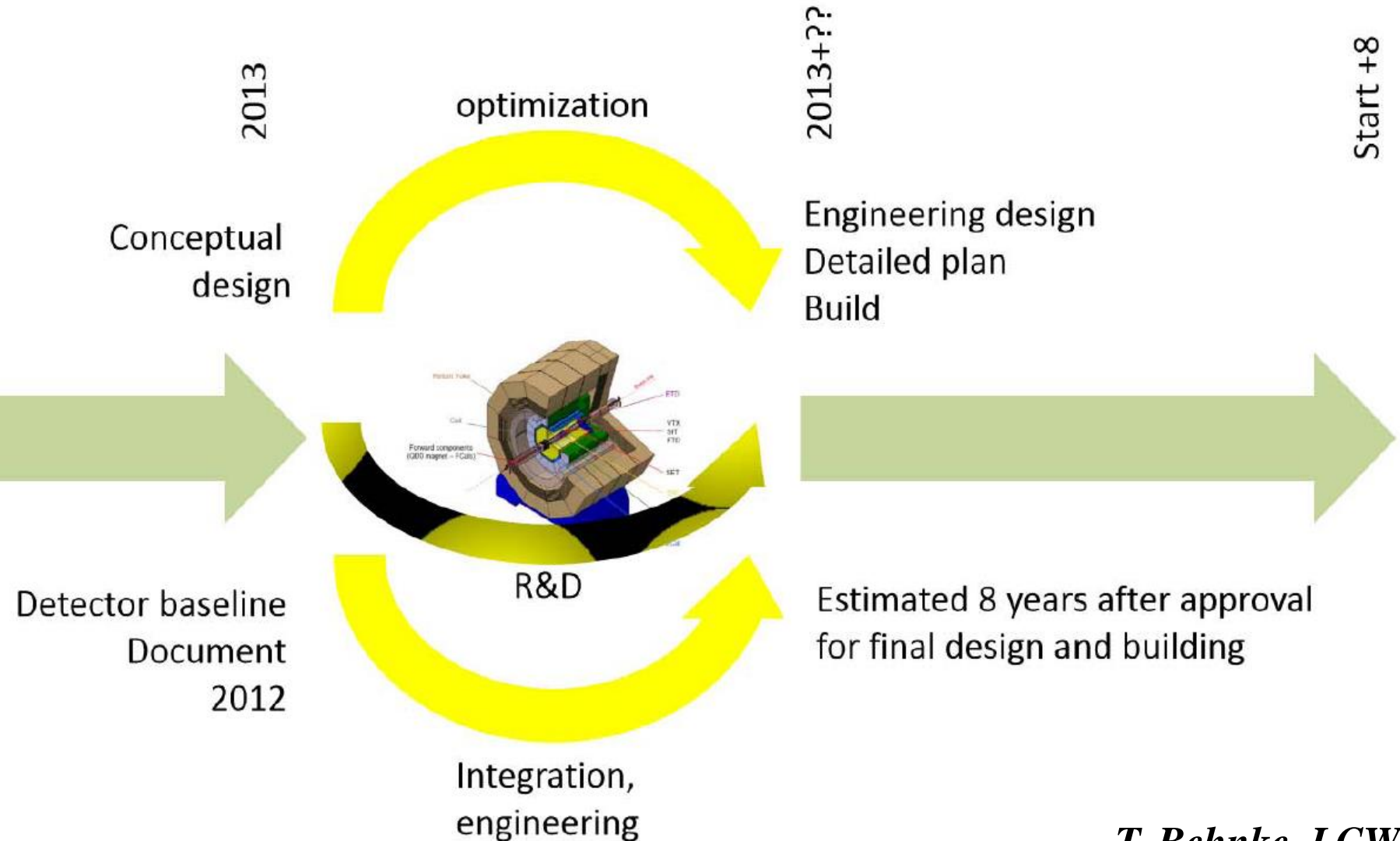
Sven Heinemeyer, IFCA (CSIC, Santander)

- *Towards the LC precision: progress in the M_h calculation in the MSSM*
- *Higgs and DM production from SUSY decays at the LC*
- *Does the LHC exclude SUSY particles at the ILC?*
- *Overview of QCD and parametric uncertainties on Higgs coupling extraction in a linear collider*
- *LC precision in the MSSM*
- *MW in the MSSM*

DEPFET APS for future collider applications

-a status report Ladislav Andricek, MPG Halbleiterlabor, München For the DEPFET Collaboration

Quo Vadis ILD

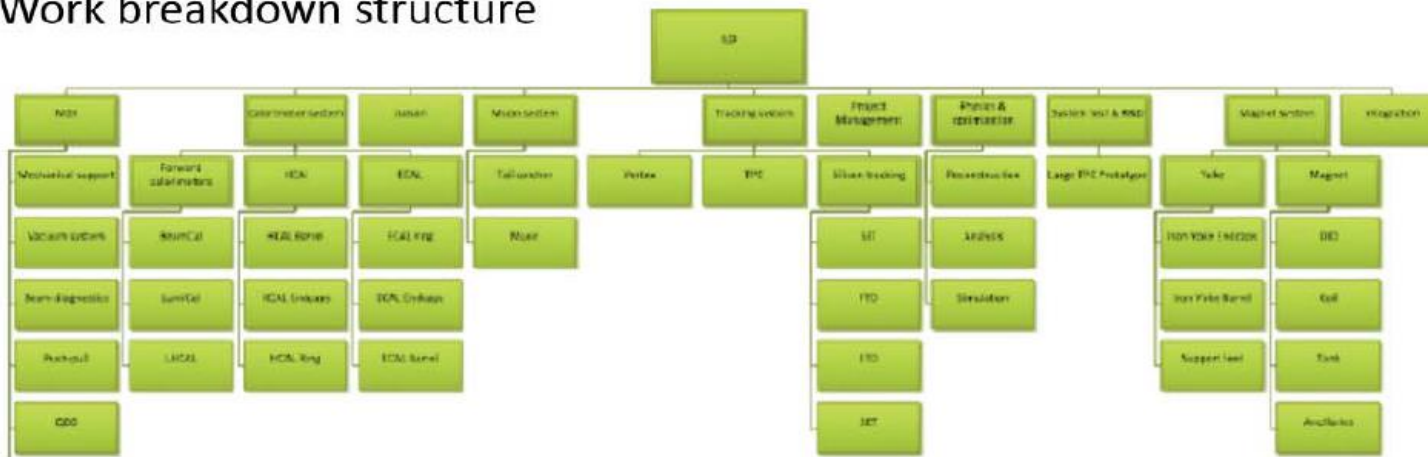


T. Behnke, LCWS13

Managing Integration

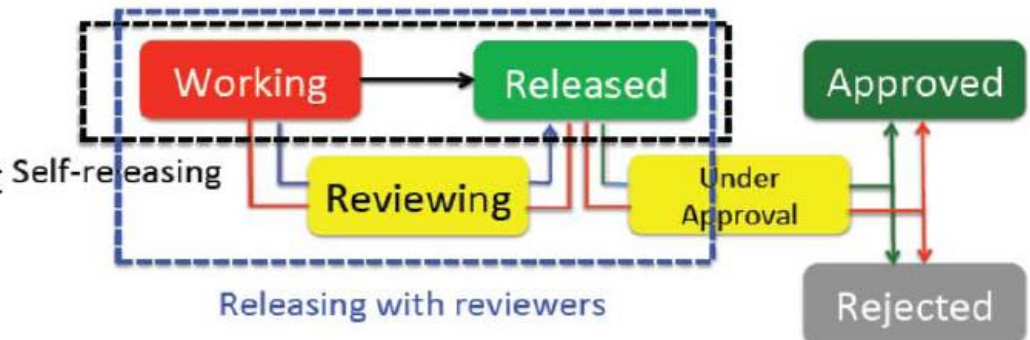
Need to move to a more formal system to manage and control the evolution of the detector design:

Work breakdown structure



Manage information for the ILD detector:

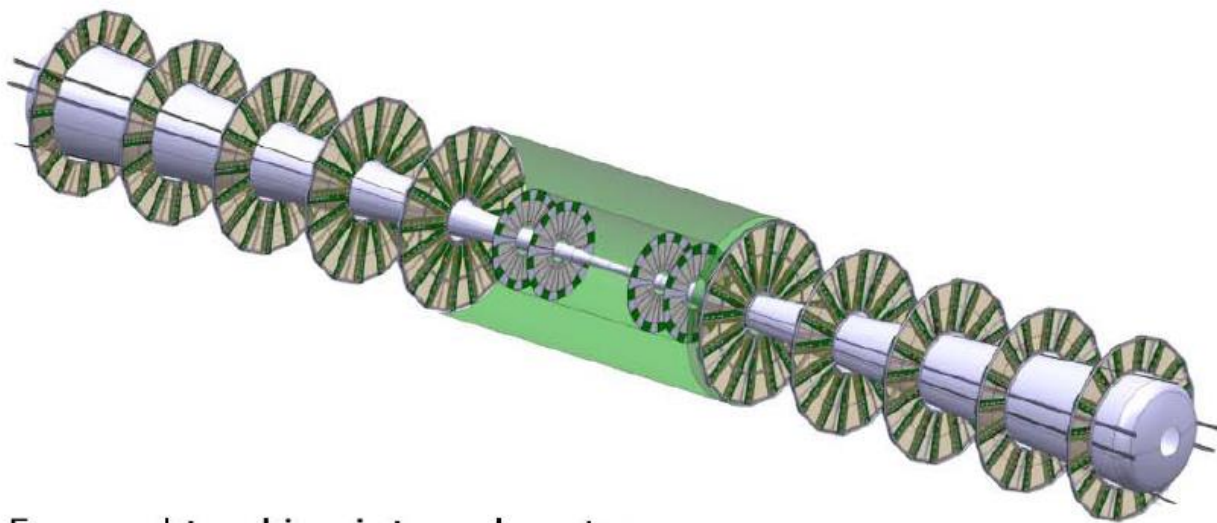
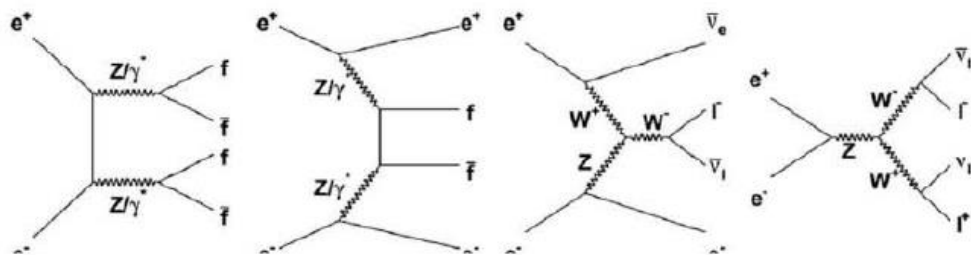
Need to set this up so that we re-gain control of our information



Forward Tracking

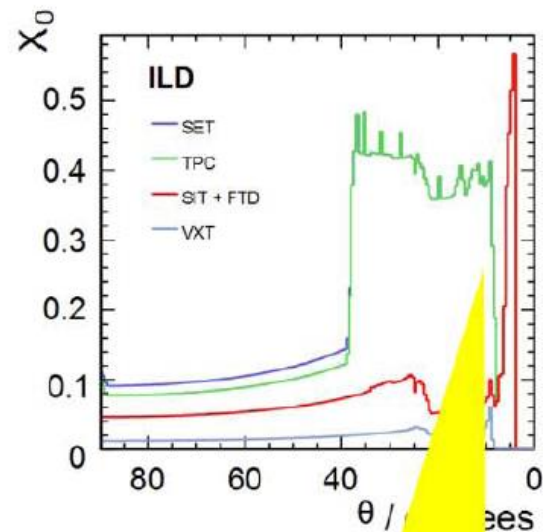
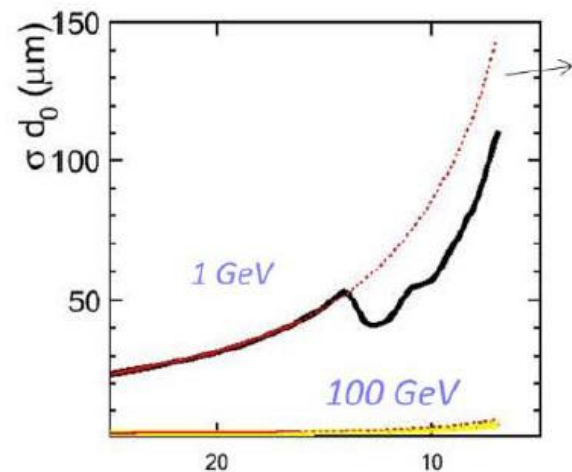
ILC physics:

Forward region is increasingly important



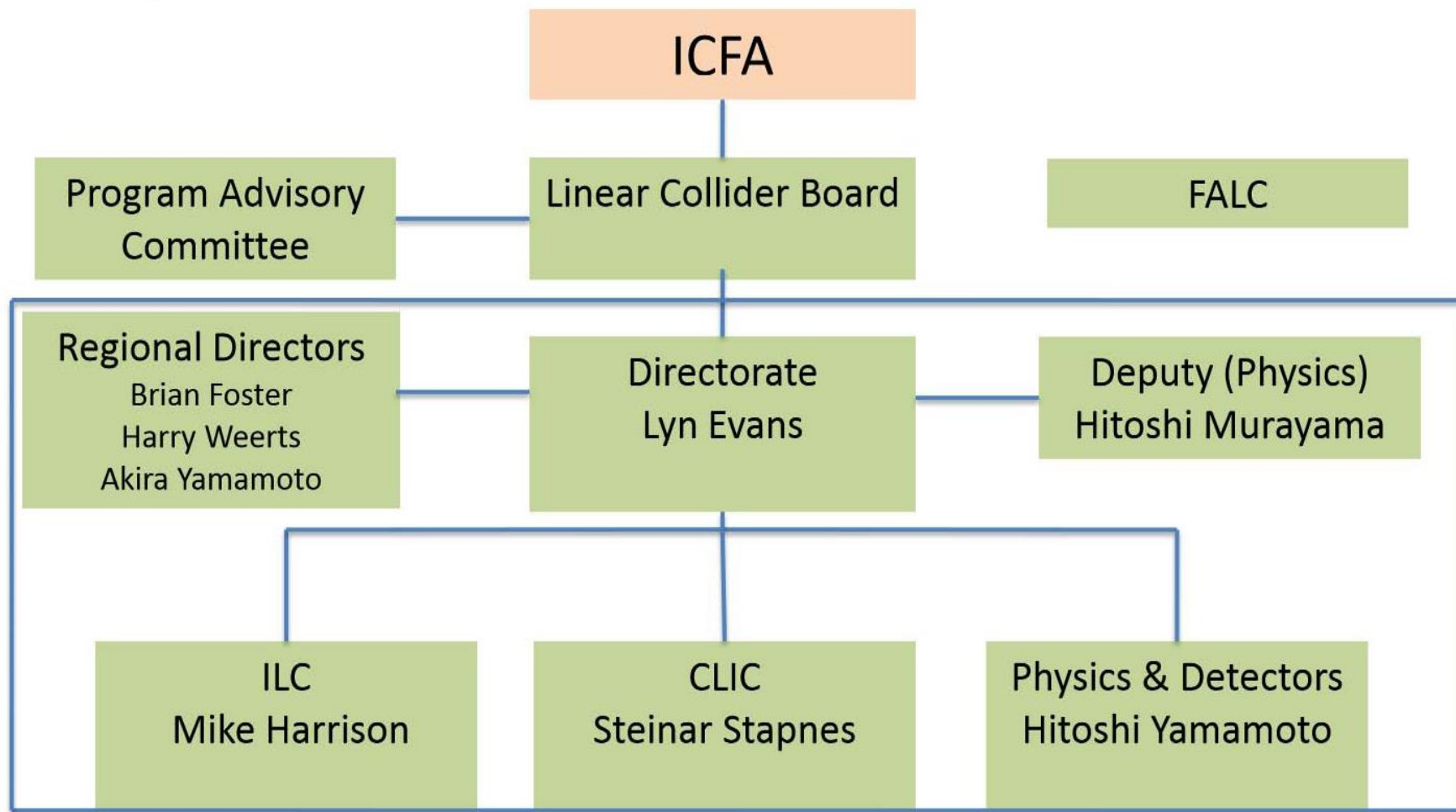
Forward tracking integral part
of ILD

Purely Silicon based



Can we do better?

Organization



TRANSCRIPT (English translation)

Speaker: **Mr. Takeo KAWAMURA**

Chair of the Federation of Diet members

Date: November 11, 2013

Venue: International Workshop on Future Linear Colliders (LCWS13) at The University of Tokyo

.....

The ILC project contains many important elements: international collaboration; promotion of global talents; the frontier of knowledge led by advanced science; and a significant potential for change in social life using new technology. It also motivates challenges for academics and industry. Above all, the international process for the realization of ILC is a new challenge. ILC is a project that can serve as a model for worldwide collaboration, not only in science and technology, but also in many other fields.

.....

It was the then Minister of Education, Mr. Kaoru Yosano, who in 1995 decided that Japan should contribute to the LHC. In 2006, under his chairmanship, we established the "The Committee for Promoting Construction of the International Linear Collider Laboratory" consisting of LDP Diet

.....

Particular emphasis was put on the need for a more precise cost estimate, the need to discuss the required budget and international partnerships, and the necessary distribution of manpower over the next 2-3 years. To achieve these goals, the Department of Education has requested the Department of Finance to provide an ILC investigation fund of 50 million yen in next year's budget, in addition to R&D funds for research laboratories.

.....

From now on, we should move towards forming the framework for an international partnership which goes beyond simple cooperation between researchers, towards one to which governments commit. We would like to proceed in an orderly manner and with a large-scale view, by building an international network base for researchers and engineers with our partner nations, reinforcing cooperation in the fields of science, technology, and economics.



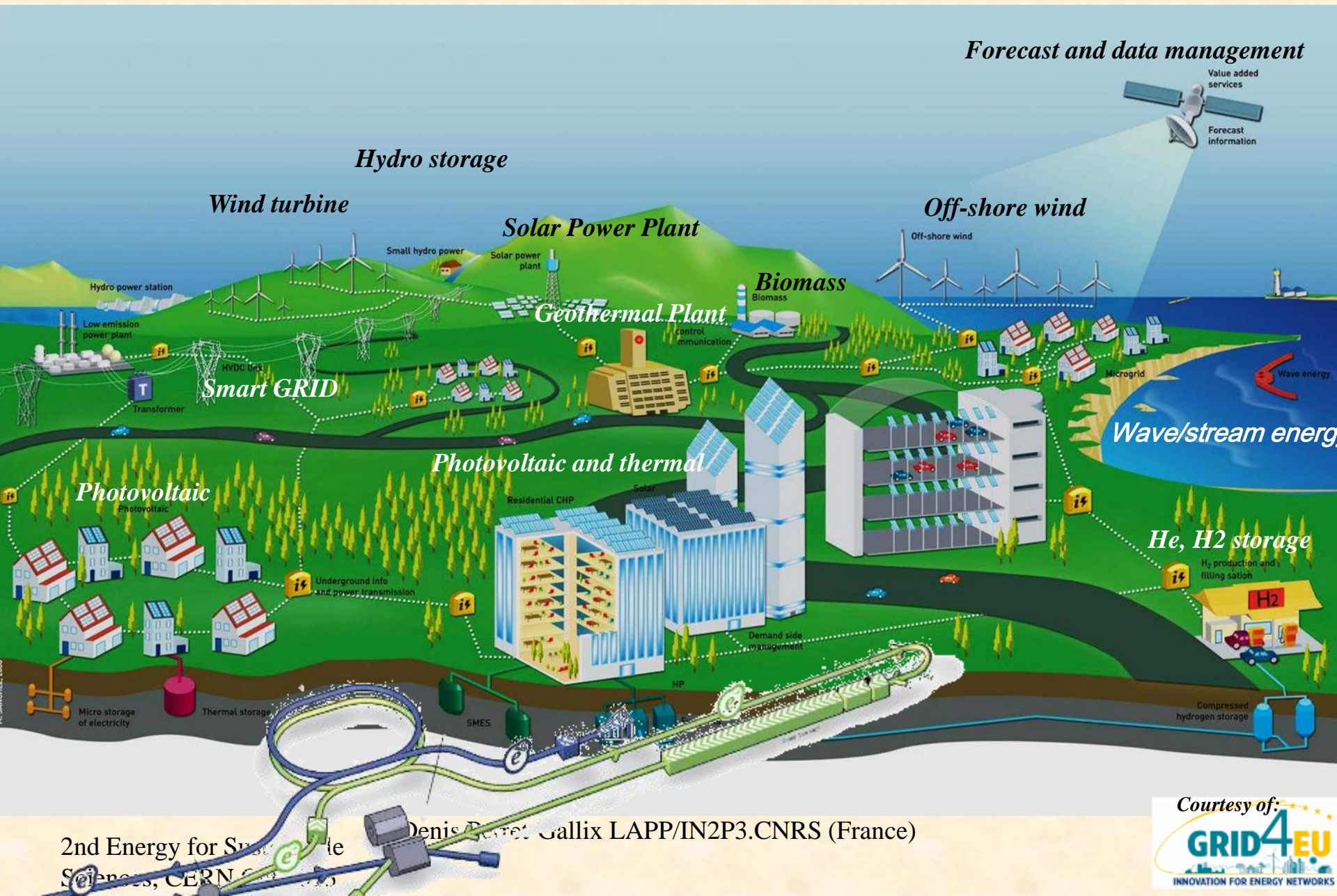
ILC Timeline

Proposed by LCC

- 2013 - 2016
 - Negotiations among governments
 - Accelerator detailed design, R&Ds for cost-effective production, site study, CFS designs etc.
 - Prepare for the international lab.
- 2016 – 2018
 - ‘Green-sign’ for the ILC construction to be given (in early 2016)
 - International agreement reached to go ahead with the ILC
 - Formation of the ILC lab.
 - Preparation for biddings etc.
- 2018
 - Construction start (9 yrs)
- 2027
 - Construction (500 GeV) complete, (and commissioning start)
(250 GeV is slightly shorter)

Hitoshi Yamamoto

ILC center futuristic view



Irfu, CEA Saclay

november 2013

Accelerator and Detector FLC Activities at Spain

A. Faus-Golfe
(IFIC)

International Representation:

- FALC (Funding Agencies for Large Colliders)
- ECFA Linear Collider Study chair
- ILD Executive Board, Forward Tracker
- AIDA chair of the Collaboration Board
- Depfet Linear Collider chair of the Collaboration Board

National Coordination:

- Future Linear Collider Network Coordinator
- Flavour Network Coordinator
- Principal Investigators of projects from the National Plan



<http://ilcs.ific.uv.es>

Workshop Organization and Participation:

- ECFA-ILC/GDE workshop in Valencia, November 2006
- LCWS11 workshop in Granada, 26-30 September 2011
- National Network for Future Linear Colliders workshops (twice per year)
- CPAN workshops participation as specific community

Organization and Coordination at Spain

Three National Networks (one genuine, two participation):

- R&D for Future Colliders (Detectors + Accelerators + Theory, not only Large Collider)
- Flavour Physics (Detectors + Theory)
- LHC, Experiment & Theory

R&D for Detectors and Physics:

- ILC, End Cap, Colaboración DEPFET (Pixels), SiLC (Tracker), CALICE (Calorimeter)
- Belle II Colaboración DEPFET
- CLIC, Physics Benchmark, End Cap, Mechanical Structures

European Projects:

- AIDA (R&D for detectors, present)
- ENVISION-ENLIGHT (R&D for detectors, Medical Physics)

R&D for Accelerators:

- ILC: ATF2 (OTRs), XFEL (MLQ, movers)
- CLIC: DR Kickers, CTF3 (PETS, CR Kickers, BPMs)

European Projects:

- EUCARD2, HL-LHC, PACMAN (R&D for accelerator, present)
- PARTNER-ENLIGHT (medical Physics, present)
- TIARA (Accelerator Network)



	Barça	Granada	Madrid	Santander	Valencia	Zaragoza
Phenomenology (also LC rel.)	+	+	+	+	+	+
LC specific calculations	+			+		
red ILC		+		+		
ESPP (Europe)		+	+	+		
Snowmass (USA)			(+)	+		

Silicon for Large Colliders

IFIC, NTC, UB, IMB-CNM, US, ITA, IFCA, INTA



Advanced European Infrastructures for Detectors at Accelerators



DEPFET Collaboration
IFIC, NTC, UB, IMB-CNM, IFCA



CIEMAT

IFIC, ILC, ATF-ATF2

- Beam Dynamics Studies and commissioning of EXT line (LAL, KEK)
- Instrumentation: New Multi-OTR system (SLAC, KEK)
- Micromovers for FONT4 (KEK, JAI)
- Collimation (LAL, KEK)

IFIC, CLIC-CTF3

- BPM's for the TBL (CERN)

IFIC-CIEMAT, CLIC

- DR Kickers (CERN)

CIEMAT, CLIC-CTF3

- Quadrupole Mover (CERN)
- PETS (CERN)
- Orbit Correctors (CERN)
- Kickers (CERN)
- Septa (CERN)

CIEMAT, ILC

- TESLA500 (SLAC)
- Cooling of Superconducting Magnets

Expression of Interest for participation in the follow-up project of AIDA
to be submitted to the 1st Call for Integrating Activities under Horizon 2020

Proposal for R&D common activities of the International Linear Collider community

Test beam activities at CERN and DESY

Common DAQ and Combined test-beam infrastructure

Common software activity

European Project Office for Detectors

Power distribution development

High-field magnet testing facility