



CLIC-ILC Collaboration

Barry Barish

CLIC-ILC Collaboration #2

13-May-08



CLIC-ILC Collaboration

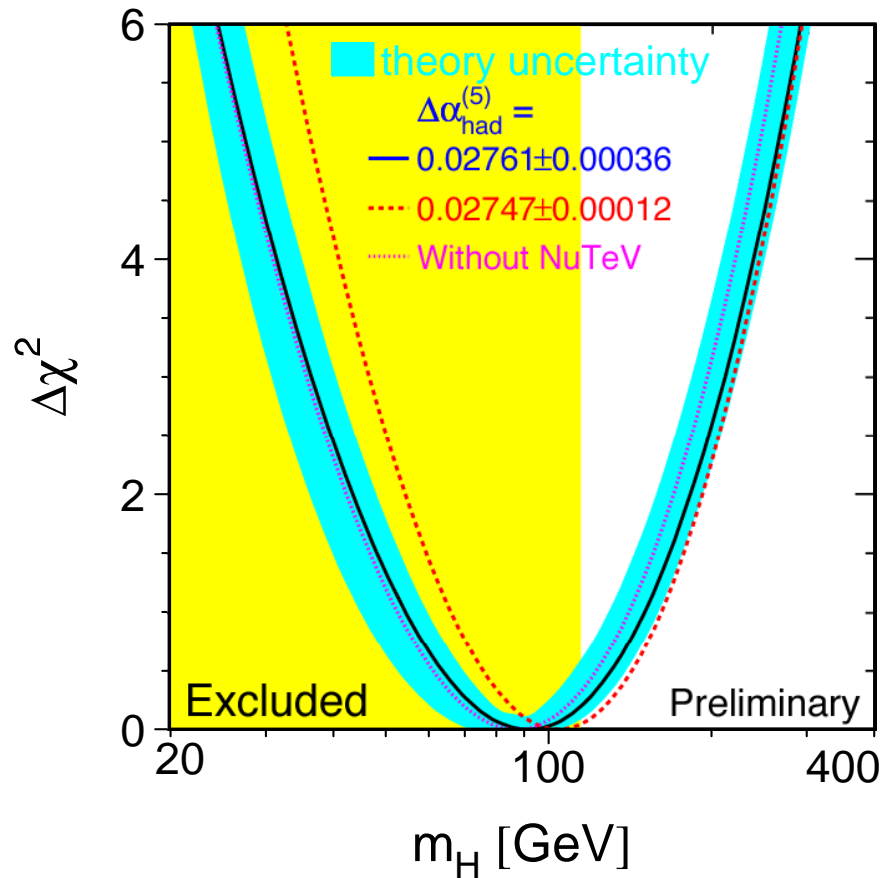
why collaborate?

- The LHC is going to open a new energy frontier and we all anticipate the discoveries

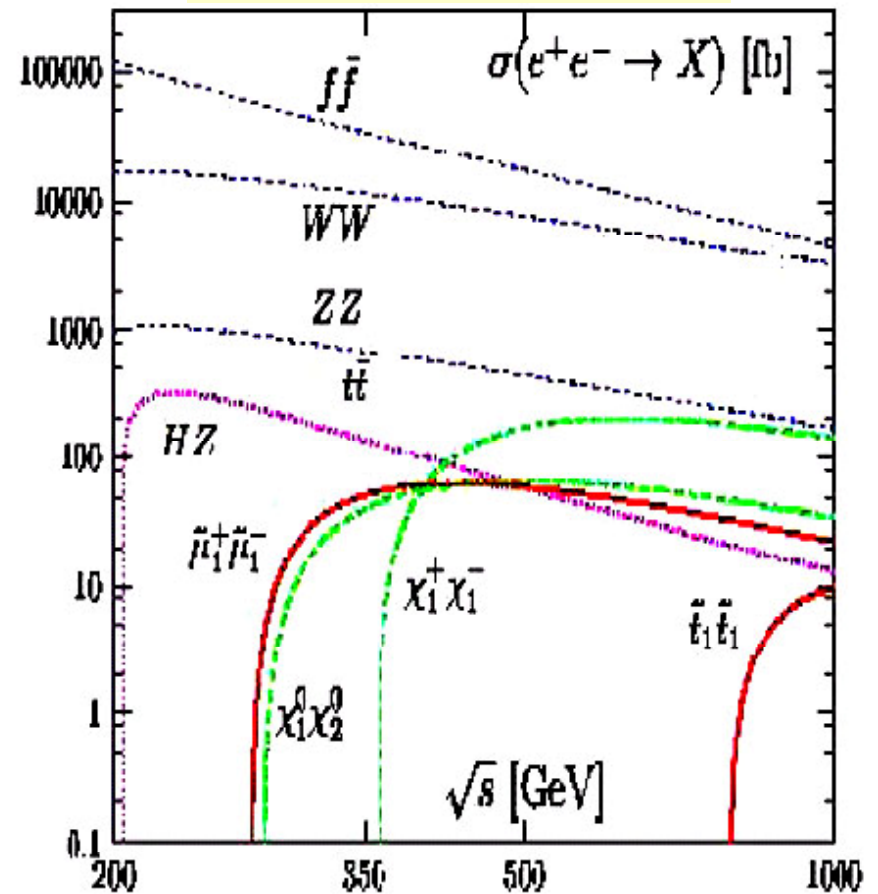


LHC opens up the TeV energy scale

HIGGS



Supersymmetry





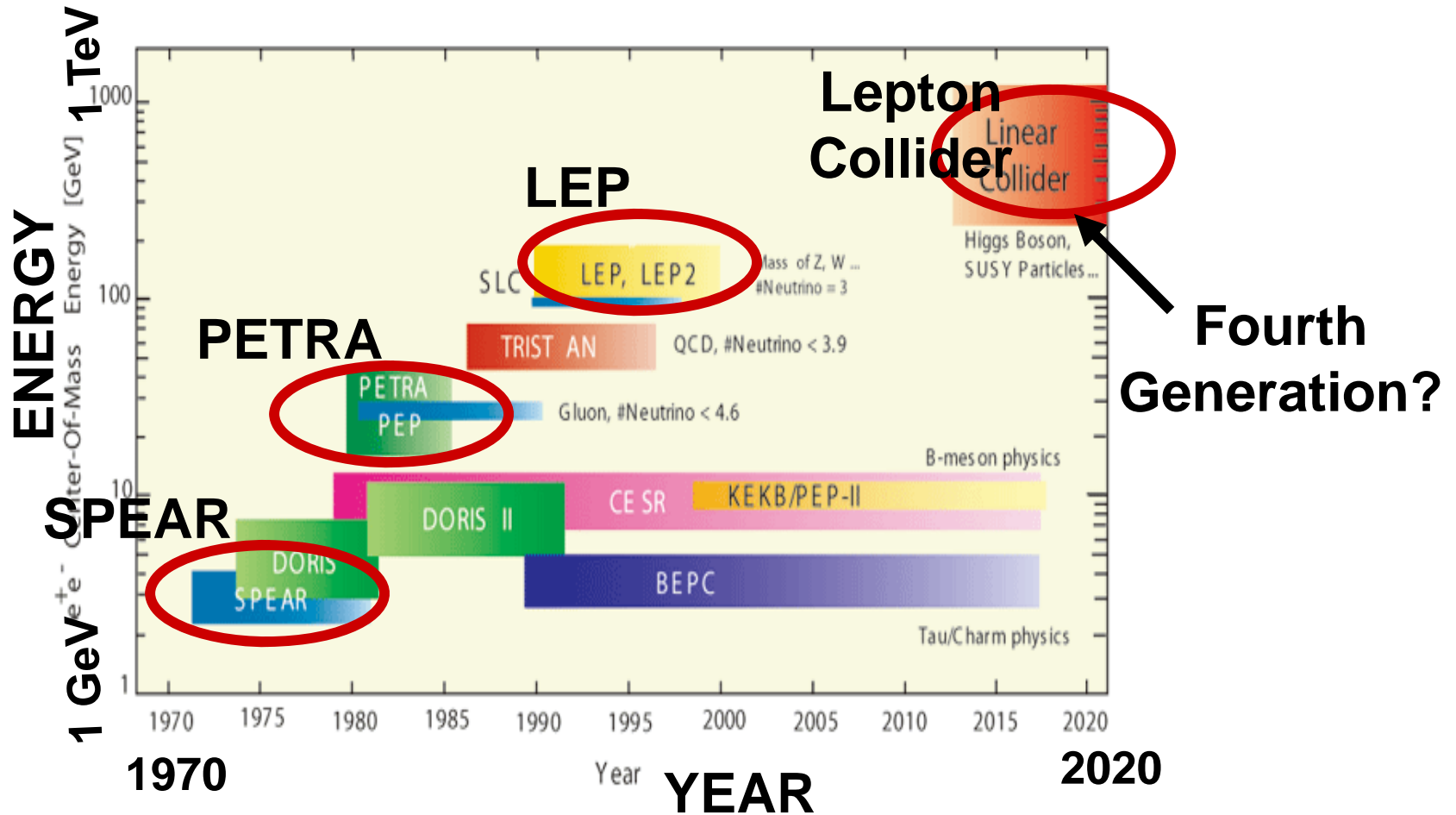
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- **A complementary lepton collider will almost certainly be strongly motivated by those discoveries.**

Three Generations of e^+e^- Colliders

The Energy Frontier





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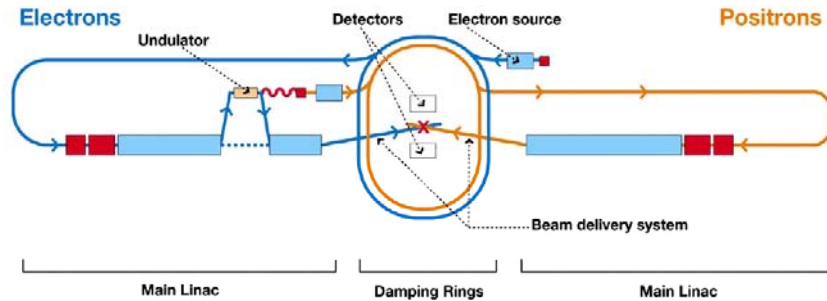
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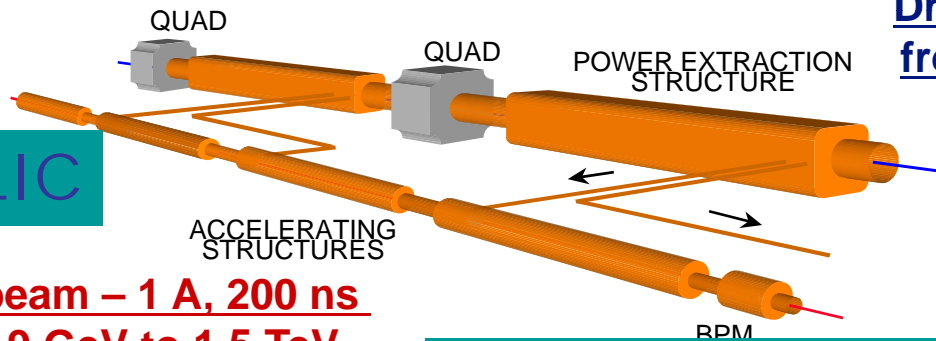
Possible TeV Scale Lepton Colliders

ILC



ILC < 1 TeV
Technically possible
~ 2019

CLIC

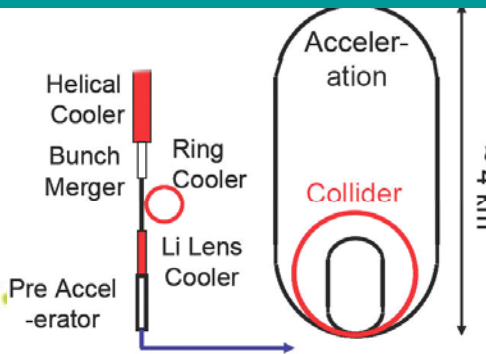


Drive beam - 95 A, 300 ns
from 2.4 GeV to 240 MeV

Main beam - 1 A, 200 ns
from 9 GeV to 1.5 TeV

CLIC < 3 TeV
Feasibility?
ILC + 5-10 yrs

Muon Collider



Muon Collider
< 4 TeV
FEASIBILITY??
ILC + 15 yrs?

Much R&D Needed

- Neutrino Factory R&D +
- bunch merging
- much more cooling
- etc

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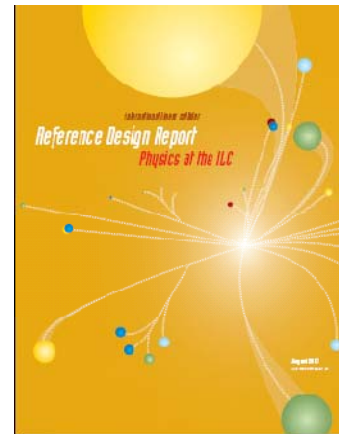


ILC Reference Design

- Reference Design Report (4 volumes)



Executive
Summary



Physics
at the
ILC



Accelerator



Detectors



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- **The choice should be determined by the science!**
- **Common goal! We need to optimize the developments, so a lepton collider can become a reality.**



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CLIC/ILC Collaboration #0

- Meetings at CERN in November when I visited CERN to give an ILC colloquium
 - Meeting with the CLIC Extended Steering Committee, where I suggested we explore areas of joint work, where both stand to gain.
- I also had a meeting with R Aymar, who endorsed on the general idea of increasing areas of joint work
- Followed up with discussions with ILC Executive Committee, and then, preliminary discussions with CLIC lead by ILC Project Managers



CLIC/ILC Collaboration #1



Introduction

- review selected subjects and define tasks which serve common interests –
 - **ILC and CLIC studies.**
 - (or which are close enough to yield useful direct exchange)
- Once defined, nominate contact persons for each subject (convenors)
 - **Who prepared the discussions for today's meeting**
 - **And will follow-up afterwards on listed tasks**

M Ross



Initiating joint work

- **Co-conveners of the CLIC-ILC working groups**
 - **Civil Engineering and Conventional Facilities (CFS):** Claude Hauviller/CERN, John Osborne/CERN, Vic Kuchler (FNAL)
 - **Beam Delivery Systems and Machine Detector Interface:** D.Schulte/CERN, Brett Parker (BNL), Andrei Seryi (SLAC), Emmanuel Tsesmelis/CERN
 - **Detectors:** L.Linssen/CERN, Francois Richard/LAL, Dieter.Schlatter/CERN, Sakue Yamada/KEK
 - **Cost & Schedule:** John Carwardine (ANL), Katy Foraz/CERN, Peter Garbincius (FNAL), Tetsuo Shidara (KEK), Sylvain Weisz/CERN
 - **Beam Dynamics:** A.Latina/FNAL), Kiyoshi Kubo (KEK), D.Schulte/CERN, Nick Walker (DESY)



CLIC-ILC Collaboration

Moving Forward



CLIC-ILC Collaboration - #2

Tuesday 13 May 2008

from 14:30 to

19:30 Europe/Zurich

at CERN ([Room B](#))

chaired by:

Barry Barish (CalTech) ,

Jean-Pierre Delahaye (CERN)

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Tuesday 13 May 2008

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14:30->14:50 **Introduction on the Motivation and Prospects of the CLIC-ILC Collaboration** (Convener: Barry Barish (*CalTech*) , Jean-Pierre Delahaye (*CERN*))

14:50->17:20 **Presentation of the Draft Mandate, Members and Work Programme of each of the Working Groups**

14:50 Civil Engineering and Conventional Facilities (20) Claude Hauviller (*CERN*) , John Andrew Osborne (*CERN*) , Vic Kuchler (*FNAL*)

15:10 Beam Delivery Systems and Machine Detector Interface (20) Daniel Schulte (*CERN*) , Emmanuel Tsesmelis (*CERN*) , Brett Parker (*BNL*) , Andrei Seryi (*SLAC*)

15:30 coffee break

16:00 Detectors (20) Lucie Linssen (*CERN*) , Wolf-Dieter Schlatter (*CERN*) , Francois Richard (*LAL*) , Sakue Yamada (*KEK*)

16:20 Cost & Schedule (20) Katy Foraz (*CERN*) , Sylvain Weisz (*CERN*) , Peter Garbincius (*FNAL*) , John Cawardine (*ANL*) , Tetsuo Shidara (*KEK*)

16:40 Beam Dynamics (20) Daniel Schulte (*CERN*) , Nick Walker (*DESY*) , Kiyoshi Kubo (*KEK*) , Andrea Latina (*CERN*)

17:00 Discussion (20)

17:20->17:40 **Organisation and Next Steps**

17:40->18:00 **AoB**



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CLIC – ILC Collaboration Strategy

- Components – working together on pieces
 - **There will be much in common – starter projects kept definitively small.**
- What can ILC bring to CLIC?
 - **Use the same cost basis. – develop a credible comparison**
 - **ILC could even help in the costing of CLIC.**
- CLIC to ILC:
- CERN expertise helpful to solve.
 - **There may not always be a point to point balance.**
- Line up tasks and skill-sets!
- The big picture may (will) be harder to arrange.
- *The credibility of each, through the broader community, will be facilitated through communication.*

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Final Words

- We have selected areas where the ILC may gain more in some, CLIC in others. But overall, we should have a net gain for both and therefore be moving forward toward our mutual goals *A Tev-scale Lepton Collider*
- *In our email regarding today's meeting, JP and I said, "The real work could then start in dedicated meetings of each working group during the GDE meeting at Dubna for the Accelerator related WG and to the Warsaw meeting for the Detector WG."*
- **Let's begin the work!**