

August 2007: ILC RDR (CDR equivalent) completed

June 2013: ILC TDR completed

Tokyo



CERN



Fermilab



TDR 5 volumes



Culmination of many years of R&Ds  
Performances and costs well understood

ILC is in principle ready to go technically

# Statement on the ILC Operating at 250 GeV as a Higgs Boson Factory

## ICFA, Nov 2017

...ICFA considers the ILC a key science project complementary to the LHC and its upgrade.

ICFA welcomes the efforts by the Linear Collider Collaboration on cost reductions for the ILC, which indicate that **up to 40% cost reduction relative to the 2013 Technical Design Report (500 GeV ILC)** is possible for a 250 GeV collider.

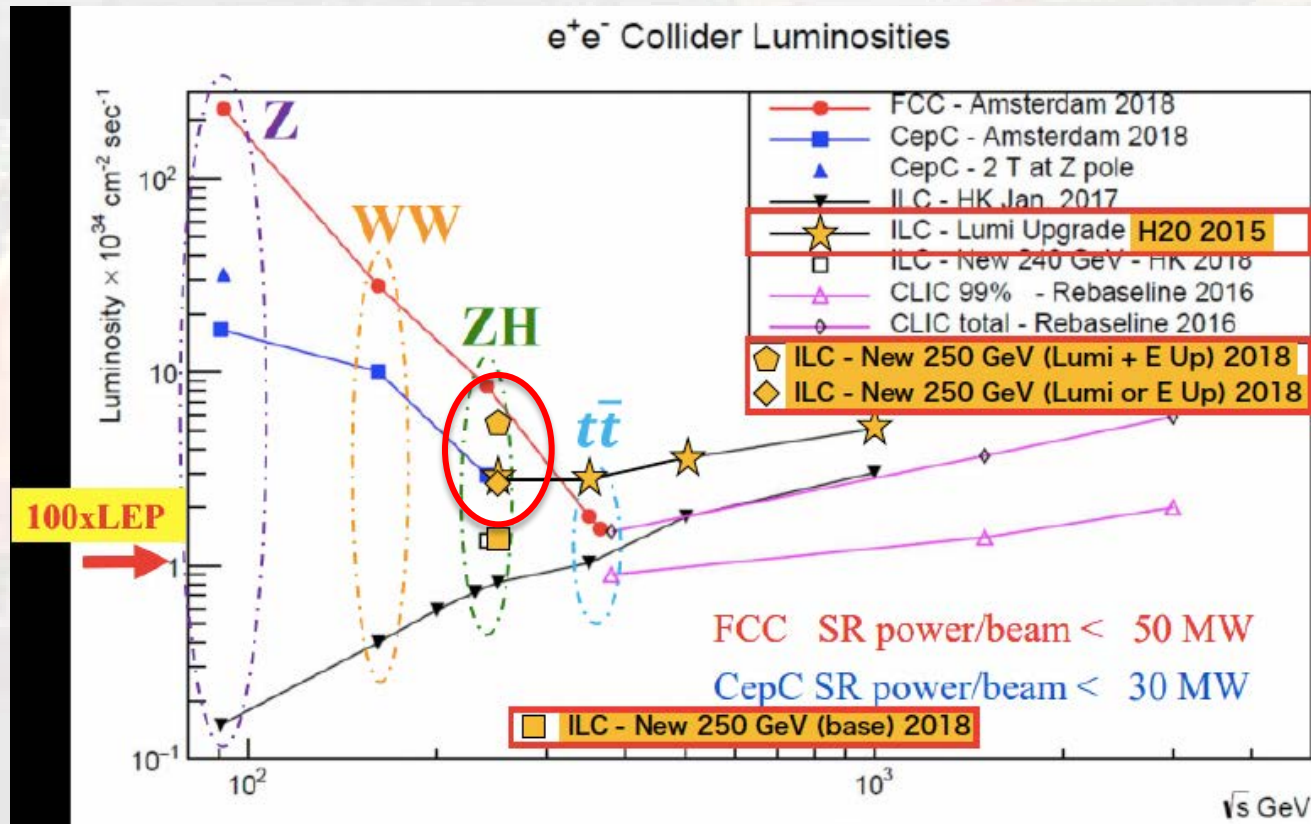
ICFA emphasizes **the extendibility of the ILC to higher energies** and notes that there is large discovery potential with important additional measurements accessible at energies beyond 250 GeV. ICFA thus supports the conclusions of the Linear Collider Board (LCB) in their report presented at this meeting and **very strongly encourages Japan to realize the ILC in a timely fashion as a Higgs boson factory with a center-of-mass energy of 250 GeV as an international project, led by Japanese initiative.**

# Luminosity Upgrades

Options:

a) x2 by doubling the number of bunches

b) x2 by doubling the rep rate (5 Hz  $\rightarrow$  10 Hz, requires 500 GeV ILC at 5 Hz)



Shown by Geoff Taylor

# Polarization

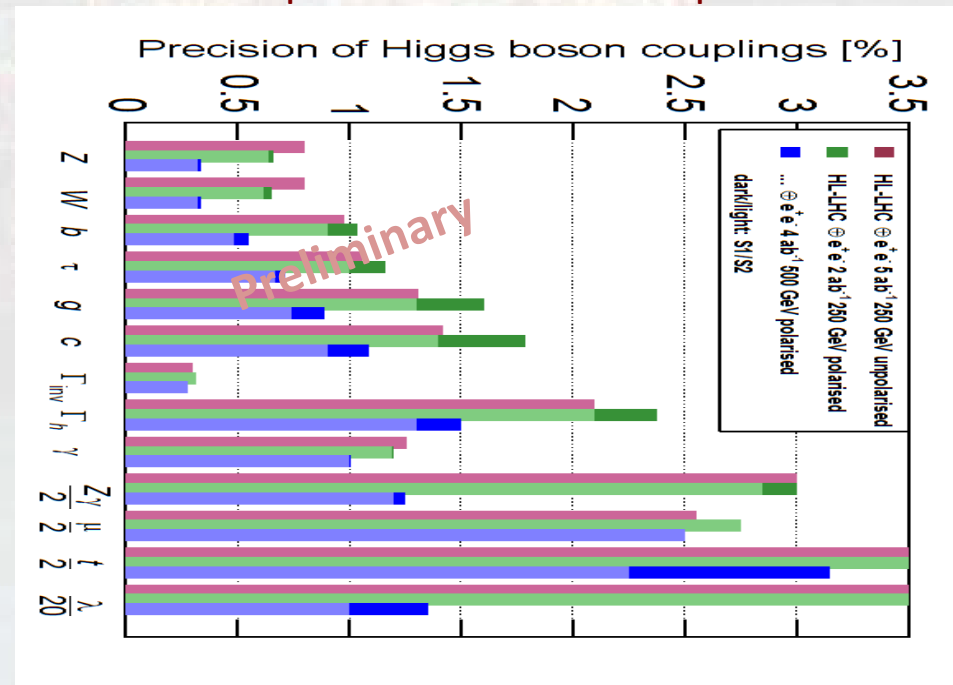
Beam polarization is a powerful tool:

When measuring Higgs couplings by EFT fit, **polarization effectively increases integrated luminosity** not just by the increased rates but also by its power to separate different EFT operators.

If ILC observes new phenomena, polarization will play an essential role in **determining their chiral properties**.

Polarization will also allow **systematic uncertainties** on many measurements to be significantly reduced.

2 ab-1 polarized ~ 5 ab-1 unpolarized



# Coordination Council for Realization of ILC by Ruling Party (LDP)

## ● Established Sep 18, 2018

- Takeo Kawamura (chair), Toshihiro Nikai, Akira Amari, + ...

Chairs of committees related to science and technologies and disaster recovery.

## Resolution:

1. To position ILC as a **cross-policy "national project"**, covering not only science, technology and innovation but also many challenges faced by the national government;
2. To secure the financial resources for the realization of ILC (beyond the Olympic Games) **outside of the ordinary science and technology, academic or university budgets;**
3. (On cost sharing)



2 out of 3 most important posts of LDP 5

# MEXT ILC Advisory Panel on ILC250

Final Report: July 4, 2018

## On Scientific Merits

...

'The strongest advantage of experiments at the 250 GeV ILC is their capability to **precisely measure the couplings of the Higgs boson**. If any coupling(s) is measured to be different from the Standard Model prediction, a particle-by-particle pattern of the deviation will **elucidate the nature of new physics**, suggesting a future direction of elementary particle physics. Mysteries in the Standard-Model such as **the nature of dark matter and compositeness of the Higgs boson may also be clarified** with this measurement.'

...

Also commented on cost estimation, technical feasibility, human resources, organization/management, and international cooperation.

# Science Council of Japan on ILC250

Report: Dec 19, 2018

## Executive summary (official translation)

...

Judging from the plan and preparatory status of the project presented at the moment, the Science Council of Japan does not reach a consensus to support hosting the 250GeV ILC project in Japan. The SCJ considers that government should be cautious regarding a decision to announce its commitment to host the ILC in Japan.

...

(Concerns: No clear prospect for proper international cost-sharing or securing human resources. Not convinced that cost is justified by the scientific merit. Technically, considerable hurdles remain to be cleared.)

Question being asked: 'Should Japan initiate serious international negotiations, such as cost-sharing and governance?'

MEXT Minister Shibayama: 'SCJ report is one input to be considered.'

# On Announcement by Japanese Government

Chair's Summary from the LCB phone meeting that took place on 5 December 2018 concerning the status of the ILC discussion in Japan

In order to adhere to the plan, it would be crucial to have a statement from the Japanese government in time for the March 2018 LCB/ICFA meeting, expressing its strong interest to host the ILC in Japan and intention to initiate international discussion, together with an indication of possible Japanese contribution along the line suggested in the LCB conclusion endorsed by the ICFA in Ottawa in November 2017.

→ Effective deadline: March 7/8, 2019 LCB/ICFA meeting in Tokyo  
(to be properly included in the European Strategy Update discussion)

(LCB, Nov 2017)

...A natural expectation would be that the cost for the civil construction and other infrastructure is the responsibility of the host country, while the accelerator construction should be shared appropriately. ...