



Report from Physics Coordinators

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on behalf of the Physics WG
February 16, 2022

ILC Situation in Japan

MEXT Review

Final Report published on Feb. 14

Summary part (Sec. 4)

Based on DeepL translation

From the discussions so far, it can be seen that *there has been no significant progress in the ILC project* to clarify the future prospects of the ILC project, although some technical progress has been made in the three years *since the previous panel review*. Given the situation, *at this point in time, we are not in a position to support the transition, to be initiated by the expression of interest by the Japanese government to host the project, to the ILC preparatory laboratory stage on the scale proposed, as desired by the proposing research community, and we must say that it is premature.*

With this said, from the perspective of hoping for the continuous development of this field in the future, *the Second ILC Advisory Panel would like to make the following comments.*

In the field of particle physics and accelerator science, which is its foundation, Japan has a strong presence in the world, having produced many Japanese Nobel laureates, and it is expected that Japan will continue to produce world-leading research results. The panel shared the same understanding. The domestic community's activities themselves should also be appreciated, as they have provided the world with an important perspective on the development of particle physics, namely the linear accelerator. Looking ahead to the future of particle physics in the world, *the academic significance of the precise measurement of the Higgs particle and the development of "physics beyond the standard model" will remain unchanged.* On the other hand, in light of the recent *severe financial situation* of each country, *it is time for the research community to reconsider how to proceed with the ILC project.*

Continued

Based on DeepL translation

In this reconsideration, the discussion should not be confined to the ILC project, but it should also take into account the current status of the FCC feasibility study *in order to vision future particle physics and accelerator science in a sustainable form, to consider how to reconstruct the international R&D strategy for the Higgs factory, including the ILC and FCC*, on a medium- to long-term time scale, and to clarify what are the technological issues that form the core of the strategy.

In the meantime, the ILC project should not be focused on the ILC preparatory laboratory as proposed this time, but rather, it *should separate the site issues that directly affect the international cost-sharing discussion*. It *should seek an approach to steadily implement the strategically important technical issues* for the development of the next generation accelerator, taking into account the latest technological trends, *under an appropriate division of labor among the research institutes* of the countries concerned, and develop the research and development in a phased manner, taking into account various circumstances.

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Based on DeepL translation

In order to realize such a large project, it is *important to foster an environment in which the government officials of the countries concerned* can discuss the project while going through *the proper procedures within each country* and sharing their own circumstances, referring to the consensus building process of past large-scale international joint projects such as the ITER project.

It is *also important for the research community to make steady efforts to maintain a relationship of trust among the parties involved and deepen mutual understanding through two-way communication, in order to gain broad support from various stakeholders in Japan and abroad, regarding the original purpose of the project together with its ripple effects.* In this regard, we *look forward to the future activities of ILC Japan*, which was newly established this year.

Once again, we *hope that the world's particle physics and accelerator science communities will engage in more realistic discussions for the future development of the field, involving young researchers who will be responsible for the future.*

My Personal Take

The basic conclusions didn't change from the draft shown at the last meeting of the panel.

- The panel decided it is premature to make transition to the full-fledged pre-lab as proposed by IDT at this point of time.***
- The panel understood the importance of precision Higgs measurements and recommended the world HEP community to build a consensus on a more realistic strategy.***
- Technical part of the pre-lab work package activities would be supported at least partially.***

We need to wait and see how ICFA will respond to this.

IDT Phys/Det WG (WG3)

<https://linearcollider.org/team/wg3/>

WG3 Meeting every two weeks (last one on Feb. 9)

- IDT-eb's view for next period (by Tatsuya)***
- ILD future strategy planning (by Ties)***
- Usual subgroup reports***

Physics Potential & Opportunity Group

- Schedule for regular open meetings:

August 12: talks from Tim Barklow on $e\gamma \rightarrow eH$ and on the new CEPS paper

September 16: talks from Matt Basso on $H \rightarrow ss$ and from Yu Kato on $H \rightarrow 4b$

No meeting in October

November 11/12: bottom, e^+ pol, SMEFT, $t\bar{t}$ threshold (see next page):

<https://agenda.linearcollider.org/event/9351/>

December 16/17: generators, CPV in SMEFT, H^3 effects in 2HDM,
energy calibration and luminosity spectrum (GW)

<https://agenda.linearcollider.org/event/9352/>

Feb. 10/11: open top, event shapes (QCD), NR

<https://agenda.linearcollider.org/event/9354/>

Mar. 10, Apr. 14, ...

- Snowmass meetings;

EF workshop Aug. 30 - Sep.3

<https://indico.fnal.gov/event/49756/>

Snowmass Day (all frontiers) Sep. 24

<https://indico.fnal.gov/event/50538/>

Snowmass Agora

Dec. 15: Linear e^+e^- Colliders

<https://indico.fnal.gov/event/52161/timetable/>

Jan. 19: Circular e^+e^- Colliders

<https://indico.fnal.gov/event/52534/timetable/>

Feb. 16: 2022: Muon Colliders

<https://indico.fnal.gov/event/53010/timetable/>

Software & Computing Group

Software tutorials <https://agenda.linearcollider.org/category/273/>

- July 21, Introduction to iLCSoft: <https://agenda.linearcollider.org/event/9272/>
- August 18, LCFIPlus: <https://agenda.linearcollider.org/event/9318/>
- October 13, SGV fast simulation: <https://agenda.linearcollider.org/event/9394/>
- ***Planning the next one for PFA?***

ILD Physics WG Activities

***- Joint Effort with Software WG
and IDT WG3 -***

Today (February 16)

- ***Update on $e^+e^- \rightarrow ss$ Analysis by Yuichi***
- ***Improved reconstruction of heavy flavor jets with a correction to semi-leptonic decays in the ILD by Yasser***
- ***ILD model with all-silicon tracker by Daniel***

Proposed S&A meeting schedule

Feb. 16: Daniel
Mar. 2: Frank
Mar. 16: KF
Mar. 30: Filip?

S&A meeting usually every two weeks on Wednesday at 14:00 CERN time

Schedule also on

<https://confluence.desy.de/display/ILD/ILD+Physics+Working+group>

Physics conveners' meeting every two weeks on the same day as the S&A meeting at 13:00 CERN time.

Conveners' ML:

ild-physics-conveners@desy.de

Use this mailing list to send your talk request.

Stay safe!