

Recent Status of the ILC Project in Japan

Keisuke Fujii (KEK)

Sep. 10, 2015

MEXT's ILC Review

MEXT

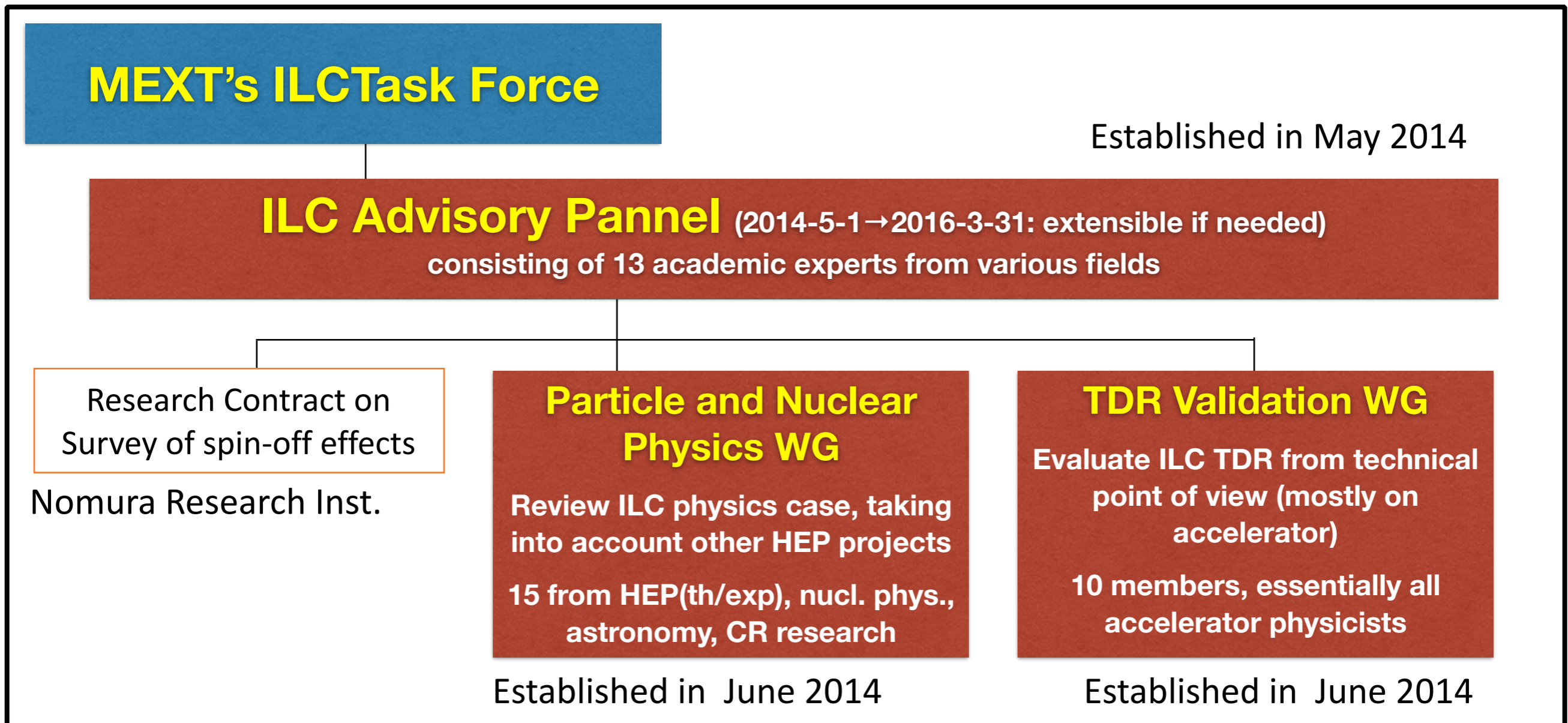
=

Japan's
**Ministry of
Education,
Culture, Sports, Science and
Technology**

MEXT's ILC Review

Oct., 2013: **Japanese HEP community** filed a petition for the Japanese government to invite the ILC to Japan. → **ILC became a project officially recognized by the government.**

May 8, 2014: An **Advisory Panel** including external members under **MEXT's ILC TF** started the official review process!



Particle and Nuclear Physics WG had 8 meetings and TDR validation WG had 6 meetings before producing their reports to the ILC Advisory Panel in March 2015. *The ILC advisory panel then published an interim summary of discussions on Aug. 5, 2015.*

Summary of the ILC Advisory Panel's Discussions to Date

The ILC Advisory Panel

Official English version available from

http://www.mext.go.jp/component/b_menu/shingi/toushin/_icsFiles/afieldfile/2015/08/05/1360596_3.pdf

Table of Contents

1. Discussion background and target	1
2. Overview of discussions	2
3. Recommendations	5
4. Review of necessary human resources in the construction and operation periods	7
5. Future prospects of the investigation	7
Supporting documents	8
“Challenges and activities to understand natural lows in a unified framework”	

3. Recommendations

Based on the investigations and reports by the working groups and discussions by the advisory panel, the panel recommends the following on the ILC project;

Recommendation 1: The ILC project requires huge investment that is so huge that a single country cannot cover, thus it is indispensable to share the cost internationally. From the viewpoint that the huge investments in new science projects must be weighed based upon the scientific merit of the project, a clear vision on the discovery potential of new particles as well as that of precision measurements of the Higgs boson and the top quark has to be shown so as to bring about novel development that goes beyond the Standard Model of the particle physics.

- The objective of the ILC project is to uncover physics beyond the Standard Model through the precision measurements of the Higgs boson and top quark and through searches for new particles. In case of new discoveries beyond the Standard Model, its scientific impact on elementary particle physics will be significant.
- As the ILC project requires huge investment, it is indispensable and essential prerequisite for the implementation to have a clear vision of participation and cost sharing by international partners including European countries and the United States while taking into account mid-term and long-term domestic economic and financial situations.
- From the viewpoint the huge investments in new science projects must be weighed based upon the scientific merit of the project, it is necessary to have a clear strategy of the discovery potential of new particles such as supersymmetry particles which are considered as a candidate of the dark matter, in addition to that of precision measurements of the Higgs boson and top quark, has to be shown so as to bring about novel development that goes beyond the Standard Model.
- It is appropriate to proceed discussion on a possible international cost sharing scheme of the ILC project by not only taking into account the scheme used by CERN but also taking into account the schemes of existing large scale international projects such as the International Thermonuclear Experimental Reactor (ITER) and International Space Station (ISS).

Recommendation 2: Since the specifications of the performance and the scientific achievements of the ILC are considered to be designed based on the results of LHC experiments, which are planned to be executed through the end of 2017, it is necessary to closely monitor, analyze and examine the development of LHC experiments . Furthermore, it is necessary to clarify how to solve technical issues and how to mitigate cost risk associated with the project.

- The specifications of the performance and the scientific achievements of the ILC project depend on the results of LHC experiments in the 13TeV run which is currently going on through the end of 2017. Especially whether new particle(s) can be found or not, and what their mass value(s) would be in case of the discovery, will provide important viewpoint for the judgement.
- It is important to show a clear outlook to address technical and cost issues pointed out at the working group discussions.
- It is recommended to further enhance the maximum efforts to incorporate technology development that can improve the accelerator performance.

Recommendation 3: While presenting the total project plan, including not only the plan for the accelerator and related facilities but also the plan for other infrastructure as well as efforts pointed out in Recommendations 1 & 2, it is important to have general understanding on the project by the public and science communities.

5. Future prospects of the investigation

- We will set up another working group to investigate the issue of necessary human resources and their cultivation.
- We will commission another survey using an external research agency in order to understand the world trends in technology issues related to accelerator construction, and in approaches to reduce the production cost of accelerators.

Personal Comments

- a) The ILC Advisory Panel is setup within the government and hence its interim summary is official and hence will have certain effects on the government's future actions.
- b) ***The panel is not requesting a guarantee for any new particle discovery.*** It just wants to make sure that the machine specification is appropriate in terms of new particle discovery potential, in particular when a new particle will be found at the LHC. That is why it wants to closely monitor the LHC results.
- c) Based on the recommendations, ***it is expected that MEXT will start government-to-government talks.*** It is very important to make sure that the contacted governments to react positively, which would then induce a positive feedback towards a green light.
Note that what is needed at this stage is not a guarantee but a show of willingness to be a partner under the condition that Japan would officially express its interest in hosting the ILC in the future.
- d) I would like to ask those of you who want ILC to ***contact your governments so as to extract from the governments a positive feedback towards realization of the ILC.*** There would be no positive development without proactive bottom-up movements in the individual potential participating countries.
- e) There were some unofficial contacts made by MEXT in the past 1.5 years.
The government-to-government talks mentioned above will be made based on the recommendations by the Advisory Panel and hence has much higher importance, which means that their effects can be greater in both ways.
- f) I consider the fact that the panel set ***a definite deadline (2017) for the judgement*** in their interim summary very important. It could have been the end of the full LHC program (~2035). It is also important to understand that ***this does not mean that MEXT will just wait for the LHC run 2 results without doing anything.*** A new WG has been setup and a new investigation by Nomura institute has begun already as recommended in the interim summary. If some new particle or phenomenon is found at the LHC before this deadline, the panel is expected to discuss it promptly.
- g) By the end of 2017, we need to pave the way to the table for eventual official international negotiations for cost sharing. This needs the positive feedback from the potential partners during the period of the government-to-government talks as mentioned above. I would like to ask you again to ***work coherently on your governments.*** We have only two years or so. We need to hurry.

Government-to- Government Talks

An example

LC Newsline

<http://newsline.linearcollider.org/2015/06/11/>

FEATURE

Discussions at the political level over the ILC in US and Europe

by Rika Takahashi



Right after the Asian Linear Collider Workshop (ALCW) 2015 and ILC Tokyo Event, another big milestone for the ILC happened in the United States. From 26 to 30 April, three members of the Diet and members of Japan's Federation of Diet Members for Promotion of the ILC, Takeo Kawamura, Ryu Shionoya and Shun-ichi Suzuki visited Washington D.C., to meet with their American counterparts to discuss the ILC.

DIRECTOR'S CORNER

Japanese diet members go to Washington

by Harry Weerts



Japanese and US officials as well as representatives from the physics community met in Washington, D.C. to discuss how Japan and the US can work together toward the realisation of the ILC. Americas Regional Director Harry Weerts reports.