

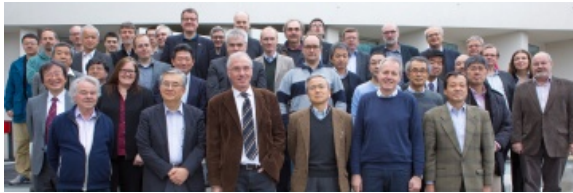
# LC NEWSLINE

THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

AROUND THE WORLD

## More time for collaboration

by Barbara Warmbein



DESY and KEK are two labs that have a lot in common. They know a lot about accelerators, operated and have operated a number of them in their long and eventful histories. They are their countries' hubs for particle physics research, but they also run accelerators for photon science. They are national labs that collaborate closely with other institutes and labs from around the world. And, notably, with each other. At the recent DESY KEK Workshop at DESY in Hamburg, Germany, the two therefore decided to extend the existing cooperation agreement by another five years.

FEATURE

## Big science needs international partnership

by Rika Takahashi



After a strategic US-Japan meeting earlier this year, the delegates from Japan recently briefed their colleagues on the outcome of the various discussions. The US and Japan have strong ties in science and technology, and the ILC plays an important role.

DIRECTOR'S CORNER



## Morioka welcomes next LC workshop

by Hitoshi Yamamoto

In northern Japan, Iwate prefecture is full of cultural and natural attractions and – even more important – very ILC friendly. Local governments support the ILC with enthusiasm and the local population is quite knowledgeable about the ILC, from children to grandparents. Attendants of the next LCWS2016 workshop will have the opportunity to see it by themselves while in Morioka next December.

## IMAGE OF THE WEEK



## Thirst for knowledge – the ILC vending machine

Image: Iwate Prefecture International Linear Collider Promotion Council

Fancying a coffee in Morioka? Supporting the ILC? You could do both at the same time with the ILC vending machine. For each cup, part of the proceeds will go to the Iwate ILC Promotion Council. You will find it on the third floor of the Malios skyscraper next to Morioka Station.

## IN THE NEWS

from *Kahoku Shinpo*

22 March 2016

[被災地から地方創生 復興やまちづくり議論](#)

経済評論家の三橋貴明氏が東北復興と日本の経済成長をテーマに基調講演。デフレ脱却策として公共投資の重要性を説き、「東北の復興事業や世界中の知性が集まる国際リニアコライダー（ILC）に、政府は積極的に投資するべきだ」と語った。（Takaaki Mitsuhashi, an economic analyst gave a keynote lecture about Tohoku's reconstruction and economic growth. He stressed the importance of public investment as deflation measures, and said "Japanese government should invest in ILC where intelligence from all over the world will gather".)

from *Kitakami Times*

11 March 2016

[The Reconstruction and the ILC](#)

If the ILC is built here, the collider will stretch from Oshu and Ichinoseki inland to Kesenuma on the coast of Miyagi Prefecture. Parts will be shipped to harbors like the one in Kesenuma, and factories may be built in the surrounding areas.

from *Europa Press*

7 March 2016

[El acelerador de partículas japonés comienza su puesta a punto tras una larga remodelación](#)

Para ello se han usado nuevos detectores de píxeles desarrollados en la colaboración internacional DEPFET para el Colisionador Lineal Internacional (ILC). Estos detectores, más integrados y eficaces, están diseñados para un acelerador de partículas electrón-positrón, por lo que encajan perfectamente en Belle II. La fase de comisionado de las mejoras en los haces y el experimento Belle II está prevista en 2017.

## CALENDAR

### Upcoming events

[4èmes Journées - Collisionneur Linéaire](#)  
Paris, France  
23- 24 March 2016

[ECFA Linear Collider Workshop](#)  
Santander, Spain  
30 May- 05 June 2016

[View complete calendar](#)

## PREPRINTS

### ARXIV PREPRINTS

[1603.06681](#)  
Lepton flavor violating Higgs boson decay  $h \rightarrow \mu\tau$  at the ILC

[1603.06501](#)  
 $\alpha_s$ ,  $V_{cs}$ , and CKM unitarity test from W decays at NNLO

[1603.06016](#)  
Updated Study of a Precision Measurement of the W Mass from a Threshold Scan Using Polarized  $e^-$  and  $e^+$  at ILC

[1603.05952](#)  
The Lepton Flavour Violating Higgs Decays at the HL-LHC and the ILC

[1603.05651](#)  
Linear Accelerator Test Facility at LNF Conceptual Design Report

[1603.05588](#)  
Single and double production of the Higgs boson at hadron and lepton colliders in minimal composite Higgs models

[1603.04764](#)  
A First Look at the Impact of NNNLO Theory Uncertainties on Top Mass Measurements at the ILC

[1603.04737](#)  
Search for Higgs portal DM at the ILC

[1603.04718](#)  
Higgs decay to two muons at ILC

[1603.04242](#)  
Rare Higgs three body decay induced by top-Higgs FCNC coupling in the littlest Higgs Model with T-parity

[1603.04205](#)  
TeV scale mirage mediation in NMSSM and precision Higgs measurement

[1603.03385](#)  
Probing New Physics Scales from Higgs and Electroweak Observables at  $e^+e^-$  Higgs Factory

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AROUND THE WORLD

## More time for collaboration

Barbara Warmbein | [24 March 2016](#)



*Konnichiwa Hamburg! Participants of the DESY-KEK meeting. Image: DESY*

DESY and KEK are two labs that have a lot in common. They know a lot about accelerators, operated and have operated a number of them in their long and eventful histories. They are their countries' hubs for particle physics research, but they also run accelerators for photon science. They are national labs that collaborate closely with other institutes and labs from around the world. And, notably, with each other. At the recent DESY KEK Workshop at DESY in Hamburg, Germany, the two therefore decided to extend the existing cooperation agreement by another five years.

Even though the first cooperation agreement was signed some 25 years ago, the actual cooperation goes back more than 40 years, when the JADE experiment was in full swing (JADE stands for JAPAN, Deutschland and England, by the way, and was operated at DESY). At the moment, the particle physics community is gearing up for the start of the Belle II at KEK. Since

2012, DESY has been one of eleven German and 98 international institutes from 23 countries participating in the particle physics experiment Belle II in Japan. Belle II is only one of many interests shared by DESY and KEK – for example, both are closely involved in the ATLAS experiment at the LHC and of course in the ILC.

Masanori Yamauchi, the director general of KEK, and Helmut Dosch, the chairman of DESY's board of directors, believe there is still enormous potential for future collaboration. "DESY and KEK have a great deal in common and many good cooperative projects," says Masanori Yamauchi. To ensure that this good cooperation can continue, the third DESY KEK Workshop was held from 7 to 8 March 2016 in Hamburg. These workshops take place once every eighteen months, alternating between Hamburg and Tsukuba, to give the managing board and the research scientists an opportunity to discuss existing and future projects, to develop new ideas and to move projects ahead. "DESY is not only helping to build the central new detector for Belle II but will also be testing it here," explains Joachim Mnich, DESY's director of particle and astroparticle physics.

Another idea that emerged at the meeting is an experiment with a cryomodule on a boat. Accelerator experts are considering shipping an accelerator module from Hamburg to Tsukuba after first carrying out very precise measurements on it. They would then repeat the same measurements on its arrival at KEK to check how the performance of the high-tech module is affected by the long sea voyage (if at all). If accelerator modules for the future ILC are to be manufactured all over the world – in Europe, America and Asia – it is essential that they are capable of being transported over long distances.

In addition, KEK is interested in DESY's international side and is therefore sending a delegation to Germany for a number of days, for example to hear more about DESY's experiences with international users.

[BELLE-II](#) | [DESY](#) | [ILC](#) | [KEK](#) | [LHC](#) | [PHOTON SCIENCE](#)

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FEATURE

## Big science needs international partnership

Rika Takahashi | [24 March 2016](#)



*General meeting of Federation of Diet members to promote the realisation of ILC*

International Linear Collider is, as its name suggests, is being discussed as an international project, which involves many countries around the world. As reported in the [3 March issue of LC NewsLine](#), US-Japan Political Leader's Forum on Science and Technology was held in Washington D.C., USA, marking an important milestone to move the ILC project forward.

On 4 March, the Federation of Diet members' general meeting was held in Tokyo, and a debriefing of their US visit was made. The meeting room in the Diet members' building was full with 56 diet members and their deputies, and participants from government agencies including the Cabinet Office, Ministry for Education, Culture, Sports, Science, and Technology (MEXT), Ministry of Foreign Affairs, Ministry of Land, Infrastructure, Transport and Tourism, Ministry of Economy, Trade and Industry, as well as scientists and industry members.

They summarised the fruits of the visit in three points:

1. Realisation of the first forum,
2. Fruitful discussion with US department of energy, and
3. Enlisting the support for the ILC from Senator Mark Kirk. They agreed to strengthen the US-Japan relationship on science and technology, putting special focus on the four areas of space exploitation, fusion, supercomputing and accelerator science.

The forum was held on 11 February at the Rayburn House Office building, with participants of leaders from political, bureaucratic, industry, and scientific domains. Participants from the Japanese side included three politicians from the Federation of Diet Members for the ILC, Ryu Shionoya, secretary-general, Shunichi Suzuki, vice chair, and Taku Otsuka, deputy director general, as well as Teruo Kishi, science and technology advisor to the Minister for Foreign Affairs, and Hiroshi Ikukawa, deputy director of the research promotion bureau in MEXT, Chair of federation. Takeo Kawamura could not attend the meeting, but the message from Kawamura along with Hirofumi Nakasone, chair of Japan-US Parliamentary Association, and vice chair Kenji Kosaka was announced at the forum.

Another meeting at the US House took longer than expected, and four congressmen who had planned to attend the symposium couldn't join. However, in a message Joaquin Castro and Charles W. Boustany, Co-chairs of the Japan Caucus, reaffirmed the importance of the US-Japan cooperation on science and technology issues. Also, the Japanese delegation met Diana DeGette, and Billy Long, co-chairs of a US Japan Study Group,

The following day was a day for several important meetings. One was the “technical session” held at the Hudson Institute, a non-profit think tank, discussing the US-Japan cooperation towards the ILC. Suzuki said in his concluding address that the “ILC will require big budget. We understand that each country around the world is facing financial difficulties, but the world will share all the scientific outcomes and technological spin-offs from the ILC, and it should be done by international cooperation. I strongly wish that US scientists communicate with Congress and people in the US, and tell them how great the ILC project is.”

Japanese politicians also had a separate meeting with Cherry Murray, Director of the Office of Science of DOE, James Siegrist, Director of the High Energy Physics, as well as Hiroshi Ikekawa of MEXT. There were suggestions from the US side for issues both can work on at this moment. They stressed the importance of the study of project management methodology. They also pointed out the need to discuss about issues such as cost analysis based on the latest information, cost reduction potential by technical applications, and possible economic ripple effect in both countries. DOE proposed to set up a “discussion group” between DOE and MEXT to push the discussion forward.

Another important meeting was the one with Senator Mark Kirk. Because he is an Illinois-based political, he has a detailed knowledge of particle physics, has made significant contributions to raise the science budget, and strongly supports the neutrino programme in US. They agreed to position science and technology as key factor of the US-Japan bond, and support government in each country towards the realisation of the ILC.

At the debriefing on 4 March, Kazuo Todani, deputy minister of MEXT, gave feedback for the forum. He said that it is a general recognition that the big science projects need international cooperation. For that reason, MEXT appropriates a budget for international strategy planning including the study on the ILC in FY2016 national budget (under discussion in Diet). “We will make detailed study on successful and unsuccessful cases of project managements around the world, and seek the most appropriate management procedure with an eye to the possibility for Japan to host such project,” he said. He explained that MEXT regard the United States as one of the most important allies of Japan, and close communication between two countries is indispensable for planning an international strategy. “This forum helped further strengthen the rapport and mutual understanding between the political leaders. In parallel, we would like to deepen intergovernmental discussions,” he said. For the set up of the discussion group, he explained that MEXT recognises the importance of close cooperation with DOE, and will discuss about the specific procedure. He also said that they are planning to send the officer in charge to the US, and strengthening the structure in MEXT.

“We were able to confirm ILC’s significance in science and technology, effect in industry, security, and a number of other areas,” Shionoya concluded. The next forum meeting is planned to be held in Japan.

[ILC SITE](#) | [JAPAN](#) | [MEXT](#) | [UNITED STATES](#)

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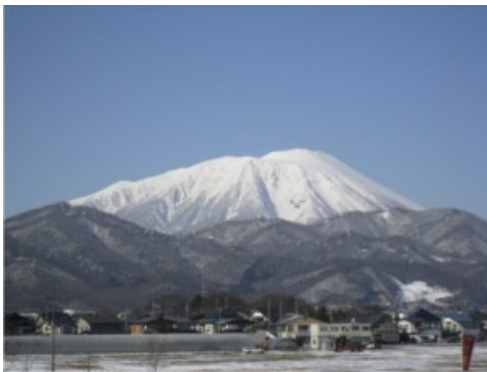
DIRECTOR'S CORNER

## Morioka welcomes next LC workshop

Hitoshi Yamamoto | [24 March 2016](#)



Morioka in Iwate will host the LCWS in December. The little purple bar is the ILC.



View of Mount Iwate

The 2016 international linear collider workshop LCWS2016 will be held in Morioka, Japan from 5 to 9 December. Since around 2010, two linear collider workshops are held per year – one in spring and another in autumn. Recent tradition is that the one in spring is hosted regionally, and the one in autumn is hosted globally, and the one in December is indeed organised by Linear Collider Collaboration.

Morioka is the capital of Iwate prefecture where the most part of the candidate site for the International Linear Collider is located. The meetings will take place in two modern buildings near Morioka station that is reachable from Tokyo in about two hours by bullet train. Even though it is expected to take one or two years for the Japanese government to decide whether or not to make a serious commitment to the ILC, it is accelerating its efforts regarding the ILC both domestically and internationally, and we may have some positive news by the time of the workshop.

The local governments support the ILC with enthusiasm, and are willing to offer substantial human and financial help for this workshop including an excursion to the candidate site. Local people also are very much hopeful that the ILC be realised in this region, and in fact are quite knowledgeable about the ILC from children to grandparents. When a group of experts on conventional facilities visited the region looking around a farm land that seemed private, an old man and a girl of about five years old came up to them. Some members of the group thought that the old man might tell them to go away. The old man, however, asked a Japanese member of the group about the work, and when he knew it was about the ILC, he said “please try your best to build the ILC – for this child.”

This region is full of attractions. There are many excellent hot springs in the mountains to the west of Morioka and they are also locations with exquisite scenery as well as ski resorts. By the way, there are no hot springs to the east of Morioka where the candidate site is located since the area is geologically stable and hot spring are usually associated with volcanic activities. On the cultural side, there are many historical spots including a town called Hiraizumi about 30 kilometres to the east of the would-be interaction region. This is an UNESCO world heritage site where there was a beautiful cultural center

rivaling that of Kyoto nearly one thousand years ago. Later, Morioka became the capital of a powerful Nambu clan, and that tradition is still alive today including the practice of tea ceremony. In fact, local organization of tea ceremony is offering to show the attendants of the workshop some piece of that tradition at the banquet. So, looking forward to see you in Morioka!

[IWATE PREFECTURE](#) | [KITAKAMI SITE](#) | [LCWS16](#) | [MORIOKA](#)

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IMAGE OF THE WEEK

## Thirst for knowledge – the ILC vending machine

Image: Iwate Prefecture International Linear Collider Promotion Council | [24 March 2016](#)

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Image: Iwate Prefecture International Linear Collider Promotion Council

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