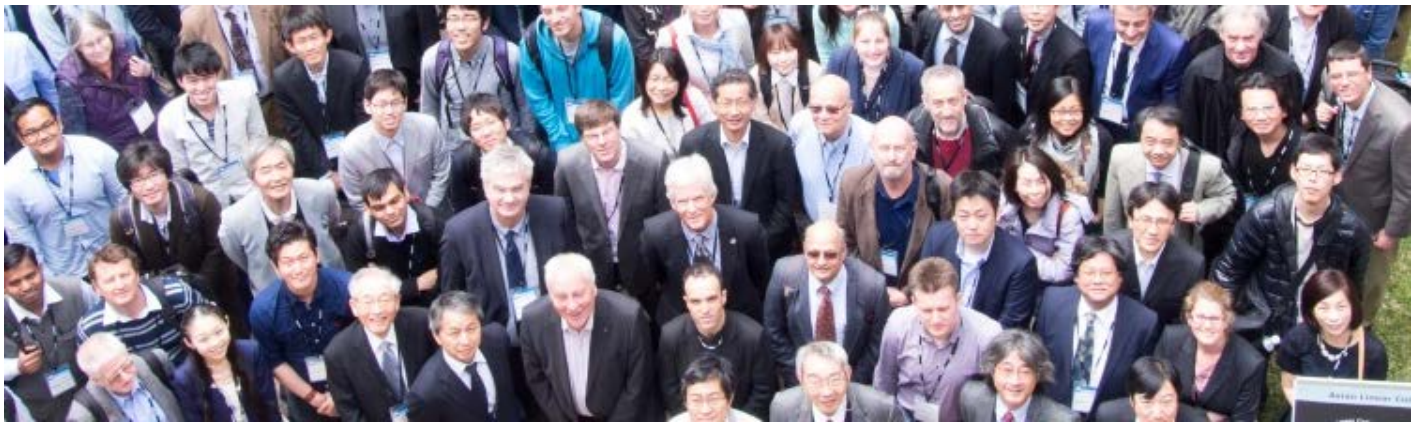
NEWSLINE
THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

FEATURE

Towards the realisation of the International Linear Collider



At the ILC Tokyo Symposium, held on 22 April 2015 at the Ito International Hall, Tokyo, Japan, the Linear Collider Collaboration (LCC) and the more than 300 participants from around the world at the Asian Linear Collider Workshop (ALCW) 2015 decided to issue a statement confirming their conviction of the scientific justification for a prompt realisation of the International Linear Collider (ILC).

AROUND THE WORLD

CALICE under new leadership

by Barbara Warmbein

CALICE, the collaboration of detector developers working on calorimeters for the linear collider, has a new spokesperson. At their meeting during the ALCW2015 workshop, the collaboration elected Frank Simon from the Max Planck Institute for Physics in Munich, Germany, as their new head. He takes over from Jose Repond, Argonne National Lab.

DIRECTOR'S CORNER

Bright lights, big city – the ILC comes to town

by Mike Harrison

The organisers arranged a special “Tokyo Event”, to highlight the benefits of the ILC to Japanese society. More than 400 politicians, industry, media and workshop participants heard about the Tokyo Statement, Japanese demographics and followed a panel discussion that included the claim that physicists come across as ignorant. Mike Harrison sums up his impressions.

IMAGE OF THE WEEK

Impressions from ALCW2015 and the Tokyo Event

Vertical shafts instead of slanted ones, news from the detector concepts, familiar and new faces and a lot of exchange – that's nowhere near a summary of a week of discussions between some 300 linear collider experts from around the world... but it's a start. Look at a selection of photos in this photo album for some impressions, also of the political event in Tokyo on 22 April, and check the ALCW2015 page for all pictures.

IN THE NEWS

from *Iwate Nichi Nichi*
25 April 2015
ＩＬＣ理解 説明が肝要 素粒子研究施設広報担当者
世界素粒子物理研究施設の広報担当者は、ＩＬＣの北上山地（北上高地）への建設実現を見据えて外国人が暮らしやすいまちづくりを推進する「ＩＬＣサポート委員会」と意見交換を行った。(Communication specialists from around the world had a opinion exchange session with ILC Support committee, a group of foreign residents in Iwate prefecture which aim to realise the international city where everyone can have comfortable life)

from *Mainichi Shimbun*
24 April 2015
ＩＬＣ誘致:海外研究機関が気仙沼視察 「現時点で最適の候補地」
「国際リニアコライダー（ＩＬＣ）」建設計画に関連し、この分野の各国研究機関の広報担当スタッフが２３日、気仙沼市などを視察した。(Regarding the planned ILC construction, communication specialists from world particle physics labs visited related cities include Kesennuma on 23 April)

from *Yomiuri Shimbun*
24 April 2015
ＩＬＣ 海外広報が候補地視察…一関
海外の素粒子物理研究所の広報担当者が２３日、巨大実験施設「国際リニアコライダー（ＩＬＣ）」の建設候補地となっている一関市などを視察した。(Communication specialists from particle physics labs around the worls visite ILC candidate site)

from *Tanko Nichinichi*
23 April 2015
ＩＬＣ早期実現すべき 世界の研究者が宣言
“Calling for the Early Realization of the ILC: Researchers the World Issue Tokyo Statement”

from *Kahoku Shinpo*
23 April 2015
＜ＩＬＣ＞計画の意義を解説 東大でシンポ
ＬＣＣは２２日、ＩＬＣ計画の意義などについて専門家が意見を交わすシンポジウムを東大で開いた。ＩＬＣ計画に関係の深い研究者４人が登壇した。(LCC held a symposium to discuss significance of the ILC at the University of Tokyo on 22 April)

from *Iwate Nippo*
22 April 2015
ILC建設見積額1兆1000億円 有識者会議、初の検証
国際リニアコライダー（ＩＬＣ）計画を検討する文部科学省の有識者会議は２１日、同省で開かれ、加速器施設建設費（労務費を含む）の見積額が１兆１千億円程度に上ることが示された。建設費を公的に検証したのは初めて。(Expart panel to discuss the ILC in Japan had its meeting on 21 April, and reported the estimated construction cost, including labor)

CALENDAR

Upcoming events

6th International Particle Accelerator Conference (IPAC'15)
Jefferson Lab, Richmond, Virginia, USA
03- 08 May 2015

View complete calendar

PREPRINTS

ARXIV PREPRINTS

1504.06491
Double parton scattering at high energiesDouble parton scattering at high energies

1504.06108
Luminosity goals for a 100-TeV pp collider

1504.05626
Anomalous Higgs-top Coupling Pollution on Triple Higgs Coupling Extraction at Future High-Luminosity Electron-Positron Collider

1504.05596
What's in the Loop? The Anatomy of Double Higgs Production

1504.05407
Top pair production at a future e+e− machine in a composite Higgs scenario

1504.05091
The Higgs boson, Supersymmetry and Dark Matter: Relations and Perspectives

1504.04416
Double vector meson production in the International Linear Collider

1504.04332
The gluon Sivers distribution: status and future prospects

1504.04302
Study of systematic errors on the scalar boson mass

1504.04016
Neutrino Masses from Neutral Top Partners

1504.03999
Search for doubly charged Higgs bosons through VBF at the LHC, and beyond

1504.03402
Indirect Probe of Electroweak-Interacting Particles at Future Lepton Colliders

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Towards the realisation of the International Linear Collider

30 April 2015

At the ILC Tokyo Symposium, held on 22 April 2015 at the Ito International Hall, Tokyo, Japan, the Linear Collider Collaboration (LCC) and the more than 300 participants from around the world at the Asian Linear Collider Workshop (ALCW) 2015 decided to issue a statement confirming their conviction of the scientific justification for a prompt realisation of the International Linear Collider (ILC).

1. The ILC's role in particle physics is to explore with exquisite detail the fundamental forces and constituents of matter by recreating the conditions just after the beginning of the Universe,. This research is unique and indispensable for a deep understanding of how our Universe began, how it evolved, and how it works today. We are eager to build and work at the facility.
2. The technical feasibility of the ILC has been demonstrated in the Technical Design Report, The ILC is ready to be built following the completion of an engineering-design phase. The project is now in a phase where governmental involvement should lead to a decision to realise the project. In this context we express our appreciation of the ongoing project assessment being undertaken by the Japanese government.
3. The ILC is one of the largest scientific projects ever proposed, on a similar scale to the Large Hadron Collider project. Its realisation as an international project requires the establishment of an international framework for sharing the cost and expertise among countries. We therefore intend to facilitate discussions between governments and funding authorities to achieve this goal as soon as possible.

Lyn Evans, Director of the LCC on behalf of the LCC and the participants of the ALCW 2015

22 April 2015

AAA | ALCW2015 | ASIA | JAPAN | PHYSICS CASE | TOKYO STATEMENT

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AROUND THE WORLD

CALICE under new leadership

Barbara Warmbein | 30 April 2015

Former CALICE spokesman and current chair of the Steering Board Felix Sefkow congratulates Frank Simon on his new role.

CALICE, the collaboration of detector developers working on calorimeters for the linear collider, has a new spokesperson. At their meeting during the ALCW2015 workshop, the collaboration elected Frank Simon from the Max Planck Institute for Physics in Munich, Germany, as their new head. He takes over from Jose Repond, Argonne National Lab.

The CALICE collaboration unites 336 physicists and engineers from 57 institutes and 17 countries in their goal to develop, test and build different calorimeters for future linear collider detectors. Calorimeters measure the energy of passing particles and come in two different varieties: electromagnetic and hadronic. For each of these there are several options on the table – analog, semidigital or digital, and using different materials – for the not-yet-built detectors, and time will tell which option will get the go-ahead.

The calorimeters are core contributors to the particle flow algorithm, a concept that is supposed to provide the highest ever energy resolution for particle jets in a detector, making it possible to identify and track every single particle from a collision. The particle-flow calorimeter looks at where the energy was deposited as a precise three-dimensional picture with very high resolution, not how much particle energy was deposited in a broad volume, as is typical for calorimeters in use today.

Like all R&D projects for the ILC, the CALICE collaboration is in a transition phase – it can turn from potential into actual project at any moment. “For us this means that we will do everything that is possible and necessary to facilitate a decision for high-granular calorimeter systems for the ILC detectors,” says Frank Simon. He thinks that CALICE will play a major, and model, role in the formation of approved detector collaborations: “Having developed and tested all major calorimeter technologies and improved shower simulations and the GEANT4 simulation software, the collaboration has shown that it is capable of developing state-of-the-art subdetectors and that its concepts and technologies go far beyond the collaboration’s boundaries.” Other projects like the detectors at the Large Hadron Collider at CERN have shown interest in using CALICE technologies, and the new spokesman is keen to tap the potential of these related projects.

Further reading: Common ground in ILC and CLIC detector concepts, particle flow, CALICE

ALCW2015 | CALICE | CALORIMETER | CLIC | DETECTOR R&D | ILC

LC NEWSLINE
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DIRECTOR'S CORNER

Bright lights, big city – the ILC comes to town

Mike Harrison | 30 April 2015

Panel discussion during the Tokyo Symposium. Image: Nobuko Kobayashi, KEK

Last week during the Asian Regional Workshop ALCW 2015 held in Tsukuba, the ILC broke with the tradition of staying in one place when the workshop participants moved en masse to Tokyo for what is best described as a multicultural extravaganza in support of the International Linear Collider. Taking advantage of the workshop's location in Japan the organisers arranged a special "Tokyo Event", to highlight the benefits of the ILC to Japanese society. The first part of the event was open to all members of the public who pre-registered but was targeted at politicians, industrialists and media. The gathering was very well received with more than 400 attendees. There were two parts to the event; in the afternoon there was a symposium held at the University of Tokyo's Ito Hall lecture complex, in the evening the spotlight moved to a special banquet at the Hotel New Otani. In between these two activities the LCC management managed to squeeze in a short meeting with the Federation of Diet Members to promote the realisation of the ILC, which some 160 Japanese diet members (about quarter of all diet members) have joined.

The Symposium was started by Lyn Evans who thanked the University for the welcome shown to the project and introduced the audience to the Tokyo Statement from the Linear Collider Collaboration stressing the technical readiness and scientific validity of the ILC. Lyn was followed by a short welcome from Ryu Shionoya, a Diet Member from the House of Representatives and Secretary-General of the Diet Members Federation, who welcomed the Workshop delegates. The keynote address was then given by Hiroya Masuda, Chairman of the Japanese Policy Council. He described the potential demographic challenge facing Japan due to population decline over the next several decades. He then discussed how projects such as the ILC could play a role in stemming this reduction and could be especially effective in regional rejuvenation. Mr. Masuda's thought-provoking presentation was then followed by a panel discussion. Moderated by Hitoshi Murayama, deputy Director of LCC, the panel consisted of Joachim Mnich (DESY, Germany), Jonathon Bagger (TRIUMF, Canada), Hiroaki Aihara (University of Tokyo, Japan) and Lyn Evans and they gamely addressed a wide variety of topics provided by Hitoshi. There was, of course, general agreement with Jonathon's observation that the precision of the ILC was "made for the Higgs" with clean collisions and complementary physics to the proton colliders. Joachim noted that the large circular lepton machines were coming to the their natural end and future linear colliders would provide the route to higher energies for electrons. Hiroaki pointed out that the ILC is a huge project which must be approached carefully and must maintain balance with other fields of science. He mentioned that High Energy Physics field can sometimes come across as arrogant (who, us??) and this is not conducive to inter-disciplinary harmony. He also added that there is little Japanese experience in international leadership in international projects, thus external political help will be crucial. Lyn returned to Mr. Masuda's demographic possibilities for the ILC by noting that the LHC programme has stimulated significant renewed interest in science within the EU and saw no reason why the ILC should not fulfill the same role in Japan. The symposium ended with a short message from the Masanori Yamauchi, the incoming KEK Director General, on future plans, and a

symposium summary from Hitoshi Murayama which, as usual, was presented so enthusiastically that it reduced the translator to sporadic interjections of translated speech fragments.

The delegates then moved on to the special banquet portion of the evening dubbed the “Taste of Discovery”. The HEP community is by its nature very cosmopolitan. When the banquet organisers indicated that, stressing the international nature of the ILC, the gustatory theme for the evening would be provided by asking the diplomatic embassies for the menu of a signature dish from those countries represented in the ILC Technical Design Report, I suspected the logistics involved would prove a real challenge for any hotel. It was therefore exciting to see a veritable cornucopia of international food awaiting everyone when the banquet started. I did not try to count the different offerings but it certainly seemed consistent with the TDR authors’ list of home countries (48). An unscientific sampling of the crowd confirmed the excellent quality of the food too (as did the speed of consumption). In addition to the food offering, Japanese culture was also highlighted throughout the proceedings. A Taiko demonstration (synchronised Japanese drumming) by a performance group named “indra” was part of the entertainment as well as a calligraphy performance by Tomoko Kawao. She is .one of the most high-profile calligraphy artists of Japan. Dipping an enormous brush into a well of ink, she wrote a dramatic rendition of four Chinese characters, “宇宙創成” (meaning “creation of the universe) on a big sheet of paper. In a smaller setting demonstrations of traditional Japanese water colour painting were on hand as well as traditional tea ceremony participation. I can personally attest to some very interesting green tea. The crowd consisting of a mixture of embassy staff, political and industrial supporters, were highly appreciative of the time and effort which went into both the food and the entertainment.

Too soon the time passed and it was time to return to Tsukuba in preparation to resume the workshop activities the following day. Those present will certainly cherish the memories of their trip to Tokyo this year.

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IMAGE OF THE WEEK

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30 April 2015

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ALCW2015 | TOKYO STATEMENT | TOKYO SYMPOSIUM