

LC NEWSLINE

THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

FEATURE



Directors from major particle physics labs meet Japanese journalists

by Rika Takahashi

On 26 February, members of the ICFA gathered in a conference room in Tokyo, Japan, for the press conference, explaining the status of accelerator science in the world.

AROUND THE WORLD

KEK's science comic features the ILC

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LC NewsLine will provide English versions of KEK's science comic "Kasoku Kids" from this issue. The comic exists since 2008, but this new series has a new protagonist: the ILC.

DIRECTOR'S CORNER

Adapting to change

by Philip Burrows



The International Committee for Future Accelerators (ICFA) is a biannual gathering of the heads of major particle physics labs and institutes from around the world for the purpose of sharing news, liaising, and working together to promote global collaboration in our field. The Linear Collider Collaboration (LCC) has its mandate from ICFA, and the LC oversight Board (LCB) met in association with the recent ICFA meeting [see other article] to monitor progress on the three main LCC elements: the ILC, CLIC, and Detector & Physics groups.

IN THE NEWS

from *AsiaHEP/ACFA*

10 March 2016

AsiaHEP/ACFA Statements on ILC + CEPC/SPPC

AsiaHEP and ACFA reassert their strong endorsement of the ILC, which is in a mature state of technical development.

from *Tanko Nichi Nichi*

10 March 2016

動きだす日米連携「今後、さらに加速」 (山下東大特任教授)

東京大学の山下了特任教授は9日、仙台市内のホテルで講演し、北上山地が最有力候補となっている素粒子研究施設、国際リニアコライダー（ILC）の実現に向け日米間で進められている連携協議について、大臣級のハイレベル協議から担当者レベルの協議も進み、大きな枠組みがつくられていると説明。「この動きをさらに加速させ、日米連携を核に欧米、アジアと連携枠を広げたい」と述べた。(Satoru Yamashita of University of Tokyo said in his talk held in Sendai city, Miyagi prefecture on 9 March that US-Japan discussion on the realisation of the ILC has been developed from working level to minister level, and framework is setting up. "We would like to accelerate this move, and facilitate interactions with European and Asian countries, using US-Japan collaboration as a core".)

from *Kahoku Shinpo*

9 March 2016

<震災5年>販路開拓に専門的支援

「研究者組織が国内候補地に選んで約2年半。2月に米国を訪れ、地元の熱意と受け入れ態勢の構築を進めていることを訴えた。今後も地道に活動を続け、地域全体の機運をさらに高めたい」("It have been 2 year and half since Tohoku was evaluated as a potential site for the ILC. I visited the US in February, and appealed the enthusiasm of region and told that we are preparing for new foreign comers. We will work hard to foster momentum)

from *Le Temps*

8 March 2016

Révolutionner la physique en faisant surfer les particules

Au lieu d'imaginer des machines toujours plus grandes et coûteuses, des scientifiques du CERN tablent sur un projet permettant d'accélérer des particules avec un instrument tenant... dans un garage

from *Iwate Nichi Nichi*

7 March 2016

夢の実現を展望 奥州市 ILCビジョン素案 地域産業振興など目標

次世代の大型加速器「国際リニアコライダー（ILC）」と共生できるまちづくりを目指す奥州市は、市 ILC まちづくりビジョンの素案を作成した。(Oshu city created the vision to boost local development with the ILC)

from *Iwate Nippo*

5 March 2016

ILC、定期協議の場検討へ 文科省

国際リニアコライダー（ILC）計画の日本誘致を推進する超党派のリニアコライダー国際研究所建設推進議員連盟（会長・河村建夫衆院議員）は4日、国会内で総会を開き、2月の訪米の成果を報告した。米エネルギー省（DOE）は ILC 計画の国際協力などの「議論の場」を求めたといい、文部科学省は検討する方針を示した。議員レベルの協議から政府間の定期的協議への発展が期待される。(Federation of Diet member promoting the ILC had their general meeting on 4 March, reported the progress made at the US visit in February. US Department of Energy asked for setting up the discussion forum about international cooperation, and MEXT will discuss how to proceed. It is executed that the discussion between politicians will develop into the regular meeting between government officials.)

CALENDAR

Upcoming events

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

Upcoming schools

[Joint Universities Accelerator School](#)
Archamps, Haute Savoie, France
11 January- 18 March 2016

[View complete calendar](#)

PREPRINTS

ARXIV PREPRINTS

[1603.01654](#)

Design, Construction and Testing of the Digital Hadron Calorimeter (DHCAL) Electronics

[1603.01653](#)

Design, Construction and Commissioning of the Digital Hadron Calorimeter – DHCAL

[1603.01388](#)

CP-Violation in the ZZZ and ZWW vertices at e+e- colliders in Two-Higgs-Doublet Models

[1603.01065](#)

Probe of the anomalous quartic WWWW couplings with beam polarization at the CLIC

[1603.00287](#)

A $\gamma\gamma$ Collider for the 750 GeV Resonant State

[1603.00016](#)

SiPM Gain Stabilization Studies for Adaptive Power Supply

[1603.00013](#)

Improvement of photon reconstruction in PandoraPFA

[1603.00009](#)

Recent status of FPCCD vertex detector R&D

[1603.00005](#)

CLIC Muon Sweeper Design

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Directors from major particle physics labs meet Japanese journalists

Rika Takahashi | [10 March 2016](#)



Masanori Yamauchi (left) and Joachim Mnich (right) at the ICFA press conference. Image: Nobuko Kobayashi

On 26 February, members of the International Committee for Future Accelerators (ICFA) gathered in a conference room in Tokyo, Japan, for the press conference. Joachim Mnich, Research Director at DESY and the current chair of ICFA, Nigel Lockyer, Director of Fermilab, U.S., Fabiola Gianotti, Director-General of CERN, and Masanori Yamauchi, Director-General of KEK sat at the conference, explaining the status of accelerator science in the world.

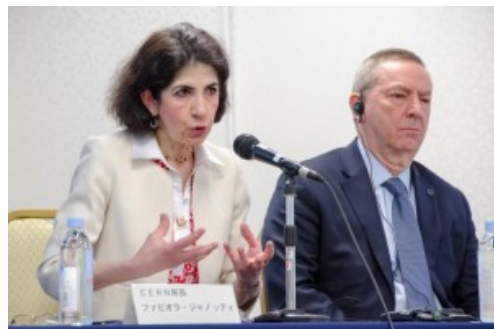
Mnich introduced the mission of ICFA: it facilitates international collaboration in planning, construction and exploitation of accelerators for high-energy physics and related fields, and it has 40 years of history in international collaboration. He said that ICFA's major topic over the last years was the ILC. ICFA has proposed and promoted the ILC as a global project, and repeatedly confirmed its support for the ILC, which is in a mature state of technical

development. "ICFA decided yesterday on its continuous study and support, and set up the sub group toward the realisation of the ILC" he concluded his talk with the decision made by ICFA's meeting.

Lockyer emphasised the international nature of particle physics, saying "particle physics has enjoyed international cooperation beyond any other field of science for many decades. We were able to exchange technical and scientific know-how as well as culture, and people learning about science together." He explained that the bottom quark was discovered at Fermilab, and the Belle experiment at KEK played a significant role to investigate the properties of the bottom quark. "The way particle physics goes is that you discover the particle, and you want to study it in detail. So, the ILC can study the Higgs boson in detail, in the same way KEK studied bottom quark in detail. A world-wide ambition is to study the Higgs in exquisite detail, which require a very special type of accelerator. The ILC is capable of doing that."

"You might think the Higgs boson is something far away from our everyday life, but actually it is not," said Gianotti in her talk. "This tiny particle is very, very special. Without the Higgs boson, our own existence is not possible," she stressed the importance of further study of the Higgs boson. She said that many people often ask if the Higgs boson will change people's lives, and her answer to that question is "it does already". In order to find this particle, scientists have developed many cutting-edge technologies in many fields. She gave the example of the medical applications and also the world wide web, invented by the physicists to communicate with colleagues overseas, which has drastically changed the way we live.

"The motivation for much of the research in particle physics is to go beyond the standard model," Yamauchi said. "If we can go beyond the standard model, universal questions such as "what is dark matter?" or "why is there are no anti matter around us?" can be answered". He said that world scientists are tackling this challenge by international collaboration and competition. "The ILC is one of the tools for next-generation research, and around the world scientists are hoping for its realisation. Now the Japanese government is carefully reviewing the project at the ILC Advisory Panel, and I hope positive conclusion is reached timely," he said.



Fabiola Gianotti, CERN, (left) answering a question from a journalist (on the right: Nigel Lockyer, Fermilab) Image: Nobuko Kobayashi

One of the journalist asked Gianotti about the general critique for spending big budget on fundamental science research. "Fundamental research always benefits society," Gianotti replied. She said that gaining fundamental knowledge itself is very important already. In addition to that, there are new technology developments and spin-offs in so many areas. She also made comparison on the CERN's budget that it is about same scale of average medium-size university in Europe, and "one cappuccino per European citizen per year." She emphasised the important role of CERN in education that "it helps so many young people to grow. 3000 PhD students have studied at LHC experiments."

This conference was not like a usual press conference to announce a new discovery, but worked well to give the journalist the idea of true international collaboration.

[CERN](#) | [DESY](#) | [FERMILAB](#) | [ICFA](#) | [ILC](#) | [KEK](#)

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AROUND THE WORLD

KEK's science comic features the ILC

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For future physicists: the KEK's Kasoku kids comic now features the ILC.

Japan's KEK laboratory has featured a series of a science comic called "[Kasoku Kids](#)" on its website since December 2008. This public relation tool has proven to work quite effectively to make new particle physics fans, especially very young children. KEK staff met some of real-life Kasoku Kids at the open house: They had memorised all the lines in the comics!

From December 2015 to March 2016, KEK is publishing a new special series about the LC. LC NewsLine will provide an [English version](#) monthly from this issue. Enjoy!

The English version of the first story was featured in [Symmetry Magazine](#), but most of them are available in Japanese only.

Find the English version of the ILC special [here](#).

[ILC](#) | [JAPAN](#) | [KEK](#)

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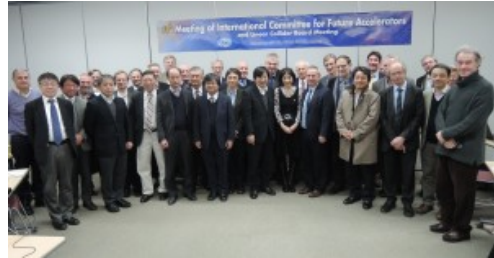
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DIRECTOR'S CORNER

Adapting to change

Philip Burrows | [10 March 2016](#)

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Group photo of ICFA meeting at J-PARC, Tokai Village, Japan
Image: KEK

One of the key issues discussed was the best way to proceed with organising global linear-collider affairs over the next few years. This will be a critical period during which several milestones will be reached:

- For the ILC we hope that the Japanese authorities will reach a conclusion on whether to proceed and implement the ILC in Japan.
- For CLIC there will be an intense preparation of a 'Project Plan' as input to the next update of the European Strategy for Particle Physics, so that CLIC can be considered (along with the Future Circular Collider (FCC)) as a possible post-LHC energy-frontier facility.
- From the LHC we look forward to a stream of physics results from 'Run 2' as more data come in at the new maximum 13-TeV proton-proton collision energy.

As I said in my [last Director's Corner](#), we must be ready for what Nature has in store for us, even (especially!) if it is not something we had fully anticipated. A good example is provided by hints of a possible new particle state of mass 750 GeV, decaying into two photons, seen, with currently very modest statistical significance, by the LHC experiments ATLAS and CMS. More data will tell us if this is simply an upward statistical fluctuation of the background, or truly evidence for a new particle; but if the effect were real how would the linear-collider community respond?

Would we imagine a gamma-gamma collider for making a new 750-GeV particle? In fact the idea of a gamma-gamma collider is not new and has been studied for as long as we have been planning linear colliders. Much work has been devoted by a band of dedicated experts to a conceptual design for a gamma-gamma collider. However, for the last decade or so most of us have imagined this option as a possible future extension to an electron-positron collider such as ILC or CLIC. Should the ATLAS and CMS hints motivate us to dust off the earlier design studies and look again at this concept? And, moreover, since only high-energy electrons are required for making high-energy photons, should we think further about an electron-electron collider? This is another cherished old idea – has its time finally come? Of course we must be patient and allow the LHC data to speak, but it is fun to speculate, and it would be prudent to 'expect the unexpected'.

Returning to where I started – the ICFA meeting: an expert group was commissioned to come up with a proposal for guiding the LC community through these next few critical years. The group could hardly be more distinguished, comprising the Directors General of CERN and KEK, the Director of Fermilab, and the Research Director of DESY. We eagerly await their wisdom and good counsel – to be presented at the next ICFA meeting in Chicago in August – watch this space!

[750GEV](#) | [CLIC](#) | [EUROPEAN STRATEGY FOR PARTICLE PHYSICS](#) | [FCC](#) | [HIGGS](#) | [ICFA](#) | [LCB](#) | [LHC](#)

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