

LC NEWSLINE

THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

AROUND THE WORLD



Newly formed European linear collider forum to increase communication with the project board

by Perrine Royole-Degieux

The Linear Collider Board is the main decision body to promote and oversee the linear collider and its detectors as a worldwide collaborative project. In Europe, a new body, the European Linear Collider Forum, has just been launched to channel European discussions concerning the ILC and CLIC and to facilitate input for the international Linear Collider Board. Anyone interested to

participate is invited to register to the mailing list. Will you take part?

AROUND THE WORLD

Guideline for ILC civil engineering completed

by Rika Takahashi



The Japan Society of Civil Engineers has just completed a guideline report for the civil engineering of the International Linear Collider, based on a five-year investigation. This report will enable the best and most cost-effective construction of the ILC. Adapted to the Japanese candidate site, this document will be effective for the construction of ILC at any overseas sites, and also useful to other future large-scale underground constructions.

DIRECTOR'S CORNER

The path to an international ILC Lab

by Brian Foster

Now that there are great hopes that Japan will soon step forward with a proposal to host the ILC, the time has come for the Linear Collider Collaboration to take another look at issues related to ILC governance. Brian Foster, European director for the Linear Collider Collaboration, has just been appointed chair of the subcommittee in charge of producing recommendations on the organisation and management of an ILC lab in Japan.



IN THE NEWS

from *Ichinoseki City*

April 2014

ILCニュース (ILC News) – Vol 8

岩手県一関市発行のニュースレター。コンテンツ コミュニケーター建設候補地視察 – 大原自治公民館等連合会視察研修 – R I P 講演会 – 大東高校出前講座 – 各種イベントで をピアール – H26年度 関連予算 – 庁内連絡会議の設置 – に関するQ A

The news letter published by Ichinoseki-city. Content: ILC communicators visit ILC candidate site, Reports on the ILC lectures in the area, City's ILC related budget for FY2014, and FAQ on ILC)

from *Iwate Nippo*

29 March 2014

大原バイパスが全線開通 一関・大東の国道343号

県が一関市大東町大原に整備を進めていた国道 号大原バイパスは 日、全線開通した。国際リニアコライダー

計画の幹線道として効果が期待されている。(On 28 March, the Ohara bypass road was completed and opening ceremony was held. This road is expected to be used as a main transport route for the construction of the ILC)

from *INFN*

25 March 2014

The Fourth Transformation Of Neutrinos

Now the scientists of the OPERA experiment can claim the observation of the extremely rare neutrino oscillation in the tau channel.

from *Tanko Daily*

24 March 2014

興味引き出す人形劇 子供向け 解説動画が完成 盛岡で初披露

岩手県が児童・生徒向けに制作を進めていた国際リニアコライダー 計画の解説動画が完成し、23日、盛岡市の岩手教育会館で披露された。(Iwate prefecture produced the ILC promotion video for children, and about 200 audience enjoyed its first screening at Morioka city on 23 March.)

from *CERN/Fermilab*

19 March 2014

International team of LHC and Tevatron scientists announces first joint result

Together the four experiments pooled their data analysis power to arrive at a new world's best value for the mass of the top quark of $173.34 \pm 0.76 \text{ GeV}/c^2$. (...) "Collaborative competition is the name of the game," said CERN's Director General Rolf Heuer. "Competition between experimental collaborations and labs spurs us on, but collaboration such as this underpins the global particle physics endeavour and is essential in advancing our knowledge of the universe we live in."

from *New Scientist*

19 March 2014

Will new physics sail on gravitational waves?

Unlike the Higgs result, this one opens up many possibilities, so in the coming days and weeks, we can expect a deluge of papers chewing over the results from BICEP2 and its rivals. Modelling inflation is a bit like playing whack-a-mole; while the new result will knock some out, more will pop up to take their place. And there are deeper questions. Why did inflation happen at all, and what is behind it? What does it mean for the fate of our universe – and of others?

CALENDAR

Upcoming events

Americas Workshop on Linear Colliders (AWLC14)

Fermilab

12- 16 May 2014

[View complete calendar](#)

PREPRINTS

ARXIV PREPRINTS

[1403.6695](#)

SM-like Higgs decay into two muons at 1.4 TeV CLIC

[1403.6557](#)

Full (α) electroweak radiative corrections to $e^+e^- \rightarrow e^+e^-\gamma$ at the ILC with GRACE-Loop

[1403.6556](#)

Full (α) electroweak radiative corrections to $t\bar{t}\gamma$ and $e^+e^-\gamma$ productions at ILC with GRACE-Loop

[1403.6434](#)

Dark Matter versus h into $\gamma\gamma$ and h into γZ with supersymmetric triplets

1403.5765

Status of the Forward Tracker Detector of ILD

1403.5694

Radiative Neutrino Mass Model at the $e-e+$ Linear Collider

1403.5659

Study of Tracking and Flavor Tagging with FPCCD Vertex Detector

1403.4784

Arbor, a new approach of the Particle Flow Algorithm

1403.4736

Probing wrong-sign Yukawa couplings at the LHC and a future linear collider

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Perrine Royole-Degieux | [3 April 2014](#)



Join the European forum and have a say in the Linear Collider collaboration effort! Image: DESY

The Linear Collider Board is the main decision body to promote and oversee the linear collider and its detectors as a worldwide collaborative project. In Europe, a new body, the European Linear Collider Forum has just been launched to channel European discussions concerning the ILC and CLIC and to facilitate input for the international Linear Collider Board. Anyone interested to participate is invited to register to the mailing list. Will you take part?

The [Linear Collider Board](#) (LCB) is the central board committee for the Linear Collider Collaboration. To date, five European members from the directorates of CERN, DESY (Germany) and JINR (Russia) and two physicists from CNRS/IN2P3 (France) and PSI, Switzerland represent Europe. "Europe is a very specific region with dozens of funding agencies and much more labs.

It is difficult for the five eminent LCB scientists to cover all the various aspects of the project going on here," said Manfred Krammer, chair of the European Committee for Future Accelerators (ECFA) and former International Linear Collider Steering Committee member. Together with Joachim Mnich, Linear Collider Board member for DESY, Krammer has just set up the new European Linear Collider Forum to foster bidirectional communications between the scientific community and the five European Linear Collider board members.

First invitations to join the forum were sent in January and already more than 80 scientists have subscribed to the mailing list. "The way this forum will operate is still work in progress, but our first attempt is to meet at least once before each Linear Collider Board meeting and once just after." This way, the group can consult the LC board agenda, submit suggestions or questions and receive feedback after the LCB meeting. "There will be no decision taken during the forum meetings, but the information we will gather there will be priceless. Scientists want to know how the decisions are being made and why. This forum will try to answer these questions".

Krammer and Mnich hope the forum will prevent the LCB from being perceived as a remote body, far away from the scientists' concerns. The information exchanged could be as diverse as scientific arguments, technical or even financial issues. Both ILC and CLIC scientists are of course welcomed in this forum. "It is also important for us to gather the two communities in the same group," said Krammer.

Join the forum and subscribe to the mailing list: <http://elcf.desy.de/>



In Europe, more than 90 labs, universities or institutes are involved in the linear collider (NB: this image only pictures ILC groups. View [full ILC map](#) and [CLIC membership](#))

[CLIC](#) | [EUROPE](#) | [ILC](#) | [LINEAR COLLIDER BOARD](#)

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Guideline for ILC civil engineering completed

Rika Takahashi | [3 April 2014](#)



Artistic view of the future ILC tunnel. Image: Rey.Hori/KEK

On 13 March 2014, a colloquium to mark the completion of the guideline for the civil engineering of the International Linear Collider was held at KEK laboratory, Tsukuba, Japan. A total of 47 scientists and engineers celebrated the accomplishment. The guideline was handed over to Atsuto Suzuki, KEK's Director General, by Hiroshi Chikahisa, chair of the subcommittee that produced this guideline.

This guideline was published by a special subcommittee under the Japan Society of Civil Engineers (JSCE), formed back in 2009. The "subcommittee on ILC civil engineering" which was formed under the Committee on Rock Mechanics. It took five years for them to clarify and sort out the challenges and agendas regarding the ILC civil engineering works, and the proposed solutions with regards to the current capability. The subcommittee members

visited and conducted surveys on the ILC candidate sites, and interviewed personnel involved in the project. They also gathered and analysed a huge amount of information on large-scale constructions, such as case examples of use of underground space, and their guidelines and standard specifications.

Based on those works, this guideline was put together to enable the best and most cost-effective construction of the ILC, avoiding any possible backsets or duplications in the process. This guideline was adapted to the Japanese environment to realise the best practice on the ILC construction in Japan, but the committee believes it will be effective for the construction at any overseas sites, and also useful to other large-scale underground constructions.

Prior to this guideline, a special team of the subcommittee on the civil engineering for the ILC under the JSCE's Committee on Rock Mechanics produced two reports on the ILC site study in 2009 in cooperation with KEK, in response to a request made by KEK's then Director General, the late Yoji Totsuka, in 2005. Then, timed to coincide with the release of the ILC's Technical Design Report (TDR), they completed this guideline. "Japan has developed world-class technologies for underground constructions for various purposes. We aimed to draw up this guideline to put together those technologies, coordinate them optimally, and utilise them as adequate technology for the ILC construction. This process was an example of the 'spirit of harmony', a particularly Japanese manner, in the field of technology, and I believe that this spirit will be one of the advantages of building the ILC in Japan," said Chikahisa.

This guideline will provide precious information for the construction of the ILC in Japan, and Chikahisa said, "we have consolidated the scattered technologies and know-how through the process of drawing up this guideline. We think this result will create synergy, and generate technology breakthroughs. We will discuss the possibilities at JSCE hereafter."



The attendants of the colloquium celebrating a completion of the guideline for the civil engineering of the ILC. The chair of the subcommittee, Hiroshi Chikahisa handed out a guideline to Atsuto Suzuki, director general of KEK (upper right). Image: JSCE

Suzuki expressed his appreciation for the accomplishment and said, “this guideline will be a very important report for the realisation of the ILC.”

The last half of the colloquium was a debriefing session, which was followed by lively discussion on the technical issues from a mostly practical viewpoint.

This guideline will be publicised on KEK and ILC website soon. The English version will be available by summer.

[CIVIL ENGINEERING](#) | [ILC CONSTRUCTION](#) | [ILC SITE](#) | [KEK](#)

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The path to an international ILC Lab

Brian Foster | [3 April 2014](#)



One year ago, Lyn Evans paid a courtesy [visit to Japan's Prime Minister](#) to Shinzo Abe.

“Those who do not learn from history are doomed to repeat it” is a misquotation from George Santayana (1863 – 1952). Very suitably for the Linear Collider Collaboration (LCC), he was a writer with an international perspective who always considered himself both Spanish and American. These words came into my mind when I received an email from Sachio Komamiya, chair of the Linear Collider Board (LCB), with the news that the LCB wanted me to chair a group to take another look at issues relating to ILC governance. The production of the [Project Implementation and Planning](#) (PIP) document back in 2011 by a group led by Mike Harrison contained what I had hoped would be the last word on governance of the ILC. This was of course naive; new projects arrive, new ideas are aired, new political and legal instruments appear. For example, the ERIC legal framework for multinational scientific infrastructures produced by the European Union was only an idea when we produced the PIP. The biggest

change of course is that we wrote the PIP without any idea of which state might host the ILC. Now that we have great hopes that Japan will soon step forward, the case to revisit some of the ideas of the PIP seems timely. Sachio is also a very persuasive man.

The LCB at its meeting at DESY in February agreed the charge for the committee: “The Subcommittee is to produce recommendations on the organisation and management of the proposed ILC Lab in Japan. Among the items to consider for this global project are: governance; organisation; management structure; legal framework; staff composition; relationship between world HEP labs and the ILC Lab; and the role of the host nation. (...) A final report should be submitted by the Subcommittee to the LCB’s 26 February 2015 meeting; an interim report can be submitted earlier if a consensus is reached on significant issues. “

The LCB also agreed the following membership:

Brian Foster, Oxford University / DESY, UK/Germany

Neil Calder, Vice President for Communication & Public Relations, Okinawa Institute of Science and Technology, (OIST), Japan

Colin Carlile, Former Director of the ESS in Sweden

Jonathan Dorfan, President and CEO, OIST, Japan

Dean Karlen, University of Victoria, Canada

Vera Luth, Professor (Emeritus) SLAC, USA

Dinesh Kumar, Srivastava, Director, Variable Energy Cyclotron Centre, Kolkata

Satoru Yamashita, ICEPP, University of Tokyo, Japan

There is a lot of experience here both of running major laboratories and major particle physics projects as well as interacting with the Japanese government at many different levels. We will certainly exploit this expertise as our work progresses.

Getting a group of busy people like this together when they are scattered across many time zones is always a challenge, but one that long experience with the former Global Design Effort enables us to meet. We held our first meeting last week, attended by all but two of the group members. It was a helpful and positive beginning: we reviewed the work done for the PIP and tried to identify areas where

there had been developments. One such is the European Spallation Source (ESS), which was in a very early stage when we drafted the governance section of the PIP; Colin Carlile has agreed to bring us up to date with that. Another project which is regularly in the headlines, rarely for the right reasons, is ITER; once again we were able to identify recent relevant documentation that the panel will study for our next meeting.

Those panel members who did not already subscribe to *LC NewsLine* agreed to sign up, recognising its value as a source of news but also the archive as a quick way for those who are not so familiar with the project to catch up. We were fortunate that both Sachio and Satoru were able to give us an update on the current situation with regard both to the site process in Japan and the current activities, predominantly of MEXT, in contacting and discussing the ILC project with other governments and funding authorities. We were also fortunate that Jonathan and Neil agreed to produce a document describing the experience gained in the setting up of the Okinawa Institute of Science and Technology (OIST), an international organisation with a Japanese site. The foundation of such a complex entity required very close liaison with several parts of the Japanese government. Although Universities are different in many ways to major science facilities such as the ILC, nevertheless there are also many parallels with the processes we will have to go through to make the ILC a reality.

One aspect of the committee's role is to ensure that we can outline a model of operation for the ILC laboratory that is acceptable to the host state. This will require significant interactions with Japanese government officials. We can also play a useful role in facilitating meetings between government officials throughout the world to raise awareness of the ILC project. I will be in Tokyo next week for the site-dependent design meeting organised by Mike Harrison and hope in the margins of this meeting to continue the very positive and helpful discussions I have been having with Japanese colleagues. Such discussions are essential if we are to understand the constraints and wishes of all parties interested in realising the ILC; without that understanding, we cannot produce a framework that will be readily accepted and form the foundation upon which we can build the ILC. To end with another quote, this time from the 20th-century British politician and Foreign Secretary Lord Curzon: "The first rule of diplomacy is to know your own mind. The second is to make sure that your interlocutor knows it too."

[ILC LAB](#) | [ILC SITE](#) | [LCB](#) | [LCC](#)

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