

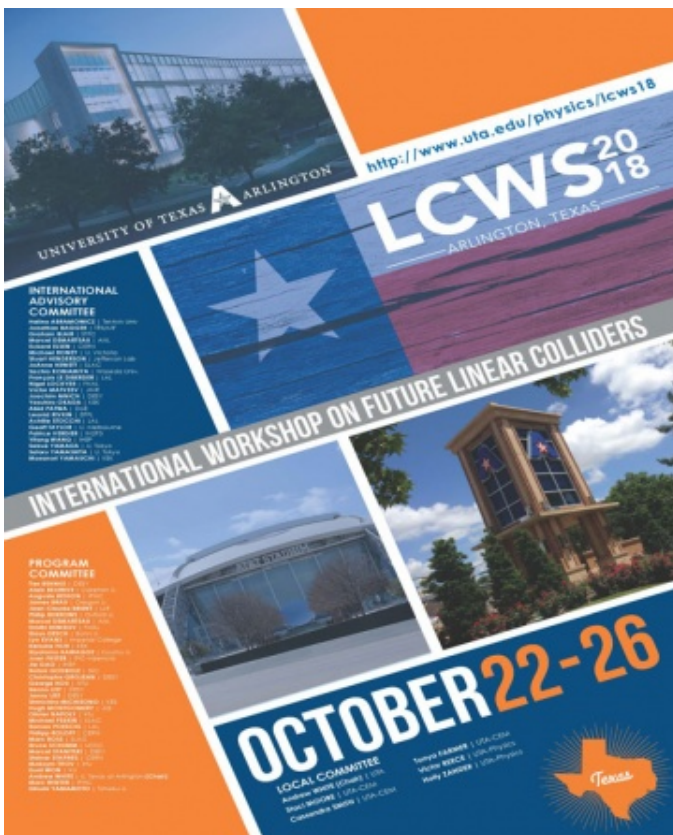
LC NEWSLINE

THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

DIRECTOR'S CORNER

LCWS2018: preparing for ILC realisation

by Jim Brau



An ILC with collisions at 250 GeV is an “enormously exciting” first phase of the project, says the Linear Collider Collaboration’s Associate Director for Physics and Detectors, Jim Brau of the University of Oregon. Awaiting ILC project reviews in Japan while planning the next community meeting, LCWS2018, he explains how the Fermilab history of energy upgrades after successful and innovative management and operation could serve as a model for the ILC.

AROUND THE WORLD

Getting lots of heads round the test beam data

by Barbara Warmbein

FEATURE

Nobel laureates speak for the ILC

by Rika Takahashi

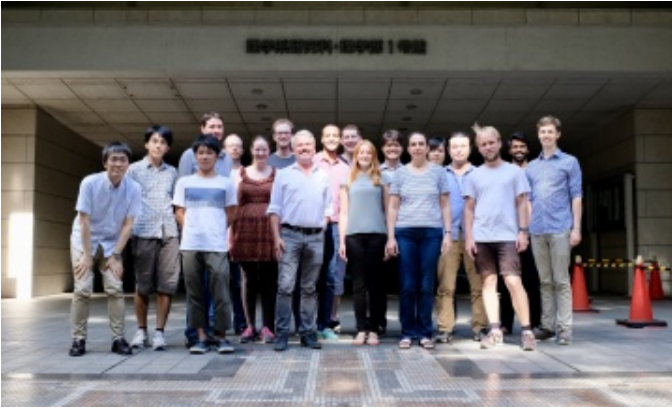


Four Nobel laureates in Physics Sheldon Glashow, Barry Barish, Masatoshi Koshiba and Yoshinori Osumi publicly support the ILC project in a symposium held at the University of Tokyo last August. The ILC is “absolutely essential,” they said, and not just for particle physics.

AROUND THE WORLD

The ILC Supporters – celebrities for the linear collider

by Barbara Warmbein



Here is how to tackle what would normally take a couple of months in a couple of weeks. A group of students and experts from the CALICE Collaboration recently spent three weeks tucked away at the University of Tokyo to get their heads round and analyse all the data taken at the most recent testbeam of the CALICE calorimeter setup. They emerged with new ideas and lots of knowledge in their heads.



Have you ever seen pictures of people proudly showing off tattoos or stickers showing a compass-like stylised particle collision and wondered what that was all about? Have you heard of a group called "ILC Supporters" but didn't know who they are and how to join them? This interview with Kimura U, Japan's "ambassador for cute (kawaii)" and famous ILC Supporter, should answer all your questions.

IN THE NEWS

from *Physics World*

3 October 2018

Back to the future

From financial woes and teacher shortages to major projects being delayed or cancelled, many issues facing physicists 30 years ago remain just as pertinent now as they did then. Michael Banks investigates.

from *Iwate Nippo*

27 September 2018

Imagining an international place where you can do research – Morioka #1 HS students meet with researchers from Serbia

This is the first time for such an exchange at one of the eight ILC model schools. One student, Chisato Kamada, said, "I got a better idea of what it would be like at the ILC, where scientists from around the world will gather."

(Full translation provided by *Iwate & the ILC* website. **Read Japanese original [here](#)**).

from *The Kitakami Times*

20 September 2018

Communicating science and the ILC to the local youth

As you can imagine, there are some hurdles when communicating the ILC to the community. Many have not heard of particle accelerators, it's difficult to picture what the project will look like and the sheer scale, people question the impact of the ILC and what the science will be used for.

from *Nikkan Kogyo Shinbun*

19 September 2018

ILC誘致費、通常予算とは別枠で 誘致実現連絡協

ILC誘致実現連絡協議会（河村建夫会長）は18日、初会合を開き、超大型加速器「国際リニアコライダー」（ILC）誘致費用の財源は通常の科学技術・学術・大学予算とは別枠とするべきだとした決議をまとめた。

from *Iwate Nippo*

18 September 2018

An ILC Liaison Council is formed by the FDMILC and LDP to strengthen efforts to encourage the national government to decide on the ILC

The non-partisan Federation of Diet Members for the ILC (FDMILC, Chair: Hon. Takeo Kawamura of the House of Representatives) and related organizations in the Liberal Democratic Party (LDP, Japan's leading political party) came together on September 18th to form a Liaison Council for the ILC. They will strengthen efforts to encourage the national government to position the ILC as a promising national project.

(Full translation provided by *Iwate & the ILC* website. **Read Japanese original [here](#)**).

from *Physics World*

6 September 2018

China unveils blueprint for huge underground 'Higgs factory'

While physicists hope that the Japanese government will now get behind the facility by the end of the year, there are many other projects vying for funding, no less a major new neutrino facility in Kamioka. It is likely that a decision about the ILC will be kicked further down the road.

from *Ibaraki Shinbun*

4 September 2018

国際リニアコライダー 誘致に踏み切るべきだ

内向きの政策を続け、科学大国の座から降りるのか。政治の決断に注目したい。

from *My navi news*

6 September 2018

ノーベル賞受賞者たちが語ったILCが開く科学の未来

8月5日、ILCが切り開くであろう科学の未来の姿について、シェルドン・L・グラショウ博士とバリー・C・バリッシュ博士という2人のノーベル物理学賞受賞者がお茶の水女子大学にて「ノーベル賞受賞者に聞く ILCが開く科学の未来」と題した講演を行なった。

from *NHK World*

31 August 2018

Science View The Leading Edge: Will the International Linear Collider Be Built in Japan?

The ILC's establishment is expected to lead to further Nobel Prize-level discoveries. 5 years have passed since then and the time has come for Japan to make a decision about building the ILC. Will Japan be able to host its first international science megaproject? (broadcasted on 31 August)

from *Nikkei*

30 August 2018

巨大加速器、日本に建設？ 宇宙の始まり再現 期待と現実

LCは日米欧を中心に国際協力で建設する計画だが、欧州では19年初めに素粒子物理学の次期研究計画の議論が始まる。もし18年中に日本が誘致を決めなければ欧州の参加が難しくなり、ILC建設が暗礁に乗り上げる可能性が高い。学会会議の結論を受けて日本政府が誘致の是非をどう判断をするのか、世界が注目している。

from *Iwate Nippo*

30 August 2018

Science Council of Japan ILC Committee hears from researchers about the scientific significance of the ILC project – but members call for more societal awareness

“Researchers around the globe have determined the ILC to be highly valuable. We think we have cleared the hurdles regarding proving the project’s academic significance and design, and would like you to move to the next step: concrete negotiations with other countries on sharing the costs, and establishing an organization to push forth the project.”

(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

from *Nature*

28 August 2018

Burton Richter (1931–2018)

Burt was keen to push for ever-higher particle energies. To produce lots of Z-particles, a carrier of the weak nuclear force, he invented the SLAC linear collider. Short pulses of high-energy electrons and positrons, in beams the width of a human hair, travel for miles along the SLAC accelerator.

from *BUSINESS INSIDER JAPAN*

27 August 2018

東北に、宇宙誕生の謎解き明かす「7000億円の実験装置」は実現するか？

「宇宙誕生の謎を解く」とされる、研究施設の誘致を目指す動きが加速している。

国際リニアコライダー（ILC）と呼ばれる素粒子物理学の実験装置を、総額約7000億～8000億円かけて岩手・宮城両県にまたがる北上山地に建設する計画だ。

from *Menkoi TV*

25 August 2018

ノーベル賞受賞者に聞く「ILC が開く科学の未来」

宇宙誕生直後の素粒子の反応を再現し、宇宙や時間、空間や質量の謎に迫る研究のため進められている「国際リニアコライダー「ILC」計画」。ILCは、北上山地への誘致が期待されている全長約20kmの、世界最先端の素粒子実験施設です。世界最先端の実験が切り開く科学の未来について、ノーベル賞受賞者たちに伺います。

from *Iwate Nippo*

24 August 2018

MEXT requests a budget of 260 million yen for accelerator science in fiscal year 2019 – same number as FY 2018

Researchers around the world are urging the Japanese government to make a decision on the ILC within the year. The Science Council of Japan, which was asked by MEXT to deliberate on the project, has established a committee to debate and evaluate the ILC, and the government will take their results into account when making their decision whether or not to host the ILC.

(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

from *THE PAGE*

19 August 2018

国際リニアコライダー計画で会見(全文1)ILCをつくらないと知ることできない

次世代の大型加速器「国際リニアコライダー（ILC）」の日本誘致を目指す計画をめぐり、ノーベル物理学賞の受賞経験がある米国の2博士が7日、東京の外国特派員協会にて記者会見を開き、ILC計画の意義や可能性などについて説明した。

from *Iwate Nippo*

7 August 2018

“A refusal of the ILC would be the same mistake the US made” – An interview with Sheldon Glashow – Iwate Nippo

“Is what CERN found really the Higgs particle? We haven’t been able to precisely measure its characteristics yet, so that will be one of the roles of the ILC. There is a possibility the ILC will discover other various surprising things. For the next few decades, it may be able to research things in a way that other competing machines won’t be able to. Japan is in a very fortuitous position to be able to build that sort of international laboratory.”

(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

from *THE PAGE*

7 August 2018

The International Linear Collider project press conference. 国際リニアコライダーの日本誘致で、ノーベル賞物理学者が会見

The International Linear Collider project press conference by two renowned Nobel laureates.

from *Iwate Nippo*

7 August 2018

An interview with Barry Barish – Iwate Nippo

In these 20 years, I worked on developing a detector for gravitational waves (which got me the Nobel Prize). I didn’t know I would succeed, and feared I would fail. But because I tried, a breakthrough happened. The ILC will be the same. By going forth and challenging ourselves, a new horizon will open to us. I worked on the design for the past ten years. Research and development already has created a model that is ready (to be built).

(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

from *Iwate Nippo*

6 August 2018

Nobel laureates putting their faith in Japan to realize the ILC at the 8/5 Tokyo symposium

Barish said that the ILC had the potential to contribute greatly to the evolution of elementary particle physics through its precision study of the Higgs boson particle (thought to give mass to matter). “Researchers will gather from around the world to work on the ILC, and they will bring diverse skills and knowledge. I hope that Japan will make a decision in the near future.”Glashow said that

the ILC might lead to a clue that would unravel the mysteries behind things the Standard Model cannot explain.
(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

from *Iwate Nippo*

31 July 2018

[The Iwate ILC Promotion Council estimates economic benefits of the ILC to be 5.7190 trillion yen](#)

President Suzuki explained how they came to a realistic figure: "There are signs that the economic effects will only grow with time. This is a very reliable calculation if you take into account the market value of accelerator technology thus far."

(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

from *Iwate Nippo*

26 June 2018

[Lyn Evans, director of the Linear Collider Collaboration, urges the Japanese government to make their intentions clear on the ILC](#)

"(...) we are in a good place to develop momentum to get [international] cooperation for the ILC. Next year, the board of directors at CERN will begin deliberations on the next 5-year strategy for particle physics in Europe, so "this is a very crucial period. The Japanese government must make their intentions clear."

(Full translation provided by *Iwate & the ILC* website. [Read Japanese original here](#))

PREPRINTS

ARXIV PREPRINTS

[1809.03520](#)

Probing top-quark couplings indirectly at Higgs factories

[1809.00285](#)

CEPC Conceptual Design Report

[1808.09281](#)

A highly granular SiPM-on-tile calorimeter prototype

[1808.06209](#)

A Dark Vector Resonance at CLIC

[1808.03803](#)

Model-independent study for the tau-neutrino electromagnetic dipole moments in $e^+e^- \rightarrow \nu\tau\bar{\nu}\gamma$ at the CLIC

[1808.00755](#)

Models with Extended Higgs Sectors at Future e^+e^- Colliders

[1807.04009](#)

High-Precision Electroweak SUSY Production Cross Sections at e^+e^- Colliders

[1807.02876](#)

Machine Learning in High Energy Physics Community White Paper

[1807.01911](#)

One-loop effects of MSSM particles in $e^+e^- \rightarrow Z\bar{h}$ and $e^+e^- \rightarrow \nu\bar{\nu}h$ at the ILC

[1805.12027](#)

Prospects for the determination of the top-quark Yukawa coupling at future e^+e^- colliders