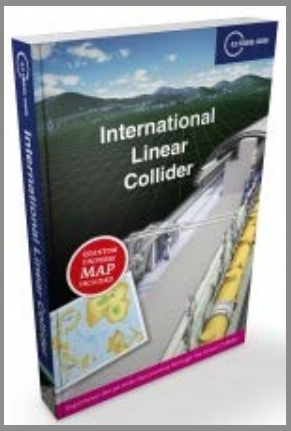
LC NEWSLINE
THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY



Special issue: The ILC guide to Kitakami 2

How do foreigners get around in Japan and where will they settle when (if) the ILC is being built and operated? In this visit to Kitakami-part 2, you will be introduce to the *coolness* of the ILC Kitakami candidate site (don't miss the videos inside!). For an introduction and a glossary, don't miss the first chapter in the 20 February 2014 issue of *LC NewsLine*.

FEATURE

Cool Japan, cool Kitakami

by Rika Takahashi

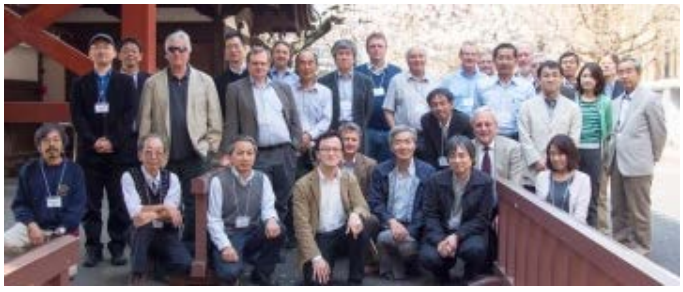
Sushi, anime, manga, Hello Kitty, and Harajuku fashion… Many aspects of Japanese culture are setting to tone of cool and trendy around the world. Japan's Iwate prefecture released videos entitled "Cool Kitakami" on 8 April. Composed of four themes – Tourism and Culture, Life, Future and International Linear Collider, these videos introduce how cool it will be to live around the expected site for the ILC to a non-Japanese audience.

Don't miss them!

DIRECTOR'S CORNER

The ILC design evolves

by Mike Harrison



Having just returned from a three-day meeting of civil engineers, accelerator designers, integration experts and linear collider management at the University of Tokyo, Mike Harrison, ILC Director in the Linear Collider Collaboration, reports on the progress. It turned out that even if the ILC is built in stages, which is a popular model with many, all the major civil engineering facilities would have to be completed in phase one of the project.

IMAGE OF THE WEEK

Ichinoseki-eki: get on board the ILC train!

Image: Ichinoseki city

If you ever come to the Kitakami region and visit the ILC candidate site in Japan, you may well stop or change over at Ichinoseki station (Ichinoseki-eki). Since a few weeks, local people and the visitors can view an ILC booth in the station, providing information about the ILC project and candidate site. Read more...

IN THE NEWS

from *Iwate Nippo*
16 April 2014
物流拠点構想が始動 福島でハブ構築説明会
国際リニアコライダー　の建設実現を見据え、業種横断的な産業戦略の具体的な検討が始まった。「　物流　ハブ　構築構想説明会」が　日、福島県郡山市で開かれ、部品工場と建設地を結ぶ物流拠点を東北に整備する構想が示された。(The cross-industry effort toward the realisation of the ILC has been started. On 15 April, the explanatory meeting to establish the logistics hub for the ILC was held in Koriyama city, Fukushima prefecture. In the meeting, the framework of the plan to connect the components factories and the construction site was presented)

from *livescience.com*
14 April 2014
Beyond the Higgs: 4 Weird Facts About Other Bosons
But the Higgs boson is only one type of boson. Bosons are defined as having integral spin (spin expressed as an integer such as 0, 1 or 2) and behave in accordance with statistics proposed by Albert Einstein and Indian physicist Satyendra Nath Bose. Here are four bizarre facts about other bosons.

from *Science Daily*
13 April 2014
未来的对撞机　环路还是直线 (Future Collider: circular or straight)
为了以非常高的能量来粉碎电子　线性加速器会更管用。这种加速器的加速管道是笔直的　每端都有一台加速器　通过这个管道　从两端出发的电子和正电子会相互碰撞并相互湮灭——因为当物质和反物质相遇时　它们会相互湮灭。Read Google translation

from *Iwate Nichinichi Shimbun*
11 April 2014
体制充実、実現へ一丸 県科学ILC推進室新設
本県が建設候補地の超大型加速器・国際リニアコライダー　実現に向け、県は　年度に新たな組織として「科学推進室」を設置した。(Iwate prefecture sets up the new office toward the realisation of the ILC)

CALENDAR

Upcoming events

Americas Workshop on Linear Colliders (AWLC14)
Fermilab
12- 16 May 2014

PREPRINTS

ARXIV PREPRINTS

1404.3609
An ultracold low emittance electron source

1404.3173

Technology and Instrumentation in Particle Physics 2014 (TIPP 2014)
Amsterdam, the Netherlands
02- 06 June 2014

View complete calendar

ILD SiW ECAL and sDHCAL dimension-performance optimisation

1404.3164
Feasibility of a minimum bias analysis of $e^+e^- \to ZH \to q\bar{q}+X$ at a 250 GeV ILC

1404.3013
Prospect for Study of Randall-Sundrum model from Higgs decay at future colliders

1404.2420
Prospect for Study of Randall-Sundrum model from Higgs decay at future colliders

1404.2184
Experimental and Theoretical Progress of Linear Collider Final Focus Design and ATF2 Facility

1404.2025
Experimental and Theoretical Progress of Linear Collider Final Focus Design and ATF2 Facility

1404.1672
Scintillator Strip ECAL Optimization

1404.1386
Supersymmetry, Naturalness, and Light Higgsinos

1404.1200
Production and decay of radion in Randall-Sundrum model at a photon collider

1404.1013
LHC top mass: alternative methods and prospects for the future

1404.0982
Cosmic ray tests of a GEM-based TPC prototype operated in Ar-CF4-isobutane gas mixtures: II

1404.0810
Testing nonlinear-QED at the future linear collider with an intense laser

1404.0365
Does the LHC exclude SUSY Particles at the ILC?

1404.0349
ILC Extraction Line Simulations with TDR Parameters

1404.0186
Prediction of the light CP-even Higgs-Boson Mass of the MSSM: Towards the ILC Precision

1404.0124
Robustness of a SiECAL used in Particle Flow Reconstruction

1404.0041
CALICE Digital Hadron Calorimeter: Calibration and Response to Hadrons

1404.0040
An Overview of the Anomalous Soft Photons in Hadron Production

1403.8104
Gain Stabilization of SiPMs

1403.8097
Results of the SDHCAL technological prototype

1403.7996
A Study of Thermocurrent Induced Magnetic Fields in ILC Cavities

1403.7953
A study of silicon sensor for ILD ECAL

1403.7921
Searching for dark matter via mono-Z boson production at the ILC

1403.7734
Model Independent Determination of HWW coupling and Higgs total width at ILC

1403.7717
Activity report of ILD-TPC Asia group

1403.7539
An Engineering Guide To Photoinjectors

1403.7433
WHIZARD 2.2 for Linear Colliders

1403.7392
Simplified Models for Vector Boson Scattering at ILC and CLIC

1403.7348
Precision luminosity measurement at ILC

1403.7008
Full Simulation Study of the Higgs Branching Ratio into Tau Lepton Pairs at the ILC with s√=500 GeV

ILC NEWSLINE
THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

FEATURE

Cool Japan, cool Kitakami

Rika Takahashi | 17 April 2014

Iwate prefecture is taking another cool initiative, the Iwate manga project, introducing the charm of the area by various comic artists who were born or lived in Iwate prefecture. Their third book was just published in March, and one of the stories featured the ILC, by famous comic artist Sensha Yoshida.

Sushi, anime, manga, Hello Kitty, and Harajuku fashion… Many aspects of Japanese culture are setting to tone of cool and trendy around the world. The Japanese government has started a "Cool Japan" branding initiative to explore attractive Japanese goods and services on a worldwide scale.

In keeping with the Cool theme, Japan's Iwate prefecture released videos entitled "Cool Kitakami" on 8 April. Composed of four themes – Tourism and Culture, Life, Future and International Linear Collider, these videos introduce how cool it will be to live around the expected site for the ILC to a non-Japanese audience.

Last August, the Kitakami site in Iwate prefecture was evaluated as the best location for the ILC in Japan. "The Kitakami site is receiving increasing attention since the site evaluation. We produced these videos to introduce the life style in the area, share information regarding sightseeing and cultural resources, and our ongoing effort to get over the Tsunami disaster," said Hisashi Odaira, Deputy Director General of the Office of Policy Promotion in the Iwate Prefectural Government, the chief producer of the videos. "I believe that the Kitakami site provides convenient access, beautiful nature, and comfortable lifestyles which will be perfect for the future research environment. Please come visit us. Local government officials as well as local residents are all welcoming you."

The first video, sightseeing and culture, is presented by Amanda Krips, Coordinator of International Relations at Iwate prefecture, who has been living in Iwate for five years. Krips said that there has been a real push to produce more information about Iwate in English since the evaluation last summer. "I'm very proud to have taken part in that. It was exciting to get to talk about places in Iwate that made me fall in love with the region in the first place," she said. "The videos showcase a lot of the charm of Iwate, but I can't wait for viewers to see the real deal themselves. It's just such a great place to live, and the people here are so friendly. Above all, Iwate is serious about creating an international community where everyone is welcome, so your opinions are important as we proceed down the road to the ILC. Looking forward to seeing you in Iwate!"

Below, view these videos in four languages: English, French, Chinese and Japanese.

ENGLISH VERSIONS

1. Tourism and culture
2. Lifestyle and Location
3. The Future
4. ILC

FRENCH VERSIONS

1. Tourisme et culture
2. Art de vivre et géographie
3. L'avenir
4. L'ILC

CHINESE VERSIONS

1. 观光、文化
2. 生活、位置
3. 未来
4. ILC

JAPANESE VERSIONS

1. 観光・文化
2. 生活
3. 未来
4. ILC

LC NEWSLINE
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DIRECTOR'S CORNER

The ILC design evolves

Mike Harrison | 17 April 2014

Group picture of the joint meeting of the conventional facilities and accelerator design and integration groups at Tokyo University. Image: Nobuko Kobayashi

The ILC baseline design as described in the *Technical Design Report* and its associated cost estimate was finalised in 2012. Since that time the design has been relatively static while the global high-energy physics community absorbed and responded to this information. During the past 12 months, significant progress in Japan has resulted in the choice of a preferred site together with a proposal to consider implementing the ILC project in a series of discrete energy stages rather than an initial 500- gigaelectronvolt (GeV) centre-of-mass energy. Thus the time is fitting to evolve the TDR baseline in response to these new eventualities. An initial step in this direction was taken recently in a three-day meeting at the University of Tokyo, which involved a joint team from the conventional facilities and accelerator design and integration groups.

The goals of the meeting were described thus: "*This meeting will examine the scope of the pre-project CFS work, the schedule, and necessary resources. The detector hall concept at the proposed site, and the impact of energy phasing will also be addressed. The pre-project CFS timeline will likely drive many aspects of the accelerator design work in the next few years thus it is important to understand these constraints. In order to derive a site dependent ILC design and address long lead-time CFS activities then we need to assess what design information needs to be available to the CFS group and when. The ILC technical design in the TDR relied on a generic site description which is inadequate to proceed much further in the site specific design.*"

During the LCWS13 meeting last November, it became apparent that in order to be consistent with a construction project which can start in 2018, a multi-year pre-construction programme centred around the conventional facilities work in Japan needed to start soon. In turn, this programme would need timely input from the site-specific accelerator design. Although three days is insufficient time to finalise anything, a consensus was achieved on many items which provides the necessary framework for how to proceed during the next few years. Next month's Americas Workshop on Linear Collider to be held at Fermilab will build on this work.

Conventional facilities preparation for a construction project covers not only the detailed design of the tunnel, associated enclosures and the interaction region/damping ring complex but also such green-field related topics as land acquisition, environmental impact, geological and topographical studies. The schedule for this work depends to a certain degree on the available resources but it will require a minimum of several years. The meeting discussed the work scope and how best to proceed but there was little dissent from the conclusion that we need to start soon to remain consistent with a construction start in 2018 or thereabouts. This topic will provide the basis of a funding request for the long lead-time elements.

Intermediate energy operation at values less than 500 GeV is based on a partial installation of the main linac and has ramifications on

many aspects of the project execution including such programme aspects as the cryomodule production rate, funding profiles and minor design changes to best accommodate lower energies. The exact details depend on the desired energy points and the associated integrated luminosity at these values. These specifications are currently under study by the parameters working group, but one critical conclusion from the meeting was the recognition that all the major convention construction needs to be completed as part of the first phase of any project. This result will now be used as input for subsequent planning.

A partial linac can be implemented in several ways. The basic variants consist of “missing” cryomodules at the upstream end, the downstream end or interspersed along the length. All of these approaches require the full injector complex, the complete beam delivery system and transport sections in the main tunnel. Emittance growth minimisation requires an initial accelerating section of at least 50 Ge,V which argues against a missing linac on the upstream end. Most discussions involved a solution which has the location of the accelerating sections determined by the baseline cryogenic infrastructure which satisfies the beam dynamics requirements and allows for some operational flexibility. This approach will be used for the future energy scaling discussions.

The preferred site has re-opened debate on the possibility of a vertical access shaft (or shafts) for the detector hall as opposed to, or in addition to, the baseline design which involved a horizontal access tunnel. This is complicated issue involving the detector construction technique, personnel safety, and exact location of interaction point as well as old favourites such as cost and schedule. More work is necessary before an optimal decision can be made but in order to start to restrict the potential phase space of solutions we decided to use the TDR baseline (horizontal) and the so-called Hybrid A (CMS-like) as the models for further study. The goal in this area is to converge on a solution by the end of this calendar year.

Several other topics such as the role of the central campus, safety issues arising from the tunnel design, and short-term activities were also part of the meeting. The looming *LC NewsLine* deadline suggests that these items be left for a later date – the talks are posted on the aforementioned web site for those of you who can’t bear to wait. The upcoming Fermilab workshop will provide the next forum for further face-to-face dialogue.

On behalf of the meeting participants I would like to thank the University of Tokyo and the support staff for arranging the meeting, the facilities, the excellent weather, the cherry blossom in bloom, and a damn good meal which appeared to materialise in a mysterious and spontaneous fashion courtesy of the physics department.

ACCELERATOR | CIVIL ENGINEERING | CONVENTIONAL FACILITIES | ILC DESIGN | KITAKAMI SITE

NEWSLINE
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IMAGE OF THE WEEK

Ichinoseki-eki: get on board the ILC train!

Image: Ichinoseki city | 17 April 2014

If you ever come to the Kitakami region and visit the ILC candidate site in Japan, you may well stop at or change over at Ichinoseki station (Ichinoseki-eki). Since a few weeks, local people and the visitors can view an ILC booth in the station, providing information about the ILC project and candidate site.

Osamu Katube, Mayor of Ichinoseki city, has given more than 100 public lectures about the ILC so far. “I believe that the ILC has gained a broad understanding around the area. With this exhibition, I am hoping people will feel that the ILC project is moving, will imagine the scale of the project and will get interested in science.”

This exhibition is the result of interactions between Mayor Katsube and Ichinoseki Station manager, Toshihiro Chiba. They were having a meeting one day, and the ILC came up as a topic of chat. “When Mr. Chiba learned that Ichinoseki might be the closest station to the future ILC campus, he immediately offered the exhibit space.” The visitor will find the ILC exhibit just in front of the ticket gate of the Shinkansen bullet train.

ICHINOSEKI CITY | ILC | IWATE PREFECTURE | KITAKAMI SITE | OUTREACH