LC NEWSLINE
THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

DIRECTOR'S CORNER

Moving from emotions to negotiations

by Lyn Evans

Physics isn't usually associated with big emotions, and in the everyday life at the labs this is probably true. However, our field has recently had many momentous events, and the excitement these have caused have made particle physics one of the most popular science topics in the world. Let's use this momentum to get ahead in our plan to build the ILC – maybe in stages and in Japan?

AROUND THE WORLD

SLAC inaugurates a new era for the future ILC (twice)

A group of SLAC physicists and engineers celebrate the handover of the ILC Technical Design Report.

by Julianne Wyrick

The University of Tokyo, CERN and Fermilab weren't the only locations celebrating the handover of the International Linear Collider's (ILC) Technical Design Report on 12 June.

AROUND THE WORLD

China's strategy on next-generation high-energy electron-positron colliders discussed

by YiLin Liu

From 12 to 14 June, the 464th Fragrant Hill Science Conference on "The Next-generation High Energy Electron Positron Collider - Current Situation and Future Strategy" was held in the Beijing Fragrant Hill Hotel. Thirty-five front-line scientists from theoretical physics, experimental physics, detectors and accelerators from eleven institutes in China joined the conference.

Scientists reviewed the achievements of high-energy-frontier experiments and current research programmes on particle physics both at home and abroad. They also discussed China's strategy for the next-generation high-energy electron-positron colliders.

AROUND THE WORLD

From symmetry magazine: International Linear Collider design is 'good to go'

After nearly a decade of R&D, the International Linear Collider global design effort crosses the finish line

At a series of events held on three continents, scientists celebrated the completion of the design for a next-generation particle collider, the International Linear Collider.

VIDEO OF THE WEEK

Good things come in threes

The last issue of LC NewsLine featured the two summary videos from the Asian and the European Technical Design Report handover event. Today we are proud to present part three: the summary of the Americas event that took place at Fermilab and culminated in the handing over of a gift-wrapped set of the report from Barry Barish to Pier Oddone. Relive the baton toss again...and again... and again.

IN THE NEWS

from *Yomiuri Shimbun*
27 June 2013
加速器誘致決議 県議会が可決
県議会は　日、　月定例会の最終本会議を開き、宇宙誕生の謎に挑む次世代加速器「国際リニアコライダー」　　の九州誘致を求める決議を可決した。(Prefectural assembly of Saga adopt a resolution to invite the ILC on 26 June)

from *Iwate Nippo*
24 June 2013
北上山地は　適地　ILC地質調査、県と東北大報告
国際リニアコライダー　　の誘致を目指す県と東北大などは　日、奥州市江刺区と一関市大東町で、建設候補地の北上山地　北 上高地　で実施した地質調査の結果報告会を開き、「　　建設地に適している」との結論を示した。(Tohoku University held the debrief meeting on the geological investigation of the ILC construction site in Kitakami mountains, offering the conclusion that the site is suitable for the ILC construction)

from *SX Daily*
24 June 2013
日本或承建5000亿电子伏国际超级直线对撞机
据国外媒体报道　上周三　国际直线对撞机(International Linear Collider　蓝图被公布　日本、瑞士和美国举行了相关仪式表示这台超高能量正负电子对撞机工程进入实施阶段　科学家希望这台价值数十亿美元的机器可揭示更多的宇宙奥秘。据悉　日本政府对这项基础研究工程非常支持　很有可能最终会落戶日本。

from *Technisch Weekblad*
22 June 2013
Technisch ontwerp ILC bekendgemaakt
Vorige week publiceerde een internationaal samenwerkingsverband het technisch ontwerp van de International Linear Collider (ILC), een deeltjesversneller die in meer detail dan de succesvolle Large Hadron Collider (LHC) naar subatomaire deeltjes gaat kijken.

from *Science*
21 June 2013
U.S. Particle Physics Lab Names New Director
"My first challenge is to get my arms around that process, talk to the leaders of the various efforts, and understand what the U.S. community really wants to do," Lockyer says.

from ***Futura Sciences***
20 June 2013
Le ILC, le successeur du LHC, est prêt à construire
On vient d'apprendre par le Cern que les travaux concernant les plans et le programme de construction de l'ILC étaient prêts : il ne manque plus que le financement et la décision politique pour lancer sa construction, quelque part sur la planète. Beaucoup pensent qu'il sera installé au Japon, mais rien n'est encore sûr.

from ***Naperville Sun***
20 June 2013
New director named for Fermilab
In the future, he said, there will be decisions to be made regarding the programs already at Fermilab, and the U.S. lab's role in cooperative international projects, such as upgrades at CERN and the construction of the International Linear Collider, a particle accelerator on the scale of the Large Hadron Collider slated to be built under a Japanese mountain range. Fermilab, he said, will play a leading role in all of them.

from ***Maxisciences***
19 June 2013
Accélérateur de particules : le ILC, un nouveau collisionneur pour succéder au LHC
De plus, les physiciens espèrent poser les bases d'une "nouvelle physique", permettant d'expliquer des phénomènes et des particules qui sortent du cadre de la théorie standard.

from ***Ars Technica***
18 June 2013
The International Linear Collider will be a Higgs factory
When it comes back online, researchers will use it to probe the properties of the Higgs boson it discovered and to continue the search for particles beyond those described by the Standard Model. But no matter how many Higgs particles pop out of the machine, there's a limit to how much we can discover there.

from ***Ingeniøren***
18 June 2013
Her er planerne for LHC's afløser
En teknisk designrapport for en lineær elektron-positron collider til en pris af 50 milliarder kroner er netop fremlagt. Japanerne vil gerne bygge, og Cerns generaldirektør er positiv, men afventende.

from ***Novini.bg***
18 June 2013
Строят линеен колайдер
Новият 31-километров Международен линеен колайдер (International Linear Collider, ILC) е почти готов за строителство.

from ***CERN Bulletin***
17 June 2013
Together in the same direction
What it means is that the ILC is ready to be built, if the physics motivation is there along with the political will. Thanks to the great performance of the LHC, there is now a strong physics case. And in Japan, there have been encouraging noises from both scientific and political circles about hosting the ILC. So, for now, we will have to wait and see.

from ***The Guardian (Blog)***
16 June 2013
Fairytale of New Physics
It is a costly multinational project which the Japanese are proposing to lead, with international collaboration. It is the most realistic project of several major particle physics colliders under discussion – indeed, it is the only one we really know how to build at present.

from ***NHK***
14 June 2013
国際リニアコライダー計画「日本誘致」に期待感
年代の完成を目指して計画が進む最先端の実験施設、 国際リニアコライダーについて、建設を推進する国際的な組織のリン・エバンスディレクターが の単独インタビューに応じ、施設を日本が誘致することに期待感を示しました。(Video)

from ***Nature World News***
14 June 2013
Phase One Complete for New-Generation Particle Accelerator
As far as construction goes, those behind the project say that there are strong signs coming from Japan that it could bid to host the project.

from ***Mainichi Shimbun***
14 June 2013
国際リニアコライダー:素粒子研究施設の誘致で意見交換 受け入れ環境重要
「国際リニアコライダー」　　の北上高地建設に備え、外国人研究者や家族の受け入れについて意見交換する「国際都市奥州市について考える～　　誘致とまちづくり」　市主催　が　　日、同市の奥州宇宙遊学館で開かれた。(On 13 June, the meeting to discuss about the conditions to accept the foreign researchers was held in Oshu city, Iwate prefecture in preparation of the envisioned ILC construction.)

from ***The Conversation***
14 June 2013
The International Linear Collider is coming – but why do we need it?
In simple terms, if the Large Hadron Collider is considered the discovery machine, the International Linear Collider will be the precision machine. Both are required to complement each other's findings.

from ***Chinese Academy of Science***
14 June 2013
International Linear Collider Publishes its Technical Design Report
The Chinese scientists have been involved in the ILC R&D efforts, including overall design of the accelerator, studies on particle dynamics, damping ring design, 1.3 GHz superconducting cavity and accelerating components, advanced beam diagnosis and detector etc.

from ***Nikkei***
14 June 2013
日本学術会議、次世代加速器誘致で夏に結論
内閣府の日本学術会議は14日、宇宙の成り立ちの謎を探る次世代加速器「国際リニアコライダー　　」計画について、有識者による検討会を開いた。同計画の科学的な意義や社会への影響などを集中的に話し合い、今夏をメドに結論をまとめる。On 14 June, Science Council of Japanese cabinet held the meeting to review the scientific significance and the social impact of the ILC. They will frame a conclusion this summer)

from ***Kopalnia Wiedzy***
13 June 2013
Zakończono prace projektowe nowego zderzacza cząstek
Ewentualne zbudowanie ILC przyniesie korzyści nie tylko fizykom. Już teraz można zakładać, że nowe technologie, które powstaną na potrzeby akceleratora udoskonalą np. obrazowanie medyczne, pozwalając na zminiaturyzowanie tomografów pozytonowych i przyczynią się do stworzenia nowych mniej szkodliwych technik radioterapii.

from ***Génération Nouvelles Technologies***
13 June 2013
Science : Un nouvel accelerateur de particules pour créer de la matière noire
L'un des projets les plus ambitieux de l'histoire de l'humanité s'apprête à commencer. Les scientifiques du monde entier viennent d'annoncer avoir finalisé les plans du prochain plus gros accélérateur de particules.

from ***Presse Citron***
13 June 2013
International Linear Collider, le futur de l'accélérateur de particules
Le plus grand accélérateur de particules jamais créé devient enfin possible. International Linear Collider, 31 kilomètres, ne demande plus qu'à être construit.

from ***scienze fanpage***
13 June 2013
Dopo LHC, ecco l'acceleratore di particelle del futuro
Si chiamerà International Linear Collider e, a differenza di LHC, non sarà un acceleratore ad anello. Obiettivi: supersimmetria, materia oscura e dimensioni nascoste. Forse costruito in Giappone.

from ***Wired***
13 June 2013
Plans published for Large Hadron Collider's dark matter-hunting successor
The main goal is finding dark matter, the substance that is theorised to make up more than 85 percent of the universe's mass but which has never been directly detected. It won't be a replacement for the LHC, but rather is designed to be "complementary".

from ***Daynews.co.il***
13 June 2013
מאיץ חלקיקים ענק חדש בתכנו :CERN אחרי
הושלמו התכניות לבניית מאיץ החלקיקים הגדול בעולם. עכשיו חסר רק המימון: 7.8 מיליארד דולר

from ***Adevarul.ro***
13 June 2013
Un proiect uriaş a fost aprobat: acceleratorul liniar care va demonstra că bosonul Higgs descoperit este “cel real” Citeste mai mult: adev.ro/moc50y
ILC va încerca să ducă mai departe rezultatele LHC şi să identifice şi să caracterizeze bosonul Higgs, iar pe viitor ar putea investiga şi domenii cum ar fi supersimetria, materia întunecată şi energia întunecată şi teoria supercorzilor în dimensiuni multiple.

from ***Topnews.nz***
13 June 2013
An International Physicist Group Plans to Build a Super-Collider
An international physicist group is planning to build particle accelerator with Japan as a leading candidate to house planned super-collider.

from ***Gazeta.ru***
13 June 2013
Физики создали технический проект Международного линейного коллайдера
Международная группа физиков создала технический проект Международного линейного коллайдера (ILC), сообщает РИА «Новости» со ссылкой на сообщение коллаборации линейного коллайдера.

from ***Golem***
13 June 2013
Beschleuniger ILC ist bereit für den Bau
International Linear Collider (ILC) heißt das nächste Großprojekt der Teilchenphysik: An diesem Teilchenbeschleuniger soll die Forschungsarbeit des Large Hadron Collider (LHC) fortgeführt werden. Die Linear Collider Collaboration hat die technischen Details zu der Anlage veröffentlicht.

from ***Nikkei***
13 June 2013
宇宙の起源探る次世代加速器、国内誘致へ 政府
政府は、宇宙創成の謎に迫る次世代加速器「国際リニアコライダー　　」を国内誘致する方針を固めた。　月をメドに国内の建設候補地を一本化し、正式に意思表明する。(The Japanese government established the policy to invite the ILC. The site selection in Japan is expected in July, and Japan might make official proposal.)

from ***Computerra.ru***
13 June 2013
Физика элементарных частиц за пределами БАК: что ожидать от нового коллайдера
Судьба Международного линейного коллайдера решалась вчера специалистами ведущих лабораторий в ходе проводимой через интернет видеоконференции.

from ***phys.org***
12 June 2013
New 31-km-long International Linear Collider ready for construction
Today the Linear Collider Collaboration published its Technical Design Report [PDF] for the International Linear Collider (ILC) – a proposed 31-kilometer electron-positron collider that will both complement and advance beyond the physics of the Large Hadron Collider.

from ***Mainichi Shimbun***
12 June 2013
リニアコライダー:技術設計が完了 立地選定へ
宇宙誕生の謎に迫る超大型加速器「国際リニアコライダー」　　の実現に向け、日米欧などの科学者らが約　年かけて進めてきた技術設計が完了し　日、東京都文京区の東京大で記念式典が開かれた。技術的な検証を終え、いよいよ立地選定の段階に移行する。(The technical design of the ILC was completed after the eight years of the R&D. On 12 June, the ceremony was held at University of Tokyo. The technical evaluation has been done, and the ILC is moving to the next step of the site selection.)

from ***Physik Journal***
12 June 2013
Höchste Priorität für den LHC
Die Planungsarbeiten sind weit fortgeschritten, und am 12. Juni haben die beteiligten Physiker den Technical Design Report der Öffentlichkeit vorgestellt.

from *Nikkei*
11 June 2013
次世代加速器、経済効果は45兆円 日本生産性本部が試算
宇宙誕生の謎に迫る次世代加速器「国際リニアコライダー　　」建設の経済効果は30年間で合計約45兆円――。日本生産性本部は11日、　　を日本に建設した場合の経済効果の試算を初めてまとめた。(Japan Productivity Center published the report on the economic impact of the ILC on 11 June. According to the estimate, the impact of the ILC construction will be as big as 45 trillion yen for 30 years.)

from *Saga Shimbun*
11 June 2013
　　脊振誘致へ 海外向け　　動画を公開
佐賀、福岡両県は　　日、国際リニアコライダー　　の脊振誘致を　　する海外研究者向け動画を動画投稿サイト「　　ユーチューブ　」に公開した。(Saga and Fukuoka prefectures posted the English video to promote the ILC to Kyushu area on YouTube on 11 June)

from *Xinhua news*
12 June 2013
下一代高能对撞机设计报告问世
欧洲核子研究中心　　日在日内瓦发布公报称　下一代高能对撞机——国际直线对撞机的最新设计报告问世　这种新一代粒子对撞机一经建成　将与该研究中心现有的大型强子对撞机一起解开很多未解的宇宙科学之谜。

CALENDAR

Upcoming events

XXVI International Symposium on Lepton Photon Interactions at High Energies (2013 Lepton Photon Conference)
UCSF Mission Bay Conference Center, San Francisco, CA, USA
24- 29 June 2013

Snowmass Energy Frontier Workshop
University of Washington, Seattle
30 June- 03 July 2013

IHEP XXIX-th International Workshop on High Energy Physics

Protvino, Russia
26- 28 June 2013

Snowmass on the Mississippi (CSS 2013)
Minneapolis, Minnesota, USA
29 July- 06 August 2013

View complete calendar

ANNOUNCEMENTS

Snowmass: Energy Frontier working group meeting agenda online

The Seattle meeting of the Energy Frontier working groups is taking place from 30 June to 3 July. The agenda page is now online.

The organisers are planning a mix of plenary and parallel talks and a panel discussion, all aimed at providing the final input to the working groups before their reports must actually be written. Please register here.

PREPRINTS

ARXIV PREPRINTS

1306.5878
Phenomenology of Fermionic Asymmetric Dark Matter

1306.3229
Non-Decoupling MSSM Higgs Sector and Light Superpartners

1306.3148
Leaving no stone unturned in the hunt for SUSY naturalness: A Snowmass whitepaper

1306.3126
The International Linear Collider

1306.2926
Naturalness, Supersymmetry and Light Higgsinos: A Snowmass Whitepaper

1306.2369
Proton-proton and electron-positron collider in a 100 km ring at Fermilab

1306.2315
Xenophobic Dark Matter

NEWSLINE
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DIRECTOR'S CORNER

Moving from emotions to negotiations

Lyn Evans | 27 June 2013

We particle physicists have lived through some exciting times recently. A few years ago, the world witnessed live when the LHC was switched on for the first time (to my countdown). A few days later, one of the interconnects broke, and it took us more than a year to get the LHC back into shape. The world watched again when we had first collision, but all this was topped by last year's 4-July announcement that the Higgs had been found. What a day! It was both a culmination of many years of hard work and determination and a pointer towards the future of the field.

An emotional moment: Pier Oddone, who will retire from his posts as Fermilab Director and ICFA chair on 1 July, congratulates Barry Barish, who is also retiring from his role as GDE Director, on accomplishing the TDR. Image: Cindy Arnold, Fermilab

Another culmination of many years of hard work was celebrated two weeks ago in a relay symposium to announce the publication and official handover of the ILC's *Technical Design Report*. It may not have been as ground breaking as the Higgs discovery, but it was an emotional moment nevertheless – what an achievement to combine several R&D projects in various stages into one global effort to design the best possible partner and successor to the LHC. In three events in Asia, Europe and the US (and several national labs as well), the people who made it all happen celebrated this massive milestone. I actually flew from Wales to Tokyo, arriving an hour before the official starting time to attend and speak at the Asian event. Some 50 journalists had gathered in the room, cameras were snapping away when Sachio Komamiya handed me the TDR and I can't quite recall how many interviews I gave to Japanese media at the press conference that followed.

I take this great interest in the project and the story of the ILC as a sign that the Japanese public is ready to consider welcoming the ILC in their country as a great new science adventure. It is therefore time to put the physics emotions to the side and to get back to facts. We are all looking towards Japan these days. We know Japan is a strong and trustworthy partner that would be an ideal host to a new, global laboratory like the ILC. We are ready to start negotiations on a concrete future.

In a few weeks the two possible sites, one in the Sefuri region of Japan and one in the the Tohoku region, will have been evaluated internally in Japan and one will have been selected. This site will then be studied in detail by an international committee to ensure that it meets all the technical requirements.

I would also like to congratulate Nigel Lockyer, who will succeed Pier Oddone as Fermilab Director on 1 July. I look forward to working with Nigel and am curious about his vision for Fermilab's collaboration in the Linear Collider.

Greetings from San Francisco, where I am attending the Lepton Photon Conference!

FERMILAB | JAPAN | SITE SELECTION | TECHNICAL DESIGN REPORT

NEWSLINE
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AROUND THE WORLD

SLAC inaugurates a new era for the future ILC (twice)

A group of SLAC physicists and engineers celebrate the handover of the ILC Technical Design Report.

Julianne Wyrick | 27 June 2013

TDR handover party cake, complete with silly straw model of the ILC. Image: Cherrill Spencer.

The University of Tokyo, CERN and Fermilab weren't the only locations celebrating the handover of the International Linear Collider's (ILC) *Technical Design Report* on 12 June. SLAC employees who have worked on the ILC had a party of their own: the group watched a live stream of the American event and enjoyed a cake topped with an ILC made from silly straws.

Around 35 SLAC employees gathered to watch the handover of the *Technical Design Report* (TDR) from ILC's Global Design Effort Director Barry Barish to International Committee for Future Accelerators (ICFA) Chair Pierre Oddone at Fermilab. Many also tuned in early for a presentation on the 25-year history of electron-positron colliders by SLAC physicist Nan Phinney.

SLAC magnet engineer Cherrill Spencer organised the party, which was held in SLAC's new Research Support Building that houses the Accelerator Directorate. She wanted to provide an opportunity for those who had worked on the ILC to celebrate the fruit of their labours.

"There are a lot of us here who spent half our lifetimes working on linear colliders," Spencer said.

Party attendees included SLAC engineers, staff scientists and accelerator physicists who designed ILC equipment, created prototypes and assessed costs of beamline components. SLAC theoretical physicists who worked on determining parameters such as beam energy were also part of the group.

One of the partygoers was Tom Markiewicz, SLAC's representative on the ILC Machine Detector Interface (MDI) Common Task Group. The MDI group's work has involved the engineering of the push-pull detector system and the focusing and delivery of the beams to the collision point.

Of the handover celebration Markiewicz said, "It was wonderful, but it will be even better when we start to build."

Spencer found satisfaction in seeing a completed TDR.

"Most of us are not actually working on it (the ILC) right now," Spencer said. "But what was written in that report, hundreds of pages, describes work we did."

Her own work on the ILC includes designing and costing over 13,000 magnets. Most recently, she helped with the redesign and re-costing of magnets for the ILC's damping rings.

The TDR handover party isn't the first linear-collider-related party Spencer has planned. In September 2004, Spencer hosted a "Goodbye NLC" party in the back garden of her Palo Alto home after SLAC's design for a linear

SLAC physicists and engineers dismantle Spencer's NLC-labeled swing set at her 2004 Goodbye NLC party. Image: Naomi Nagahashi

accelerator was set aside in favor of DESY's TESLA design.

SLAC's Next Linear Collider (NLC) design involved copper-based cavities and a room-temperature, or "warm," radiofrequency power delivery system. DESY's TESLA design proposed the cold superconducting technology that will be used by the ILC.

When ICFA selected this design for the ILC, SLAC physicists, like Markiewicz and Spencer, moved from working on their NLC design to the new ILC design.

To find closure after the switch, Spencer led 25 other physicists and engineers in the "Goodbye NLC" party, which, besides food and drink, involved taking apart an old swing set labeled to represent the NLC, as well as digging a hole to bury NLC-related items.

"I had a swing set in my back garden that my daughter had outgrown, and I wanted it dismantled," Spencer said. "I labeled different parts of the swing set with the names of different parts of the NLC, such as a damping ring, the linac and a beam delivery. Many of my physicist and engineer colleagues took it apart very quickly."

After taking apart the swing set, Spencer, her SLAC colleagues and their families dug a hole where the swing set had been and buried a box of NLC memorabilia. Diagrams of the linac, a 1996 Snowmass Report on the NLC and a pulse-forming network coil strap remain buried beneath her lawn to this day.

Spencer's backyard in 2004 after burial of the NLC memorabilia. Image: Cherrill Spencer.

"I'm a person who believes in celebrating when there's something to celebrate and bringing closure when we've been disappointed," Spencer said of the two parties.

Though the NLC party was a "goodbye" party, Markiewicz said the TDR handover party could be considered a beginning party.

"We're hoping that with this handover of the TDR, the Japanese will have the technical basis they need to make a solid proposal to build the ILC to their government," he said.

COLD TECHNOLOGY | DESY | SLAC | TECHNICAL DESIGN REPORT | WARM TECHNOLOGY

NEWSLINE
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AROUND THE WORLD

China's strategy on next-generation high-energy electron-positron colliders discussed

YiLin Liu | 27 June 2013

From 12 to 14 June, the 464th Fragrant Hill Science Conference on "The Next-generation High Energy Electron Positron Collider -Current Situation and Future Strategy" was held in the Beijing Fragrant Hill Hotel. Thirty-five front-line scientists from theoretical physics, experimental physics, detectors and accelerators from eleven institutes in China joined the conference.

Scientists discussing the current situation and future strategy in China for the next-generation high-energy electron positron collider. Image: Yilin Liu.

The meeting started with a keynote speech from Yifang Wang, IHEP Director and Linear Collider Board member. Wang pointed out that "*the next-generation high-energy electron-positron collider is the forefront of high energy physics; it has decisive significance in science and technology in general, and China can't be absent*."

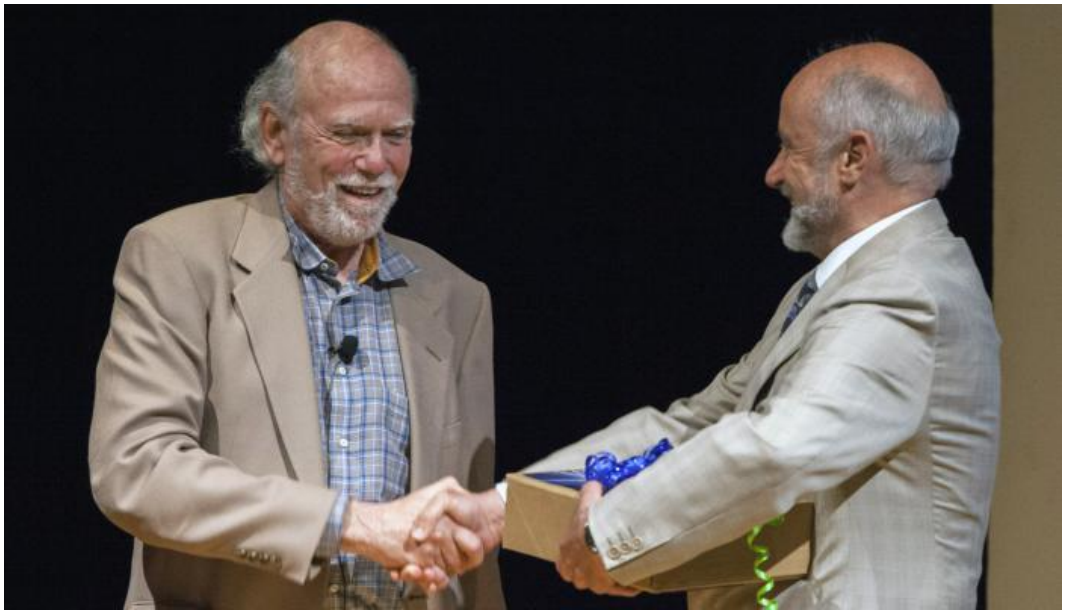
Scientists reviewed the achievements of high-energy-frontier experiments and current research programmes on particle physics both at home and abroad. They also discussed China's strategy for the next-generation high-energy electron-positron colliders. Jie Gao, Asian Linear Collider Steering Committee chairman and Linear Collider Board member, gave a talk entitled "*LC international collaboration status & Higgs factory and its future.*" In his talk Gao stressed the importance of China's participation in the ILC collaboration in addition to China's home-based programme.

The ILC TDR event, which took place at the same time as the Fragrant Hill Science Conference, celebrated the official completion of ILC Technical Design Report (TDR) and marked the success of many years of globally coordinated R&D efforts on the ILC. Yifang Wang joined the ceremony in Tokyo via network video and delivered a speech. He emphasised: "*In August, 2004, ICFA announced the adopted technology for ILC at IHEP in Beijing. Today, on behalf of the Chinese High Energy Physics Community, I am honoured to share with you our strong emotion and full support for the ILC; we will certainly be part of it and make our contributions.*"

In the Fragrant Hill Science Conference, the scientists concluded that the next-generation electron-positron collider, a so-called "Higgs factory," will be a significant historical opportunity for the development of China's high-energy physics programme. Activities will be actively organised to advance the discussions and studies on the topic.

About the Fragrant Hill Science Conference Established in 1992 and formally instituted one year later under the auspices of the former State Science and Technology Commission of China and the Chinese Academy of Sciences, the Fragrant Hill Science Conference is the general designation of a small-scale academic workshop series, with the objective of promoting free academic exchanges and discussions, fostering interdisciplinary cooperation and integrated studies in various areas of excellence and exploring new frontiers.

CHINA | ELECTRON-POSITRON COLLIDER | IHEP | ILC



breaking

June 13, 2013

International Linear Collider design is ‘good to go’

After nearly a decade of R&D, the International Linear Collider global design effort crosses the finish line.

By Leah Hesla

Yesterday, at a series of events held on three continents, scientists celebrated the completion of the design for a next-generation particle collider, the International Linear Collider.

At these events, the ILC Global Design Effort collaboration officially submitted its design of the proposed International Linear Collider to the International Committee for Future Accelerators, the oversight board for projects in particle physics. The completion of the Technical Design Report, a detailed blueprint of the ILC, fulfills the GDE’s mandate to design a collider that would complement and advance the physics of the Large Hadron Collider at CERN.

It was a day the ILC community had been working toward since the GDE was formed in 2005—and thus a day for celebration. True to its commitment to internationality, the ILC collaboration commemorated the achievement with a worldwide party.

On June 12, starting in Tokyo, continuing at CERN and ending at Fermilab, scientists and their guests recognized the success with symposia, public events, receptions and a series of ceremonial handovers of the completed report. The three regions gave each other a virtual handshake by videoconference when one celebration ended in one time zone and the next started in another.

“The Technical Design Report is an impressive piece of work that shows maturity, scrutiny and boldness,” says Lyn Evans, Director of the Linear Collider Collaboration, which oversees the ILC project. “The International Linear Collider should be next on the agenda for global particle physics.”

Kicking things off in Tokyo, Linear Collider Board Director Sachio Komamiya hands over the ILC Technical Design Report to Lyn Evans, Linear Collider Collaboration director.

Photo: Nobuko Kobayashi, KEK

Ready to go

The global event was the ILC's opportunity not only to mark the design's completion and to showcase global support for the ILC, but also to awaken the field of particle physics to the possibility of its reality, says Barry Barish, director of the ILC's Global Design Effort.

"The Technical Design Report basically says that we are ready to go ahead," Barish says. "The technology is there, the R&D milestones have been achieved, the physics case is clear, and we could start construction tomorrow."

At five substantial volumes, the report contains everything you ever wanted to know about the ILC—or at least everything collaborating governments would need to know to build it, including an implementation plan. Now the task remains to gather enough support to convert the ILC from paper plan to constructed collider.

The 19-mile-long machine would accelerate and collide electrons and their antiparticles, positrons, at 500 billion electronvolts. The point-like character of the electrons and positrons means that their collisions could reveal physics that would be extremely difficult to observe at the Large Hadron Collider, which collides protons.

At CERN, Global Design Effort European Regional Director Brian Foster (right) presents the report to International Committee for Future Accelerators member Rolf-Dieter Heuer.

Photo: Anna Pantelia, CERN

“The discovery of a Higgs boson at the LHC has made the case for the ILC even more compelling,” says Sakue Yamada, research director for the ILC.

The ILC hopes that the physics case—which is detailed in the TDR—along with the case for its construction-readiness will persuade governments to get behind the machine. Japan, in particular, has indicated interest in hosting it.

“The TDR makes a convincing case: Thanks to all the hard work, we now have a machine that we know we can build,” says Jonathan Bagger, chair of the International Linear Collider Steering Committee. “The ILC is good to go.”

Top image: In the third and final stage of the ILC worldwide event, Global Design Effort Director Barry Barish carries out the ceremonial handover of the ILC Technical Design Report for the Americas region, presenting the five-volume set to International Committee for Future Accelerators Chair Pier Oddone.

LC NEWSLINE
THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

VIDEO OF THE WEEK

Good things come in threes

27 June 2013

The last issue of *LC NewsLine* featured the two summary videos from the Asian and the European Technical Design Report handover event. Today we are proud to present part three: the summary of the Americas event that took place at Fermilab and culminated in the handing over of a gift-wrapped set of the report from Barry Barish to Pier Oddone. Relive the baton toss again…and again… and again.

Americas: Batavia, Fermilab

Europe: Geneva, CERN

Asia: Tokyo

HANDOVER | TDR