DIRECTOR'S CORNER

A potential US site for the ILC

by Barry Barish

There are no official proposals for where the ILC could be located. Rather, our approach has been to develop an ILC design compatible with three “sample” sites that have different characteristics. In this process, we have by no means ruled out the possibility of housing the ILC in a shallow site, even though all three of our sample sites are deep underground. A new shallow site possibility has recently been suggested in Hanford, Washington in the US.

RESEARCH DIRECTOR'S REPORT

Community spirit helps us achieve our milestones

by Sakue Yamada

The two volumes of the *Detailed Baseline Design* report, which will be published alongside the *Technical Design Report*, are ready in draft form. They will now be submitted to the physics and detectors’ advisory group IDAG. A lot has been accomplished in the R&D process for the ILC detectors, and it’s thanks to the community’s spirit and determination that we have achieved our milestones. We look forward to taking on the next challenge.

AROUND THE WORLD

The welcoming season

by Qian Pan

Qian Pan, a new ILC communicator for Asia, introduces herself. Qian, who is called Peggy by all her non-Chinese colleagues, is based at IHEP in Beijing. She shares her time between the Foreign Affairs Department of IHEP and ILC communications.

IMAGE OF THE WEEK

Korea-US Collaboration Center for Accelerator Science opens at Fermilab

Image: RISP Information and Collaboration Team

Fermilab has a new collaboration centre: on 27 August the Korean Ministry of Education, Science and Technology and the Rare Isotope Science Project of Korea's Institute for Basic Science opened the Korea-US Collaboration Center for Accelerator Science.

IN THE NEWS

from ***Star-Telegram.com***
17 September 2012
Nobel laureate in physics will give public lecture as part of international conference at UT Arlington next month
No word on whether Sheldon, Leonard or Penny will be there, but the International Workshop on Future Linear Colliders will draw plenty of star power to the University of Texas at Arlington in late October. Particle physicists from around the world will attend, and Nobel laureate Steven Weinberg will deliver a public lecture Oct. 24.

from ***Der Standard***
14 September 2012
Zukunftspläne: 80-Kilometer-Tunnel als möglicher LHC-Nachfolger
Forscher trafen sich zum Brainstorming – Projekte brauchen sehr lange Vorbereitungszeit. (google translation)

from ***midcitiesonline.com***
14 September 2012
Worlds top particle physicists will gather in Arlington
The University of Texas at Arlington will host hundreds of particle physicists from all over the world Oct. 22-26 for the International Workshop on Future Linear Colliders.

CALENDAR

UPCOMING EVENTS

5th International Workshop on Top Quark Physics (TOP 2012)
Winchester, UK
16- 21 September 2012

52nd ICFA Advanced Beam Dynamics Workshop on High-Intensity and High-Brightness Hadron Beams
Beijing, China
17- 21 September 2012

UPCOMING SCHOOLS

The first Asia-Europe-Pacific School of High-Energy Physics (AEPSHEP2012)
Fukuoka, Japan
14- 27 October 2012

View complete calendar

PREPRINTS

ARXIV PREPRINTS

1209.2594
Status of the CALICE analog calorimeter technological prototypes

1209.2543
The CLIC Programme: Towards a Staged e+e- Linear Collider Exploring the Terascale : CLIC Conceptual Design Report

ilc newsline

DIRECTOR'S CORNER

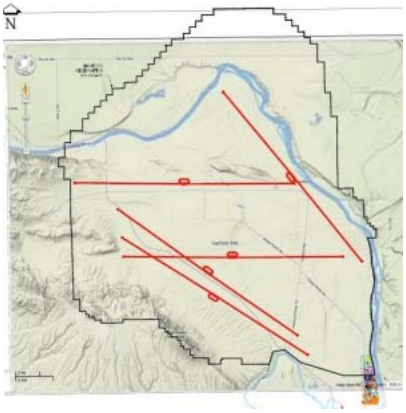
A potential US site for the ILC

Barry Barish | 20 September 2012

A shallow underground laboratory at the DOE Pacific Northwest National Laboratory at Hanford.

One of the largest challenges in designing the ILC is maintaining the ability to site the facility in different countries with candidate sites that have very different characteristics. Our approach to taking this into account for the reference design was to develop a single baseline design having site requirements that could be satisfied by most candidate sites. To accomplish this goal, we asked for detailed data on three 'sample' sites in Asia, Europe and the Americas. A very encouraging result was that the ILC *Reference Design Report* design requirements are compatible with siting the ILC in any of the three sites, and for similar costs. The *Technical Design Report* (TDR), now nearing completion, goes a step further by taking some site-dependent design differences into account, especially for mountainous versus deep-underground sites. The mountainous sites have fundamentally different access issues (access that is almost horizontal, as opposed to vertical shafts), and this leads to differences in the tunnels themselves, as well as for some technical elements, like high-level RF.

It is worth noting that members from all three regions submitted and studied sample sites are around 100 metres deep underground. One is near CERN, one under Fermilab and one in the Japanese mountains. The conventional facilities for the ILC account for nearly half of the cost, and we have recognised that shallow sites near or at the earth's surface could be cost-effective options. For that reason, during the RDR process, we also did a small study of a near-surface site at Fermilab; we looked at the European XFEL near-surface construction at DESY in Hamburg, Germany; and we performed a study with Russians on an interesting near-surface site in the neighbourhood of Dubna. Although we concluded that a shallow site may well be a possible option without a specific candidate site, we deferred further studies.



Potential sites have less than 100 metres change in elevation over 30 kilometres.

Now, a suggestion has been made by David Asner of the Pacific Northwest National Laboratory that a shallow site at the Hanford DOE Laboratory be considered for siting the ILC. Each shallow site tends to have rather different features, even regarding construction techniques. There are different methods for making the tunnel, for example 'classic' tunnelling or possibly a cut-and-cover construction approach, where a trench is excavated and later covered up. I personally know the Hanford site well, since it serves as the location of one of the LIGO interferometers that was constructed while I was director of the LIGO project. At a recent SiD workshop, Asner proposed that Hanford could be a very cost-effective site, thanks to lower regional construction costs, favourable geology and possible savings for cut-and-cover construction, as well as

cheaper electricity and labour costs than those at other US sites.

Since the discovery of a Higgs-like particle at 125 GeV was announced this summer, ideas for a staged ILC, beginning with a Higgs factory, are being discussed. This has opened the dialogue in many directions, and even though a US site is not actively being considered, the Hanford possibility is a welcome addition to the global possibilities for siting either a Higgs factory or the full ILC.

CUT-AND-COVER | **DOE** | **ILC SITE** | **LIGO** | **UNITED STATES**

RESEARCH DIRECTOR'S REPORT

Community spirit helps us achieve our milestones

Sakue Yamada | 20 September 2012

A few peaks are ahead of us - and we are about to reach first one.

Now we are making the final spurt to complete *Detailed Baseline Design* report (DBD). Of its two volumes, the physics volume describing the physics possibilities of the ILC was drafted by an author group convened by Michael Peskin in July and is now open for reading in the community.

The draft of the other volume on detector and simulation, which includes the two chapters of the ILD and SiD detector concepts, will be finished this week and is to be handed to the International Detector Advisory Group (IDAG) for review. During the LCWS12 meeting in Arlington in October, IDAG will discuss it with the management and will interview each detector group on its chapter. These two volumes, together with referenced material, summarise the entire accomplishments of the R&D studies of the ILC detector and physics community during the Letter of Intent period. Our wish is that the report can convince expert readers that the ILC experiments are capable to scrutinise the new field, which was highlighted by the Higgs-like particle found at the LHC this summer.

We plan to collect the signatories for the report when the DBD is completed. At the time of LOI submissions in 2009, each concept group collected signotaries separately, to invite coworkers. This time the call for signatories will be done for the entire volume, considering that the report will be a part of a number of reference documents when the ILC is proposed.
Beyond the contributors, we would like to invite everybody who intends to participate in the research programmes at the ILC in the future or who supports the realisation of the ILC to sign the reports.

Following the review by IDAG, the DBD will be polished and submitted to PAC, which will make an external review in December of both the DBD and GDE's *Technical Design Report* for the ILCSC. After additional brush-ups, the DBD will be submitted to the ILCSC early next year. When they meet in February next year jointly with the new Linear Collider Board (LCB), both the TDR and DBD will be handed to the new LCB, which will proceed to the next stage. We hope the reports make a good launch pad.

Our mandate will be fulfilled with the completion of DBD, yet there is one concern that remains. The organisation for the detector and physics activity after 2012 has not been shaped yet. Only the direction was agreed on – that both the ILC and CLIC activities will be combined – but the details still need to be worked out. Both concept groups will certainly wish to go forward with more advanced studies, including engineering issues. It is highly desirable to keep the momentum and to strengthen the motivation. How to orient the intention is linked with the planning of the new scheme. The first step is to set a clear objective for the next period. Once the community agrees on that, the new structure can be designed accordingly.

Looking back to when we started, we were given a well defined mandate. It was straightforward to organise the activity as we knew where to go. And after we organised ourselves, the community fulfilled the planned milestones one by one. Through this period, the ILC detector management has been proficiently assisted by the good will of the participating members of the LOI groups. Submitting the LOIs, the groups pledged to complete detector designs and to push the necessary R&D. And they kept their

promise. It is just a logical consequence in a sense, but we should acknowledge that it is a great achievement. We did not provide any budget for R&D and there were difficult periods for the groups. We must keep in mind that this was able to happen because we had a clear goal when we started and the community worked together towards that goal.

When you are climbing up a mountain, it is an exciting moment when the aimed peak can be seen nearby. You realise also that the remaining slope will become harder. We may be in a similar position now. Luckily we now see there is another beautiful mountain behind our first peak. We hope we can have a better view of it and possibly a route to go there when we reach our goal.

AROUND THE WORLD

The welcoming season

Qian Pan | 20 September 2012

Qian "Peggy" Pan, a new ILC communicator for Asia.

These days of late summer and early autumn are the best season of the year in Beijing! The sun is shining high over the blue sky, and green leaves that are reflected through the sunshine dance to the tune of the cool winds. As we wave goodbye to the hot August, we are starting to embrace a warm and comfortable season! After an exciting and interesting summer holiday, students are packing their books and getting ready for the new semester. For me, a new ILC communicator for Asia, I am learning from, sharing and connecting with the ILC communicators.

My name is Qian Pan, but all my non-Chinese colleagues call me Peggy, and I started working at the Institute of High Energy Physics of the Chinese Academy of Sciences (IHEP) in 2009, after graduating from Beijing Language and Culture University. My undergraduate major is English, and the orientation of my post-graduate study is about foreign linguistics and its application. Before I acquired the master of arts degree, I had one year of internship in the Beijing Organizing Committee of Olympic Games (BOCOG) from 2007 to 2008. In BOCOG, I worked in the Media Operation department, which aimed to offer the best services to media from all around the world and helped them deliver a newsworthy story during the time of the games. At present I work in the Foreign Affairs Department of IHEP, and my job mainly concerns foreign visit affairs, international conferences held at our institute and IHEP's English website. Therefore I am used to communicating frequently with foreign physicists and writing IHEP news coverage.

Since IHEP is a member of Interaction Collaboration, in March I joined the annual spring meeting of the Interaction collaboration in Vancouver and met two of the other ILC communicators, Leah Hesla (Fermilab) and Rika Takahashi (KEK). That was when I got to know ILC communications. This June, Jie Gao, professor at IHEP, came to me and invited me to join the communicators' team. I was very excited at this opportunity to work with an international team. I had confidence that my language and media-related working experience would help me to do a good job in ILC communication. With this new position, I will put more focus on China's involvement in the International Linear Collider project. As an ILC communicator, I will write stories for *ILC NewsLine* and take care of general communication business at the regional and global level, making sure that colleagues, decision makers and eventually the public will be well aware of the exciting studies and results in the ILC community.

During the past two months, especially after the discovery of Higgs-like particle on 4 July, I gradually realised how huge and significant the project is that I am involved in. In this team I saw their rigourous attitude to every piece of news writing, and I saw their passion to promote the ILC project to people all around the world. Working together with Rika, Perrine Royole-Degieux (CNRS/IN2P3) and Barbara Warmbein (DESY), I believe we will make our own contribution to this international project in the future.

ASIA | CHINA | IHEP | ILC COMMUNICATORS