ilc newsline

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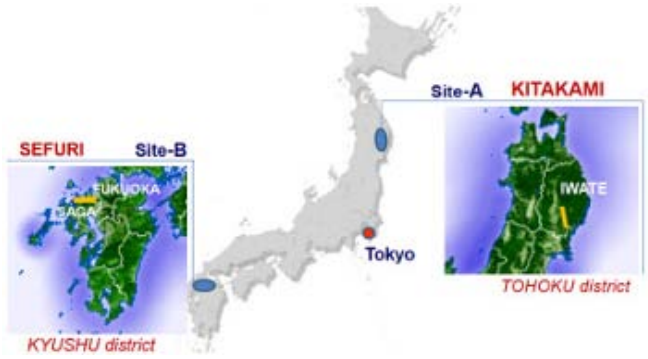
DIRECTOR'S CORNER



A visit to the two candidate Japanese ILC sites

by Barry Barish

On 17 and 18 January, several senior members of the ILC design team had the opportunity to visit the Japanese candidate sites. As reported in *ILC NewsLine* last month, the Japanese have identified two candidate sites for the ILC, one in southern and one in northern Japan. Today, I give my impressions following our visit to both sites.

AROUND THE WORLD

From CERN Courier: Council solicits opinion to chart the future of European particle physics

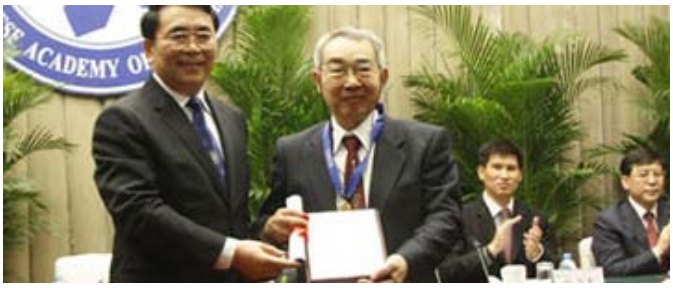
During its December meetings, CERN Council announced that an Open Symposium will be held in Cracow on 10–13 September 2012 for the purpose of updating the European Strategy for Particle Physics. Council adopted Europe's current strategy for the field in July 2006 with an understanding that it be brought up to date at appropriate intervals of typically five years. The Open Symposium is part of a process designed to get the maximum input from the particle-physics community, as well as from other stakeholders both inside and outside Europe, as Europe's strategy forms part of a global whole.

Read more in *CERN Courier*

AROUND THE WORLD

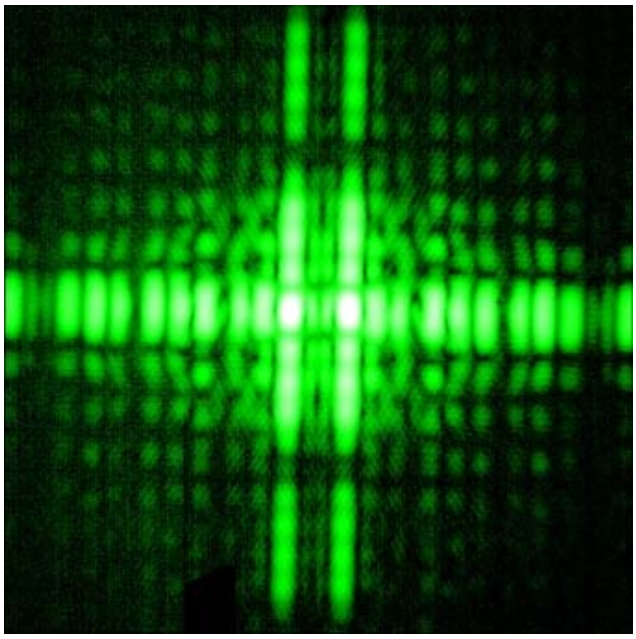
China awards Shin-ichi Kurokawa for his international scientific cooperation

by Rika Takahashi



Shin-ichi Kurokawa, professor emeritus of KEK, has been awarded the 2011 award for International Scientific Cooperation by the Chinese Academy of Sciences. Since the eighties, Kurokawa has been actively promoting academic cooperation and exchanges in science and technology between Japan and China, and later expanded it to Asian-wide collaborative research. He also served as chair of the Asian Committee for Future Accelerators and of the ILC Steering Committee.

IMAGE OF THE WEEK



ILC technology in the Guinness Book of World Records!

Image: Stefan Eisebitt / HZB

The world's fastest (and shortest) movie has superconducting radiofrequency technology to thank for its entry into the Guinness Book of World Records. Shot at DESY's FLASH X-ray laser, which accelerates electrons in much the same way as the ILC will, it shows a micro model of the German Brandenburg Gate at an interval of a mere 50 femtoseconds between two frames.

Read DESY's press release

IN THE NEWS

from ***Science***
27 January 2012
DOE Funding Crunch Threatens Future of Only U.S. Collider Still Running
As physicists at Brookhaven National Laboratory continually upgrade the $1.1 billion Relativistic Heavy Ion Collider (RHIC) and the two big particle detectors it feeds, known as STAR and PHENIX, they hope to map out the relationship between ordinary nuclear matter made of protons and neutrons and the quark-gluon plasma, which may be analogous to the relationship between liquid water and steam. They are also planning a $500 million upgrade for early next decade that would enable the collider to answer a key puzzle about the proton itself—if RHIC doesn't fall victim to budget cuts. (Subscription required)

from ***BBC News***
27 January 2012
Anti-matter atoms to address anti-gravity question
The question of whether normal matter's shadowy counterpart anti-matter exerts a kind of "anti-gravity" is set to be answered, according to a new report.

from ***Nature.com***
26 January 2012
US physicists call for underground neutrino facility
In addition, the closure of the Tevatron, Fermilab's particle collider, in 2011, means that the United States risks being left without a large-scale particle-physics experiment, and young experimentalists will have to go to Europe to work on the Large Hadron Collider.

from ***CERN Courier***
25 January 2012
SuperKEKB goes in hunt of flavour at the terascale
KEK is upgrading its B factory to provide a 40-fold increase in luminosity by using a large crossing-angle and squeezing the beams down to nanometres. The Belle experiment will also see a second incarnation.

CALENDAR

UPCOMING EVENTS

3rd LC FORUM meeting
DESY, Hamburg
07- 09 February 2012

CALICE collaboration meeting
Shinshu University, Matsumoto, Japan
05- 07 March 2012

UPCOMING SCHOOLS

Physics and Technology of Particle Accelerators (JUAS 2012)
Geneva, Switzerland
09 January- 16 March 2012

Excellence in Detectors and Instrumentation Technologies (EDIT 2012)
Fermilab, Batavia, IL, USA
13- 24 February 2012

View complete calendar

BLOGLINE

29 January 2012
CERN
Mastering complexity

PREPRINTS

ARXIV PREPRINTS

1201.5839
SUSY-Yukawa Sum Rule at the LHC and the ILC

1201.5807
ILD Machine-Detector Interface and Experimental Hall Issues

1201.5762
Calibration System with Optical Fibers for Calorimeters at Future Linear Collider Experiments

1201.5355
The pure $B-L$ model and future linear colliders: the Higgs sector

1201.5300
Dynamical Symmetry Breaking in Supersymmetric Extensions of Nambu-Jona-Lasinio Model

1201.5264
Recent Advances of the Engineering Prototype of the CALICE Analog Hadron Calorimeter

1201.5053
Results of numerical simulations for unstable-particles pair production in modified perturbation theory in NNLO

ilc newsline

DIRECTOR'S CORNER

A visit to the two candidate Japanese ILC sites

Barry Barish | 2 February 2012

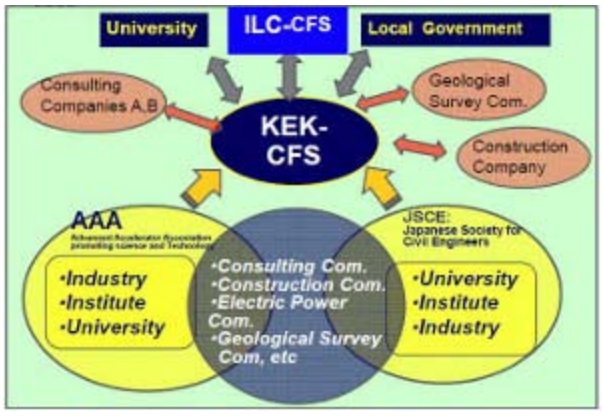
Locations of the two candidate Japanese sites: a northern site in the Tohoku district and a southern site in the Kyushu district

A common question I am often asked is where the ILC will be sited. That is obviously a very important question, but we don't have an answer yet. We will complete the *Technical Design Report* (TDR) within the next year and the Large Hadron Collider will, we believe, produce physics results that can both motivate the ILC project and help guide the final parameters. Also this year, the International Linear Collider Steering Committee is forming a special committee to give advice on how to approach the siting the ILC. In any case, early interest in hosting the facility is both welcome and very useful in helping to make our TDR even more realistic because we are able to take into account important site-dependent issues.

The developmental work towards Japanese ILC sites began in 2009 by the Advanced Accelerator Association Promoting Science and Technology (AAA). In 2010, the local communities, especially universities for both candidate sites, organised geological studies, including investigations of various tunnel shapes for the mountainous sites. KEK then evaluated the tunnel designs and the environmental conditions presented in these studies.

The next phase of the work on the Japanese sites will be coordinated by the KEK laboratory, which will take care of tunnelling, electrical and mechanical issues, and by the Japanese Civil Engineering Association, which will deal with assessing the geological surveys and civil engineering. This future work will be supported through a supplemental earthquake recovery budget, and it will include support for further site-dependent geological studies at the candidate sites that will be coordinated through KEK, along with the local university and government communities.

The ILC has received considerable recent attention by the government of Japan. The Science and Technology Policy Council of the Cabinet of the Japanese government received a brief report from the Cabinet office and the Japanese funding agency MEXT on 1 September last year on the science objectives of the ILC project and the global status. Then, as we reported in the 19 December 2011 Special Issue of *ILC NewsLine*, Prime Minister Yoshihiko Noda spoke, and other high-government officials participated in an AAA Symposium in Tokyo.



The organisation of efforts towards the ILC site development in Japan

The two candidate sites are located in mountainous regions where the geology for tunnelling is stable granite rock without active faults or volcanoes. There are good access roads to these candidate sites and high-voltage transmission lines nearby. The local governments and community are supportive and cooperative towards developing these sites for a possible ILC project.

We first visited the southern candidate site located in Fukuoka and Saga prefectures on Kyushu, an island located in the southwestern part of Japan. The actual site is located in the picturesque Sefuri mountain range. Although the exact location and trajectory of the linac is yet to be determined, we were able to view much of the terrain where the linac will be located. The initial 500-GeV machine would be installed in hard low-permeability granite, and schemes proposed for a future extension to 1 TeV appear feasible by incorporating a slight tilt in the linac to go under a river bed into a sandstone-dominated region.

We were able to go underground to visit the Tenzan underground hydraulic power plant near the location of the proposed ILC interaction region. We drove down an inclined road, similar to what is proposed for the ILC, and viewed the geology, excavation techniques and a large cavern that looked similar to the proposed design of the ILC detector hall. In my view, this visit went some way towards demonstrating the feasibility of construction of the ILC at this site.

We then visited the northern candidate Japanese site, which is north of Sendai in Iwate Prefecture in the mountains east of Kitakami Junction. Importantly, “The Great East Japan Earthquake and Tsunami Recovery Plan” that has been developed for this area is based on a “multilayered approach, including urgent, short-term, medium-term and long-term efforts.” The ILC siting and development of a research hub are an integral part of this plan.

The large hall housing the Tenzan underground hydraulic power plant in the Sefuri mountains

We visited the candidate site area, viewed potential access points and reviewed the geology and granite samples from borings where the linac and interaction region may be located. Like the Kyushu candidate site, this site appears to be a viable site for the ILC.

There are a number of options for the exact configurations at each site. Inclined access is proposed from the sides with a roughly 10 percent grade and that appears workable, as we witnessed by visiting the underground power plant near the Kyushu site. There are major universities in the general vicinity of both sites, and general access to advanced technology and other types of infrastructure needed for a major particle physics accelerator laboratory.

Sample borings of the granite rock from the northern site in the mountains in Iwate prefecture

After visiting both candidate sites, it is clear that mountain sites have many good features and can provide a realistic and attractive location for the ILC. They are accessible, while at the same time being in undeveloped areas of pretty rolling hills that have very good geology.

The Japan’s interest in investigating these mountainous sites for hosting the ILC is very welcome. They are providing us with very valuable information for adapting the ILC design to specific features of mountain sites, and are helping us to understand better what information we will need to assess candidate ILC sites.

CANDIDATE SITES | FUKUOKA PREFECTURE | ILC SITE | IWATE PREFECTURE | JAPAN | KEK | MOUNTAIN-REGION ILC SITES | SAGA PREFECTURE

CERN Courier

Jan 25, 2012

Council solicits opinion to chart the future of European particle physics

Cracow

During its December meetings, CERN Council announced that an Open Symposium will be held in Cracow on 10–13 September 2012 for the purpose of updating the European Strategy for Particle Physics. Council adopted Europe's current strategy for the field in July 2006 with an understanding that it be brought up to date at appropriate intervals of typically five years (*CERN Courier* September 2006 p29).

The Open Symposium is part of a process designed to get the maximum input from the particle-physics community, as well as from other stakeholders both inside and outside Europe, as Europe's strategy forms part of a global whole. Opinion will be solicited from the individual scientists who carry out the research, the communities that stand to benefit and the research ministries that will foot the bill. With help from the local organizing committee, the Open Symposium will be arranged by a preparatory group appointed by Council and provide an opportunity for the global particle-physics community to express its views on the scientific objectives of the strategy.

Submissions will be solicited for written statements from individual physicists, groups of scientists representing specific interests – such as an experiment or a topic of theoretical research – together with contributions from institutions and organizations, such as funding agencies and science ministries. After discussion in the Open Symposium, these statements will be made available to the European Strategy Group tasked by Council with drafting the updated strategy document under the chair of the Scientific Secretary of the Strategy Session of Council.

Council will discuss the draft of the updated European strategy in March 2013 and will hold a special session in Brussels in early summer 2013 to adopt the updated strategy. It is also expected that the update of the strategy will become an agenda item for the EU Council of Ministers meeting to be held at the same time.

• Further information on the update of the European Strategy of Particle Physics, including announcements and details for participation at the Open Symposium, may be found as it becomes available at https://europeanstrategygroup.web.cern.ch/EuropeanStrategyGroup/.

AROUND THE WORLD

China awards Shin-ichi Kurokawa for his international scientific cooperation

Rika Takahashi | 2 February 2012

Shin-ichi Kurokawa receives the 2011 award for International Scientific Cooperation from the Chinese Academy of Sciences. Image: CAS

Shin-ichi Kurokawa, professor emeritus of KEK, and vice president of Cosylab, is one of three international scientists to have been awarded the 2011 award for International Scientific Cooperation, the Chinese Academy of Sciences (CAS) announced on 18 January.

This award is given to honour eminent foreign experts who make outstanding contributions to facilitating cooperation with CAS in science and technology, and to encourage more efforts that will strengthen CAS's innovation capacity and lead to improvements in its research performance, education and training, management, and reputation in the international scientific community.

Kurokawa has visited China 58 times, fostering a cooperative relationship in accelerator science between China and Japan. Since the eighties, he has been actively promoting academic cooperation and exchanges in science and technology, collaborating with Chinese researchers at the Institute of High Energy Physics (IHEP), the Shanghai Institute of Applied Physics and the University of Science and Technology of China, and the Institute of Modern Physics.

In 1999, he organised the first major Asian accelerator school held in Beijing and carried it to a successful conclusion. In 2000, he initiated a collaborative programme between the Japan Society for the Promotion of Science (JSPS) and CAS. This programme continued for 10 years, involving many institutions and universities in China and Japan.

"Through this programme, over 800 scientific visits were made, and many conferences and workshops were successfully carried out," Kurokawa said. "Also numerous high-quality papers were published based on this collaboration." Later, Korea and India also participated in the project, expanding the collaborative programme to be Asian-wide.

Kurokawa also helped IHEP to upgrade the Beijing Electron Positron Collider (BEPC) to a two-ring electron-positron collider, BEPC II, especially, transferring the superconducting accelerating technology used at the KEKB accelerator in Japan to China. He also served as a member of the Machine Advisory Committee for the BEPC II. "This is a well-deserved award for Professor Kurokawa, who is very much appreciated at IHEP for his devotion to pushing the collaboration between IHEP and KEK," said Jiuqing Wang, IHEP deputy director.

Kurokawa served as chair of the Asian Committee for Future Accelerator (ACFA) from 2004 to 2006, and chair of the Steering Committee for the International Linear Collider (ILCSC) from 2005 to 2007.

"I faced difficulties in dealing with differences of culture between the two countries, as I recall. However, it was a great pleasure to promote and deepen the collaborative relationship with our Chinese colleagues. I am quite confident that this collaboration will

grow further based on the strong foothold we have built," Kurokawa said.

Founded in Beijing in November 1949, CAS is China's top academic and research institution in natural sciences. The other two winners are Lonnie Thompson of Ohio State University in the US and Flemming Besenbacher of the Danish-Chinese Centre for Self-Assembly and Function of Molecular Nanostructures on Surfaces in Denmark.

*A version of this article first appeared on **KEK website***