

Statement of support

We at *ILC NewsLine* offer our condolences to our friends and colleagues in Japan, who have endured great loss from last week's devastating earthquake and tsunami. Our thoughts are with you during this tragic time.

DIRECTOR'S CORNER

To our Japanese colleagues

by Barry Barish

To our Japanese colleagues:

On behalf of the Global Design Effort for the International Linear Collider, I would like to convey our deepest care and sympathy to the citizens of Japan and to our physics colleagues and collaborators for the tragedy that your country has suffered as a result of the earthquake and tsunami last week. We are saddened by the loss of lives and the extent of the devastation. Our thoughts are with everyone who has been affected by this tragic event.

Along with our condolences for the loss of life and property, we share your concerns over the impact on your scientific community and facilities. We hope that our fellow scientists and their families are safe.

We join the worldwide particle physics communities in extending our sympathies to the Japanese people and to the Japanese scientific community. Please know that our thoughts are with you during this trying time.

FEATURE

A scientist's report on the earthquake and KEK's accelerator test facility

The earthquake takes its toll on one of KEK's hallmark experiments

by Toshiaki Tauchi



A huge 9.0-magnitude earthquake descended on us at about 14:46 on 11 March 2011 Japan standard time. The ATF (accelerator test facility) was operating for ATF2 beam-tuning and we were going to have a background study for the interaction point beam size monitor.

FEATURE

KEK earthquake report

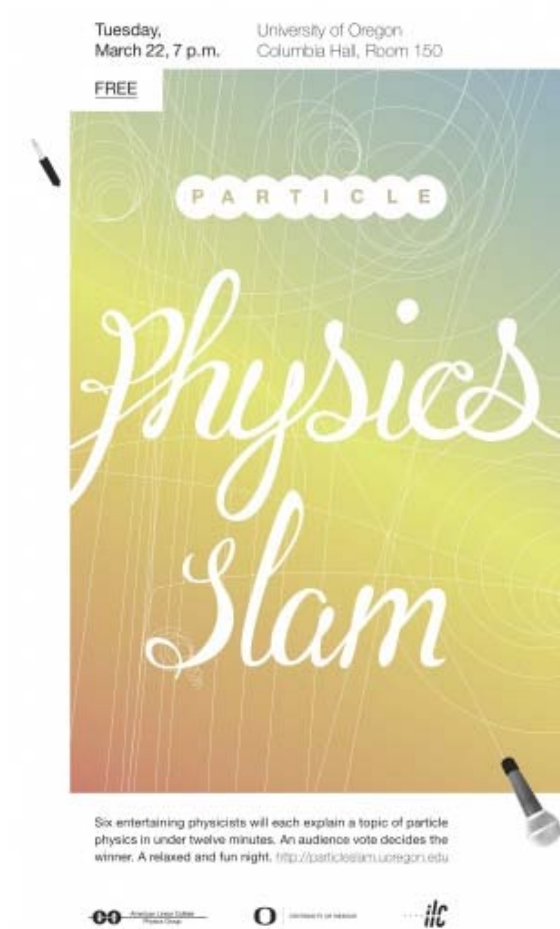
KEK employees survey the damage to their laboratory after enduring the biggest earthquake in Japan's history

by Rika Takahashi



As many people in the world already know, Japan is currently dealing with its worst disaster: Japan's biggest earthquake on record and the fourth largest in history. Thousands of lives have been lost. Tens of thousands people are forced to evacuate and live without basic necessities. Hundreds of thousands are still missing.

IMAGE OF THE WEEK



First-ever US physics slam to be held in Eugene, Oregon

Six entertaining physicists will each explain a topic in particle physics in under 12 minutes. An audience vote decides the winner.

Image: Sandbox Studio

At this year's [ALCPG conference](#), the University of Oregon will host the first-ever physics slam held in the United States.

Six ILC scientists become slammers for one night. Each has only 12 minutes to explain a topic in particle physics to the residents of Eugene, Oregon. The audience votes for the clearest, most entertaining particle physics slam of the evening.

Come join the fun if you can! The event is free and open to the public. Visit the [event page](#) for more information.

IN THE NEWS

From symmetry breaking
15 March

[Speedy single top sighting at the LHC](#)

For the first time, scientists at the Large Hadron Collider have spotted single top quark production.

From Fermilab Today
14 March

[Tevatron experiments report new Higgs search results](#)

The CDF and DZero experiments at Fermilab have reached new ground in their quest to find the Higgs boson, a key member of the particle zoo known as the Standard Model.

From physicsworld.com
14 March

[Physicists take stock of quake damage](#)

Physicists in Japan are assessing the state of the country's research facilities in the aftermath of Friday's major earthquake and tsunami. ...As the clean-up begins, scientists are now beginning to evaluate how much damage has been caused to the country's research infrastructure and facilities.

From Reuters
14 March

[CERN particle collisions resume](#)

CERN scientists said Monday they staged their first speed-of-light particle collisions of the year at the weekend, resuming their probes into the origins of the cosmos in the centre's Large Hadron Collider (LHC).

From The Guardian
12 March 2011

[Japanese high-energy physics facilities affected by quake](#)

Two major particle physics labs are a couple of hundred kilometres south of Sendai. The earthquake struck just before a seminar to announce the first T2K neutrino results.

ANNOUNCEMENTS

New **ILC NewsLine** launch delayed

Because of the recent tragedy in Japan, we are delaying the launch of the new *ILC NewsLine* until next week, 24 March.

PREPRINTS

[ARXIV PREPRINT](#)

[1103.1697](#)

Supersymmetry Without Prejudice at the 7 TeV LHC

BLOGLINE

11 March

Physics and Physicists

[Argonne on Jeopardy](#)

CALENDAR

[UPCOMING EVENTS](#)

[End Station Test Beam \(ESTB\) Workshop 2011](#)

SLAC

17 March 2011

[2011 Linear Collider Workshop of the Americas \(ALCPG11\)](#)

University of Oregon, Eugene, Oregon, USA

19- 23 March 2011

[2011 Particle Accelerator Conference \(PAC'11\)](#)

New York Marriott Marquis Hotel, New York, NY, USA

28 March- 01 April 2011

[UPCOMING SCHOOLS](#)

[Joint US-CERN-Japan-Russia School on Particle Accelerators](#)

[Course on Synchrotron Radiation and Free Electron Lasers](#)

Ettore Majorana Foundation and Center for Scientific Culture, Erice, Sicily, Italy

06- 15 April 2011

[View complete calendar](#)



DIRECTOR'S CORNER

To our Japanese colleagues

[Barry Barish](#) | [17 March 2011](#)

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[EARTHQUAKE](#) | [JAPAN](#)

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FEATURE

A scientist's report on the earthquake and KEK's accelerator test facility

The earthquake takes its toll on one of KEK's hallmark experiments

Toshiaki Tauchi | 17 March 2011



The primary damage to ATF, with fallen cable racks and cables. It will require about a month to repair. Image: Nobuhiro Terunuma

A huge 9.0-magnitude earthquake descended on us at about 14:46 on 11 March 2011 Japan standard time. The ATF (accelerator test facility) was operating for ATF2 beam-tuning and we were going to have a background study for the interaction point beam size monitor. Some of us, including me, were working in the electronics hut of the beam size monitor. Another of us was at the electronics of the LLR (Laboratoire Leprince-Ringuet at CNRS/IN2P3 in France) background study. All were in the assembly hall. We heard a huge sound, which filled the hall, and experienced large lateral movements as if we were on air for several minutes! The ceiling crane ran away and power cables fell down from the ceiling. The cables prevented us from exiting through the front door. We could exit from a side door. Our other colleagues in the ATF control room had evacuated the building already and were situated outside the assembly area. No one was injured either at ATF or

at KEK.

On the afternoon of 14 March, we inspected the inside of the concrete shields with flashlights in the dark to quickly evaluate the damage and make an estimate of the recovery time. Our conclusion could not be perfect because it was only a flashlight inspection.

First, we inspected the linear accelerator from the radiofrequency gun to the beam transport line. A bellows and a beam pipe were broken just upstream of the last accelerator tube; the upstream part (the steering and quadrupole magnets) was displaced to the north. Several bellows are slightly damaged at other accelerator tubes. The area around the radiofrequency gun seems fine. The damage is not serious, but the parts need replacement and realignment.

Next, we inspected the beam transport line and the north part of the damping ring. They seem to be in good shape, except for possible damage at the ceramic chamber of the SLAC kicker.

Then, we entered the extraction and ATF2 beam line. All the quadrupole magnets were sitting on the movers, which reassured us very much. They were tied to the support with two wires, which help create an earthquake-proof structure. One of the wires was cut at almost all the quadrupole magnets. The setup worked as expected! No magnets had fallen down. The other instruments looked fine, including wire scanners, optical transition radiation instruments, and the Shintake monitor with lead shields.

So, the whole beam line seems to have suffered little damage. However, the waveguides from the pulse compressor to the acceleration tubes may be deformed since there is no bellows to absorb external force. Also, realignment is needed for all of the beam line from the radiofrequency gun to the ATF2 beam dump.



The quadrupole magnet sits on the mover, but one of wires was cut. The earthquake-proof apparatus worked as designed. Image: Nobuhiro Terunuma

When we looked at the concrete shields, we observed evidence of the fierce earthquake. The concrete blocks were displaced about a few centimetres from south to north at several places. The biggest displacement is one at the interaction point region — the concrete block was displaced about five centimetres since it sits on shims made of stainless steel, which is slippery.

At this moment, we do not know how long recovery will take. Even if we could recover quickly, the power shortage means that we may not operate the ATF for some time.

[ATF](#) | [ATF2](#) | [EARTHQUAKE](#) | [JAPAN](#) | [KEK](#)

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FEATURE

KEK earthquake report

KEK employees survey the damage to their laboratory after enduring the biggest earthquake in Japan's history

Rika Takahashi | 17 March 2011



Fallen ATF2 shield blocks. Image: Nobuhiro Terunuma

As many people in the world already know, Japan is currently dealing with its worst disaster: Japan's biggest earthquake on record and the fourth largest in history. Thousands of lives have been lost. Tens of thousands people are forced to evacuate and live without basic necessities. Hundreds of thousands are still missing.

KEK laboratory in Tsukuba is also dealing with the situation, and established an earthquake emergency response team headed by director general Atsuto Suzuki on 11 March upon the arrival of the earthquake. Because of the power outage, detailed investigations into damages have not yet been conducted. However, some damage to the buildings and facilities have already been identified based on a

glance-over inspection.

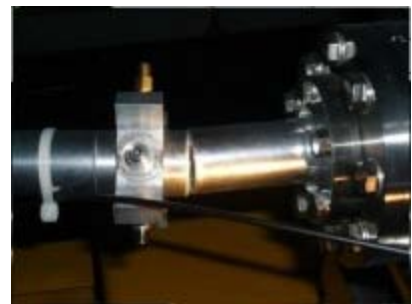
"The ILC-related facilities at KEK sustained considerable damages, especially at ATF (Accelerator Test Facility), which suffered severe damages," said Seiya Yamaguchi, head of the Linear Collider Project Office at KEK. Many cracks on the building surfaces have been observed, and some window glasses were destroyed. Some of the cables and concrete shield blocks fell down. "The ATF linear accelerator suffered considerable damages. We will need a length of time to fully recover from the incident," said Yamaguchi.

KEK reported that the operation of all accelerators and experimental devices operations were stopped immediately after the first shake, and confirmed employees were safe from radiation and that there was no hazard to the environment. There are no reports of casualties on either the Tsukuba or Tokai campuses. All users and collaborators who stayed at the Tsukuba and Tokai campuses were confirmed safe, and those who were at the Tokai campus have either moved to the dormitory at the Tsukuba campus or have returned to their homes.

Staff at KEK have received many e-mails from colleagues all over the world concerning the circumstances of the laboratory, which include warm encouraging words such as those from Taiwan:

Japan has endured many hard time in the past and proved to the world that miracles exist. We wish the earthquake never happened. Nevertheless, facing the heartbroken tragedy today, it only makes Japan a stronger nation and united as ever.

KEK staff are endeavouring to understand the extent of the damage and how to actively address the situation. "Our first priority is to restore the facilities and



Cracks in KEK's linear accelerator beam duct. Image: Nobuhiro Terunuma



Fallen and overturned lead blocks at KEK's linear accelerator. Image: Nobuhiro

reopen the lab. We sincerely appreciate everyone's understanding and cooperation," said Suzuki.

Akira Yamamoto, GDE project manager, also expressed his hope for the future of KEK. "We are deeply thankful for the many e-mails and warm words we have received from many global collaborators around the world," he said. "We have been much encouraged and have received the energy needed to overcome this very difficult situation. We seek all possibilities for moving forward. We would hope to continue and extend our global team effort for the ILC."

Further reporting will appear in a future issue of *ILC NewsLine*.

[EARTHQUAKE](#) | [JAPAN](#) | [KEK](#)

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