

# THE KITAKAMI TIMES

*Iwate,  
the International  
Linear Collider,  
and You*

*In this issue...*

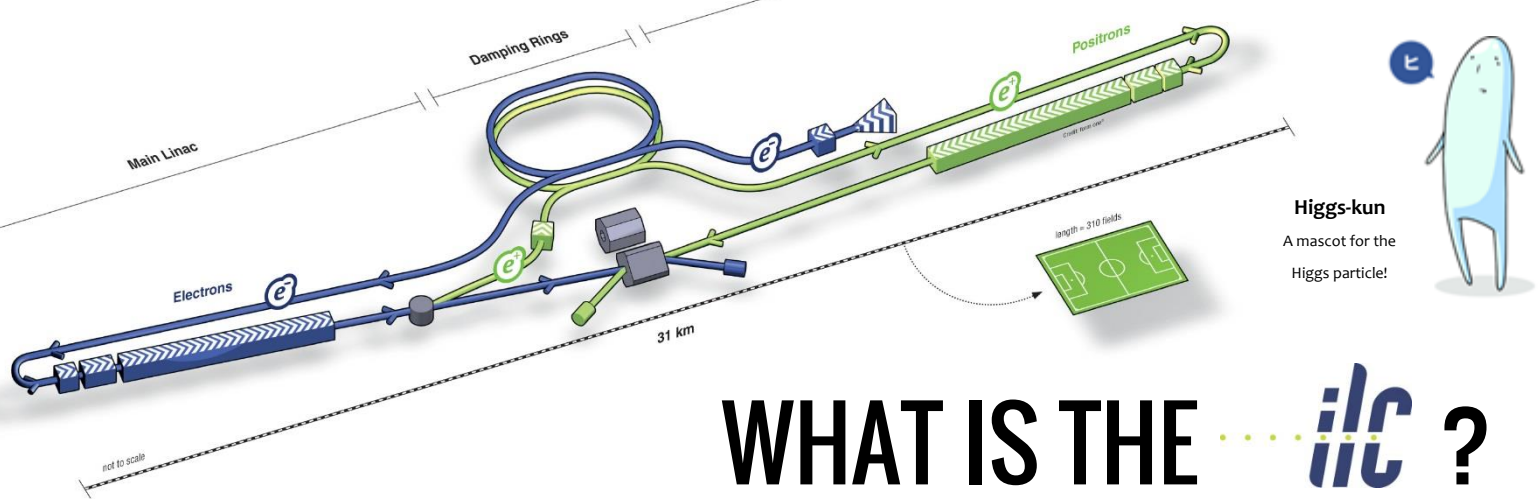
**Dr. Klaus Sinram and his visit to Ichinoseki**

*Checking out the Kitakami Site, and collaboration for the future*

**Plus, Physics at Sendai #1 High School, the Oct. 17<sup>th</sup>  
AAA Symposium in Tohoku, and more**

*"Cosmos" – A statue in the courtyard  
of Sendai #1 High School that  
represents the birth of the universe*





The International Linear Collider (ILC) will be one of the world's largest scientific endeavors.

Built in a 31 km-50km long tunnel underground, this state-of-the-art device will accelerate electron and positron particles and collide them at near the speed of light. By measuring their output, we will be able to learn more about the newly-discovered Higgs particle, and quite possibly deepen our understanding of the Standard Model, the Big Bang, and the universe. Scientists and engineers worldwide are collaborating to realize this unique project, which will contribute to fundamental science, industry, and a more international society.

## THE JAPANESE CANDIDATE SITE

TOHOKU,  
NORTHERN  
JAPAN



THE KITAKAMI MOUNTAINS  
ILC CANDIDATE SITE



### Iwate Prefecture

A large prefecture in northern Japan, Iwate is home to the Kitakami candidate site for the ILC.



### Oshu City

The ILC's northern end will lie in Oshu, which is also home to the Mizusawa National Astronomical Observatory.



### Ichinoseki City

The ILC will pass through Ichinoseki City, one of the largest cities in Iwate. The ILC's interaction point will be in the northeast district of Daito.



### Miyagi Prefecture

Directly south of Iwate, Miyagi holds both Kesennuma and Sendai cities in its borders.



### Sendai City

Home to Tohoku University, Sendai is the urban center of the entire Tohoku region.



### Kesennuma City

The southern tip of the ILC will lie in Kesennuma City. The city is hard at work rebuilding from the 2011 earthquake and tsunami.

The Kitakami mountains are a range of gentle, rolling mountains in Iwate and Miyagi with a thick granite bedrock – perfect conditions for an underground particle accelerator. Kitakami is a name with a lot of history in the region, such as the Kitakami River, Kitakami City, and even THE KITAKAMI TIMES!


## FOR THE FUTURE

If the ILC becomes a reality, about 10,000 researchers and their families around all over the world will come with their families to live in the area. An international hub of knowledge will be formed in our backyard, with leading edge research that will inspire new industries: medicine, IT, biotechnology, and many more. The ILC will be a great beacon of hope to the people of Tohoku, Japan, and the rest of the world. The entire region is joining together to make it a reality.

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International Linear Collider



Mr. Tadashi Kikuchi (right) talks about the swift re-start in March, 2011

ICHINOSEKI CITY

## Dr. Klaus Sinram of DESY and his visit to Ichinoseki

By Nathan Hill

Domo. This article is about the day trip up to Ichinoseki and Kesennuma on September 24 by Dr. Klaus Sinram of Deutsches Elektronen-Synchrotron (DESY), who was staying in Japan for five weeks under the Europe-Japan Accelerator Development Exchange Program.

Dr. Sinram popped up to Ichinoseki in the morning from Sendai, just half an hour away by bullet train, and was accompanied by Dr. Masakazu Yoshioka, Visiting Professor at Tohoku University and Iwate University and Professor Emeritus at KEK.

First, we visited NEC Network Products Ltd., located outside the east exit of Ichinoseki station. There was a presentation in English about the company and its state-of-the-art manufacturing, followed by a tour of the premises, which included looking at panels which show the limited damage at the plant incurred by the Great East Japan Earthquake of March, 2011. Production resumed just six days after the earthquake; a testimony to measures implemented over the years to reduce their impact. Dr. Sinram said he learned more about preventive procedures to ensure personal safety and protect sensitive equipment from damage due to earthquakes.

We then drove some 10-15 minutes to the South Iwate

Research Center of Technology, a facility built by Iwate Prefecture and Ichinoseki City twenty years ago to support research and development by local companies and collaboration between them, academia and government. Among the items covered in the presentation was the Ichinoseki National Institute of Technology located next door, which trains young people to become globally-minded engineers. Interestingly it has also won national robot contests a number of times.

For lunch we went to a small sushi place, where the chef prepared it in front of us. While enjoying that and the green tea, Dr Sinram noted that the menu was in Japanese only. I mentioned that larger sushi chains nearby are equipped with touch screen ordering systems which have menus in English, Chinese and Korean, but also that if the ILC is realized and many researchers from abroad move to the region, that businesses of all sorts will cater for demand, and there is plenty of time yet to make those preparations.

After lunch we drove to the port city of Kesennuma, Miyagi Prefecture, less than an hour east from central Ichinoseki on route 284, which at this time of year was flanked by full fields of rice about to be harvested. After viewing the bay in Kesennuma and a new berth under



Checking out a ship hull being made



The lunch line-up. "Itadakimasu!"  
(said before eating) →

construction, we visited Kidoura Shipyard Co. Ltd, who have been building and repairing ships and vessels for over 80 years. They incurred significant damage by the tsunami of 2011, but teamed up this May with other shipbuilders and so on to form a new company, Mirai Ships, who together are scheduled to relocate to the new berth in 2018.

*Mirai* means future in Japanese, and they have positioned the ILC in the center of their long-term vision. They have extensive experience in building and welding techniques that will be necessary in assembling the ILC, and also in the use of large cranes, which will be needed to bring onto land ILC apparatus and equipment that are shipped in, and lower them underground into the ILC tunnel.

After touring the shipyard, it was time to head back to Ichinoseki station and Dr. Sinram and Dr. Yoshioka took the bullet train south; Dr. Sinram getting off at Sendai where in the evening he met with international residents

over dinner and beverages.

It was great to show Dr. Sinram a few places that can contribute to the ILC should the project be given the green light, and he said he was impressed by how many people are working to make it happen. Come up to the Tohoku region and check out the Kitakami ILC candidate site and its surrounds - we would love to show you around and have you see with your own eyes the efforts being made.

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Ichinoseki and the ILC

Breaking up a water molecule into its most fundamental building blocks



SENDAI CITY

# Physics, by another name -

## An English talk on the ILC at Sendai #1 High School

By Amanda Wayama

The most amazing part: the #1 High School of Sendai City teaches its physics classes in English.

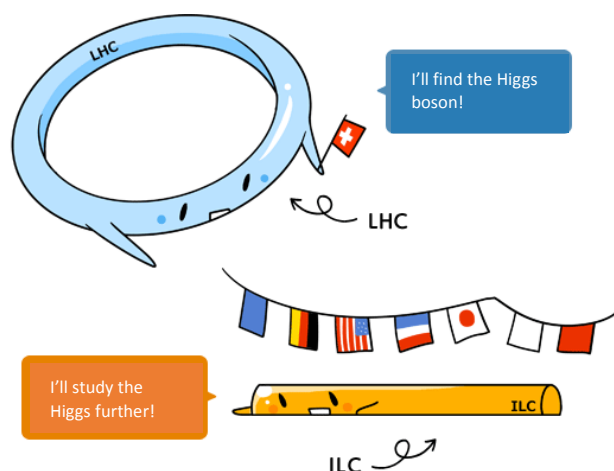
The less amazing part: somehow I got invited to give a lecture on the ILC to these students!

First, some details. Sendai City, the largest metropolis in the entire Tohoku region, is located in Miyagi Prefecture and is home to around 1 million people. The city is only about 40 minutes away from the Kitakami site for the ILC, and an hour and a half from Tokyo. It also hosts Tohoku University, which is at the forefront of the movement to bring the ILC to Japan. The #1 High School, only 10 minutes away from Sendai Station, is part of the Ministry of Education's Super Science High School program, with its mission to instruct students in science in their non-native English. I didn't even take physics in high school, let alone learn about it in another language, so I have to admire these students for their smarts.\*

My worst fear is a teenage audience, but luckily I had a lot of materials to help me craft a short and simple English presentation. I have the Advanced Accelerator Association Promoting Science & Technology (AAA) to thank. Without their mascot "Higgs-kun" and their friendly explanations of the ILC and the underlying

science, I would never have been able to put it all together. Higgs-kun, for the uninitiated, is a blob-like figure representing the Higgs boson. Don't ask me why, but all of us working on the ILC in Japan have grown to love the little guy.

Using Higgs-kun and his friends, I gave a short talk on the search for the Higgs boson and its significance for the Standard Model. I started off with the fundamental question: Have you ever wondered why we are all here? Why does matter exist the way it does? The secret may be found in the Higgs boson and the high-level science



Courtesy of Kaori Kurokawa of KEK. Illustration of the LHC and ILC



taking place at particle accelerators around the world. In fact, the International Linear Collider, to be built in the Kitakami mountains, may give us the key to the mystery.

For the other half of my presentation, I tried to impress upon the students that they would be living in a growing international society right here in Tohoku. Up to 10,000 researchers and their families will spend time living at the site, and while cutting-edge physics is super cool, our newest international residents will have lives outside of work. How do we integrate an influx of foreign residents into Iwate, Miyagi, and the rest of Tohoku? How do we ease the language barrier? How will we all get involved with this next great adventure of mankind?

(One student said he'd personally donate to the project (!!)). As the ILC will be an International Space Station-class project, we'll need all the help we can get, kid!)

The students were engaged and already aware of the project, and seemed very interested in the future of Tohoku. Just like the general public, these students are being mindful about both the pros and cons of this massive international project- as which they should be. It's our jobs to spread information about the project and make sure the voices of people are heard regarding how the project will fit into Tohoku and its culture. But with these young people as the next generation, I have no doubts that we will be ready to host the ILC.

\*They do also have separate physics classes in Japanese, with the English class being used to reinforce the information.

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[Sendai City's English Homepage](#)

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Tohoku University

[Advanced Accelerator Association – The ILC Project](#)

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Advanced Accelerator Association



Outside Sendai #1 High School

標準理論の素粒子たち

# We are Standard Model particles★

物質をつくる素粒子			力を伝える素粒子		
<b>レプトン</b> <b>電子ニュートリノ</b> 電荷: 0 スピン: 1/2 寿命: 不明 <b>ミューニュートリノ</b> 電荷: 0 スピン: 1/2 寿命: 不明 <b>タウニュートリノ</b> 電荷: 0 スピン: 1/2 寿命: 不明	<b>電子</b> 電荷: -1 スピン: 1/2 寿命: 約 1.5 × 10 <sup>-12</sup> 秒 <b>ミュー</b> 電荷: -1 スピン: 1/2 寿命: 約 2.2 × 10 <sup>-6</sup> 秒 <b>タウ</b> 電荷: -1 スピン: 1/2 寿命: 約 2.9 × 10 <sup>-13</sup> 秒	<b>W<sup>+</sup>/W<sup>-</sup> ボソン</b> 電荷: ±1 スピン: 1 寿命: 約 3 × 10 <sup>-25</sup> 秒 <b>Z ボソン</b> 電荷: 0 スピン: 1 寿命: 約 3 × 10 <sup>-25</sup> 秒			
<b>アップクォーク</b> 電荷: +2/3 スピン: 1/2 寿命: 不明 <b>チャームクォーク</b> 電荷: +2/3 スピン: 1/2 寿命: 不明 <b>トップクォーク</b> 電荷: +2/3 スピン: 1/2 寿命: 約 1.5 × 10 <sup>-13</sup> 秒	<b>ダウルクォーク</b> 電荷: -1/3 スピン: 1/2 寿命: 不明 <b>ストレンジクォーク</b> 電荷: -1/3 スピン: 1/2 寿命: 不明 <b>ボトムクォーク</b> 電荷: -1/3 スピン: 1/2 寿命: 約 1.5 × 10 <sup>-13</sup> 秒	<b>電磁気力</b> <b>光子</b> 電荷: 0 スピン: 1 寿命: 無限大 <b>強い力</b> <b>グルーオン</b> 電荷: 0 スピン: 1 寿命: 無限大			

ヒッグス

超対称性ヒッグス

ダークマター

Courtesy of Kaori Kurokawa of KEK. An illustration of the Standard Model and the fundamental particles within. All your favorite characters are here, separated into quarks, leptons, and gauge bosons (particles that carry the forces)

### Quarks

Up, down, charm, strange, top and bottom quarks

### Leptons

Electrons, muons, taus, electron neutrino, muon neutrino, and tau neutrino

### Gauge bosons

Gluons, which carry the strong force, photons, which carry the electromagnetic force, and weak bosons W and Z, which carry the weak force. At the very bottom is the Higgs Boson.

# AAA Symposium 2015 in Tohoku: “What the International Linear Collider Can Do”

By Anna Thomas

On October 17th, Z Hall in Oshu was the venue for the AAA Symposium 2015 in Tohoku, “What the International Linear Collider Can Do.” This was the first time that new KEK Director-General Masanori Yamauchi has come to Iwate to speak after his appointment. Following the Director-General’s lecture “Four Mysteries that Particle Colliders can Solve,” were lectures by Satoru Yamashita, head of the Large Project Department at AAA and Associate Professor at Tokyo University, and Hiroya Masuda, Japan Policy Council Chairman, former governor of Iwate, and former Minister of Internal Affairs & Communications. Around 800 people attended, including many high school and middle school students.

The event was hosted by the Iwate ILC Accelerator Science Promotion Council, the Iwate Prefecture International Linear Collider Promotion Council, the Tohoku Conference for the Promotion of the ILC, the Japan Policy Council, and the Advanced Accelerator Association Promoting Science and Technology (AAA) and backed by a laundry list of twelve organizations including KEK, Iwate Prefecture, Oshu City, and Kanegasaki Town.

The Director-General’s lecture was on four fundamental riddles that particle physics is investigating:

1. Where did mass come from?

2. What is dark matter?

3. Where did antimatter get to?

4. What is happening with the expanding universe?

These riddles are what particle physics is pursuing, and what Japan wants to continue to pursue as a leader in particle physics. Dr. Yamauchi finished his lecture by explaining what research KEK was doing to facilitate building the ILC.

Dr. Yamashita and Mr. Masuda’s lectures covered important points in a complementary way, with Dr. Yamashita speaking from a more scientific perspective and Mr. Masuda with a focus on urban development.

- Where accelerators are in Japan and the world, what fields contribute to their manufacturing and maintenance, and what fields they contribute to.
- How accelerators contribute to humanity’s wellbeing
- The progress made up until the present with the ILC project, and
- Recent developments including the Tokyo ILC

Symposium and visits/progress made with the US.

I was happy and proud to hear one theme in all three lectures: all impressed on the audience that Japan is a leader in particle physics, and one piece of evidence showing that is the number of particle physicist Nobel prize winners Japan has produced, including Dr. Takaaki Kajita this year.

I was especially happy our lecturers could say “Our country is a leader in particle physics and continues to contribute to human progress” to many middle and high school students in the audience. The organizers of this event made a significant effort to get young people to come. The whole event even started out with some extremely youthful energy as local children performed the Iwate National Sports Festival dance and finished up with a message about the ILC: “Our dream for the future: ILC!” This message pleased Dr. Yamashita so much that he altered one of his slides to include it.

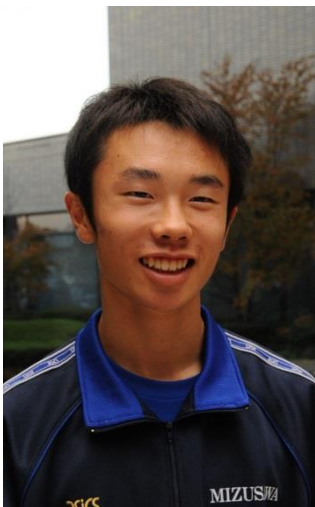
The ILC truly is not for us: it’s for the next generation and the generations after.



Former Governor of Iwate  
and former Minister of  
Internal Affairs &  
Communications Hiroya  
Masuda gives his  
presentation



So, what did some members of this next generation have to say about the symposium? Here's a few impressions from some younger audience members.



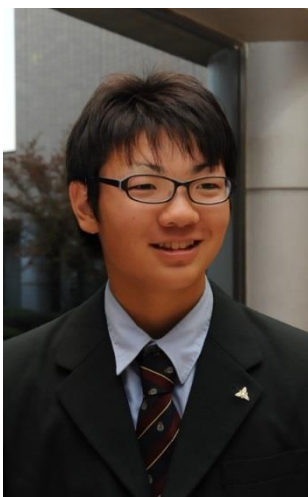
**Ryo Hiraoka, 1st year student at Mizusawa High School**

“Mr. Yamauchi explained about “four mysteries of the universe” in his speech. I think these mysteries are ones researchers all over the world haven’t been able to solve over many years. The fact that the ILC, which will give clues to solve these mysteries will possibly be built not only in Japan but in

Iwate is a great honor. It was very interesting to me, as I aim to study science in university.”

**Reina Sato, 3rd year student at Mizusawa Business High School**

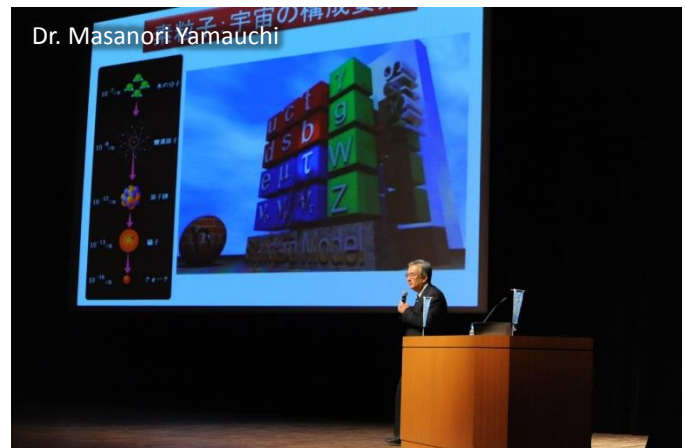
“I learned that the realization of the ILC would make the area around Oshu city an international research base, and widen the horizons for various fields like medical care, life science, information science, and energy. In the future I want to contribute to building a community that’s easy to live in through a job in social welfare. I hope that Tohoku will develop into an attractive are through the ILC.”



**Mizuki Sato, 1st year student at Mizusawa Daiichi High School**

“This is the second time I’ve listened to a talk about the ILC. In this event, I learned that “the ILC will make the first international research base in Asia” and what that means. If the ILC is constructed, Iwate will become “a center of science and technology for the world.”

Thinking this make me really impatient for it to be finished. An evolving Iwate: I want to study hard to be able to contribute to that.”



Over 800 people attended the symposium

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Oshu ILC Promotion Division



ILC SUPPORT COMMITTEE

# A Day at the ASUPIA International Festival

By Dean Ruetzler



Serving up chili con carne at the festival

On September 27, 2015, the Oshu City International Relations Association held the ASUPIA Festival, its yearly international fair. A wonderful early-autumn day greeted volunteers and guests alike. Festival goers were entertained by Filipino Gospel singers, Indonesian traditional dancers, and Japanese Hula, Hip-hop, *taiko* drumming, traditional dance and Belly-dancing troupes. On sale were various delicacies from across the globe, including *chijimi* (Korean pancakes), *kimchi* (pickled cabbage), spicy noodle dishes and plantains from the Philippines (thanks to ISC Vice-Chair Perly Endo), Romanian treats made by ISC member and local entrepreneur Anca Stroe, and *pirozhki* cooked up by local residents from Russia and other Slavic countries.



Festival-goers enjoy some tasty food

Our Chairman Bill Lewis took on the role of English emcee, while Perly and Anca manned booths representing their own countries. As the ILC Support Committee's sponsoring organization is the Oshu International Relations Association, we also thought it would be a good idea to put together a booth for the ILC this year.

Our hook was selling some classic Tex-Mex chili as our "international" cuisine, put together by members Kevin Price (a culinary school graduate), Mark Mino-Thompson (and his eleven year old son Conan), and Dean Ruetzler. Both Kevin and Mark are known in the foreign community as some of the best cooks in Iwate, so it was clear we'd have an awesome pot of chili. In the meantime, Conan helped some local university students with running the event.

The chili was cooked in two batches. We had your standard semi-spicy chili that can be bought at just about any "greasy spoon" in North America. There were an additional twenty servings allotted to a Ghost pepper degree of spiciness for those adventurous enough to try it. By the end of the day both types had sold out completely.

It was a long day of setting the booth up, selling quite a bit (about 100 bowls) of chili, and then taking the booth down. It was a beautiful, sunny day, hundreds of people



came, the food (both ours and the other booths) was delicious and the entertainment was enjoyable to watch.

People attended the fair with the goal of having a good time, and I would call it a great success. By appearing at this popular event, we were able to talk to people about the ILC as well as just give residents a sense of what a more international Tohoku might look like. International and Japanese residents working together to put an event together is exactly the kind of international society we want to start building.

## LEARN MORE ABOUT THE ISC

[The ILC Support Committee Facebook](#)

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The ILC Support Committee

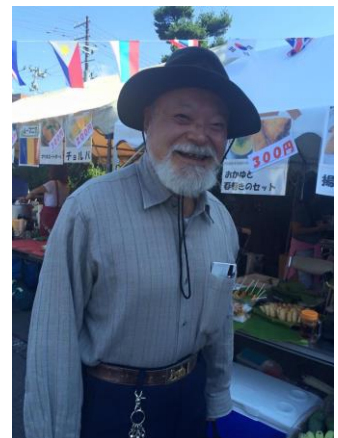
The ILC Support Committee is a group of volunteer foreign residents who are helping local governments create a more international Tohoku.

**Chairman** Bill Lewis **Vice-chair** Perly Endo

**Supported by** The Oshu International Relations Association



Materials at the ILC Support Committee booth



The author and Anca at the Romanian booth





## IN THE NEWS

October  
7<sup>th</sup>

### [Diverse chances and hopes for contributions](#)

**Tanko Nichinichi:** On October 6<sup>th</sup>, Iwate Prefectural University president Atsuto Suzuki lectured at Mizusawa High School in Oshu City. Regarding the International Linear Collider, Suzuki told the students “You will have the chance to be active in not just particle physics but in many other fields. I would definitely like you to get involved.”

October  
16<sup>th</sup>

### [Japan-US Cooperation on High-Energy Physics Including ILC \(KEK, DOE Agreement\)](#)

**Tanko Nichinichi:** This agreement will promote further cooperation between Japan and the US on research and development on next generation accelerators including the ILC and detectors. KEK Director-General Yamauchi and DOE Associate Director of the Office of High Energy Physics Jim Siegrist signed the agreement, as then Minister of MEXT Mr. Shimomura and United States Ambassador Kennedy looked on.

October  
18<sup>th</sup>

### [“I want to make it a reality” KEK President Masanori Yamauchi in Oshu City](#)

**Iwate Nippo:** Around 800 people attended the Advanced Accelerator Association’s 2015 Symposium in Oshu. KEK President Yamauchi: “The ILC is the only thing that can coordinate all of the universal laws of physics and produce an answer. I want it to be realized in Tohoku, so we can use it to unlock the mysteries of the universe.”

November  
9<sup>th</sup>

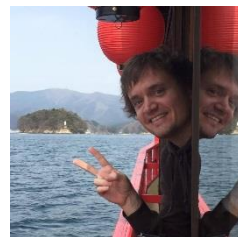
### [Breakthrough Prizes Give Top Scientists the Rock Star Treatment](#)

**The New York Times:** The Fundamental Physics prize was awarded to an entire community of some 1,300 physicists represented by 5 teams (including Atsuto Suzuki, president of Iwate Prefectural University) for their work in finding and studying neutrino particles.

## CONTRIBUTORS

### **Nathan Hill, ILC Internationalization Coordinator, Ichinoseki City**

Nathan has lived in Ichinoseki since 2013, working for two years as an English teacher before beginning work in the city’s ILC Promotion Division in 2015. From Perth in Western Australia, where he worked at the Consulate-General of Japan, he likes early morning jogs through the countryside, photography, the shinkansen and other trains.



### **Amanda Wayama, International Communications Officer, Iwate Prefecture**

In Iwate since 2009, Amanda is just about used to the cold Iwate winters. She likes spending her free time knitting (again, cold winters) and sampling craft beer from the region.



### **Anna Thomas, ILC Internationalization Coordinator, Oshu City**

Anna’s been in Iwate since May 2010. Here are some of the things she enjoys about life here: squeaky snow during snowshoe walks, weird antisocial squirrels with long ears, the singing baked yam truck, local superheroes, affordable national health care, tip-free excellent customer service, and an environment so safe people leave the keys in their cars. Also sake.



### **Dean Ruetzler, ILC Support Committee, Morioka City**

Dean is an English teacher and aspiring pundit. When in his element, he will be active and can be found skiing, sumo wrestling, and playing cricket on occasion.



## THE KITAKAMI TIMES : Issue #3

Produced by the Iwate Prefectural Government and the Iwate Prefecture ILC Promotion Council

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with Oshu City, Ichinoseki City, and the ILC Support Committee

We’re working on a web version of the Kitakami Times that should be up shortly. Our next issue is scheduled for December.  
Please let us know if you have any comments or suggestions!