

AROUND THE WORLD

Crescendo for European infrastructures

Looking back on the first year of AIDA

by Barbara Warmbein



The AIDA community takes stock of its first year of R&D activities. Twenty-three European countries are working on a variety of infrastructures that help today's researchers plan the detectors of the future - from linear colliders to neutrino facilities.

AROUND THE WORLD

Akira Yamamoto: new year, new role

by Rika Takahashi

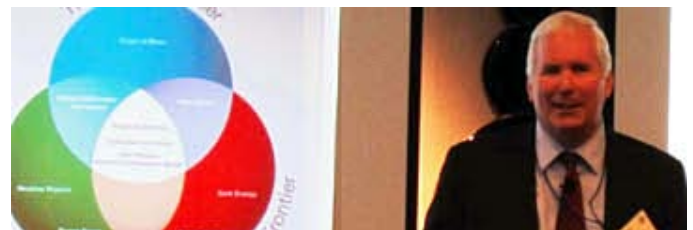


You may know Akira Yamamoto as an ILC Project Manager. Already head of KEK's cryogenics science centre, he is now wearing a third hat for the next Japanese fiscal year, as he has just been appointed new head of KEK's Linear Collider Project Office.

DIRECTOR'S CORNER

HEPAP: advising DOE on the particle physics programme

by Barry Barish



HEPAP is the official advisory body to DOE for high-energy physics. At their recent meeting from 12 to 13 March, they dealt with US high-energy physics budgets, including future year projections, and how to reconcile them with the US high-energy physics programme. In the process, they covered a wide variety of topics ranging from the future of the US accelerator R&D programme to next-generation dark matter searches.



Light in the darkness

Image: KEK

KEK staff perform a facility disaster prevention and training at the accelerator test facility (ATF), recreating laboratory conditions in an emergency situation. One resourceful staff member flips open his cell phone for a light source.

IN THE NEWS

from **Black Hills Pioneer**

10 April 2012

[DOE calls for even larger dark matter experiment](#)

Sanford Underground Research Facility head Dr. Kevin Lesko said his team is working with collaborations that are responding to a Department of Energy call for proposals for a “next-generation” dark matter experiment.

from **symmetry breaking**

9 April 2012

[Tevatron experiment confirms LHC discovery of Chi-b \(P3\) particle](#)

In December, scientists on the ATLAS experiment at the LHC announced that they had unearthed in their data a never-before-seen particle composed of two bottom quarks, called Chi-b (P3). The DZero collaboration now has made public in a paper submitted to Physical Review D that they also see the Chi-b (P3) particle.

from **BBC News**

5 April 2012

[LHC is back with big energy boost](#)

Early on Thursday, opposing stable beams of protons were smashed into each other at four observation positions. The total collision energy in these bunches of sub-atomic particles was eight trillion electron volts (8TeV) – a world record.

CALENDAR

UPCOMING EVENTS

[Joint ACFA Physics and Detector Workshop and GDE meeting on Linear Collider \(KILC12\)](#)

Daegu, Korea

23- 26 April 2012

[ILD Workshop 2012](#)

Kyushu University, Fukuoka, Japan

23- 25 May 2012

[15th International Conference on Calorimetry in High Energy Physics \(CALOR 2012\)](#)

Santa Fe, New Mexico

04- 08 June 2012

UPCOMING SCHOOLS

[The 2012 European School of High-Energy Physics](#)

Anjou, France

06- 19 June 2012

[View complete calendar](#)

ANNOUNCEMENTS

Linear Collider Town Hall Meeting – 16 May, Paris, France

CERN Council will agree on a European strategy for particle physics in a special meeting held in 2013 in Brussels. An international committee has been established to prepare input from the linear collider community. The committee is requested to review the physics case for a linear electron-positron collider in a draft report, the final version of which will be delivered to the European Strategy Group. On 16 May, a town hall meeting will take place in Paris for the whole particle physics community to express its view to the committee: the discussions at this meeting, that aims to gather the community at large, will be timely in view of preparations for the European Strategy Update.

The committee is looking forward to wide participation of the particle physics community.

[Registration and further information.](#)

PREPRINTS

ARXIV PREPRINTS

[1204.1951](#)

Renormalization of the Higgs sector in the triplet model

[1204.1834](#)

Higgs boson production at Linear Colliders from a generic 2HDM: the role of triple Higgs self-interactions

[1204.0845](#)

Top quark pair production via (un)polarized photon collisions in the littlest Higgs model with T-parity at the ILC

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Looking back on the first year of AIDA

Barbara Warmbein | 12 April 2012



During its first annual meeting, the AIDA community also organised its first industry-academia workshop. Poster: AIDA

Proposed projects rely heavily on active R&D activities, young people willing to spend weeks in test beams, industry willing to tackle new technological challenges and infrastructures that will in the end help turn a few of the proposed projects into reality. The EU-programme AIDA (for Advanced European Infrastructures for Detectors at Accelerators) combines all these under one umbrella. At its first annual meeting, held at DESY in Hamburg, Germany, the institutions from more than 23 European countries involved in AIDA took stock of what was achieved during the first year and what still needs to be done.

AIDA's annual meeting was a first in many ways. Obviously, after one year, it was the first big meeting after last year's kick-off. There's more, though. It was also the first time that researchers and industry met at an AIDA-organised workshop to learn about the needs and skills of the other, form new collaborations and develop new technologies together. This one concentrated on silicon detectors; the next one will also be tailored to the host institution by picking up its expertise. Also a first: students had the opportunity to attend a half-day tutorial about silicon detectors. These educational tutorials take the breadth of the AIDA programme beyond pure R&D.

AIDA covers all possible future projects in line with the European Strategy for Particle Physics: the LHC upgrade, linear colliders, neutrino facilities and Super-B factories. Many different sensor technologies are being used in the community, and although requirements can vary, there is a lot of overlap in the microelectronics sector. One goal was to get an overview over all the sensor technologies used, identify common

topics and form subprojects where there is an overlap to avoid duplicate efforts and produce the best possible sensor for the community.

Another AIDA goal is developing the best possible beam telescope to serve two important test beam audiences – groups working on LHC upgrades and groups working on linear colliders. This telescope has to be versatile: while LHC upgrade tests primarily need the telescope to be speedy, the linear collider groups need it to be precise.

After this year's premiere of the academia-industry workshop on silicon detectors, the next one will deal with microelectronics interconnections in conjunction with all the projects developed within AIDA. Future topics for the educational tutorials could include gas detectors, calorimetry or electronics and microelectronics. "We are certainly going to continue and expand this scheme," says AIDA project coordinator Laurent Serin of IN2P3/CNRS in France. These tutorials are open to everybody, not only people from institutions involved in AIDA.

Among the various activities covered by AIDA, an area where Serin notices an increase in activity is the neutrino sector. Several institutes are working on prototypes for long-baseline neutrino experiment detectors and designing a dedicated low-energy test beam line at CERN. Linear collider and LHC-related tasks are proceeding and the community is expecting many results from test beams in 2012. Opening the project to new European partners was among the goals of AIDA, and indeed, a piece of R&D from Lithuania about dosimeters presented during the meeting could be changing the way the radiation measurement are done, Serin says. This new and more accurate dosimeter could replace the conventional ones if the first tests are confirmed.

Read more on individual projects – especially ILC-related CALICE and TPC news – in future issues of *NewsLine*.

[3-D SILICON TECHNOLOGY](#) | [AIDA](#) | [DETECTOR R&D](#) | [DOSIMETER](#) | [FP7](#) | [INDUSTRY](#)

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AROUND THE WORLD

Akira Yamamoto: new year, new role

Rika Takahashi | 12 April 2012



A man of three hats: GDE Project Manager, head of KEK's cryogenic science centre and head of KEK's Linear Collider Project Office Akira Yamamoto. Image: Nobuko Kobayashi

Akira Yamamoto, project manager of the ILC Global Design Effort (GDE), was appointed new head of KEK's Linear Collider Project Office in Tsukuba, Japan. He has been already wearing two hats since he became one of the three ILC project managers in 2007, since he's also head of KEK's cryogenics science centre. He will be wearing one more beginning this Japanese fiscal year, starting April 2012.

"2012 is an important milestone for the ILC programme, so I would like Akira to coordinate both international and KEK's ILC activities," said Atsuto Suzuki, director general of KEK.

Yamamoto is now in charge of decision-making on KEK's R&D plans and activities towards the realisation of an energy-frontier linear collider project. Based on the accelerator design to reach the energy of up to 1 teraelectronvolt, he will be facilitating the accelerator design and

associated R&D in cooperation with the GDE.

He is now also responsible for supporting universities and local governments in conducting geological surveys on the two Japanese ILC candidate sites. Furthermore, he will lead the collaboration of various stakeholders in Japan, such as science communities outside high-energy physics, national universities, and industry. He is hoping to further strengthen collaborative relationships with KEK's international partners too.

"I am intending to work hard to promote all ILC activities – international, domestic, and inside KEK – in good balance," said Yamamoto. "it is important to listen to different opinions and discuss well to reach decisions, and I am willing to take responsibility for the necessary decisions." He says he will seek ways to collaborate synergistically.

His assigned term has started from this April. "I will work as quickly as possible within my limited term," he said, determined to bring his best to three leadership roles.

[KEK](#)

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DIRECTOR'S CORNER

HEPAP: advising DOE on the particle physics programme

Barry Barish | 12 April 2012

As US Regional Director, Mike Harrison usually covers US High Energy Physics Advisory Panel (HEPAP) meetings as a way to stay abreast of developments in and the direction of the US high-energy physics programme. This time, instead of Mike, I attended the recent HEPAP meeting in Washington DC on 12 and 13 March. At this meeting, HEPAP dealt with US high-energy physics budgets, including future year projections, and how to reconcile these with the ambitions of the US high-energy physics programme. Today, I summarise some highlights from this meeting.



Jim Siegrist, Associate Director, DOE Office of High Energy Physics, addresses HEPAP. Image: ILC

HEPAP is jointly chartered by the US Department of Energy (DOE) and the National Science Foundation (NSF) under the guidelines established by the Federal Advisory Committee Act to provide periodic reviews of existing high-energy physics programmes; provide advice on the formulation of long-range plans, priorities, and strategies for the nation's high-energy physics programme; recommend appropriate levels of funding to assure a world leadership position; and make recommendations to help maintain appropriate balance between competing elements of the programme. Thereby, HEPAP is the official advisory committee to the US funding agencies for high-energy physics.

For the DOE, Bill Brinkman, Director of the Office of Science, presented the "Fiscal Year 2013 Budget Request to Congress for DOE's Office of Science." The Office of Science provides 45 percent of the federal support of basic research in the physical and energy-related sciences.

Brinkman emphasised that the Office of Science underpins the President's goals, including clean energy, new materials design and discovery, biological and environmental research and advanced scientific computing research. As a result, the small (roughly two percent) increase for the Office of Science for FY2013 has gone into these fields, leaving other areas, like high-energy physics, with near constant budgets.

Jim Siegrist, Associate Director for High Energy Physics, followed by summarising the programme for high-energy physics within the FY2013 budget request to Congress. Of course, of special interest to those of us in the ILC is that this budget request both recognises the success of our programme and the planned completion of the TDR at the end of this year. However, the proposed budget requested no new funding for the ILC post-TDR programme. Siegrist addressed the future support for the ILC as follows: *"We will keep a VERY low-level GDE involvement while we wait to see if another region will press forward with a project."* As a result, we are working hard in the short term to make sure we have enough resources to complete the ILC *Technical Design Report* and to ensure that the critical ongoing R&D will have no major interruptions.

The US programme in particle physics is now being treated as three efforts at the three frontiers of particle physics that were introduced in the HEPAP P5 report. The figure from that report has even become an icon representing the field of particle physics. There was considerable emphasis in this HEPAP meeting on the US programme at the Intensity Frontier.

The proposed centrepiece of this activity for the future is a redirection of the activities at Fermilab. Again quoting Jim Siegrist, "Fermilab is the HEP main laboratory. Our first priority is to increase capability investment at Fermilab to support our future Intensity Frontier programme while keeping all three frontiers in balance. Fermilab must concentrate efforts in this area, and the rest of the community needs to support that mission where appropriate (including the other labs). The Fermilab Long Baseline

Neutrino Experiment (LBNE) is presently under consideration at the Office of Science as to whether they can integrate it into their future programme at its present scope with anticipated future flat budgets.” A decision was announced soon after the HEPAP meeting that the proposed budget for LBNE cannot be accommodated and ways will need to be considered to reduce the scope of the project.

Another presentation of special interest was given by Norbert Holtkamp on the “Accelerator Task Force Interim Report to HEPAP.” The background is that DOE sponsored a workshop called Accelerators for America’s Future in 2009 to elicit views and opinions on the challenges and opportunities for developing and deploying accelerators to meet the national needs.

As a result of that workshop and report, which can be downloaded from the [Accelerators for America’s Future website](#), the Senate has directed the Department “to submit a 10-year strategic plan by June 1, 2012 for accelerator technology research and development to advance accelerator applications in energy and the environment, medicine, industry, national security, and discovery science. The strategic plan should be based on the results of the Department’s 2010 workshop study, Accelerators for America’s Future, that identified the opportunities and research challenges for next-generation accelerators and how to improve coordination between basic and applied accelerator research. The strategic plan should also identify the potential need for demonstration and development facilities to help bridge the gap between development and deployment.”

Holtkamp gave an interim report for the group of senior accelerator scientists from a broad range of laboratories who have been charged with developing a response to the Senate directive. The committee is considering the question very broadly, including questions of how to organise such an effort, what the key technical challenges in the field are and how to integrate industry into accelerator developmental work in DOE labs. They have even developed some preliminary infrastructure proposals:

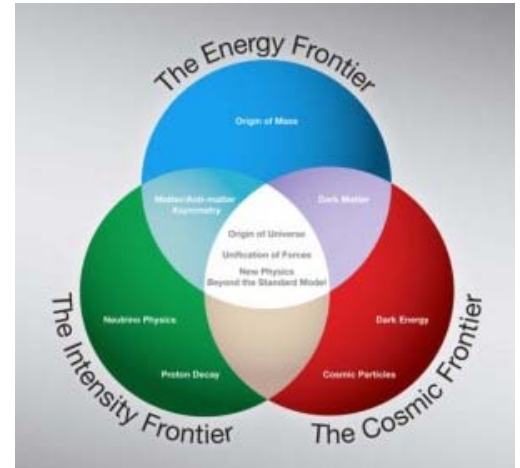
- Infrastructure Proposal 1
“The medical community would benefit from a discussion of how the current R&D program could help on the route to a National Resources for Hadron Beam Medical Facilities. The Office of Science could develop a stepwise implementation plan for providing beams, developing beams and beam delivery systems for a cost-efficient production of such facility.”
- Infrastructure Proposal 2
“The Office of Science could consider providing a home for laser R&D under its auspices. Lasers, an enabling technology, have become an integral part of accelerators and provide tremendous potential for new methods of acceleration, for miniaturization of accelerators and as part of accelerator systems.”

In his summary, Holtkamp solicited advice on feasibility, appropriateness and content, and emphasised that implementing some of the ideas they are considering would mean changing how we do business.

[DOE](#) | [DOE OFFICE OF SCIENCE](#) | [HEPAP](#) | [UNITED STATES](#)

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The three frontiers of particle physics as first presented in the HEPAP P5 report



The report from the DoE accelerator workshop in 2009