

IMAGE OF THE WEEK

Large-scale powering scheme has scientists' pulses racing

Images: IPNL



For the first time, a large-scale calorimeter prototype for the ILC, fully equipped with embedded power-pulsed electronics, successfully passed a test beam at CERN a few weeks ago. A prototype of more than one cubic metre in size of CALICE's Semi-Digital Hadronic Calorimeter successfully recorded and tracked 1 million particles from CERN's SPS accelerator beam (muons and pions). Thanks to power pulsing, the detector front-end electronics was periodically disabled and enabled, following the beam cycle. [Read more and view more photos about the test beam.](#)

RESEARCH DIRECTOR'S REPORT

Marking our progress – Detailed Baseline Design report

by Sakue Yamada



During ACFA KILC12 workshop in Daegu last month ILC, the International Detector Advisory Group gave useful insight and recommendations to the Detailed Baseline Design report working group, paving the way to the report completion by the end of 2012.

DIRECTOR'S CORNER

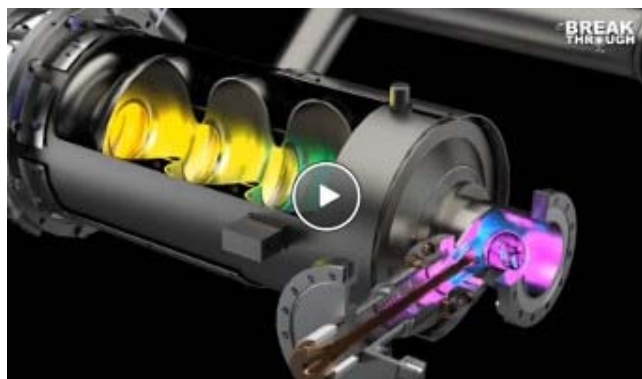
Jean Trân Thanh Vân receives Tate medal

by Barry Barish



Today I pay tribute to a very special Vietnamese physicist, Jean Trân Thanh Vân, who has been awarded the 2011 Tate Medal. No field of physics is more international than particle physics and Trân epitomises that spirit. He has dedicated much of his professional life to creating ways to bring physicists together from around the globe, and especially his initiatives to bring Vietnam into the global world of physics.

VIDEO OF THE WEEK



The potential of superconducting niobium cavities

Video: Fermilab

There are more than 30,000 particle accelerators in operation around the world. At Fermilab, US, scientists are collaborating with other laboratories and industry to optimise the manufacturing processes for a new type of powerful accelerator that uses superconducting niobium cavities.

IN THE NEWS

from **INFN**
15 May 2012

[Research on neutrinos allows the discovery of vortices in the abysses of the eastern Mediterranean](#)

An INFN research project on neutrinos has made it possible to observe for the first time the presence of chains of marine vortices in the Mediterranean at depths of more than 3000 meters, large water structures of diameters of approximately 10 km, moving slowly at speeds of approximately 3 centimeters per second.

from **CERN Bulletin**
14 May 2012

[Two beautiful new particles](#)

Although discovering new particles is increasingly looking like a routine exercise for the LHC experiments (see previous features), it is far from being an obvious performance, particularly when the mass of the particles is high. Created in the high-energy proton-proton collisions produced by the LHC, these new excited states of the Λ_b particle have been found to have a mass of, respectively, 5912 MeV/c² and 5920 MeV/c². In other words, they are over five times heavier than the proton or the neutron.

from **CERN**
14 May 2012

[CERN welcomes its first choreographer in residence](#)

Space, time and gravity are under the cultural spotlight at CERN this month with the arrival of Gilles Jobin, the laboratory's first choreographer in residence and winner of the Collide@CERN Geneva prize, which is supported by the Canton and City of Geneva. Jobin is an internationally renowned Swiss choreographer with a company in Geneva

from **bulletins électroniques**
11 May 2012

[La reconstruction dans le Tohoku : une priorité du gouvernement japonais](#)

... L'intérieur d'Iwate pourrait voir également l'installation d'un accélérateur de particules (l'International Linear Collider, successeur du LHC [2] du CERN [3]) ...

CALENDAR

UPCOMING EVENTS

[International Particle Accelerator Conference 2012 \(IPAC12\)](#)
New Orleans, USA
20- 25 May 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](#)

PREPRINTS

ARXIV PREPRINTS

[1205.3087](#)
High energy particle colliders: past 20 years, next 20 years and beyond

[1205.1777](#)
Hydrostatic Level Sensors as High Precision Ground Motion Instrumentation for Tevatron and Other Energy Frontier Accelerators

[1205.1448](#)
Supersymmetric models with light higgsinos

IMAGE OF THE WEEK

Large-scale powering scheme has scientists' pulses racing

Images: IPNL | [17 May 2012](#)

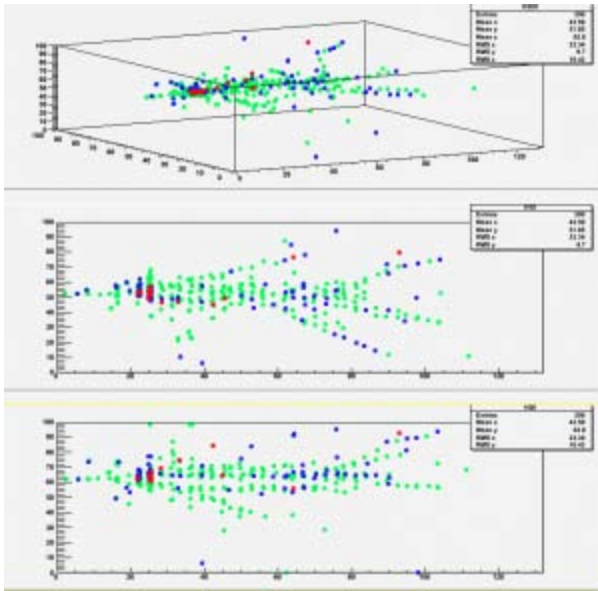


CALICE's Semi-Digital Hadronic Calorimeter prototype during April 2012 test beam at CERN. Image: IPNL

For the first time, a large-scale calorimeter prototype for the ILC, fully equipped with embedded power-pulsed electronics, successfully passed a test beam at CERN a few weeks ago. A prototype of more than one cubic metre in size of CALICE's [Semi-Digital Hadronic Calorimeter](#) successfully recorded and tracked 1 million particles from CERN's SPS accelerator beam (muons and pions). It was equipped with 48 chambers of glass resistive plate chambers (RPC) and two Micro Mesh gaseous structure (MICROMEGAS). This module is pretty close to what a future ILC hadronic calorimeter could look like, totalling 460 000 electronic channels. Thanks to power pulsing, the detector front-end electronics was intermittently disabled and enabled, following the beam cycle. The SDHCAL team involved in the construction and test of this module are based in France (IPNL in Lyon, LAPP in Annecy, LAL in Orsay and LLR in Palaiseau), Spain (CIEMAT in Madrid) and the universities of Louvain and Ghent in Belgium.

Lowering power is key to reduce the detectors' power budget of course, but also to reduce heat dissipation in the sub-detectors. It is also a key issue for particle physicists to solve to design the next generation of collider experiments.

[Learn more about power pulsing in *ILC NewsLine*](#)



100-GeV particle tracks recorded in CALICE's Semi-Digital Hadronic Calorimeter prototype during the April 2012 test beam at CERN. Image: IPNL

[CALICE](#) | [CALORIMETER](#) | [POWER PULSING](#) | [SDHCAL](#) | [TEST BEAM](#)

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RESEARCH DIRECTOR'S REPORT

Marking our progress – Detailed Baseline Design report

Sakue Yamada | 17 May 2012



During the past five years the physics and detector community has made much progress for establishing capable detector designs for the ILC. These achievements are to be summarised in the Detailed Baseline Design report (DBD) by the end of this year. The DBD will make a solid milestone, marking the end of the Letter-of-Intent period and the point for the community to proceed towards the next stage. We consider it a very important task to complete the DBD, and plans started already in 2010. [As I wrote in January](#), discussions for a precise and detailed planning of the DBD started by the DBD format working group last year. The working group worked out basic structure of the volumes and a schedule towards completion. The minutes can be obtained in [our web page](#).



IDAG at work during AFCA-KILC12 meeting in Daegu, Korea. Images: KEK/N. Kobayashi

The first step in the schedule was the preview of the planned outline of each chapter of the detector volume by the International Detector Advisory Group (IDAG). The detector groups prepared their plans of detector chapters last March, and they were handed to IDAG for advice together with the content of the introductory chapter. IDAG met during the [ACFA KILC12 workshop in Daegu](#), Korea, last month. IDAG discussed with the management and the two detector groups SiD and ILD separately. It also heard from the software common task group about the status of the new simulations for 1-TeV benchmark reactions which are under way for the DBD, as well as from Michael Peskin about the studies for the physics volume.

IDAG gave me some recommendations in order to improve the content and style of the DBD and to make the drafting work smooth. They include points that help clarify the aim of DBD and make it more comprehensive. Also there were technically useful suggestions. I

appreciate all the suggestions and adopt many of them since they strengthen our effort on DBD. I describe below some important points, backed up also by IDAG, which are meaningful to be known by the community.

First, IDAG confirmed that all contributors shared the basic stance that the expected audience of the document is high-energy physicists. We have been discussing the character of DBD with the concept groups for some time and agreed that the document should contain detailed enough information to convince our colleagues in the nearby fields about the feasibility and the capability of the designed detectors and about the clear discussions of physics reach. When the DBD is finished, however, it will also be desirable to address it towards wider communities including funding agencies. This will be made in collaboration with that of Global Design Effort by making separate volumes of an executive summary and an outreach document of both the Technical Design Report and the DBD combined.

The detector volume will have an introductory chapter, a common issue chapter and the two detector chapters. As suggested by IDAG, a common issue chapter will be made, in which common items will be moved from the introductory chapter and from each detector chapter. With the common issue chapter, the DBD can be organised in a clearer form, reducing duplications. Now detailed discussions are being continued by the DBD format working group on how to allocate the topics in order to make for smooth reading and comprehensive coverage.

An important recommendation about the common chapter was made regarding future R&D. It is always true that detectors can be improved as new technologies or studies develop. So the concept groups wish to continue further R&D, knowing where possible improvements can be expected. IDAG suggested a solution, which was the same as we had planned, that such future activities be placed in the common chapter, not in each detector chapter, so that we don't give the impression that we are not ready. The detector part needs to present that capable detector systems can be realised based on the achieved technologies.

Taking the IDAG suggestion that the introduction be written earlier so that the detector authors know what has already been written in the introduction, we try to fix the contents and authors of the introductory and common issue chapters as soon as possible.

There were recommendations concerning the simulations. One of them is to put a summary of the existing simulation studies for 500-GeV reactions before presenting new benchmarks at 1 TeV. It is an important point in order not to confuse the readers. While the detector groups are now working in full swing to complete the new benchmarks, we should not forget that the primary focus of the TDR/DBD will be on achieving a robust design for 500-GeV physics and that a number of benchmarks were studied already for the Letters of Intent. This point was transmitted to the two detector groups.

The format working group will meet soon to finalise the plan so that we can go ahead soon with drafting. We will also consider making a short summary chapter after the individual detector chapters to bring a clear message to the readers. We wish to complete the DBD by stating in the summary chapter that the DBD describes the status of the ILC detector studies of the design groups, demonstrating that with the technology in hand we can conclude that the two baselines are feasible and capable of achieving the physics goals of the ILC, and that future work will now move us closer to realisation of these detector concepts.

[DBD](#) | [IDAG](#) | [PARTICLE SIMULATION](#)

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DIRECTOR'S CORNER

Jean Trân Thanh Vân receives Tate medal

Barry Barish | 17 May 2012



Trân Thanh Vân celebrating at dinner with friends and colleagues following receiving the AIP Tate Medal at the APS 2011 Prize and Award Ceremony

I was thrilled to learn that the American Institute of Physics had awarded the Tate Medal for 2011 to Jean Trân Thanh Vân. Tran epitomises global science, and both physics (especially high-energy physics) and his native country of Vietnam are greatly indebted to him for his dedication to bringing leading physicists from around the world together, even when political realities created major obstacles. He was honoured at the annual award ceremony of the American Physical Society during their April meeting in Atlanta. I delivered my APS Past-President address in the same session, during which the 2011 APS Prize winners were also honoured.

The John Torrence Tate Medal for International Leadership in Physics is given every two years by the American Institute of Physics. The 2011 medal was awarded “in recognition of Trân Thanh Vân’s role spanning more than four decades in bringing together the community of physicists across national and cultural borders through the Rencontres de Moriond and Rencontres de Blois, and for his tireless efforts to build a modern scientific community in Vietnam.”

As described in the *CERN Courier*:

In 1965, Jean Trân Thanh Vân, a young researcher at Orsay, decided to organise an unusual scientific meeting for January 1966. The subject itself – electromagnetic interactions – was not particularly unusual, but the organisation was. The meeting was held in the French Alps in a group of chalets, with no catering help or assistance, few of the visual aids one associates with such meetings and, most importantly, without any telephone contact with the outside world (...) This was not a conference or a school, but a gathering (“rencontre”) of minds. The name of what became a series of meetings reflects this original motivation.

These meetings have become an important centrepiece for high-energy physicists, being unique in that they are attended by young and established researchers and in that they have the singular distinction of being a “winter meeting” where important new results are presented.

Jean Trân Thanh Vân was born in Dong Hoi, Vietnam, just north of the 17th parallel where the country was divided in 1954. He grew up in war-torn Vietnam, and as a thirteen-year-old left his family to study in Hué. Then, at the age of 17, he left Vietnam to attend university in France. But his identification always remained closely linked to Vietnam.

Following the end of the Vietnam war and the opening of Vietnam, Trân organised the first “[Rencontres du Vietnam](#)” to renew contacts between the Vietnamese scientific community and scientists from the rest of the world. I had the privilege of going to Vietnam in 1995 to participate in one of the first meetings. Following the meeting, Trân took us on a tour of Vietnam. Most memorable was our visit to a local orphanage. It opened our eyes to a completely different side of Trân and his wife. In 1970, they had founded the association “Aide à l’Enfance du Vietnam” to help Vietnamese orphans, and following the end of the war, they



Yours truly, 2011 APS President and ILC Global Design Effort Director, caught wearing a tie for his Past-President address at the APS awards ceremony

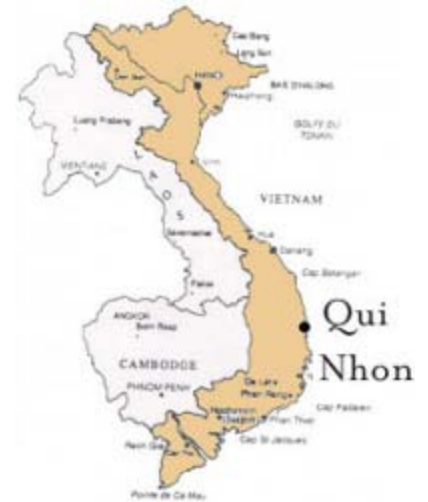
were instrumental in creating several centres for orphaned or homeless children. The orphanage we visited with Tr n was impressive, filling a great need in rebuilding a country destroyed by years of war.

In recent years, Tr n has dedicated himself to creating an important new international interdisciplinary centre in the heart of Vietnam, a crossroads between north and south, on an area of 20 hectares at the edge of the East Sea. The International Center of Interdisciplinary Science Education (ICISE) is aimed at young research scientists and engineers from different fields, exchanging ideas and experiences, in an atmosphere to develop their knowledge and themselves, much in the spirit of Tr n's "rencontres."



An architect's rendering of ICISE

The ICISE facilities are under construction, with construction completion and a planned first conference in July 2013. Tr n has invited me to participate in this inaugural event and I very much hope to go back to Vietnam to do so, just one month after we formally submit our ILC *Technical Design Report* to ICFA.



Map of Vietnam showing the location (Qui Nhon) of the International Center of Interdisciplinary Science Education, which is under construction.

[AIP](#) | [APS](#) | [AWARD](#) | [MORIOND](#) | [ORSAY](#) | [VIETNAM](#)

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