

AWARDS

Suppliers win Golden Hadrons

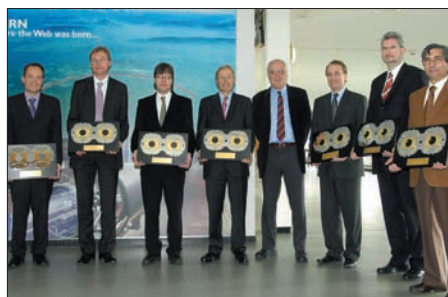
The fourth CERN Golden Hadron awards saw seven suppliers for the Large Hadron Collider (LHC) receive recognition for their high quality of work, respect for delivery dates, flexibility, and adaptability to the demanding working conditions of the project.

The awards went to Kemppi-Kempower (Finland), Metso Powdermet (Finland), Transtechnik (Germany), Babcock Noell Nuclear (Germany), Iniziative Industriali (Italy), ZTS VVU Košice (Slovakia), and Jehier (France).

Babcock Noell Nuclear (BNN) received its award for the successful production of a third (416 cold dipole masses) of the LHC's superconducting dipole magnets, one of the collider's most critical and complex components. BNN produced the magnets eight months ahead of the contract deadline, delivering high-quality magnets with an exceptional performance, despite the insolvency of its parent company in 2002.

Metso Powdermet manufactured most of the end covers for the LHC superconducting magnets and other cryogenic equipment. Metso stepped in and launched a "crash programme" after the company originally holding the pre-series contract refused to deliver. Metso adapted its unique powder metallurgy technique to the LHC, involving melting fine metal powder in a process that replaces welding and reduces costs.

Jehier has designed, and is now producing and delivering, multi-layer insulation (MLI)



Representatives of the seven companies with their Golden Hadron awards, together with Lyn Evans, project leader for the LHC.

blankets for the LHC's superconducting magnets, fulfilling CERN specifications. After the delivery of thousands of MLI blanket sets, no non-conformities have been found. Jehier demonstrated its goodwill and flexibility to adapt its production to numerous requests from CERN during the crisis with the cryogenic distribution line, and the company made considerable efforts to supply at short notice.

A leading manufacturer of arc-welding equipment, Kemppi-Kempower produced the only workable prototype of the high-current and high-precision power converter for the LHC, when faced with competition in 2002 from two other suppliers. Subsequently, the Finnish firm received the contract for pre-series and series delivery, and by July 2005, 82 power converters had been delivered and accepted, constituting 42% of the total production.

At the end of 2002, Transtechnik, who provide power electronics for railway applications, went bankrupt having already delivered successful prototypes of the main quadrupole power converters and four-quadrant power converters for the LHC. Fortunately, another firm, Drosten, took over Transtechnik and all the key engineers remained with the company. Transtechnik is now back on schedule, having recouped the time lost due to the financial difficulties.

Since 2003, Iniziative Industriali has installed more than 1600 tonnes of steel structures and several kilometres of piping in the LHC tunnel and underground caverns. This is a great achievement, as more than half the design-specification drawings for the steel structures were unavailable when the contract was initially signed. Iniziative Industriali and its subcontractors have adapted their means of production to satisfy CERN's requirements.

The LHC has required the development of very hi-tech handling devices for installing the big, heavy and fragile superconducting magnets in the very confined space of the LHC tunnel. Specialists in machine engineering and electro-technical products, ZTS VVU Košice in Slovakia, manufactured five equipment-transfer sets for CERN. These robots can carry the LHC magnets from the transport vehicles inside the tunnel and align them with the magnets' support jacks with high precision (0.1 mm).

Julius Wess receives award from Humboldt-University

Julius Wess has been awarded the degree of *Doktor rerum naturalium honoris causa* by the Mathematics and Science Faculty I of the Humboldt-University Berlin to mark the occasion of Einstein World Year of Physics 2005. The award ceremony took place on 25 October in the new physics-institute building in Berlin-Adlershof.

The award recognizes numerous scientific contributions Wess has made to

mathematical and theoretical physics, and more specifically his contributions to quantum field theory and anomalies, the discovery of supersymmetry, the development of superspace geometry, and his work on non-commutative spacetime. This work, much of which was done in collaboration with Bruno Zumino, continues to play a key role in present efforts to understand the fundamental structure of space, time and matter.



Julius Wess, right, receives the honorary doctor award from the dean of the Mathematics and Science Faculty I of Humboldt-University Berlin, T Buckhout, centre, and the director of the Physics Institute, Fritz Henneberger.

AWARDS

Herwig Schopper honoured

Herwig Schopper, CERN director-general 1981–1988, has received the UNESCO Niels Bohr Gold Medal along with Sir Martin Rees, Britain's astronomer royal, and Peter Zoller of Innsbruck, a central figure in quantum information. The medals, which were presented at the Danish Royal Academy of Science and Letters on 15 November, recognize scientific excellence, concern with the impact of science, and efforts to promote

the free exchange of ideas on a broad international scale.

Schopper is president of the International Centre for Synchrotron Light for Experimental Science and Applications in the Middle East (SESAME) council (*CERN Courier* November 2002 p6). This is the second UNESCO award Schopper has received in the past two years. In April 2004, he received the Albert Einstein Gold Medal (*CERN Courier* June 2004 p39).



Herwig Schopper, left, together with the Danish minister for Science, Technology and Innovation, Helge Sander, who presented the UNESCO medals.

The Alexander von Humboldt Foundation has made research awards to Joël Feltesse of CEA/Saclay and Bikash Sinha, director of the Saha Institute of Nuclear Physics.

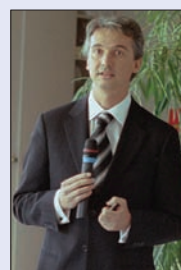
Feltesse has received one of six Helmholtz–Humboldt awards made annually to internationally acknowledged scientists from outside Germany in recognition of their research achievements. These are awarded jointly by the Alexander von Humboldt Foundation and the Helmholtz Association. The award to Feltesse acknowledges his outstanding contribution to the study of deep inelastic scattering and the important role he played in the development of European particle physics during his time as spokesman of the H1 experiment at DESY, as director of DAPNIA at Saclay, and as chair of CERN's Scientific Policy Committee. He was among the first to realize the importance of low x physics in the exploration of high gluon densities in the proton.



Joël Feltesse, left, and Bikash Sinha.

Sinha has received a Humboldt research award for his exceptional achievements in changing the scale and dimensions of nuclear-physics research in India. Sinha, who is also director of the Variable Energy Cyclotron Centre (VECC), worked with the Mumbai-based Bhabha Atomic Research Centre and successfully campaigned for the setting up of heavy-ion accelerators in India. The VECC is currently working on a superconducting cyclotron and a project to develop a radioactive-beam facility.

Patrick Janot du CERN a reçu la médaille d'argent 2005 du CNRS pour l'IN2P3 (Institut national de physique nucléaire et de physique des particules). Ce prix, l'un des plus prestigieux du



centre de recherche français, lui a été remis plus particulièrement pour ses travaux lorsqu'il était coordonnateur scientifique du grand collisionneur électron–positon (LEP) au cours des deux dernières années de fonctionnement de l'accélérateur, en 1999 et 2000, et son "rôle central dans la recherche du boson de Higgs" durant cette période. Il s'est notamment illustré en proposant des idées novatrices pour pousser les performances de la machine dans leurs retranchements et atteindre une énergie de 209 GeV tout en optimisant la luminosité.

E-PUBLISHING

J-journals expand into radiation instrumentation

The International School for Advanced Studies (SISSA) and the Institute of Physics (IOP) have launched the new online-only *Journal of Instrumentation* (JINST). Recent years have seen a huge growth in instrumentation science and JINST has been created to support the needs of this expanding community.

JINST covers all fields of radiation

instrumentation and deals both with concepts and experimental techniques, as well as with related theoretical aspects, modelling and simulations. Major JINST sections include accelerator science, instrumentation and methods for accelerators and accelerator experiments, detector physics, detectors and apparatus for particle and nuclear physics, methods and apparatus for astronomy and astrophysics, detectors for biomedical applications, instrumentation and methods for medical applications, non-destructive testing, and detector-readout concepts and electronics.

The SISSA–IOP online-only J-journals (JHEP, JCAP, JSTAT) have proved to be remarkably

successful in terms of quality and impact. Like its siblings, JINST will feature highly distinguished advisory and editorial boards. Unlike traditional journals, the editorial board of the J-journals is entirely responsible for the peer-review process: authors are thus assured that the fate of their submissions is in the hands of active scientists.

For the first year JINST will be available free of charge. As with the other J-journals, papers published in JINST will be available on open-access terms for the first month of publication and all papers will remain free of charge to institutions in developing countries.

● To access JINST see <http://jinst.sissa.it> or www.iop.org/EJ/journal/jinst.

PERSONALITY

Alexander Skrinsky celebrates his 70th year

Alexander Skrinsky, or Sasha as his friends and colleagues call him, was 70 on 15 January. The occasion was celebrated on 14–16 January at the Budker Institute of Nuclear Physics (BINP) in Novosibirsk, where he is director, with an international seminar entitled Selected chapters of modern high energy physics and charged particle accelerators.

An outstanding member of Gersh Budker's Siberian school, Skrinsky went to Novosibirsk after graduating from Moscow University in 1959, and progressed to become director. From the earliest days, he led the pioneering team working on electron–electron and electron–positron colliders. The successful commissioning of these machines, which earned him the Lenin Prize in 1967, opened a new era in experimental high-energy physics. An attempt to extend this work to heavy particles stimulated the development of electron cooling, a technique today exploited all over the world. Now the high-energy physics community is developing the International Linear Collider project, the conceptual design of which was suggested 30 years ago by Skrinsky together with Budker and Vladimir Balakin.

Skrinsky's early fascination with spin dynamics resulted in major developments for



Alexander Skrinsky, who was 70 in January, celebrated at the BINP, where he is director.

polarized beams in colliders, leading to the discovery and subsequent development of resonance depolarization for high-precision measurements of particle masses. For this,

Skrinsky and other physicists at Novosibirsk received the State Prize of the USSR in 1989.

Skrinsky's wide physics interests are a continual source of fresh ideas, including the optical klystron – a special free-electron laser – and various industrial applications of radiation technologies. For the past few years he has been developing the concept of an international muon collider using ionization muon cooling as he proposed together with Budker in the 1970s. At present he is actively supporting an upgrade of the complex of colliders at Novosibirsk, which will include new acceleration options such as round beams and monochromatization. The aim is to achieve copious production of ϕ mesons and τ leptons.

As a leader of a major Russian physics centre and as a head of the nuclear-physics section of the Russian Academy of Sciences, Skrinsky contributes to the scientific programme of major accelerator laboratories and furthers the interests of Russian physicists in various international projects, in particular construction of the Large Hadron Collider and its detectors at CERN, and experiments at the B-factories at KEK and SLAC. He is an active member of several international committees on scientific politics in high-energy physics.

SUMMER SCHOOL

CERN and Fermilab offer joint hadron-collider summer schools

For the past few years, experiments at Fermilab's Tevatron collider have been exploring uncharted territory at the high-energy frontier of particle physics. With CERN's Large Hadron Collider (LHC) operations to start in 2007, a new era in the exploration of the fundamental laws of nature will begin.

In anticipation of this era of discovery, Fermilab and CERN are jointly launching a series of Hadron Collider Physics Summer Schools, with the aim of offering students and young researchers a complete picture of both the theoretical and experimental aspects of hadron-collider physics. The first school will take place on 9–18 August 2006 at Fermilab; the following one will be at CERN in the summer of 2007.

Preparing young researchers to tackle the current and anticipated challenges of hadron colliders, and spreading the global knowledge required for a timely and competent exploitation of the LHC physics potential, are concerns equally shared by CERN, the LHC host laboratory, and by Fermilab, the home of the Tevatron and host to the CMS collaboration's LHC Physics Center in the US.

The first school will include nine days of lectures and discussions, with one free day in the middle of the period. The emphasis will be on the physics potential of the first years of data-taking at the LHC, and on the experimental and theoretical tools needed to exploit that potential. The school will be focused to attract senior graduate students

and recent PhDs in both experimental and theoretical particle physics.

The lectures and discussions will include an introduction to the theoretical and phenomenological framework of hadron collisions, and current theoretical models of frontier physics, as well as an overview of the main detector components, the initial calibration procedures and physics samples, and early LHC results. Examples of physics analyses drawn from the current Tevatron experience will help inform these exchanges.

Scholarship funds will be available to support some participants. Updates, application procedures, and more details will be available at the website for the first school: <http://hcpss.fnal.gov>.

EXHIBITIONS

Bulgaria welcomes CERN exhibition

In Bulgaria's first CERN exhibition more than 1400 people, many of them students and young physicists, visited the National Earth and Mankind Museum in Sofia on 8–17 November 2005. Permanently staffed by young physicists from Sofia University, there were exhibits about research activities at CERN, and four posters describing Bulgaria's participation.

The inauguration on 8 November took place in the presence of Vanya Dobрева, Vice-Minister for Science and Education, and some 200 guests. Organized by Matey Mateev, president of the Union of Physicists in Bulgaria, the exhibition allowed CERN to present the laboratory and the Large Hadron Collider (LHC). It also underlined the important contribution that Bulgarian physicists are making towards the LHC and experiments at CERN.



CERN's first exhibition in Bulgaria covered the LHC and other experiments at CERN.

EDUCATION

Physicists and teachers unite

On 4–7 July 2005 the beautiful building of the German Physical Society in Bad Honnef outside Bonn hosted EPEC-1, the first EPS Physics Education Conference. Participants from 20 countries gathered to present and discuss education projects and initiatives in physics education. The aim was to provide a forum for new physics-education methods and initiatives, involving school teachers and university teachers in a dialogue and informal alliance to make physics at school and university more interesting.

The conference presented frontline physics from several fields, experiences in physics education and examples of how to use multimedia in education. The Frontiers lectures were much appreciated and it was gratifying to observe the willingness of leading researchers to participate in a conference that was directed primarily towards education. Werner Hoffman of the Max Planck Institute for Nuclear Physics, Heidelberg, spoke on elementary particles and the cosmos; Uwe Czarnetski of Bochum described recent advances in Bose–Einstein condensates and the construction of matter lasers; Klaus

Ensslin of ETH, Zurich, discussed the work that he and his group have carried out in nanophysics and the fabrication of nano-scale devices; and Guy de Mortier from the Laboratoire d'analyses par réactions nucléaires, Namur, described some of his many applications of nuclear techniques to problems in medical physics and archaeology.

Among the educational topics, Thomas Trefzger of Mainz described a neat experiment to observe cosmic muons using a thermos flask as a simple Cherenkov detector for cosmic-ray muons. Jef Colle and Frits Hidden presented HiSPARC, the Dutch cooperative project between the scientific community and high schools that aims to detect high-energy cosmic showers with scintillation detectors housed in ski boxes on the roof of several schools in the Netherlands.

There was a general consensus that there should be an EPEC-2 in 2007 where physics teachers and scientists can continue to present their work on making physics education more interesting.

● Talks and reports can be found at www.physik.uni-mainz.de/lehramt/epec/.

PRODUCTS

Acqiris has introduced the first 10 bit, 4GS/s 3U PXI digitizers, with input bandwidths of up to 3 GHz. The dual-channel DC152 and single-channel DC122 units reduce testing and data-acquisition time, making them ideal for high-speed applications. See www.acqiris.com.

Instrumentation Technologies has extended its Libera product family for beam stabilization, introducing Libera Bunch-by-Bunch, which damps coupled bunch instabilities and helps provide beam users with a more stable orbit. It enables digital signal processing, data storage, fine delay of analogue output, and a sampling rate of up to 500 MHz. For more information see www.i-tech.si/products-libera-bbfp.html.

Ulvac Technologies, Inc. has introduced the MS-E1S microscope, which, with an integrated hot furnace, enables the direct observation of materials samples during heating and cooling experiments, as in semiconductor and metallurgical investigations. The unit integrates a compound optical microscope with an infrared gold image furnace hot stage and a video recording and display system. For further information contact Evan Sohm, tel: +1 978 686 7550, fax: +1 978 689 6300, e-mail: evan_sohm@ulvac.com or see www.ulvac.com.

MEETINGS

The **International Accelerator School for Linear Colliders** will take place on 19–27 May at Sokendai, Hayama, Japan. Organized by the International Linear Collider (ILC) Global Design Effort, ICFA Beam Dynamics Panel and the ILC Steering Committee, the primary focus of the school will be on the ILC, but it will also cover multi-tera-electron-volt colliders, such as the Compact Linear Collider. This seminar-style school is intended for graduate students, postdocs and young researchers. Applications are welcomed from physicists who are considering changing their career from experimental physics to accelerator physics. Students from around the

globe will be accepted into this first global accelerator school for linear colliders. For further information contact Yoko Hayashi, KEK, tel: +81 29 864 5214, or e-mail ilc-school@mil.k.kek.jp or see www.linearcollider.org/cms/?pid=1000171.

The **XXVI Physics in Collision** conference will take place in Búzios, Rio de Janeiro on 6–9 July. These international conferences, which began in 1981, comprise invited talks and contributions in poster sessions. Speakers review and update key topics in elementary-particle physics with the aim of encouraging informal discussions on new experimental results and their implications. For further details see <http://omnis.if.ufrj.br/~pic06/>.

LETTERS

CERN Courier welcomes letters from readers. Please e-mail cern.courier@cern.ch. We reserve the right to edit letters.

In my proof that four-legged tables can be put in equilibrium, what matters of course is that the feet form a perfect square (*CERN Courier* December 2005 p9). The top can be anything, in particular a disc. The next step is to extend the proof to the case where the four feet are on a circle, for instance, form a rectangle, and also a half hexagon, like the tables you find in the “salle des pas perdus” at CERN or in certain conference rooms.
André Martin.

CORRECTIONS

In the obituary for John Bahcall, who died in August 2005 (*CERN Courier* December 2005 p41), his year of birth was unfortunately incorrectly given as 1935. John was in fact

born in 1934. *CERN Courier* offers its apologies to all concerned.

In the obituary for Cesare Mansueto Giulio Lattes, who died in March 2005 (*CERN Courier* November 2005 p48), the first sentence implied that Lattes was the last

surviving member of the team that discovered the pion. Hugh Muirhead is however still with us, and *CERN Courier* would like to wish him well and apologise to him and his family for any undue upset this error may have caused.

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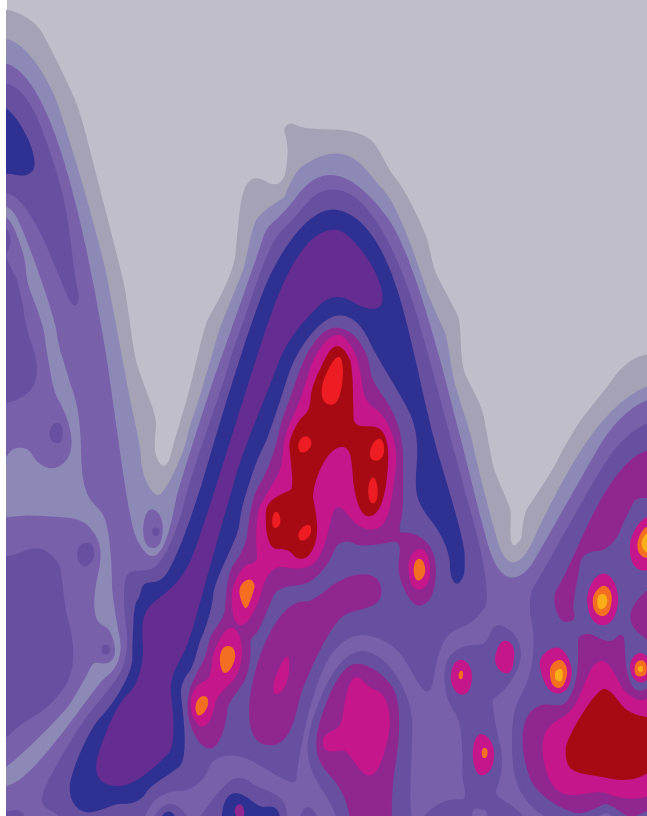
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