

Faces & Places

FACILITIES

CERN AMS-02 control centre begins operations

A month after the successful installation of the Alpha Magnetic Spectrometer (AMS-02) on the International Space Station (ISS), the AMS Payload Operation and Control Centre (POCC) began operation from a specially constructed building on CERN's Prévessin site on 24 June. The POCC will control AMS-02 for its entire lifetime.

Data-taking started soon after AMS-02 was installed on the ISS on 19 May, when the spectrometer began detecting cosmic rays at a rate of about 50 million a day. With the detector operational, the AMS team was able to transfer the POCC successfully from the Johnson Space Center in Houston to the new building at CERN.

The experiment is controlled from the POCC round the clock. Each subsystem has a dedicated monitor desk and each is devoted to data flow and to the command function – the only position that can issue commands to be uploaded to AMS-02 from NASA's Marshall Space Flight Center in Alabama. The spectrometer provides a continuous flow of data at a rate of about 10 Mbps, which requires on-line storage, monitoring and processing. While one team takes shifts for monitoring the operation of the experiment



Charles Bolden, centre, with Sam Ting, right, and Saul Gonzalez, at the AMS POCC.



Bolden together with Claude Nicollier, left, Switzerland's first astronaut.

in space, another ensures that data are properly processed by a cluster of computers at CERN, before distribution to regional centres for specific, detector-related analysis and calibration.

The POCC started operation at CERN a day after a visit by Charles Bolden, a former shuttle astronaut and current NASA administrator, and Saul Gonzalez of the US Department of Energy. Bolden had been invited to visit the centre by Sam Ting, principal investigator for AMS-02, which had made its journey to the ISS aboard

the last flight of the NASA space shuttle *Endeavour* (CERN Courier July/August 2011 p23). While at CERN, Bolden, who had piloted the space shuttle *Discovery* into orbit with the Hubble telescope in the payload bay, had a chance encounter with an old acquaintance, Claude Nicollier, Switzerland's first astronaut. Nicollier took part in several shuttle flights, including *Endeavour's* mission to correct Hubble's faulty optics. He was at CERN to give a colloquium on "Hubble, the astronomer, the telescope, the results".

India sets up first ALICE Centre

A dedicated centre for data monitoring and analysis for the ALICE experiment at the LHC was inaugurated at the Variable Energy Cyclotron Centre (VECC), Kolkata, on 16 June. The new ALICE Centre will allow experts to attend to detector components remotely and extend the capability of Tier-II and Tier-III computing with direct connection to CERN.

The facility at VECC will also provide an excellent environment for training new students and postdocs, preparing them for shift duty in the ALICE Control Room at CERN – mandatory for all collaboration members. The new centre currently contains two workstations for control-system and data-acquisition monitoring; two screens with wireless internet for displaying the ALICE run status



The ALICE Centre at VECC was inaugurated by Srikumar Banerjee, the Chairman of the Atomic Energy Commission and Secretary of the Department of Atomic Energy (DAE). Front row: Subimal Saha, Subhasis Chattopadhyay, Tapan Nayak, Bikash Sinha (Homi Bhabha Professor, DAE), Srikumar Banerjee, Yogendra Viyogi, Dinesh Srivastava, Rakesh K Bhandari (Director, VECC); back row: Baldev Raj (Former Director, Indira Gandhi Centre for Atomic Research, Kalpakkam), Jogender Saini and Susanta Pal. (Image credit: VECC.)

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and the LHC status; and several computers for use with monitoring and analysis programs. The centre will also provide a dedicated conference facility, so attending the daily ALICE co-ordination meetings,

for example, will now become easier.

The inauguration took place on the anniversary of the foundation day of VECC, with several dignitaries from the Indian physics community in attendance. Paolo

Giubellino and Jurgen Schukraft – the current and former spokespeople of the ALICE collaboration – joined via Skype from the ALICE Control Room, together with Indian colleagues at CERN.

CERN

Intel ISEF Special Award winners visit CERN

In June, 12 pre-college students visited CERN as winners of the CERN Special Award at the Intel International Science and Engineering Fair (ISEF) 2011. The Intel ISEF is the world's largest international pre-college science competition, offering a yearly forum for more than 1500 high-school students from 65 countries to showcase their independent research tackling challenging scientific questions. The organizer, Society for Science & the Public, is in partnership with Intel and dozens of other corporate, academic, government and science-focused sponsors, to reward the best students, who are all winners of national competitions.

The CERN Special Award was established in 2009, when Craig Barrett, Intel's chair of the board at the time, visited the laboratory as part of Intel's partnership in CERN openlab. Barrett and Wolfgang von Rüden, former head of the Information Technology Department, defined the award as a five-day trip to CERN for 12 students, co-funded by CERN and Intel. The award, which has proved immensely popular, is now in its third year.

The winners this year are: Arjun Aggarwal, David Alexandre Joseph Campeau, Brian Ronal Graham, Emil Timergalievich Khabiboulline, Jayanth Krishnan, Pratheek Nagaraj, Nicholas James Nothom, Sahir Raoof, Kamal Shah, Andrey Sushko, Aishwarya Ananda Vardhana and Nicole Yeechi Tsai. Each applicant underwent a thorough selection process and had to excel in an online test before being reviewed at the fair in Los Angeles by von Rüden and Alberto Pace from CERN. The final selection was based on their evaluation of the students' projects and on individual interviews.

At CERN the students visited the LHC and enjoyed presentations from various prominent physicists and engineers. They particularly appreciated a few hours of individual coaching by a scientist on a topic of their choice. Visits to Geneva, the Ecole Polytechnique Fédérale in Lausanne and the region were also part of their programme.

Intel and CERN have built a strong partnership since the start of CERN openlab in 2001 (CERN Courier October 2003 p31).



The 2011 Intel-ISEF CERN Special Award winners, with judges Alberto Pace (left) and Wolfgang von Rüden (right). (Image credit: Society for Science & the Public.)

Intel not only collaborates on computing projects but also supports the CERN openlab Summer Student Programme. Indeed, after

just one year at university, one of the 2010 ISEF award winners qualified to join this programme.



A small ceremony took place at CERN on 23 June to mark, in effect, the end of the original LHC main magnet group at CERN. It was organized by Lucio Rossi, second from left, who joined CERN in 2001 to become the leader of the construction team. He stepped down as leader of the Magnet Group on 1 July, handing over to Luca Bottura, and now leads the project for future high-luminosity at the LHC (HL-LHC). Those joining in the ceremony included, left to right: Frédéric Bordry, now head of CERN's technology department; Romeo Perin, former head of the Magnet Group; Lyn Evans, former LHC project leader; and Jean-Pierre Koutchouk, now project co-ordinator of the FP7-EuCARD project.



Brian Cox talks about *The Infinite Monkey Cage* at the Cheltenham Science Festival in 2010. (Image credit: Jesse Karjalainen.)

COMMUNICATION

Bulldogs and monkey business: how to present science

Different ways of taking science to the public have picked up awards on both sides of the Atlantic. In the UK, an unusual partnership between a comedian and a physicist has won a Sony Radio Academy Award, while in a more traditional approach, the Brookhaven National Laboratory (BNL) has received two Bulldog Awards for Excellence in Media and Public Relations for a publicity initiative that brought worldwide media attention in 2010 to results from the Relativistic Heavy Ion Collider (RHIC).

BBC Radio 4's *The Infinite Monkey Cage* took the gold award for Best Speech Programme at the 2011 Sony Radio Academy Awards. Hosted by comedian Robin Ince and particle physicist Brian Cox, *The Infinite Monkey Cage*, which has been running since 2009, is a "witty, irreverent look at the world according to science". Each programme centres on a topic – such as, is philosophy dead?, is cosmology really a science? – which Ince and Cox discuss with guests, typically a couple of scientists and another comedian.

Brookhaven's award-winning campaign was developed to announce two major results from RHIC in 2010. The campaign – which included a press briefing at a national meeting of the American Physical Society and media tours of RHIC – was planned and executed by members of the Media and Communications Office, with the assistance of PR consultants from Tartaglia Communications. It won a gold Bulldog award in the "Best Campaign Under

ASTROPARTICLE PHYSICS

CAST reaches milestone but keeps on searching

The CERN Axion Solar Telescope (CAST) has fulfilled its original physics programme after eight years of searching for the emission of a dark-matter candidate particle, the axion, from the Sun.

CAST, the world's most sensitive axion helioscope, points a recycled prototype LHC dipole magnet at the Sun at dawn and dusk, looking for the conversion of axions to X-rays. It incorporates four state-of-the-art X-ray detectors: three Micromegas detectors and a pn-CCD imaging camera attached to a focusing X-ray telescope that was recovered from the German space programme (CERN Courier April 2010 px).

Over the years, CAST has operated with the magnet bores – the location of the axion conversion – in different conditions: first in vacuum, covering axion masses up to $20 \text{ meV}/c^2$; and then with a buffer gas (^4He and later ^3He) at various densities,

finally reaching the goal of $1.17 \text{ eV}/c^2$ on 22 July. While a direct solar-axion signal remains elusive, the experiment has set the most restrictive experimental limit on the axion-photon coupling strength for rest masses, which includes the theoretically and cosmologically motivated range from $\mu\text{eV}/c^2$ to eV/c^2 . At the same time, the collaboration has gained valuable experience in low-background detectors ($<10 \text{ keV}$) and ultracold (around 1.8 K) gas systems.

After a scheduled maintenance, CAST will resume data-taking in 2012 with improved sensitivity for solar axions (hot dark matter). The experiment will also expand its physics horizon, searching for paraphotons (the "hidden sector") and chameleons (dark energy), while exploring the possibility of searching for relic axions (cold dark matter) in an, as yet, inaccessible rest mass range of around $0.1\text{--}1 \text{ meV}/c^2$.



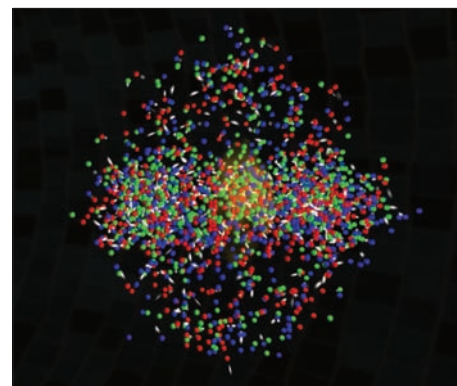
Members of the CAST collaboration with the dipole-based helioscope in July.

\$25 000" category and a bronze award in the "Best Not-for-Profit/Association/Government Campaign" category. The awards are given by the publisher Bulldog Reporter.

● To download podcasts of *The Infinite Monkey Cage*, go to www.bbc.co.uk/podcasts/series/timc.

For more about the results from RHIC, see www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=1282.

Gold collisions bring gold award for Brookhaven. (Image credit: BNL.)



Faces & Places

COLLABORATION

NUFO strengthens the voice of 'users'

The National User Facility Organization (NUFO) represents the interests of 30 000 users who conduct research at 39 national scientific user facilities in the US, as well as scientists from US universities, laboratories and industry who use facilities in other countries. This includes SLAC, Jefferson Lab, Fermilab, the Oak Ridge, Argonne, Brookhaven, Lawrence Berkeley and Los Alamos national laboratories, as well as astrophysics facilities, their user organizations and the organization for US users of the LHC at CERN.

NUFO aims to enable communication between users, user organizations, facility administrators and other stakeholders. It seeks to provide a unified message at the national level about issues of resources for science, economic competitiveness and education for the next generation of the scientific workforce. It is organized into two major branches: user organizations' representatives focus primarily on outreach activities, while user administrators focus on streamlining processes to facilitate access. Both branches work together closely to fulfil the overall mission. An elected steering committee – consisting of three user organization representatives, three user administrators, three additional elected members and three appointed members – conducts the organization's business between annual meetings.

The organization recently played a fundamental role in the 2010 revisions of the Department of Energy (DOE) Order on Foreign Visits & Assignments, widening access to DOE-supported facilities by non-US citizens. This year its most important outreach activity has been the User Science Exhibition, which was held at the US House of Representatives on 7 April with the aim of highlighting the important role that scientific user facilities play in science education, economic competitiveness, fundamental knowledge and scientific achievements.

Visitors to this public exhibit were able to talk to facility users, examine posters, watch videos and learn more about the accomplishments and achievements of facility users. Attendees included congressional leaders (both senators and representatives and their staff members), management from the DOE Office of Science, four national laboratory directors, a representative from the National Science Foundation and representatives from a



Congressional visitors at the User Science Exhibition. (Image credit: NUFO.)

number of scientific agencies or societies, including the American Physical Society and the American Institute of Physics.

Speaking briefly during the exhibition, Rene Bellwied of Wayne State University,

and NUFO chair, identified the key role that national user facilities play in fostering science by providing the capabilities for key discoveries that advance new technologies and stimulate economic growth. Stephen Wasserman, of Eli Lilly and Company, addressed the importance to his company's drug-development efforts of the research conducted regularly at a number of facilities represented at the exhibition. Thom Mason, director of Oak Ridge National Laboratory, reinforced Bellwied's comments and stressed the research benefits of co-located user facilities at national laboratories. Charles Fleishmann, congressional representative from Tennessee, expressed his support for science and its role in the economic future of the US and thanked NUFO for arranging the exhibition.

NUFO also participated in the inaugural US Science & Engineering Festival in Washington DC in October 2010. An estimated 500 000 people of all ages participated in this two-day event. The NUFO booth, which featured popular science demonstrations and information on the research conducted at user facilities attracted an estimated 5000 children, parents, high-school students and teachers.

● Additional information about NUFO can be found at www.nufo.org.



Ahmad Tajuddin Ali, centre, president of the Academy of Science of Malaysia, came to CERN on 22 June to sign an "expression of interest" in the participation of scientists and students from universities and research institutes in Malaysia in the CMS experiment at the CERN LHC accelerator. Present at the signing were, from right to left: Emmanuel Tsismelis, CERN contact person for Malaysia, Guido Tonelli, spokesperson of CMS, Albert de Roeck, deputy spokesperson CMS, and Sue Ann Koay, a Malaysian graduate student at the University of California, Santa Barbara. (Image credit: Immanuel Gfall.)

OBITUARIES

Maurice Goldhaber 1911–2011

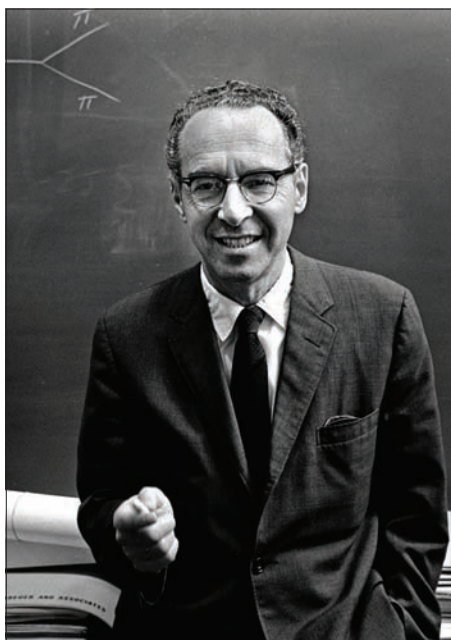
Maurice Goldhaber, a well known physicist and a former director of Brookhaven National Laboratory (BNL), died at the age of 100 on 11 May after a short illness. During his career he contributed in many ways to modern physics and also interacted with many of the physics greats of the 20th century.

Goldhaber was born in Austria and studied as an undergraduate in Berlin. There he experienced the stimulating atmosphere in colloquia attended by many of the great physicists of the time. Then in March 1933, while he was still a student, Nazi students rioted and classes were stopped.

“So I went to the library to read, and there was a German journal, something like the *Scientific American*, that had a little paragraph saying that GN Lewis had made a cc or a gram of heavy water. So I jotted down, ‘What can you do with heavy water?’ I had five or six ideas but one of them was, ‘The photon could disintegrate the deuteron’. It shows you the speed with which things moved in those days. I left Germany in about May 1933, and I had applied to various places and I was accepted in Cambridge at the Cavendish. Laue and Schroedinger wrote me recommendations and Rutherford wrote me that I could come as a student.”

Goldhaber earned his PhD in physics at the University of Cambridge in 1936, working mainly with James Chadwick. In 1934 he and Chadwick were the first to measure accurately the mass of the neutron via his idea of photo-disintegration of the deuteron. Goldhaber moved to the US in 1938 as a faculty member of the University of Illinois. He joined BNL in 1950, along with his wife, the nuclear-physicist Gertrude Scharff-Goldhaber. At Brookhaven he served as chair of the Physics Department from 1960 to 1961, and as laboratory director from 1961 to 1973.

Goldhaber’s research in the fields of nuclear physics and fundamental particles included experiments, systematic evaluations, development of techniques and theory. He made numerous significant contributions to nuclear physics and helped establish parts of the theory of subatomic particles, now known as the Standard Model. In addition to measuring the mass of the neutron, he contributed to the discovery of the nuclear photo-effect, the role of spin in nuclear reactions and a variety of additional physics research, including the



Maurice Goldhaber photographed in 1967. (Image credit: BNL.)

Goldhaber-Teller model for the giant dipole resonance. In 1968 the US Atomic Energy Commission was granted a patent for Goldhaber’s invention of the Ne-H mixture that made bubble chambers suitable for the study of neutrino interactions.

His best-known experiment was the elegant, table-top determination of the neutrino’s helicity, undertaken at BNL with Lee Grodzins and Andrew Sunyar in 1958. Goldhaber’s vital contribution arose from his knowledge of the unique combination of spins of the parent and daughter states in the $^{152m}\text{Eu} \rightarrow ^{152}\text{Sm}$ decay process, which together with the special kinematics of the decay allowed a straightforward interpretation of the result. Writing about the helicity experiment in 1987, Robert Adair commented: “Without Maurice Goldhaber – who knew everything and understood everything – I am not sure that the helicity of the neutrino would have ever been measured.”

As the laboratory’s director, Goldhaber initiated and presided over an extraordinary period of scientific productivity at Brookhaven. Research during his tenure resulted in major discoveries in physics, three of which eventually garnered physics Nobel prizes. Medical research that indicated the role of sodium in the development of hypertension and the value of

the drug L-dopa to treat Parkinson’s disease was also conducted at the laboratory during that time.

He retired in 1985 but continued his research at the laboratory until he was well into his nineties. He told those who saw him working long hours in his later years, “I don’t have time to age”, and continued to generate new ideas. To acknowledge his significant contributions to physics and BNL, he was named Distinguished Scientist Emeritus at the laboratory after his retirement.

Goldhaber’s productive career won him numerous awards, including the Tom W Bonner Prize in Nuclear Physics in 1971, the J Robert Oppenheimer Memorial Prize in 1982, the National Medal of Science in 1983, the Wolf Prize in Physics in 1991 and the Enrico Fermi Award in 1999. He was a member of the National Academy of Sciences and was a fellow of the American Academy of Arts & Sciences, the American Association for the Advancement of Science and the American Physical Society, of which he was president in 1982.

He loved aphorisms and was an avid punster, even into his last days. He often said, “Physics teaches old things to new people” and in talking about an experiment he was involved with on proton decay, he pointed out that you could get an estimate of the lifetime, because if it were too short “you could feel it in your bones”. His son, Alfred, recalled that when being taken out of the hospital for the last time, a nurse ran up to his wheelchair and said that they needed one more blood sample. After many failed attempts by a sequence of “experts” to draw anything from a vein, Goldhaber commented, “Well, that was in vain”.

Perhaps as valued as any other contribution was the fact that Goldhaber could and would contribute to any discussion in physics at lunch or in the halls, or by asking a telling question at a seminar. He spoke to anyone and everyone, democratically, helpfully – and very much to the point.

BNL’s director Sam Aronson said: “Maurice Goldhaber was a valued friend to the lab community. His insight, intellectual curiosity and wit will be sorely missed, but the influence he had on the lab remains.”

● For an interview with Maurice Goldhaber about his history, see www.aip.org/history/ohilist/4632.html.

● *Friends and colleagues at BNL.*

Faces & Places

Graham Ross Macleod 1929–2010

Ross Macleod, who died on 17 April 2010, was head of CERN's Data Handling Division (DD) for 10 years from 1965, during a period that saw dramatic changes in computing at CERN.

Born in Manchester in 1929, Ross joined CERN in 1955 as a physicist in the Scientific and Technical Services (STS) Division, with a PhD from the University of Cambridge. At that time STS was still located at the airport, with Lew Kowarski as division leader.

By 1965, when he became the head of DD, Ross had gained considerable experience in computing and data handling. After participating in the installation of CERN's first computer in 1958, a Ferranti Mercury, he took part in various early bubble-chamber experiments, using manual measurements made with the prototype Instrument for the Evaluation of Photographs (IEP) and he also developed the Digitised Protractor (or Baby IEP) for the more rapid measurement of simple events. In particular, he wrote the three Mercury programs for the first bubble-chamber experiment performed at CERN, in which the Padua propane chamber was exposed to a beam from the Synchrocyclotron.

When more versatile geometry and kinematics programs were developed, Ross contributed his input program to the production chain for data analysis. In 1963 he was involved in the development of programs for the automatic analysis of spark-chamber photographs using the Hough-Powell Device (HPD) online to the IBM 7090 computer. This was the first use of the HPD and some



Ross Macleod in 1965.

200 000 photographs were measured automatically. In the same year, Ross organized a four-week lecture course on these bubble-chamber and spark-chamber programs, which was attended by people from CERN and all around the world.

As division leader, Ross made a prolonged effort to recruit experienced computer scientists, thus acquiring the resources necessary for the years to come. The division was responsible for the CERN Library, and the Print Shop, both of which Ross completely reorganized, later adding a Computer Science Library.

The CDC 6600, delivered in 1965, had severe running-in problems but when these had been overcome CERN had the most powerful computer centre in all of Europe. Users were fortunate in having someone of the calibre of Ross, with the authority and

leadership to develop the facilities, unique at that time, for operating the computer centre as an "open shop". The main facility developed for users was the Focus system for remote file-handling and job-submission from CDC 3100s to the CDC 6600. A major extension came in 1972, when a CDC 7600 – four times as powerful as the 6600 – was installed with similar user facilities.

In 1964 Ross was already encouraging physicists to use small computers directly online to experiments, without film. The networking needed for this was provided in an *ad hoc* manner by the division, until the CERNET facility was developed. CERNET was an initiative by Ross, for which he continued to act as project leader after he left office at the end of 1975. It came into operation in 1977, replacing Focus and allowing users to submit computer jobs from their desks and to transfer data files within the site. Predating the internet, CERNET lasted more than 10 years.

In 1970 Ross founded the CERN School of Computing for young physicists, which is held every year. In 1972, in his capacity as first chair of the European Physical Society Computational Physics Group, he convened a conference at CERN on the "Impact of Computing on Physics".

Ross suffered from a recurrent health problem that finally led to his retirement in 1986, but this did not appear to diminish the energy with which he built up and managed the Data Handling Division in those pioneering years of computing.

● *Gery Moorhead on behalf of former colleagues.*

NEW PRODUCTS

Aerotech has introduced the VTS300 vertical translation stages that provide long travel precision positioning in a compact upright design for individual Z-axis payloads up to 450 kg. They may also be arranged as multiple synchronized units that support heavy loads, with kinematic three-point mounting with the added potential for angled tip/tilt load manipulation. It is available in four vertical travel ranges from 50 mm to 200 mm with a nominal positioning resolution of 0.064. For details, contact Simon Smith, tel +44 118 940 9400, e-mail ssmith@aerotech.com, or visit www.aerotech.com.

FLIR Advanced Thermal Solutions has announced two high-performance macro lenses for use with its FLIR SC 645 and

FLIR SC 655 thermal imaging cameras. Available with 2.9× and 5.8× magnification, they enable accurate temperature readings of small objects, as well as analysis of small components and processes. The 2.9× (5.8×) lens can resolve elements as small as 50 (100) µm within a field-of-view of 32 × 24 (64 × 48) mm. For details, tel +33 160 370 100, e-mail research@flir.com, or see www.flir.com.

Schroff has introduced a compact new MicroTCA system to meet the requirements of the proposed MTCA.4 subspecifications for high-energy physics and other advanced test-and-measurement applications. It is ideal for development purposes and consists of 5U-high, 42HP-wide chassis complete with backplane, power supply and fan. The

front has six AdvancedMC slots in double mid-size format, one MicroTCA carrier hub slot and one slot for a plug-in 300 W PSU, while the rear provides six RTM slots. For details, tel +44 1442 218 726, e-mail schroff.uk@pentair.com, or see www.schroff.co.uk.

UltraVolt has announced enhanced interface options, the –I5 Option and the –I10 Option, for its AA series and high-power C series of high-voltage power supply (HVPS) products. The new interfaces are optimized for connecting the HVPS to computers and programmable logic controllers in process systems and equipment typically standardized on 0 to +5 VDC and +10 VDC signals and controls. For details, call +1 631 471 4444, e-mail ae@ultravolt.com or see www.ultravolt.com.

Faces & Places

VISITS



Amr Ezzat Salama, right, minister for scientific research, science and technology of the Arab Republic of Egypt, right, came to CERN on 25 May. He visited the CMS control room on the Meyrin site with, from left, CMS spokesperson, **Guido Tonelli**, **Alaa Awad**, Fayum University, **Hisham Badr**, ambassador at the UN Geneva, and **Maged Elsherbiny**, president of the Scientific Research Academy.



A large delegation of representatives of Chinese Ministries and Officials from the People's Republic of China were welcomed to CERN on 1 June. They split into two groups to visit the *Universe of Particles* exhibition in the Globe of Science and Innovation and the ATLAS visitor centre. One group is seen here, with **Steve Goldfarb**, ATLAS outreach co-coordinator (centre).

Members of the Swiss Federal Council, including **Micheline Calmy-Rey**, president of the Swiss Federal Council, front row fourth from right, came to CERN on 7 July. The group visited the *Universe of Particles* exhibition in the Globe of Science and Innovation and toured the ATLAS visitor centre and control room. Here they are outside the Globe with senior members of CERN staff, including the director-general, **Rolf Heuer**.



During a visit to CERN on 22 June, **Naledi G Pandor**, right, minister of science and technology for the Republic of South Africa, looked round the ATLAS visitor centre with **Peter Jenni**, former spokesperson for the ATLAS experiment. She also toured the LHC superconducting magnet test hall and the ALICE visitor centre.



Bruno Zumino, second from left, one of the fathers of supersymmetry, was at CERN on 7 July, to participate in the LAPP-Annecy/CERN celebration for the 80th birthday of **Raymond Stora**, held at LAPP. Zumino, a former senior staff member of CERN, wrote important papers on the theory of anomalies with Stora, a theoretical physicist at Annecy who is still a frequent visitor to CERN. Another participant was **Mary K Gaillard**, centre; both she and Zumino gave interesting talks at the special seminar held in Stora's honour. Here they are seen with **Sergio Ferrara**, left, and on the right, **John Ellis** and **Ignatios Antoniadis** of the current Theoretical Group at CERN.

CORRECTIONS

In Sciencewatch, *CERN Courier* July/August p13, an error crept into the world's best limit on the electron's electric dipole moment (edm). This should have said that the limit is now less than 10.5×10^{-28} e cm.

Also, the date of the launch of AMS-02 was wrongly given as 25 May on p19 and p21. The launch took place on 16 May.

Apologies to all concerned.

Faces & Places

UK AWARDS

IOP medals for experimental and theoretical physics

Particle physics, cosmic radiation and quantum theory are among the areas of physics recognized by the 2011 awards of the UK's Institute of Physics.

Terry Wyatt, University of Manchester, receives the Chadwick Medal and Prize, which is given specifically for distinguished research in particle physics. Wyatt, who is rewarded for "outstanding contributions to hadron-collider physics", has played a prominent role in the field for the past 25 years, starting with his work on proton-antiproton physics at CERN's Super Proton Synchrotron collider in the 1980s. Since then he has played a prominent role in the DØ collaboration at Fermilab's Tevatron, becoming co-spokesperson (2004–2007), and has also been chair of CERN's LHC Committee (2007–2010).

Of the gold medals awarded, the Faraday Medal for outstanding contributions to experimental physics goes to Alan Andrew Watson, University of Leeds, for his "leadership within the Pierre Auger Observatory, and the insights he has provided to the origin and nature of ultra-high-energy cosmic rays". The Dirac Medal for outstanding contributions to theoretical physics goes to Christopher Isham, Imperial College London, for his "major contributions to the search for a consistent quantum theory of gravity and to the foundations of quantum mechanics". Theory at Imperial College is also honoured with the Rayleigh Medal and Prize for distinguished research in theoretical, mathematical or computational physics. Arkady Tseytlin, receives this award for "his contributions to the understanding of string theory and of its relation to conventional quantum field theories, and in particular to non-abelian gauge theories that form the basis for our current theoretical description of elementary particle interactions".

Remaining with theory, the Maxwell Medal and Prize is an early-career award for outstanding contributions to theoretical physics. The 2011 recipient is Andrei Starinets, University of Oxford, for "his work on the transport properties of systems of strongly coupled quantum fields". His research has been at the forefront of major developments that make use of the gauge/gravity correspondence that arises in string theory. By contrast, the Isaac



Left: Terry Wyatt receives the Chadwick Medal and Prize for his work on hadron-collider physics. (Image credit: T Wyatt.)

Newton Medal, an international prize for outstanding contributions to physics, regardless of subject area or nationality, this year honours a physicist with a long and highly successful career. Leo P Kadanoff, University of Chicago, receives this medal "for inventing conceptual tools that reveal the deep implications of scale invariance on the behaviour of phase transitions and dynamical systems".

In fields related to particle physics, the Payne-Gaposchkin Medal and Prize for distinguished research in plasma, solar or space physics is awarded to Yvonne Elsworth, University of Birmingham, for "the development of helioseismology into a unique quantitative tool probing the deep interior of the Sun, illuminating stellar structure and evolution and the solar neutrino problem". The Kelvin Medal and Prize for outstanding contributions to the public understanding of physics goes to nuclear physicist Jim Al-Khalili, University of Surrey.

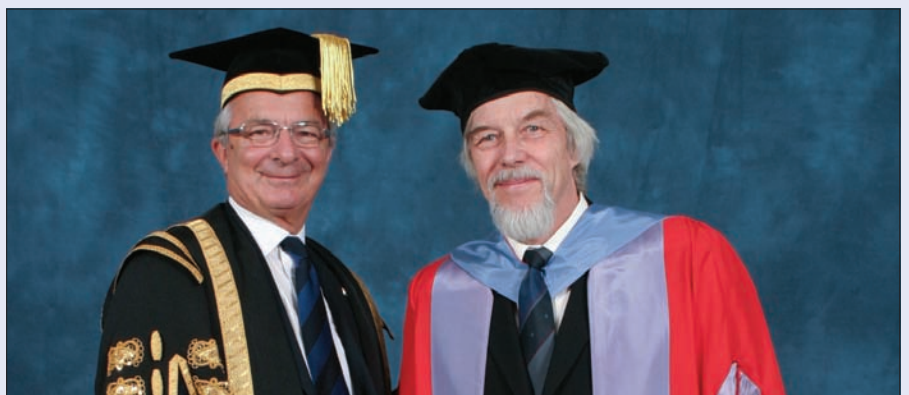
The Queen honours services to science

Jenny Thomas, of University College London, is to become a Commander of the Order of the British Empire (CBE) for services to science, announced in the Queen's Birthday Honours list for 2011. Her career has included participation in particle physics experiments at Fermilab, the Max-Planck Institute in Munich, and CERN. Currently focussing on the physics of neutrinos, she is the co-spokesperson for the MINOS experiment and is a member of the NEMO-III and SuperNEMO experiments.

Also honoured this year are Richard Davis, Professor of Astrophysics at Jodrell Bank, University of Manchester, who becomes an officer of the Order of the British Empire (OBE). Sheila Rowan, director of the Institute for Gravitational Research, and Robin Clegg, Head of Science in Society at the Science and Technology Facilities Council, both become members of the order of the British Empire (MBE).



Jenny Thomas, co-spokesperson of MINOS, becomes CBE. (Image credit: J Thomas.)



Rolf Heuer, right, CERN's director-general, was in the north of England on 19 July to receive an honorary degree from the University of Liverpool. Here is seen here together with the university's vice-chancellor, Sir Howard Newby. The university has long-standing connections with particle physics and CERN in particular. The award was made during a week of ceremonies that saw the graduation of more than 4000 students.