

Faces & Places

APPOINTMENT

Brookhaven has new leader for nuclear and particle physics

Nuclear physicist Berndt Mueller is to lead the physics programmes at Brookhaven National Laboratory, having taken over as the associate laboratory director (ALD) for nuclear and particle physics as of 1 January. Mueller has a long collaborative association with Brookhaven and brings world-class experience to his new post as both a scientist and a manager of major research initiatives.

With a PhD in theoretical physics from Goethe University in Frankfurt, as well as postgraduate studies at Yale University and the University of Washington, Mueller has served on many physics review panels for the US Department of Energy and the National Science Foundation. He is currently chair-elect of the division of nuclear physics of the American Physical Society. He recently co-authored a paper for the journal *Science*, reviewing the scientific achievements of the laboratory's Relativistic Heavy-Ion Collider (RHIC) and outlining



the complementary physics opportunities for the next decade of experiments at RHIC and at the LHC at CERN.

Mueller replaces physicist Steve Vigdor,

Berndt Mueller is Brookhaven's new associate laboratory director for nuclear and particle physics. (Image credit: BNL.)

who retired at the end of 2012 after five years as ALD. Vigdor had advanced the research programme at RHIC, guided the laboratory's participation in the ATLAS experiment and developed programmes in cosmology, astrophysics and neutrino research.

Currently a James B Duke Professor and the director of the Centre for Theoretical and Mathematical Sciences at Duke University, Mueller will continue his work there for the remainder of the current academic year, splitting his time between Duke and Brookhaven for the first five months. During this transition period, Brookhaven's David Lissauer will act as interim ALD, sharing responsibilities and bringing Mueller up to speed on the laboratory's existing operations and latest initiatives.

ITALY

INFN inaugurates new national centre in Trento

The INFN has established a new national centre at Trento, northern Italy, dedicated to particle physics and the development of cutting-edge technologies in sensors, space research, supercomputing and biomedicine. The Trento Institute for Fundamental Physics and Applications (TIFPA) is a result of collaboration between the INFN, the University of Trento, the Bruno Kessler Foundation (FBK) and the Trento Provincial Agency for Proton Therapy (ATReP).

The new centre will deal with research into fundamental physics as well as innovation and technology transfer by exploiting the existing infrastructures, skills and human resources of the project's partners in Trento and by expanding specific areas



Francesco Profumo, Italy's Minister for Education, Research and University, speaks at the inauguration of the INFN national centre in Trento. (Image credit: University of Trento.)

of action. It will, for instance, count on the infrastructures of the Centre for Materials and Microsystems – which built the silicon detectors for the AMS experiment on the International Space Station and for the ALICE experiment at CERN – and of the European Centre for Theoretical Physics of the FBK and use the new proton-therapy machine that will become operational by the end of 2013.

Francesco Profumo, Italy's Minister for Education, Research and University, spoke

at the end of the inauguration ceremony on 15 January, immediately after the INFN, the University of Trento, the BFK and the ATReP signed a declaration of intent. His presence at the event underlined the strategic importance of the initiative, both for the potential for scientific progress and in terms of building synergies among the various institutions. The declaration officially paves the way for further and closer institutional collaborations to be implemented at the cutting-edge centre.

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AWARDS

CERN makes the headlines in 2012

The announcement by the ATLAS and CMS collaborations last July of the discovery of a new particle at CERN's LHC made headlines around the world. These were echoed in December by a number of magazines and newspapers as they published their lists of top news from 2012. The collaborations may not yet have enough information to confirm that the new particle is the long-sought Higgs boson of the Standard Model but the discovery has made an impact beyond just the scientific media, as these examples show.

Starting with scientific magazines, *Science* named the discovery "Breakthrough of the Year, 2012". Their list of runners up included more particle physics with the measurement of θ_{13} – "the last parameter describing how

elusive particles called neutrinos morph into one another as they zip along at near-light speed" – by the Daya Bay Reactor Neutrino Experiment in China (*CERN Courier* May 2012 p6). *Physics World* also made its award for the 2012 Breakthrough of the Year "to the ATLAS and CMS collaborations at CERN for their joint discovery of a Higgs-like particle at the Large Hadron Collider".

Nature named CERN's director-general, Rolf Heuer, as one of its "10 people who matter" in 2012, calling him the "Higgs diplomat" and saying that his "gentle nudging... ensured that the world heard about the discovery" of the new particle. (In 2011, CERN's Mike Lamont had featured as the "Higgs mechanic"). While *TIME*

named the President Barack Obama its "Person of the Year", it selected the current spokesperson for the ATLAS collaboration, Fabiola Gianotti, as a runner-up, alongside Tim Cook, Malala Yousafzai, and Mohamed Morsi. The magazine also named the new particle as "Particle of the year", hailing its discovery as "one of science's greatest achievements". *National Geographic* was another prestigious popular magazine to recognize the achievement, ranking the discovery seventh in its "Top 10 Discoveries of 2012".

Last but not least the Spanish newspaper *El Mundo* pronounced CERN "City of the year 2012", with its "machine that unveiled the cement of the universe".

Cyprus honours Herwig Schopper

On 12 December, in a small ceremony at the Presidential Palace in Nicosia, the president of Cyprus, Demetris Christofias, awarded Herwig Schopper the rare distinction of the Grand Cross of the Order of Merit of

the Republic of Cyprus. Schopper, who was director-general of CERN in the years 1981–1988, received the award principally for his contribution since 2001 to the planning and development of the Cyprus Institute where he is president of the Scientific Advisory Council. He was also honoured for his involvement as founder and first president of the International Council of SESAME, the synchrotron radiation laboratory in Jordan. Edouard Brézin, former president of the French Academy of Sciences, was also honoured at the same ceremony.



Demetris Christofias, left, presents the Grand Cross of the Order of Merit of the Republic of Cyprus to Herwig Schopper. (Image credit: Cyprus Institute.)

Academy of Lyon presents the 2012 Prix Thibaud

At a ceremony on 18 December at the Hotel de Ville, Lyon, chaired by Cédric Villani, winner of the Fields Medal 2010, the 2012 Prix Thibaud was awarded to Aurélien Barrau, Sandrine Laplace and Jacques-Emmanuel Marteau. They receive the prize for their high-quality contributions to nuclear, particle and astroparticle physics.

Barrau is professor at the Université Joseph Fourier and a researcher in the Laboratory for Subatomic Physics and Cosmology, Grenoble, where he specializes in cosmology



Left: Jacques-Emmanuel Marteau. (Image credit: J-E Marteau.) Right: Sandrine Laplace (left) and Aurélien Barrau at the prize ceremony. (Image credit: P Salati/IN2P3.)

and astroparticle physics. Laplace is a CNRS researcher at the Laboratory of Nuclear Physics and High-Energy Physics, Paris, and she works on the ATLAS experiment at CERN's LHC, specializing in the electromagnetic calorimeter and the decay of the Higgs boson into two photons. Marteau, associate professor at the Institute of Nuclear Physics of Lyon, specializes in neutrino physics and is a member of the T2K collaboration; he was a member of

the OPERA collaboration up until 2012.

The prize, in honour of nuclear physicist and former president of the Académie des Sciences, Belles-Lettres et Arts de Lyon, Jean Thibaud (1901–1960), has been awarded biannually since 1963. Candidates are European experimental or theoretical physicists, aged between 30 and 40, active in the fields of nuclear, particle or astroparticle physics and engaged by a French research organization and laboratory.

OUTREACH

ALBA opens its doors to the public

The Spanish Synchrotron Radiation Facility, ALBA, held its first public open day on 15 December. More than 1000 visitors, mainly from Barcelona and the surrounding region, came to the laboratory on a sunny Mediterranean winter's day; visits by hundreds more had to be postponed for future events.

The lucky ones enjoyed an itinerary around the laboratory's installations, which took them to see the view from the top of the accelerator tunnel, past the experiment "hutches" and through one of the control rooms. There was also an opportunity to look closely at a copy of one arc of the ring, a monochromator and a radio-frequency cavity. The tour was enhanced by explanatory panels that showed the principles of particle accelerators, the production of synchrotron radiation and its uses, as well as many scientific applications



of synchrotron radiation.

ALBA is a third-generation synchrotron light-source facility situated at Cerdanyola

del Vallès, Barcelona (CERN Courier November 2008 p31). It began operation for users during 2012 and the seven Phase I beamlines are now operational. The accelerator routinely delivers a stable 3 GeV electron current of 100 mA, with the implementation of top-up and higher currents envisaged early in 2014. The first paper with scientific results based on data from ALBA – on inorganic chemistry – was published in December 2012.

The complete success of the open day was made possible thanks to the volunteer participation of ALBA staff, whose enthusiasm, professionalism and joy in showing their daily work to visitors.

experiences, including a trip to CERN (CERN Courier September 2012 p68 and January/February 2013 p42).

As with the second science fair in 2012, Fermilab is teaming up with CERN to offer a prize of experiencing a week as an international particle physicist, shadowing a physicist mentor at Fermilab and then travelling with their mentor to CERN. Previous winners have tackled cancer diagnosis and treatment, figured out more efficient ways to farm as well as explored the natural world around them.

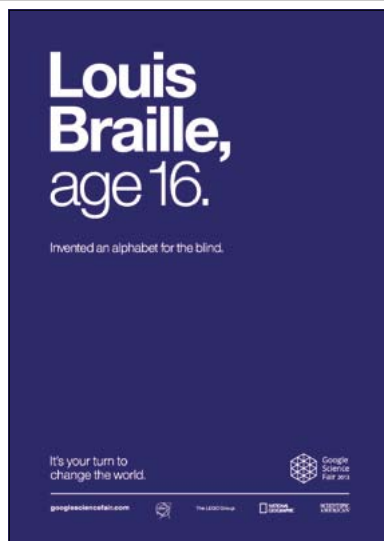
● The competition is open until 30 April. Interested students and teachers should visit www.google-science-fair.com.

Please note that the competition is not open to the relatives of employees of CERN, Fermilab or Google.

Google Science Fair tells 13–18 year olds that "It's your turn to change the world".

Google Science Fair seeks the scientists of tomorrow

At the end of January, Google launched its third annual Google Science Fair in partnership with CERN, LEGO, *National Geographic* and *Scientific American* magazines. The Google Science Fair is an international competition that encourages students between the ages of 13 to 18 from all around the world to perform science experiments or create engineering projects and submit them online to compete for prizes, scholarships and once-in-a-lifetime



MEETINGS

FPCP 2013, the **11th conference on Flavor Physics & CP Violation 2013** will take place on 19–24 May in Búzios, Rio de Janeiro, Brazil. The aim of the meeting is to review developments – theoretical and experimental – related to the physics of heavy flavours. There will be updates on many topics, including CP violation, rare decays, spectroscopy, CKM elements and the

potential for studies of heavy flavour decays to help unravel any new physics seen directly at the LHC. For further information and for registration, see <http://fpcp2013.if.ufrj.br>.

The **2013 Space-Cryogenics Workshop**, "Space Cryogenics at Earth's Last Frontier", is to be held on 23–25 June in Girdwood, Alaska. Sponsored by the NASA Goddard

Space Flight Center and the Cryogenic Society of America, the workshop is an opportunity for all of those engaged in low-temperature work to exchange research results and knowledge. All aspects of space cryogenics will be represented, with an emphasis on work related to previous missions as well as future research. For details, see www.spacecryogenicsworkshop.org.

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OBITUARIES

Paul Levaux 1931–2012

Paul Levaux, a long-standing member of the Belgian delegation to CERN's Finance Committee and Council, passed away on 3 December 2012.

Paul Levaux first attended the CERN Council and Finance Committee in June 1970 as an adviser, although his association with CERN goes back to the 1960s. From October 1970 until December 2007 he represented Belgium as a delegate to Council and Finance Committee. He was chair of Finance Committee (1971–1973) and president of Council (1975–1978). He also served as vice-president of Council (1978–1980) with a second term from January 1994 until December 1997.

In addition to holding these important offices, Levaux participated in an extensive number of CERN working groups. In particular, he was a member of the Working Group on Procedures for Payment of Member States' Contributions (2000–2001) and the Working Group on the Review of the Tasks and Working Methods of CERN's Governing Bodies and Committees (July–December 2003), chair of the Study Group on Pension Fund Governance in 2007, and chair of the Working Group on the Procedure for future Elections of the President of



Paul Levaux. (Image credit: E Gröniger-Voss.)

Council and the Chairs of the CERN Committees in 2007.

A substantial part of Levaux's time at CERN was devoted to matters relating to the Pension Fund. As chair of the

Governing Board of the pension fund in the years 1989–2002, he was responsible for organizing and implementing the new structure of the fund, giving it a greater operational autonomy and placing it under the direct authority of the Council. His services in the pension field were recently called on again when he made an important contribution to the setting-up of the new governance structure for the Pension Fund approved by Council in 2007, whose final report now bears his name as the "Levaux Report". As doyen of Council and Finance Committee by a considerable margin, Levaux's departure as a delegate represented the loss of one of CERN's most distinguished and long-standing member-state representatives, a true *mémoire du CERN*.

Throughout his long association with CERN, Levaux remained a strong supporter of the organization and its activities and in honour of his achievements he was invited back to CERN last June for the Council dinner. Gratifyingly, he lived to witness the first results from the LHC, the announcement of which brought him great satisfaction.

● *CERN management, president and delegates of Council, and his colleagues and friends.*

Gordon Fraser 1943–2013

Gordon Fraser, who was editor of *CERN Courier* for 20 years, passed away on 3 January.

Born in Glasgow, to Ralph Jack Fasht and Ray Braverman, whose parents originally came from Russia, Gordon grew up in the east end of London. His life in physics began at Imperial College London, where he was encouraged to read Paul Dirac's *Principles of Quantum Mechanics* and took mathematics as a special subject. With a demonstrated ability in mathematics, he went on to join the theory group of the future Nobel laureate Abdus Salam and obtained his PhD on diffractive scattering in 1967 under Paul Matthews. Gordon then joined the group of Yuval Ne'eman at Tel Aviv University for two years, before returning to the UK and Sussex University, where he met his future wife, physics postgraduate Gill Harbinson.

A radical change in career soon followed in 1969, when Gordon left physics to become



Gordon Fraser.

a journalist, at first for *Computer Weekly* in London and later as a freelancer. He moved

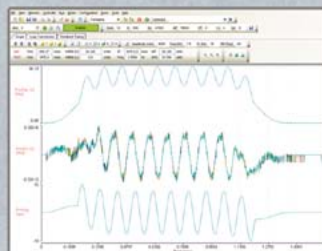
into scientific editing at the Rutherford Appleton Laboratory in 1975 and it was from there that he was hired to join the publications team at CERN in 1977.

By 1982 Gordon had become the editor of *CERN Courier*. During his time at the helm, both particle physics and the *Courier* changed considerably. Under his careful stewardship, aspects of publishing were outsourced, leading to an attractive, professional magazine with a worldwide reputation.

These developments required the creativity and sharp writing skills for which Gordon became well known, not only through the *Courier* but also through his books about particle physics. *The Search for Infinity* (with E Lillestøl, I Sellevåg) – an illustrated popular introduction to particle physics and cosmology – was translated into nine languages.

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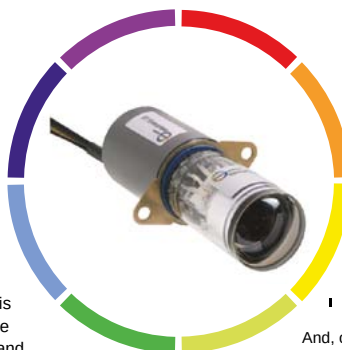
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University Press to be editor-in-chief of *The New Physics for the 21st Century* (published in 2006), Gordon took early retirement from CERN in 2002 to concentrate on writing books. A biography of an early mentor, *Cosmic Anger – Abdus Salam, the First Muslim Nobel Scientist* (CERN Courier September 2008 p55), followed in 2008.

His most recent work in a sense a tribute to his family's origins and dedicated to his father, was *The Quantum Exodus – Fugitive Jews, the Atomic Bomb, and the Holocaust* (reviewed in CERN Courier October 2012 p49).

A well known figure at CERN, Gordon was also a keen runner and he was often

seen powering around the Meyrin site on his lunchtime run. He will be missed by many, especially by those who were fortunate enough to have worked with him and witnessed his skill as a writer. He is survived by his father, his wife Gill and two children, Nathalie and Ben.

● *His colleagues and friends.*

LETTER

The missing life of DORIS

The article "The three lives of DORIS" (CERN Courier December 2012 p 22) briefly summarizes the history of DORIS. We believe the author has forgotten one "life", in the years 1977–1978, when DORIS was upgraded from 3.5 GeV to 10.0 GeV in the centre of mass. Though being only a short life it is worth mentioning for at least three reasons.

First, it enabled a scan of the full range of energies and confirmed that there were no new quarks (below the Y) and strengthened knowledge of the properties of jets from the hadronization of quarks. Second, it allowed the detection of the new Y resonance at 9.46 GeV, which decays mainly strongly and

is very narrow, and thereby delivered the necessary confirmation of the new b quark found a year earlier at Fermilab via the Y resonance at 9.5 GeV. Third, through the analysis of the hadronic decays of the Y, it provided first evidence for the decay $Y \rightarrow 3$ gluons $\rightarrow 3$ jets, for gluon jets and for the spin 1 of the gluon, and hence made an important contribution to the discovery of the gluon, confirming the expectations of QCD.

The reason for forgetting this "life" could be that the author based his article on a book published in 2009, and so missed two more recent papers. In one we put new light on the importance of the PLUTO experiment at DORIS in 1978 in contributing to the discovery of the gluon (Stella and Meyer

2011). The second is an independent review where this new perspective is mainly confirmed (Ali and Kramer 2011, see e.g. p3 and pp20–24 in chapter 4, "Gluon jets in Y decays").

For completeness, we would like to remember not only the results of PLUTO at DORIS but also other "forgotten" experiments: DASP, Crystal Ball, DASP II, DESY-HDD and LENA.

Bruno R Stella ([Bruno.Stella@roma3.infn.it](mailto: Bruno.Stella@roma3.infn.it)) and Hans-Jürgen Meyer ([Hans-Juergen.Meyer@ams-soft.de](mailto: Hans-Juergen.Meyer@ams-soft.de)).

● Further reading

A Ali and G Kramer 2011 *Eur. Phys. J. H* **36** 203.

B Stella and H-J Meyer 2011 *Eur. Phys. J. H* **36** 243.

NEW PRODUCTS

Intersil Corporation has announced the ISL8225M, a 30A fully encapsulated power module. The ISL8225M can deliver up to 100W-output power from a small 17-mm-square PCB footprint. The two 15A outputs can be used independently or combined to deliver a single 30A output. Current sharing and phase interleaving allow up to six modules to be put in parallel for 180A-output capability. Excellent efficiency and low thermal resistance permit full-power operation without heat sinks or fans. For more information, contact Kelly Maxwell, tel + 1 408 546 3582, e-mail [kmaxwell@intersil.com](mailto: kmaxwell@intersil.com) or see [www.intersil.com](http: //www.intersil.com).

Lake Shore Cryotronics Inc has introduced updated specifications for its Model CRX-VF Cryogenic Probe Station, featuring increased maximum magnetic field, improved magnetic field at elevated sample temperatures and improved vacuum performance. The cryogen-free micro-manipulated probe station is used for nondestructive testing of devices on full and partial wafers up to 51 mm in diameter. The maximum magnetic field capability at base temperature has been improved from ± 2.25 T to ± 2.5 T. For more information, tel +1 614 891 2244, fax +1 614 818 1600, e-mail [info@lakeshore.com](mailto: info@lakeshore.com) or visit [www.lakeshore.com](http: //www.lakeshore.com).



Peter Higgs (right), emeritus professor at the University of Edinburgh, has been made a Companion of Honour in recognition of his services to physics in the UK's New Year Honours list for 2013. This honour is restricted to a select group of 65 for achievements in the arts, literature, music, science, politics, industry or religion. Two companions were named for 2012, the other being Lord Sebastian Coe, for his work in bringing the Olympic Games to London and ensuring its success. Lord Coe was a gold medallist over 1500m in 1980. Higgs' colleague, Alan Walker (left), an honorary fellow at Edinburgh University, was also honoured, as a member of the Order of the British Empire (MBE) for services to science engagement and science education in Scotland.

Faces & Places

Luvata has announced Mileon, the longest seamless hollow conductor available on the market. Unlike traditional hollow conductors, Mileon gives manufacturers the option for large continuous coils or the flexibility to specify the optimum length, reducing the required amount of scrap and packaging materials. Mileon hollow conductors are completely jointless and are produced in continuous lengths of hundreds or thousands of metres. Made from high-purity oxygen-free copper, Mileon delivers electrical conductivity of 101–102% IACS and thermal conductivity of 390 W/km. For further details, contact Paula Tappola, tel +358 2 626 6878, e-mail paula.tappola@luvata.com or see www.luvata.com.

Narda Safety Test Solutions presents two new meters for equipment that operates using industrial frequencies. The NIM-511 and NIM-513 are complete hand-held measuring systems that make standards-compliant measurements of electric and magnetic field strength and demonstrate adherence to human safety regulations. The NIM-511 covers the range 300 kHz to 100 MHz, while the NIM-513's sensors cover the range

10 MHz to 42 MHz and are balanced during calibration at the 27.12 MHz frequency used for heat-welding equipment and induction ovens. For further information contact Narda STS at tel +49 7121/9732 0, e-mail support@narda-sts.de or see www.narda-sts.de.

Pfeiffer Vacuum has introduced energy-saving dry pumps A100 L, with a compact design specially developed for flexible integration in semiconductor production facilities. These dry multistage Roots pumps are ideal for clean applications and the fully integrated ES module reduces energy use to a minimum in the low-pressure range, significantly reducing operating costs. Annual savings per pump total up to 7900 kWh. In addition, the final pressure of the A100 L ES is reduced to 7×10^{-4} mbar (hPa), which opens up new potential applications. For details, contact Sabine Neubrand-Trylat, tel +49 6441 802 1223, e-mail Sabine.Neubrand@pfeiffer-vacuum.de or visit www.pfeiffer-vacuum.com.

UltraVolt Inc has announced lower output voltage ranges on its general-purpose bench-top power system, the BT-GP Series,

which are now offered at 1 kV, 2 kV, 4 kV and 6 kV of output power at 30 W. The BT-GP Series is ideal for OEM-biasing applications such as air purification, process fluid cleansing, hi pot testing and for laboratory research. The company has also announced that the –I5 and –I10 interface options are now available on its higher voltage modules (10A–25A Series), low-ripple modules (F Option) and standard high-voltage biasing supplies (A Series). For further details, tel +1 631 471 4444 or see www.ultravolt.com.

XP Power has announced the ECP60 series of compact low profile 60 Watt AC/DC power supplies. These units with typically 88% efficiency measure $101.6 \times 50.8 \times 30.4$ mm and fit into an industry standard footprint. With a no-load power consumption of less than 0.5 W the ECP60 series helps to comply with “green” energy-efficiency specifications. The series comprises eight models offering a +5 VDC single output, three dual-output and four triple-output models. For more information, contact Steve Head, tel +44 118 984 5515, e-mail shead@xppower.com or visit www.xppower.com.



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L-3 Electron Devices is leading the technology revolution with powerful solutions like the 13 kW klystron for the 12 GeV Upgrade at the Thomas Jefferson National Accelerator Facility and the 90 kW IOT amplifier for Brookhaven National Lab's NSLS-II Booster RF Transmitter System. For high-voltage switching or stable and reliable RF power, L-3's thyratrons, klystrons, IOTs and TWTs are meeting the demanding requirements of many of the world's major accelerator systems, and we are working to produce the next generation of devices for tomorrow's new accelerators.

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