

Faces & Places

AWARDS

Karlsruhe honours Cronin, Jenni and Della Negra

The awards of the Julius Wess Award and an honorary doctorate were two of the highlights of the inaugural symposium of the Karlsruhe School of Elementary Particle and Astroparticle Physics – Science and Technology (KSETA), which took place on 1 February. The school has been founded thanks to a successful application within the context of the 2012 German Excellence Initiative.

Nobel laureate James Cronin was made an honorary doctor of the Karlsruher Institut für Technologie (KIT) for his outstanding achievements in cosmic-ray research, which culminated in the successful construction and operation of the Auger Observatory in Argentina. A research group from KIT has been working closely with Cronin since the beginning of the project.

Peter Jenni and Michel Della Negra of CERN were presented with KIT's 2013 Julius Wess Award for their outstanding contributions to hadron-collider physics, which led to the discovery of the W and Z bosons in 1983 and of what could well prove to be the Higgs boson in 2012. As long-term spokespersons, they are often dubbed the



Above: Winners of the Julius Wess Award, Peter Jenni, centre left, and Michel Della Negra, together with Johannes Blümer, far left, Detlef Löhe and Thomas Müller, right.

Right: New honorary doctor Jim Cronin speaks to an attentive audience. (Image credits: KIT.)

“founding fathers” of the ATLAS and CMS experiments at the LHC, respectively, and they created the present-day culture of competition between friends. KIT has been deeply involved in CMS for almost 18 years.



INTERNATIONAL

UN secretary-general Ban Ki-moon visits CERN

On 1 March, Ban Ki-moon, secretary-general of the United Nations, visited CERN for the first time since the organization was granted observer status at the United Nations General Assembly last December (*CERN Courier* Jan/Feb 2013 p5).

Ban visited underground areas at the LHC, as well as UNOSAT, the UN technology-intensive programme hosted by CERN to deliver imagery analysis and satellite solutions to relief and development organizations (*CERN Courier* October 2009 p17).

The visit offered the opportunity to discuss CERN's contribution to science-related UN activities, such as ECOSOC, the United Nations platform on economic and social issues. CERN contributed on the theme of young women in science to ECOSOC's youth forum on 27 March and will be taking part in ECOSOC meetings in Geneva in July. Ban and CERN's director-general also discussed



the role of the secretary-general's recently established science advisory board.



Above: The new spokesperson for ATLAS, Dave Charlton, left, discusses the experiment with Ban Ki-moon during a tour of the underground cavern.

Left: The UN secretary-general, left, meets representatives from UNOSAT.

INDIA

Kolkata pays tribute to the memory of Bose

A bust of Satyendra Nath Bose, the Indian scientist best known for his work on Bose-Einstein statistics, was unveiled on 6 October on the corner of a prominent thoroughfare in the northern region of Kolkata. Bikash Sinha, the Homi Bhabha chair professor at the Indian Department of Atomic Energy, performed the unveiling in a ceremony attended by many distinguished people, including scientists, ministers and eminent academics.

Bose's ancestral home is located nearby, next to the Scottish Church Collegiate School. Sinha had his early education in the same school and came to know Bose closely, visiting him after school hours. Bose himself explained to the young Sinha about the beauty and the elegance of his famous statistics and how spin-0 and spin-1 elementary particles obey Bose-Einstein statistics.

Since the announcement of the discovery of a Higgs-like boson on 4 July 2012, a keen interest has gripped this area of Kolkata. Intense intellectual discussion is the order of the day, with no end to the discussion of the relevance of the Higgs boson and its capacity



Bikash Sinha unveiled the new bust of Satyendra Nath Bose in northern Kolkata. (Image credit: Sutanati Book Fair Committee/Suman Bhowmick.)

for creating mass. The general public is extremely curious about the newly found boson and its connection to God because it has often been referred to as the “God

particle”. The hysteria, Sinha notes, seems to have gone so far that Bose – a Bengali – is now viewed by some as a favoured son of God.

PRIZES

Brookhaven physicists win IEEE awards for innovation

Two physicists at Brookhaven National Laboratory (BNL) are to receive awards from the Institute of Electrical and Electronics Engineers (IEEE) at a ceremony on Long Island, NY, on 21 March.

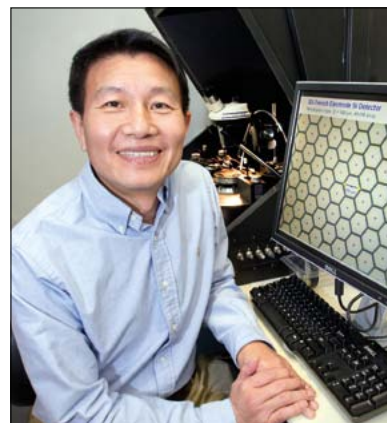
John Smedley is the 2013 recipient of the Charles Hirsch Award in recognition of his “contributions to the advancement of photocathode technology”. The award, made by the Long Island section of the IEEE, recognizes innovative and significant technical accomplishments. Smedley has been researching and designing novel accelerator photocathodes at Brookhaven for almost 20 years. Most recently, he has been involved in the development of a diamond-amplified photocathode that could revolutionize fourth-generation light-source technology, with amplifiers capable of increasing an electron beam's current by a factor of more than 300.

Zheng Li is the 2012 recipient of the IEEE Region 1 Technological Innovation Award for his groundbreaking work in “the development of novel silicon detectors in photon science and particle physics research”.



John Smedley, left, and Zheng Li, winners of IEEE innovation awards. (Image credits: BNL.)

To increase detection efficiency and lower the signal-to-noise ratio, in 2004 Li developed a novel “stripixel” detector – a single-sided silicon strip detector that significantly increased the accuracy and output of data of the PHENIX experiment at the Brookhaven's



Relativistic Heavy-Ion Collider. More recently, he developed a “3D-trench electrode detector” based on his stripixel research that has potential applications beyond high-energy and nuclear physics. Already, one company based in New York has expressed interest.

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COLLABORATION

ALICE matters around the world

The latest ALICE Physics Week – a tradition that began in Erice in 2005 – took place outside Europe for the first time when it was held at the Benemérita Universidad Autónoma de Puebla (BUAP), Mexico, on 27 November – 1 December. Participants were welcomed by Enrique Agüera Ibáñez, rector of BUAP, and Arturo Fernandez Tellez also of BUAP, who chaired the meeting, as well as by representatives from the Centro de Investigación y Estudios Avanzados, the Universidad Autónoma de Sinaloa and the Universidad Nacional Autónoma de México.

During the week, some 110 ALICE members discussed the top issues in the ALICE physics programme, with a special emphasis on results from the pilot proton–lead run that took place in September, as well as on the detector upgrade. As part of the effort to open the physics week to the city of Puebla, the organizers arranged for a public lecture on “the perfect fluid” to be given by the ALICE spokesperson, Paolo Giubellino. His talk was followed by a lively discussion with the audience, including many students in attendance.

The collaboration also celebrated Guy Paicé’s 75th birthday with a symposium on 1–2 December on “open issues in heavy-ion physics”, with talks by Paicé’s colleagues from ALICE and CMS at CERN, as well as from the experiments at the Relativistic Heavy-Ion Collider at Brookhaven. In particular, Gerardo Herrera Corral of the Centre for Research and Advanced Studies of the National Polytechnic Institute described Guy’s career in Mexico, which started more than 10 years ago.

Recognizing the importance of the physics week, the Mayor of Puebla awarded Giubellino, together with leading ALICE



Above: ALICE members at the meeting in Puebla. (Image credit: Domenico Collela.)

Right: Paolo Giubellino, spokesperson of ALICE, and Prasart Suebka, rector of SUT, hold two copies of the MoU signed between CERN, ALICE and SUT. (Image credit: SUT Press Office.)



members Federico Antinori, Jean-Pierre Revol and Jürgen Schukraft, a diploma as distinguished visitors of Puebla.

In December, Suranaree University of Technology (SUT) signed a memorandum of understanding (MoU) with CERN and the ALICE collaboration. This followed the ALICE collaboration board’s acceptance of SUT as a member of the collaboration in October. Princess Maha Chakri Sirindhorn graciously presided over the signing ceremony.

The agreement will further strengthen the capacity and capability of Thailand’s research

programme. The MoU refers to the building of a Tier-2 computing centre, which is a part of the National e-Science Infrastructure Consortium of Thailand. SUT will provide computer equipment for the system on which large amounts of data from ALICE will be stored and processed. Researchers in a variety of other disciplines in SUT will also benefit from the high-performance system. In addition, SUT will participate in the upgrade of the ALICE inner tracking system.

LETTER

In memory of Gordon Fraser

I was saddened to learn that Gordon Fraser, long-time editor of *CERN Courier*, had died earlier this year (*CERN Courier* March 2013 p36). I will remember Gordon first and foremost as my editor and collaborator in trying to communicate high-energy physics beyond the strict confines of the discipline. Every month or so, I’d send him a draft news item or longer article about goings-on at SLAC. He’d gently nudge my awkward copy into something more readable by the audience that *CERN Courier* was aiming to reach. I learnt a lot from him. Although we may have

met only a handful of times, at an international conference or during one of my CERN visits, we became good friends and trusted colleagues via e-mail and the occasional phone call, despite well known interlab rivalries.

I last saw Gordon while at CERN to cover the impending “Higgs boson discovery” for *Physics World* and *Scientific American*. We shared a memorable Sunday visiting the Einstein Museum and home (closed for repairs, unfortunately) in Bern. On the train there, we discussed Gordon’s suggestion to rename this new particle the “higgson”,

which I immediately thought a marvellous idea. So we quickly wrote an opinion piece together that *Physics World* published in its August 2012 issue, which announced the discovery of the new particle. This time Gordon served as the writer, dashing off 1000 words in a few hours, and me the editor. Our last joint effort will always remain my fondest memory of him, and of all our many attempts to explain physics to wider audiences. I’m glad that I had this final opportunity.

● Michael Riordan, former SLAC correspondent, Eastsound, WA.

OBITUARIES

Aldo Menzione 1943–2012

Aldo Menzione, a pioneer in the development and use of silicon vertex detectors, passed away quietly and unexpectedly in Pisa on 23 December 2012.

Aldo graduated in physics in 1967 with a thesis on “Production of Neutral Mesons Decaying into All-neutral secondaries” at the CERN Proton Synchrotron and in 1969 joined the Pisa-Stony Brook collaboration at the Intersecting Storage Rings (ISR). This experiment discovered that the total proton–proton cross-section starts increasing at ISR energies, a departure from what had previously appeared to be a flat “asymptotic” behaviour. Aldo made important contributions in setting up the experiment and in the study of short-range correlations among particles produced in inelastic collisions, which were observed by the same experiment for the first time as an early manifestation of hadron jets.

In 1978, as a member of the Pisa team, Aldo designed and built the small-angle spectrometer of the NA1 (later NA7) experiment. This spectrometer obtained the most precise measurements of the pion and kaon charge-radius, as well as a number of new results in charm physics. The tracking system of NA1, to which Aldo devoted much of his effort, used one of the first active targets of silicon detectors and later



Aldo Menzione. (Image credit: Courtesy Bichina Menzione.)

an innovative germanium-strip detector to identify the decay of long-lived charmed hadrons, allowing measurement of their lifetimes. From this, Aldo understood that a silicon-strip vertex detector could be used to signal the decays of charmed and beauty hadrons close to the vacuum pipe at a hadron collider, thereby tagging jets containing heavy flavour.

Starting in 1980, he began work on the detailed design of the CDF detector at Fermilab's Tevatron with his characteristic vigour, originality and vision. Aldo was leader of the Silicon Vertex Detector

construction project, which played an essential role in the discovery of the top quark in 1995 by identifying the b quarks from top decays. For Run 2 of CDF, an upgraded vertex detector was implemented with fast front-end trigger electronics, which allowed operation of a displaced vertex trigger, the Silicon Vertex Trigger (SVT). Aldo and the prime designer of the SVT, Luciano Ristori, were awarded the 2009 Panofsky Prize in Experimental Particle Physics of the American Physical Society in 2009 for “their leading role in the establishment and use of precision silicon tracking detectors at hadron colliders, enabling broad advances in knowledge of the top quark, b hadrons, and charm hadrons” (CERN Courier December 2008 p34).

Besides being an extremely skilled experimentalist, Aldo was warm, direct and a wonderful colleague and friend. He participated actively in physics discussions with crisply thought-out, bluntly expressed and often deeply original contributions. Aldo created a special atmosphere in which the best decisions were made and everybody, including the junior members, felt included.

● *Adapted with permission from material that originally appeared in Physics Today's Daily Edition, www.physicstoday.org/1.2902567.*

Ger van Middelkoop 1937–2013

Ger van Middelkoop, an experimental nuclear and particle physicist with a talent for scientific leadership, passed away on 4 February after unexpected heart failure.

Ger studied and worked at Utrecht University, obtaining his PhD in 1966 with Pieter Endt for work on neutron capture, research performed at the Reactor Research Facility in Petten (now known as Energy Centre Netherlands). He also worked as a postdoc at Chalk River Nuclear Laboratories in Canada.

In 1979 he was appointed as professor in experimental physics at the Vrije Universiteit in Amsterdam. In the following years he played a key role in the merger of the separate Nuclear Physics and High-Energy Physics sections into what is now the National Institute for Subatomic Physics (Nikhef). He was scientific director of the Nuclear



Ger van Middelkoop. (Image credit: Nikhef.)

Physics section for several years (1983–1988) and later the first scientific director of the combined Nikhef institute (1996–2001). He

managed to bridge the cultural differences between the sections with his direct but also amiable style.

Ger was the driving force in the participation of Nikhef in the New Muon collaboration (NA37) at CERN and was spokesperson from 1990 until 1995. Besides his managerial work, he always kept close contact with the ongoing work of PhD students and colleagues at the laboratory – often walking in and discussing physics even when they were working late. Many colleagues remember him as someone who carefully read and corrected publications and thesis manuscripts, and who was always stimulating staff and students to attend weekly colloquia at the institute, where he himself enlivened the discussion with sharp questions.

Later in his career and after his retirement,

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he stayed active in the field. He led the organization of the 2002 International Conference on High-Energy Physics in Amsterdam, was active in scientific advisory

boards as well as organized and participated in various physics outreach activities in the Netherlands. After a difficult period in his personal life, in which he lost his wife, he

organized and enjoyed with his new partner various cultural activities in their second home in France.

● *His friends and colleagues.*

David Olive 1937–2012

David Olive, a pioneer of string theory who made seminal contributions to S-matrix theory, superstrings and gauge theories, died on 7 November 2012. Among many honours, he was awarded the 1997 ICTP Dirac Medal, shared with Peter Goddard.

Born in 1937, David was educated in Edinburgh and then Cambridge, where he obtained his PhD in 1963. After a postdoctoral appointment at the Carnegie Institute in Pittsburgh, he became lecturer in the department of applied mathematics and theoretical physics in Cambridge in 1965. A year later, with Richard Eden, Peter Landshoff and John Polkinghorne, he published *The Analytic S-matrix*, the definitive text on S-matrix theory.

In 1971, David joined the CERN Theory Division, keen to work in the stimulating group of theorists around Sergio Fubini and Daniele Amati on the dual-resonance model, later recognized as string theory. It was an enormously fruitful time, highlighted in his memoir “From dual fermion to superstring” in *The Birth of String Theory* (Cappelli *et al.* eds, CUP 2012). His work at CERN, in collaboration with Lars Brink and others, initially focused on the consistent formulation of dual fermion amplitudes and resulted in several major contributions to string theory, including the “Glozzi-Scherk-Olive (GSO) projection” which was an essential step in establishing 10-dimensional superstring theory. His vision of string theory as a unified theory of all particle interactions, including gravity, informed his highly influential plenary talk at the 1974 “Rochester” conference in London.

David’s collaboration with Peter Goddard led to seminal papers on the mathematical



David Olive, right, receiving the 1997 ICTP Dirac Medal from Miguel Angel Virasoro, at a ceremony in Trieste. (Image credit: ICTP Photo Archives.)

foundations of string theory, notably on Virasoro and Kac-Moody algebras, their representations and relationships with vertex operators. Their work on algebras and lattices identified the special role played by the two Lie groups $SO(32)$ and $E_8 \times E_8$, which were shown by Michael Green and John Schwarz to exhibit the anomaly cancellation that led to the renaissance of string theory in 1984.

Another major interest concerned duality symmetries in gauge field theories, which played a key role in later developments of string/M theory. In 1977, while still at CERN, he and Claus Montonen conjectured that there should exist an electromagnetic dual theory in which the roles of monopoles and gauge bosons are interchanged. Subsequent work with Ed Witten showed that this duality is fulfilled

in some supersymmetric theories. The Olive-Montonen duality emerged later from a deeper web of dualities underlying string/M theory, ushering in the second superstring revolution of the mid-1990s.

David moved to Imperial College in 1977, becoming professor in 1984 and head of theoretical physics in 1988. He left in 1992 for Swansea University, where he and Ian Halliday built the theoretical particle physics group, now one of the UK’s leading theory groups. At Swansea he explored the deep symmetries underlying integrable quantum field theories, especially affine Toda theory.

The mathematics of symmetry was a lifelong enthusiasm, suiting the predilection for clarity, precision and depth that characterized all of David’s work in theoretical physics and made him a worthy recipient of the medal named after Dirac, whom he admired deeply. David was a generous supervisor and teacher, guiding many PhD students who have gone on to accomplished careers around the world. His wide circle of friends, colleagues and collaborators remember him with respect and affection as a brilliant but unassuming theorist whose insights have become part of the fabric of modern theoretical physics.

David was a devoted family man. He married Jenny in 1963 while at Cambridge and they have daughters Katie and Rosalind. As well as his continuing battles with the game of golf, reflecting his Scottish upbringing, his days at CERN led to enthusiasms for hiking and skiing. He had a lifelong love of classical music, and amassed a fine collection of recordings.

● *Ed Corrigan, Ian Drummond, Graham Shore and Tony Sudbury.*

Hamlet Vartapetyan 1927–2013

Hamlet Vartapetyan, professor of physics and mathematics, and member of the Armenian National Academy of Sciences, passed away on 22 January 2013. A well known Armenian scientist, he had a decisive role in the establishment and development of theoretical and experimental research in

particle and nuclear physics in the Republic of Armenia.

Vartapetyan was born on 26 May 1927 in Yerevan, Armenia. He graduated from the Ecole Supérieure de Physique et Chimie Industrielles in Paris in 1952 and from the Sorbonne University in 1953. From

1952 until 1957 he worked with Irène and Frédéric Joliot-Curie in the Radium Institute in Paris, receiving his PhD degree under Frédéric Joliot-Curie, then moving to the Institut de Physique Nucléaire, Orsay, until 1958.

In 1960 Vartapetyan began research on

the electron synchrotron at Yerevan Physics Institute (YPI). In the following decades, thanks to his efforts, the institute acquired state-of-the-art electronic and computer technology, and under his leadership established a powerful experimental infrastructure, where an extensive programme in nuclear and particle physics was successfully accomplished.

His group achieved a series of important results on fundamental properties of elementary particles; the results on photoproduction at the electron synchrotron, in particular, brought recognition to Vartapetyan and his colleagues. He was awarded the Red Flag Medal in 1971, the Badge of Honour in 1976 and, along with his colleagues, received the Republic of Armenia Award in Science and Technology for his fertile scientific work.

Vartapetyan also worked diligently



Hamlet Vartapetyan. (Image credit: YPI.)

in scientific organizational matters and international collaborations. His involvement in JINR, Dubna, was particularly important; for many years he had the role of liaison representative for the Republic of Armenia.

In addition, he had an important role in the education and development of young Armenian scientists. He lectured at the Yerevan State University's Physics Department from 1968 and in the years 1969–1974 was the chair of nuclear physics. He created the Experimental Physics School in Armenia and more than 20 PhD students received their diplomas under his guidance. In parallel, he worked successfully with secondary schools on science education.

The memory of the highly respected Hamlet Vartapetyan will forever remain in the hearts and minds of those who had the good fortune to know and work with him.

● Ashot Chilingarian, YPI.

Arthur Wightman 1922–2013

Arthur Strong Wightman, a mathematical physicist and one of the founders of axiomatic quantum field theory, passed away on 13 January 2013.

Born in Rochester, NY, Arthur Wightman gained his PhD in 1949 under John Wheeler at Princeton University, where he was to spend the rest of his academic career, becoming professor of mathematical physics in theoretical physics.

The goal of axiomatic quantum field theory was to put on a firm mathematical basis some of the features of local field theory in such a way as to avoid illegal mathematical operations, which produced the well known infinities of QED. Wightman's axioms went one step further in terms of rigour than the preceding formulation of Harry Lehmann, Kurt Symanzik and Wolfhart Zimmermann, opening the way to the more sophisticated construction of Rudolf Haag, Huzihiro Araki and Daniel Kastler. However, it was only with the work of Henri Epstein and Vladimir Glaser that ultraviolet divergences could be avoided on the basis of locality. In the meantime, Wightman launched a programme of "constructive field theories", which was entrusted to Arthur Jaffé and Oscar Landford. This programme exhibited non-trivial relativistic field theories that fulfilled the Wightman axioms but, unfortunately, examples remained far from matching current physical models.

Wightman had many other interests. In particular, in 1952 he co-signed with Gian



Antonino Zichichi listening to a lecture by Arthur Wightman given in the Dirac hall at the Ettore Majorana Centre for Scientific Culture in Erice in 1988. (Image credit: EMCSC.)

Carlo Wick and Eugene Wigner a paper – the "WWW paper" – in which the symmetry properties of elementary systems are studied and the notion of "superselection rules" is introduced. In this paper they raise, in a footnote, doubts on the exact conservation

of parity and charge conjugation.

Independently, at the same time, Louis Michel made the observation that there is no proof of conservation of parity in weak interactions. Wightman's interest in weak interactions existed from the beginning of his career. Indeed, he and Michel, together with Val Telegdi and Valentine Bargmann started to write a book on weak interactions that was never finished. Wightman also supported Barry Simon in the study of nonrelativistic quantum mechanics.

Wightman was an enchanting lecturer both in public and in private. He was active at the Erice Ettore Majorana Centre for Scientific Culture, where he founded and directed the International School of Mathematical Physics. He was awarded the Heineman Prize by the American Physical Society, and the Henri Poincaré Prize by the International Association for Mathematical Physics.

We will miss an outstanding physicist and a wonderful person.

● His friends at CERN.

OBITUARY NOTE

Peter Sharp 1937–2011

I would like to thank all of those friends and colleagues working on CMS with Peter and at CERN who wrote and sent me such kind sentiments about him after his death in March 2011 (CERN Courier June 2011 p36). My thanks also for the generous contributions, which will go to the Sobell House Hospice

in Oxford. Peter's last two difficult years of life were made more bearable by all your encouragement and support, which was so appreciated by both of us.

My sincere apologies to all for the delay in thanking you. He was a very special person and is much missed.

● Betty Sharp

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VISITS



José Antonio Meade Kuribreña, the Mexican secretary of foreign affairs, visited CERN on 26 February. He met Rolf Heuer, CERN's director-general, and Sergio Bertolucci, director for research and scientific computing, who introduced the laboratory's activities. He also took the opportunity during his visit to tour the LHC tunnel and the underground cavern of the ALICE experiment, before meeting Mexican scientists at CERN.

The Mongolian minister for foreign affairs, **Lusanvandan Bold**, right, signed CERN's guest book when he met the director-general during a visit to the laboratory on 26 February. Rüdiger Voss, adviser for international relations, presented a general introduction to CERN, which was followed by a visit underground to the ALICE experiment's cavern.



MEETINGS

CEC/ICMC 2013, the 19th joint Cryogenic Engineering Conference and International Cryogenic Materials Conference, will take place in Anchorage, Alaska, on 17–21 June. The programme features the latest research and state-of-the-art developments in all cryogenics areas, including superconductivity, cryocoolers, cryogenic materials and applications. For conference and registration details, see www.cec-icmc.org. Immediately before the conference, the Cryogenic Society of America (CSA) is offering **CSA Short Courses** on 16 June at the Anchorage Marriott Downtown. These are aimed at seasoned professionals and those new to the field. For details and to register, visit <http://2csa.us/2013shortcourses>.

ICALEPCS 2013, the 14th International Conference on Accelerator and Large Experimental Physics Control Systems will be held on 6–11 October in San Francisco, hosted by the National Ignition Facility at the Lawrence Livermore National Laboratory. At the conference, managers, scientists, engineers and decision makers of pre-eminent world-class science laboratories and facilities will discuss control and information systems for big science. For further details, see www.icalepcs2013.org.

NEW PRODUCTS

The **ORTEC Products Group** of AMETEK Advanced Measurement Technology has introduced the LDM-1, an integrated gamma-ray spectrometer for fixed and mobile counting-room applications. The self-contained Laboratory Detector Module (LDM-1) builds on technologies developed for the ORTEC Detective family of portable nuclide identifiers. Powered from a small 10–17 V DC supply, it has a built-in battery back-up. It also has a built-in a high-stability digital signal processor. For more information, tel +1 865 482 4411, fax +1 865 483 0396 or visit www.ortec-online.com.

Amphenol Aerospace has announced a new high-speed, rugged connector capable of delivering data rates up to 10 Gbps per pair. The high-density Oval Contact System (OCS) features improved signal integrity with reduced cross-talk and enhanced attenuation performance for high-speed applications including, 10/40G Ethernet, HDMI/DVI video, 1/2/4/8G fibre channel and PCI express. For further details, contact Sandra Ford, sford@amphenol-aao.com or see www.amphenol-aerospace.com.

Cobham Technical Services has extended the capabilities of the Opera-3D finite element software for electromagnetic design with a new solver to analyse natural vibration modes. The tool should prove useful for electrical machine developers to investigate and minimize forces that might cause oscillations close to the natural frequencies of the equipment. The new modal solver – STRESS/EV – finds a user-specified number of eigenvalues within a specified frequency range and calculates the eigenvectors of each mode. For more information, contact Julie Shepherd, tel +44 1865 370 151, fax +44 1865 370 277, e-mail vectorfields.info@cobham.com or visit www.cobham.com/technicalservices.

Hidden Analytical has announced the Hidden HPR-60 mass spectrometer for the direct analysis of ions, radicals and neutral species in reactive processes. The system typically operates in pressure regimes from 5 mbar to 5 bar. Options provide for measurement of neutrals, positive ions, negative ions and ion energies, with a choice of mass range up to 2500 amu. The system samples directly from the process using a sequence of up to

three pressure-reduction stages, providing a sampling range of 5 mbar to 100 mbar for the two-stage system and to 5 bar with the third stage. For further details, tel +44 1925 445 225, e-mail info@hidden.co.uk or see www.hiddenanalytical.com.

CORRECTIONS

Recent articles on the development of QCD have unfortunately reproduced figures without due acknowledgement to the originals. Figure 2 in the article by Harald Fritzsch (*CERN Courier* October 2012 p21) is reproduced from figure 5 in the article by Siegfried Bethke and Peter Zerwas in *Physik Journal* vol. 3 no. 12 pp31–35 (2004). Figure 1 of the article by David Gross and Franck Wilczek is reproduced from figure 3 in Siegfried Bethke "World Summary of α_s (2012)" Oct 2012, MPP-2012-132, arXiv:1210.0325 [hep-ex]. *CERN Courier* apologizes unreservedly for these oversights.

In the news article about the first measurements of electroweak boson fusion by CMS, a zero became lost in the di-muon mass quoted on the event display. This should be 90.2 GeV.