

FACES AND PLACES

US LAB NEWS

SLAC and Jefferson Lab see changing faces



Movers and shakers (from left to right): Jonathan Dorfan, Christoph Leemann, Andrew Hutton and Elke-Caroline Aschenauer.

Jonathan Dorfan, who has been director of SLAC for nearly eight years, has announced that he will step down in the autumn.

Dorfan has overseen the laboratory since September 1999. Prior to that, he served as SLAC associate director and as director of the B-Factory Project from 1994 to 1999. He will continue to be involved at SLAC and, once a new director is named, will assist in the transition to the new leadership. Dorfan's achievements during his directorship include creating the Kavli Institute for Particle Astrophysics and Cosmology at SLAC and securing the world's first X-ray free-electron laser, the Linac Coherent Light Source, which is under construction (p9).

At the Thomas Jefferson National Accelerator Facility, Christoph Leemann has announced that he will be stepping down as director after six-and-a-half years at the helm of the research facility. Leemann has served Jefferson Lab for almost 22 years in

various leadership positions, after coming to the laboratory from the Lawrence Berkeley Laboratory in 1985, attracted by the opportunity to build a new facility and a new organization on a green site. He was instrumental in the design, technology choice, and construction of the Continuous Electron Beam Accelerator Facility (CEBAF).

Also at Jefferson Lab Andrew Hutton, the long-time deputy associate director of the Accelerator Division has stepped into the role of associate director. He takes over from Swapna Chattopadhyay who served in that position from 2001, before joining the UK's Cockcroft Institute as its inaugural director in March. Hutton's interest in accelerators dates back to growing up in England, when Hal Gray, after whom the unit of absorbed radiation dose is named, allowed him to go after school to work on a small research electron linear accelerator at the cancer-research institute that Gray

led. Ultimately Hutton went on to pursue his interest at CERN at the Large Electron-Positron collider, at the SLAC Linear Collider and at the PEP-II B-factory, before arriving at Jefferson Lab in 1993 to lead the commissioning of CEBAF.

Jefferson Lab has in the meantime welcomed a new face with the appointment of Elke-Caroline Aschenauer as the 12 GeV Upgrade Hall D Leader in December. She is also a member of the 12 GeV Upgrade project team. Aschenauer was previously at the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, and since August 2003 she has served as the spokesperson for the HERMES collaboration (*CERN Courier* April 2006 p26). For HERMES she monitored day-to-day data taking and supervised an analysis of hadron multiplicities in semi-inclusive DIS using the RICH to tune fragmentation parameters in the HERMES Monte Carlo.

PUBLICATIONS

Sprouse takes over at *Physical Review*

The American Physical Society (APS) has appointed Gene D Sprouse, professor of physics at Stony Brook University, as its new editor-in-chief. Sprouse will succeed Martin Blume, who has held the position for 10 years.

Sprouse helped to build the Stony Brook

superconducting linac and has been director of the Nuclear Structure Laboratory since 1996. The position of editor-in-chief is one of three co-equal operating officers of the APS, and includes primary responsibility for the *Physical Review* series of physics journals.

He will head the APS editorial office located in eastern Long Island, near Brookhaven National Laboratory. With a staff of 150, the office annually receives and processes peer reviews for nearly 30 000 physics manuscripts, two thirds of which originate outside the US. The office also manages an electronic archive of the 400 000 *Physical Review* articles published since 1893.

AWARDS

Franklin Institute rewards Totsuka and McDonald

The Franklin Institute in Philadelphia has awarded its 2007 Benjamin Franklin Medal in Physics to Yoji Totsuka and Arthur McDonald for discovering that the three known types of neutrino change into one another when travelling over long distances, and that neutrinos have mass. The institute's awards date back to 1824, when the institute was founded to train artisans and mechanics in the fundamentals of science. McDonald, from Queen's University,

Ontario, is director of the Sudbury Neutrino Observatory (SNO) Institute, while Totsuka, from the University of Tokyo, is former director of the Kamioka Observatory, home to the Super-Kamiokande neutrino detector.

The Kamiokande collaboration first reported the detection of a deficit in the number of atmospheric muon neutrinos in 1988. A decade later the Super-Kamiokande collaboration announced the discovery of atmospheric neutrino



Yoji Totsuka (left) and Arthur McDonald.

oscillations. More recently SNO found evidence for oscillation in solar neutrinos, resolving the long-standing solar-neutrino problem (see p26). The Franklin Institute also recognized solar-neutrino physics in 2003, with the award of the Franklin Medal in Physics to John Bahcall, Raymond Davis and Masatoshi Koshiha (*CERN Courier* July/August 2003 p34).

HESS collaboration wins Descartes Prize



Representatives of HESS at the Descartes Prize ceremony, together with Annette Schavan (left), the German research minister, Janez Potočník (third from right), the Commissioner for Science and Research of EU, and Claudie Haigneré (second from right), chair of the Grand Jury of the Descartes Prizes. (Courtesy European Community.)

The High Energy Stereoscopic System (HESS) collaboration has received the prestigious EU Descartes Prize for Research at a ceremony in Brussels on 7 March. Launched in 2000, the prize rewards teams of scientists for outstanding scientific or technological results achieved through transnational research in any field of science.

The HESS collaboration involves about 100 scientists from Armenia, the Czech Republic, France, Germany, Ireland, Namibia, Poland, South Africa and the UK. It operates an array of four big Cherenkov telescopes in Namibia, which are the most sensitive telescopes in the world for studying very

high-energy gamma rays. Since starting operation in 2002, results from HESS have provided a number of breakthroughs, such as the first resolved image of a supernova shock wave acting as a cosmic particle accelerator, the detailed study of high-energy radiation from the centre of our galaxy, and the discovery of a stellar black hole – a “microquasar” – generating gamma rays.

HESS shares the prize with two other projects: Hydrosol, which has developed a way to produce hydrogen from water-splitting using solar energy, and APOPTOSIS, which has made great strides in the understanding of apoptosis (programmed cell death).

NIM rewards two young scientists at Vienna conference

Two young researchers shared the NIMA Young Scientists' Award at the 11th Vienna Conference on Instrumentation held in February. The award, for scientists under 35 who have contributed a paper or poster at the conference, is sponsored by *Nuclear Instruments and Methods in Physics Research, Section A*. This year the International Advisory Committee selected Xavier Llopart from CERN and Nahee Park from Ewha Womans University in Seoul. Llopart, who works on the Medipix project at CERN, won the award “for the development of pixel readout chips for a wide range of instrumentation applications”; Park received her award “for substantial contributions to the CREAM balloon experiment and outstanding presentation of her work”.



Nahee Park (left) and Xavier Llopart (right) receive their awards at the conference.

Royal Irish Academy makes Weinberg an honorary member



Steven Weinberg, who receives honorary membership of the Royal Irish Academy.

The Royal Irish Academy has made Steven Weinberg, Nobel laureate and professor at the physics and astronomy departments of the University of Texas, Austin, an honorary member. The academy was founded in 1785, and continues to serve as the national academy of arts and sciences for Northern Ireland and the Republic of Ireland. Weinberg joins just 14 scholars at American universities who are honorary members of this academy.

ANNIVERSARY

Zatsepin celebrates 90 years

George Zatsepin, pioneer of cosmic-ray physics and neutrino astrophysics, celebrates his 90th birthday on 28 May. He is probably best known for the Greisen–Zatsepin–Kuzmin effect, published in the 1970s, which is the subject of many experimental and theoretical studies throughout the world.

In the early 1950s, in work on the nuclear nature of extensive air showers, Zatsepin created the equations for particle propagation through the atmosphere. His “next-generation principle” assumes that the characteristics of secondary particles produced in nucleon–air nucleus interactions depend only on the portion of energy taken away by a secondary particle – an effect found later in experiments on accelerators and named “scaling”.

Many experiments have realized Zatsepin’s ideas in neutrino physics and astrophysics. He is a leader of the Russian–American gallium germanium experiment, SAGE, which has studied the solar neutrino flux for 15 years at the Baksan Neutrino Observatory. He was the first to suggest measuring the neutrino flux from collapsing stars and was a leading figure in the Baksan neutrino telescope, the 100 tonne



George Zatsepin, who turns 90 in May.

scintillator detector in Artyomovsk, and the Italian–Russian Liquid Scintillator Detector under Mont Blanc. He remains a head of the Large-Volume Detector experiment in the Gran Sasso National Laboratory.

Zatsepin has long held the cosmic-ray chair of the physics department of Moscow State University, where he helped to create the emulsion detector group and the international Pamir Collaboration. As head of the neutrino physics and neutrino astrophysics department of the Institute for Nuclear Research of the Russian Academy of Sciences he created an important school of physicists working on cosmic-ray and neutrino physics.

CENTENARY

Dubna symposium honours the memory of Norair Sissakian

The III International Symposium “Problems of Biochemistry, Radiation and Space Biology” took place on 24–28 January in Dubna. This year the symposium was dedicated to the centenary of Norair Martirosovich Sissakian (1907–1966), an eminent researcher and biochemist, one of the founders of space biology, and an outstanding organizer of global scientific cooperation.

For a number of years Sissakian was chief scientific secretary of the Presidium of the USSR Academy of Sciences and academician-secretary of the Department of Biological Sciences. On the global scene he was vice-president of the International Academy of Astronautics, and chair of the committee on bioastronautics of the International Astronautics Federation. In 1964 he was unanimously elected president of the 13th



Norair Martirosovich Sissakian, 1907–1966.

session of the UNESCO General Conference; some 40 years later, the 33rd session decided that the centenary of his birth should be included in the list of anniversaries associated with UNESCO in 2006–2007. He was also an active member of the Pugwash

movement of scientists for peace.

About 150 scientists, not only from Russia but also from Italy, Canada, the US and CIS countries (Armenia, Georgia, Belarus and Ukraine), attended the symposium. The opening ceremony took place on 25 January at the President Hall of the Russian Academy of Sciences (RAS), with talks from many outstanding scientists and researchers.

● The symposium was organized by the RAS, the RAS Department of Biological Sciences, the Bach Institute of Biochemistry of RAS, the RF State Scientific Centre (SSC) – Institute of Biomedical Problems, the National Academy of Sciences of the Republic of Armenia, Yerevan State University, the Dubna International University of Nature, Society and Man and the Joint Institute for Nuclear Research.

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NEW PRODUCTS

HiTek Power has added the OL20K 20 KW family to its range of inherently robust high-voltage power supplies, offering output voltages from 60 kV to 200 kV and beyond. Each consists of a converter in a 6U, 19-inch rack-mounting unit and a separate high-voltage multiplier assembly. The supplies are highly stable, with ripple of less than 0.1% peak-to-peak of rated output. For further information contact sales.uk@hitekpower.com or see www.hitekpower.com.

Lake Shore Cryotronics has introduced the new Model RX-102B-CB ruthenium oxide resistance cryogenic temperature sensor, the first that is commercially available. Calibrated from 20 mK to 40 K, the sensor is monotonic from 10 mK to 300 K, and the calibrations are accurate to ± 2.0 mK at 20 mK, ± 3.0 mK at 30 mK, ± 4.0 mK at 40 mK and ± 5.0 mK from 50 mK to 1 K. For further information tel +1 614 891 2244, fax +1 614 818 1600, e-mail info@lakeshore.com or see the website at www.lakeshore.com.

LG Motion Ltd has announced a new compact, low-cost linear positioning stage, available with a manual or motorized drive. Based on a PTFE bearing system with a simple lead-screw drive, the XslideT has repeatability of 2.5 μ m per 25 mm and an overall positioning accuracy of 76 μ m per 250 mm as standard, or 38 μ m per 250 mm in the optional higher precision version. For further information contact Gary Livingstone, tel +44 (0)1256 365600, fax +44 (0)1256 365645 or e-mail g.livingstone@lg-motion.co.uk.

PI (Physik Instrumente) LP has introduced the M-511.HD hybrid nanopositioning translation stage. The new hybrid system combines the resolution (down to 2 nm) and rapid response of a piezo-flexure drive with the long travel ranges and high holding forces of a servo-motor/ballscrew arrangement. Typical applications include surface inspection, laser technology and interferometry. For further information see www.physikinstrumente.com.

Resolve Optics Ltd has developed a comprehensive range of non-browning (radiation resistant) lenses for use in radioactive environments. All the lenses are designed to withstand a total radiation dose of 100 000 000 rads and temperatures up to 55 °C without discolouring. Fixed-focus lenses range from 6 mm to 25 mm focal length with fields of view up to 108°; 6:1 and 3:1 zoom lenses are also available. For further information tel +44 (0)1494 777100, e-mail sales@resolveoptics.com or see www.resolveoptics.com.

Vector Fields has announced a 3D version of its electromagnetic modelling software for simulating permanent magnet characteristics. DEMAG allows optimization of designs by accurately simulating both the magnetization process and subsequent demagnetization effects. Vector Fields has also announced an electromagnetic design tool for coaxial devices such as connectors and attenuators. Concert AS uses 3D drawings imported from CAD software or created by the package's own 3D modelling tool. For more information tel +44 (0)1865 370151 or +1 630 851 1734 or see www.vectorfields.com.

MEETING

The **International School of Subnuclear Physics, Searching for the 'Totally Unexpected' in the LHC Era**, will take place at the Ettore Majorana Foundation and Centre for Scientific Culture, Erice, on 29 August – 7 September. In anticipation of the start-up of the LHC, the school, organized by G 't Hooft and A Zichichi, will be dedicated to a set of "hot theoretical problems" and a series of experimental highlights presented by the directors and experiment leaders of

all the major particle-physics laboratories. The programme also includes seminars on specialized topics, such as complexity at the fundamental level, double beta decay, problems with three neutrinos, dark matter and dark energy. The school will be attended by 50 invited "young talents" selected from throughout the world. Diplomas for the best students will be awarded at the end of the school. For more information see www.ccsem.infn.it/ef/emfscsc2007/pdf/ISSP2007.pdf.

OBITUARIES

Simon Peter Rosen 1933–2006

Simon Peter Rosen, 73, died on 13 October 2006 at his home in Rockville, MD, after a battle with pancreatic cancer.

Peter had been senior advisor to the director of the Office of Science in the Department of Energy (DOE) since 2003. From 1997 to 2003, he was associate director of the Office of Science, with responsibility for high-energy and nuclear physics. Highlights of his tenure include the discoveries of neutrino oscillations and dark energy, construction of the B-Factor and the Relativistic Heavy Ion Collider, and the signing of a US–CERN agreement for US participation in the LHC.

An authority on neutrino oscillations and neutrinoless double beta decay, Peter was also a gifted spokesman for particle and nuclear physics. Even while undergoing three years of intensive cancer therapy, he continued his efforts, writing and speaking about the importance of physics and finding DOE support for two NOVA programmes. In September 2006, one month before his death, *CERN Courier* published Peter's eloquent tribute to Ray Davis, whom he called "discoverer and grand pioneer of the solar-neutrino problem" (*CERN Courier* September 2006 p32).

Peter was born in August 1933 in London, UK, and became a US citizen in 1972. Earning a PhD in physics at Oxford in 1957, he began his career at Washington University in St Louis, MO, where he became well known for his work with Henry Primakoff on the theory of double beta decay. Peter then moved to Northwestern University Research and spent a year as a NATO Fellow at Oxford.

In 1962, he joined Purdue University as an assistant professor and rose rapidly,



Simon Peter Rosen, who died in October.

promoted to associate professor in 1963 and to professor in 1966. His research focused heavily on implications of various symmetry principles for the weak interactions. These included the application of unitary symmetries to non-leptonic hyperon decays and tests of lepton number conservation in semi-leptonic decays. Following the discovery of neutral weak currents in the mid-1970s, Peter co-authored a series of papers with Boris Kayser, Gerry Garvey, Ephraim Fischbach and others on tests to determine the space–time structure of the neutral current using data from reactions such as elastic neutrino–proton scattering.

At Purdue and throughout his career, Peter returned many times to the theory of double beta decay, a problem that became increasingly important as the evidence for massive neutrinos grew. Peter's work helped connect experimental bounds to physics beyond the Standard Model: constraints placed on the neutrino mass matrix,

on right-handed couplings of Majorana neutrinos, and on exotic processes such as Majoron emission.

Peter also found time to serve on both the university and the School of Science promotion committees and as president of the Purdue chapter of the American Association of University Professors. He enjoyed tennis and squash and was a tenacious competitor – a trait also apparent in his physics, where he relished debate with friends and colleagues.

On leave from Purdue, Peter served as a theoretical physicist at two federal agencies: ERDA (1975–77) and the National Science Foundation (1981–83). He moved from Purdue to the Theoretical Division of Los Alamos National Laboratory (1983–90), where he helped to organize an unsuccessful proposal to mount a US gallium solar-neutrino experiment. He also collaborated with James Gelb on the implications of the newly discovered Mikheyev–Smirnov–Wolfenstein mechanism for matter-enhanced neutrino oscillations. In anticipation of the Superconducting Supercollider, Peter left Los Alamos to become dean of science at the University of Texas at Arlington (1990–96), establishing a high-energy-physics group in the physics department.

Peter was a fellow in the American Physical Society and the American Association for the Advancement of Science. In 2000 he became professor emeritus of the University of Texas at Arlington and in 2004 received an honorary degree from Purdue University.

Peter is survived by his wife Adrienne, his son Daniel and his daughter Sarah. *Ephraim Fischbach, Sandip Pakvasa, and Wick Haxton.*

Willy van Neerven 1947–2007

Willy van Neerven died on 15 February 2007. He held a position at the Lorentz Institute of Leiden University and a special professorship at the Vrije Universiteit Amsterdam, working as a theoretical particle physicist.

Willy was born at Weert in the Netherlands

on 3 May 1947. He received his PhD at Nijmegen University in 1975, carrying out thesis studies under the supervision of RP Van Royen and JJ de Swart. As a postdoctoral fellow and during long-term visits he worked at CERN, NIKHEF, Dortmund

University, ETH Zurich, Tallahassee, YITP Stony Brook and DESY. From his early years at CERN and NIKHEF onwards he performed groundbreaking calculations within perturbative quantum field theory.

He was involved in developing important

aspects of quantum electrodynamics (QED), quantum chromodynamics (QCD) and the Standard Model. He developed specific calculation technologies and performed a large number of complete calculations at the one- and two-loop level, including those with different mass scales and polarized initial states.

Willy played a leading role in calculating the two-loop QED-corrections for the Large Electron-Positron collider, which were instrumental in establishing all precision measurements at the Z peak. His pioneering work on the QCD-Wilson coefficients for the deeply inelastic structure functions, also including those for heavy flavours, formed a milestone in QCD and was instrumental for interpreting the experimental data at HERA. He performed one of the first calculations of the polarized next-to-leading-order anomalous dimensions. His work in collider physics covered the celebrated two-loop calculations of the cross-sections for the Drell-Yan process and for Higgs production, which are



Willy van Neerven, who died in February.

of central importance for the physics at the Tevatron and the LHC. He also calculated the next-to-leading QCD corrections to the top-quark cross-section. Without his efforts much of the precision analysis of the data would

have been impossible.

Willy was a driven teacher to the benefit of his students and collaborators. He was equipped with a fabulous encyclopaedic knowledge of many facets of quantum field theory, and also of scientific literature, often down to the volume number, as well as of historic facts down to dates. We all remember conversations with him, especially on walks, during which he enjoyed a good cigar; besides being pleasant they offered a great way to analyse current scientific problems with his collaborators. In his reasoning he was strict but not at all dogmatic. His aim was to understand a physics problem to the very end, whenever possible. Willy understood physics thoroughly as quantitative science and therefore only accepted theories that could be tested by experiment.

He will be greatly missed by friends and colleagues alike.

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