

FACES AND PLACES

LABORATORIES

Wagner hands Dosch the baton at DESY

At a ceremony on 2 March, the outgoing DESY director Albrecht Wagner passed a symbolic baton to his successor, Helmut Dosch (*CERN Courier* December 2008 p33). The event took place in the facility's oldest experimental hall, attended by some 900 members of staff, and doubled as the opening in a series of celebrations marking the laboratory's 50th anniversary this year.

The ceremony began with speeches by representatives of the German research ministry, Bärbel Brumme-Bothe, the City of Hamburg, Rolf Greve, and the German federal state of Brandenburg, Josef Glombik, as well as chair of DESY's Extended Scientific Council, Metin Tolan, and scientific director at GSI in Darmstadt, Horst Stöcker. Wagner then spoke reflectively about the 50 successful years of DESY's history before handing a baton over to Dosch as a symbolic gesture. Dosch then presented his vision for the future of the laboratory.

To mark the start of the 50th anniversary year celebration all of the DESY directors



Dosch, right, takes the baton from Wagner at the ceremony at DESY. (Courtesy DESY Hamburg.)

lent a hand in officially unveiling the newly designed "DESY 50" logo. Finally, Dosch and Wagner tapped a beer keg and officially opened the night's celebration party.

A list of the official events that are planned to celebrate DESY's 50th anniversary can be found at http://zms.desy.de/news/e39081/index_eng.html.

CELEBRATION

CERN honours Charpak's 85th birthday

On 9 March CERN's main auditorium was the venue for a fascinating and moving celebration that marked the 85th birthday of Georges Charpak, who was awarded the Nobel Prize in Physics in 1992 for his invention and development of particle detectors, in particular the multiwire proportional chamber.

Introducing the colloquium CERN's director-general, Rolf Heuer, paid an emphatic tribute to Charpak's work in education. Charpak then gave a 20 minute speech via video conference from his home in Paris. "Dear friends," he began. "Thank you for this unusual celebration. This is the first time that my birthday has been officially celebrated on the correct day". Although his date of birth was recorded as 1 August 1924, Charpak was actually born on 8 March. He went on to speak about his life, including his birth in a village in what is now the Ukraine, his



Georges Charpak, now 85, at CERN in 2005.

emigration to France at the age of seven, his service in the resistance, his imprisonment in a concentration camp, his enthusiastic discovery of physics and his arrival at CERN. "CERN was a wonderful place. I was able to conduct science in total liberty over several decades," he said.

Charpak also spoke about his contribution to developments in the field of detectors for medical imaging and his involvement in education initiatives, the most well known of which is "La Main à la Pâte", a programme that helps schoolchildren to learn about science through simple experiments (*CERN Courier* March 2009 p24). Charpak's speech was followed at CERN by a presentation of his work by former colleague Ioanis Giomataris of CEA-Saclay.

● For the webcast of the entire colloquium, see <http://cdsweb.cern.ch/record/1165736/>.

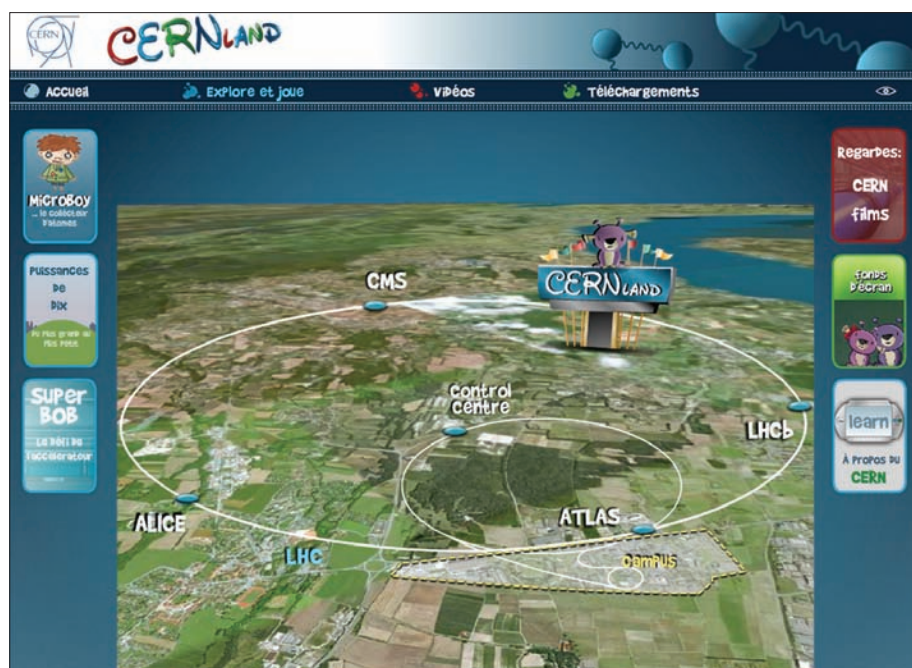
OUTREACH

CERNland: a new virtual theme park

The celebrations for the 20th anniversary of the World Wide Web (p24) saw the public release of a new website for young people: *CERNland* has been developed to bring the excitement of CERN's research to a young audience aged between 7 and 12 with a range of films, games and multimedia applications.

CERNland is designed to teach children about CERN's research in an interactive way. It contains information about CERN, several videos and nine different games on themes as varied as the LHC, the CERN Control Centre, antimatter and even the restaurant. The main goal is to get children playing so that they will get to know about the research being done at CERN through the games and interactive activities. Users do not require any particle-physics expertise but those who click on the information links will be better placed to answer the questions and improve their scores. As with many real theme parks there is no real age limit to enjoying *CERNland*: anyone can follow SuperBob round the LHC or try building atoms by collecting electrons, protons and neutrons.

Young people are an important audience for CERN because there is an increasing demand for a physics-literate graduate population, which is being compounded with falling enrolment in physics courses at university level. *CERNland* aims to attract youngsters before they begin to make decisions that



The *CERNland* website has plenty to attract the young and not-so young to the physics at CERN.

will influence their future career paths. The site has been developed with the help of professional educators and assisted by some of the young people in the age group that it has been designed to reach. Their input has been incorporated into the site's design.

"Society needs more physicists across a range of industries," said CERN's

director-general Rolf Heuer at the launch, "and the way to attract young people into physics is to engage them early with the kind of discovery-science that we do here at CERN, addressing some of the most fundamental questions about our universe."

● To visit *CERNland*, see www.cern.ch/cernland.

NEW PRODUCTS

AMS Technologies has released new Cynergy3 stainless-steel float switches with two liquid-level switching positions or continuous output of 4–20 mA. The devices come in lengths from 10 cm to 3.5 m. The continuous-output devices span from 50 cm to 5 m and the output varies with the level in 10 steps within the span. For more details, tel +49 89 89 5770; e-mail salesinfo@ams.de; or see www.ams.de.

Berkeley Nucleonics Corporation has announced the 1035 areaSam for remote monitoring of radiation levels with isotopic identification of radionuclides. It provides simple identification data backed up by

spectroscopic data and isotope-specific dose rates in real time. Firmware upgrades allow users to set up multiple e-mail addresses to receive ANSI N42.42-compliant reports. For more details contact Robert Coresetti, tel +1 800 234 7858 ext. 250; e-mail robert.coresetti@berkeleynucleonics.com; or see www.berkeleynucleonics.com.

Donaldson Advanced Filtration offers Tetratex ePTFE membrane to protect crystals in a wide range of scintillator applications. The membrane can play a significant role in the reflectance of crystals by decreasing voids as it is pushed on to the surface. It acts as a functional barrier and protective layer for

sodium iodide, caesium iodide, alkali-halide and other hygroscopic crystal materials. For more details, tel +44 1942 711711; fax +44 1942 711571; e-mail advanced-filtration@donaldson.com or see www.donaldson.com.

Heason Technology has launched its new open frame X-Y table range with high-resolution ceramic motors from Nanomotion and super-compact optical encoders from Renishaw. The result is a large working aperture with positioning at better than 1 µm repeatability and 200 mm/s scanning. The first phase covers new models with X and Y travel of 50 mm, 100 mm and 200 mm. For more details contact Jon Howard, tel +44

ART AND SCIENCE



Peter Higgs, left, with John Ellis in front of Higgs' portrait. (Courtesy C Bennetts/Maverick Photo Agency.)

Higgs meets his likeness in Edinburgh

At a special event at the Informatics Forum of the University of Edinburgh on 2 March the principal, Tim O'Shea, unveiled a new portrait of Peter Higgs by the artist Ken Currie. Higgs is professor emeritus at Edinburgh, where he has been since he was appointed lecturer in 1960.

The event celebrated the work of Higgs, of "Higgs boson" fame, and the work of Ken Currie, one of Scotland's most influential artists. The portrait depicts the physicist in a contemplative mood, as scientists around the world are preparing to resume the search for the eponymous particle at the LHC.

There were also two talks at the event,

one by Tom Normand, senior lecturer at the University of St Andrews on "Ken Currie – themes, subjects, and portraits 1985–2008". For the second talk, Richard Kenway, head of the School of Physics and Astronomy at Edinburgh, invited John Ellis of CERN to give the 2009 Robin Schlapp Lecture on "To Higgs or not to Higgs".

The night was made all the more special for Higgs by the presence of many of his friends and colleagues from the days of the Tait Institute of Mathematical Physics, where he did his pivotal work, as well as the current members of the particle-physics theory group.

1403 755800; fax +44 1403 755810; e-mail jhoward@heason.com; or see heason.com.

HiTek Power has introduced the OLS10K family of 10 kW high-voltage power supplies for use in a range of ion and electron beam systems and other applications. The series has 40% lower volume than previous supplies, leading to lower weight and cost. Housed within a single 6U 19 inch rack-mounted chassis, the units are mains powered and provide a range of output voltages from 1 kV to 8 kV. Full remote control and monitoring is available. For more information contact Michelle Quiggan, tel +44 1903 712400; e-mail sales@hitekpower.com; or see www.hitekpower.com.

LG Motion Ltd has announced a new range

of manual and motorized rotary stages with accuracy up to 0.1° and for loads up to 500 kg. The LGR range covers five models with outside diameter of 82–250 mm. The smaller stages include fine handwheel-driven adjustment with a vernier scale for positioning to within 6 arc-min and loads of up to 5 kg. For more details contact Gary Livingstone, tel +44 126 365600; fax +44 1256 365645; e-mail g.livingstone@lg-motion.co.uk; or see www.lg-motion.co.uk.

Maxon Motor AG has launched the EPOS2 Module 36/2, an OEM addition to the EPOS family of digital positioning controllers. The miniaturized plug-in module can operate in various modes within a CANopen network with USB or RS232 interfaces. The company

LETTERS

The high-energy horizon

Further considerations suggest that we revise and expand the third paragraph of our article "The light-pulse horizon", where we addressed the particle-acceleration schemes using lasers (*CERN Courier* March 2009 p22).

Enrico Fermi contemplated a 1 PeV (10^9 MeV) accelerator girdling the Earth. While an energy of peta-electron-volts is in general held to be too ambitious for currently available technology, we see it on the horizon. Laser acceleration may allow us to reach this energy in a device with a size of the order of 1 km employing a sub-picosecond 15 MJ laser. On the way towards this goal, we can test the ultrahigh-gradient acceleration theory at 10 TeV, which we hope can be achieved with a laser of 15 kJ and a 50 fs pulse. Such an intense laser pulse is not yet available, but the proposed Extreme Light Infrastructure (ELI) should offer an opportunity to explore this physics. The peak power of ELI will be in the exawatt (10^{18} W) region – that is 100 000 times the power of the global electricity grid, albeit only over several femtoseconds.

Controlling a beam of even relatively few electrons at such energies may allow us to calibrate high-energy cosmic-ray detectors, study large Lorentz-contraction phenomena such as the Landau–Pomeranchuk–Migdal effect, and test fundamental laws in this new domain, including an exploration of the validity and limits of relativity itself.

Gérard Mourou, Johann Rafelski and Toshiki Tajima.

has also unveiled the MILE encoder with a diameter of 6 mm. It delivers 64 pulses at up to 120 000 rpm and is suited to harsh environments. For more details tel +41 41 666 1500; fax +41 41 666 1650; or see www.maxonmotor.com.

Southern Scientific has introduced the FM 6150K, a new floor monitor for radioactive contamination, which is compact and easily manoeuvred. With a sealed proportional counting tube, it provides high efficiency for $^{90}\text{Sr}/^{90}\text{Y}$ and other alpha and beta emitters such as ^{241}Am , ^{60}Co and ^{137}Cs . A new decontamination gel is also available. DeconGel 1101 is a water-based, peelable hydrogel that can be applied to many surfaces. For more information see www.ssl.gb.com.

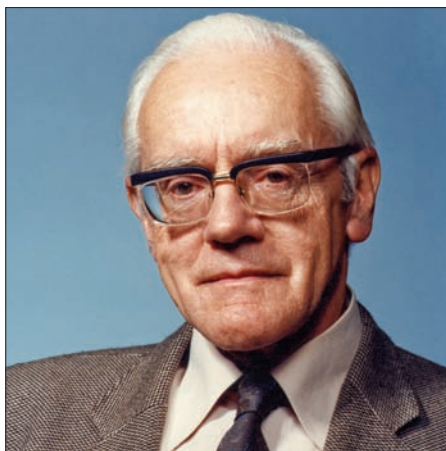
OBITUARIES

John Riley Holt 1918–2009

John Holt was an experimental physicist whose career started with small-scale bench-top experiments just after the discovery of nuclear fission and progressed to the large-scale experiments of today.

Holt came to Liverpool University's physics department in 1934 as a student aged 16; he graduated in 1938 and won the Oliver Lodge Prize for the best undergraduate student in his year. The department was propelled onto the world stage of physics with the arrival of James Chadwick in 1935, the year in which he won the Nobel Prize for his discovery of the neutron. Holt joined Chadwick as a graduate student and started work on studies of artificial radioactive isotopes. The studies changed direction abruptly at the beginning of the Second World War, when Otto Frisch and Rudolf Peierls surmised that a nuclear weapon could be created with a few kilograms of ^{235}U – rather than the tons referred to in Albert Einstein's famous letter to President Roosevelt in 1939. To verify the Frisch–Peierls calculations the rudimentary information available had to be improved. Liverpool, with its newly built cyclotron, became the centre for the necessary measurements and Holt became Frisch's assistant. The culmination of this work was the proof of the feasibility of the production of a nuclear weapon, paving the way for the Manhattan Project.

Holt made several significant discoveries during his career. He was the first to discover that the angular distributions of particles emitted in deuteron-stripping reactions could be used to deduce the orbital angular momentum of the higher energy levels of the final-state nucleus. The agreement of



John Holt. (Courtesy Liverpool University.)

these values with the predictions of the newly proposed shell model of the nucleus helped gain credence for the model. He also measured the helicity of the decay electrons and positrons from muon decay, firmly establishing the weak interaction as a vector and axial-vector interaction rather than as pseudoscalar-tensor, as thought at the time. Furthermore, his demonstration that the helicity of electrons from μ^- decay was opposite to that of positrons from μ^+ decay proved the violation of charge-conjugation invariance in weak decays. These facts are now taken for granted in the Standard Model.

High precision became bywords for Holt's later experiments, such as $\pi\pi$ scattering at the 156 inch synchrocyclotron in Liverpool and a series of studies of π^0 and η photoproduction at the electron synchrotron NINA at the Daresbury Laboratory. In the *NINA scrapbook*, published to celebrate

the synchrotron's 10th anniversary of the electron synchrotron, Sandy Donnachie wrote: "Holt's name has become synonymous with precision and accuracy". Holt had earlier been responsible for the design of the magnet system for NINA, which enabled the first direct extraction of a beam from such a machine.

Holt's final experiment was on deep-inelastic muon scattering in the European Muon Collaboration at CERN in the mid-1980s. His group developed a very large polarized target for experiments to study the spin of the proton in terms of the constituent quarks. The results obtained from these experiments showed that the proton's spin was not simply distributed among its quarks, overturning all of the preconceived ideas of the time. This led to an avalanche of theoretical papers and spawned a whole new series of experiments around the world.

Holt was elected to a Fellowship of the Royal Society in 1964. His deep understanding of the experimental method meant that his opinions were highly valued when important decisions were needed. He was keen to communicate his great enthusiasm for physics to people within and outside the academic world. He was kindly, unassuming and led by example, never seeking the limelight, preferring to work with colleagues young and old. In meetings he was a man of few words but every one counted. His main form of relaxation was gardening and he enjoyed collecting exotic shrubs and trees.

His wife Joan died in 2001 and he is survived by his sons David and Eric and grandsons Christopher and Timothy. *T Sloan, Lancaster University.*

Daniel Morellet 1925–2009

Daniel Morellet nous a quittés le 4 mars dernier, dans sa quatre-vingt quatrième année. Il était entré en 1947 dans le Laboratoire du Professeur Louis Leprince-Ringuet à l'Ecole Polytechnique pour étudier les particules élémentaires. Les rayons cosmiques étaient alors l'unique source de particules de haute énergie et leurs

propriétés devaient être observées avant que leur énergie ne soit dégradée par leur interaction avec les noyaux de l'atmosphère terrestre. Daniel Morellet fit partie du groupe qui utilisait des émulsions photographiques à la fois comme cible et comme détecteur et les exposait dans la stratosphère au moyen de ballons-sondes. Il était chargé de

l'organisation du vol de ces ballons, ainsi que du développement, très délicat, des émulsions qui étaient ensuite observées au microscope pour détecter et mesurer les trajectoires des particules. Tout le groupe étudiait les mésons π , puis des mésons plus lourds – appelés 'étranges' à l'époque – et les hyperons après leur découverte.

Dès l'apparition des premiers accélérateurs, les émulsions comme les chambres de Wilson furent rapidement délaissées au profit de moyens de détection mieux adaptés et le laboratoire construisit des chambres à bulles pour ses premières expériences au PS du CERN. Daniel Morellet rejoignit alors le groupe des Chambres à Bulles à liquides lourds, dirigé par André Lagarrigue. Il étudia les problèmes de statistique liés aux mesures dans ces chambres et à la détermination des quantités physiques objet des expériences ; il s'attacha à définir les méthodes correctes et à les enseigner.

Quand, en 1964, André Lagarrigue fut nommé professeur à Orsay, Daniel Morellet le suivit avec la moitié du groupe et le seconda jusqu'à sa disparition. Il prit en charge l'installation au Laboratoire de l'Accélérateur Linéaire (LAL) puis la préparation des moyens d'analyse pour la grande chambre à bulles Gargamelle construite au CEA sous la direction d'André Lagarrigue. Il contribua à la grande et difficile aventure de l'étude des interactions des neutrinos qui déboucha sur la découverte des courants neutres, l'une des



Daniel Morellet. (Courtesy LAL.)

plus importantes découvertes de la physique des particules au siècle dernier.

Au décès d'André Lagarrigue, il devint responsable du groupe 'Chambre à Bulles' puis sous-directeur du LAL et accompagna la réorientation de ses physiciens vers des expériences d'électronique sur les machines du CERN et de DESY. Sa charge principale fut alors de faire fonctionner

les services du laboratoire pour assurer un soutien technique et administratif aux expériences. Il encouragea en particulier le développement de l'informatique au laboratoire et l'utilisation de la conception assistée par ordinateur pour l'électronique. Il s'acquitta de cette tâche souvent difficile avec beaucoup de dévouement, trouvant un dérivatif dans les cours de physique atomique et nucléaire qu'il donnait à l'Ecole Supérieure d'Electricité et surtout dans la poursuite de ses travaux sur le développement des gerbes électromagnétiques qui ont permis d'améliorer la qualité de la mesure des électrons dans tous les types de détecteurs

Ceux qui l'ont connu garderont le souvenir de la qualité de son accueil, de son humour, de son ouverture d'esprit et de son tempérament toujours égal. Il était attentif à tous les problèmes, petits ou grands, qui apparaissaient dans le laboratoire et il fit en sorte que chacun, chercheur ou technicien, trouve la place qui lui convenait et les moyens dont il avait besoin. Il fit beaucoup, souvent dans l'ombre, pour la réussite des expériences. *Ses collègues et amis.*

Janusz Zakrzewski 1932–2008

Janusz Zakrzewski passed away on 26 October 2008 in Warsaw, Poland, after a long illness.

Zakrzewski studied physics at the University of Warsaw and obtained a PhD in physics at Bristol University in 1961. He was employed at the University of Warsaw from 1956 until his retirement in 2002. In the early stage of his career he was involved in emulsion studies of hypernuclei and participated in the discovery of heavy hypernuclei, as well as the first observation of a double hypernucleus in 1963. In the following years he was involved in K meson physics at the Rutherford High Energy Laboratory in the UK and in studies of interactions of high-energy hadrons with nuclei at Dubna and Serpukhov. In 1983/1984 he took part in the UA2 Collaboration at CERN.

He was an active member of the Polish physics community and a renowned academic. Always interested in teaching, he devoted much effort to the education of young physicists, which he regarded as important as scientific research. He had a natural ability for the clear expression of



Janusz Zakrzewski. (Courtesy A Jagielska.)

thoughts and his public appearances were always perfectly prepared. He is also a co-author (with A K Wróblewski) of a popular Polish student textbook on basic physics.

Zakrzewski was an energetic proponent of co-operation between Polish and German universities and scientific institutions in the 1970s and 1980s, when Polish-German political relations were uneasy. His efforts resulted in a collaboration with DESY, which

started with small-scale participation in the TASSO group and soon transformed into the full involvement of the Polish high-energy-physics community in the HERA project and the ZEUS and H1 experiments.

He was vice-rector of the University of Warsaw (1981–1982) and held functions at the Faculty of Physics. He was dean of the Faculty (1972–1975); and head of the High-Energy Physics Department (1971–1994). In 1976 he was elected member of the Polish Academy of Sciences. He was a member of the European Physical Society and received the society's Cecil Powell Medal in 1990. He was also president of the Polish Physical Society (1987–1991) and was honoured by the Marian Smoluchowski–Emil Warburg Medal of the Polish Physical Society–Deutsche Physikalische Gesellschaft in 2001.

Zakrzewski had many cultural interests including music, history and literature. He will be missed as a good friend, a passionate physicist, a person with a lively sense of humour and impeccable manners.

Jacek Ciborowski.

Anatoly Moskalev 1936–2009

Anatoly Nikolaevich Moskalev died on 18 January at the age of 73. He had suffered following a severe stroke five years ago.

For almost 50 years Moskalev contributed to various parts of physics including high-energy physics and physics of nuclei, but he is best known as one of the pioneers of the development of a specific branch of atomic physics: the investigation of parity-violating processes in atoms. This was the Standard Model of electroweak interactions, which was invented to describe what happens at energies of about 10^{11} eV, manifests itself in radiation from atoms that involves energies of about 10 eV. Work on this subject is still ongoing and several people who started their studies together with Moskalev at the Petersburg Nuclear Physics Institute continue their investigations in universities in the US, the UK and Australia.

In 1975, together with D A Varshalovich and V K Khersonsky, Moskalev published the monograph *Quantum theory of angular momentum*. It was translated into many languages and became widely known, providing the most complete coverage of the subject. It is remarkable that to this day only two misprints have been found in the book, which is mainly a reference book, containing many formulas and tables.

For many years Moskalev gave lectures on classical electrodynamics and later on relativistic quantum theory at the St Petersburg Polytechnical University. His



Anatoly Moskalev. (Courtesy PNPI Theory Dept.)

students remember him as one of the most popular professors, whose lectures were clear and full of physics meaning. These lectures formed the book *Relativistic field theory*, published in Russian several years ago.

In the 1990s Moskalev held high positions in the administration of the Petersburg Nuclear Physics Institute – at the time of a deep crisis in the Russian economy, caused by the disintegration of the Soviet Union. Moskalev did his best to lessen the consequence of this crisis for the institute employees.

We shall remember him as a bright physicist, an excellent professor, a skilful administrator and simply a kind and friendly person. *His colleagues and friends.*

MEETINGS

The **International Neutrino Summer School** (INSS09) will take place at Fermilab on 6–17 July at Fermilab. The summer school aims to cover the full breadth of neutrino physics and will present an opportunity for participants to concentrate on the many aspects of the field that the community will be addressing over the next few decades. It is aimed at advanced graduate students and recent post-docs. Young researchers, either currently engaged in neutrino physics, or those considering it, are encouraged to attend. The final deadline for registration is 30 April. For more information about the summer school and details of how to register, visit <http://projects.fnal.gov/nuss/>.

The **Fourth International Accelerator School for Linear Colliders** (2009 LC School) will be held on 7–18 September at Hotel Jixian, Huairou, near Beijing, under the auspices of the GDE, ILCSC and ICFA Beam Dynamics Panel and hosted by the Institute of High Energy Physics in Beijing. Topics will include an overview of TeV-scale future lepton colliders; accelerator physics for sources, damping rings, linacs and beam delivery systems; and superconducting and warm RF technology, LLRF and high-power RF.

The school will take a maximum of 70 students from around the world. Students will receive financial aid to cover airfare, lodging, meals and local transportation, full or partial. The deadline for registration is 1 June; only online applications will be accepted. For more information, visit www.linearcollider.org/school/2009/.

CLARIFICATION

Commenting on the small resistive zone in an LHC bus connection that led to the incident on 19 September 2008, a recent article (*CERN Courier* January/February p6) stated that “in less than a second the zone led to a resistive voltage of 1 V at 9 kA. The resistance was small – 200 nΩ – dissipating of the order of

10 W at high current intensity.”

A quick application of Ohm's law suggests that these two statements are incompatible. What happened is that the resistance evolved with time as the current was ramped up. In tests on 15 September at 7 kA the resistance was indeed around 200 nΩ and

had it stayed so small there would have been no incident.

However as the current was ramped up to 8.7 kA, localized heating increased the resistance, leading to thermal runaway. Dissipation was nearly 9 kW by the time that the detection threshold of 1 V was reached.



Motion in Vacuum

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