

FACES AND PLACES

CELEBRATION

90-50-10: BNL marks special anniversaries

Brookhaven National Laboratory celebrated a trio of important anniversaries on 10–11 June as part of the annual Relativistic Heavy Ion Collider (RHIC) and Alternating Gradient Synchrotron (AGS) users' meeting. Dubbed "90-50-10", the celebration recognized the 90th birthday of Ernest Courant – one of four accelerator pioneers who originated the idea of strong focusing – together with the 50th anniversary of the start-up of the AGS and the 10th anniversary of operations at RHIC. More than 20 leading scientists, including two Nobel laureates honoured for work at Brookhaven, took the stage with stories of the early days, fierce international competition and building equipment with their bare hands.

"When I got here, it looked like an army camp, filled with barracks," said Courant, who first visited Brookhaven in 1947. The following year, he joined the laboratory "for good" as a member of the team that was assembling Brookhaven's first accelerator, the Cosmotron. This proton synchrotron was the first machine to send particles to giga-electron-volt energies. In 1952, as Courant recalled, word of Brookhaven's success travelled quickly after reaching the world record of 1.3 GeV – almost five times higher energy than had ever been achieved previously.

It particularly interested European physicists who wanted to build a similar, but larger, machine at CERN. They formed a study group with the Brookhaven team to figure out how it could be done; building an accelerator 10 times more powerful than the Cosmotron with existing technology would have required 100 times more steel, resulting in a 200 000-tonne machine. It was at one of these meetings that Courant, M Stanley Livingston and Hartland Snyder presented the solution of strong, or alternate-gradient, focusing. (This idea was first conceived in 1949 by Nicolas Christofilos, who later worked briefly at Brookhaven. Unaware of the work of Christofilos, the Brookhaven team independently developed strong focusing three years later.) CERN went on to implement this scheme in the Proton Synchrotron, while Brookhaven applied it in the AGS.

Nobel laureate James Cronin spoke of his



Ernest Courant and Brookhaven director, Sam Aronson. The yellow tie draped around Courant's neck contains a reproduction of TD Lee's and C N Yang's notes on parity-violation.

experiences at Brookhaven, the first time as a research associate at the Cosmotron. "I want to stress that Brookhaven for me was an extraordinary experience, not only because of what I learnt and did in my own physics, but because of all of the people who surrounded me," he said. "I was so lucky to have this experience of interacting with these high-class, smart people going after problems that could be solved with simple, short experiments. That gets into your culture." Later, as a visiting scientist from Princeton, Cronin, together with Val Fitch and colleagues, discovered CP-violation in K^0 decays at the AGS, where they had set up a detector built mostly by hand. The experiment ran for only one week in 1964, but earned Cronin and Fitch the Nobel prize in 1980.

Samuel Ting, who shared the 1976 Nobel Prize in Physics for the discovery of the J/Ψ particle with Burt Richter, talked about his experience with precision experiments on the ground, and most recently, in space. He said that in his career of some 40 years one of his most difficult tasks was acquiring the five tonnes of soap (along with 100 tonnes of lead and five tonnes of uranium) needed for AGS Experiment 598, the study that eventually revealed the J/Ψ particle. Ting is now working on a different challenge: sending the Alpha Magnetic Spectrometer (AMS) into space. Backed by institutions from 16 countries



Derek Lowenstein (left) receiving the appreciation award from DOE associate director of science for high-energy physics, Dennis Kovar. (Photos courtesy Brookhaven National Laboratory.)

(and about 600 scientists), AMS will measure high-energy charged cosmic rays in the search for antimatter, dark matter and other mysteries of the universe.

Looking to the future of accelerators at Brookhaven, Thomas Roser, collider-accelerator department chair, described how stochastic cooling will increase luminosity at RHIC by almost an order of magnitude. Steve Vigdor, associate laboratory director for nuclear and particle physics, explained that this increased luminosity, coupled with detector upgrades, will permit researchers to quantify the properties of the quark-gluon plasma, search for the "critical point" and study local symmetry violations. Vigdor also described Brookhaven's longer-term plans to add an electron ring to RHIC for the study of electron-ion and electron-polarized proton collisions.

At a celebratory dinner, former AGS and later collider-accelerator department chair, Derek Lowenstein, was presented with an Appreciation Award from the US Department of Energy (DOE). Dennis Kovar, the DOE associate director of science for high-energy physics, commended Lowenstein for his "outstanding leadership and service" as chair for 27 years.

● Based on an article for *The Bulletin*, by Kendra Snyder. For videos of the more than 20 talks, see www.bnl.gov/905010.

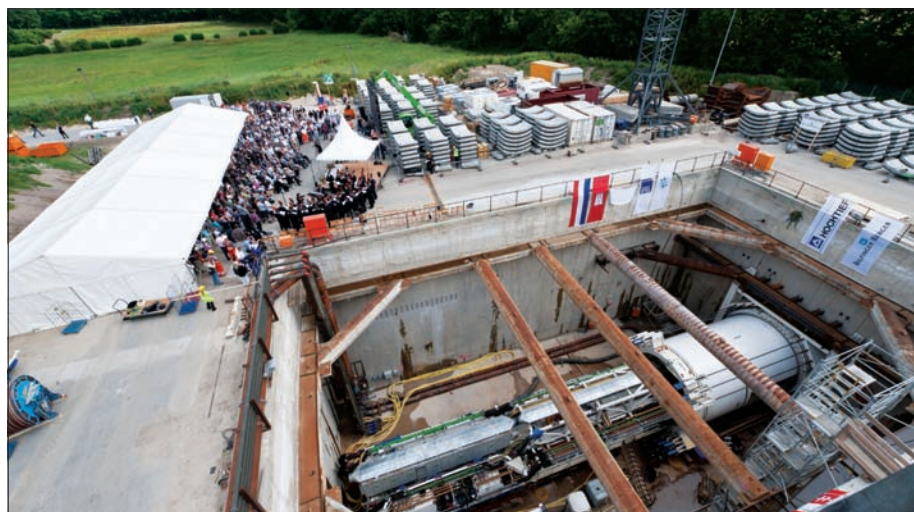
LABORATORIES

Tunnel boring for European XFEL begins

On 7 July the first tunnel-boring machine for the European XFEL started drilling the tunnels for the X-ray laser that will extend for 3.4 km from Schenefeld in north Germany to the site of the DESY laboratory in Hamburg. It will take the machine about a year to excavate two of the photon tunnels plus the main tunnel for the superconducting linear accelerator. It will be joined in late 2010 by a second, smaller machine that will excavate the other sections of the photon-tunnel system.

Before the machine powered up, on 30 June a “tunnel fest” to honour an old custom took place on the site of the future research campus of the European XFEL in Schenefeld. Like mining, tunnel construction in Germany follows a special tradition that still plays an important role for miners and tunnel builders. The tunnel and boring machine were “christened” by their respective patronesses – the tunnel now bears the first name of Hamburg’s state minister for science, Herlind Gundelach, and the machine is called “TULA”, short for “Tunnel for Laser”. The ceremony also featured the blessing of a statue of St Barbara, the patron saint of tunnel works, who is said to protect workers from the dangers connected with their labour.

Around 560 guests from science and politics gathered for the ceremony, which was accompanied in proper style by a miners’ choir. As Massimo Altarelli, managing director of European XFEL GmbH, underlined



With a diameter of 6.17 m, a length of 71 m and a weight of 550 tonnes, the first tunnel-boring machine for the European XFEL commenced drilling operations on 7 June. (Photos courtesy European XFEL.)

in his welcome address, the occasion celebrated: “A double milestone on the road to the European XFEL. First of all, it marked the overall start of tunnel construction. In addition, this is the first time such a ceremony has taken place under the banner of European XFEL GmbH, the new international research facility that will build and operate the European XFEL. The facility has established itself almost unnoticed in northern Germany in recent months, and today marked its first real public debut.” The European XFEL is due to be switched on in 2014.



The patron saint of tunnel works, St Barbara, takes her place to protect workers from danger.

COLLABORATION

South Africa joins the ATLAS experiment

The ATLAS collaboration has increased its reach across Africa now that South Africa has joined Morocco as the second member country from that continent. This development follows a unanimous ballot at the meeting of the ATLAS collaboration board in Copenhagen on 2 July.

South Africa’s contributions to high-energy particle physics began with physicists of South African origin who worked abroad, such as Stanley Mandelstam, well known for this work on the kinematics of particle interactions. The first observation of the

neutrino in cosmic rays occurred in the 1960s in the ERPM gold mine near Boksburg after Friedel Sellschop alerted Fred Reines to this opportunity and then led the South African component of the research team.

South African collaboration at CERN started initially with participation in the NA43, NA59 and NA63 experiments and at the ISOLDE facility. CERN and South Africa then signed a co-operation agreement in 1992. The contributions of theorist Jean Cleymans to the statistical model of particle production

in heavy-ion collisions led to South African participation in the ALICE experiment at the LHC from November 2001. CERN’s John Ellis further encouraged the development of the co-operation with CERN.

The participation in ATLAS was initiated by the head of the South African iThemba Laboratory of Accelerator Based Sciences, Zebulon Vilakazi, who introduced Ketevi Assamagan of Brookhaven National Laboratory to South Africa. This led to the establishment of a new high-energy-physics

group at the University of Johannesburg under Simon Connell, which is aligned with Assamagan's work in the muon-detector subsystem and on the Higgs and supersymmetry sectors. The new group was at first hosted within ATLAS by Brookhaven. At the same time, Peter Jenni, initially as ATLAS spokesperson, worked actively to develop and guide the process of the South African involvement in ATLAS over several years of discussions at both university and government level.

An important step in developing high-energy physics in South Africa was to unify all of the CERN-based activities



South Africa joins Morocco as the second African nation to be involved as a member country.

into one coherent network, known as the SA-CERN Programme (ATLAS, ALICE, ISOLDE and theory). This network worked together

on issues of Grid development, student training, schools planning, interaction with government and by applying jointly for support at a national level.

The programme has also attracted additional people to South Africa. Trevor Vickey moved recently to the University of the Witwatersrand and formed an experimental high-energy-physics group to work within ATLAS on the Semiconductor Tracker and various physics studies. The expression of interest to join ATLAS was made jointly by the Universities of Johannesburg and the Witwatersrand; the University of Cape Town will join soon.

CELEBRATION

CERN marks Lyn Evans' retirement in style

After 41 years at CERN, Lyn Evans has officially retired. For 30 of these years, Evans has been involved in one way or another with the LHC – as it has grown from the first designs in the early 1980s to become reality as the world's highest-energy particle collider, with the first results presented at this year's main summer conference (p5).

Evans came to CERN in 1969 as fellow in the Linac Group, moving to the 300 GeV project that would become the Super Proton Synchrotron (SPS), soon after its approval. He went on to become heavily involved in the operation of the SPS as a proton-antiproton collider, which led to the discovery of the W and Z bosons at CERN and the award of the Nobel prize in physics to Carlo Rubbia and Simon van der Meer. From 1994 he led the LHC Project until the machine started up with first beam in September 2008.

In his time at CERN, Evans worked under a total of 10 directors-general, six of them during the LHC era. All of these six contributed, either in person or by video link, to a special colloquium, "The Large Hadron Collider – from Inception to Operation", which took place at CERN on 15 June to honour Evans on his retirement.

Herwig Schopper (1981–1988) began by recalling the Large Electron-Positron (LEP) collider as "the cradle of the LHC". The size of LEP became the size of the LHC, and the earlier collider gave birth also to a new era in experiments at CERN. With external finance playing an important role, the experiments



Lyn Evans receives a standing ovation at the end of the colloquium to mark his retirement.

became like institutes, involving the international community, especially after the US government abandoned the project for the Superconducting Super Collider.

Carlo Rubbia (1989–1993) joined in by video, offering a memory of when the SPS became the world's first proton-antiproton collider at 4.15 a.m. on 9 July 1981 – an event witnessed only by Rubbia, Evans and Sergio Citterlin in the SPS control room. In his talk that followed those of the directors-general, Evans noted Rubbia's seminal role. "Without the proton-antiproton collider we would not have known how to build the LHC," he said.

The LHC passed from a dream to a fully approved project under Chris Llewellyn Smith (1994–1998), who contributed by video

link. In 1996, CERN Council agreed to the construction of the LHC in a single phase, thanks to the contribution of non-member states. In his appreciation of Evans, Llewellyn Smith noted his great help in working with these countries.

Luciano Maiani (1999–2003), also by video, recalled the "agitated times" during his mandate as director-general. These included the closure of LEP, just when there seemed to be some hints of the long-sought Higgs particle, and the rise in costs of the LHC. There were also happier times, with the main magnet production by industry getting into full swing.

Installation of the LHC was finally completed under Robert Aymar (2004–2008), who was

also able to see the first beams pass round the new machine and host the official inauguration in October 2008. Aymer had been chair of the External Review Committee in 1993 that was mandated by CERN Council to evaluate the LHC project. As director-general he oversaw the resolution of the financial difficulties

Rolf Heuer, the current director-general, had the privilege of presenting the recent successes of the LHC, as the experiments rediscover the “Standard Model zoo” and beam commissioning continues at full speed. He then handed the floor to Evans, who spoke fondly about his time at CERN, delighting the audience with his memories of good times and bad.



Lucio Rossi (right) presents Lyn Evans with the “Lyn Hadron Collider”.

The colloquium ended with a standing ovation for Evans – and two surprises. One

was a small model of an LHC dipole, signed by the six directors-general and named the “Lyn Hadron Collider”. The other, by video, was a live performance by the Morriston Orpheus Choir from Swansea, who had blessed the LHC with song in the CERN Control Centre on 12 October 2008. They finished with the Welsh national anthem. It was a proud moment for the man who, commenting in an interview with the BBC that he had travelled a lot for the LHC, recalled how on meeting the president of China, he thought to himself, “not bad for bloke from Aberdare”.

● For all of the presentations, see <http://indico.cern.ch/conferenceDisplay.py?confId=93701>.

WORKSHOPS

COMPASS turns to new round of QCD studies

The COMPASS collaboration has recently submitted the COMPASS-II proposal to the CERN SPS committee. The aim is to explore several new and interesting aspects of QCD through a whole series of measurements with the versatile COMPASS apparatus.

As one part of the proposal, COMPASS plans to study generalized parton distributions (GPDs) by scattering the highly polarized M2 muon beam off a liquid-hydrogen target surrounded by a recoil detector. The experiment will access as yet uncharted territory between the gluon-dominated region of small Bjorken- x measured by H1 and ZEUS at HERA and the valence-quark-dominated region at large Bjorken- x , which was accessed by HERMES at HERA and at Jefferson Lab. The focus of the GPD programme in the COMPASS-II proposal is the study of the GPD H. This distribution describes interactions in which the helicities of both the struck parton and the nucleon are conserved. Access to H at COMPASS will be provided by the deeply virtual Compton scattering (DVCS) process off unpolarized protons. The same data will make possible the mapping of the transverse position of partons with respect to the fraction of the nucleon longitudinal momentum that they carry. Such a mapping is sometimes referred to as “nucleon tomography”.

As another part of the proposal, COMPASS plans to scatter pions from the M2 beam line off the existing polarized ammonia target,

using an absorber. COMPASS will thereby become the first “polarized” Drell-Yan (DY) experiment to access transverse-momentum-dependent parton distributions (TMDs). Among the distributions to be studied are the Sivers, Boer-Mulders and “pretzelosity” TMDs as well as transversely polarized quark distributions. Examination of the Wilson-line structure of final-state interactions in QCD predicted that the Sivers function should have opposite signs in DY and semi-inclusive DIS (SIDIS) processes. Groups from several laboratories intend to be first to confirm this “restricted universality”, which is rooted in fundamental aspects of QCD.

In addition, the proposal shows how new insights into QCD at low energies will be gained by measurements of exclusive final states produced by incoming high-energy pions at very small momentum-transfer to the recoiling nucleus – that is, in the Primakoff region.

To strengthen the first two of these physics opportunities, the COMPASS collaboration organized two international workshops at CERN in spring 2010. The workshops considered both the theoretical and experimental scenes, including plans for studies at other laboratories around the world.

The first workshop, “GPDs@COMPASS”, concentrated mainly on theoretical aspects after starting with experimental reviews, including a look at existing DVCS measurements. Etienne Burtin of Saclay presented the outlook for COMPASS-II and

underlined that no measurements exist of the specific kinematic domain that COMPASS will access. Matthias Burkardt from New Mexico State University set the theoretical scene by presenting GPDs as an indispensable tool for studying the structure of the nucleon. He also stressed the importance of a (later) continuation of the GPD programme using a transversely polarized proton target to access the GPD E at COMPASS kinematics. Extractions of H and E at similar kinematics are the only known way to determine the total angular momentum of quarks in the nucleon via Ji’s sum rule – a long-term goal of the GPD community. The spatial structure of the nucleon transverse to the direction of motion of particles in the beam will be measured at COMPASS for the region 0.01–0.1 in Bjorken- x , and this will be of special interest for the Monte Carlo simulation of backgrounds at the LHC.

Other topics that were discussed include: nucleon structure from a phenomenological viewpoint; the first promising attempts on global GPD fits; experience building a phenomenological GPD model to describe exclusive vector-meson production data; and, as a complementary approach to determine moments of GPDs, the state of the art in QCD calculations on a Euclidean lattice. The one-day workshop was summarized by Andreas Schäfer of Regensburg, who concluded that for understanding non-collinear QCD – a major task that requires

progress on different research fronts – GPDs are the only known rigorous and undisputed approach. “They do not answer all questions,” he said, “but most questions cannot be answered without them.”

The second workshop, “Studying the hadron structure in Drell-Yan reactions”, covered two days. It opened with reviews of theoretical and experimental progress in the field. In his talk, Daniel Boer of Groningen underlined that measurements of TMDs in DY processes are well suited for the study of 3D aspects of nucleon structure. Paul Reimer of Argonne covered four decades of fixed target and collider DY experiments, including the first observation of TMD-induced effects in the violation of the Lam-Tung relation.

The first day then continued with a focus on theoretical topics, including recent calculations of higher-order QCD corrections for the DY process. Relevant aspects of the formalism of TMDs and TMD phenomenology in DY were discussed and the complementary nature of DY and SIDIS measurements in accessing the underlying physical distributions was highlighted. The day concluded with a round-table covering TMD models and GPD studies in DY processes. The second day saw reviews on all DY measurements planned at world-leading laboratories such as Fermilab, Brookhaven, J-PARC, GSI, JINR and CERN. The huge variety of proposals reflects the strong interest of the community in DY studies, a main focus being the study of spin-dependent effects in DY reactions using polarized beams and/or targets. With COMPASS-II, CERN would have a great opportunity to play a leading role.

In summary, these two workshops successfully strengthened the physics goals of the COMPASS-II proposal, in particular the necessity of new measurements in the kinematic region that is accessible only to COMPASS at CERN.

- The programme details and all of the presentations at the two workshops are available on the web. For GPDs@COMPASS see <http://indico.cern.ch/conferenceDisplay.py?confId=77527>; for Studying the hadron structure in Drell-Yan reactions see <http://indico.cern.ch/conferenceDisplay.py?confId=85721>.

Further reading

COMPASS II Proposal 2010
CERN-SPSC-2010-014/SPSC-P-340.

VISITS



On 13 July **Nikolay Mladenov**, Bulgarian minister of foreign affairs, left, visited CERN. He toured the CMS control centre with **Guido Tonelli**, right, CMS spokesperson, after receiving a general introduction to CERN's activities from Rolf Heuer, CERN's director general.

NEW PRODUCTS

Elma Electronic Systems has released a new two-slot VPX/OpenVPX test and development platform that accommodates both 3U and 6U boards via a shelf divider. This E-Frame Series test platform can connect multiple backplanes and enables developers to power up one or more VPX blades under test and interconnect the J1 fabric connections to emulate an application. The platform allows easy cable access to components on either side of the board under test. For more details, contact Valerie Andrew on +1 510 656 3400; e-mail sales@elma.com; or see www.elma.com.

Hidden Analytical Ltd has announced the extension of the HPR-20 Series of gas analysers with the addition of an expanded range of gas-stream selectors. Standard selector options give the choice of 8, 20, 40 and 80 channels for application to multiple gas-stream control and monitoring in the pressure regime from 10 mbar to 10 bar. Stream selection is fast with switching times of less than 1 s. For more details, tel +44 1925 445 225; or e-mail info@hidden.co.uk.

MKS Instruments Inc has introduced the High Cycle Valve, a small, light and durable vacuum valve rated for 10 000 000 cycles. A new formed stainless-steel bellows prevents outgassing, virtual leaks and particle entrapment, ensuring easy maintenance and extending the cycle life of the valve.

High-flow port sizes use maximum internal diameters for greater conductance. For more details, contact Mary Ann Naddy on +1 978 645 5538; fax +1 978 557 5100; e-mail MaryAnn_Naddy@mksinst.com; or visit www.mksinst.com.

Pfeiffer Vacuum has announced HiPace M, a new series of magnetically levitated turbopumps for pumping speeds of 300, 700 and 800 l/s and high compression ratios for all gases. The pumps are characterized by their high flexibility in all installation orientations, while a special rotor design affords dependable operation. The low dynamic magnetic field does not interfere with nearby equipment. For more details, contact Sabine Neubrand-Trylat on +49 6441 802 169, fax +49 6441 802 500; e-mail Sabine-Neubrand@pfeiffer-vacuum.de; or see www.pfeiffer-vacuum.net.

Trek Inc has introduced its 2200 Series of 40 W high-voltage amplifiers. Three initial models, 2205, 2210 and 2220, provide output voltage ranges of ± 500 V, ± 1 kV and ± 2 kV, respectively. The series also includes features such as DC stability and wide bandwidth, well regulated and controlled AC-output signals, DC-offset adjustment with front panel metering and auto-recovery shutdown for output-overpowering protection. For more details, tel +1 585 798 3140; e-mail sales@trekinc.com; or see www.trekinc.com.

COMMUNICATION

SPARC Europe gives CERN an award for open access

SPARC Europe has presented its 5th Award for Outstanding Achievements in Scholarly Communications to CERN for its comprehensive approach to open access, especially with regard to the SCOAP³ project – the Sponsoring Consortium for Open-Access Publishing. Salvatore Mele received the award on behalf of CERN during the LIBER annual conference in Aarhus.

SPARC Europe is an alliance of more than 100 European research libraries, library organizations and research institutions. It aims to provide a voice for the community and the support and tools it needs to bring positive changes to the system of

scholarly communications.

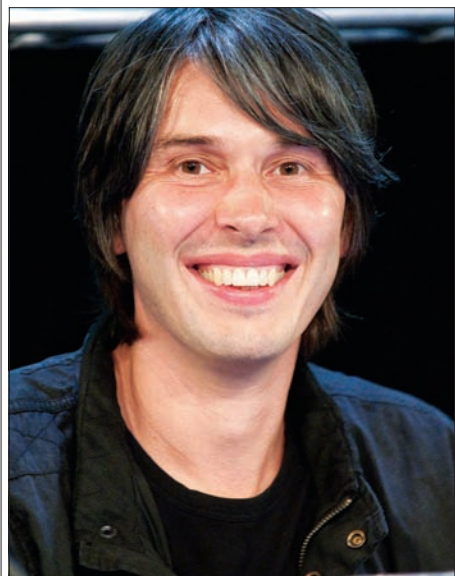
The award to CERN recognizes that the organization has passed several milestones in its open-access-publication policy: in 2003 a policy document was issued to reinforce self-archiving by researchers; in 2004 CERN signed the Berlin Declaration; and in 2005 CERN's policy on open access was approved, requiring researchers to deposit a copy of their published articles in an open-access repository and encouraging them to publish in open-access journals. CERN launched the SCOAP³ project in 2007, which aims to aid open-access publishing in high-energy physics by re-directing subscription money.



Salvatore Mele, right, received the award on behalf of CERN, from Bas Savenije, chair of SPARC Europe. (Courtesy Henrik Storgaard Sørensen.)

UK honours for services to science

Brian Cox of Manchester University is to become an officer of the Order of the British Empire (OBE) for services to science, as announced in the Queen's Birthday Honours list for 2010. Cox, a particle physicist, most recently with the ATLAS collaboration, has become well known as a presenter of television and radio programmes about science.



Brian Cox, OBE. (Courtesy Jesse Karjalainen.)

Also named is Jerry Cowhig, the managing director of IOP Publishing, publishers of the *CERN Courier*, among other titles. Cowhig, who will be made member of the British Empire (MBE), has been managing director of IOP Publishing for 15 years, presiding over a major expansion of the firm's international activities. Like Cox, Cowhig is honoured for his services to science.



Jerry Cowhig, MBE. (Courtesy IOP Publishing.)

APS opens access to LHC articles

On 6 July, the American Physical Society (APS) and CERN announced that initial experimental results from the LHC published in *Physical Review Letters* and *Physical Review* will be made available open access and under a Creative Commons licence, for all interested parties to read and reuse. With this gesture, the APS and CERN "acknowledged the fundamental significance of the work being performed by these large international collaborations".

First to appear under this agreement is a paper from the CMS collaboration, with results on transverse-momentum and pseudorapidity distributions of charged hadrons in proton-proton collisions at 7 TeV centre-of-mass energy (Khachatryan et al. 2010). The results indicate an increase in the number of charged particles per unit pseudorapidity that exceeds the predictions of the commonly-used event simulation models.

Further reading

For the APS announcement, see <http://prl.aps.org/edannounce/2010-APS-CERN-LHC>. V Khachatryan et al. (CMS collaboration) 2010 *Phys. Rev. Lett.* **105** 022002.

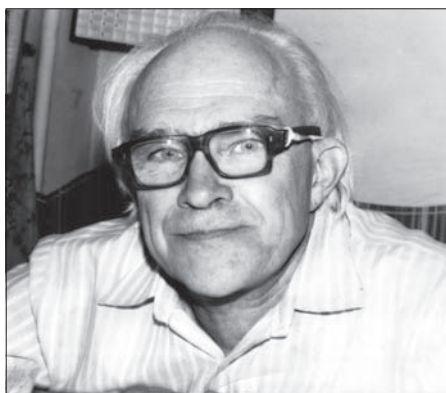
OBITUARIES

Georgy Leksin 1929–2010

Georgy Leksin, a well known experimental particle and nuclear physicist at the Institute for Theoretical and Experimental Physics (ITEP) in Moscow, passed away on 27 June.

Georgy was born in Moscow on 24 December 1929. He graduated from the Physics Department of Moscow State University and followed this with a PhD at JINR on proton-deuteron backward scattering, before moving to ITEP in 1957. His interests covered a range of questions, from the development of the spark-chamber technique, through π - π scattering and polar diagrams in nuclear physics, to particle interactions inside nuclear matter.

Georgy led experimental studies of inelastic nuclear interactions that were carried out in research centres around the world, including ITEP, JINR, the Institute of High Energy Physics (Protvino), Yerevan, CERN, Fermilab and DESY. This research showed that the spectra



Georgy Leksin. (Courtesy ITEP.)

of hadrons (proton, pions, kaons) emitted in high-energy nuclear reactions outside the kinematical region of quasi-nucleon interactions do not depend on the energy of the incident particle and its type (protons, pions, kaons, photons, neutrinos) or on the

atomic number of the target nucleus. The most popular explanation for this phenomenon was through the interaction of incident high-energy particles with dense droplets inside nuclei (like heavy multiquark bags).

Being a scientifically motivated person, Georgy educated in his group many top-level physicists who now work in research laboratories all over the world. He was one of the founders of the ITEP Winter Physics School, which has attracted young talented scientists for more than 35 years.

He was also greatly interested in various aspects of culture, especially in painting, architecture and history – an interest that he transferred to many of his colleagues. All those who had the pleasure of meeting Georgy will remember him as a wonderful person.

Alexander Arefyev, Mikhail Danilov, Vladimir Gavrilov and Yuri Zaitsev, ITEP.

Gilles Sauvage 1939–2010

Gilles Sauvage, a physicist from LAPP-Annecy working with ATLAS, passed away on 21 April.

Gilles Sauvage was deeply involved in many generations of experiments at CERN as he followed the evolution of the field at the energy frontier. He started with the group from Laboratoire de l'Accélérateur Linéaire, Orsay, working in the WA2 hyperon experiment at the Super Proton Synchrotron (SPS), from 1976 to 1979. With the same group he became a founding member of the UA2 collaboration at the SPS $p\bar{p}$ Collider, in which he was active throughout the duration of the experiment. He then moved to the Laboratoire d'Annecy-Le-Vieux de Physique des Particules (LAPP) in 1986 and joined first the L3 group at the Large Electron-Positron collider, making important contributions to the construction, calibration, installation and commissioning of the BGO crystal calorimeter. Later, in the mid-1990s, Gilles joined ATLAS and led the LAPP-Annecy group through the intense period of the construction at LAPP of one third of the modules for the ATLAS liquid-argon barrel electromagnetic calorimeter. He then



Gilles Sauvage. (Courtesy LAPP.)

followed “hands-on” its integration and installation at CERN. He retired in 2006, but his passion for physics motivated him to remain fully active until the last day.

For those of us who worked with him in designing, constructing and testing the liquid-argon electromagnetic barrel calorimeter, Gilles was rather like our living encyclopedia. We often asked him about the finest details on how the calorimeter was built and assembled. While the modules were being built at LAPP, Gilles was with them day

and night, and he led their assembly into two half-barrel cylinders as well as the insertion into the cryostat.

Gilles was an exceptional experimentalist, who also set high standards in how to work with great human qualities in a large collaboration. He always sought the most elegant technical and scientific solutions, and would not accept easy short-cuts. He never acted as a “big boss”, but instead motivated junior and senior colleagues by setting the example of working hard on the floor over many years.

Having coffee with Gilles was always a great pleasure, as he would remember a story of his past experiments – little anecdotes that only he knew. He was also poetic, often referring to flowers, birds and treks in the mountains. And when Gilles described his garden it was like being there and seeing every plant grow, tasting every fruit.

It is hard to imagine how to continue without him. Our thoughts and sympathy go to his family and close friends.

Colleagues and friends from ATLAS.