

Faces & Places

AWARDS

Ben Segal joins Internet Hall of Fame

CERN's Ben Segal is one of 24 new inductees into the Internet Hall of Fame, which annually honours individuals selected by the Internet Society for their significant contribution to developing and advancing the internet. At a ceremony on 8 April in Hong Kong, Segal was awarded the honour of Global Connector, for an individual who has made significant contributions to the global growth and use of the internet.

Segal joined CERN's Data Handling Division in 1971 and, as CERN's first official "TCP/IP Co-ordinator", from 1985 to 1988, was responsible for co-ordinating the introduction of internet protocols within the

laboratory. He also taught TCP/IP and Unix, and distributed computing in many countries in Europe, Asia and Latin America from 1986 until his retirement in 2002.

Segal continues to work at CERN as an honorary staff member, focussing on volunteer computing using the BOINC infrastructure to harness large amounts of computing power from the public, in projects such as the Citizen Cyberscience Centre, LHC@home and Africa@home (*CERN Courier* September 2006 p62). He joins three other CERN members of the Internet Hall of Fame: World Wide Web innovators Tim Berners-Lee and Robert Cailliau, and



Ben Segal joins the Internet Hall of Fame. (Image credit: Christiane Segal.)

internet innovator François Flückiger (*CERN Courier* September 2013 p58).

Canada honours members of ALPHA collaboration

At a ceremony that took place on 3 February in Ottawa, Canadian members of the ALPHA collaboration were presented with the Natural Sciences and Engineering Research Council's John C Polanyi Award by Governor General of Canada David Johnston. The prize "honours an individual or team whose Canadian-based research has led to a recent outstanding advance in the natural sciences or engineering".

ALPHA's Canadian team received this prestigious national award for its contribution to the experiment's successes



in trapping and measuring antihydrogen atoms. Using techniques developed by the team, the collaboration measured for the first time the response of trapped antihydrogen to microwaves, which opened the door to comparing it with the well-known response of hydrogen (*CERN Courier* April 2012 p7).

The ALPHA-Canada team includes plasma, atomic, condensed-matter, particle, detector,

Makoto Fujiwara, leader of the ALPHA-Canada team, left, shakes hands with the Governor General of Canada at the award ceremony. (Image credit: MCpl Vincent Carbonneau, Rideau Hall/Her Majesty The Queen in Right of Canada represented by the Office of the Secretary to the Governor General (2014).)

and accelerator physicists, and students from the University of British Columbia, Simon Fraser University, the University of Calgary, York University and TRIUMF. They contributed particularly in electronics and analysis for the annihilation detector, and the development of the microwave system for measuring antihydrogen's ground-state structure. The engineering and construction of ALPHA-2's atom-trap cryostat was also led by Canadian institutes.

SCHOOL

Particle physics in the Philippines

For the first time, a particle-physics school organized in collaboration with CERN has taken place in the Philippines. The venue was the National Institute of Physics at the University of the Philippines Diliman, close to Manila. The eight-day programme of lectures, ranging from basic particle physics to results from the LHC and other interesting frontier experiments, also included a special afternoon for the public. Lecturers came not only from various Manila-based universities and CERN, but also from the south of the Philippines (Mindanao) and from nearby Taiwan.

The school targeted secondary-school

students in their final year as well as undergraduates from science and engineering departments in universities across the Philippines. Its success was testified by the numbers: more than 500 students applied to participate and around 100 followed the school throughout. Many of the students expressed an interest in following up the subject further and in applying to CERN's summer student programme. Former CERN summer students gave feedback – at times emotional – on their personal experience of their stays at CERN.

The school would not have been possible



The first particle-physics school in the Philippines, co-sponsored by CERN. (Image credit: André David.)

without the support of CERN and the Philippines Department of Science and Technology. The plan is to repeat the school a few years from now.

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LHC UPGRADE

CMS travels to the past to plan the future

With the aim of expanding the physics reach of the experiments at the LHC, the High Luminosity LHC (HL-LHC) project will allow the collider to reach an instantaneous luminosity an order of magnitude higher after it is upgraded around 2020. To exploit the full power of the accelerator and to survive the hostile high-radiation environment, as well as to meet the challenge of reconstructing the more than 100 interactions that will occur at each bunch crossing, the detectors at the LHC will need to undergo extensive upgrade programmes of their own.

Between 31 March and 4 April, 264 experts from the CMS collaboration and from 80 institutes worldwide congregated at the Karlsruhe Institute für Technologie (KIT) for a meeting organized by the Institut für Experimentelle Kernphysik (IEKP) – a long-term CMS member institute – to exchange ideas and plan an ambitious upgrade of the CMS detector. The five-day conference focused on the preparation of a technical proposal to be submitted to the LHC Committee at its September session. With 130 presentations in plenary and parallel sessions, accompanied by eight management meetings, this CMS week provided a unique opportunity to review the motivations for the proposed upgrades and to consolidate the organization of the R&D programmes.

The engagement of the collaboration in the HL-LHC upgrade has escalated recently and tremendous progress was reported at the meeting, demonstrating the strength of the programme to fully exploit the HL-LHC and its most challenging physics potential. Major innovations foreseen for the future detector include a new “light” tracker, with selective read-out at 40 MHz for the purpose of enabling



Above: Members of the CMS collaboration on arrival in Bad Herrenalb. Right: CMS spokesperson Tiziano Camporesi in the driving seat. (Image credits: KIT.)

a hardware trigger, and an extension of coverage in the forward region, in conjunction with high-resolution and fine-granularity endcap calorimetry, to discern vector-boson fusion or scattering processes. Many new ideas to provide enhanced reduction of background, mitigate the effect of pile-up and improve acceptance for various physics signals were also discussed.

To take a break from the intense discussions and long meeting days, the collaboration took a trip into the past, travelling on a 90-year-old steam train into the Black Forest. Thirty kilometres south of Karlsruhe, the small spa town of Bad Herrenalb – and home town of the organizer of the CMS week, Thomas Muller – welcomed the visitors with a traditional “Schwarzwaldabend”. Accompanied by



regional food, the participants enjoyed presentations by the local hornblowers and traditional dancers. Another highlight of the evening was the awarding of a model of CMS laser-engraved into a crystal to Simon Weingarten from RWTH Aachen, for the best poster presented at the meeting.

MEETINGS

HF2014, the **55th ICFA Advanced Beam Dynamics Workshop on High Luminosity Circular e⁺e⁻ Colliders – Higgs Factory** will take place on 9–12 October in Beijing, hosted by the Institute of High Energy Physics, Chinese Academy of Sciences. ICFA supports studies of energy-frontier circular colliders and encourages global co-ordination. Topics will range from parameters and optics through superconducting RF to instrumentation and control. The deadline for registration is 31 August. For more

details, visit <http://hf2014.ihep.ac.cn/>.

The **3rd International Workshop on Accelerator-Driven Sub-Critical Systems and Thorium Utilization** will be held on 14–17 October at Virginia Commonwealth University, Richmond, Virginia. The workshop will include working sessions on fast-spectrum and thorium-based systems, and thermal-spectrum systems, as well as superconducting RF ingot niobium technology, accelerator systems and enabling technologies. It will also seek to identify

CORRECTION

The article “Neutrinos and nucleons” (*CERN Courier* April 2014 p23) erroneously stated that the Gargamelle bubble chamber had been built at Orsay. While André Lagarrigue, who was the inspired leader of the project was at Orsay, the chamber was built at Saclay. Apologies to all concerned.

areas of common interest to explore the possibilities of future collaboration. For further information, visit <http://adsthu.org/index.html>.

CERN

ELENA building inaugurated

A new building for the future Extra Low ENergy Antiproton (ELENA) ring was inaugurated at CERN on 11 April, less than a year after construction began. Erected at the side of the Antiproton Decelerator (AD), the building will house a cleaning room, workshops and generators for the AD's kicker magnets, to free space in the AD hall where ELENA will be installed.

To make space for the building, some 10,000 tonnes of earth had to be moved by around 500 lorries. The presence of the TT2 transfer tunnel directly beneath the building also posed a number of technical challenges. An 800-mm-thick shielding slab has been implemented to shield the building from radiation.

The demand for low-energy antiprotons at the AD continues to grow, particularly in the field of antihydrogen spectroscopy and measurements of gravitational effects on antimatter, and the AD alone can no longer provide the number of antiprotons needed. ELENA – a small magnetic decelerator ring 30 m in circumference that will fit inside the present AD hall – will slow down the 5.3 MeV antiprotons from the AD to an energy of only 100 keV. This will increase the number of trapped antiprotons in the AD experiments by a factor of 10–100. In addition, ELENA will allow parallel operation of up to four experiments.

The project's Technical Design Report has been published recently and the work is progressing well. ELENA's deceleration ring will be installed in the AD hall in the middle of 2015 and its research programme should begin two years later.



Above: The newly inaugurated ELENA building at CERN. (Image credit: CERN-PHOTO-201404-075 – 1.) Top right: ELENA project leader, Christian Carli, second from left, and François Butin, technical co-ordinator of the project, left, spoke at the inauguration ceremony. (Image credit: CERN-PHOTO-201404-075 – 11.)



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VISITS



Philippe Courard, the Belgian state secretary for social affairs, families, the disabled and scientific policy, in charge of occupational risks, came to CERN on 28 March. His visit included a descent into the LHC tunnel and the CMS experimental hall at Point 5. (Image credit: CERN-PHOTO-201403-063 – 29.)



During her visit to CERN, also on 28 March, the Italian minister of education, university and research, **Stefania Giannini**, centre, was shown the ATLAS experimental cavern by former spokesperson, **Fabiola Gianotti**, left, and current spokesperson, **Dave Charlton**. (Image credit: CERN-PHOTO-201404-067 – 28.)



Albert Frick, left, president of the Liechtenstein parliament, visited CERN on 1 April. He toured the ATLAS experimental hall, the LHC tunnel and the Globe of Science and Innovation, and met with the director-general, **Rolf Heuer**. (Image credit: CERN-PHOTO-201404-066 – 15.)



Left: On 2 April, the president of Germany, **Joachim Gauck**, right, and his delegation, visited the LHC tunnel and ATLAS underground experimental area, accompanied by the director-general, **Rolf Heuer**. Right: At a round-table discussion with German-speaking scientists in the Globe of Science and Innovation, the panel included, left to right, **Georg Schütte**, state secretary of the German Federal Ministry of Education and Research, **Maria Böhmer**, minister of state at the Federal Foreign Office, **Joachim Gauck**, **Rolf Heuer**, **David Gill**, state secretary and head of the President's Office, and **Otto Lampe**, German ambassador to Switzerland. (Image credits, left to right: CERN-PHOTO-201404-069 – 8, CERN-PHOTO-201404-069 – 56.)

OBITUARIES

Ian Butterworth 1930–2013

Ian Butterworth sadly died on 1 December, two days before his 83rd birthday. He was a major force in European particle physics, from the late 1950s until leaving his post as research director at CERN in 1986 to become the principal of Queen Mary College, London.

Ian obtained his PhD at Manchester in Patrick Blackett's cosmic-ray group and later followed Blackett to Imperial College – a connection he retained for the remainder of his life. In the 1960s and early 1970s, the bubble chamber was the principal device for pictorial examination of particle reactions, and this was Ian's area of expertise. The discoveries of resonant hadronic states dominated research at that time, and the patterns that emerged ultimately established the "Eightfold Way" and led to the quark model. Ian's speciality was investigating these resonances using mass spectra and partial-wave analysis, and he gave plenary talks at many international conferences on both meson and baryon resonances.

Ian had vision. He recognized that innovation and particularly information technology (IT) would not only bring substantial benefit but would also prove essential for advances. Following a stay at Berkeley in the 1960s, he initiated a UK programme to equip groups with Hough–Powell automatic measuring machines, and in the 1970s he was influential in enabling the Imperial College group to engage with a team at SLAC in developing the hybrid rapid-cycling bubble-chamber facility to investigate processes too rare for a conventional chamber. The potentialities of IT fascinated him. While not a software expert, he appreciated the importance of cutting-edge computing and ensured that at Imperial there



Ian Butterworth. (Image credit: Meilin Sancho/Imperial College London.)

would be local state-of-the-art computing facilities. One of his great pleasures as research director at CERN was that his remit covered the data-handling division, so he could discuss these matters with the experts. Later in his career he was one of the first to appreciate the importance of computer networking and the great potential of the web.

Ian's desire to make things happen extended to committees and he proved an excellent committee chair. In the area of particle physics, he was chair of the UK's film-analysis committee and Nuclear Physics Board, and of the Super Proton Synchrotron Committee at CERN. In his later days, he chaired many more committees associated with publishing and European co-operation in education and research.

He held many appointments: head of the Rutherford Laboratory's bubble chamber group (1968–1971), head of the Imperial High-Energy Physics group (1971–1983),

head of the Imperial College Physics Department (1981–1983), research director at CERN (1983–1986), principal of Queen Mary College, London (1986–1990) and pro-vice-chancellor of the University of London for European Affairs (1989–1991). He was elected a fellow of the Royal Society in 1981 and to the Academia Europaea in 1989, which reinforced his interest in pan-European approaches to education and research.

Things changed for Ian in 1990 when, at the age of 60, he had a stroke. However, less than a year later he was back at Imperial and active in the ZEUS experiment at DESY with colleagues he had worked with previously while studying baryon resonances. His interests broadened and he became chair of the board of IOP Publishing Ltd, and with his undiminished love for technological advance moved the company to embrace electronic publishing. He was very proud when they published the world's first electronic physics journal and were subsequently the first to move all their publications to the web.

He was soon working tirelessly on his two major interests: the effective use of the web for electronic publishing and the advancement of a coherent European strategy for education and research. Much of this was under the auspices of the Academia Europaea, and he was elected a vice-president in 1997. During the past few years he gave up much of the committee work but retained a deep interest in European culture and continued to enjoy travelling around Europe, not least to follow another passion, excellent food.

Ian was a unique person – warm-hearted, lively and excellent company. He leaves a daughter, Jody, and son-in-law, Nicholas.

● *Peter Dornan, Imperial College London.*

Giorgio Giacomelli 1931–2014

Giorgio Maria Giacomelli, professor emeritus of experimental physics of the Alma Mater Studiorum – University of Bologna – died on 30 January. He was one of the leading scientists who contributed significantly to the university's excellence in experimental particle physics.

Born in Cagli in 1931, Giorgio received a degree in physics from the University of Bologna in 1954, followed by a PhD in

physics from the University of Rochester, New York, in 1958. He was appointed professor of general physics at the University of Padua in 1971 and then at the University of Bologna in 1974. He was director of the Institute of Physics and later of the Department of Physics of the Alma Mater.

Countless universities and international research laboratories beyond Italy had the privilege of Giorgio's collaboration and

teaching – the University of Rochester, CERN, the Atomic Energy Research Establishment at Harwell, the Brookhaven National Laboratory, the Institute of High-Energy Physics in Serpukhov, Fermilab, the University of Kyoto, and the University of California, at Berkeley and Riverside. He was a committed advocate for co-operation and science dissemination in universities and laboratories in developing countries,

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initiating collaborations with Oujda, Kolkata, Islamabad, Bamako, São Paulo and Recife.

At the Alma Mater, Giorgio trained and mentored generations of students and researchers, supervising hundreds of undergraduate and postgraduate theses in Italy and abroad. His scientific attitude, an uncompromising refusal of any approach that was not scientifically founded, a rare ability to synthesize and identify solutions – all of these combined with an uncommon physics insight to make him recognized as a master in the field.

Among his important results, the following are worth mentioning: total and elastic hadronic cross-section measurements from a few million electron-volts to 1.8 TeV; the discovery of around 10 new structures/resonances (Brookhaven 1966–1970); the discovery of rising K^+p total cross-section (Serpukhov 1970–1971), π^+p , K^-p and $\bar{p}p$ total cross-sections (Fermilab 1974–1980, 1988–1990); hadron production in pp , pN and $\bar{p}p$ collisions from a few giga-electron-volts to 1.8 TeV (CERN Intersecting Storage Rings, Serpukhov, Fermilab, 1968–1984) at low transverse momentum (p_T); the determination of simple scaling laws and of the main features of hadron production, leading to the four-jet structure in high- p_T hadron collisions; detection of d , ^3H and ^3He in an intense RF-separated beam at CERN's Super Proton Synchrotron (1977–1978); the study of K^+N collisions at 0.6–2 GeV (1964–1970); and the study of (anti) ν –



Giorgio Giacomelli. (Image credit: Stefano Cecchini.)

deuteron collisions in the Big European Bubble Chamber (CERN 1980–1988).

Giorgio was a member of the OPAL collaboration and its leading committees. He was co-spokesman of the MACRO experiment at the Gran Sasso National Laboratory, which in 1998 co-discovered, with Soudan-2 and Super-Kamiokande, neutrino oscillations in the atmospheric sector. MACRO also yielded the best direct limits on grand-unified-theory magnetic monopoles (CERN Courier May 2003 p21). He contributed to the ANTARES and OPERA experiments, being an active member until the end.

He was author of more than 800 publications in scientific journals, 450 reports and conference proceedings, and 50 scientific monographs. He was also a

member of many national and international scientific committees, which included the European Committee for Future Accelerators and committees of CERN, Fermilab and INFN. At the time of his death, he was still a collaborator with INFN and CERN, a fellow of the American Physical Society, “*socio benemerito*” of the Italian Physical Society, and a member of the European Physical Society, the Accademia delle Scienze di Bologna and the New York Academy of Sciences.

From the late 1960s, Giorgio was a respected and admired group leader. He had a unique ability to identify an individual's natural talent, whatever its nature, whether it be theoretical or experimental, organizational or communication skills. Undergraduates and graduate students, technicians and researchers, young and old – he was able to find, appreciate and value their best qualities, which became a resource for the whole team.

Giorgio coupled leadership with kindness. His natural respect for people, his lack of any cultural or gender bias, and his gentle but determined nature created a friendly and efficient work environment where everyone always felt welcome and valued. A natural communicator, in later years he increased his dedication to the popularization of science, and was chairman of the University of Bologna's popularization website, www.scienzagiovane.unibo.it.

● *His privileged and affectionate collaborators and friends.*

Jean Perez y Jorba 1930–2013

An important personality in the world of particle physics, Jean Perez y Jorba passed away on 10 January 2013, after an accident at the age of 82.

Jean Perez y Jorba entered the Ecole Normale Supérieure in 1949. From the beginning it was obvious that he was extremely gifted. He oriented himself in experimental nuclear physics, beginning with a stay in Saclay, before moving to the laboratory of Hans von Halban in Oxford. When Halban moved to the Ecole Normale, Perez y Jorba came back with him, and then followed Halban to Orsay, to the Laboratoire de l'Accélérateur Linéaire (LAL), where a linear electron accelerator was being built.

As the machine was beginning to function, Pierre Lehmann and Perez y Jorba came to CERN to consult the theory division, where I worked, early in 1961. Their problem was that, because of the



Jean Perez y Jorba. (Image credit: LAL.)

structure of the beam, they could not make coincidence experiments, but could only measure the energy and angle of the outgoing electron, and they asked what to do. Together with Sergio Fubini, we started working on the blackboard and concluded that they could measure two and only two

functions of two variables. These were what were later called the “structure functions”, which maybe we were the first to discover. In July of the same year, I learnt that James Bjorken had obtained the same result.

Perez y Jorba went on to perform many important experiments in Orsay and trained many students. He became a full professor at the University of Paris XI in 1963. From 1975 to 1986 he was director of LAL. He was a member of many committees, both in France and elsewhere, especially at CERN, where he was a member of the Research Board and of the Scientific Policy Committee. He was also a member of the European Committee for Future Accelerators and of the scientific committee of the DESY laboratory in Hamburg. In 1994 he became a French delegate at CERN Council.

In 1986, Perez y Jorba founded the Magistère de Physique Fondamentale in Orsay. Because of his scientific rigour

and insistence on quality, this high-level course, which he ran until 1998, became a flagship in the teaching programme of the university, where he was also dean of the faculty of sciences from 1991 to 1996.

Perez y Jorba was demanding of himself and of others – something that not everyone appreciated, but he cared a great deal for those with whom he worked, and was deeply human.

This text is based largely, with kind permission, on an obituary by Alain Cordier, published in *l'Archicube*, the periodical of the alumni of the Ecole Normale.

● *André Martin, CERN.*

Ioana Videau 1937–2014

It is with great sorrow that her colleagues and friends learned that Ioana Videau passed away on 1 April. She had a very productive career in physics, combining a flair for analysis with an excellent technical competence in data acquisition and computing techniques.

In 1967, Ioana came from Romania to France to do her PhD at the Ecole Polytechnique on a bubble-chamber experiment. There she met her husband, Henri Videau, with whom she collaborated on many experiments throughout the years. From 1969 to 1978, she worked on the hyperon-beam experiment, for which she had already played a key role in the data-acquisition system. She then spent a few years in the US at the Lawrence Berkeley National Laboratory. Working on the Mark II detector at the SPEAR electron-positron collider at SLAC, she engaged in studies of the then poorly known charmed mesons and baryons.

Returning to Europe, Ioana participated in the conception and construction of the ALEPH detector at CERN's Large Electron-Positron Collider. She took responsibility for the data-acquisition modules and programs



Ioana Videau. (Image credit: Videau family.)

for the electromagnetic calorimeters that were built in France and the UK. At the start of data taking, in a period of difficulties, she was asked by the collaboration to lead the online data-acquisition group. With her characteristic mixture of technical skills, dedication, strong convictions, and sensitivity toward human relationships, she united the group's efforts and allowed ALEPH to proceed with an excellent and efficient team. With an acute interest in data analysis, she focused on B physics and

determination of electroweak parameters, and mentored a number of graduate students.

Ioana moved to the Laboratoire de l'Accélérateur Linéaire, Orsay, in 1992, and served as deputy director in the years 1996–1997. In 1997, she joined the LHCb collaboration and participated in the conception of the calorimeter electronics and its use in the trigger. However, her main impact was in unifying control of the electronics in the cavern with a system that is immune to single-event upsets.

At the request of Tatsuya Nakada, spokesman of the collaboration, Ioana served as LHCb's deputy spokesperson from 1999 to 2001. At the end of her term, she was asked by the leader of CERN's Experimental Physics (EP) Division to become his deputy. She then set up a group with experts from the EP and IT divisions to develop software tools common to all the four big LHC experiments. That this was a success owes a great deal to Ioana's skills, leadership and professional relationships.

She will be missed greatly. We offer our deepest condolences to her husband Henri and their children.

● *Colleagues and friends.*



Left: The fire brigade in January 1961. The majority of the firefighters were recruited from the Paris professional Fire Brigade. Right: CERN's Fire Brigade team in April 2011. CERN's Fire and Rescue Service (FRS, GS-FB Group) currently consists of 58 professionals. These are highly sought-after positions: for just a handful of vacancies, hundreds of applications are submitted from all over Europe. only professional firefighters with at least five years' experience at a centre with high levels of operational activity may apply...and they must also have a good command of at least one of the

Organization's two official languages. In 2010, the Fire Brigade welcomed its first female firefighter, quickly followed by two more. For many years, the members of CERN's Fire Brigade went on call-outs clad in their work trousers and fire-rescue coats, which only afforded them partial protection. Today, textile manufacturing techniques have moved on a long way and CERN's firefighters are now kitted out with state-of-the-art personal protective equipment. The coat and trousers are three-layered, comprising fire-resistant aramide, a protective membrane and a thermal lining. (Image credits: CERN-SA-6103294 CERN-GE-1104113 01.)

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