

Faces & Places

CERN

Building 774: open for business



Left: The foundation stone for Building 774 was laid in a ceremony on 28 February 2013, attended by Stéphane Donnot, sub-prefect of Gex, Octavio Mestre and Francesco Soppelsa, the building's architects, and Sigurd Lettow, CERN's director of administration and general infrastructure. (Image credit: CERN-GE-I302044-01.) Right: Almost exactly two years later, the building was handed over to the Beams Department, to house the large Control group together for the first time. (Image credit: Francesco Soppelsa.)

In July 2012, the demolition of Building 936 on CERN's Prévessin site marked the start of the Building 774 project. Less than three years later, on 23 February, the new 3900-m² building was handed over to the Beams Department. The 120 occupants of the building have just moved into their new home, bringing all of the members of the

department's Controls group into the same building for the first time. The location near to the CERN Control Centre (CCC) is a huge advantage for the members of the Controls group, who interact with the accelerator operators several times a day.

Building 774 contains offices, laboratories and meeting rooms, and a huge public

area consisting of a 104-seat auditorium, a changing room/shower in the basement, and a cafeteria. Thanks to its public areas and reserved parking for buses and coaches, the building will become a pivotal location for welcoming visitors and dignitaries to the Prévessin site. The inauguration, planned for mid-May, will bring the project to a close.

AWARDS

ATLAS physicist wins L'Oréal–UNESCO Women in Science award

Rajaâ Cherkaoui El Moursli, vice-president of the Mohammed V University, Rabat, is one of the five laureates of the 2015 L'Oréal–UNESCO For Women in Science Awards. She has received the award "for her key contribution to one of the greatest discoveries in physics: proof of the existence of the Higgs boson, the particle responsible for the creation of mass in the universe".

El Moursli, who contributed to the simulation and construction of the electromagnetic calorimeter of the ATLAS experiment at the LHC, leads a group in Rabat working on the consolidation of a



distributed-analysis support team (DAST) for ATLAS. DAST is a team of shifters forming the front line for all help requests on distributed data analysis. The focus of her team's analysis is on top-quark and Higgs-boson physics.

The award winners, selected from five different regions of the world, were recognized for their contributions to groundbreaking discoveries in the physical sciences, in a ceremony at the Sorbonne

Award-winning woman in science: Rajaâ Cherkaoui El Moursli. (Image credit: Brigitte Lacombe.)

University in Paris on 18 March. El Moursli won the prize for Africa and the Arab States; inorganic chemist Yi Xie for Asia/Pacific; physical chemist Carol Robinson for Europe; astronomer Thaisa Storchi Bergmann for Latin America; and polymer chemist Molly Shoichet for North America.

● For an interview with El Moursli, visit atlas.ch/news/2015/atlas-physicist-wins-loreale-unesco-women-in-science-award.html.

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At the 117th session of the JINR Scientific Council, held on 19–20 February, the prestigious international Bruno Pontecorvo Prize for 2014 was awarded to Grigory Domogatsky, right, of the Russian Academy of Sciences Institute for Nuclear Research, Moscow, for his outstanding contributions to high-energy neutrino astrophysics and neutrino astronomy, in particular, for pioneering the development of a method for

detecting high-energy neutrinos using an underwater detector, and the construction of the experiment at Lake Baikal. The Bruno Pontecorvo prize was established at JINR in 1995 to commemorate the name of this important physicist. It is awarded annually by the international jury to scientists who have made a significant contribution to the field of elementary-particle physics. The award was presented by Victor Matveev, the director of JINR. (Image credit: JINR.)

Chalmers University honours Maria Borge

Maria José García Borge, spokesperson and leader of the ISOLDE physics group at CERN, is to receive an honorary doctorate from Chalmers University of Technology in Gothenburg, in a ceremony on 9 May. The award recognizes her “exceptionally strong merits within nuclear and atomic physics, in particular concerning experimental studies of exotic light subatomic systems, mainly her expertise within the field of β -delayed particle emission is world leading”. Leader of the ISOLDE physics group at CERN since 2012, she is also research professor at the Consejo Superior de Investigaciones Científicas, Madrid, and has collaborated closely with the researchers at Chalmers for decades.

Chalmers awards its honorary doctorates to people who have a strong relationship with the university, in recognition of a prominent professional performance associated with the



Maria José García Borge. (Image credit: CERN-PHOTO-201503-045-1.)

university's areas of expertise. The awards for 2015 go also to Ludvig Strigeus and Martin Lorentzon for their work with the music service Spotify, computer-scientist Benjamin Pierce, and biotechnologist Jay D Keasling.

MEETING

The 13th International Conference on Heavy Ion Accelerator Technology (HIAT2015) will be held at Yokohama, Japan, on 7–11 September. HIAT is an international conference dedicated to the design, construction, development and operation of heavy-ion accelerators and their components. It focuses on the operational experience of existing

facilities, achievements in heavy-ion accelerator physics and technology, progress on the implementation of new projects and infrastructure upgrades, and trends in the proposal and design of heavy-ion accelerators as well as their main systems and components. For further information, visit www.nishina.riken.jp/hiat2015/.

SCHOOL

CLASHEP goes to Ecuador

The eighth CERN–Latin-American School of High-Energy Physics (CLASHEP) took place in the Hacienda Chorlavi, near Ibarra in Ecuador, on 4–17 March. A total of 69 students, of 19 different nationalities, followed an intense programme of lectures and discussion sessions. The teachers, from 11 different countries, also reflected the global nature of high-energy physics.

In addition to courses on numerous aspects of particle-physics theory, there were classes addressing experimental facilities and statistical techniques. By popular demand, some additional lectures were scheduled in optional after-dinner sessions. The students also presented and discussed their own research in an informal evening poster session, and worked on group projects.

Organizing the school was an important event for the host country, Ecuador, where discussions are going on with two universities, Escuela Politecnica Nacional (EPN), Quito, and Universidad San Francisco de Quito (USFQ), as well as with the national funding agency Secretaría de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT), towards a possible formal national and institutional involvement in the CMS experiment at CERN. This builds on the already existing effort at the level of individual Ecuadorian physicists.

The strong interest in particle physics was exemplified by high-level representation at the opening of the school, including Rina Pazos, general sub-secretary of SENESCYT, Jaime Calderon, rector of EPN, and Carlos Montufar, president of USFQ. Also present were Fernando Albericio, rector of Yachay Tech University,



Left: Students participating in a discussion session at the school. (Image credit: EPN.)



Right: John Iliopoulos discussing with students in an ad-hoc after-dinner session at the school. (Image credit: USFQ.)

and Daniel Larson, chancellor of Yachay Tech University. This interest was also reflected in the visit to CERN of Ecuadorian president Rafael Correa Delgado in October 2014 (*CERN Courier* January/February 2015 p36).

Having a large number of eminent scientists as teachers at the school was an opportunity for the local organizers, led by Edgar Carrera from USFQ, to arrange associated outreach activities. These included four public lectures in Quito, with audiences of up to about 400, and one at Yachay. The school and associated activities were also covered in local, regional and national newspapers.

An important objective of the school, in addition to teaching the participants about particle physics and related disciplines, is to foster cultural exchange and networking between young researchers from different countries. With this end in mind, an effort was made to mix students from different

countries in the discussion and project groups, and also in shared sleeping quarters.

In addition to the academic activities, the participants had the occasion to experience the natural beauty of Ecuador. Excursions included the spectacular volcanic Cuicocha lake, the tropical forest in the Seven Waterfalls reserve and the thermal springs at Chachimbiro, as well as the towns of Cotacachi, Ibarra and Otavalo.

● CERN is involved in organizing two off-site, residential schools of high-energy physics each year. The Latin-American events have been held in odd-numbered years since 2001, alternating with Asia-Europe-Pacific Schools in even-numbered years since 2012 (*CERN Courier* January/February 2015 p35). Schools have been organized annually in Europe since the early 1960s (*CERN Courier* June 2013 p27). For more information on the schools of physics, visit cern.ch/PhysicSchool/.



CERN has received the award of Best Swiss Twitter Page 2015. Nicholas Muldoon, Agile coach at Twitter, selected CERN from a shortlist of 10 Twitter accounts, ranging from tourism to luxury brands to sports personalities. He says that he chose the @CERN account for a number of reasons, the most significant for him being “that @CERN is bringing people around the world into one of the greatest explorations of our universe, and doing it in a very social-media-savvy way”. Muldoon presented the award to Kate Kahle, CERN’s social-media manager, and James Gillies, CERN’s head of communications, at the worldwebforum conference in Zurich on 10 March. (Image credit: CERN-PHOTO-201503-060-4.)

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VISITS



As the LHC underground areas closed for the start of Run 2, CMS provided one place still available for visits. On 26 February, the Polish minister of foreign affairs, **Grzegorz Schetyna**, right, came to CERN. Before touring CMS, he met briefly with the president of CERN Council, Polish physicist **Agnieszka Zalewska**. (Image credit: CERN-PHOTO-201502-040-34.)



On 3 March, **Eladio Loizaga**, Paraguay's minister of external relations, visited CERN to sign a statement of intent between the government of the Republic of Paraguay and CERN. Following the signature, he visited the CMS experimental area at point 5 on the LHC. (Image credit: CERN-PHOTO-201503-043-4.)

On the morning of 5 March, it was the turn of **Abul Hassan Mahmood Ali**, left, foreign minister, People's Republic of Bangladesh, to come to CERN. After meeting the director-general, **Rolf Heuer**, he went on to see CMS together with Emanuel Tsesmelis, CERN's adviser for the People's Republic of Bangladesh. (Image credit: CERN-PHOTO-201503-044-3.)



One of the highest-ranking Buddhist masters, **His Holiness the XIth Gyalwang Drukpa**, came to CERN on 17 March for the event "Science meets Buddhism: Great minds, great matters", at which he discussed the intersection of science, philosophy and spirituality with some of the laboratory's leading scientists. (Image credit: CERN-PHOTO-201503-054-1.)



In the afternoon of 5 March, **Manuel González Sanz**, right, minister of foreign affairs and worship for the Republic of Costa Rica, visited CERN. During his time at the laboratory he also toured the CMS underground cavern together with the spokesperson, **Tiziano Camporesi**. (Image credit: CERN-PHOTO-201503-046-26.)

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OBITUARIES

Klaus Winter 1930–2015

Distinguished CERN physicist Klaus Winter passed away on 9 February, after a long illness.

Winter graduated from the university of his native Hamburg, before moving to Paris where, in 1958, he obtained his PhD in nuclear physics from the Collège de France under the supervision of Francis Perrin. It was then that he learnt to master his immaculate French, and also developed a deep interest in modern art, which would accompany him for the rest of his life.

In 1958, Winter joined the staff of CERN, where he remained for his entire career. His first experiment – a measurement of the lifetime of π^0 mesons at the Proton Synchrotron (PS) in the group of Guy von Dardel – became the subject of his “habilitation” in Hamburg in 1963. He was soon promoted to senior physicist and leader of a CERN research group. Shortly after the discovery of CP violation in 1964, he began measurements of the interference of the decays of K_L^0 and K_S^0 into two charged pions, and was one of the first to determine the phase of the CP asymmetry parameter, η_{+-} . Together with Marcel Vivargent, he subsequently led a precision experiment to test the $\Delta Q = \Delta S$ rule in semileptonic K^0 decays.

Soon after the Intersecting Storage Rings were commissioned in 1971, Winter’s research shifted to the study of proton–proton collisions at the highest energies then attainable. Leading the CERN–Hamburg–Orsay–Vienna (CHOV) collaboration, his investigations focused on the study of elastic proton–proton scattering, diffraction dissociation and double pomeron exchange with the Split-Field Magnet facility.

When the Super Proton Synchrotron (SPS) came into operation in the late 1970s, Winter returned to weak-interaction physics and began to devote his career to the investigation of neutrinos – the least understood elementary particles at that time. First in a long series of measurements with the SPS neutrino beam was the experiment



Klaus Winter and the CHARM detector in 1978. (Image credit: CERN-PHOTO-7812581-1.)

of the CERN–Hamburg–Amsterdam–Rome–Moscow (CHARM) collaboration, which he set up jointly with Ugo Amaldi. The experiment was designed to study in detail the neutrino neutral-current interactions, discovered in 1973 with the Gargamelle bubble chamber at the PS. A unique feature of the CHARM detector was the target calorimeter, which used large plates of Carrara marble as absorber material. This experiment was followed by CHARM II, optimized for the measurement of neutral-current neutrino–electron interactions and based on a 700-t target calorimeter built from glass plates and streamer tubes. Through deep-inelastic neutrino scattering, these experiments allowed, *inter alia*, measurements of the electroweak mixing angle, θ_w , and of nucleon structure functions, thereby making seminal contributions to establishing the Standard Model of particle physics.

The last experiment under Winter’s leadership, from 1991 until his retirement, was CHORUS. This used a hybrid emulsion–electronic detector designed primarily to search for $\nu_\mu \rightarrow \nu_\tau$ oscillations in the then-favoured region of large mass-squared differences and small mixing angle.

In recognition of these fundamental results, obtained with innovative and original experimental techniques, in 1993, Winter was awarded the Stern–Gerlach Medal, the highest distinction of the German Physical Society, for exceptional achievements in experimental physics. In 1997, he was

awarded the Bruno Pontecorvo Prize for his major contributions to neutrino physics by the JINR in Dubna.

Winter was a visionary and uncompromising scientist who applied the highest standards to his own work, as well as to that of his many students and collaborators. He paid particular attention to the quality of his publications and to the publications of others: as a long-term editor, he helped to establish *Physics Letters B* as one of the leading high-energy physics journals. He was also the editor of two renowned books, *Neutrino Physics* (1991 and 2000) and *Neutrino Mass* with Guido Altarelli (2003), and served for many years on the advisory committee of the prestigious International Conference on Neutrino Physics and Astrophysics.

In 1973, he became honorary professor at the University of Hamburg. Later, soon after the reunification of Germany, he became a guest professor at the Humboldt University of Berlin, where he taught particle physics for many years. Under his impact, Humboldt University established one of the first chairs of experimental high-energy physics in former East Germany.

Only a few years after his retirement from CERN, Winter suffered a bicycle accident from which he never recovered fully. With his passing, the particle-physics community has lost an outstanding scientist and recognized leader. We will remember him with sympathy and gratitude.
● *His friends and colleagues.*

Anatoly Alekseevich Logunov 1926–2015

Anatoly Alekseevich Logunov, an outstanding Russian theorist in the field of quantum theory and gravitation, and a founder

of large-scale high-energy physics research in Russia, passed away on 1 March in Moscow. Born on 30 December 1926, Logunov

studied physics at Moscow State University (MSU), where he received his Candidate of Sciences degree (equivalent to a PhD) in



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astrophysics. Soon afterwards, he joined the theoretical group led by Nicolai Bogoliubov, and concentrated on what was then a new and promising problem of renormalization in quantum field theory. In 1956, Logunov generalized the renormalization group in gauge theories (QED), introducing the “running” gauge parameter. Three years later he showed, with Bogoliubov and Dmitry Shirkov, that the causality principle enables the elimination of the “ghost” (Landau) pole from the effective QED coupling. During the 1950s, Logunov also proved many dispersion relations on the basis of the “majorization” of relevant Feynman diagrams.

Working with Albert Tavkhelidze, in 1963 Logunov developed a covariant generalization of the potential interaction on the basis of the “quasi-potential” equation, which allowed a probabilistic treatment of the wave function to be extended in a relativistic context. Then in 1967, together with Lev Soloviev, Logunov and Tavkhelidze derived the famous finite-energy sum rules that related the resonance and Regge energy regions, leading to the notion of “duality”. At the same time, the growing role of particle production in higher-energy collisions prompted Logunov to search for a new approach to multiparticle processes. In 1967, he introduced a new class of cross-sections (later referred to as “inclusive”) to deal with reactions producing many particles, and obtained general bounds on their high-energy behaviour. Two years later, the experimental study of inclusive processes at the Serpukhov accelerator revealed the effect of “scaling” in hadron production.

In 1963, at the age of only 36, Logunov was appointed director of the newly established Institute for High Energy Physics (IHEP) near Serpukhov. The 70-GeV proton



Anatoly Alekseevich Logunov. (Image credit: IHEP.)

synchrotron (U-70) was constructed under his leadership and commissioned in 1967. For five years the U-70 held the world record for proton-beam energy, and saw the launch of unprecedented international co-operation in experimental research. The most active participation was by groups from CERN (under an agreement of 1967) and the French Commissariat à l'énergie atomique (an agreement of 1966). Logunov played a key role in establishing this first large-scale collaboration between what was then the Soviet Union and the West. His deep personal conviction about the international nature of fundamental science helped him to obtain the necessary support from the national government and the academic community. He remained director of IHEP until 1974, and was appointed to the post again in the years 1993–2003.

A full member of the Russian Academy of Sciences from 1972, Logunov was vice-president in the years 1974–1991. In this role, he managed to consolidate the high-energy particle-physics community in Russia, in particular, under the State

Programme for High-Energy Physics (1987–1992), which provided the funding and support for new research projects in Protvino, Troitsk, Baksan and Novosibirsk. He was also rector of MSU from 1977 until 1992, and managed to bring autonomy to the university and to do much for its future development. He established new faculties of materials science (1991), sociology (1989), foreign languages and area studies (1988).

At the age of 50, Logunov switched unexpectedly to problems of gravitation, a subject quite far from his previous research interests. Starting from a critical review of Albert Einstein's general-relativity theory, Logunov finally came to his own theory based on a rigorous implementation of the energy–momentum and angular-momentum conservation laws. His theory of gravitation – the relativistic theory of gravitation – keeps pseudo-Euclidean geometry as a basis, allowing the gravitational field to be treated as a conventional physical field in the sense of Faraday and Maxwell. A peculiar feature of the theory is that the gravitational field is massive. Moreover, there are no black holes, and the spatially infinite universe evolves cyclically there. All known observational data comply with the theory. Logunov considered his research on gravitation to be his life's aim, and worked on it enthusiastically until his last days.

In recognition of his achievements in research and in the development of science, he received the highest awards of the Soviet Union and the Russian Federation, as well as honorary titles and prizes, and awards from many foreign universities.

Anatoly Alekseevich Logunov will be remembered by all of his colleagues and future generations of researchers.

● *His colleagues at IHEP, Protvino.*

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