Faces & Places

Awards

Carlo Rubbia awarded China's highest scientific prize

Carlo Rubbia, Nobel laureate for physics in 1984 and CERN's Director-General from 1989 to 1994, has been awarded the International Scientific and Technological Co-operation Award by the People's Republic of China.

The award honours the significant contributions that Rubbia has made to China's scientific development in the field of high-energy physics.

During the last 30 years, Rubbia has been devoted to promoting co-operation in science and technology between China and Europe. Particularly since 1989, when serving as Director-General of CERN, he promoted collaboration between CERN and the Institute of High Energy Physics, Chinese Academy of Sciences (IHEPCAS), helped to construct the experimental high-energy physics base in China, and supported IHEPCAS in accessing the internet.

Under his leadership, in 1993 CERN proposed free internet protocols and procedures, which had important significance for the development of the internet as well as its application in China. Moreover, he enhanced co-operation in the fields of energy and the environment between Italy and China, and supported China's research in accelerator-driven systems, with significant achievements.

Rubbia, who was appointed a senator-for-life of the Italian Republic in 2013, is currently a president of the Chinese University of Mining and Technology's Institute of Sustainable Energy. The institute's main research focus is on zero-emission energy systems, energy-storage systems, and transmitting electric power over long distances using superconductors.

This work follows his recent research on finding solutions to the world's energy crisis through renewable sources. As a result of this, Rubbia has held several positions on energy advisory boards, including the United Nations Economic Commission for Latin America. He is currently a professor at the Gran Sasso Science Institue (INFN) and spokesman of the ICARUS experiment (one of the three SBN experiments at Fermilab).

The prize – considered to be the top honour for foreign individuals – is awarded to several scientists each year for their contributions to China's social, technological and economic development.

CERN is extremely proud of this new recognition for Rubbia, whose contribution to the history of both particle physics and CERN itself has been critical.

Rubbia was presented with the award by president Xi Jinping and premier Li Keqiang in Beijing on 8 January.

CERN

Carlo Rubbia, Nobel laureate for physics and former CERN Director-General, has been awarded the International Scientific and Technological Co-operation Award by the People's Republic of China.

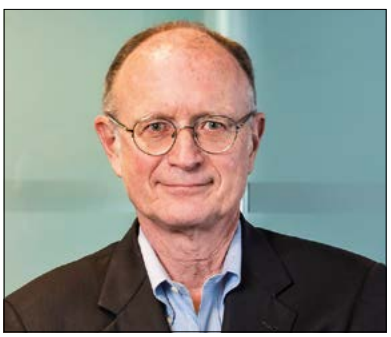
Appointments

New director for Lawrence Berkeley National Laboratory

Michael Witherell, vice chancellor for research at the University of California Santa Barbara (UCSB), has been appointed the new director of the Lawrence Berkeley National Laboratory (Lawrence Berkeley National Lab), in the US.

Witherell is a leading particle physicist with a highly distinguished career in teaching, research and managing complex organisations. He has received numerous honours and recognitions for his scientific contributions and achievements. Witherell is the former director of the Fermi National Accelerator Laboratory (Fermilab) and currently holds the presidential chair in physics at UCSB.

Photo by Majed



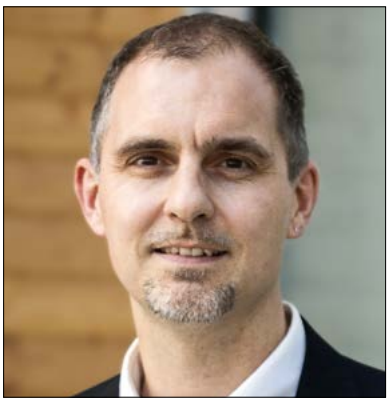
Michael Witherell.

Witherell is a member of the LUX collaboration (*CERN Courier* December 2013 p8) and he was also a member of the CMS collaboration. Before that, he studied e^+e^- collisions with the BaBar, CLEO and SLD detectors, and charm production in fixed-target experiments at Fermilab E-691, with a particular interest in heavy-quark physics.

Lawrence Berkeley National Lab, the internationally renowned institution whose scientific expertise has been recognised with 13 Nobel prizes, is managed by the University of California on behalf of the US Department of Energy (DOE) since it was founded in 1931.

New leadership structure accelerates TRIUMF

TRIUMF



Reiner Krücken.

With a fresh leadership structure at TRIUMF, the laboratory's new deputy director (DD), Reiner Krücken, will guide the realisation of TRIUMF's scientific vision.

TRIUMF recently instituted changes to the laboratory's management structure, as the organisation enters into its latest five-year plan (FYP), 2015–2020. Changes included renaming the Science Division the Physical Sciences Division, and creating the Life Science Division, into which the current Nuclear Medicine Division will be integrated as a department. All divisions will be under the leadership of associate laboratory directors (ALDs, replacing division heads). Most significantly, a DD position was created, with Dr Reiner Krücken being appointed to the new role by director Jonathan Bagger. All changes were effective as of 1 October 2015.

The DD's responsibilities include supporting the director in driving TRIUMF's projects in the current FYP, such as the Advanced Rare IsotopE Laboratory (ARIEL) and the upcoming Institute for Advanced Medical Isotopes (IAMI). The DD will work across TRIUMF's divisions – accelerator, physical sciences, life sciences, and engineering – to realise the FYP in a safe and effective manner, as well as to develop the laboratory's long-term science strategy.

Krücken is ready for the job. He developed a profound knowledge of TRIUMF's research programme while leading the laboratory's (now) Physical Sciences Division since 2011, co-editing TRIUMF's 2010–2015 FYP, and creating the ARIEL science workshop series. Moreover, he founded the Isotopes for Science and Medicine (IsoSiM) programme, a joint venture between TRIUMF and the University of British Columbia under the Natural Sciences and Engineering Research Council of Canada (NSERC) Collaborative Research and Training Experience (CREATE) programme umbrella. IsoSiM will expose students and postdocs to the interdisciplinary nature and applications of isotope science, providing them with a unique training opportunity within UBC and TRIUMF's diverse research programmes. His broad scientific interests, which have evolved from experimental nuclear physics to applications of nuclear physics in medicine and other scientific fields, are particularly well suited for his role, interacting with all of the associate lab directors.

As the new DD, Krücken declares his primary goal to be achieving TRIUMF's FYP vision. He emphasises that ARIEL is a key priority upon which the laboratory's future is based, because it will solidify TRIUMF's position as a world-leading isotope-production facility for studies in particle physics, nuclear physics, materials science and nuclear medicine.

With both Bagger and Krücken at the helm, and a new management structure in place, TRIUMF is well poised to navigate the challenges facing the laboratory in the exciting times ahead.

CELEBRATIONS

Aleksandr Skrinsky celebrates his 80th birthday

Valentin Baev

Aleksandr Skrinsky.

Aleksandr (Sasha) Skrinsky, currently the scientific leader of Budker Institute of Nuclear Physics (Russia), turned 80 on 15 January.

Skrinsky is well-known for his contribution to the development of colliding beams in storage rings. At the VEP-1 and VEPP-2 colliders in Novosibirsk, Skrinsky and colleagues conducted a series of pioneering tests of quantum electrodynamics and studies of vector mesons. Studies on the beams in storage rings led to the discovery of the longitudinal and transverse coherent instabilities and, subsequently, to the development of methods for their suppression. Skrinsky was also the first to show the nonlinear nature of the beam–beam effects in circular accelerators. In particular, he showed the role of nonlinear resonances and stochastic instability in reducing the luminosity of colliders.

In the 1970s, Skrinsky played a leading role in the development of the theory of spin motion in circular accelerators, based on the invention of the periodic spin precession axis. Together with colleagues, he proposed a method for the precise measurement of elementary particle mass by resonant depolarisation of electron–positron beams. In 1974, Skrinsky and colleagues developed the theory of "electron cooling" (proposed by G I Budker in 1967), and confirmed it experimentally. The method has been widely used at many laboratories around the world, including CERN, GSI (Germany), and IMP (China).

During the past few years, Skrinsky has worked on the ionisation cooling of muons for muon colliders. Skrinsky is an expert on free-electron lasers (FELs), for which he proposed the optical klystron. Largely through his efforts, a number of Russian laboratories have been involved in the LHC programme.

Today, while he continues to ski and run regularly, Skrinsky participates in experiments at the VEPP-4M and VEPP-2000 colliders, and is involved in the design of the Super-tau-charm factory, one of the most ambitious scientific projects in the field of high-energy physics.

JINR celebrates 90th birthday of academician Alexander Baldin

JINR

Alexander Mikhailovich Baldin.

On 26 February, the scientific community of the Joint Institute for Nuclear Research (JINR) celebrated Alexander Mikhailovich Baldin, who was born on the same day in 1926 in the Krasnaja Presnja district of Moscow.

Baldin's youth and student years were lived during the Second World War and post-war reconstruction. In 1946, he was invited to continue his studies at the newly established Moscow Mechanics Institute of Ammunition – later named the Moscow Engineering Physics Institute (MEPhI) – from which he graduated in 1949.

Baldin's first research work was on the theory of particle motion in a cyclic accelerator. These investigations allowed him to develop a method that was used to improve the performance of JINR's Synchrophasotron, and it is still being widely used in calculations for the design of new accelerators. In the early 1950s, Baldin developed the theory of meson photoproduction off nucleons and nuclei, and in 1973 he was awarded the USSR State Prize for pioneering research in pi-meson photoproduction.

In 1968, in his capacity as a scientific leader of JINR, Baldin set nuclear interactions at relativistic energies as a major research activity. Under his guidance, the Synchrophasotron was modified to become a specialised accelerator of relativistic and polarised nuclei, which led to the discovery of the nuclear cumulative effect predicted by Baldin. The results of the first period of studies with relativistic nuclei enabled Baldin to suggest the idea of a new, superconducting accelerator – the Nuclotron.

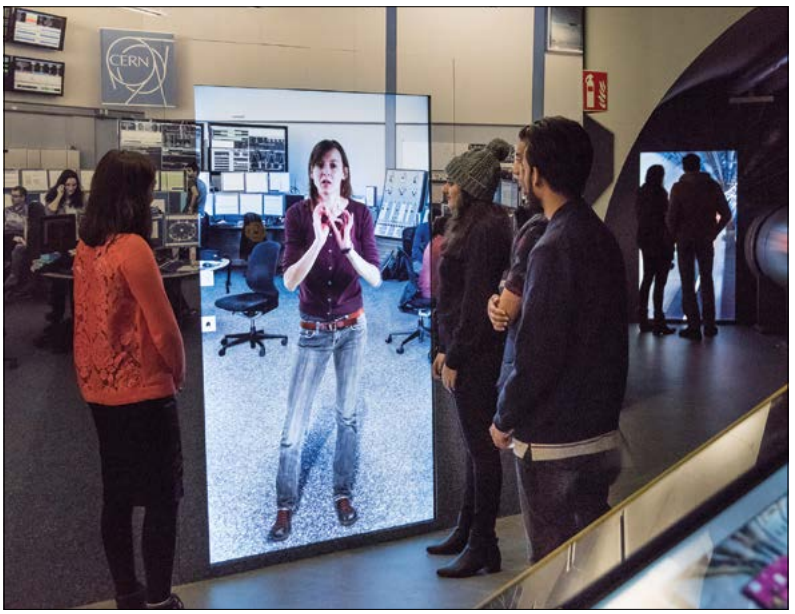
Baldin's scientific and organisational activities were extremely versatile. He was president of the Council on Electromagnetic Interactions and a member of the Bureau of the Nuclear Physics Department of the Russian Academy of Sciences, editor-in-chief of the journals *Physics of Elementary Particles and Atomic Nuclei* and *Physics of Particles and Nuclei Letters*, as well as a member of the editorial boards of many scientific publications. Baldin was also very much appreciated for the effort he put into training younger scientists, giving lectures and organising international schools of physics.

The achievements of this outstanding scientist have been awarded with the Lenin Prize, the State Prize, and the V I Veksler Prize, as well as with several governmental awards. He has also been awarded orders and medals of the JINR member states. Baldin was also given the title of honorary citizen of the town of Dubna. The street that leads to the main gates of the laboratory is named after him.

OUTREACH

CERN exhibition reopens to the public

CERN



Role models for students – 1:1 scale audiovisual in "Microcosm" allows visitors to meet the people who make CERN tick.

After a major revamp last year, "Microcosm", one of CERN's two on-site exhibitions, is once again open to visitors. The new exhibition takes visitors on a journey through CERN's key installations, following the path of particles from the bottle of hydrogen, through the network of accelerators and on to collisions inside vast experiments. Objects, life-sized audiovisuals and high-definition photographs are used to recreate real CERN spaces, while live data feeds bring news of the LHC direct to the exhibitions. Throughout, the focus is on the people who design and use this extraordinary technology to further our understanding of the universe. Screen content continues to evolve, and more games will be introduced into the exhibition during 2016. The exhibition is free and open to all.

Faces & Places

All image credits: CERN

NETWORKING

CERN signs agreements with Lebanon, Palestine, the US, ESO and IRENA

December was a good month for global collaboration in particle physics because it saw the signature of several agreements that will contribute to cementing CERN's partnerships and create frameworks for fruitful co-operation.

On 3 December last year, CERN signed an International Co-operation Agreement (ICA) with the Lebanese National Council for Scientific Research, CNRSL, paving the way for future collaboration with Lebanese academia. Soon after, on 18 December, a second ICA was signed with Palestine, allowing CERN to forge stronger links with Palestinian universities.

Lebanese researchers have long had links with CERN's theory group, and have recently expressed an interest in joining the LHC experiments. Three Lebanese doctoral students active on LHC experiments gave talks at the signing ceremony, held at the Lebanese University in Beirut, where Lebanon also expressed immediate interest in the heavy-ion programme at the LHC and in hardware upgrades on CMS. Links between CERN and Palestine have so far been more limited, with a number of

From left to right: Ambassador Pamela Hamamoto of the US (left) and CERN Director-General (2009–2015) Rolf Heuer; Ibrahim Khraishi (right) Palestinian ambassador to the international organisations in Geneva with Rolf Heuer, after signing the Co-operation Agreement between Palestine and CERN; and Mouïn Hamzé (left), secretary general of the Lebanese National Council for Scientific research, CNRSL, and CERN's Rüdiger Voss, after signing the International Collaboration Agreement.

individuals working on CERN programmes and Palestinian participation in CERN summer student programmes. However, this new agreement confirms the increasing interest in the LHC and opens the way for Palestinian researchers to join the ATLAS collaboration.

CERN has a high level of engagement in the Middle East and North Africa region, with ICAs already signed with Iran, Jordan, Saudi Arabia and the United Arab Emirates, and well-established contacts with Oman and Qatar. Moreover, CERN plays an important role in SESAME, the region's first intergovernmental research organisation (*CERN Courier* July/August 2015 p19).

Also in December, CERN signed ICAs with the European Southern Observatory (ESO) and with the International Renewable Energy Agency (IRENA). The agreements address many areas, including scientific research, technology development and sharing, and big-data solutions, as well as education and public-outreach activities.

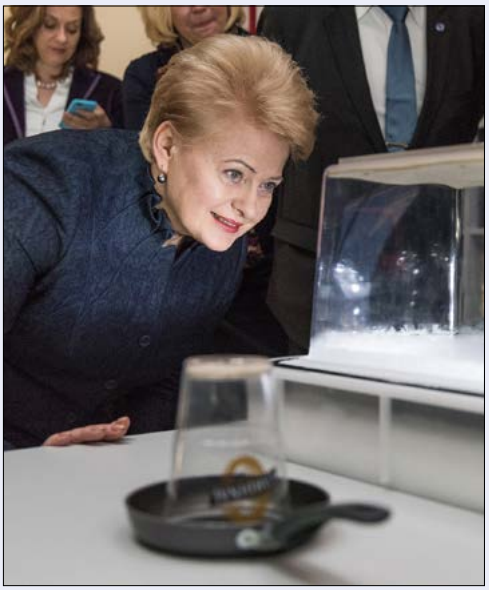
Collaboration between CERN and the US is nothing new: the US is a valued partner in the LHC, contributing to investment in the facility, to the running of LHC experiments and to the globally distributed computing infrastructure necessary to process the vast data volumes produced by the experiments. The most recent co-operation agreement was signed between CERN, the US Department of Energy and the US National Science Foundation at the White House on 7 May last year, marking both a renewal of a long-standing friendship and a commitment to take the partnership further.

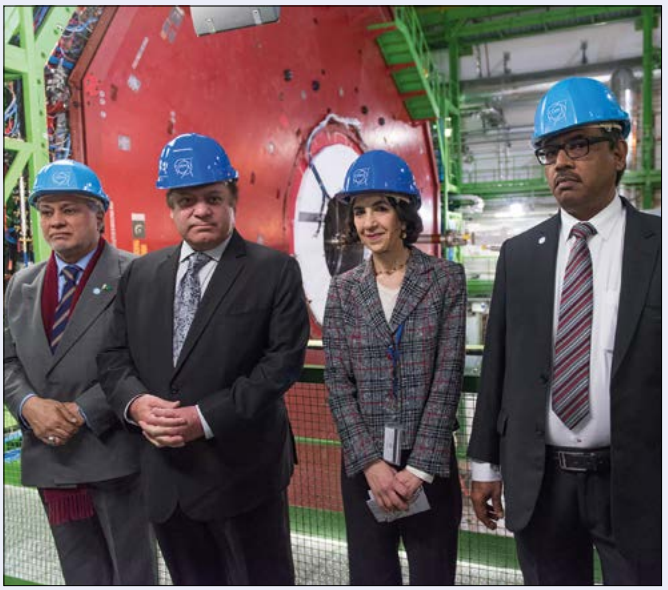
The new protocols signed in December confirm the US's commitment to the LHC project and its upgrade programme, the High-Luminosity LHC. For the first time, they set down in black and white European participation through CERN in pioneering neutrino research in the US. They are a significant step towards a fully connected trans-Atlantic research programme.

In this framework, CERN, which is no longer running its own neutrino beamlines, will serve as a platform for worldwide scientists engaged in neutrino-detector R&D, who will go on to work at neutrino experiments in the US and elsewhere.

Visits

Image credits: CERN





On 20 January, Her Excellency Dr Dalia Grybauskait, President of the Republic of Lithuania, visited CERN. Three days later, on 23 January, CMS welcomed His Excellency Mr Muhammad Nawaz Sharif, Prime Minister of the Islamic Republic of Pakistan. The Lithuanian delegation had a busy morning, visiting several CERN facilities. The tour of the laboratory started at Point 5 (the CMS experiment), where the President and her delegation were welcomed by Director-General Fabiola Gianotti. In the afternoon, the delegation stopped off at the Computing Centre, where they heard a presentation on the worldwide LHC Computing Grid. At the end of the visit, the President took a moment to shake hands with members of the Lithuanian community at CERN, and also participated in a virtual visit by a high-school class connected remotely from Lithuania as part of the S'Cool LAB project. CMS also received a visit by His Excellency Mr Muhammad Nawaz Sharif from Pakistan. The delegation was welcomed by the representative of France, Stéphane Donnot, sous-Préfet de Gex, CERN's Director-General, and other members of the CERN directorate. It was the first visit by a head of government of Pakistan since the country became CERN's latest associate member state in July 2015. The Prime Minister then had the opportunity to visit the CMS underground experimental area accompanied by the CMS Spokesperson, Tiziano Camporesi, and the CMS collaboration's national contact physicist for Pakistan, Hafeez Hoorani. At the end of his visit, the Prime Minister took the time to sign CERN's guestbook and to meet with a number of Pakistanis collaborating with CERN. Picture on the left: **The President of Lithuania, Dalia Grybauskait**, observing a cloud-chamber experiment at the S'Cool LAB. Picture on the right: From left to right: **Minister of Finance Mr Mohammad Ishaq Dar, Prime Minister of the Islamic Republic of Pakistan Muhammad Nawaz Sharif, CERN Director-General Fabiola Gianotti** and CMS national contact physicist **Hafeez Hoorani**.

Faces & Places

OBITUARY

Michael K Craddock 1936–2015

Michael K Craddock, UBC emeritus professor and retired TRIUMF research scientist, passed away in Vancouver, Canada, on 11 November, following a brief battle with cancer. One of TRIUMF's founding fathers, he worked tirelessly on the cyclotron and other key projects for 50 years, including 33 years as TRIUMF's head accelerator physicist, until his retirement in 2001.

Mike Craddock was born on 15 April 1936 in the UK. He received his Bachelor's and Master's degrees in mathematics and physics at Oxford University in 1957 and 1961, respectively. He was a scientific officer at Rutherford Appleton Laboratory while pursuing a D.Phil in nuclear physics at Oxford, which he was awarded in 1964. Upon graduation, Mike joined the Physics Department at the University of British Columbia (UBC), where he remained throughout his career.

Originally hoping simply to conduct experiments at UBC's Van de Graaf accelerator, he was thrust almost immediately into the department's campaign to build a new accelerator on campus. Tasked with investigating options for a new machine, he recommended a modified version of the H^- cyclotron design of Reg Richardson at UCLA. Mike managed the overall specification, which settled on a scaled-down 500 MeV, 20 μA machine. In 1968, the TRIUMF proposal was approved by the Canadian government, and for the next 10 years, Mike was the beam-dynamics group leader. His most memorable challenge in that time was responsibility for determining the position and number of the magnetic shims installed during the massive cyclotron field-shaping campaign. Mike's reward came when he was present at Reg Richardson's shoulder as the first beam emerged on 15 December 1974.

Mike was TRIUMF's leading beam physicist throughout his career, from joint head of the Beam Development Group from 1978 to 1981, then as Accelerator Research Division head from 1982 to 1988 and head of the Accelerator Division from 1989 to 1994, to group leader for accelerator physics from 1995 until his retirement in 2001. He was a chief architect of the KAON Factory Project, where as deputy to project-leader Alan Astbury, he led a multidisciplinary team in the engineering design of a suite of synchrotron-type proton accelerators. KAON was unable to attract federal funding, and so Mike set to work on projects related to the Large Hadron Collider (LHC) accelerator injector chain at CERN, the success of which raised the lab's profile worldwide. Remarkably, during all this time he supervised more than 14 graduate students, regularly taught undergraduate and graduate physics courses, and acted as TRIUMF's correspondent for the *CERN Courier* for 29 years, until August 2004.

TRIUMF

Michael Craddock.

Retirement did little to tamper with Mike's relentless energy. He joined the Accelerator Development Group and worked on several projects before settling on fixed-field alternating-gradient accelerators (FFAGs) from 2004 to 2012, where he participated in an international project to build a 20 MeV electron model (EMMA) at Daresbury, UK. He was a constant presence at the lab, organising conferences, and presenting introductory accelerator-physics lectures to students at TRIUMF, UBC, and the University of Victoria, all the while acting as TRIUMF's unofficial historian.

During a career that spanned five indefatigable decades, Mike demonstrated exceptional leadership in the field of high-energy subatomic-particle physics, notably in particle-accelerator design and construction, and he was instrumental in fostering new generations of accelerator physicists in Canada and abroad. A testament to his outstanding character, before he passed away, Mike made a very generous gift to TRIUMF, establishing the Michael Craddock Fund for Accelerator students.

His passing has been felt worldwide and has left a gaping hole in the TRIUMF family. He will be sorely missed by all who knew him.

● *His friends and colleagues.*