

# Faces & Places

## APPOINTMENTS

# Chi-Chang Kao takes the reins at SLAC

On 1 November, Chi-Chang Kao became the fifth director of the SLAC National Accelerator Laboratory. He succeeds Persis Drell, who held the position from December 2007 and had announced her intention to step down in November last year.

Kao came to SLAC in 2010 as associate lab director for the Stanford Synchrotron Radiation Lightsource. As a respected X-ray scientist, his research focuses on X-ray physics, superconductivity, magnetic materials and the properties of materials under high pressure. His scientific career began with a bachelor's degree in chemical engineering from National Taiwan University in 1980. After gaining a doctorate in chemical engineering from Cornell University in 1988, he joined Brookhaven National Laboratory to work on the National Synchrotron Light Source and worked his



way from postdoctoral research assistant to chair, before moving to SLAC.

SLAC celebrated its 50th anniversary this year (*CERN Courier* November 2012 p26). Among its facilities, it operates the world's most powerful X-ray laser, the Linac Coherent Light Source (*CERN Courier* December 2009 p6).

"With his experience and expertise in X-ray science, Chi-Chang is the right person to set a vision for how this extraordinary machine, as well as SLAC's other excellent facilities and its world-class scientists, can revolutionize science in the years to come," states the US Department of Energy Secretary of Energy, Steven Chu.

*New SLAC director, Chi-Chang Kao. (Image credit: Brad Plummer, SLAC National Accelerator Laboratory.)*

# Stöcker begins second term at GSI

Horst Stöcker is to extend his period of service as the scientific director of GSI by an additional five years at the request of the Supervisory Board.

Since Stöcker became scientific director in August 2007, GSI has co-operated with partners in Germany and other countries to fulfil the preconditions for the start of construction of the Facility for Antiproton and Ion Research (FAIR), which will be linked with the existing GSI accelerator facility. The construction of FAIR, which is now under way, is one of the world's largest projects in basic physics research. To bring together the know-how for the R&D that will be carried out at FAIR, as well as to ensure a supply of new talent in the areas of science and technology, Stöcker has actively built networks with universities and research laboratories.

Approximately 3000 scientists from more than 40 countries are already working on the planning of FAIR. The facility will provide antiproton and ion beams of an intensity and quality never attained before. In its final phase, FAIR will consist of eight circular accelerators with a circumference of up to 1100 m, two linear accelerators and approximately 4 km of beamline.



*Horst Stöcker begins another term of office at GSI. (Image credit: G Otto.)*

"The greatest challenge during my next term of office will be to work with GSI to do everything that's necessary to complete the construction of FAIR," says Stöcker. "To celebrate the commissioning of FAIR during my next term of office would be fantastic."

## VISIT



**Dmitry Livanov**, the minister of education and science of the Russian Federation, right, and CERN's director-general, **Rolf Heuer**, admire the history of the universe on a mug during the minister's visit to CERN on 22 October. The minister also toured the LHC superconducting magnet test hall, the ATLAS visitor centre and the Antiproton Decelerator facility.

## AWARDS

# Italy honours CERN and INFN researchers

On 24 September at the Quirinale Palace in Rome, the Italian president, Giorgio Napolitano, greeted Italian researchers from the National Institute of Nuclear Physics (INFN) and CERN, who, at various levels, have contributed to the recent discovery of a Higgs-like boson.

Napolitano took the occasion to give the honour of Grande Ufficiale dell'Ordine al Merito della Repubblica Italiana to Sergio Bertolucci, director of research and computing at CERN, and to Fabiola Gianotti, spokesperson for the ATLAS experiment.

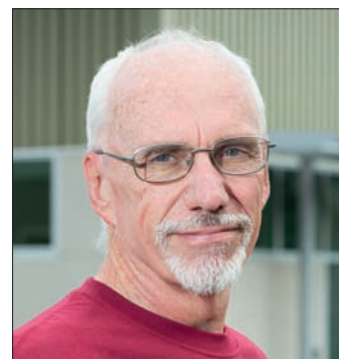
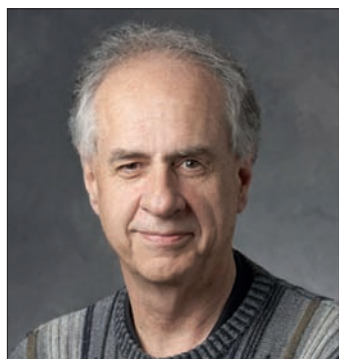
At the same time, he also gave the honours of Commendatore della Repubblica Italiana to: Fernando Ferroni, President of INFN; Oscar Adriani, co-spokesperson of LHCf; Pierluigi Campana, spokesperson for



Giorgio Napolitano, right, shakes hands with Sergio Bertolucci, while Fabiola Gianotti, centre right, and other researchers from INFN and CERN look on. (Image credit: Presidenza della Repubblica Italiana.)

LHCb; Simone Giani, spokesperson for TOTEM; Paolo Giubellino, spokesperson

for ALICE and Guido Tonelli, who was CMS spokesperson until December 2011.



Left to right: Blas Cabrera, Stanford University; Bernard Sadoulet, University of California, Berkeley; and Helen Quinn and John Galayda of SLAC are among the APS prizewinners for 2013. (Image credits: B Cabrera (left) and SLAC.)

## APS rewards searches for dark matter and more

The American Physical Society (APS) has announced many of its awards for 2013, with a number for work in particle physics – in particular related to searches for new particles and new effects in experiments away from accelerators. Physicists from SLAC and the University of California figure prominently.

The nature of dark matter is one of the puzzles driving current research in particle physics. It is highlighted this year in the awarding of the 2013 W K H Panofsky Prize in Experimental Particle Physics to Blas Cabrera of Stanford University and Bernard Sadoulet of the University of California, Berkeley. They receive the prize, which recognizes and encourages outstanding achievements in experimental particle physics, for “their pioneering work and leading roles in the

development and use of phonon detection techniques enabling direct searches for weakly interacting massive particles”. Their decades-long effort with the Cryogenic Dark Matter Search has taken them to several underground sites in the hunt for direct evidence of hypothetical weakly interacting massive particles, which – if discovered – could help to define and explain dark matter.

On the theoretical side, the 2013 J J Sakurai Prize for Theoretical Particle Physics, which recognizes and encourages outstanding achievement in particle theory, goes to Roberto Peccei of the University of California, Los Angeles, and to Helen Quinn of SLAC. They are rewarded for “their proposal of the elegant mechanism to resolve the famous problem of strong CP

violation, which in turn led to the invention of axions, a subject of intense experimental and theoretical investigation for more than three decades”. The axion is one of the candidates for dark matter being searched for in a variety of experiments.

Rare processes related to new physics is the subject of the 2013 Tom W Bonner Prize in Nuclear Physics. Michael Moe of the University of California, Irvine, receives this award for “his leadership in the first observation of the rare process of two-neutrino double-beta decay, where his creative contributions were instrumental to its successful detection and transformed the field”. His team’s detection of the process in 1987, in the decay of  $^{82}\text{Se}$ , came 40 years after the first efforts to observe it began.

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Since then, searches employing similar techniques have been directed at neutrinoless double-beta decay, which can occur only if the neutrino is a Majorana particle.

Neutrinos feature in the work of the winner of the 2013 Hans A Bethe Prize, which is to “recognize outstanding work in theory, experiment or observation in the areas of astrophysics, nuclear physics, nuclear astrophysics, or closely related fields”. This year the prize goes to George Fuller of the University of California, San Diego, for his “outstanding contributions to nuclear astrophysics, especially his seminal work on weak interaction rates for stellar evolution and collapse and his pioneering research on neutrino flavour-mixing in supernovae”. The 2013 Henry Primakoff Award for Early Career Particle Physics also recognizes research in neutrino physics, this time at accelerators. The recipient is Fermilab’s Teppey Katori, for “outstanding contributions to a range of accelerator-based neutrino physics, including cross-section measurements and searches for violations of Lorentz and CPT symmetry”.

The Robert R Wilson Prize for Achievement in the Physics of Particle Accelerators looks once again to what has become a major field throughout the world, with the development of accelerator-driven free-electron lasers (FELs) for light sources. SLAC’s John Galayda receives the 2013 prize for “his leadership and outstanding and pioneering contributions to the development, construction and commissioning of the Linear Coherent Light Source, the first X-ray FEL to lase at 0.15 nm, and his contribution to the Advanced Photon Source and the National Synchrotron Light Source”.

Back with more general theoretical physics, the 2013 Dannie Heineman Prize, for outstanding publications in the field of mathematical physics, goes to Michio Jimbo of Rikkyo University and Tetsuji Miwa of Kyoto University. They are recognized for “their profound developments in integrable systems and their correlation functions in statistical mechanics and quantum field theory, making use of quantum groups, algebraic analysis and deformation theory”.

### CORRECTION

The article on the 50th anniversary of SLAC (CERN Courier November 2012 p26) incorrectly implied that Samuel Ting was affiliated to Brookhaven National Laboratory at the time of the  $J/\psi$  discovery. While the discovery was made in an experiment at Brookhaven, Ting was, and still is, with Massachusetts Institute of Technology. Apologies to all concerned.

## Myers receives UK engineering fellowship

Steve Myers, director of accelerators and technology at CERN, has been elected as a fellow of the Royal Academy of Engineering. Each year the academy honours the UK’s most eminent engineers by electing up to 60 fellows from nominations made by existing fellows. This year’s new fellows were announced in July and had the opportunity to meet at a dinner for newcomers on 5 November.

Myers is internationally recognized for his engineering contributions and leadership in the development of CERN’s particle colliders over the past 40 years, including the Intersecting Storage Rings, the Large Electron–Positron collider and the LHC. These complex machines depend on many branches of engineering, including civil,



Steve Myers, now a fellow of the Royal Academy of Engineering.

mechanical, electrical and informatics. In his current role at CERN, Myers is responsible for the exploitation of the LHC.



The end of the year will see the 80th birthday of Tom Kibble, left, a senior research fellow and emeritus professor of theoretical physics at Imperial College London. Kibble is best known as one of the theoretical physicists whose work in the early 1960s became a key piece of the Standard Model, through giving mass to the W and Z bosons via a symmetry-breaking mechanism that would require a new particle, dubbed the Higgs boson. Kibble was not at CERN when the ATLAS and CMS collaborations announced the discovery of a particle consistent with being the Higgs boson. However, the following day he met the former spokesperson of CMS, Tejinder Virdee of Imperial College, who gave him a personal presentation of the results. (Image credit: M Sancho/Imperial College.)

### SCHOOL

ISOTDAQ 2013, the fourth International School of Trigger and Data Acquisition, will take place on 1–8 February 2013 at Aristotle University of Thessaloniki. The aim is to introduce MSc and PhD students to the “art and craft” of triggering and acquiring data for high-energy physics experiments. About half of the time will be spent on laboratory

exercises based on techniques described in the lectures. A maximum of 48 students will be chosen by CV and a recommendation letter, with limited financial support available for selected students. The application deadline is 1 December 2012. For more information and more about how to apply, see [www.isotdaq2013.physics.auth.gr](http://www.isotdaq2013.physics.auth.gr).

## ASTROPARTICLE PHYSICS

# HESS II is officially inaugurated

The world's largest Cherenkov telescope, HESS II, located in the Khomas Highlands of Namibia, was officially inaugurated on 28 September, two months after it saw first light (*CERN Courier* October 2012 p39). Werner Hofmann of the Max Planck Institute for Nuclear Physics, Heidelberg, and spokesperson of the HESS collaboration, opened the ceremony with a brief presentation on HESS II, which was followed by messages from representatives of key collaborating institutes and agencies.

Abraham Iyambo, minister for education of the Republic of Namibia, gave the keynote speech on behalf of the president of Namibia, Hifikepunye Pohamba. He emphasized the previous pioneering discoveries of the HESS Cherenkov telescope array and its international recognition among the world's 10 top observatories. HESS put Namibia on the world map of science and is a success story that will continue with HESS II. Iyambo recalled how as a boy he had been fascinated by the stars in the sky and had dreamt of one day becoming an astronaut. Addressing future junior scientists, he encouraged school students to visit the HESS site.

At the end of the ceremony, Iyambo pressed the symbolic "red button" to activate the new telescope. Guests were impressed by the synchronized motion of the five telescopes of the HESS array and by how rapidly the 580-tonne HESS II telescope can point to any position in the sky. During the tour round the HESS site, the automatic assembly of the 2.8-tonne camera was



Namibia's minister of education, Abraham Iyambo, is just about to press the symbolic red button to activate the HESS II telescope, visible in the background, with HESS spokesperson, Werner Hofmann, right, and Lazarus Hangula, vice-chancellor of the University of Namibia, far left. (Image credit: C Föhr/HESS collaboration.)

demonstrated and the operation of the control room explained. Despite several failures of the Namibian power grid during the ceremony, the telescope drive and control systems worked flawlessly, backed by HESS's emergency power generators.

The inauguration events had started the day before with an international symposium

at Heja Lodge near Windhoek and concluded with an open day for the general public at the HESS site on 30 September. Several hundred Namibians and tourists took the opportunity to see the telescopes and learn about gamma-ray astronomy from guided tours and an exhibition presenting posters and telescope components.

## OUTREACH

## Particle physics at the Frankfurt Book Fair

From 10–13 October, CERN showcased its research at the Frankfurt Book Fair, the largest of its kind in the world. In addition to presenting a range of books on the science of CERN and the LHC, the CERN stand unveiled a new interactive LHC "time tunnel".

The time-tunnel display was built especially for the book fair with a view to integrating it into future exhibitions. Using state-of-the-art motion sensors and



The CERN stand allowed visitors to the Frankfurt Book Fair to kick virtual particles in the LHC "time tunnel".

projectors, it allows visitors to visualize the effect of the Brout-Englert-Higgs field and to kick virtual particles to see how they collide in the LHC.

The stand, in the Hall for Expert

Information, Science, Technology and Education, was based around a partial reconstruction of the CERN Control Centre (CCC), with live LHC status-updates on the screens. It also included the first computer used by Tim Berners-Lee to develop the original World Wide Web software and the antimatter trap from the film *Angels & Demons*. Each day, physicists from CERN presented insights into the LHC, featuring live connections with the control rooms of the ATLAS and CMS experiments, as well as with the CCC.

The fair also provided the occasion for CERN to announce a collaboration with the Finnish games-developer Rovio to create new educational resources for children linked to their award-winning *Angry Birds* video game series.

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### ARTS AND SCIENCE

# Changing places: Collide@CERN's artists in residence

An ethereal figure dressed in white is floating on an upper shelf in the CERN library, handing out books such as *Don't Make Me Think*. The restaurant has its chairs and tables swept away to become transformed into a live contemporary dance studio. Even the computer centre is not out of bounds, with dancers in orange, blue, white and gold threading and dancing their way through its maze.

Adventurous interventions such as these have been a hallmark of the residency of CERN's first choreographer in residence, the Swiss dancer, Gilles Jobin. They have been designed specifically to create new ways for the laboratory's scientists to look at the spaces that they are working in as they go about their daily working lives. Such interventions are a key feature of CERN's Collide@CERN programme, which began earlier this year, with the first artist in residence in its digital-arts strand, Julius von Bismarck (*CERN Courier* January/February 2012 p39 and March p28).

For three months this summer, Jobin has been encountering the ideas, people and places behind the physics at CERN, seeking choreographic inspiration. The results will be seen in the autumn of 2013, when he intends to premiere a new piece inspired by his residency, which he says, has profoundly affected the way he relates to his own body, as well as the way he choreographs and even perceives his career in the future. Another "collision" is also promised, as von Bismarck's installation *Versuch unter Kreisen*, showcased at this year's Ars Electronica Festival in Linz, may well become the stage set for Jobin's new dance work.

In the meantime, von Bismarck's successor to the digital arts strand of Collide@CERN has just been announced. One of the world's leading artists and a pioneer in his field, the American sound artist, Bill Fontana, will be taking up his residency in June 2013 for two months, following introductory visits over winter to familiarise himself with the laboratory. This is the second year of the Prix Ars Electronica Collide@CERN, which marks CERN's three-year cultural partnership with one of the world's leading digital arts organizations, Ars Electronica, Linz.

Fontana, who came out on top of entries from 49 countries around the world to win the award, has exhibited at the Tate Modern and The Whitney Museum of American Art. It is extremely rare for artists of his international standing to enter an open



Above: Sound-artist Bill Fontana. (Image credit: Stuart Davidson.)

Right: *Strangels in the CERN library*, a new take on working space by Gilles Jobin.

international competition but he said that the lure of CERN was simply irresistible: "As an artist, even with 40 years behind me, I am always looking for situations to expand my horizons and I want to be in a situation where I am completely challenged. Coming to CERN will certainly do that." His entry for the competition talked about his wish to explore the physics of sound at



the laboratory, creating a new soundscape that could also link with the city of Geneva in an artistic experiment he calls "acoustic time travel".

#### ● Further reading

For more about the work of Julius von Bismarck and Gilles Jobin at CERN, see: <http://arts.web.cern.ch>.



On 27 September, Uppsala University organized a Higgs Fest Symposium that was held in the State Hall of Uppsala Castle. The programme included presentations by Fabiola Gianotti, right, spokesperson of the ATLAS experiment at CERN, and by Nobel laureate Frank Wilczek, left, and Janet Conrad, both from Massachusetts Institute of Technology. With the discovery by ATLAS and CMS of a Higgs-like boson earlier this year, Wilczek won a bet that he had made with Conrad in 2005. He bet that the Higgs boson would be found at the LHC, while she bet against the discovery. The event drew 700 people, including four school groups. For videos of the main presentations, see: <http://cdsweb.cern.ch/record/1489653>, <http://cdsweb.cern.ch/record/1489652> and <http://cdsweb.cern.ch/record/1489651>. (Image credit: T Thörnlund, Uppsala University.)