

Faces & Places

APPOINTMENT

Reiner Kruecken named TRIUMF deputy director

Reiner Kruecken, TRIUMF Science Division head since February 2011, has recently been named deputy director of the laboratory, effective from 1 August 2015. In his new role, Kruecken will support TRIUMF director Jonathan Bagger to develop and manage the laboratory's long-term vision, as well as manage cross-divisional aspects of the ongoing scientific programme, as set out in the most recent five-year plan.

Kruecken has brought to TRIUMF worldwide expertise in nuclear physics, with a deep familiarity with rare-isotope beam facilities in the US, Europe and Asia. His research interests include nuclear structure, reactions and astrophysics; hadron properties in hot, dense nuclear matter;



Reiner Kruecken. (Image credit: TRIUMF.)

detector developments; biological and medical applications of nuclear methods; particle-induced light emission in dense gases and liquids; and the transmutation of nuclear waste. He earned his PhD in nuclear physics from the University of Cologne, and worked at the Lawrence Berkeley National Laboratory and at the Wright Nuclear Structure Laboratory at Yale, before moving to Technische Universität München in 2002, where he led a large group of researchers as part of the federal cluster of excellence on "Origins and structure of the universe".

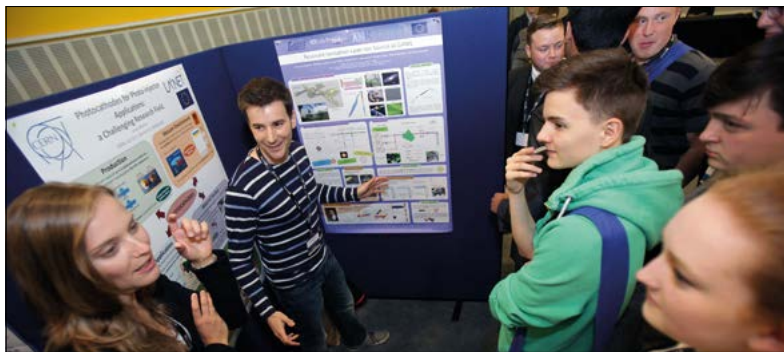
The search has begun to fill the (renamed) position of TRIUMF associate lab director of physical sciences.

OUTREACH

Accelerator showcase inspires the young

The international Symposium on Lasers and Accelerators for Science and Society, attracting a capacity audience at the Liverpool Arena Convention Centre, took place on 26 June. The event was a sell-out, with delegates comprising 100 researchers from across Europe and 150 local A-level students and teachers. The aim was to inspire young people about science, and the application of lasers and accelerators in particular. "Discovering the unknown", "innovation", "beating cancer", "pioneering new technology" and "a possible career" – these were comments from some of the students.

The symposium included talks from experts in the field such as Victor Malka of the Laboratoire d'Optique Appliquée, Ralph Aßmann of DESY and Brian Cox of the University of Manchester, best known for his television programmes about the origins of the universe. Graham Blair, executive director, programmes, at the UK's Science and Technology Facilities Council, explained the range of science in which accelerators now have a key role. In addition, to research at the high-energy frontier of



A busy poster session. (Image credit: University of Liverpool/STFC.)

CERN's LHC, accelerator science has applications across all sectors of industry and healthcare from, for example, measuring strain in jet engines to the accurate targeting of cancerous tumours

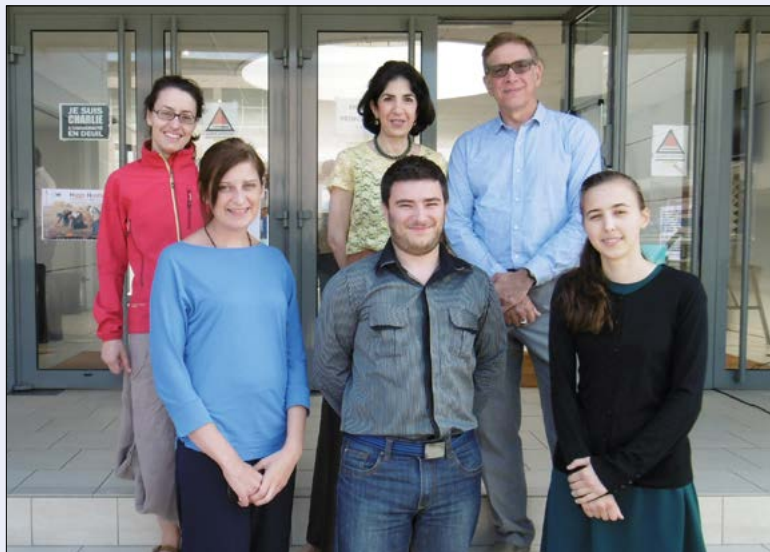
The event also showcased a portfolio of projects by researchers at the forefront of this exciting field of science and engineering, through an interactive poster session with questions and answers. This gave young people the opportunity to see how scientists only a few years older are pushing back the boundaries of knowledge.

The event was organized by Carsten Welsch, head of the Liverpool Accelerator Physics Group at the Cockcroft Institute in Daresbury, who leads two pan-European training networks that aim to address

the skills shortage in accelerator science – oPAC (Optimization of Particle Accelerators) and LA³NET (Lasers for Applications at Accelerators). Research fellows in these networks become experts in their discipline and also develop skills in physics, engineering, information technology, data analysis and project management. The involvement of partners from industry and academia and the opportunity to work at research institutions across Europe has provided training that would have been impossible by one company or one country alone.

● Share the enthusiasm through the online presentations available at http://www.liv.ac.uk/quasar/events/outreach_events/symposium/.

Faces & Places



Around 140 physicists met in Orsay on 30 July–1 August for the 6th Higgs Hunting Workshop. They discussed the future analyses for LHC Run 2, as well as detailed studies with data from Run 1 on the boson discovered three years ago by ATLAS and CMS, and on possible deviations from the properties predicted by the Standard Model. Searches for additional bosons, prospects with future accelerators, and recent theoretical developments were also covered. Among those attending were Fabiola Gianotti and Joe Incandela, back row centre and right, the two former spokespersons of ATLAS and CMS, respectively, who announced the discovery on 4 July 2012. Eleni Mountricha, back left, and Nansi Andari, front left, passed their thesis examination only a few weeks after the discovery, while Christophe Goudet, front centre, and Julie Rode, front right, are two newcomers in the field. (Image credit: L Fayard.)

PUBLISHING

SCOAP³ delivers open access in high-energy physics

Since starting in January 2014, the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP³) has allowed more than 7000 articles on high-energy physics to be published as “open access” at no cost to authors. These articles are accessible to anyone to read and re-use, and their copyright stays with their authors, meeting the expectations of an increasing number of funding agencies and policy makers for open access.

Initiated and hosted at CERN, SCOAP³ is a global collaboration of about 3000 university libraries, library consortia, research organizations and funding agencies. Working with leading publishers, SCOAP³ has converted key high-energy physics journals to open access, without any changes for authors. SCOAP³ pays participating publishers centrally for the costs of open access, and the publishers in turn eliminate or reduce subscription fees for these journals to libraries worldwide. As a result, all final versions of peer-reviewed articles, published in the participating



Representatives from all over the world met recently at CERN to discuss the continuation of the SCOAP³ collaboration. (Image credit: SCOAP³ Collaboration.)

journals, are available immediately and free-of-charge to the entire scientific community, by reusing already existing funds formerly spent on subscriptions.

Each of the 46 participating countries and intergovernmental organizations contributes to a common fund at a level commensurate with its scientific output in high-energy physics. SCOAP³ journals are open for any scientist to publish in, and more than 18,000 individual authors have benefited from free open-access conditions.

Membership of SCOAP³ has grown by more than 50% during the past year, and the SCOAP³ governing bodies together with CERN are now preparing for the

continuation of this successful open-access initiative beyond its first three-year period. Scientists will continue to enjoy the advantages of open access at no cost and with no administrative burden, thanks to the support of their libraries and institutions.

● Journals participating in SCOAP³ are: *Acta Physica Polonica B*, *Advances in High Energy Physics*, *Chinese Physics C*, *European Physical Journal C*, *Journal of Cosmology and Astroparticle Physics*, *Journal of High Energy Physics*, *New Journal of Physics*, *Nuclear Physics B*, *Physics Letters B*, *Progress of Theoretical and Experimental Physics*. For more information, visit <http://scoap3.org/>.



HUNGARY

LEP cavity takes pride of place at Wigner RCP

On 30 July, CERN's director-general, Rolf Heuer, inaugurated a special exhibit at the Wigner Research Centre for Physics (Wigner RCP) in Budapest – a high-frequency accelerator cavity used in CERN's Large Electron–Positron (LEP) collider. After the ceremony, Heuer visited the high-energy physics laboratories of the Wigner RCP, where different projects for the LHC upgrade programme have begun, as well as the Wigner Datacenter, where CERN's parallel Tier-0 unit is operated by the Wigner RCP (*CERN Courier* July/August 2015 p7). An extension of the Tier-0 host service contract had been signed a few weeks previously.

CERN had donated the LEP cavity to the Wigner RCP last year as part of Hungary's celebrations for CERN's 60th anniversary. Among other CERN 60 events in Hungary, the Colourful Physics Bus ("Boson Bus") – a travelling exhibition – started its roadshow in April 2014, visiting cities, universities and high schools to introduce the latest results on "Higgs hunting" and related investigations in particle physics. Flyers, books and articles were distributed at the various locations. Later in the year, at the CERN-Wigner Open Days in September, some 1000 visitors were guided between tents presenting current experiments at CERN and related Hungarian activities. The visitors could also enjoy a virtual visit to the CMS underground area at CERN, as well as an actual visit to the Wigner Datacenter.

Top: The LEP cavity outside the Wigner RCP, with CERN's director-general, Rolf Heuer, second from right, and Péter Lévai, director-general of the Wigner RCP. (Image credit: Wigner RCP.)

PT2026 NMR Precision Teslameter

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OBITUARIES

Daniel Kastler 1926–2015

Daniel Kastler, a well-known theoretical physicist at the University of Aix-Marseille, passed away on 4 July, in his 89th year.

Daniel was born on 4 March 1926. His father, Alfred Kastler, was a prominent physicist, awarded the Nobel prize in 1966. After entering the Ecole Normale Supérieure in Paris as a student in 1946, Daniel was ranked first in the agrégation diploma in mathematics in 1949. He went on to become lecturer at the Saarland International University in 1950. Three years later, he became associate professor in mathematics at the same university and received his PhD in quantum chemistry. His doctoral study was a remarkable piece of work in which the whole computation of the diatomic HF molecule was carried out for the first time. In 1957, he joined the University of Aix-Marseille as associate professor, and was appointed full professor in 1959.

In the mid-1950s, Daniel was among those who noticed the link between second quantization and multilinear algebra over Hilbert spaces. As a participant at the famous 1957 Lille Conference, he started to develop the algebraic approach to quantum field theory (AQFT), in collaboration with Rudolf Haag. This culminated in the formulation of the “Haag–Kastler axioms” in 1964, and the concept of “Haag–Kastler–Ruelle local observables”; these are among the most fascinating gems of mathematical physics.

Developing the promising direction of AQFT, further fruitful collaborations emerged, mainly with Sergio Doplicher, Richard Kadison and Derek Robinson, on the one hand, and with Ola Bratelli, Huzihiro Araki, Masamichi Takesaki, Alain Guichardet, Michel Sirugue and Mohammed Mebkhout, on the other. Daniel and collaborators showed the relevance of C^* -algebras in the foundation of quantum statistical mechanics (e.g. KMS states, invariant states, temperature states, equilibrium states and ergodic states) and in the study of abelian asymptotic systems.



Daniel Kastler. (Image credit: Ulli Schücker.)

Constantly abreast of the latest trends in C^* -algebras and their consequences, from the mid-1980s, Daniel became very enthusiastic about Alain Connes’ non-commutative geometry and its applications to fundamental interactions, in particular as a new approach to the Standard Model and the Higgs boson. As one of its leading and most fervent supporters, Daniel contributed substantially to promoting Connes’ viewpoint. In the meantime, with Raymond Stora, he provided a geometrical setting of the important BRST transformations for quantizing gauge theories.

With his stimulating enthusiasm, Daniel carried in his wake several collaborators, including Jean Bellissard, Daniel Testard, Robert Coquereaux, Arkadiusz Jadczyk, John Madore, Thomas Schücker, Bruno Iochum, Peter Seibt, Thierry Masson, Thomas Krajewski and, his last PhD student, Koumarane Valavane. His last research quest in the early 2000s was, in his own words, to “fish out the salmon among the medusa” with the help of a quantum group at the root of unity. He also had in mind a book project – several chapters should still be on the hard

disk of his computer – as his scientific legacy.

Daniel was not only a great scientist at the boundary between mathematics and physics, he also sought constantly to attract research experts to Marseilles to develop these streams of ideas in France and build leadership potential. He also had a humanist vision. He was one of the three co-founders, in 1968, of the Centre de Physique Théorique (CPT) in Marseilles, together with Jean-Marie Souriau and Antoine Visconti. He helped a great deal in the creation of the Luminy Institute of Mathematics at Aix-Marseille to bring together theoretical physicists and mathematicians at the same place. He also contributed much to create a main hub between mathematicians and mathematical physicists in the Marseilles area. To the east, beyond the so-called “University of Bandol” – his own place where he brought several scientific guests, driving them by car on the coast road past the impressive cliffs of Cassis – he was involved in the creation of the mathematical physics team at the University of Toulon.

Many of us owe much to Daniel’s foundational efforts in Marseilles, and we wish to pay tribute to his fighting spirit, his open-mindedness and his ability. We will also remember his humanity, his kindness and his humour. He was passionate about music, including the piano, and loved poetry. In the words of Jean-Claude Risset, physicist and musician, Daniel had “a profound sense of the essential role of beauty in science and in life”.

All of the great scientific and human qualities that Daniel was able to share and transmit were mainly thanks to the strong and unflinching support of his beloved wife, Liesl.

● *Thierry Martin and Serge Lazzarini, CPT management team, and Pierre Chiappetta, former CPT director. This obituary is also published in the July issue of the Bulletin of the International Association of Mathematical Physics (<http://www.iamp.org>).*

Boris Zupnik 1945–2015

Boris Zupnik, an eminent Russian theorist who was a leading researcher at the Bogoliubov Laboratory of Theoretical Physics (LTP) of JINR in Dubna and

professor at Dubna University, passed away on 20 March after a few months of serious illness.

Boris Zupnik was born on 12 June

1945 in Samarkand, Uzbekistan, where his Jewish family had been evacuated from Dnepropetrovsk, Ukraine, in 1941. Following the war, the family returned to

their city, and Boris went on to graduate from the Dnepropetrovsk State University in 1968. He then joined the LTP in Dubna as a postgraduate. At the time his supervisor, Victor Isaakovich Ogievetsky, was interested in chiral dynamics, a new approach to low-energy strong interactions. Together with Ogievetsky, Boris obtained first-class results in the field. He stood out as a promising young researcher with solid mathematical background and a deep sense for the beauty of theoretical physics.

In 1972, Boris brilliantly defended his PhD thesis, but despite the best efforts of his supervisor, he was not admitted to the LTP staff. He spent the next 20 years as a researcher at the Institute of Nuclear Physics in Ulugbek near Tashkent, and as a lecturer at the Tashkent State University. There, he continued his research and taught several talented PhD students.

Boris maintained his close contacts with Ogievetsky's group at the LTP, where supersymmetry became the centre of interest. The superfield approach to super-Yang–Mills and supergravity became, for Boris, his favorite research topic. He made a particularly significant contribution to the new harmonic superspace method



Boris Zupnik. (Image credit: V Zupnik.)

developed in Dubna in the early 1980s, and was among the first to generalize it to other dimensions. One of his most striking results was the beautiful closed form for the harmonic superspace action of the $N=2, 4D$ (or $N=(1,0), 6D$) super-Yang–Mills theory. It is now called “Zupnik's action”.

After defending his habilitation thesis

in Dubna in 1991, Boris finally joined the LTP in 1994 – by then named after Nicolai Bogoliubov – and successfully continued his investigations of superfield theories in diverse dimensions. His main achievements are the $N=3$ Born–Infeld theory, and the new superfield formulations of the superconformal $N=3, 6, 8$ Chern–Simons theories, among others. In the last year of his life, Boris kept searching for the ultimate off-shell formulation of the renowned $N=4$ super-Yang–Mills theory. This challenging problem – still unsolved – was always among his top research priorities.

Boris had a warm and friendly personality, always open to new ideas. He chose his research topics independently and wrote many excellent papers without co-authors. He was also a very modest person, with scientific and moral authority among theoreticians worldwide. He spent much time educating young physicists at the International University in Dubna. He was very dedicated to his family, and a respected father and grandfather.

The death of Boris Zupnik is a great loss for his friends and colleagues, and for the whole world of theoretical physics.

● *Friends and colleagues of Boris.*

LETTER

First names in modern physics

In his book review in praise of Oskar Klein (*CERN Courier* July/August 2015 p49), Johann Rafelski paraphrased Alan Guth's words as “how many recognize Oskar as the first name of ‘this’ Klein? Compare here (by birth year, within 10 years): Niels B (1885), Hermann W (1885), Erwin S (1887), Satyendra N B (1894), Wolfgang P (1900),

Enrico F (1901), Werner H (1901), Paul A M D (1902), Eugene W (1902), Robert O (1904). Thanks to this book, Oskar K (1894) will take his place on this short list.”

I think that Louis de B (Louis de Broglie, born 1892) and George G (George Gamow, 1904) were missed out in this list of luminaries. Moreover, the following are worth including if Guth's birth-year

criterion is extended by plus or minus five years: Max B (Max Born, 1882), Emmy N (Emmy Noether, 1882), Lev L (Lev Landau, 1908), Sin-Itiro T (Sin-Itiro Tomonaga, 1906), Hideki Y (Hideki Yukawa, 1907) and Hendrik C (Hendrik Casimir, 1909).

● *Min-Liang Wong, Department of Veterinary Medicine, National Chung-Hsing University, Taichung, Taiwan.*

NEW PRODUCTS

EDAX Inc. has announced the addition of a new series of Octane Elite silicon drift detectors (SDD) to its existing portfolio of detectors. The Octane Elite SDD Series offers an up to 35% improvement in light-element sensitivity and outstanding low-energy performance, owing to the use of silicon-nitride (Si_3N_4) entry windows, which replace the polymer windows that have been standard since the inception of SDD technology. For further details, contact Sue Arnell, e-mail sue.arnell@ametec.com or visit www.edax.com.

Goodfellow offers a selection of polymer films, including specialist products suitable for demanding applications. Among these special polymer films are: polyphenylenesulphide (PPS) in thicknesses from 0.1 to 0.4 mm, polyetherimide (PEI)

in thicknesses from 0.025 to 0.50 mm, and polyetherketone (PEK) in thicknesses from 0.040 to 0.100 mm. In addition to film, Goodfellow can supply many polymers as rods, sheets, tubes, granules, fabric, fibre, monofilament, honeycomb and fasteners (nuts, bolts, washers). For more information, email info@goodfellow.com or visit goodfellow.com.

Siemens has expanded its portfolio of rugged network components with the Ruggedcom RMC8388 – a compact time converter designed to operate in harsh environments with widely varying climatic and environmental conditions. Withstanding extreme temperatures from –40 up to +85 °C, vibration and shock, the device offers high reliability for electric-power applications. By enabling cost-effective time

synchronization, Ruggedcom RMC8388 also reduces capital expenditures and maintenance costs. For further information, visit www.siemens.com/rmc8000.

Spectrum Systementwicklung GmbH, has released a Digitizer Handbook, available free of charge, which provides answers to questions about functionality, performance and the application of digitizers. Topics include how to select a digitizer, understanding the various terms, and comparing performance with other instruments, such as digital oscilloscopes. It also explains the structure of device drivers and how cards can be programmed using popular programming languages such as Visual C++, Borland C++, Gnu C++, Visual Basic and Python. To request a copy, visit www.spectrum-instrumentation.com/contact-us.

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Abstract Submission Deadline
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