

FACES AND PLACES

APPOINTMENTS

GSI appoints third managing director

With the appointment of Hartmut Eickhoff as technical director in mid-February, the GSI Helmholtz Centre for Heavy Ion Research in Darmstadt has three managing directors for the first time. With this strengthening of the management the centre is prepared for the implementation of the international Facility for Antiproton and Ion Research (FAIR). Horst Stöcker and Christiane Neumann are scientific director (and CEO) and administrative director respectively.

As technical director, Eickhoff's responsibility includes the operation of the scientific and technical facilities, and the upgrading and conversion of the GSI

accelerator facility as an injector for FAIR. He has worked at GSI for many years and has been head of the accelerator division since 2005 – a position he retains.

Eickhoff received his doctorate in the field of nuclear physics in Munster. From 1980 he worked on the design for the heavy-ion synchrotron SIS18 and the ESR storage ring at GSI and also enhanced these accelerators. In 1995 he took responsibility for the accelerator modification for GSI's pilot project in tumour therapy with carbon ions and from 1998-2005 he led the accelerator project for the Heidelberg Ion-beam Therapy centre at the University Hospital of Heidelberg.



Hartmut Eickhoff. (Courtesy G Otto, GSI.)

Pennington to lead J-Lab Theory Center

Michael Pennington has been named the new associate director for theoretical and computational physics at the US Department of Energy's Jefferson Lab. He will begin his duties on 1 July.

Pennington received his PhD in theoretical physics in 1971 from Westfield College, University of London. He joined Durham University in 1978, where he is currently a professor of mathematical sciences and physics, and dean for educational outreach.

He has served as a distinguished visiting professor at the University of Adelaide and as a visiting scientist and Fulbright Scholar in the High Energy Theory Group at Brookhaven National Laboratory. He has also been a fellow in the Theory Division at CERN, a research associate at the Rutherford Laboratory and a physicist in the High Energy Theory Group at Lawrence Berkeley National Laboratory.

Since 2007, Pennington has served as a member of Jefferson Lab's Program Advisory Committee. He has participated as a member of the CERN SPS Committee and as a member of the DAΦNE Physics Working Group. In 2009, he was named an Outstanding Referee by the American Institute of Physics.



Pennington moves to Jefferson Lab. (Courtesy Durham University.)

AWARDS

AIP honours Voss with Tate Medal

The American Institute of Physics (AIP) has awarded the Tate Medal for International Leadership in Physics to Gustav-Adolf Voss. He received the medal on 14 February at a meeting of the American Physical Society in Washington in recognition of his outstanding success in promoting international physics for many years, especially for his effective support of Soviet and eastern European physicists after the breakup of the Soviet Union, his stimulation of the development of

accelerator technology throughout Europe, and his leadership in the construction of the synchrotron radiation source SESAME in Jordan, which is to be used as a collaborative facility by nine countries in the Middle East.

Voss was the successful project leader for the PETRA and HERA storage rings at DESY and a member of the DESY directorate and head of the accelerator division from 1973 until 1994. He shaped the research centre with his unorthodox, internationally oriented and very effective methods, bringing together the best experts from all around the world. For his lifetime achievements in accelerator physics, he was the first to be awarded with the golden DESY pin in September 2009.



Gustav-Adolf Voss. (Courtesy DESY.)

CELEBRATION

University of Michigan honours Alan Krisch

On 14 November 2009, colleagues and friends from around the world gathered at the University of Michigan in Ann Arbor for a Spin Physics Symposium to honour Alan Krisch, who recently turned 70.

After gaining his PhD at Cornell under Giuseppe Cocconi, Alan moved to Michigan in 1964 and has stayed there ever since – as a full professor for the past 41 years. The first part of the symposium centred on Alan's many important contributions to spin-physics, after a first talk in which Homer Neal reminded the audience of Michigan's long association with spin: from Uhlenbeck and Goudsmit, Dennison and Crane, to the recent activities in high-energy, nuclear and atomic spin-research.

Michigan's Carl Akerlof reviewed Alan's early experiments. The first was his 1962–63 thesis experiment at Brookhaven's Alternating Gradient Synchrotron (AGS), on 30 GeV large-angle proton–proton elastic scattering. This was followed by the 1965–66 measurement of π^- -p elastic scattering at 180° for different momenta at Argonne's Zero Gradient Synchrotron (ZGS). It was Alan's first experiment as spokesperson, at the age of 25 – an outstanding success “that put the ZGS on the map”, as Argonne's former high-energy physics director Malcolm Derrick commented. The 1966 experiment on proton–proton elastic scattering at 90°_{cm} showed a kink in the elastic cross-section near a beam momentum of 8 GeV/c: the first evidence for objects (or layers) inside the proton.

Marvin Marshak of Minnesota recalled Alan's first “ $p + p \rightarrow p/\pi/K + \text{anything}$ ” experiments at the ZGS to test his so-called “onion” model. It did not confirm Alan's prediction that heavier particles were produced in the proton's inner layers, but the papers in *Physics Review Letters* of 1967 and 1968 contained the first definition of the concept of “inclusive” cross-sections (the name “inclusive” being coined later by Richard Feynman).

Alan pursued inclusive measurements at much higher energies at CERN's Intersecting Storage Rings (ISR) in the Argonne–Bologna–CERN–Michigan collaboration. The Argonne–Michigan team was the first from the



Alan Krisch, left, engaged in conversation with Ernest Courant. (Courtesy John Trotter.)

US to work at the ISR and the collaboration was among the first to take data in 1971.

Marshak recalled how the ZGS appeared in 1960 as a unique facility for accelerating polarized protons but it had to wait for a driving force like Alan to develop the world's first high-energy, polarized-proton beam in the years 1970–1973, along with Larry Ratner, Everett Parker and many others. Alan embraced the idea that the structure being suggested by the experiments could best be probed by preparing either the beam or target protons, and later both, in a specific spin state. Michigan's Polarized Proton Target (PPT) used dynamic nuclear polarization, a technique first developed at Saclay and Berkeley. In six years there were a total of 43 polarized-proton and four polarized-deuteron experiments conducted at the ZGS. It was then (1974) that Alan started the series of Spin Physics Symposia, where progress and ideas are still debated today. Alan was leader of the effort – together with Larry Ratner, Kent Terwilliger, Ernest Courant, Vernon Hughes, Thomas Roser and many others – that led to the acceleration of the first strong-focusing polarized proton beam at the AGS during the years 1978–1985.

Alan was right. As Don Crabb of Virginia commented, Alan's team found large spin effects in double-spin experiments at the ZGS. First, they found a large spin-dependence in the transversely polarized pp total cross-section. Then, in 1977 and 1978, at 12 GeV/c, near 90° , they found the spin-parallel pp elastic cross-section $\sigma(\uparrow\uparrow)$ to be four times larger than the anti-parallel spin cross-section $\sigma(\uparrow\downarrow)$. A similar experiment with

the scattering angle fixed at 90°_{cm} confirmed that the huge spin effect was a result of the hard scattering of the proton's constituents, and not a consequence of particle identity. However, this $\sigma(\uparrow\uparrow)/\sigma(\uparrow\downarrow)$ ratio was a factor of two too large to be caused by three spin- $\frac{1}{2}$ quarks in the quark-interchange model proposed by Stan Brodsky and others.

Large spin effects were also found at the AGS after the ZGS shut down in 1979. Alan's team studied the single-spin elastic cross-section's up–down asymmetry $A_n = (\sigma(\uparrow\downarrow) - \sigma(\downarrow\uparrow)) / (\sigma(\uparrow\uparrow) + \sigma(\downarrow\downarrow))$: A_n was growing rapidly at large transverse momentum, in contradiction with QCD. To confirm the data, the team developed a radiation-doped ammonia PPT, working at 1 K in a 5 T magnetic field, which could be used in a beam of 10^{11} protons/s (20 times more intense) with an average polarization of 85%. The large and growing A_n was confirmed with higher precision.

Then, following Alan's long-standing interest in “Siberian snakes”, the team moved to the Indiana University Cyclotron Facility to study spin manipulations with collaborators from Indiana (1986–2002). The acceleration and successful collision of the world's first beams of 100 GeV (and then 250 GeV) polarized protons at Brookhaven's RHIC is a direct fall-out from the research by Alan and his collaborators. Thomas Roser discussed the first test in 1989. These studies were continued in 2002–2009 at the Jülich Cooler Synchrotron. Hans Ströher of Jülich, in a paper delivered by Dennis Sivers, reviewed the highlights, including the very high-efficiency proton spin-flipper, and the spin-manipulation of tensor-polarized deuterons.

In the afternoon, the symposium reviewed the present and future status of spin physics, with talks by Jacques Soffer, Naomi Makins, Richard Milner, Jonas Sandberg and Abhay Deshpande.

Engaging nature's huge problems, sceptical, meticulous, innovative, persistent: that is how Michigan's Homer Neal summed up Alan, when offering him a spin-inspired sculpture made in the Michigan workshop at the end of the symposium.

For the full programme and all the talks, see <http://spin-symposium.physics.lsa.umich.edu>.

SCHOOLS

Ankara hosts inaugural ISOTDAQ school

The 1st International School of Trigger and Data Acquisition (ISOTDAQ) took place on 1–7 February in Ankara. This pioneering project was an initiative by CERN's Turkish community and became possible through major contributions from CERN and various members of the LHC experiments. The project was jointly funded by the ACEOLE project under the Marie Curie Action Fellowship Programme, CERN, the Turkish Atomic Energy Authority (TAEK) and Boğaziçi and Çukurova Universities. TAEK hosted the event.

This new school's target audience is masters and doctoral students who intend to continue their careers in the field of accelerator physics or particle physics, specializing in trigger and data acquisition. The topics covered included trigger hardware and software, data-acquisition hardware and software, and data-transfer technologies. The school attracted some 100 applicants from 11 nations, of whom 40 were selected.

With the aim of striking a balance between theory and practice, the lectures were accompanied by 11 lab sessions, each 2 hours long. The lab equipment was shipped from CERN (half a tonne) and supporting universities. The labs covered different topics, such as finite-state machine (FSM) design, field-programmable gate-array programming, and cosmic-muon measurements using VME-bus technology. Twenty-seven experts from all four major LHC experiments and CERN volunteered as lecturers and lab instructors.

A pre-school lecture programme took place one day before the school started to prepare the students with the necessary



A student group learns about FSM design and implementation. Each student received a readout board like the one used in this exercise (yellow object near centre). (Courtesy Francesca Pastore.)

computing skills. Over the next seven days, the participants gathered on the 11th floor of the TAEK headquarters to attend lectures and take part in the lab sessions, engaging in lively debates on the various topics covered during the lectures. “Get your hands dirty,” said Gökhan Ünel aptly in his welcoming speech at the opening ceremony, quoting Confucius as the motto for the school: “I hear and I forget. I do and I understand.”

The students were also treated to an excursion day to the city of Ankara for a taste of traditional Turkish cuisine and culture. This included visits to the Museum of Anatolian Civilizations and the mausoleum of M K Atatürk, the founding father of the Turkish Republic.

On the last day of the school, the instructors were pleasantly surprised by a humorous closing lecture from the students before the school was brought to an end with a ceremony where participation certificates



The school's participants outside the TAEK building. (Photo and article courtesy Yi Ling Hwong.)

were presented to the students. Each student also received a minimalist TDAQ device as a gift from the school. This hardware is meant to encourage the students to express their own creativity. Those who successfully complete a project with it within two weeks will also receive an achievement certificate from TAEK.

This inaugural school received a positive evaluation from the students and encouraging feedback from the TDAQ community. It also caught the attention of the Turkish national radio and television network, TRT. Extensive interviews with students and instructors appeared in a documentary aired in March. What started off as an ambitious project has turned out to be a remarkable learning process for everyone involved. The event's success has laid a solid groundwork for turning it into an annual school, with the next ISOTDAQ scheduled for 2011.

For slides and video recordings of the lectures, see <http://isotdaq.web.cern.ch>.

MEETINGS

The 12th Topical Seminar on “Innovative Particle and Radiation Detectors” (IPRD10)

will take place at the University of Siena, Italy, on 7–10 June. Attendance will be by invitation: interested physicists should write to the organizing committee, giving name, address, affiliation and, if applicable, the title of a contribution. The deadline for submitting an abstract is 15 March, but post-deadline contributions will also be considered. A limited number of grants covering the conference fees

is available for young PhD students wishing to attend. For more details, see www.bo.infn.it/sminiato/siena10.html; e-mail: kaos@bo.infn.it; or contact F.-L. Navarria, Dip. di Fisica, V.le Berti Pichat 6/2, I-40127 Bologna.

The **11th International Workshop on Tau Lepton Physics (Tau 2010)** will take place at the University of Manchester, on 13–17 September. Invited plenary speakers will cover experimental and theoretical

aspects in topics in tau physics, including: static properties of the tau; tests of lepton universality; semihadronic decays; strange decays; decays of heavy quarks to tau; CP violation; lepton–flavour violation; muon and tau $g-2$; neutrino physics; tau physics at hadron colliders; and future prospects. There will be a poster session, to which anyone can contribute. There will also be plenty of time for discussions. For more details, see www.manchester.ac.uk/tau2010.

OBITUARY

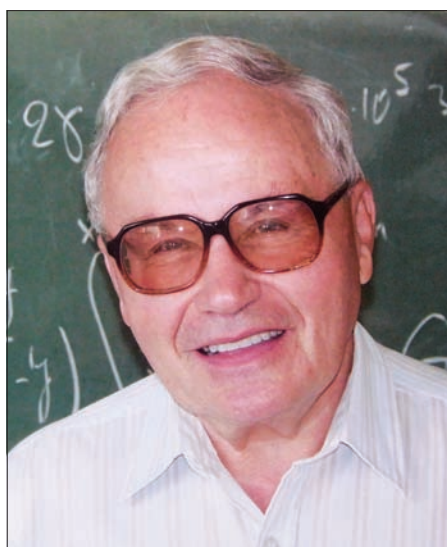
Vladimir Nikolaevich Baier 1930–2010

Vladimir Baier, professor of physics and an eminent Russian scientist, died on 19 February. With his passing, Russian science has lost an outstanding and world-renowned researcher.

Baier started his academic career in 1955 as a postgraduate student in the Lebedev Physical Institute of the USSR Academy of Sciences in Moscow. He worked there under the supervision of 1958 Nobel laureate Igor Tamm, of which he was always proud. After receiving his PhD in 1959, Baier joined the newly founded Institute of Nuclear Physics in Novosibirsk, led by Gersh Budker.

Baier was one of the first to envision the construction of electron–positron colliders. As early as October 1959, he shared his idea of colliding-beam experiments with Budker, who initially considered it insane. This was well in advance of the launch of the first electron–electron collider VEP-1 in what is now the Budker Institute of Nuclear Physics. Attitudes soon changed, however, and Baier took an active part in making his idea a reality.

Baier obtained a number of fundamental results in QED. Some of them were included in the world-famous *Course of Theoretical Physics* by Lev Landau and Evgeny Lifshitz. His works were devoted to single and double bremsstrahlung and electroproduction in collisions of high-energy electrons, radiative



Vladimir Baier. (Courtesy Valentin Baev, BINP.)

corrections to cross-sections at high-energy, radiative polarization and radiative-return theory. Together with his colleagues, Baier did much to advance the quasi-real photon/electron method, which lies at the root of the parton model – one of the main tools in the modern theory of strong interactions at high energy. The operator approach to QED in an external field was also developed under Baier's leadership. This approach became a clue to the construction of the general theory

of processes in periodic structures such as the laser wave, undulator, and monocrystal. His group did thorough research into the channelling of relativistic particles in a crystal. Their scientific results were published in three monographs and numerous reviews.

For many years Baier combined intensive research and teaching. He made a significant contribution to the establishment and development of Novosibirsk State University. Many generations of students have vivid memories of him and his QED textbooks are still in demand.

A talented scientist and teacher, Baier also had a lively personality. He was unobtrusively sociable and neither avoided – nor sought – communication. He had broad interests and knowledge, so it was interesting to talk to him not only about physics but also about music and literature, history and philosophy, as well as about different varieties of wine and ways to make them, about cars, yachts, and boats. He was a skier, swimmer and a yachtsman.

Vladimir Baier will remain in the memory of those who knew him personally, while his scientific works and methods will continue in physics for a long time. The theoretical schools that he founded and nourished will thrive and flourish and many generations of physicists will remember his name.

Friends and colleagues.

VISIT

The Polish under secretary of state, ministry of science and higher education, **Jerzy Szwed**, far left, visited CERN on 22–23 February. Here he is at the LHCb experiment, with (from left to right): LHCb spokesperson, **Andrei Golutvin**; machine protection and electrical integrity group leader, **Andrzej Siemko**; counsellor to the minister, **Maria Klimkiewicz**; and LHCb national group leader, **Grzegorz Polok**, of Henryk Niewodniczanski Institute of Nuclear Physics. Szwed also saw the ATLAS visitor centre, the LHC superconducting magnet test hall, the CERN Control Centre, the CMS centre, the ALICE exhibit and met members of the Polish community at CERN.



LETTER

Niobium heat treatment

Concerning the letter “Progress in superconducting RF” published in the January/February 2009 issue in response to my “Viewpoint” in November 2008 headlined “SRF technology comes full circle”, some readers might be interested in the following article, which establishes the basis for the points I made: “High field Q slope and the baking effect: Review of recent experimental results and new data on Nb heat treatments” by G Ciovati, G Myneni, F Stevie, P Maheshwari and D Griffis 2010 *Physical Review Special Topics – Accelerators and Beams* **13** 022002. (See also <http://link.aps.org/doi/10.1103/PhysRevSTAB.13.022002>). Ganapati Rao Myneni, Jefferson Lab.

NEW PRODUCTS

Hidden Analytical has introduced its transient mass spectrometer designed for the analysis of fast transient gas events at pressures near atmospheric. The compact bench-top system features the HAL/3F PIC mass spectrometer with pulse ion-counting detector and a fast-response capillary inlet. This allows inlet system response times of less than 150 m/s with measurement speeds up to 500 data points per second over a 7-decade dynamic range. The system monitors species with molecular weights to 300 amu, with higher mass ranges available. For more details, see www.hiddenanalytical.com.

Pfeiffer Vacuum has announced the Duo 125 and Duo 255 rotary vane pumps for applications that require pumping speeds between 120 and 250 m³/h in the low- and medium-vacuum ranges. They are suitable for high-vacuum pumping stations in combination with turbopumps or as

backing pumps for Roots pumps. Another new product is the robust turbopump, HiPace 60. Its integrated drive electronics reduce the need for cabling. A variety of drive versions, including Profibus and DeviceNet, are available. For more details, see www.pfeiffer-vacuum.net.

Physik Instrumente LP has developed the N-216 NEXLINE high-load piezo linear motors. These ultra-precision nanopositioning actuators provide travel ranges to 20 mm and push/pull forces to 600 N (130 lb). The operating principle is based on co-ordinated motion of a number of highly preloaded linear and shear piezo elements acting on a ceramic runner. For more details, see www.pi.ws.

Resolve Optics Ltd has introduced the Model 290 motorized non-browning zoom lens that includes a range of features to assist operation in environments subject to radiation.

The Model 290 uses special glass that can withstand long-term exposure to high levels of radiation (up to a total dose of 100 Mrad) and temperatures (55°C) without discolouration. Operating at f/1.8, the Model 290 provides high image-resolution and minimum geometric distortion from 400–750 nm. For more details, see www.resolveoptics.com.

Useful Corporation has released Useful Multiplier V.3.7, the latest version of software that turns 1 PC into 10. Expanding multilingual support enables more countries to take advantage of this product and allows computer access in multiple official languages simultaneously. In addition, there is improved USB device support, including hot-plugging of 2-way audio devices. The Useful Multiplier V.3.7 supports all major Linux distributions and is available in 64-bit and 32-bit packages in both RPM and DEB formats. For more details, see www.useful.com.

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