

FACES AND PLACES

AWARDS

Dirac Medals for work on weak interaction

Italian physicist Nicola Cabibbo of the University La Sapienza, Rome, and Indian-American physicist George Sudarshan of the University of Texas share the 2010 Dirac Medal and Prize of the International Centre for Theoretical Physics. The award recognizes their fundamental contributions to the understanding of weak interactions and other aspects of theoretical physics. (Sadly Cabibbo died on 16 August, only 8 days after the announcement. An obituary will appear in the next edition of *CERN Courier*.)

Cabibbo was cited for his important contributions to theoretical physics, including the recognition of the significance of mixing in weak interactions, which established the existence of a new class of physical constants and whose first example is the Cabibbo angle. This angle determines the mixing of strange quarks with non-strange quarks. With the discovery of a third family of quarks and leptons, quark mixing led to the understanding of the phenomenon of CP violation.

Sudarshan's important contributions to



Nicola Cabibbo. (Courtesy Massimo Silvano/ICTP Photo Archives)



George Sudarshan. (Courtesy G Sudarshan/ICTP.)

theoretical physics include the discovery (with Robert Marshak) of the V-A theory of weak interactions, which opened the way to the full description of the unified electroweak theory. He has also made innovative discoveries in the field of quantum optics, including the optical equivalence theorem, which provides

the foundation upon which the investigations of the manifestly quantum or nonclassical character of the electromagnetic field are based.

ICTP's Dirac Medal is given in honour of Paul Dirac and is awarded annually on the anniversary of his birth, 8 August 1902.

Italy honours theoretician Sergio Ferrara

Sergio Ferrara has been awarded the Commendatore Ordine al Merito della Repubblica Italiana. The Italian Order of Merit of the Republic recognises contributions made to literature, public service and the economy, and for humanitarian activities. Ferrara's ranking as Commander is recognition by the Italian Republic for his contributions to the physics community. An accomplished theoretical physicist, Ferrara also urges young students starting their careers to work with curiosity and enthusiasm. He encourages them to trust their own self-confidence. Ferrara received the award on 8 July from the Italian Ambassador to the United Nations and other International Organizations in Geneva.



Sergio Ferrara, far right, with from left to right: Pasquale d'Avino, minister counsellor at the Italian Permanent Mission to the United Nations and other International Organizations, Rosanna Ferrara, Sergio Bertolucci, CERN's director for research and scientific computing, and Laura Mirachian, the Ambassador to the UN and other International Organizations in Geneva. (Courtesy Elena Gianolio.)

Brookhaven physicists receive accelerator and superconductivity prizes

Robert Palmer, head of the Advanced Accelerator Group at Brookhaven National Laboratory, was awarded the Advanced Accelerator Concepts (AAC) prize in June at the 2010 AAC Workshop held in Annapolis, Maryland. He was honoured for “outstanding leadership in the muon-collider programme and pioneering many concepts in advanced accelerator science”.

Palmer is an executive board member of the Muon Collider Collaboration, which is studying the feasibility of building a high-energy muon collider to enable detailed studies of new particles that may be found at CERN’s LHC. He has a distinguished history of contributions to accelerator physics and has also made significant discoveries in particle physics. He participated in the discovery of the Ω^- at Brookhaven in 1962, as well as the discovery of neutral currents in the early 1970s at CERN, the charmed baryon at Brookhaven in 1975 and direct single photons at CERN in 1978.

The prize, which consists of \$6000, a plaque and a certificate, was made possible by a donation from Bergoz Instrumentation of St Genis-Pouilly, France, manufacturers of electronic instruments for high-energy particle accelerators.



Robert Palmer. (Courtesy T Koeth/Univ. Maryland.)

William Sampson, another senior physicist at Brookhaven, has in turn received the IEEE Council on Superconductivity Award for Significant and Sustained Contributions in the Field of Applied Superconductivity. The IEEE honours him in particular for his contributions to the field of large-scale superconductivity.

In the 1960s, Sampson built some of the first superconducting magnets to exceed 10T. He also made early models of dipole and quadrupole magnets. In the 1970s, he made wigglers for the National Synchrotron



William Sampson. (Courtesy BNL.)

Light Source at Brookhaven, which began operating in 1982. He has also worked on high-temperature superconducting magnets that can operate in high-radiation environments, such as the future Facility for Rare Isotope Beams (FRIB), a nuclear-physics facility that will be operated by Michigan State University.

Sampson received the award – which consists of a plaque, a medallion made of niobium and \$5000 – at the Applied Superconductivity Conference in Washington, DC, on 2 August.

TRIBUTE

Mikhail Grigorievich Meshcheryakov

This year marks the centenary of Mikhail Grigorievich Meshcheryakov. A well known Russian physicist and a pioneer of research at Dubna, he was born on 17 September 1910 and died 25 May 1994.

Meshcheryakov received his higher education at Leningrad State University, where he graduated with honours in 1936. He then took post-graduate courses for three years under the guidance of Igor Kurchatov at the Radium Institute of the USSR Academy of Sciences. At that time, the USSR’s first cyclotron was under construction and pioneering research in neutron physics and the radiochemistry of the products of artificial transformations of nuclei was to

begin there. Meshcheryakov’s scientific views as a physicist-experimenter evolved in the atmosphere of high-level academic research that Vladimir Vernadsky, Lev Mysovsky and Vitaly Khlopin initiated.

As a post-graduate Meshcheryakov enthusiastically joined the work on the 1-m cyclotron that started up in 1938 and in experiments there he discovered that cross-sections for the radiative capture of fast neutrons strongly fluctuated with the growth of the nuclear-mass number. Meshcheryakov summed up the results of these studies in his thesis, which he successfully defended in 1940. He became head of a laboratory at the Radium Institute that same year.

At the outbreak of the Second World War Meshcheryakov volunteered for the front. After being injured and demobilized in July 1942, he returned to the Radium Institute, which at the time was evacuated to Kazan University. He immediately joined the research on the atomic programme. When the blockade of Leningrad was broken in 1944 Meshcheryakov and colleagues reconstructed the cyclotron and used it to irradiate uranium blocks in connection with the development of industrial technology for the extraction of plutonium from uranium. At the same time, using the cyclotron as a high-resolution mass separator, he conducted a cycle of experiments to determine the isotopic

composition of helium of various origins.

In the years 1946–1947, as a scientific expert from the USSR, Meshcheryakov took part in the work of the Technical Committee of the UN Atomic Commission. On his return from the US he was appointed deputy director of the Atomic Energy Institute in Moscow and the scientific leader of the work to design and construct what was at the time the largest accelerator – the 6 m synchrocyclotron – in the future city of Dubna, in the vicinity of the Bolshaja Volga settlement. Meshcheryakov was the director of the Hydrotechnical laboratory, which was based on the synchrophasotron and which later became the Institute of Nuclear Problems. After 1956 this institute became part of the Joint Institute for Nuclear Research (JINR).

A talented scientist and organizer, Meshcheryakov was the head of a large scientific research institute in a city under construction; he carefully considered not only scientific issues but the tasks of city planning. He was the first to define the image of the future Dubna – the city with a special atmosphere of the invisible but constant work of the human mind.

From 1950, Meshcheryakov's scientific interests became concentrated on studies of the strong interactions of nucleons at high energies. He initiated research into



Mikhail Meshcheryakov. (Courtesy JINR.)

nuclear structure using 660 MeV proton beams, which brought about the discovery of the clusterization phenomena in nuclei and considerably influenced further development of relativistic nuclear physics. Unexpected results of the research that he conducted became widely known and were later confirmed in studies at other scientific centres.

Meshcheryakov became professor at Moscow State University in 1954. He

always paid much attention to the training of scientific staff. He was a member of the Scientific Council on the application of computing techniques and automation means in experimental nuclear physics at the department of nuclear physics of the USSR Academy of Sciences. He was also a member of the editorial boards of journals such as *Atomic Energy*, *Nuclear Physics*, *Nuclear Instruments and Methods*, *Elementary Particle Physics* and *Atomic Nuclei*. He twice received the Soviet State Prize, in 1951 and 1953, and became a Corresponding Member of the Academy of Sciences of the USSR in 1953.

In 1966 Meshcheryakov received an assignment to organize a special laboratory at JINR for the elaboration of methods to apply the latest achievements in computer technology and automation to scientific research. New techniques that emerged at the institute as a result of this work considerably widened the range of experimental and theoretical research and facilitated the development of new scientific trends.

Meshcheryakov belonged to the group of outstanding Soviet scientists who were the first in the country to start the construction of large accelerators, conduct research in the physics of the atomic nucleus and elementary particles, and to bring automation to scientific research.

SUMMER SCHOOL

LHC school gets going again in southern Italy

After a break of four years, the LHC School (formerly the Italo–Hellenic School of Physics) has regathered the threads of its original mission to provide young researchers with the opportunity to acquire techniques indispensable for physics at the LHC directly from experts actively involved. Held on 14–19 June with the theme, “The physics of LHC: theoretical and experimental aspects”, the fourth school in the series attracted an audience of some 30 young researchers. They were mainly Italian but a number of students came from elsewhere in Europe. The school was held – as always – at Palazzo Palmieri, a 16th-century baronial residence situated in the centre of Martignano, outside Lecce, in southern Italy.

The aim of the school is to bring young researchers engaged in LHC physics up to date with the tools necessary for their present



Palazzo Palmieri. (Photos courtesy Consorzio della Grecia Salentina.)

and future activities. Lasting six days, the 30 hours of lectures were divided evenly between theory and experiment while the students were roughly one third theorists and two thirds experimentalists. The programme this year was substantially enriched by the possibility for discussions about some of the

results already obtained at the LHC.

The theory lectures ranged from electroweak symmetry breaking, Higgs and new physics at the LHC (Riccardo Barbieri) and QCD and Monte Carlo tools for the LHC (Fabio Maltoni) to flavour physics (Giancarlo D’Ambrosio) and heavy-ion physics (Francesco Becattini). The experimental courses covered the current performance and prospects at the LHC accelerator (Stefano Redaelli), trigger commissioning (Margherita Primavera), calibration and alignment in tracking (Rino Castaldi), particle identification (Domenico Di Bari), muons (Margherita Primavera), calorimetry (Davide Pinci), data analysis and distributed computing (Alessandro De Salvo) and the results of preliminary analyses of the LHC experiments: ATLAS (Margherita Primavera), CMS (Rino Castaldi), ALICE (Domenico Di

Bari) and LHCb (Davide Pinci).

Although this fourth edition followed an unplanned break, the intention is now that the school should become biennial, with the possibility of topical workshops in the intervening years. The enthusiasm of the local bodies and the interest shown by the national funding agency, not to mention the satisfaction of the students themselves, has set the scene for the school to be established as a regular fixture for young researchers in their quest towards a career in high-energy physics. Judging by the positive feedback received from students of all events held so far, the school as a whole is well targeted and serves a specific and useful purpose.

The organizers gratefully acknowledge the various bodies whose financial and material aid made the school not only possible but also a success: l'Istituto Nazionale di Fisica Nucleare, l'Università del Salento, il Parco Turistico Palmieri, il Consorzio della Grecia Salentina and la Banca Monte dei Paschi di Siena.

● For further details about the 2010 school, see www.le.infn.it/lhcschool.



The vaulted lecture room of Palazzo Palmieri.

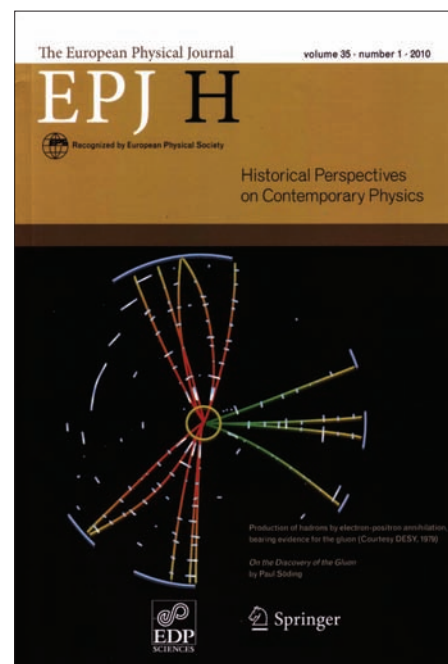
PUBLISHING

EPJ turns to historical perspectives

The *European Physical Journal* has launched a new series devoted to the Historical Perspectives on Contemporary Physics: *The European Physical Journal H (EPJ H)*. Its basic aim is not only to address the history of physics and the birth of its underlying concepts, but also to serve as a bridge between working physicists and professional historians and philosophers of science.

The publishers see the journal as a place where the experts on both sides can trade ideas and exchange knowledge, especially in the more complex fields of modern physics, where a deep understanding relies on mathematics beyond the level attained by non-practitioners. To this end, contributing physicists will be able to use as much mathematics as necessary, provided that they also include non-technical introductions and, importantly, conclusions. The language of the journal is English, but another aim is to include translations into English of documents of historical interest that are in other languages.

The focus will be on the history of the physics itself, rather than the social history of the subject. Topics to be covered range from particle physics and quantum field theory to nonlinear dynamics and complexity science. The first issue has articles on the discovery of the gluon, the birth of hydrodynamic stability theory, Jorge Sweica's contributions to quantum field theory and the origin and



EPJ H seeks to be a place to trade ideas, exchange knowledge and catalyse, foster, and disseminate an awareness on the historical background to contemporary physics and, more generally, an understanding about how nature works.

abundances of the chemical elements before 1957.

● For more about *The European Physical Journal H*, see www.springer.com/physics/journal/13129.

NEW PRODUCTS

Aerotech has launched a new digital servo amplifier with a linear power stage for ultra-high-resolution brushed or brushless linear and rotary-motion control systems. The new compact ML series amplifier is intended for lower power use but maintains the very high-performance characteristics required for nanometre- and microradian-level precision positioning applications that are acutely susceptible to electrical noise. The company has also introduced a new 560 mm-wide ball-screw-driven positioning stage as part of its PRO precision table range. Available in standard and high-speed versions, the extra wide cross-section of the new PRO560 and PRO560 HS stages provide optimal support

for long travel upper axes or large footprint loads. For more details, contact Cliff Joliffe, tel +44 118 940 9400; fax +44 118 940 9401; e-mail cjoliffe@aerotech.co.uk; or visit www.aerotech.co.uk.

Cobham Technical Services has developed new modelling tools that dramatically extend the accuracy and speed of finite element simulation used to develop superconducting magnets. Cobham's work during the Integrated Modelling Package for Designing Advanced HTS Materials Applications project resulted in three major new capabilities for Oxford Instruments. The most fundamental advance is in the finite element meshing

algorithms that divide a 3D computer-design model of a magnet down into smaller, connected elements to allow numerical solution. Working with Sumitomo Electric, Cobham has also introduced an advanced solution for the design of electrical machines and power equipment. Cobham's QUENCH electromagnetic software tool for modelling the quenching process now comes with a library of material characterization data for Sumitomo's DI-BSSCO bismuth-based superconducting wire. For more details, contact Julie Shepherd, tel +44 1865 370 151; fax +44 1865 370 277; e-mail vectorfields.info@cobham.com; or visit www.cobham.com/technicalservices.

VACVISION

©BICOM_10483.02 0.09.2010

The new Vacuum Controller: Intelligent and multi-tasking.

The new **VACVISION** monitors and controls the entire vacuum process. The large TFT graphic display with touch panel offers intuitive operation, a guided configuration menu (wizard), simple hardware interfacing as well as plug and play functions. The controller automatically detects up to three active vacuum gauge heads, five valves, one fore vacuum and one high vacuum pump. **VACVISION** offers a basis for flexible vacuum system configuration and smart operation.

Get the details at oerlikon.com/leyboldvacuum



TURBOVAC SL turbomolecular pumps and **VACVISION** - a smart combination.

oerlikon
leybold vacuum

Oerlikon Leybold Vacuum GmbH
Bonner Strasse 498
D-50968 Köln
T +49 (0)221 347-0
F +49 (0)221 347-1250
info.vacuum@oerlikon.com
www.oerlikon.com/leyboldvacuum

CERN SCHOOL

RF for accelerators comes under scrutiny in Denmark

The CERN Accelerator School (CAS) and Aarhus University jointly organized a specialized course on RF for accelerators in Ebeltoft on 8–17 June. The challenging programme focused on the introduction of the underlying theory, the study and the performance of the different components involved in RF systems, the RF “gymnastics” and RF measurements and diagnostics. This academic part of the course was completed with three afternoon sessions dedicated to practical, hands-on exercises

The school was a success, with 100 participants from 25 countries. Feedback from the participants was extremely positive, praising the expertise and

enthusiasm of the lecturers, as well as the high standard and excellent quality of their lectures.

In addition to the academic programme, the participants took time to visit a small industrial exhibition organized by Aarhus University and take part in a one-day excursion, consisting of a visit to the accelerators operated at the university and a boat trip on the Silkeborg Lakes, which ended with a walk to the peak of the Sky Mountain.

● The next specialized CAS course will be on “High-Power Hadron Machines” and will take place in Bilbao in the spring of 2011. Information will be available soon on the CAS website, at www.cern.ch/schools/CAS.



Participants at the CAS in Aarhus pose for the traditional group photo. (Courtesy G Præst.)

MEETING

PHYSTAT 2011 takes place at CERN on 17–19 January. It will deal with the statistical issues related to discovery claims in search experiments, concentrating on those at the LHC. Topics include: model selection methods, inclusion of the effects of systematics, the “Look Elsewhere Effect”, practicalities of estimating significance, whether 5σ should be a universal criterion for discovery, sensitivity of searches, experience from earlier experiments, etc. There will be invited talks by physicists and statisticians, and time for papers and discussion. This is a follow up to the PHYSTAT-LHC meeting at CERN in 2007 and to the recent Banff Workshop on statistical issues related to discovery claims. There is no registration fee but would-be participants should register on the conference website, <http://phystat2011.web.cern.ch/phystat2011>, where further details are available.

CORRECTIONS

There was an error in the recent article on four decades of the Lindau meeting (*CERN Courier* September 2010 p46). The handover of the presidency of the meetings from Count Lennart Bernadotte to his wife Countess Sonja took place in 1988, not in 1982.

Also, a misprint occurred in the box “The student factor” in the report on the IPAC ’10 conference (p16). The students received their prizes from the chair of the Scientific Programme Committee, Akira Noda. Apologies to all concerned.

Delta Tau has announced the Turbo PMAC Clipper, a highly cost-effective multiaxis controller. Based on the Turbo PMAC2 CPU, the new Turbo PMAC Clipper provides a single board with four-axis servomotor or stepper motor control with 32-digital I/O points and a choice of Ethernet or RS232 communication ports. The device is easily expandable to eight axes. Some of the high-performance features include multitasking of up to 16 motion programs and 64 asynchronous PLC programs, and co-ordinate-system translation and rotation in 2D and 3D. For more details, contact Stirling Morley, tel +44 1376 333 333; or e-mail stirling@micromech.co.uk.

Porvair Filtration Group has introduced Sinterflo metal filters to provide optimal performance with the lowest cost of ownership and long filter life for high-temperature gas-filtration applications. Available in stainless steel, Hastelloy, FeCrAlloy and other exotic materials, these filters offer superior performance compared with ceramic or alternative metallic structures. They are available from single elements to complex systems, including cyclones, prefilters, main filters and associated cleaning processes. For more details, contact Claire Webster, tel +44 1489 864 330; e-mail webster@porvairfiltration.com; or visit www.porvairfiltration.com.

Wavelength Electronics Inc has upgraded the WLD3343 General Purpose Laser Diode Driver for higher output current, lower noise, and no leakage current. It provides up to 3 A output in a compact 14-pin DIP package. There are five models, including the standard 2.2 A (WLD3343), a 2.2 A lithium-ion battery-compatible (WLD3343HB), a 2.2 A lower noise version (WLD3343-2L), the 3 A enhancement (WLD3343-3A), and a lower noise 3 A version (WLD3343-3L). The series is ideal for a wide variety of electro-optical instrumentation, including spectrometers. For more details, tel +1 406 587 4910; e-mail sales@teamwavelength.com; or visit www.teamwavelength.com.

OBITUARIES

Gerson Goldhaber 1924–2010

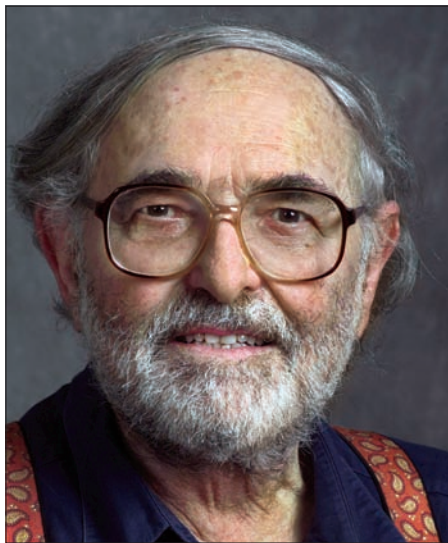
Gerson Goldhaber, whose accomplishments included leadership roles in the first observations of antiproton annihilation, the discovery of hadrons with non-zero charm quantum number and the discovery of the universe's accelerating expansion, passed away on 19 July at his home in Berkeley after a long battle with pneumonia.

Gerson was born in Chemnitz, Germany, on 20 February 1924. To avoid Nazi persecution his family moved to Cairo in 1933 where his father had, many years before, conducted guided tours of Egyptian antiquities. Gerson subsequently moved to Israel, and, in 1947, received an MSc from the Hebrew University in Jerusalem. He gained a PhD in physics from the University of Wisconsin in 1950 and he became a US citizen in 1953. After three years as an instructor at Columbia University, in 1953 he moved to the University of California, Berkeley, where he became full professor in 1963. He was also faculty senior scientist at the Lawrence Berkeley National Laboratory (LBNL). He retired in 1991, but subsequently remained active in research.

In Jerusalem, Gerson had met Sulamith Low, a chemistry student who became his wife in 1947. When the couple moved to Berkeley, she shifted into physics and became Gerson's close research collaborator.

In his thesis research at Wisconsin, Gerson developed a technique to measure gamma-ray spectra from excited nuclei, using photographic emulsions loaded with D_2O . The gamma rays led to observable deuterium photo-disintegrations. At Columbia, he worked with Leon Lederman and others in studies of pion–nucleon interactions in the 100 MeV range, again using photographic emulsions.

At Berkeley, Gerson's research initially focused on beams from the new 6.2 GeV Bevatron. With Gosta Ekspong and others, he used photographic emulsions to follow an antiproton candidate to rest, and demonstrated that the energy released in the form of newly created pions and nuclear fragments significantly exceeded the rest energy of a proton – a result expected for antiproton annihilation. In collaboration with Sula, he also made numerous measurements



Gerson Goldhaber. (Courtesy LBNL.)

of kaon properties and interaction processes, using emulsions and bubble chambers. One important result was the determination of the spin of the K^* meson as 1.

In a reorganization of LBNL in 1963, Gerson, Sula and their postdocs and students joined George Trilling and his colleagues to form a new research group (the TG group) that worked together until 1989. Tragically, during a visit to India in 1965, Sula suffered a sudden stroke and died. In 1969, Gerson married Judith Margoshes Golwyn, a science writer, playwright and poet.

Following several years of detailed K^* –nucleon interaction studies over a wide energy range, the TG group, with strong leadership from Gerson, shifted focus to the study of high-energy electron–positron collisions, using the new SPEAR storage ring/collider at SLAC and the MARK I and MARK II detectors. This research effort was a collaboration with William Chinowsky of Berkeley, and the SLAC groups led by Burton Richter and Martin Perl – the SLAC-LBL collaboration. The next few years saw many discoveries from the collaboration: the J/ψ , the charm quark, the τ lepton and final-state jet structure. Gerson's great achievement, with François Pierre, was to demonstrate the existence of charm hadrons, with non-zero value of the charm quantum number.

While the collaboration expanded and moved to higher-energy electron–positron experiments at the PEP storage ring and the Stanford Linear Collider, Gerson's research interests shifted in a new direction. In 1989, he joined the Supernova Cosmology Project (SCP) led by Saul Perlmutter. With techniques developed mostly under Perlmutter's leadership, the SCP team made observations of distant type-1A supernova, studying the relationship between redshift and observed luminosity. Gerson played an important role in the discovery, based on the study of 38 supernovae, that the universe's expansion is accelerating rather than decelerating as expected from gravitational attraction.

Gerson's outstanding research accomplishments were made possible by his ability to recognize, even in imperfect experimental data, hints of potentially new and interesting science. He was relentless in pursuing these hints until their origin was understood. His "nose for discovery" influenced in a positive way his choices of scientific direction. His achievements were recognized with numerous honours, including election to the US National Academy of Sciences, being named California Scientist of the Year 1977, and, jointly with François Pierre, the American Physical Society Panofsky Prize in 1991.

Gerson's impact was not confined to research. He and Robert Cahn wrote the important textbook *The Experimental Foundations of Particle Physics* (Cambridge University Press 1989). Starting during the lonely time following his first wife's death, Gerson became interested in art. He did wonderful water-colours, many of which he gave to friends. More recently, he and his wife Judith co-authored two books, *Sonnets from Aesop* and *Sarah Laughed*, for which she wrote the poems and he did a water-colour illustration for each poem.

Gerson is survived by his wife Judith, his son A Nathaniel, his daughters Michaela and Shaya, and his grandsons Sam, Ben, and Charles. He is greatly missed by all of us who had the privilege of interacting and working with him.

George Trilling, Berkeley.

Alexei Kaidalov 1940–2010

Alexei Kaidalov, famous for his ground-breaking contributions to Regge theory and the phenomenology of soft hadronic processes, passed away on 25 July after a long and merciless illness.

Kaidalov was born in Moscow on 20 July 1940. He graduated from the Moscow Engineering Physics Institute and was the last student to write his diploma under the supervision of Isaac Pomeranchuk. He then entered the Institute for Theoretical and Experimental Physics in Moscow and gained his PhD in 1968, eventually becoming head of the Laboratory for Strong Interactions. He was among those rare theorists who knew, in a profound way, all fundamental physics, although his passion throughout his life was for strong-interaction theory and high-energy phenomenology. He had a true talent to explain complicated physics in a simple way.

It is difficult to overestimate Kaidalov's impact on understanding intimate details of strong interactions, in particular in the nonperturbative domain. He was the leading world expert (sometimes, the ultimate expert) in all aspects of soft hadronic processes and his judgement was almost always final. He



Alexei Kaidalov. (Courtesy ITEP.)

was held in extremely high esteem in both the theoretical and experimental particle-physics communities.

Kaidalov was a creator of the celebrated quark–gluon string model. At the LHC workshop in Evian in 1992, Alvaro De Rújula

called his model “immorally successful” – perhaps one of the best compliments a theoretical physicist can ever receive. More than 25 years later, this model is still in high demand and continues to produce remarkable results in the new era of LHC data.

From the 1970s Kaidalov collaborated closely with theorists and experimentalists at CERN and was always interested in all new data from CERN's experiments. He became a member of the ALICE collaboration in 1998 and made important contributions to its physics programme.

In 2003 Kaidalov was elected as a corresponding member of the Russian Academy of Sciences. He also chaired the International Pomeranchuk Prize Committee and was the deputy editor-in-chief of the journal *Physics of Atomic Nuclei*.

Friends know “Aliosha” as an outstanding musician, a dedicated downhill skier, a modest and quiet person, and a very good friend. The depth of his knowledge in art was amazing, but his love of science was overwhelming. This is a great loss for the entire high-energy-physics community. *His colleagues and friends.*

Karl Lanius 1927–2010

Karl Lanius, a leading figure in experimental particle physics in East Germany, passed away on 21 July.

Lanius studied physics in Berlin from 1946 to 1952. He finished his PhD at the Humboldt University, where he became professor of physics in 1964. His scientific career then started at the Zeuthen institute close to Berlin, with the study of cosmic rays and nuclear reactions in emulsions. He soon recognized the importance of bubble chambers as a central tool for high-energy physics and also the need for international scientific co-operation.

In 1962, Lanius transformed the Zeuthen laboratory into the Institut für Hochenergiephysik and he continued to lead and shape the institute until 1988. From 1973 to 1976 he also served as vice-director of the Joint Institute of Nuclear Research



Karl Lanius. (Courtesy E Manske.)

(JINR) in Dubna. Many of the activities at Zeuthen were connected with the research programmes in both Dubna and Serpukhov. In parallel, he built up close co-operation with CERN and DESY, culminating in participation in the L3 experiment at CERN's Large Electron–Positron collider in 1983 and in joining the H1 experiment at the HERA collider at DESY in 1985. Being attracted by questions of cosmology and astrophysics, Lanius also promoted Zeuthen's first steps into the field of astroparticle physics with the participation in the Baikal experiment in 1988.

His strategic approach to science was accompanied by an atmosphere at Zeuthen that – despite all political restrictions – was remarkably open-minded and pragmatic when compared with other East German research institutions. It was Lanius'

remarkable science policy that prepared the ground for the successful unification of the Zeuthen institute with DESY in 1992.

Lanius was elected member of the German Academy of Sciences in Berlin in 1969. He chaired the academy's Klasse Physik from 1988 to 1992 and then the Klasse Naturwissenschaften of the Leibniz Society, the follow-up organization of the formerly East German academy, from 1993 to 1996. He was a vice-president of the International Union of Pure and Applied Physics from 1987 to 1990.

Lanius' parents were communists. His Jewish mother was arrested in Theresienstadt and Lanius himself sent to a youth work camp in 1944. When he was 60, he used the possibility of early retirement offered in East Germany to victims of fascism. He then stepped down from his position as director and worked with the L3 collaboration at CERN from 1988 to 1990.

Later, his interest turned to questions concerning the evolution of mankind, Earth and climate, which he discussed in three

books written in the last two decades of his remarkable life. Spending some time nearly every day in "his" old institute, he kept up his interest in modern developments in cosmology, astroparticle and particle physics.

It was Lanius who established experimental particle physics in East Germany. He will be missed by his former colleagues and remembered as a renowned physicist, distinguished science manager and director. *His friends and colleagues.*

Robert Lévy-Mandel 1923–2010

Robert Lévy-Mandel, an influential engineer at Saclay and at CERN, passed away on 3 July at the age of 87.

After obtaining a diploma from the Institut polytechnique in Grenoble, in 1948 Lévy-Mandel started work at the Commissariat à l'énergie atomique (CEA), only three years after its creation. He became involved in the development and construction of a Van de Graaff generator for the new Saclay research centre, which opened its doors in 1952. Using this first accelerator, the CEA began nuclear physics studies for military applications and energy production, but then decided to extend the research into the domain being opened up in the US, in particular at Brookhaven. This led to the construction of a weak-focusing 3 GeV proton synchrotron - Saturne - by a group of engineers under the direction of Lévy-Mandel. The machine started up in 1958 and in 1963 Lévy-Mandel was appointed head of the Saturne Synchrotron Department.

In 1966 the Groupement d'Etude pour le Synchrotron National began studies for an alternating-gradient 45 GeV proton synchrotron. Lévy-Mandel led this effort, benefiting from the experience of Pierre Lapostolle from CERN, but the project – Jupiter – was eventually abandoned. The Saclay team went on to lead the construction of the Gargamelle bubble chamber, which was installed at CERN in 1970, and also made contributions to other major facilities, including the Big European Bubble Chamber (BEBC).

In 1971 Lévy-Mandel was invited to CERN by John Adams, who was in charge of the Super Proton Synchrotron (SPS) project. CERN at that time had two laboratories, one



Robert Lévy-Mandel, at a CERN Council meeting in 1977, when he was a member of the directorate.

at Meyrin and one at Préessin, each with its own director-general: Willibald Jentschke at Laboratory I and Adams at Laboratory II. Lévy-Mandel was entrusted by Adams with the responsibility for site installation work at the Préessin laboratory, then under construction. The SPS started up in 1976 and, with the two CERN laboratories combined, Lévy-Mandel joined the directorate, with responsibility for technical services and site management.

By this time, planning for the Large Electron-Positron collider (LEP) was already in full swing. Emilio Picasso, appointed leader of the LEP project in 1980, asked Lévy-Mandel to produce the safety report for the future accelerator. The task was particularly sensitive as the 27 km tunnel would run under numerous French and Swiss villages, and the plans were meeting determined opposition. Lévy-Mandel produced the Installation nucléaire de base (INB) reports that were

submitted to the French authorities to obtain approval for the project. He also set up a programme for consultation with the French and Swiss municipalities and organized numerous briefings for the local authorities together with Henri Laporte, the head of civil engineering. Lévy-Mandel's talent for diplomacy proved particularly valuable in

bringing the local authorities on side and allaying their concerns. When he retired in 1988, just before LEP started up, the former mayors of the Pays de Gex organized a farewell dinner in his honour, in recognition of his work during the construction of LEP.

After his retirement, Lévy-Mandel maintained his attachment to CERN, and

continued to participate in discussions and work at the laboratory. He will be remembered for his great dignity and tact, as well as for his tireless devotion to CERN and seemingly boundless capacity for work.

Sincere condolences go to his two daughters, Anne and Françoise, to his grandchildren and to the entire family.

Matey Dragomirov Mateev (1940–2010)

Matey Mateev, a leading Bulgarian scientist and eminent theoretical physicist, perished together with his wife Rumiana Mateeva in a car accident near Sofia on 25 July. A teacher of generations of physicists and an organizer of scientific activities, he was dedicated to international collaboration in science.

Mateev was born in Sofia on 10 April 1940, the son of a medical doctor in a family that was part of the old Bulgarian intelligentsia. Graduating at Sofia University, "St. Kliment Ohridski", in 1963 he became an assistant professor of theoretical physics in the university's faculty of physics. International collaboration played an important role in his career from the start. Early in his professional life Mateev won a one-year grant to work at the newly founded International Centre for Theoretical Physics in Trieste. Later, from 1971, he worked for a decade in the Laboratory of Theoretical Physics at JINR in Dubna, where he gained his PhD and a Doctor of Science degree (for a dissertation on the concept of fundamental length in high-energy physics). In 1983 he became full professor at Sofia University, where he taught for 25 years. In 2003 he was elected a member of the Bulgarian Academy of Sciences.

International collaboration has also been a vital element in the development of Bulgarian physics. As an established scientist in his own right, it was natural for Mateev to use his influence – as a minister of national education in the years 1990–1991, and



Matey Mateev with his wife Rumiana. Both were killed in a car accident in July. (Courtesy K Koumanov.)

later – to promote international collaboration with Bulgarian physicists for the benefit of future generations. He was, in particular, instrumental in Bulgaria's admission to CERN as a member state in 1999 and he represented his country on the CERN Council in the period 1999–2000. He was also a member of the Scientific Council of JINR from 1993 and chair of the Bulgarian Union of Physicists from 2001.

Mateev was involved in many other activities, participating in work ranging from high-temperature superconductivity to crystal

growth. In recent years he wrote, together with Alexander Donkov who passed away a year ago, the first advanced textbook on quantum mechanics in Bulgarian. He continued until the last day of his life his work with Vladimir Kadyshevsky from JINR on a quantum field theory with fundamental length.

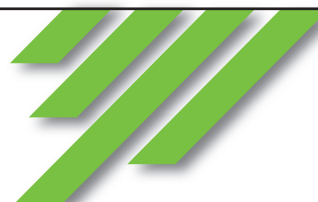
Matey, known as Mag by those close to him, was a kind and warm person. He naturally attracted people and had good friends in many countries around the world. We shall miss him.

His colleagues and friends.



VACUUM VALVES

www.vatvalve.com



Alessandro G Ruggiero 1940–2010

Alessandro Ruggiero, senior physicist in the Collider-Accelerator Department at Brookhaven National Laboratory passed away at his home on 26 June after a long battle with cancer.

Alessandro Ruggiero's story is one of the search for new ideas and improvements to particle accelerators, which sent him to live in many locations around the globe. Sandro, as he was known by his friends and colleagues, was born on 10 April 1940 in Rome. He studied at the Institute of Physics of the University of Rome and gained his PhD in 1964, based on work done at the electron synchrotron at the Laboratori Nazionali di Frascati. His first move took him to CERN in 1966 on a two-year fellowship to work on the CERN Electron Storage Accelerator Ring and the Intersecting Storage Rings. Together with Andrew Sessler and Vittorio Vaccaro he developed a systematic description of collective beam instabilities in terms of stability charts and coupling impedances, which had a lasting influence on accelerator theory. The time at CERN stimulated his interest in all aspects of accelerator physics, a field he never left.

In 1970 Sandro accepted an appointment at Fermilab and the US subsequently became his new home and he became a citizen in 1980. The period from 1970 to 1984 at Fermilab allowed him to establish himself as a first-class theoretical accelerator physicist. As a member of the theory group, he not only studied beam-intensity effects in accelerators and storage rings in general terms, but also solved known problems. He is credited with having made major contributions to the concept and design of the two-ring antiproton source for the Tevatron, especially the stochastic cooling method in the Accumulator and the design of the Debuncher. In 1985, Sandro accepted a post as senior physicist at the Argonne National Laboratory. He was attracted by the proposal to build the Argonne Wakefield Accelerator Facility. At the same time, he successfully led an inter-laboratory group to improve the performance of ALADDIN, the 1 GeV synchrotron-radiation facility in Wisconsin.

Sandro had previously shown interest in



Alessandro Ruggiero. (Courtesy LBNL.)

ISABELLE, the precursor to the Relativistic Heavy Ion Collider (RHIC) at Brookhaven, by providing the beam-stability analysis at the workshop held in 1975. So, when Brookhaven's future direction as an accelerator laboratory was being discussed after the ISABELLE project was terminated, he was invited to explore the options for a heavy-ion collider. In 1987 he went to Brookhaven as senior physicist with tenure and stayed there until his untimely death. He was lured by the possibility of influencing the design and construction of the proposed RHIC, which he could do as head of the Accelerator Physics Group. He applied his expertise of beam dynamics and instabilities to the various components of RHIC – from the Tandem via the Booster and the Alternating Gradient Synchrotron to the collider itself – resulting in a stable, high-intensity machine.

Sandro was always driven by the search for challenges, as well as their implementation in new projects. He participated in the study

and design of the Brookhaven-designed Accumulator ring for the Spallation Neutron Source at Oak Ridge National Laboratory. He became involved in proton radiography for the Stockpile Stewardship programme of the US Department of Energy (DOE) and a facility for nuclear waste transmutation in conjunction with Lawrence Livermore National Laboratory. He conceived and promoted a circular RF quadrupole as an alternative to a ring of conventional magnets in collaboration with the Accelerator Physics Group at the University of Naples. He participated in the study of a non-scaling, fixed-field, alternating-gradient accelerator as a proton driver for isotope production, a muon collider or a neutrino factory. He studied and produced papers on the formation of crystal beams. Although drawn mainly to new concepts and proposals, he was equally active in the measurements of the beam at RHIC and the interpretation of its instabilities and performance limitations.

Sandro was an eminent accelerator physicist, respected by his peers worldwide. He was an adjunct professor of physics at the University of Wisconsin in Madison and taught accelerator physics to young students at the US Particle Accelerator School. He had more than 200 publications to his credit, organized accelerator conferences and was the editor of several workshop proceedings. He was a member of many review committees for the DOE and for foreign projects. His outstanding contributions to physics were recognized when he was elected a fellow of the American Physics Society for "contributions to accelerator theory, including instabilities and nonlinear dynamics, to accelerator complex designs notably the Antiproton Source and the Relativistic Heavy Ion Collider and to accelerator architecture investigations of spallation neutron sources".

With Sandro's death, the accelerator community has lost a true innovator and a lively personality. He will be missed by his friends and colleagues, at Brookhaven and around the world. He is survived by his wife Amalia (Liucci) Ruggiero, children Sara and Filippo, and grandchildren.

Harald Hahn, with input from Thomas Roser, Vittorio Vaccaro and Claudio Pellegrini.