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Wolfgang Schnell 1929–2006

Wolfgang Schnell died on 2 October after an illness that he endured with great courage and lucidity. He was one of CERN's pioneers. After gaining a physics degree from the University of Heidelberg he worked at the Max-Planck Institute there, before joining the Proton Synchrotron (PS) construction team in 1954. He made numerous and significant contributions to accelerator physics and technology throughout his career.

Wolfgang Schnell

Working in the group led by Chris Schmelzer, Wolfgang achieved a breakthrough in 1959 during the running in of the PS, which was suffering from substantial beam loss during acceleration with the radio-frequency (RF) programming based on the magnetic field. With his phase-lock feedback system the beam went immediately to 24 GeV with hardly any losses. He later proudly showed his younger colleagues that the electronics of his system was built inside a coffee tin.

Wolfgang then became a member of the design team that studied the next generation of CERN accelerators after the PS – namely the Super Proton Synchrotron (SPS) and the Intersecting Storage Rings (ISR). He contributed significantly to both.

He proposed a travelling-wave structure for the 300 GeV SPS to accelerate the particles, which are already nearly relativistic at injection energy. A system of four such structures is still used in the SPS, faithfully accelerating protons since 1976 and ions since 1990.

The ISR was the first proton–proton collider. It was constructed in the late 1960s and operated from 1973 to 1983. Wolfgang led the design and construction of the RF system, including the many improvements implemented during the lifetime of the ISR. Examples of the novel ideas that he introduced are the missing-bucket scheme, based on a suggestion of Arnold Schoch, which increased the stacked beam current by a factor of 1.5, and equipping the vacuum chamber with clearing electrodes. He was responsible for the running-in and performance improvements of this tricky accelerator, which eventually stored up to 40 A of protons for each coasting beam in colliding mode and reached beam lifetimes exceeding many months. The final luminosity was 35 times the design value.

During this period Wolfgang discovered the transverse Schottky signal, a type of noise generated by the random transverse motion of the particles. This was immediately used to obtain some indication of the betatron frequencies of the DC beam, which previously could not be measured. The discovery of this signal led to another of Wolfgang's unique accomplishments: the resurrection and first experimental proof of the stochastic cooling of beams, based on the concept invented by Simon van der Meer in 1968 but considered to be without a practical application. It opened the door to antiproton cooling and, consequently, to proton–antiproton collisions, a technique that was highly successful in the SPS

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and remains so in the Tevatron at Fermilab.

In 1983 the ISR was shut down in favour of the Large Electron-Positron (LEP) collider and Wolfgang was a leader of the initial study group for this unique facility. He went on to be the driving spirit of the LEP RF group, which constructed the world's largest and most complex RF system. This was based on copper cavities coupled to spherical storage cavities that lowered the power consumption by a factor of 1.4, another of Wolfgang's original ideas. Also in 1983 he and Steve Myers presented the first paper on the parameters of a future proton–proton collider in the LEP tunnel – now the Large Hadron Collider – and participated in the brainstorming about CERN's future in 1985 chaired by Carlo Rubbia. It was then that he proposed an attractive, more practical variant of a two-beam scheme for a linear electron–positron collider, which is considered to be of strong potential for reaching the highest energies and is being studied at CERN as the Compact Linear Collider (CLIC). Wolfgang led the CLIC study with great enthusiasm for almost 10 years and contributed with various novel ideas even after his retirement.

His accomplishments were internationally recognized, as reflected in his membership of high-level international committees, and by the award of the Prize for Achievements in Accelerator Physics and Technology in the US and the *Doctor honoris causa* by the University of Heidelberg. He also played a leading role in the management of CERN as director of the ISR department after Kjell Johnsen, and as a prominent member of committees and project teams, and he was renowned for his implementation of a lean management while keeping a keen eye on the essentials.

Wolfgang will be remembered as a friend and a colleague who could create a team spirit, not as a boss but by being a natural leader with contagious enthusiasm. His ability to solve the most complex RF and beam-dynamics problems by the simplest means based on his deep insight was proverbial. He was always approachable to the young people to whom he was a patient tutor and mentor. He kept in close contact with his technicians and workshop staff to follow the latest developments and to keep his feet on the ground.

Many will be proud to have been part of one of his teams and to have had the honour to work with him. He will be sorely missed.
His colleagues and friends.

Vitali Kaftanov 1931–2006
Vitali Kaftanov died on 14 September at the age of 74. He was an outstanding Russian physicist, professor and former deputy-director of the Institute of Theoretical and Experimental Physics (ITEP) in Moscow. He was born on 3 December 1931 in Moscow to the family of well known Soviet scientist, Sergey Kaftanov. In 1954 he graduated with honours from Moscow State University, where he specialized in nuclear physics.


Vitali Kaftanov

In the mid-1950s international contacts began to develop between Soviet scientists and their foreign colleagues. Fluent in English, the young physicist Kaftanov was included in a Soviet government delegation, which participated in international conferences on the peaceful use of atomic energy taking place in Geneva under the auspices of the UN. It was here that Kaftanov met colleagues from the recently founded CERN. He had by then become a scientific researcher at ITEP, where he was working on similar issues to his CERN colleagues.

In 1960 the directorate of CERN made a proposal to the Soviet Academy of Sciences that Soviet scientists could participate in

international experiments, and Kaftanov became the first candidate for this role. From then on he had close relations with CERN, spending most of his life in Geneva. He was also involved in developing scientific technology and cultural collaboration between Russia and Switzerland. For a long time he was head of the neutrino research programme of ITEP, which involved accelerators at CERN, the Institute for High Energy Physics at Protvino and Fermilab.

For the past 15 years Kaftanov was a member of the cmS project at CERN and was one of the founders of the Russia and Dubna Member States (RDMS) cmS Collaboration. As a founding member of the magnet technical board, he was involved in designing and building the cmS magnet. He was also the RDMS technical coordinator for a long time and was key in assembling and commissioning the cmS detector.

Kaftanov's collaborative attitude and devotion to his work won him high regard and the admiration of all who know him. He will be sorely missed.
His colleagues and friends at the cmS collaboration.

Pedro Pascual 1934–2006
Pedro Pascual died on 29 October, aged 72. He made a difference to Spanish particle physics and was the first scientist to bring theoretical high-energy physics to Spain in the early 1960s from his period of learning with Yoichiro Nambu in Chicago. He educated the first highly competitive generation of theoretical particle physicists and led the development of experimental high-energy-physics groups across Spain.


Pedro Pascual

Pascual established the present Spanish system for evaluating researchers by the quality of their work. He also founded the Benasque Center for Science, which will now carry his name.

We remember his unlimited capacity for work and his uncompromising enthusiasm for excellence. His spirit will remain with us.
J I Latorre, Physics Department, University of Barcelona.

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