

ence agencies, colleges and universities and national and international committees. He treated all his students with great respect—which in his eyes included holding them to high standards—and closely followed their careers as long as he lived, helping them find good positions, criticizing their papers and books (when requested, which was often) and seeing that their work was known to others. No wonder he was so widely admired, professionally and personally.

F. JAMES RUTHERFORD

*American Association for the
Advancement of Science
Washington, DC*

Ralph Andreas Höpfel

Ralph Andreas Höpfel, a leading Austrian solid-state physicist, passed away tragically in Innsbruck, Austria, on 9 May 1997, the day after his 42nd birthday.

A native of Innsbruck, Ralph completed his PhD in physics at Innsbruck University in 1983 under the guidance of Erich Gornik. His thesis work on the infrared emission from two-dimensional plasmons and hot electrons in silicon-based metal oxide semiconductor field-effect transistors led, in 1984, to a position as a postdoctoral research scientist with Jagdeep Shah at what was then AT&T Bell Laboratories in Holmdel, New Jersey. During those two years at Bell Labs, Ralph, together with his collaborators, studied the transport and optical properties of gallium arsenide–aluminum gallium arsenide heterostructures. His most important work at Bell Labs was probably the discovery that minority carriers in GaAs quantum wells can have a negative absolute mobility under an applied electric field. This discovery led to new insights into electron–hole scattering in semiconductors.

Ralph then returned to Innsbruck and completed his *Habilitation* in 1988, becoming a member of the physics faculty. After a four-month guest professorship at the University of Nagoya in Japan, Ralph became a full professor of physics in 1996 at Vienna University's Institut für Materialphysik.

Over the last ten years of his life, Ralph and his coworkers concentrated on femtosecond time-resolved measurements. His group in Innsbruck was the first to observe the relaxation of plasmon oscillations in a solid through second-harmonic generation in silver islands. In other work, the group was able to show that intraband inversion in proton-bombarded indium phosphide can be achieved when the trapping and recombination rate is faster

than the rate of electron and hole thermalization. Ralph also studied modifications in photoluminescence spectra arising from the enhancement and inhibition of spontaneous emission in three-dimensional optical microcavities formed by semiconductor microcrystals.

Before Ralph died, his work had expanded to include the development of an ultrashort, tunable, THz pulsed light source and the direct observation of bulk plasmons in GaAs using very sensitive reflectivity measurements, as well as using a 13-femtosecond laser for medical imaging.

Ralph was a man full of energy and ideas who inspired students with his optimism. He was not only a motivational and creative physicist but also a family man and an accomplished pianist. His sudden death has taken a heavy toll on those who knew and worked with him. We all mourn his death.

**NANCY HECKER
ANTON ZEILINGER**

*Innsbruck University
Innsbruck, Austria*

ERICH GORNIK

*Vienna Technical University
Vienna, Austria*

JAGDEEP SHAH

*Bell Laboratories, Lucent Technologies
Holmdel, New Jersey*

Vance Sailor

Vance Sailor died of a sudden illness near his home in East Patchogue, New York, on 11 May 1997, in his 76th year. Working for most of his life at Brookhaven National Laboratory, Sailor was a pioneer in the use of diffracted neutron beams to explore the properties of neutron resonances of nuclei and the magnetic structure of crystalline media.

Sailor was born in Springfield, Missouri. He received his BA in physics at DePauw University in 1943 and his PhD in physics at Yale University in 1949. In the intervening years (1943–45) he was a meteorologist in the US Army Air Forces, serving in Africa and the Middle East. Soon after joining Brookhaven in 1950, he worked on experiments at the Brookhaven graphite reactor, the world's first nuclear reactor devoted entirely to peaceful research, which was just becoming operational in 1950.

He built and operated a crystal spectrometer for cross-section measurements and then added the ability to polarize the neutron beam in more refined studies. Around 1960, he added polarization of the targets for

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VANCE SAILOR

experiments at the graphite reactor, which later became the Brookhaven High Flux Beam Reactor.

In the course of his research, Sailor took on numerous young physicists, as temporary assistants, from countries all over the globe. In that way, he made an exceptional contribution to the training of an international cadre of neutron physicists. In the cases of Greece and Turkey, he assisted scientists at their nuclear research centers to help start and maintain effective programs of research in neutron physics.

In his later years at Brookhaven, he became active in programs in support of the peaceful uses of atomic energy, both those conducted by his laboratory and by others.

Sailor was also a musician and an avid sailor. His purely intellectual approach to problems, his precision and impeccable honesty made him a fine scientist. His ready wit and unfailing loyalty to his friends are among the traits that make him deeply missed by many fortunate enough to have known him.

HERBERT KOUTS
Brookhaven, New York

Siegfried A. Wouthuysen

Siegfried A. Wouthuysen, whom we lost on 9 July 1996, made a key contribution to Werner Heisenberg's S-matrix theory very early in his career.

Born in Amsterdam on 17 August 1916, Wouthuysen entered the University of Ghent in September 1934 to study chemical engineering. At Ghent, his professor of physical chemistry arranged for him to study physics with Hendrik Kramers at the University of

Leiden. There, Wouthuysen took his doctoral exam in 1939 and became the assistant of Kramers. In early 1942, Wouthuysen found a representation of the Schrödinger dispersion amplitude as an analytic function of the energy with the bound states as poles on the negative energy axis. But he had to go into hiding shortly thereafter to escape the Nazis' wartime persecution of the Jews in The Netherlands. He finally sought refuge in Belgium, where he managed to find employment under a false name. In the meantime, Heisenberg, on visiting Kramers in Leiden later in 1942, learned about Wouthuysen's analytic construction.

In 1946, Kramers arranged for Wouthuysen to receive one of the few US scholarships available for Dutch students, so that he could work with Robert Oppenheimer—both at the University of California in Berkeley (1946–47) and at the Institute for Advanced Study in Princeton (1947–48). Wouthuysen obtained a PhD at Berkeley in 1948 and then accepted a postdoctoral fellowship at the University of Rochester, where, in the summer of 1949, he developed the Foldy-Wouthuysen transformation of spinor mechanics.

Returning to Europe, he became an associate professor at the University of Amsterdam in 1949 and a full professor in 1955. In 1960, he went for a year to CERN, to which he later became the Dutch delegate. In 1962–63, he held the Franqui Chair at the University of Brussels. He also spent periods at Brookhaven National Laboratory and the Weizmann Institute in Rehovoth, Israel.

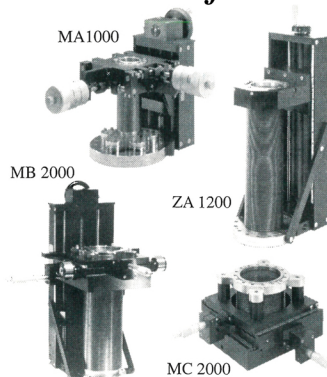
Wouthuysen was strongly concerned with world peace, became a member of the Pugwash Committee and contributed actively to the Pugwash Statement of 1962.

Until the end of his life, Wouthuysen was the spotless example of a true physicist, publishing only after he was sure he had reached results of value, always open to discussion and criticism and ready to help anybody in search of deeper understanding. His last paper, in 1994, proposed the new idea of a spinor spacetime lattice. This hopeful development came to an end with a prolonged sickness and his death at the age of nearly 80.

Wouthuysen was never very interested in publicity. He was the more appreciated by those of his colleagues who recognized the great values of his knowledge and thoughts.

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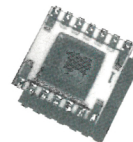
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