aligned rotating holmium target.

Koster earned a PhD in nuclear physics from North Carolina State University in 1990 and then spent one year as a postdoc at Duke University before moving to Los Alamos.

The 1992 Forum Award, given by the APS Forum on Physics and Society to recognize accomplishments in promoting public understanding of issues in physics and society, went to Luis Masperi and Alberto Ridner of the Argentine Physics Association and to Fernando de Souza Barros and Luis Pinguelli Rosa of the Brazilian Physical Society. The four were cited for "laying the groundwork for the agreement between Argentina and Brazil to abstain from building any explosive nuclear device." As representatives of their respective physics societies, the four influenced the recent decisions of the Brazilian and Argentinian governments to sign an agreement in which both parties agreed to prohibit the testing, use, fabrication and purchase of nuclear arms.

Masperi, a former president of APA, is a scientist and the head of the theory division at the Atomic Center in Bariloche and a professor of physics at the Instituto Balseiro. He earned a PhD in physics from the Instituto Balseiro in 1969.

Ridner earned a PhD in physics from the Instituto Balseiro in 1970, after which he worked at the low temperature physics center at the Atomic Center in Bariloche. While serving in a postdoctoral appointment at Brown University in the late 1970s, he became interested in microcomputers, advanced-architecture computers and parallel computers. He now heads the scientific computer center at the Argentine National Atomic Energy Commission in Buenos Aires.

De Souza Barros, a former president of the Brazilian Physical Society, received a PhD in nuclear physics from Manchester University in England in 1960. From 1962 to 1965 he was a research physicist at the Carnegie Institute of Technology (now part of Carnegie Mellon University), and in 1966 he became an assistant professor of physics there. Since 1970 he has been a professor of physics at the Federal University of Rio de Janeiro.

Pinguelli Rosa, an elementary-particle physicist, is the chairman of the Forum for Science and Culture at the Federal University of Rio de Janeiro and a staff member of the graduate program in energy there. He earned a doctorate in physics from the Catholic University of Rio de Janeiro in 1974.

Kurt Gottfried, a professor of physics at Cornell University, is the recipient of the 1992 Szilard Award, also given by the Forum on Physics and Society. Gottfried was cited for his "timely and thorough analyses of the Strategic Defensive Initiative program, crisis stability of nuclear forces and conventional forces in Europe, which have contributed greatly to the understanding of these issues by government and the public." As a member of the Union of Concerned Scientists, Gottfried pushed for the application of physics to the UCS study of SDI. He also directed and organized studies of nuclear war and Soviet conventional forces under the auspices of Cornell.

Gottfried received a PhD in theoretical physics from MIT in 1955. After serving as a postdoc at Harvard and the Institute of Theoretical Physics in Copenhagen, he joined the Harvard faculty in 1960. He became a professor of physics at Cornell four years later and now serves as department chair.

OBITUARIES

Alan H. Barrett

Alan H. Barrett, a professor of physics at MIT, died on 3 July 1991 in Denver, Colorado, after a two-year struggle with cancer. He was 64 years old.

Barrett was born in Springfield, Massachusetts. After serving in the US Navy, he studied electrical engineering at Purdue University. He did his graduate work in physics at Columbia University with Charles Townes, specializing in microwave spectroscopy. He received his PhD in 1956 for a study of the microwave spectrum of the halides of indium and gallium.

Eager to apply his knowledge of spectroscopy to the new field of radioastronomy, Barrett began such work as a postdoctoral fellow at the US Naval Research Laboratory. While at NRL he made his first search for interstellar OH radicals, with A. Edward Lilley. He also became interested in planetary atmospheres after he learned from Cornell Mayer that observations of Venus at a wavelength of 3 cm indicated a surprisingly high temperature.

From 1957 to 1961 Barrett was a research associate and instructor in the department of astronomy at the University of Michigan. In 1960 he proposed a model to explain observations of Venus that indicated brightness temperatures of 600 K at wavelengths longer than 3 cm but of only 300 K at shorter wavelengths. In Barrett's model Venus's surface was hot and the atmosphere consisted of a thick layer of carbon dioxide, which gave rise to pressure-induced absorption and a greenhouse effect. Barrett was the principal investigator on the Mariner II flyby mission to Venus, which produced radiometric data that confirmed his model. In the mid-1960s Barrett and his colleagues led the development of remote sensing of the temperature and water-vapor structure of the Earth's atmosphere, first from balloons and later from dedicated satellites. In 1961 he joined the faculty of the department of electrical engineering at MIT, and in 1967 he was appointed professor of physics. Much of his research was carried out in the MIT Research Laboratory of Electronics.

In 1963 Barrett and colleagues discovered two 18-cm lambda-doublet lines from OH radicals in the interstellar medium by their absorption of the broad-band synchrotron emission from the supernova remnant Cassiopeia A. It was the first radio detection of an interstellar molecule at radio wavelengths. They later discovered that sources of OH emission were highly polarized, a key piece of evidence that led to their identification as natural masers—intense sources of radiation analogous to lasers. Barrett also helped develop very-long-baseline interferometry, a method of linking radiotelescopes separated by thousands of miles so that they would have the resolving power of a single telescope nearly as large as the Earth. This technique has since allowed fundamental advances in the study of quasars, galaxies and interstellar masers. In 1968 Barrett and his student William Wilson discovered hydroxyl

Alan H. Barrett

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maser emission from red giant stars. In 1974 Barrett and his research team discovered in the Orion molecular cloud the first source of maser emission from interstellar methanol molecules.

In the early 1970s Barrett and his colleagues developed a technique of medical imaging known as microwave thermography. It uses very sensitive receivers developed for radioastronomy to measure noninvasively the temperature structure several millimeters beneath the skin. This technique has proved to be capable of detecting breast cancer tumors by means of their elevated temperature.

In 1977 Barrett wrote the undergraduate physics text *Electromagnetic Vibrations, Waves, and Radiation* with George Bekefi. Barrett retired from MIT in 1987.

In all of his work, Barrett combined an infectious enthusiasm, a pioneering spirit and a practical, commonsense logic. He was admired by his students for his clarity, consistency and friendly manner, and he taught by example. He trained many of the radioastronomers now working in the US. In appreciation of his work and its impact on astronomy, a symposium was held at MIT in 1987. He will be remembered fondly by his many students, colleagues and friends.

PHILIP C. MYERS
JAMES M. MORAN
PAUL T. P. HO
Harvard–Smithsonian Center for Astrophysics
Cambridge, Massachusetts

David C. dePackh

Physicist and inventor David C. dePackh died on 27 August 1990 in Hollywood, Maryland. He was 68.

Though not widely known in physics circles, Dave nevertheless made noteworthy contributions to accelerator physics, plasma theory and beam dynamics theory. At the same time he exhibited a keen ability in the experimental side of all of these disciplines.

Dave was born in Chicago in 1921. He graduated at age 18 from the University of Chicago with a degree in physics and then moved to Washington, DC, to begin his career at the Naval Research Laboratory. He remained at NRL until he retired in 1974.

My earliest experience with Dave followed the end of World War II, when we worked at NRL on an air-core synchrotron concept. We attempted to meld radar-derived pulsed-power techniques and microwave cavities to produce a compact accelerator, which we dubbed the Cavitron. Though no working model emerged from this collaboration, that sally into accelerator work launched Dave into the theoretical and experimental investigation of periodically focused electron accelerators. Dave's work with what became known as dePackh coils predated much of the now-famous work on alternating-gradient focusing in particle accelerators. A prized possession of mine is a handwritten technical note, dated 30 July 1952 and signed by Edwin McMillan, entitled "Focusing by dePackh Coils." In this note McMillan rederived Dave's theoretical expressions describing the focusing properties of Dave's novel accelerator configuration and confirmed his conclusions.

As an outgrowth of his early work with these coils, Dave initiated pioneering studies aimed at developing a high-current, small-aperture betatron–synchrotron. This novel accelerator used air-core coils and fast-rise, single-turn injection of a high-perveance electron beam to achieve high currents. Dave not only developed the beam stability theory for this accelerator but also guided its design, fabrication and operation. It was successfully demonstrated in 1962.

In 1967 Dave and his group transferred to the NRL plasma physics division, where he performed early studies of the stability of relativistic electron beams propagating in plasma. During this period he also formulated the "water bag" model of plasma behavior, a concept that has now found its way into many areas in plasma theory. Dave's coworkers at NRL recall with pleasure his good humor, his broad knowledge and his diverse interests.

Following his retirement Dave launched into a second career, aimed at such environmentally related issues as solar energy, and in particular, innovative approaches to small-scale solar energy systems. Ever active mentally, from 1974 to the time of his death he also composed string quartets, wrote plays, sang in concerts, translated ancient Persian poetry and worked on number theory. To each of these he brought his intense individuality and his remarkable genius, a genius recognized by all of us who had the privilege to know him.

RICHARD F. POST
Lawrence Livermore National Laboratory
Livermore, California ■