

APS PRIZES AWARDED AT DIVISION MEETINGS

In October and November the American Physical Society acknowledged the research achievements of several individuals. Three meetings held during those months provided the settings for award presentations: the International Laser Science meeting, held in Toronto; the meeting of the APS division of fluid dynamics, in Albuquerque, New Mexico; and the meeting of the APS division of plasma physics, in St. Louis, Missouri.

At the laser science meeting, **John L. Hall** received the Arthur L. Schawlow Prize for "his outstanding work in applying laser techniques to the study of quantum optics and fundamental physical constants, and his invention and development of key ideas that have advanced the state of the art of lasers for spectroscopy and metrology." Hall is a senior scientist at the National Institute of Standards and Technology in Boulder, Colorado, a fellow of the Joint Institute for Laboratory Astrophysics and a lecturer at the University of Colorado.

At the fluid dynamics meeting, **Theodore Yao-tsu Wu**, a professor of engineering science at Caltech, was presented with the 1993 Fluid Dynamics Prize. APS cited Wu for "his trailblazing studies on the nonlinear theory of supercavitating hydrofoils, his perceptive and substantial contributions to the theory of animal locomotion at low Reynolds numbers and his discovery and subsequent elucidation of upstream-running solitary waves caused by a moving body." The citation also noted "his devotion and generosity in furthering the careers of young scientists." The Otto Laporte Award went to **Robert Kraichnan**, a consultant and independent researcher in Santa Fe, New Mexico. He was chosen for "a lifetime of significant contributions to statistical fluid dynamics including nonlinear response functions, mapping closures, inverse cascades and the Eulerian and Lagrangian direct-interaction theories."

At the plasma physics meeting, the Maxwell Prize was presented to **Russell M. Kulsrud**, a professor in the department of astrophysical sciences at Princeton University. APS

cited Kulsrud for "his pioneering contributions to basic plasma theory, to the physics of magnetically confined plasmas and to plasma astrophysics." The citation noted that "his most important work encompasses plasma equilibria and stability, adiabatic invariance, ballooning modes, runaway electrons, colliding beams, spin-polarized plasmas and cosmic-ray instabilities." The 1993 Excellence in Plasma Physics Award was shared by pairs of researchers at three universities: **Yoshiaki Kato** and **Kunio Mima** of Osaka University's Institute of Laser Engineering; **Robert H. Lehmberg** and **Stephen P. Obenshain**, both researchers in the Naval Research Laboratory's plasma physics division; and **Stanley Skupsky** and **John M. Soures** of the Laboratory for Laser Energetics at the University of Rochester. APS cited them for "the development of laser-beam smoothing techniques and for the demonstration of the benefits of these techniques in reducing instabilities and thereby controlling the intense compression of pellets of plasma." Also at the plasma physics meeting, **Michael E. Glinzsky**, a postdoctoral physicist in the laser program at Lawrence Livermore National Laboratory, was given the Simon Ramo Award. APS cited Glinzsky for "seminal contributions to the theory of three-body recombination in strongly magnetized plasmas, and for a unified theoretical calculation of the collisional equipartition rate in strongly magnetized pure-electron plasmas that has enabled quantitative comparison to experiment over a range of eight decades in the effective magnetic field strength."

ASA RECOGNIZES WORK IN ACOUSTICS

One of the highlights of the Acoustical Society of America's meeting in Denver this past October was the presentation of awards to three individuals. **Homer P. Bucker**, research physicist at the Naval Command Control and Ocean Surveillance Center in San Diego, California, received the Pioneers of Underwater Acoustics Medal. Bucker was cited by ASA for "groundbreaking work in-

tegrating signal processing and acoustic modeling." The Silver Medal in Acoustical Oceanography went to **Clarence S. Clay**, a professor emeritus of geophysics at the University of Wisconsin. ASA cited Clay for "contributions to understanding acoustic propagation in layered waveguides, scattering from the ocean's boundaries and marine life, and ocean parameters and processes." **Steven L. Garrett** garnered the Silver Medal in Physical Acoustics and Engineering Acoustics. Garrett, a physics professor at the Naval Postgraduate School, in Monterey, California, received the medal for "leadership in transferring fundamental concepts of fiber optics and thermoacoustics into practical applications."

RHEOLOGY SOCIETY HONORS JOSEPH

At the 65th annual meeting of the Society of Rheology, held in Boston in October, **Daniel D. Joseph** received the Bingham Medal. Joseph was cited for "major contributions to the fields of rheology, fluid mechanics and thermal science."

The award citation went on to note Joseph's "landmark 1985 paper on hyperbolicity and wave propagation with Renardy and Saut" that "set a new direction in rheological fluid mechanics, showing that vorticity was a key variable, with waves of vorticity propagating into fluids at rest." Joseph is the Russell J. Penrose Professor of Aerospace Engineering and Mechanics at the University of Minnesota.



Daniel D. Joseph

IN BRIEF

The Packard Foundation has awarded five-year fellowships worth \$500 000 to each of 20 young faculty members. In addition to the recipi-

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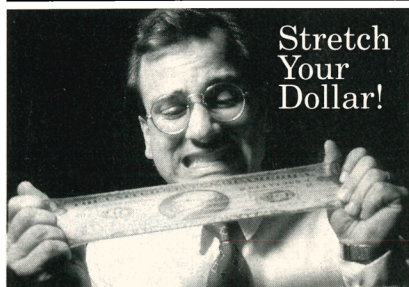
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ents announced earlier (PHYSICS TODAY, December 1993, page 63), the following also received grants: **James Graham**, assistant professor of astronomy at the University of California, Berkeley, who is exploring the physical processes that determine stellar masses; **Nancy Makri**, assistant professor of chemistry at the University of Illinois, Urbana-Champaign, who studies chemical reactions as quantum mechanical processes; and **Daniel H. Reich**, assistant professor of physics and astronomy at Johns Hopkins University, who explores experimentally the fundamental properties of materials at low temperatures and is using low-dimensional magnets to study quantum effects.

This past summer the European Physical Society awarded its 1993 High Energy and Particle Physics Prize to **Martinus Veltman**, a professor of physics at the University of Michigan, Ann Arbor. The citation acknowledges Veltman's "pioneering work on the role of massive Yang-Mills theories for weak interactions."

OBITUARIES

Zhang Wen-Yu

Zhang Wen-Yu passed away in Beijing on 5 November 1992 at the age of 82 after a long illness. Zhang had been an academician of the Chinese Academy of Sciences, director of the Institute of High-Energy Physics in Beijing and director of the Chinese Society for High-Energy Physics.

Zhang studied under Ernest Rutherford in the mid-1930s, receiving his degree from Cambridge University in 1938. He returned to China to teach at Nankai University, which, like other Chinese universities, had moved to an unoccupied area during the war. In 1942 his wife, Wang Cheng Shu, received a fellowship to work for her PhD at the University of Michigan. Zhang came to the US soon after, taking a research position at Princeton University. His first investigations were on alpha particle spectra in radioactive decay, a subject not far removed from his graduate studies. Later, when he joined Princeton's cosmic-ray group to study the interaction of high-energy particles, he found his life's work. His cloud chamber studies of stopped muons culminated in the observation of mu-mesic x rays, an important contribution to our understanding that muons are heavy electrons that can be captured into the Bohr orbits of nuclei.

Zhang joined the faculty of Purdue University in 1949. He brought with

him the large cloud chamber he had built at Princeton and, together with a few graduate students, myself included, he began the study of penetrating showers produced at sea level. Those who knew Zhang as an administrator will appreciate that he was a constant presence in the laboratory, especially during the construction of a second cloud chamber designed to study the interactions of the particles produced in the first chamber. We had no technicians, and Zhang did more than his share of cutting, drilling, wiring, assembling, disassembling and reassembling.

My clearest memories of those years are not so much of the construction, data taking and analysis, but of Zhang himself—quiet, smiling, somewhat shy, invariably courteous. A caring man, theoretically inclined, steeped in the history and philosophy of physics, he was a teacher of unfailing enthusiasm and optimism.

In 1956 Zhang, his wife—a noted physicist in her own right—and their young son returned to China, forced from America by the hysteria that was McCarthyism. Unknown to me, Zhang had endured an ordeal of harassment and uncertainty; his refuge was physics and his graduate students.

In China Zhang devoted his full concentration and energy to building a high-energy physics capability. At the Luoxueshan Cosmic-Ray Laboratory in Yunnan, in southern China, he and his colleagues constructed the largest cloud chamber of its time, and he began the training of a generation of high-energy scientists. He headed a group of Chinese physicists working on high-energy physics at Dubna from 1961 until the Soviet Union and China went their separate ways in 1965.

Zhang taught at the Chinese University of Science and Technology; he was the chairman of its department of modern physics from 1978 until his retirement ten years later.

In 1973, when the Institute of High-Energy Physics was founded in Beijing, Zhang became its first director. He immediately reached out to friends throughout the world, opening doors of communication. He led the first group of Chinese high-energy physicists to visit laboratories in the US, and he invited Western scientists to China. Negotiations culminated in agreements of cooperation.

Now Zhang is gone, but his legacies remain: for China, the accomplishment—shared with many, to be sure—of his goal of developing high-energy physics with domestic facilities and international collaborations; for individuals who knew him, an abiding influence. We all learned