

chemistry, Earth science, electrical engineering, civil engineering, computer and cognitive science, and the life sciences. Of the award recipients, eight are being recognized for physics-related work.

John N. Bahcall, Raymond Davis Jr., and Masatoshi Koshiha are sharing the Benjamin Franklin Medal in Physics for their "work that led to an understanding of neutrino emission from the Sun." Bahcall, Richard Black Professor of Natural Sciences at the Institute for Advanced Study in Princeton, New Jersey, "provided the theoretical basis for the experimental work of first Davis, and then Koshiha," reported the Franklin Institute. Using an underground detector at the Homestake Gold Mine in South Dakota, Davis discovered a striking shortfall in the Sun's neutrino output. Koshiha led the creation of the Kamiokande water-Cherenkov detector in Japan; the detector's ability to measure the energies and arrival times and directions of individual neutrinos confirmed and expanded Davis's provocative result. Davis, emeritus research chemist at Brookhaven National Laboratory, and Koshiha, emeritus professor of physics at the University of Tokyo, were two of the three winners of the 2002 Nobel Prize in Physics (see PHYSICS TODAY, December 2002, page 16).

The Bower Award and Prize for Achievement in Science is going to **Paul B. MacCready**, chairman of AeroVironment Inc in Monrovia, California. MacCready, "in the spirit of the Wright brothers, has created a series of innovations in the fields of soaring, meteorology, human- and solar-powered flight, upper atmospheric research, and unoccupied and miniature aircraft." The citation adds that, for "half a century, his exceptional contributions have expanded the frontiers of the science and technology of aeronautics, aeronautical materials, structures energy conservation and utilization, and autonomous and automatic flight." The award carries a cash prize of \$250 000.

Robin M. Hochstrasser is receiving the Benjamin Franklin Medal in Chemistry for "pioneering the development of ultrafast and multidimensional spectroscopies and their applications to gain fundamental molecular-level understanding of the dynamics in complex systems (condensed phases of biomolecules), including energy transfer in solids, reaction mechanisms in liquid solutions, the binding of small molecules on hemoglobin, and the observation of structural changes in proteins."

He is the Donner Professor of Physical Sciences at the University of Pennsylvania.

Two recipients are sharing the Benjamin Franklin Medal in Earth Science. **Norman A. Phillips** and **Joseph Smagorinsky** are being recognized for their "major contributions to the prediction of weather and climate using numerical methods." According to the institute, their "seminal and pioneering studies led to... an understanding of the general circulation of the atmosphere, including the transports of heat and moisture that determine the Earth's climate." Phillips's "leadership fostered the development of effective methods for the use of observations in data assimilation systems" and Smagorinsky "played a leading role in establishing the current global observational network for the atmosphere." Phillips retired in 1988 from his position as a principal scientist, for 14 years, with the National Weather Service's National Meteorological Center (now the National Centers for Environmental Prediction) in Marlow Heights, Maryland. Smagorinsky retired in 1983 as the director of the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey.

The Benjamin Franklin Medal in Electrical Engineering is being bestowed on **Bishnu S. Atal** for his "important work on voice coding, including the concept of speech analysis-by-synthesis coding, leading to the CELP (Code-excited Linear Predictive) Coder." According to the institute, Atal did pioneering work on Linear Predictive Coding methods that analyze and synthesize speech signals. His invention of the CELP Coder reduced the size of bandwidth needed to transmit speech, thus expanding the carrying capacity of the limited area of the electromagnetic spectrum that cellular callers use. Atal retired in 2002 as a technical director with AT&T Labs in Florham Park, New Jersey.

Sunyaev to Receive Cosmology Prize

Rashid Sunyaev, a pioneer in the field of physical cosmology and x-ray astronomy, will be awarded with the Peter Gruber Foundation's 2003 Cosmology Prize this July at the general assembly of the International Astronomical Union in Sydney, Australia. The foundation, which is based in St. Thomas, US Virgin Islands, gives this prize each year to recognize

individuals who have made groundbreaking contributions in cosmology. Sunyaev will receive a gold medal and a cash prize of \$150 000.

Director of the Max Planck Institute for Astrophysics in Garching, Germany, and chief scientist at the Space Research Institute of the Russian Academy of Sciences in Moscow, Sunyaev is being honored for his "pioneering studies on the nature of the cosmic microwave background and its interaction with intervening matter." He was "one of the most important and prolific members of the Moscow group that pioneered relativistic astrophysics," adds the citation. With the group's "illustrious leader [Yakov B.] Zeldovich, he studied the relic radiation from the Big Bang, leading to early tests of cosmological models that are still valid and have provided impetus to one of the most active areas of observational cosmology."

Sunyaev's contributions have had great import. He collaborated in landmark studies of the early universe and, with Zeldovich, was the first to describe what is known as the Sunyaev-Zeldovich effect. Also with Zeldovich, he predicted in 1970 the existence of acoustic peaks in the spectrum of angular fluctuations of cosmic microwave background radiation; the peaks were discovered in recent years (see PHYSICS TODAY, August 2002, page 18). He and Nikolai Shakura developed a standard model of disk accretion onto black holes. And, more recently, Sunyaev led the international teams that constructed and operated the Granat orbiting x-ray observatory (1989-98) and the Kvant x-ray observatory (1987-2001) at the MIR Space Station.

He continues to work actively on the theory of the boundary layer between an accretion disk and the surface of a neutron star, on the physics of quasars and microquasars, on x-ray binaries as tracers of star formation in distant galaxies, and on turbulence in the hot gas in clusters of galaxies. And he is the leading Russian participant in the European Space Agency's INTEGRAL gamma-ray observatory. "Through continuing collaborations around the globe," says the foundation's citation, "Sunyaev remains among the most effective scientific bridges between East and West."

German Physical Society Gives Awards

At its annual meeting in Hannover, Germany, last month, the German Physical Society honored the follow-

ing individuals with prizes or medals for 2003.

Martin C. Gutzwiller received the society's most important award for theoretical physics, the Max Planck Medal, for his contributions to the quantum theory of condensed matter. Gutzwiller is an IBM research staff member emeritus and an adjunct professor of physics at Yale University.

The society's top award for experimental physics, the Stern–Gerlach Medal, went to **Reinhard Genzel**, director at the Max Planck Institute for Extraterrestrial Physics, near Munich, and a physics professor at the University of California, Berkeley. He was recognized for his contributions to infrared astronomy and adaptive optics.

Brian Foster was honored with the Max Born Prize, given jointly by the society and the UK's Institute of Physics for outstanding contributions to physics. Foster, who was recognized for his contributions to experimental particle physics, is a professor of experimental physics at the University of Bristol in the UK.

The Gentner–Kastler Prize, presented jointly by the German Physical Society and the French Physical Society, went to **Hartmut Löwen**, professor of physics in the Heinrich Heine University's Institute of Theoretical Physics, in Düsseldorf. He was cited for his research on colloidal phenomena in particular and his contributions to soft matter physics in general.

Christoph H. Keitel was the recipient of the Gustav–Hertz Prize, which is given to an outstanding young physicist. The society acknowledged his contributions to the theory of interaction between light and matter. Keitel is a research group leader and lecturer in the University of Freiburg's Institute of Physics.

Christian Peth, a scientist in the optics characterization group at the Laser Laboratory in Göttingen, was awarded the Georg Simon Ohm Prize for his development of a laser-driven gaseous target used for the production of soft x-rays.

Klaas Bergmann, professor of physics at the Kaiserslautern University of Technology, received the Robert Wichard Pohl Prize for his contributions to experimental molecular physics, especially for the development of the so-called STIRAP method.

The Walter Schottky Prize, which honors contributions by young researchers in the field of condensed matter physics, was presented to **Jürgen Smet**. A senior scientist at the Max Planck Institute for Solid State

Physics in Stuttgart, he was cited for his experimental research on quantum Hall systems involving the quasi-particle characteristics of composite fermions.

Fritz Haake, professor of theoretical physics at the University of Duisburg–Essen, won the Marian Smoluchowski–Emil Warburg Physics Prize for his contributions to the theory of quantum optics and quantum chaos. The prize, presented jointly by the German Physical Society and the Polish Physical Society, is given for outstanding contributions to pure or applied physics.

Uta Fritze–von Alvensleben, assistant professor at the University of Göttingen, received the Hertha Spöner Prize, the society's award for young outstanding female physicists. She was cited for her research on the formation and evolution of galaxies, in particular the development of computer models.

Kirshner Elected President of AAS

Members of the American Astronomical Society recently elected **Robert Kirshner** as their president for 2003. Kirshner, who takes office at the society's annual meeting next month, will serve as president-elect in 2003 and as president in 2004–05, and succeeds **Catherine Pilachowski** (see PHYSICS TODAY, May 2001, page 77).

Kirshner received his AB in astronomy in 1970 from Harvard University and his PhD in astronomy from Caltech in 1975. After completing a postdoc at the Kitt Peak National Observatory in



Kirshner

Tucson, Arizona, he became a member of the astronomy faculty at the University of Michigan, Ann Arbor, in 1977. In 1986, Kirshner joined Harvard's astronomy department and served as chair from 1990 to 1997. Beginning in 1998, he was the associate director for optical and infrared astronomy at the Harvard–Smithsonian Center for Astrophysics (CfA), a position he held for five years. The same year he joined the CfA, he was elected to the National Academy of Sciences.

Currently, Kirshner is the Clowes Professor of Science at Harvard. His

research interests include supernovae and observational cosmology, especially the recent discovery of dark energy using supernovae. Kirshner has written several books directed toward the nonphysicist on astronomical topics and is a frequent public lecturer on the subject.

"The AAS has been important to me, as to every astronomer in North America," Kirshner says. "I hope I can do something useful for an organization that has helped me so much."

In other AAS election results, **Chris Impey** (University of Arizona) will serve a three-year term as a society vice-president and **Geraldine Peters** (University of Southern California) will begin a three-year term as one of the AAS representatives on the US national committee of the International Astronomical Union. The new education officer will be **George D. Nelson** (Western Washington University in Bellingham, Washington). Also, **Todd Boroson** (National Optical Astronomy Observatory), **Carol Christian** (Space Telescope Science Institute), and **Alycia Weinberger** (Carnegie Institution of Washington) will serve three-year terms as AAS councilors.

Jurnak Is Elected ACA Vice President

Frances Jurnak took office on 1 January as vice president of the American Crystallographic Association for 2003. A professor of physiology and biophysics at the University of California, Irvine (UCI), she succeeds **Raymond E. Davis**, who is now ACA's president (see PHYSICS TODAY, March 2002, page 84).

Jurnak received her BS in chemistry in 1968 from the Catholic University of America in Washington, DC, and her PhD in chemistry at the University of California, Berkeley, in 1973. From 1974

to 1977, she was a postdoctoral fellow at MIT in the field of molecular biology. Immediately following that position, she did postdoctoral work in biochemistry at the Penn State Milton S. Hershey Medical Center, in Her-



Jurnak

shey, Pennsylvania, until 1979. That same year, Jurnak established her own laboratory in the biochemistry department at the University of