

we hear that

## Rosenfeld wins Fermi Award

"Wow—I'm touched."

That, said **Arthur H. Rosenfeld**, was his reaction on learning he was the winner of the coveted Enrico Fermi Award, the federal government's oldest award for scientific achievement.

Rosenfeld, a member of the California Energy Commission whose career has focused on energy efficiency and savings—and who holds the distinction



Rosenfeld

of being Fermi's last graduate student—received the honor from the US Department of Energy "for a lifetime of achievements ranging from pioneering scientific discoveries in experimental nuclear and particle physics to innovations

in science, technology, and public policy for energy conservation that continue to benefit humanity. His vision not only underpins national policy but has helped launch an industry in energy efficiency."

The former longtime experimental particle physicist now leads the California Energy Commission's R&D and demand-response committees and is active in its energy-efficiency committee. Rosenfeld earned his PhD in 1954 from the University of Chicago, and in 1955 he joined the physics group at the University of California, Berkeley, where for the next 18 years he was a key developer of bubble-chamber physics. But in 1973, after OPEC began its embargo on oil sales to the West, Rosenfeld recognized the potential for energy savings in the building sector and founded a program that grew into the Center for Building Science at DOE's Lawrence Berkeley National Laboratory. Under Rosenfeld's direction, the center developed numerous technologies to boost energy efficiency, including electronic ballasts for fluorescent lighting—a key

component of compact fluorescent lamps—and low-emissivity windows, which have a coating that allows light in but blocks heat from entering in the summer or escaping in the winter.

Rosenfeld also developed DOE-2, a computer program for energy analysis and design of buildings that in 1978 was incorporated into California's building code, which has served as a model for other building codes around the nation.

Since joining the California Energy Commission in 2000, Rosenfeld has been implementing the demand-side technology and incentives he advocated during the previous 30 years. Rosenfeld received his award, including a medal and \$375 000, in June during a ceremony in Washington, DC. With the purse he plans to set up the Rosenfeld Fund with San Francisco's Energy Foundation to finance projects in energy efficiency worldwide.

The Fermi Award was established in 1956 as a memorial to the 1938 Nobel laureate in physics, who achieved the first nuclear chain reaction and thereby initiated the atomic age. The honor recognizes scientists of international stature for their exceptional achievement in the development, use, control, or production of energy, defined to include the science and technology of nuclear, atomic, molecular, and particle interactions and their effects on humankind and the environment.

## Winners of AGU awards selected

The American Geophysical Union has announced the recipients of two awards and a medal.

**Robert H. Eather**, owner and president of Keo Consultants in Brookline, Massachusetts, and a consultant, received the Athelstan Spilhaus Award "for developing low-light-level filming technology, carrying out on-site auroral filming, and, from these, producing text and media products on auroras and geospace that have reached, informed, and inspired millions of people worldwide." The award recognizes AGU members who have worked to express the excitement, significance, and beauty of the Earth and space sciences to the general public.

**The Cooperative Program for Operational Meteorology, Education and Training** won the Excellence in Geophysical Education Award. COMET, established by the University Corporation for Atmospheric Research (UCAR) and the National Weather Service and operated by UCAR in Boulder, Colorado, re-

ceived the award "for outstanding efforts to provide and improve access to quality science education materials worldwide." The award recognizes sustained commitment to excellence in geophysical education by a team, individual, or group. Eather and COMET received the awards in May during AGU's joint assembly meeting in Baltimore, Maryland.

**John A. Knauss** will take home the Waldo E. Smith Medal. Dean and professor emeritus at the University of Rhode Island, Knauss is a former administrator of the National Oceanographic and Atmospheric Administration and cofounder of Sea Grant, a national network of programs that provide support, leadership, and expertise for university-based marine research and education. He is receiving the medal "for five and a half decades of extraordinary contributions to geophysics during which he led academic, research, and federal agency communities in developing innovative research programs, providing advice to state and national policy and decision-makers, creating and leading institutions, fostering the responsibility of scientists to serve the nation, fostering the careers of young scientists, and fostering a climate for open research of the highest scientific merit."

The medal honors those who have played unique leadership roles and whose accomplishments have greatly strengthened and helped advance the geophysical sciences. Knauss will receive the honor during AGU's meeting in December.

## NSB recognizes accomplishments

**Charles Townes**, actor **Alan Alda**, and the chairman of Intel Corp are among this year's winners of awards presented by the National Science Board, the governing board of NSF, in recognition of their contributions to science. The



Townes

honors were presented during a May ceremony in Washington, DC.

Townes, a Nobel laureate considered to be the father of quantum electronics, is the co-recipient of the 2006 Vannevar Bush Award, the NSB's top honor. A professor in the graduate school at the University of California, Berkeley, Townes received the award "for his no-

table scientific discoveries and research in the fields of quantum electronics and astrophysics, and [his] distinguished public service influencing federal policies on science and technology issues." Work by Townes, whom NSB credits with inventing and demonstrating the maser (microwave amplification by stimulated emission of radiation) and its optical counterpart, the laser, kick-started a new generation of modern communications, global networks, and photonic science and technology. His work has led to such developments as the atomic clocks that keep the world's time and the ultrasensitive radio receivers that were part of the first communications satellites. Townes shared the 1964 Nobel Prize in Physics for accomplishments in quantum electronics.

**Emmanuel J. Candes**, professor of applied and computational mathematics at Caltech, received the Alan T. Waterman Award "for his fundamental research in computational mathematics and statistical estimation, with applications to signal compression and image processing." The board, which cited Candes's development of new mathematical tools that



Candes

allow efficient digital representation of wave signals together with his discovery of new methods to translate analog data into a cleaner, tighter digital form, said the work promises to improve the digital processing of signals in a vast array of modern technologies.

Alda, a well-known Hollywood actor who is host of the PBS series *Scientific American Frontiers*, won a Public Service Award "for his contagious enthusiasm in fostering wonder and discovery by bringing complex scientific concepts to all audiences through television and the dramatic arts." **Craig R. Barrett**, chairman of the board of directors of Intel, garnered a Public Service Award "for his outstanding promotion of science education, dedicated commitment to the public's understanding of science, and positive influence on science and technology policy." Under Barrett's leadership, Intel now invests about \$100 million annually in programs to improve science and mathematics education in more than 50 countries. Barrett's interest in teachers led him to direct Intel to undertake "Teach to the Future," a program that has trained more than 3 million US teachers on

how to integrate technology into their classrooms.

The group Public Service Award went to the **Association of Science-Technology Centers**, a major supporter and representative of science centers and museums, "for excellence and innovation in informal science education to advance public understanding of science among diverse audiences worldwide." ASTC, based in Washington, DC, supports new science and technology centers and helps members develop innovative ways to boost comprehension and appreciation of science.

in  
brief

**Simon P. "Pete" Worden** has been named director of NASA's Ames Research Center at Moffet Field, Cal-

ifornia, replacing **G. Scott Hubbard**, who left in February after a four-year stint as director to take a position with SETI. Worden, a retired US Air Force brigadier general, was a research professor of astronomy at the University of Arizona in Tucson. He began his new post in May.

**Norbert Holtkamp** has been named principal deputy director general of ITER, the international prototype fusion energy reactor. Director of the accelerator systems division of the Spallation Neutron Source at Oak Ridge National Laboratory in Oak Ridge, Tennessee, since 2001, Holtkamp had previously been head of the linear collider research group at DESY in Hamburg, Germany. He was named to his new post in April.

## obituaries

PHYSICS TODAY has changed the way it publishes obituaries. Some will continue to appear in print, but most will be available only online (see PHYSICS TODAY, October 2005, page 10). Subscribers can visit <http://www.physicstoday.org/obits> to notify the community about a colleague's death and submit obituaries up to 750 words, comments, or reminiscences. Each month, recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

### John Norris Bahcall

John Norris Bahcall, professor at the Institute for Advanced Study in Princeton, New Jersey, died on 17 August 2005 in New York City from a rare blood disorder. His scientific output was unflagging and wide ranging. He was a successful "scientific statesman" and a mentor to generations of younger scientists at Princeton.

In a commencement address he gave in 2001 at the University of California, Berkeley, John emphasized that science was fun and unpredictable. Nothing better exemplifies its unpredictability than the most sustained and important of his achievements—his research on neutrinos, a 40-year saga in which persistence paid off handsomely, in a quite unexpected way.

In the early 1960s, Raymond Davis Jr conceived an extraordinary experiment to detect neutrinos from the Sun. The most energetic of those neutrinos, produced in a reaction involving beryllium-8, can convert chlorine-37 into argon-37. Davis constructed a tank containing 10 000 gallons of cleaning fluid ( $C_2Cl_4$ ) and developed a technique that could recover individual argon



John Norris Bahcall

atoms from it. In back-to-back papers published in 1964, John and Davis presented, respectively, the theoretical predictions and the experiment. Davis found neutrinos, but only around one-third of the predicted number. Had John miscalculated? Or was Davis overconfident in believing he had trawled all the argon from his tank?

That discrepancy was the so-called solar-neutrino problem. Davis heroically

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