

we hear that

## Dark-energy discoverers share cosmology prize

Saul Perlmutter, Brian Schmidt, and their respective teams, the **Supernova Cosmology Project** and the **High-z Supernova Search Team**, are the recipients of the 2007 Gruber Cosmology Prize "for their discovery that the expansion of the Universe is currently accelerating." The prize, being presented this month at a ceremony at the University of Cambridge, will be shared by the two team leaders and the 51 coauthors of the key papers.

Both teams reported in 1998 that the expansion of the universe is not slowing, as was generally expected, but was instead increasing (see the article by Perlmutter in *PHYSICS TODAY*, April 2003, page 53). Their conclusions were based on studies of type Ia supernovae—standard candles with which the teams could accurately determine distances billions of light-years away. "An accelerating universe was a crazy result that was hard to accept," wrote the Peter and Patricia Gruber Foundation. "The discovery of the accelerated expansion has radically changed our perception of cosmic evolution." To account for the acceleration, astronomers have posited the existence of an expansive force dubbed dark energy, now thought to account for about three-quarters of the mass-energy in the universe.

Perlmutter is an astrophysicist at Lawrence Berkeley National Laboratory and a professor of physics at the University of California, Berkeley. Schmidt is an Australian Research Council Federation fellow at the Australian National University's Mount Stromlo Observatory.

## National Medals of Technology, Science awarded

The 2005 and 2006 National Medals of Science, administered by the National Science Foundation, and the 2005 and

2006 National Medals of Technology, administered by the US Department of Commerce, were conferred at a White House ceremony in July. The awards are the nation's highest honors for scientific research that enhances understanding of the world and for technological innovation.

Of the 16 National Medal of Science laureates honored, 9 are or were involved in physics-related work.

Selected "for his seminal contributions to engineering research and education in the area of wave propagation in solids and for pioneering the field of quantitative non-destructive evaluation" was **Jan D. Achenbach**, Walter P. Murphy Professor and McCormick School Professor in the departments of civil engineering, mechanical engineering, and applied mathematics at Northwestern University in Evanston, Illinois. He is also director of the university's center for quality engineering and failure prevention.

**Ralph A. Alpher** was honored "for his unprecedented work in the areas of nucleosynthesis, for the prediction that universe expansion leaves behind background radiation, and for providing the model for the Big Bang theory." Alpher is a distinguished research professor of physics at Union College in Schenectady, New York, and a former administrator of the Dudley Observatory in Schenectady.

Former NSF director **Rita Colwell** received a medal "for her in-depth research that has contributed to a greater understanding of the ecology, physiology, and evolution of marine microbes, most notably *Vibrio cholerae*, the causative agent of pandemic cholera, and which has elucidated critical links between environmental and human health." She is currently chair of Canon US Life Sciences Inc and Distinguished University Professor both at the University of Maryland, College Park, and at the Johns Hopkins University Bloomberg School of Public Health.

**Bradley Efron**, Max H. Stein Professor of Humanities and Sciences and a statistics professor at Stanford University, was recognized "for his contributions to theoretical and applied statistics, especially the bootstrap sampling technique; for his extraordinary geometric insight into nonlinear statistical problems; and for applications in medicine, physics, and astronomy."

**Daniel Kleppner**, Lester Wolfe Professor of Physics Emeritus at MIT, garnered a medal "for his pioneering scientific studies of the interaction of atoms and light including Rydberg atoms, cavity quantum electrodynamics, quantum chaos; for developing

techniques that opened the way to Bose Einstein Condensation in a gas; and for lucid explanations of physics to non-specialists and exemplary service to the scientific community."

MIT Institute Professor **Robert S. Langer** was recognized "for his revolutionary discoveries in the areas of polymeric controlled release systems and tissue engineering and synthesis of new materials that have led to new medical treatments that have profoundly affected the well being of mankind."

**Lubert Stryer** was recognized "for his elucidation of the biochemical basis of signal amplification in vision and pioneering the development of high density micro-arrays for genetic analysis." He is the Mrs. George A. Winzer Professor of Cell Biology Emeritus and professor emeritus of neurobiology at Stanford University.

Honored "for his pioneering research in the areas of homogeneous and heterogeneous catalysis, organo-element chemistry, new electronic and photonic materials, and diverse areas of coordination and solid state chemistry" was **Tobin J. Marks**. He is the Vladimir N. Ipatieff Professor of Chemistry and professor of materials science and engineering at Northwestern University.

**Lonnie G. Thompson** was recognized "for his pioneering research in paleoclimatology analyzing isotopic and chemical fingerprints found in tropical ice cores from the world's highest mountain glaciers and for his courage in collecting these disappearing climate archives that have transformed our understanding of the natural and anthropogenic factors influencing climate variability on our planet, past and present." Thompson is a University Distinguished Professor in the geological sciences department and a senior research scientist at the Byrd Polar Research Center at the Ohio State University in Columbus.

Of the seven individuals, one team, and three companies that received the National Medal of Technology, the following are involved in physics-related work.

**Alfred Y. Cho** was recognized "for his contributions to the invention of the molecular beam epitaxy (MBE) technology and the development of the MBE technology into an advanced electronic and photonic devices production tool, with applications to cellular phones, CD players, high-speed communications, and low-dimensional nanoscale systems." Cho is an adjunct vice president of semiconductor research at Alcatel-Lucent's Bell Labs in Murray Hill, New Jersey.

**Leslie A. Geddes** was honored "for contributions to electrode design and

tissue restoration that have led to the widespread use of numerous clinical devices." He is the Showalter Distinguished Professor Emeritus of Bioengineering at Purdue University.

A medal went to **Paul G. Kaminski**, chairman and CEO of Technovation Inc in Fairfax Station, Virginia, "for contributions to the national security through the development of advanced, unconventional imaging from space, and for developing and fielding advanced systems with greatly enhanced survivability."

**Herwig Kogelnik**, adjunct photonics systems research vice president at Bell Labs, was recognized "for pioneering contributions and leadership in the development of the technology of lasers, optoelectronics, integrated optics, and lightwave communication systems that have been instrumental in driving the tremendous capacity growth of fiber optic transmission systems for our national communications infrastructure."

National Academy of Engineering president **Charles M. Vest** received the medal "for his visionary leadership in advancing America's technological workforce and capacity for innovation through revitalizing the national partnership among academia, government, and industry."

**James Edward West** was selected "for co-inventing the electret microphone while working with Gerhard Sessler at Bell Labs in 1962. Ninety percent of the two billion microphones produced annually and used in everyday items such as telephones, hearing aids, camcorders, and multimedia computers employ electret technology." West is a professor in the Johns Hopkins University department of electrical and computer engineering.

The **Semiconductor Research Corp** of Durham, North Carolina, received the medal "for building the world's largest and most successful university research force to support the rapid growth and advance of the semiconductor industry; for proving the concept of collaborative research as the first high-tech research consortium; and for creating the concept and methodology that evolved into the International Technology Roadmap for Semiconductors."

**Xerox Corp** of Stamford, Connecticut, was honored "for over 50 years of innovation in marking, materials, electronics, communications, and software that created the modern reprographics, digital printing, and print-on-demand industries."

## AVS to present awards

At its annual symposium next month in Seattle (see page 61), four researchers will be honored for their achievements by AVS: Science and Technology of Materials, Interfaces, and Processing.

**Jerry Tersoff**, a research staff member at the IBM Thomas J. Watson Research Center, will receive the Medard W. Welch Award "for seminal theoretical contributions to the understanding of surfaces, interfaces, thin films and nanostructures of electronic materials."

The Albert Nerken Award is going to **Richard J. Colton** "for seminal scientific insights that accelerated the development of vastly improved surface and nanoscale analytical techniques, and of innovative biomolecular sensors." Colton is director of the Institute for Nanoscience at the US Naval Research Laboratory and is acting superintendent of NRL's chemistry division.

**Stephen J. Pearton** has garnered the biennial John A. Thornton Memorial Award and Lecture "for pioneering the science and application of advanced device fabrication techniques, including plasma etching, ion implantation for doping and electrical isolation, and formation of Ohmic and Schottky contacts for compound semiconductors." He is a

Distinguished Professor and Alumni Professor in the department of materials science and engineering at the University of Florida.

"For pioneering work in the application and development of in situ plasma and surface diagnostics to achieve a molecular understanding of thin film growth," **W. M. M. Kessels** will receive the Peter Mark Memorial Award. He is an assistant professor in the department of applied physics at Eindhoven University of Technology in the Netherlands.

### in brief

**Peidong Yang** has received the 2007 Alan T. Waterman Award, NSF's highest honor. The foundation praised Yang for his research into nanowires, which show promise for devices ranging from lasers and computer circuits to solar panels and biological sensors. An associate professor of chemistry at the University of California, Berkeley, Yang will receive a medal and a grant of \$500 000 over three years.

This fall, condensed-matter physicist and materials scientist **Jinke Tang** will be leaving the University of New Orleans to join the faculty of the physics and astronomy department at the University of Wyoming.

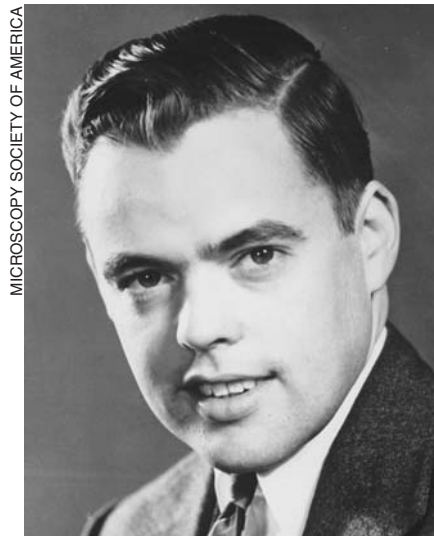
## obituaries

To notify the community about a colleague's death, subscribers can visit <http://www.physicstoday.org/obits>, where they can submit obituaries (up to 750 words), comments, and reminiscences. Each month recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

### James Hillier

James Hillier, who initiated or helped initiate some of the major electronic advances of the past 75 years, died of a stroke on 15 January 2007 in Princeton, New Jersey. His first and perhaps most important contribution was his role in creating the first commercially successful electron microscope in North America.

Born 22 August 1915 in Brantford, Ontario, Canada, Hillier went to the University of Toronto, where he earned his BA in 1937, MA in 1938, and PhD in 1941, all in physics. The physics department had been working to produce a high-resolution microscope under the direction of Eli Burton. Hillier and Albert Prebus were assigned to the effort in December 1937. They asked permission to



James Hillier

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