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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 nonspecialists 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-f-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