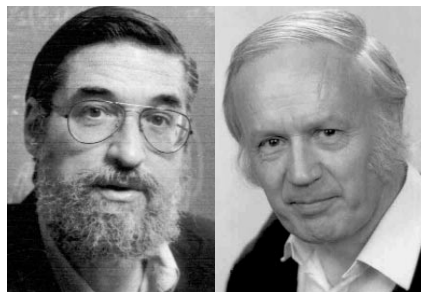


Winners Named for Wolf Prizes in Physics and Mathematics

The Wolf Foundation, based in Herzliyya, Israel, announced in January that **Bertrand Halperin** and **Anthony Leggett** will share the 2002–03 Wolf Prize in Physics and that **Mikio Sato** and **John Tate** are the joint recipients of the 2002–03 Wolf Prize in Mathematics. The awards will be conferred in a ceremony at the Knesset in Jerusalem in May; each pair of winners will split a \$100 000 monetary prize.

The foundation is honoring Halperin and Leggett for their “seminal contributions to the broad range



Halperin

Leggett

of structures and processes in condensed forms of matter.” These scientists have “provided a better understanding of the macroscopic properties of materials, which rely on non-intuitive quantum effects and the interactions that determine the properties of different states of matter and transitions between them.” The two men have conducted theoretical work, according to the foundation, that inspired experimentation and that has had “a significant impact on understanding numerous physical phenomena.” Halperin is the scientific director of the Harvard Center of Imaging and Mesoscale Structures and is Hollis Professor of Mathematics and Natural Philosophy at Harvard University. Leggett is John D. and Catherine T. MacArthur Professor and Center for Advanced Study Professor of Physics at the University of Illinois at Urbana-Champaign.

Much of Halperin’s current work involves quantum Hall systems. But his research interests also include the theory of electron states and transport in small particles in a semiconductor or a metal, superconductivity,

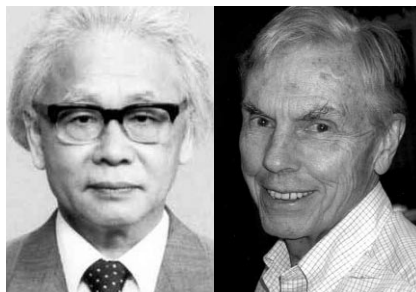
nuclear magnetic resonance experiments in porous media, and transport in inhomogeneous systems. He is specifically being recognized for his “research on two-dimensional melting, disordered systems, and strongly interacting electrons.”

Leggett’s research interests are mainly within the fields of theoretical condensed matter physics and the foundations of quantum mechanics. He is being cited for his “theory of superfluidity of the light helium isotope at very low temperatures, for his exploration of macroscopic quantum coherence, and for his contribution to the study of dissipation processes in quantum systems.”

Mathematics prize

Sato is being honored for his “vision of algebraic analysis and mathematical physics, which initiated several fundamental branches of mathematics.” An emeritus professor of Kyoto University’s Research Institute for Mathematical Sciences, located in Japan, Sato created the theories of hyperfunctions and microfunctions and, with his students, developed hologmic quantum field theory. He also provided a unified theory of soliton equations. According to the foundation, he has “generously shared his ideas with young mathematicians and has created a flourishing school of algebraic analysis in Japan.”

The foundation is recognizing Tate for his contributions, over a quarter of a century, to the development of algebraic number theory and arithmetic algebraic geometry, in areas such as Fourier analysis on local fields and adèle rings, Galois cohomology, the theory of rigid analytic varieties, p -divisible groups, and p -adic Hodge decompositions. Tate, a Sid Richardson Chair in Mathematics at the University of Texas at Austin and Perkins Professor Emeritus at Harvard University, is the son of John T. Tate, one of the initial members of the Ameri-



Sato

Tate

can Institute of Physics governing board and a longtime managing editor of the *Physical Review*.

APS to Present Awards at April Meeting

At its meeting next month in Philadelphia, the American Physical Society will hold a ceremonial prize session in honor of 16 recipients.

The Hans Bethe Prize will go to **Michael Wiescher**, Freimann Professor of Physics at the University of Notre Dame and director of the Joint Institute of Nuclear Astrophysics. APS is honoring Wiescher for his “contributions to the experimental foundation of nuclear astrophysics, especially the delineation of the processes involved in explosive hydrogen burning in novae and x-ray bursters and for providing an intellectual bridge between experimental nuclear astrophysicists and their theoretical colleagues.”

“Leadership in resolving the solar neutrino problem with the Sudbury Neutrino Observatory” is why APS has chosen **Arthur Bruce McDonald** as the recipient of this year’s Tom W. Bonner Prize. McDonald is the University Research Chair in Physics at Queen’s University in Kingston, Ontario, Canada, and director of the Sudbury Neutrino Observatory.

Homer A. Neal, Samuel A. Goudsmit Distinguished University Professor of Physics and director of the Atlas Collaboratory Project at the University of Michigan, Ann Arbor, will garner the Edward A. Bouchet Award. APS is recognizing Neal for his “significant contributions to experimental high-energy physics, for his important role in formulating governmental science policy, for his service as a university administrator at several universities, and for his advocacy of diversity and educational opportunity at all levels.”

The corecipients of the inaugural Einstein Prize are **John A. Wheeler** and the late **Peter G. Bergmann**. They are being honored for their “pioneering investigations in general relativity, including gravitational radiation, quantum gravity, black holes, space-time singularities, and symmetries in Einstein’s equations, and for leadership and inspiration to generations of researchers in general relativity.” Wheeler is a professor of

physics emeritus at Princeton University. Bergmann, who died on 19 October 2002, was an emeritus professor of physics at Syracuse University.

Melba Newell Phillips, emeritus professor of physics at the University of Chicago, will receive the Joseph A. Burton Forum Award. APS is recognizing Phillips for her "tireless efforts in physics education, for continued work in preserving the history of physics as well as other service to the physics community, for her role in founding the Federation of American Scientists, and as a model of a principled scientist."

Yvonne Choquet-Bruhat and **James York** will share the Dannie Heineman Prize for Mathematical Physics, given jointly by APS and the American Institute of Physics. According to the citation, the prize is being awarded for their "separate as well as joint work in proving the existence and uniqueness of solutions to Einstein's gravitational field equations for a variety of sources, and for formulating these equations so as to improve numerical solution procedures with relevance to realistic physical systems." Choquet-Bruhat is a professor emeritus at the Pierre and Marie Curie University (University of Paris VI) in France. York is a professor in the physics department and in the Center for Radiophysics and Space Research at Cornell University.

Frank Wilczek, Herman Feshbach Professor of Physics at MIT, will take home the Julius Edgar Lilienfeld Prize for his "role in the development of asymptotic freedom and other aspects of quantum chromodynamics, a cornerstone of the standard model; for his remarkable versatility in research in condensed matter and astrophysics as well as particle physics; and for his outstanding ability to lecture and write with clarity, profundity, and enthusiasm."

The Maria Goeppert-Mayer Award will go to **Chung-Pei Michele Ma**, associate professor of astronomy at the University of California, Berkeley. Ma is being recognized for her "important contributions to theoretical astrophysics, particularly in the areas of relativistic evolution of density perturbations, testing of structure formation models with massive neutrinos, and the clustering and dynamics of dark matter halos around galaxies."

Karsten Heeger, Chamberlain Fellow in the physics division at Lawrence Berkeley National Laboratory, will receive the Dissertation in Nuclear Physics Award for his "role in the generation and analysis of the data from the Sudbury Neutrino Observa-

tory, and the resulting resolution of the solar neutrino problem." Heeger's thesis work was done under the guidance of R. G. Hamish Robertson at the University of Washington, Seattle.

William Willis, professor of physics at Columbia University, will receive the W. K. H. Panofsky Prize. He is being recognized for playing a "leading role in the development and exploitation of innovative techniques now widely adopted in particle physics, including liquid argon calorimetry, electron identification by detection of transition radiation, and hyperon beams."

APS has selected **Alfred Mueller** and **George Sterman** to share the J. J. Sakurai Prize. They are being cited for "developing concepts and techniques in QCD [quantum chromodynamics], such as infrared safety and factorization in hard processes, which permitted precise quantitative predictions and experimental tests, and thereby helped to establish QCD as the theory of the strong interactions." Mueller is a professor of physics at Columbia University. Sterman is a professor of physics and astronomy and director of the C. N. Yang Institute for Theoretical Physics, at Stony Brook University.

Robert Socolow, professor of mechanical and aerospace engineering at Princeton University, will receive the Leo Szilard Lectureship Award. He is being cited for his "leadership in establishing energy and environmental problems as legitimate research fields for physicists" and for "demonstrating that these broadly defined problems can be addressed with the highest scientific standards."

Helen T. Edwards, head of the photoinjector group in the beams division at Fermilab, will garner the Robert R. Wilson Prize for her "pivotal achievement and critical contribution as the leader in the design, construction, commissioning, and operation of the Tevatron" and for her "continued contributions to the development of high gradient superconducting linear accelerators as well as bright and intense electron sources."

APS has also announced that the 2003 Francis Pipkin Award will go to **Eric Hessels**, professor and Canada Research Chair in atomic physics in the department of physics and astronomy at York University in Toronto. He is being acknowledged for "a wide range of high precision measurements to test fundamental interactions in atomic physics, especially fine structure splittings in helium as a measure of the fine structure constant, and for an innovative experimental technique

to create atoms of antihydrogen." Hessels will be recognized at a meeting of the society's division of atomic, molecular, and optical physics in Boulder, Colorado, in May.

Geophysics Researchers Honored by AGU

At its meeting in San Francisco in December 2002, the American Geophysical Union bestowed the following medals at a special awards ceremony.

Adam M. Dziewonski, Frank B. Baird Jr Professor of Science at Harvard University, received the society's top honor, the William Bowie Medal. He was recognized for his "fundamental contributions to the understanding of the structure and dynamics of the Earth and the character and distribution of seismic energy release; for dramatically improving our understanding of how seismic waves propagate; and for his willingness to share his expertise with his colleagues to further this research."

The Walter Bucher Medal was presented to **Stuart Ross Taylor**, emeritus professor and a visiting fellow in the department of geology at Australian National University in Canberra, in recognition of his "fundamental contributions to the understanding of the chemical composition, origin, and geochemical evolution of the continental crust."

The Maurice Ewing Medal went to **Nicholas Shackleton** for his "significant contributions to paleoclimatology, stratigraphy, and paleoceanography." Shackleton is a professor of quaternary paleoclimatology at the University of Cambridge in England.

Ronald T. Merrill, professor of geophysics and geological sciences in the Earth and space sciences department at the University of Washington, took home the John Adam Fleming Medal for his "original contributions to the understanding of rock magnetism and dynamo theories of the origin of the geomagnetic field."

The Harry H. Hess Medal went to **Gerald Schubert** for his "leadership role and for contributions to the understanding of the dynamics and evolution of terrestrial planets." Schubert is a professor of geophysics and planetary physics in UCLA's department of Earth and space sciences and at the Institute of Geophysics and Planetary Physics.

John M. Eiler and **Michael Manga** each received a James B.