# NSF honors Rabi and Witten, names Young Investigators

The National Science Foundation last year presented its Vannevar Bush Award to I. I. Rabi (Columbia University) and its Alan T. Waterman Award to Edward Witten (Princeton University).

Rabi was cited for "pioneering with vision, boldness and drive the discovery, exploration and settlement of new frontiers in science, public service and international understanding." Rabi received his undergraduate degree in chemistry from Cornell University in 1919, and his PhD in physics from Columbia in 1927. His postdoctoral study (1927–29) in Europe under the creators of quantum mechanics was an inspiration that never faded. He returned to Columbia in 1929 as a lecturer in physics, was named a full professor in 1950 and served as chairman of the physics department from 1945 to 1949. During World War II, he was associate director of the MIT Radiation Laboratory. Rabi received the Nobel Prize in 1944 for his work using atomic beams to study the magnetic moments of nuclei. With his conviction that the culture of science could unite disparate interests, Rabi was a central figure in the establishment of both Brookhaven National Laboratory and CERN. He worked closely with Dag Hammarskjöld in organizing the first International Conference on the Peaceful Uses of Atomic Energy in 1955, and as chairman of the Science Advisory Committee, Rabi convinced President Eisenhower to add a science adviser to his White House staff. In 1968, Rabi retired from his position as University Professor at Columbia.

Witten was honored for his work in theoretical elementary-particle physics, including quantum field theory, superstring theory and applications of particle physics to cosmology. He received his PhD from Princeton University in 1976, was a postdoctoral and junior fellow at Harvard University from 1976 to 1980 and returned to Princeton in 1980 as a professor of physics. He has worked extensively in quantum chromodynamics, quantum field theory and unification theory. (See PHYSICS TODAY, May, page 107).

In January 1987 NSF named the following individuals whose work is in physics or related fields to receive Presidential Young Investigator Awards: David T. Allen (University of California, Los Angeles), David E. Anderson (University of California, Berkeley), Richard Anderson (University of Washington, Seattle), Michael J. Aziz (Harvard University), Jonathan Bagger (Harvard), Akif Baha Balantekin (Oak Ridge National Laboratory), Partha P. Banerjee (Syracuse University), William Bialek (Berkeley), Robert J. Bodnar (Virginia Polytechnic Institute, Blacksburg), Susan L. Brantley (Pennsylvania State University, University Park), Michael A. Celia (Massachusetts Institute of Technology), David F. Chernoff (Cornell University), Timothy E. Chupp (Harvard), Reid F. Cooper (University of Wisconsin, Madison), Paul D. Cottle (Florida State University, Tallahassee), Mark Cronin-Golomb (Tufts University), Pablo G. Debenedetti (Princeton), Dee Denice Denton (MIT), Ronald I. Dorn (Texas Technical University, Lubbock), Stephen M. Durbin (Purdue University), Carl Ebeling (University of Washington), Philippe M. Fauchet (Princeton), Frank J. Feher (University of California, Irvine), Ken Feldman (Pennsylvania State University), Peter M. Felker (UCLA), Harindra S. Fernando (Arizona State University), Stuart B. Gazes (University of Rochester), Konstantine Georgakakos (University of Iowa, Iowa City), George Georgiou (University of Texas, Austin), Lawrence J. Hall (Berkeley), Andrew J. S. Hamilton (University of Colorado, Boulder), Jeffrey A. Harvey (University of California, San Diego), Christopher L. Henley (Cornell), Ellen C. Hildreth (MIT), Lloyd W. Hillman (Cornell), Charles E. Hyde-Wright (University of Washington), Mark A. Johnson (Yale University), Aharon Kapitulnik (Stanford University), Leslie A. Kolodziejski (Purdue), B. Gabriel Kotliar (MIT), Jacqueline Krim (Northeastern University, Boston, Massachusetts), David T. Leighton (University of Notre Dame, Indiana), Michael Leyton (SUNY, Buffalo), Kenneth G. Libbrecht (Caltech), Hao Ling (University of Texas, Austin), Emil Martinec (University of Chicago), Peter D. Meyers (Princeton), Gregory R. Miller (University of Washington), R. J. Dwayne Miller (University of Rochester), Keith A. Olive (University of Minnesota, Minneapolis), Marjorie A. Olmstead (Berkeley), Marshall Onellion (University of Texas, Austin), Norman H. Packard (University of Illinois, Urbana), Jeffrey J. Park (Yale), Robert W. Pitz (Vanderbilt University, Nashville, Tennessee), Dennis L. Polla (Yale), Thatcher W. Root (University of Wisconsin, Madison), David S. Rumschitzki (City College of New York), Phillip E. Russell (North Carolina State University), Jane Selverstone (Harvard), Daniel D. Sleator (Carnegie–Mellon University), John S. Smith (Berkeley), Alfred D. Stone (Yale), James C. Sturm (Princeton), Lynne D. Talley (Scripps Institution of Oceanography, San Diego), Thomas C. Terwilliger (University of Chicago), Devarajan Thirumalai (University of Maryland), John M. Torkelson (Northwestern University, Evan-

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**Edward Witten** and Paul A. M. Dirac.

ston, Illinois), James A. Tyburczy (Arizona State University, Tempe), Stuart N. Vogel (Rensselaer Polytechnic Institute), Gregory H. Wakefield (University of Michigan), Robert L. Whetten (UCLA), Herbert G. Winful (University of Rochester), George H. Wolf (Arizona State) and Joseph A. Zasadzinski (University of California, Santa Barbara).

These awards are designed to fund research by faculty members near the beginning of their careers, and can amount to $100 000 in a combination of Federal and private matching funds.

## Four Canadian physicists honored in 1986–87

The E. W. R. Steacie Foundation in January presented its Steacie Prize to Nathan Isgur (University of Toronto) for "his outstanding contributions to our understanding of the strongly interacting subnuclear particles." Isgur received his BS from Caltech in 1968 and his PhD from the University of Toronto in 1974. He has remained at Toronto, becoming a full professor there in 1976. Isgur and his coworkers showed that quantum chromodynamic forces are crucial to understanding quarks, and he and Gabriel Karl (University of Guelph) proposed in 1978 the three-quark model that is now the standard model of the proton and the neutron. (See their article in PHYSICS TODAY, November 1983, page 36.)

Last year, the Canadian Association of Physicists presented its Medal for Achievement in Physics to Anthony S. Arrott (Simon Fraser University) for his "work on ferromagnetism and in particular for his investigations of critical phenomena and fluctuations in magnetism of iron and its alloys," and its Herzberg Medal to André-Marie Tremblay (Université de Sherbrooke) for his "most exceptional contributions in work on fluctuations in dissipative systems and applications of the renormalization group in disordered systems."

Arrott received his BS from the Carnegie Institute of Technology (1948), his MS from the University of Pennsylvania (1950) and his PhD from Carnegie (1954). He worked in the Ford Motor Company scientific laboratories from 1956 to 1968. In 1968 he became a professor of physics at Simon Fraser; he served as chairman of the department for 1977–80. Arrott discovered the first re-entrant ferromagnetic system (1958), helped verify the currently accepted model of antiferromagnetism in chromium and its alloys (1966), and with Bretislav Heinrich (Simon Fraser) achieved extraordinary precision in investigations of critical phenomena in single iron crystal whiskers.

Tremblay received his PhD from the Massachusetts Institute of Technology in 1978. He held a postdoctoral position at Cornell University from 1978 until 1980, when he became an associate professor of physics at Sherbrooke.

The Royal Society of Canada in December named W. J. L. Buyers (Chalk River Nuclear Laboratories) to receive its Rutherford Medal for his work in magnetic excitations and lattice vibrations in ordered and disordered materials, and for his determinations of the structures of solids and liquids.

## Mackintosh and Møller receive Frank H. Spedding Award

Allan R. Mackintosh (University of Copenhagen and Nordic Institute for Theoretical Physics, Copenhagen) and Hans Bjerrum Møller (Risø National Laboratory, Denmark) received the Frank H. Spedding Award at the 1986 Rare Earth Research Conference for their "pioneering studies of magnetic excitations in rare earth metals." Individually and in collaboration they have made fundamental contributions to the understanding of the magnetic properties of the rare earths—particularly through their studies of spin waves in the heavy rare earth terbium by inelastic neutron scattering, and their subsequent studies of the light rare earth praseodymium.

After receiving his PhD from the University of Cambridge in 1960, Mackintosh went to Iowa State University, where he began his work on rare earths. He spent 1963–64 at Risø, and in 1966 became a research professor at the Technical University of Denmark. He was appointed professor of physics at the University of Copenhagen in 1970, and served as director of Risø from 1971 to 1976. Mackintosh became director of NORDITA in 1986.

Møller received his MS from the Technical University of Denmark in 1956, and his doctorate from Copenhagen in 1968, and has been associated with Risø since 1956. In 1964 he became head of solid-state physics at Risø, in 1968 head of the physics department and in 1982 director of research.

## in brief

**William Brinkman,** who had been vice president of research at Sandia Labs since 1984, in April became executive director of physics research at Bell Labs, Murray Hill. **C. Kumar N. Patel,** the former executive director of research in physics and academic affairs, became executive director of research in materials science, engineering and academic affairs in the chemistry division. He replaced **William Slichter,** who recently retired.

**David Cline,** formerly professor of physics at the University of Wisconsin, Madison, became professor of physics and astronomy at UCLA in January. **Shechao Feng,** formerly a member of the research staff at Schlumberger–Doll, became an assistant professor of physics at UCLA in July.

The Society of Photographic Scientists and Engineers in May presented its Chester F. Carlson Award to **Harold Clark,** the original director of xerographic research at Xerox. Clark joined Haloid (which later became Xerox) in 1949 as its director of physics research. There he guided the effort that resulted in the first xerographic copier. He retired from Xerox in 1981.

**Lawrence Ruby,** formerly a professor of nuclear engineering at the University of California at Berkeley, and a member of the physics staff at Lawrence Berkeley Lab since 1950, has become a professor of nuclear science and director of the reactor facility at Reed College (Portland, Oregon).

**Donald F. Nelson,** formerly a staff scientist at AT&T Bell Laboratories (Murray Hill), has been appointed professor of physics at Worcester Polytechnic Institute.