

WE HEAR THAT

1999 MacArthur Fellows Announced

In June, the John D. and Catherine T. MacArthur Foundation awarded fellowships to 32 individuals, who will receive five years of “no strings attached” financial support to use as they see fit. Among those honored are six with backgrounds in physics-related fields: **Jillian F. Banfield**, an associate professor of geology and geophysics at the University of Wisconsin—Madison; **Shawn Carlson**, founder and executive director of the Society for Amateur Scientists and an adjunct professor of physics at San Diego State University; **Juan Martin Maldacena**, an associate professor of physics at Harvard University; **Peter Shor**, a senior member of the research staff at AT&T Labs in Florham Park, New Jersey; **Eva Silverstein**, an assistant professor of physics at the Stanford Linear Accelerator Center; and **Jeffrey R. Weeks**, an independent mathematician in Canton, New York. They will receive grants ranging from \$245 000 to \$305 000.

According to the foundation, Banfield “has contributed fundamental insights into the physical and chemical forces that shape the earth’s surface.” Her studies have revealed the mechanisms of rock weathering and help to explain how elements such as toxic heavy metals can accumulate in soil. Her observations “may lead to an enhanced understanding of soil and sediment formation, factors affecting water quality and environmental processes as well as provide clues to the origins of life on earth.”

Carlson, a physicist and educator, works to make the scientific process less mystifying and more comprehensible to nonscientists. The foundation observed that, “through his dissemination of inexpensive experiments, many designed by Carlson himself, he demonstrates that scientific research is a quest to understand natural phenomena in which everyone can participate.”

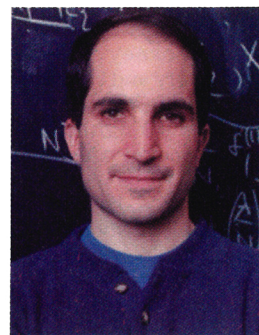
A string theorist, Maldacena “is redefining the boundaries of mathematical physics,” according to the foundation. “He has made key conceptual breakthroughs that have clarified thorny problems in theoretical physics, including the ultimate structure of matter.” Maldacena recently captured the attention of the theoretical physics community by postulating a critical theoretical link between the four-dimensional structure of quantum



BANFIELD



CARLSON



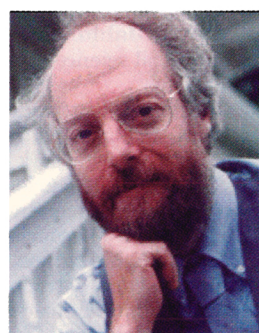
MALDACENA



SHOR



SILVERSTEIN



WEEKS

chromodynamics and a ten-dimensional string theory.

Shor is a computer scientist who is helping shape the field of quantum computing. “Using tools from physics, computation, and information theory, his discoveries offer the possibility of an exponential increase in the speed of an important class of calculations, breaking limits in computing currently thought to be insurmountable.” In 1998, Shor received the Nevanlinna Prize from the International Congress of Mathematicians.

Silverstein and her collaborators have made noteworthy contributions to the development of matrix theory (or M-theory), the umbrella theory for string theories. Her exploration of the relationship between the cosmological constant and more recent explanations of particle physics based on string theory provides “key insights into the age, structure, dynamics, and eventual fate of the universe.” She was also recently named a Sloan fellow.

Weeks is a researcher, writer, software developer, and mathematics educator. The foundation announcement stated, “He has made fundamental contributions to the analysis of knots, and collaborates with cosmologists to interpret the shape of the universe.” He also writes texts and articles, targeted to

young adults and nonspecialists, that are designed to stimulate interest and skill in thinking about geometry and space.

Guggenheim Foundation Names Fellows for 1999

The John Simon Guggenheim Foundation has awarded 179 US and Canadian fellowships this year, with an average value of \$33 836 each. The foundation has also awarded 34 Latin American and Caribbean fellowships this year, averaging \$32 000 each. The recipients were chosen for their “unusually distinguished achievement in the past and exceptional promise for future accomplishment,” according to the foundation. The American and Canadian recipients pursuing physics-related research include

David N. Beratan, an associate professor of chemistry at the University of Pittsburgh

Roger Bilham, a professor of geological sciences at the University of Colorado, Boulder and associate director of the Cooperative Institute for Research in the Environmental Sciences

Stephen G. Brush, a Distinguished University Professor of the

History of Science at the University of Maryland, College Park

Percy Alec Deift, a professor of mathematics at New York University's Courant Institute

G. Barney Ellison, a professor of chemistry and biochemistry at the University of Colorado at Boulder

Nader Engheta, a professor of electrical engineering at the University of Pennsylvania

Robb W. Glenny, an associate professor of medicine and of physiology and biophysics at the University of Washington

Tin-Lun Ho, a professor of physics at Ohio State University

Terence T.-L. Hwa, an associate professor of physics at the University of California, San Diego

David Jablonski, a professor of geophysical sciences at the University of Chicago

James M. Lattimer, a professor of physics and astronomy at the State University of New York at Stony Brook

Yanguang (Charles) Li, an assistant professor of mathematics at the University of Missouri—Columbia

Peter I. Mészáros, a professor of astronomy and astrophysics at Pennsylvania State University

William Royall Newman, a professor of history and philosophy of science at Indiana University

David J. Pine, a professor of chemical engineering and of materials at the University of California, Santa Barbara

Michael Riordan, assistant to the director of the Stanford Linear Accelerator Center and an adjunct professor of physics at the University of California, Santa Cruz

Roberto H. Schonmann, a professor of mathematics at UCLA

Duncan G. Steel, a professor of electrical engineering and computer science and of physics at the University of Michigan

Bruce Winstein, the Samuel K. Allison Distinguished Service Professor of Physics at the University of Chicago

Xin Zhou, an associate professor of mathematics at Duke University

The 1999 Latin American and Caribbean fellows engaged in physics-related work are

Roberto Escudero, a professor of physics at the National Autonomous University of Mexico (in Mexico City)

Pablo A. Ferrari, a professor of mathematics at the University of São Paulo (in Brazil)

Leopoldo Infante, an associate professor of astrophysics at the Catholic University of Chile (in Santiago)

Henrique E. Toma, a professor of chemistry at the University of São Paulo (in Brazil)

Sloan Foundation Honors Young Scientists

The Alfred P. Sloan Foundation has awarded 100 two-year grants of \$35 000 each to young faculty members. The recipients were chosen, according to the foundation, "on the basis of their exceptional promise to contribute to the advancement of knowledge." The 38 new fellows who are engaged in physics-related research are

Anton Andreev, an assistant professor of physics at the University of Colorado at Boulder

Paul S. Aspinwall, an assistant professor of physics at Duke University

Scott M. Auerbach, an assistant professor of chemistry at the University of Massachusetts Amherst

Mark M. Banaszak Holl, an assistant professor of chemistry at the University of Michigan

William Nielsen Brandt, an assistant professor of astronomy at Pennsylvania State University

Claudio Chamon, an assistant professor of physics at Boston University

Paul A. Crowell, an assistant professor of physics at the University of Minnesota

Hong Ding, an assistant professor of physics at Boston College

Douglas L. Gin, an assistant professor of chemistry at the University of California, Berkeley

Alain Goriely, an assistant professor of mathematics at the University of Arizona

Martin Greven, an assistant professor of applied physics at Stanford University

Amihay Hanany, an assistant professor of physics at MIT

Ulrich Heintz, an assistant professor of physics at Boston University

William L. Holzapfel, an assistant professor of physics at the University of California, Berkeley

James E. Hutchison, an assistant professor of chemistry at the University of Oregon

David M. Jonas, an assistant professor of chemistry at the University of Colorado at Boulder

Randall D. Kamien, an assistant professor of physics at the University of Pennsylvania

Yong Baek Kim, an assistant professor of physics at Pennsylvania State University

Chung-Pei Ma, an assistant professor of physics at the University of Pennsylvania

Hideo Mabuchi, an assistant professor of physics at Caltech

Naomi C. R. Makins, an assistant professor of physics at the University of Illinois at Urbana-Champaign

Todd J. Martínez, an assistant professor of chemistry at the University of Illinois at Urbana-Champaign

Igor Mezic, an assistant professor of mechanical and environmental engineering at the University of California, Santa Barbara

Kathryn Ann Moler, an assistant professor of applied physics at Stanford University

Karl Todd Mueller, an assistant professor of chemistry at Pennsylvania State University

Julio F. Navarro, an assistant professor of astronomy at the University of Victoria (in British Columbia, Canada)

Mary C. Pugh, an assistant professor of mathematics at the University of Pennsylvania

Jie Qing, an assistant professor of mathematics at the University of California, Santa Cruz

Daniel Raftery, an assistant professor of chemistry at Purdue University

Philip J. Reid, an assistant professor of chemistry at the University of Washington

David Saltzberg, an assistant professor of physics at UCLA

Dimitar D. Sasselov, an assistant professor of astronomy at Harvard University

Charles A. Schmuttenmaer, an assistant professor of chemistry at Yale University

Benjamin J. Schwartz, an assistant professor of chemistry at UCLA

Eva Silverstein, an assistant professor of physics at the Stanford Linear Accelerator Center

Bruce Tidor, an associate professor of chemistry at MIT

Michelle D. Wang, an assistant professor of physics at Cornell University

Kun Yang, an assistant professor of physics at Florida State University

IN BRIEF

Richard N. Zare has been named the 1999 recipient of the Welch Award in Chemistry for his lifetime achievements in physical and analytical chemistry. Zare is the Marguerite Blake Wilbur Professor of Natural Science at Stanford University.

At its annual meeting in October, the National Academy of Engineering will present its 1999 Arthur M. Bueche Award to **H. Guyford Stever**, former president of Carnegie Mellon University and former head of the National Science Foundation. Stever is being recognized for, in the academy's words, "his lifetime contributions and exceptional service to engineering and research."

Several new faculty members have joined the Pennsylvania State Uni-