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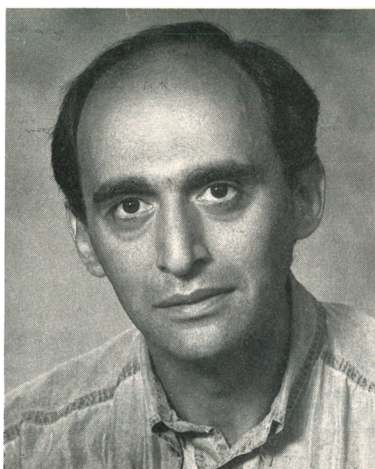


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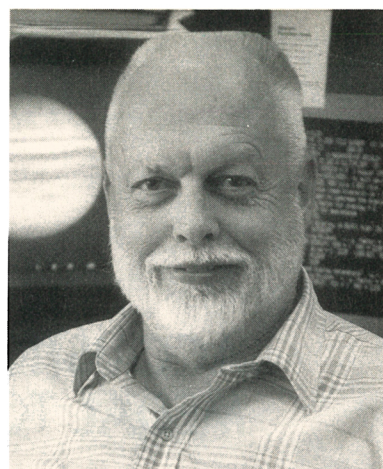


Sergiu Klainerman

research as an effort to "clarify certain basic issues concerning nonlinear equations of mathematical physics." He and Christodoulou have constructed large classes of solutions to the Einstein equations free of both black holes and singularities. The existence of such solutions was an outstanding theoretical question pertaining to the mathematical foundations of general relativity.

Prior to his appointment as a professor of mathematics at Princeton in 1987, Klainerman taught at the Courant Institute of New York University from 1980 to 1987. He received his Diploma de Leanta in 1973 from the University of Bucharest and his PhD in 1978 from NYU.

During his varied career, James Westphal has worked on acoustic transmission in glacial ice, the dynamics of water flow in marine invertebrates and mechanical deformation in volcanoes. He is best known, however, for his contributions to plan-



James Westphal

etary astronomy, including instrument design and construction, and research at infrared and visible wavelengths using ground-based telescopes.

When NASA issued an open invitation in 1977 for design proposals for the Hubble Space Telescope camera, Westphal and collaborator James Gunn assembled a team of astronomers at Caltech. The winning result of their work was the Wide Field/Planetary Camera, which offers at least two advantages over other designs: It can alternate between two modes of lens, and it uses charge-coupled devices as image sensors.

Westphal went to Caltech in 1961 as a senior engineer. On the strength of his contributions to astronomical research, he became a full professor without PhD in 1976. Before going to Caltech, he worked in an oil industry research exploration laboratory. He received a BS in physics from the University of Tulsa in 1953.

NATIONAL ACADEMIES NAME NEW MEMBERS FOR 1991

The National Academy of Sciences and the National Academy of Engineering have announced the election of new members for 1991. The National Academy of Sciences elected 60 new members, bringing its total membership to 1626. It also added 15 foreign associates from 9 countries to its previous count of 262 foreign associates.

The National Academy of Engineering elected 77 new members and 7 foreign associates last February. The total US membership now stands at 1580 and the number of foreign associates is 132.

The new members of the National Academy of Sciences include the following:

Andreas Acrivos, Albert Einstein Professor at City College of the City University of New York

Walter Alvarez, a professor in the department of geology and geophysics at the University of California, Berkeley

David H. Auston, Morris and Alma Shapiro Professor and chair of the department of electrical engineering, applied physics and nuclear engineering at Columbia University

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WE HEAR THAT

Marc Davis, a professor of astronomy and physics and chair of the department of astronomy at the University of California, Berkeley

Francis J. DiSalvo, a professor of chemistry at Cornell University

Mary Katherine Gaillard, a professor of physics at the University of California, Berkeley

James B. Hartle, a professor of physics at the University of California, Santa Barbara

John P. Holdren, a professor of energy and resources at the University of California, Berkeley

Daniel D. Joseph, a professor of aerospace engineering and mechanics at the University of Minnesota

Paul J. Kaesberg, Beaman Professor of biophysics and biochemistry at the University of Wisconsin

Charles F. Kennel, a professor of physics at the University of California, Los Angeles

Toichiro Kinoshita, a professor of theoretical physics at Cornell University

James L. Kinsey, R. D. Bullard-Welch Foundation Professor of Science at Rice University

Robert A. Laudise, director of the Materials Chemistry Research Laboratory at AT&T Bell Labs, Murray Hill, New Jersey

David W. Lee, a professor of physics at Cornell University

Patrick A. Lee, a professor of physics at the Massachusetts Institute of Technology

N. David Mermin, a professor of physics at Cornell University

Douglas J. Scalapino, a professor of physics at the University of California, Santa Barbara

Don C. Wiley, a professor of biochemistry and biophysics at Harvard University

Peter G. Wolynes, a professor of chemistry at the University of Illinois, Urbana

John A. Wood, associate director of the Smithsonian Astrophysical Observatory, Harvard-Smithsonian Center for Astrophysics

Amnon Yariv, Thomas G. Myers Professor of Electrical Engineering and Applied Physics at the California Institute of Technology.

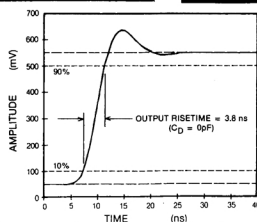
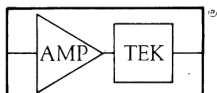
The new foreign associates include:

Leonid Brekhovskikh, an academician in the department of oceanology of the USSR Academy of Sciences

Richard H. Dalitz, Royal Society Professor at Oxford University

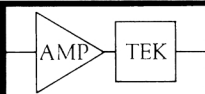
Arnt Eliassen, a professor at the University of Oslo's Institute for Geophysics

Richard R. Ernst, a professor of physics



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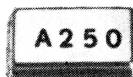
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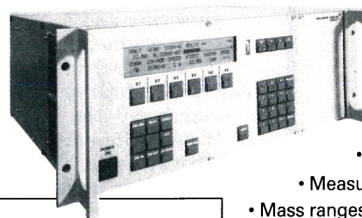
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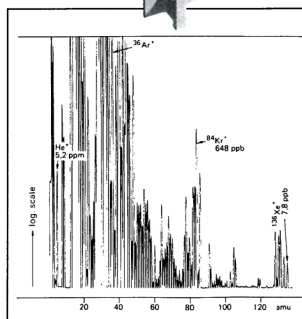
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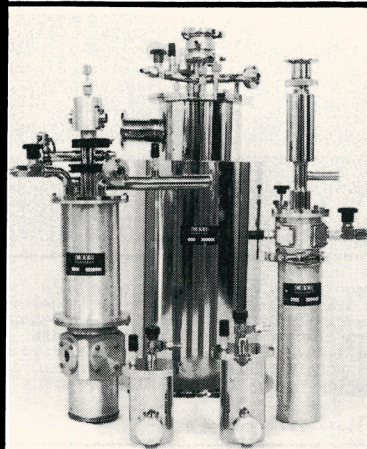
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ical chemistry at Eidgenössische Technische Hochschule Zurich
Philippe Nozières, a professor of statistical physics at the Institut Laue-Langevin, Collège de France
Rashid A. Sunyaev, head of the department of high energy astrophysics at the Space Research Institute of the USSR Academy of Sciences.

Among the newly elected members of the National Academy of Engineering are the following:

James R. Biard, chief scientist in the MICRO switch division of Honeywell Inc

Robert A. Brown, professor and head of the chemical engineering department at the Massachusetts Institute of Technology

Alan N. Gent, Dr. Harold A. Morton Professor of Polymer Physics and Polymer Engineering at the University of Akron

Howard R. Hart Jr, a physicist at the General Electric Research and Development Center, Schenectady, New York

James F. Jackson, a deputy director at Los Alamos National Laboratory

Frank E. Karasz, Distinguished University Professor of Polymer Science and Engineering at the University of Massachusetts

John L. Lumley, Willis H. Carrier Professor of Engineering at Cornell University

Tony Maxworthy, Smith International Professor of Mechanical Engineering and a professor of aerospace engineering at the University of Southern California

James C. McGroddy, director of research at the IBM Thomas J. Watson Research Center, Yorktown Heights, New York

Joseph Miller, assistant general manager in the applied technology division of the TRW Space & Technology Group, Redondo Beach, California

Arthur A. Oliner, a professor of electrophysics at the Polytechnic University, Brooklyn, New York

Alvin Radkowsky, a professor of nuclear engineering at Tel Aviv University

Hermann Statz, general manager and technical director of the research division at Raytheon Co

Richard S. Stein, director of the Polymer Research Institute and Groessman Professor of Chemistry at the University of Massachusetts

William Streifer, research manager at Spectra Diode Laboratories in San Jose, California

Charles M. Wolfe, Samuel C. Sachs

Professor of Electrical Engineering and Applied Electronic Sciences at Washington University, St. Louis, Missouri.

The new foreign associates of the National Academy of Engineering include Tadahiyo Sekimoto, president of NEC Corporation and Zehev Tadmor, president of the Technion in Haifa.

OBITUARIES

Arthur Rich

Arthur Rich, a professor of physics at the University of Michigan, died on 25 August 1990 at his home in Ann Arbor. He was 52.

Rich graduated from Brooklyn College, earned an MA from Columbia University and a PhD in physics from the University of Michigan. He joined the Michigan faculty in 1966.

In building a highly innovative and diverse research program, Rich coupled a boundless enthusiasm for physics with a tenacious adherence to scientific integrity. His work in atomic physics is widely respected for its originality and its fundamental importance. Rich launched research efforts in such diverse fields as biophysics, astrophysics and condensed-matter physics.

In his thesis research under H. Richard Crane and in his early work as a faculty member at Michigan, Rich worked on precision measurements of the gyromagnetic ratio of the positron and electron. This work was intended to test the calculated radiative correction to quantum electrodynamics. He was the first to measure the anomalous magnetic moment ($g-2$) of the free positron, and in 1970 with John Wesley he made the most precise measurement at that time of $g-2$ of the free electron. Rich's interest quickly expanded to include positronium—the bound state of the positron and electron—as a purely leptonic system for testing QED. With his coworkers he searched for the forbidden four-photon annihilation of orthopositronium as a test of charge-conjugation invariance. His group also measured the annihilation decay rates of ortho- and parapositronium to test QED decay-rate calculations; their orthopositronium measurement still disagrees with theory.

Rich was always interested in testing the basic concepts underlying fundamental theories. Thus while his $g-2$ measurements explicitly tested QED, he also coauthored a paper that