

Spring 2010

Prizes and Awards

APS Announces Spring 2010 Prize and Award Recipients

Thirty-four prizes and awards will be presented during special sessions at three spring meetings of the Society: the 2010 March Meeting, March 15-19, in Portland, OR, the 2010 "April" Meeting, February 13-16, in Washington, DC, and the 2010 Atomic, Molecular and Optical Physics Meeting, May 25-29, in Houston, TX.

Citations and biographical information for each recipient follow. The Apker Award recipients appeared in the December 2009 issue of *APS News* (<http://www.aps.org/programs/honors/awards/apker.cfm>).

Additional biographical information and appropriate web links can be found at the APS web site (<http://www.aps.org/programs/honors/index.cfm>). Nominations for most of next year's prizes and awards are now being accepted. For details, see page 8 of this insert.

2010 Prizes, Awards and Dissertations

Will Allis Prize for the Study of Ionized Gases

Mark J. Kushner
University of Michigan

Citation: "For ground-breaking contributions to developing and applying hybrid plasma models that have advanced the fundamental understanding of the chemistry, surface kinetics, and energy transport in low temperature plasmas."

Mark J. Kushner received the BS in Nuclear Engineering and the BA in Astronomy from the University of California at Los Angeles in 1976; and the MS and Ph.D. in Applied Physics from the California Institute of Technology in 1977 and 1979. He served on the technical staffs of Sandia National Laboratory and Lawrence Livermore National Laboratory before joining Spectra Technology where he was Director of Electron, Atomic, and Molecular Physics. In 1986, Dr. Kushner joined the faculty at the University of Illinois at Urbana-Champaign where he was the Founder Professor of Engineering in the Department of Electrical and Computer Engineering while also serving in many administrative roles. In January 2005, Dr. Kushner became Dean of Engineering and the Melsa Professor of Engineering at Iowa State University. He then joined the University of Michigan as founding director of the Michigan Institute for Plasma Science and Engineering and George I. Had-dad Collegiate Professor in September 2008.



liquid helium as warm-up calculations before doing nuclei. They made variational Monte Carlo calculations of ^{16}O in the early 1990s, and in 1995 he inherited the Green's function Monte Carlo program that Brian Pudliner had developed with Pandharipande and Joseph Carlson. With Ewing Lusk and Ralph Butler it has just been adapted to computers with more than 30,000 processors. It was used to develop the Illinois three-nucleon potentials, which currently reproduce nuclear states up to 12C very well.

Robert Bruce Wiringa was born in Houston, Texas in 1950 and graduated from Darien High School, Darien, Connecticut in 1968. He attended Rensselaer Polytechnic Institute in Troy, New York, earning his B.S. in 1972, and the University of Illinois at Urbana-Champaign, where he received an M.S. degree in 1974 and a Ph.D. in 1978, working with Vijay Pandharipande on nuclear matter. He was a Research Associate at Los Alamos Scientific Laboratory for two years before joining the Physics Division at Argonne National Laboratory in 1981, where he became a Senior Physicist in 2000. At Argonne he began a long-term collaboration with Steven Pieper, as well as continuing to work with groups at Urbana, Los Alamos, and later at Jefferson Laboratory.

His work has focused on the nucleon-nucleon and three-nucleon interactions, quantum Monte Carlo calculations of nuclear structure and reactions, and variational studies of dense nucleon matter and neutron stars.



concepts of traditional crystallography, especially the appearance of quasi-crystals, and the applications of electron microscopy.

Paul J. Steinhardt, the Albert Einstein Professor in Science and Director of the Princeton Center for Theoretical Science, is in the Department of Physics and the Department of Astrophysical Sciences at Princeton University. He received his B.S. in physics at Caltech in 1974, his physics M.A. in 1975 and physics Ph.D. in 1978 at Harvard University. He was a Junior Fellow in the Harvard Society of Fellows from 1978 to 1981 and on the faculty of the Department of Physics and Astronomy at the University of Pennsylvania from 1981 to 1998, where he was Mary Amanda Wood Professor between 1989 and 1998.

His current research is on inflationary cosmology and an alternative, known as the 'cyclic universe.' He also studies the properties of synthetic quasicrystal and disordered dielectric structures with application to photonics while searching for natural geological sources of quasicrystals and theories to explain quasicrystal growth and stability.



has developed a number of dimension reduction and tabulation methodologies. His textbook "Turbulent Flows" was published in 2000.

Dannie Heineman Prize for Mathematical Physics

Michael Aizenman
Princeton University

Citation: "For his development of the random current approach to correlations which has had an impact on a wide variety of problems, especially his rigorous non-perturbative proof of the triviality of ϕ^4 field theory."

Michael Aizenman is a mathematical physicist at Princeton University. Recently he has been working on quantum effects of quenched disorder.

He received his undergraduate education at the Hebrew University of Jerusalem, and PhD degree in 1975 at Yeshiva University (Belfer Graduate School of Science), New York, advised by Joel Lebowitz. After postdoctoral appointments at Courant Institute of NYU, 1974-75, and Princeton University 1975-77 with Elliott Lieb, he was Assistant Professor at Princeton. In 1982 he moved to Rutgers University as Associate Professor and then full Professor. In 1987 he moved to the Courant Institute and in 1990 returned to Princeton as Professor of Mathematics and Physics.



Hans A. Bethe Prize

Claus Rolfs

Ruhr-Universität Bochum, Emeritus

Citation: "For seminal contributions to the experimental determination of nuclear cross-sections in stars, including the first direct measurement of the key ^3He fusion reaction at solar conditions."

Claus Rolfs received his vordiplom in physics from the Universität Freiburg in 1962. He went on to receive his diplom in physics in 1966 and his promotion to doctorate in physics in 1967 from the same university. After serving as a postdoctoral fellow at the Universität Freiburg and later at the University of Toronto, he took a position as a physics professor at the Universität Munster in 1974. In 1990 he accepted the chairmanship of experimental physics at Ruhr-Universität Bochum, where he stayed until retiring in 2007.

During his career, Rolfs focused on nuclear astrophysics. He also contributed greatly to finding ways to safely dispose of radioactive waste.



Oliver E. Buckley Prize

Dov Levine

Technion, Israel Institute of Technology

Alan Mackay

Birbeck College, Emeritus

Paul Steinhardt

Princeton University

Citation: "For pioneering contributions to the theory of quasicrystals, including the prediction of their diffraction pattern."

Dov Levine is Professor in the Department of Physics at the Technion-Israel Institute of Technology. He received his B.S. in Physics from S.U.N.Y. Stony Brook in 1979, and his Ph.D. in Physics from the University of Pennsylvania in 1986. He was a postdoctoral member of the Institute for Theoretical Physics at the University of California Santa Barbara (now KITP) from 1986 to 1988, when he became a faculty member at the University of Florida. In 1990 he joined the Physics Department of the Technion.

In addition to his work on quasicrystals, Dr. Levine's research has mainly been concentrated in soft condensed matter physics, particularly granular materials, emulsions, and foams, and more recently on systems far from equilibrium and on the quantification of unconventional order in solids.

Alan Mackay retired as Emeritus in 1991 from his position as Professor of Crystallography at Birbeck College in the University of London.

He was educated at Wolverhampton Grammar School and Oundle School and entered Cambridge University with a major entrance scholarship at Trinity College in 1944. He read physics, with half subjects chemistry, electronics and mineralogy and graduated in 1947. He then worked at Philips Electrical for two years and in 1951 took a Ph.D. degree (D.Sc. 1986) in the Department of Physics at Birbeck College, London, then headed by J.D. Bernal, on X-ray crystal structure analysis. He then spent almost all his career at Birbeck College, becoming professor in 1986. He was elected a fellow of the Royal Society in 1988. His work has concerned such topics as corrosion, symmetry theory, the generalization of the



Davisson-Germer Prize in Atomic or Surface Physics

Chris H. Greene

JILA, University of Colorado

Citation: "For seminal contributions to theoretical AMO physics, including dissociative recombination, ultracold matter, and high-harmonic generation, and for the prediction of 'trilobite' long-range molecules."

Chris Greene has been a Fellow of JILA and Professor of Physics at the University of Colorado at Boulder since 1989. He earned his doctorate in theoretical atomic physics from the University of Chicago in 1980, under his advisor Ugo Fano. His undergraduate degree was in math and physics from the University of Nebraska-Lincoln in 1976, with an honors thesis supervised by Donal Burns. A one-year postdoctoral stint in Richard Zare's group at Stanford was then followed by over seven years on the faculty at Louisiana State University.

Dr. Greene's theoretical research interests cover much of atomic, molecular, and optical physics, notably few-body processes in ultracold gases, dissociative recombination in electron collisions with molecular ions, photon-atom and photon-molecule interactions, and molecular Rydberg state behavior.



Fluid Dynamics Prize (2009)

Stephen B. Pope

Cornell University

Citation: "For seminal contributions to the understanding and prediction of turbulent phenomena, especially the development of the PDF approach for turbulent reacting flows."

Steve Pope is the Sibley College Professor in Mechanical & Aerospace Engineering at Cornell University. He received his undergraduate and graduate education in the Mechanical Engineering Department of Imperial College, London, receiving his B.Sc. and Ph.D. degrees in 1971 and 1976. Following post-doctoral positions at Imperial College and at the California Institute of Technology, he joined the Mechanical Engineering faculty at the Massachusetts Institute of Technology in 1978, and then moved to Cornell in 1982.

Pope's research is in the areas of modeling and simulation of turbulent flows and turbulent combustion. He pioneered the use of probability density function (PDF) models for turbulent reactive flows, and has made various contributions to the statistical modeling of turbulent flows, and to their study via direct numerical simulations. For combustion chemistry, he



Frank Isakson Prize for Optical Effects in Solids

Duncan Steel

University of Michigan

Citation: "For seminal contributions to nonlinear optical spectroscopy and coherent control of semiconductor heterostructures."

Duncan Steel received his undergraduate degree in physics from the UNC-Chapel Hill in 1972 and his Ph.D. with David Bach and James Dunderstadt from the U. Mi. in 1976. Prior to joining the faculty at Michigan in 1985, he was a Senior Staff Physicist at the Hughes Research Laboratory in Malibu. It was at HRL, he began to understand the power of probing the nonlinear optical response to study the quantum behavior in these systems. When he started research at Michigan, he initiated experiments in solids, eventually focusing on understanding the nonlinear optical response of the exciton in GaAs. Hailin Wang in his group showed that the leading term in the nonlinear optical response was due to physics similar to collisional interactions that lead to dephasing. Working with Phil Bucksbaum, he learned how to apply the concepts of coherent control to these systems. Currently, he has been working to understand the nature of optical interactions in quantum dots and to develop them for applications to quantum computing.



Julius Edgar Lilienfeld Prize

David Campbell
Boston University

Shlomo Havlin
Bar-Ilan University

Citation: "For pioneering new approaches to the

Table of Contents

- 1 Prizes and Award Recipients
- 5 New APS Fellows
- 8 Nominations for 2010 Prizes and Awards

study of complex systems, using the complementary approaches of nonlinear dynamics and statistical physics, and for communicating the excitement of this new field to diverse audiences."

Dr. David Campbell received his B.A. in Chemistry and Physics from Harvard University in 1966 and Ph.D. from Cambridge University in Theoretical Physics and Applied Mathematics in 1970. He held post-doctoral positions at UIUC from 1970 to 1972 and the Institute for Advanced Study in Princeton from 1972 to 1974. He joined Los Alamos National Laboratory in 1974 as the first Oppenheimer Fellow, co-founding and later directing the Center for Nonlinear Studies. In 1992 he became Professor in and Head of the Department of Physics at UIUC, moving in 2000 to Boston University, where he is currently University Provost and Professor, Electrical Engineering and Physics.

Campbell is known for his studies of localized nonlinear excitations—"solitons," polarons, bipolarons, "breathers" and "intrinsic localized modes"—in many branches of physics particularly in conducting polymers, magnetic systems, and related novel solid state systems.

Shlomo Havlin, born in 1942 in Jerusalem, obtained his M.Sc. at Tel-Aviv University and his PhD at Bar-Ilan University in 1972. Havlin became Professor of Physics at Bar-Ilan in 1984 and served as Chair from 1984-1988, and as Dean of the Faculty of Exact Sciences from 1999 to 2001. He was elected president of the Israel Physical Society and served from 1996 to 1999.

Havlin and his collaborators made fundamental contributions in statistical physics that opened new avenues of active research in several areas including better understanding of anomalous transport in disordered media. He also aided in the discovery of long range correlations in DNA sequences and in physiological data which related to the development of the DFA method for analyzing non-stationary records. Havlin demonstrated also that many networks belong to a new universality class due to their heterogeneous topology, represented for example by the absence of a percolation threshold and novel critical exponents.

James Clerk Maxwell Prize for Plasma Physics (2009)

Miklos Porkolab

Massachusetts Institute of Technology

Citation: "For pioneering investigations of linear and nonlinear plasma wave and wave-particle interactions; fundamental contributions to the development of plasma heating, current drive and diagnostics; and leadership in promoting plasma science education and domestic and international collaborations."

Miklos Porkolab Education: B.A.Sc., University of British Columbia, 1963; Ph.D., Stanford University, 1967. Employment: Princeton University, Plasma Physics Laboratory: Research Staff (1967-1977); Astrophysical Sciences, Lecturer with Rank of Professor, from 1975 to 1977. MIT, Professor, Physics Department, 1977-present. Director, Plasma Science and Fusion Center, MIT, 1995-present. At Princeton, Porkolab's research concentrated on a quantitative understanding of the dispersive properties of plasma waves and instabilities in magnetized plasmas. In 1977 Porkolab joined the MIT Physics Department and the newly established Plasma Fusion Center where he began pioneering experiments on lower hybrid current drive in tokamak plasmas. Further work included clarifying the physics of ion cyclotron heating and mode conversion processes in multi-ion species fusion plasmas. Critical aspects of this work included measurements of mode converted ion Bernstein and ion cyclotron waves (ICW) using Phase Contrast Imaging (PCI). Recent work with PCI concentrated on measuring turbulence and Alfvén wave phenomena in tokamak plasmas.

James C. McGroddy Prize for New Materials

Sang-Wook Cheong
Rutgers University

Ramamoorthy Ramesh

University of California, Berkeley

Nicola A. Spaldin

University of California, Santa Barbara

Citation: "For groundbreaking contributions in theory and experiment that have advanced the understanding and utility of multiferroic oxides."

Sang-Wook Cheong obtained his Bachelor (mathematics, 1982) from Seoul National University, and Ph.D. (Physics, 1989) from University of California, Los Angeles. He worked at Los Alamos National Laboratory for 1986-1989, and was a member of tech-



nic staff at Bell Laboratories (1989-2001). Since 1997, he has been a professor at Rutgers University. He became the founding director of Rutgers Center for Emergent Materials (2005-). His scientific field has been the physics of complex oxides, including multiferroics, colossal magnetoresistive oxides and high T_c superconductors.

He is currently a Divisional Associated Editor for *Physical Review Letters*, a Distinguished Professor at Pohang Science and Technology University, Korea, and a Distinguished Visiting Scholar, National Synchrotron Radiation Research Center, Taiwan.

Ramamoorthy Ramesh graduated from the University of California, Berkeley with a Ph. D. in 1987. He returned to Berkeley in 2004 and is currently the Plato Malozemoff Chair Professor in Materials Science and Physics. From 1989 to 1995, at Bellcore, he initiated research in several key areas of oxide electronics, including ferroelectric nonvolatile memories.

His landmark contributions in ferroelectrics came through the recognition that conducting oxide electrodes are the solution to the problem of polarization fatigue. In 1994, in collaboration with S. Jin of Lucent Technologies, Ramesh initiated research into manganite thin films and they coined the term, Colossal Magnetoresistive (CMR) Oxides. His group at Berkeley demonstrated the existence of a large ferroelectric polarization in multiferroic BiFeO₃ films. They also demonstrated electric field control of antiferromagnetism as well as ferromagnetism. His current research interests include thermoelectric and photovoltaic energy conversion in complex oxide heterostructures.

Nicola Spaldin is a Professor in the Materials Department at the University of California, Santa Barbara. She received her undergraduate degree in Natural Sciences from Cambridge University in 1991, and her PhD in Chemistry from UC Berkeley in 1996, followed by postdoctoral research in Applied Physics at Yale University.

Her research develops and applies electronic structure methods for designing and understanding novel multifunctional materials. She is particularly renowned for her contributions to the emerging field of multiferroics. She is Director of the International Center for Materials Research.

Lars Onsager Prize

Daniel Friedan
Rutgers University

Stephen Shenker
Stanford University

Citation: "For seminal work on the classification and characterization of two-dimensional unitary conformal field theories of critical states."

Daniel Friedan received his PhD in physics in 1980 from the University of California at Berkeley. He worked at the Centre d'Etudes Nucléaires de Saclay from 1980 to 1981. In 1981, he joined the Physics Department and the Enrico Fermi and James Franck Institutes of the University of Chicago. The work cited by the APS was done there in collaboration with Zongan Qiu and Stephen Shenker. Since 1989, Dr. Friedan has been at Rutgers the State University of New Jersey, in the Department of Physics and Astronomy and the New High Energy Theory Center.

He has been working on two speculative projects there. The first looks at the possibility of a mechanism that could produce quantum field theory at observable distance scales in space-time. His second project investigates the possibility of making asymptotically large quantum computers from near critical quantum circuits belonging to universality classes described by 2d quantum field theories.

Stephen Shenker received his A. B. degree from Harvard University in 1975 and his Ph.D. from Cornell University in 1980. After postdocs at the University of Chicago and the ITP at UCSB he joined the faculty at Chicago where he taught until 1989. He then moved to Rutgers University where he helped to found the New High Energy Theory Center. In 1998 he moved to Stanford University.

Shenker's research interests range from statistical physics to quantum field theory and string theory. He and his collaborators have studied the phase structure of gauge theories and the consequences of conformal invariance for two dimensional critical phenomena and string theory. They have discovered nonperturbative formulations of string theory and have pointed out the existence of distinctively stringy nonperturbative effects. His recent interests include the applications of quantum gravity to the study of cosmology and space-time singularities.

Abraham Pais Prize for History of Physics

Russell McCormmach

University of Oregon, Emeritus

Citation: "For the study of German science in the 19th and 20th centuries and a major biography of Henry Cavendish (with Christa Jungnickel, his late wife), and for founding the journal *Historical Studies in the Physical Sciences*."

Russell McCormmach received a bachelor degree in physics from Washington State College in 1955 and, a second bachelor degree in politics, philosophy, and economics from Oxford University in 1959. In 1967, he received a Ph.D. in history of science at Case Institute of Technology, where one of his principle teachers was the first recipient of the Abraham Pais Prize, Martin Klein. After acquiring his advanced degree, he became a professor of history of science, first at the University of Pennsylvania and then at Johns Hopkins University.

His latest work is a biography together with an edition of letters of the eighteenth-century English natural philosopher John Michell.

PAKE PRIZE

Robert A. Frosch
Harvard University

Citation: "For original research in marine geophysics, exceptional leadership and innovative management of the General Motors Research Laboratory, and sustained contributions to national science policy."

Robert A. Frosch received an AB from Columbia College in 1947, and a PhD in theoretical physics from Columbia University in 1952. Beginning in 1951, he did research on long range underwater acoustics at Columbia University's Hudson Laboratories, later becoming Director of the Laboratories.

He was later Director of Nuclear Test Detection, and then Deputy Director of the Advanced Research Projects Agency, Assistant Secretary of the Navy for R&D, Assistant Executive Director of the United Nations Environment Programme, Associate Director for Applied Oceanography at the Woods Hole Oceanographic Institution, Administrator of NASA, and President of the American Association of Engineering Societies. In 1982 he became Vice President of the General Motors Corporation in charge of Research Laboratories, until retiring in 1993.

W.K.H. Panofsky Prize in Experimental Particle Physics

Eugene W. Beier

University of Pennsylvania

Citation: "For major contributions to studies of neutrino interactions, especially studies of solar neutrinos demonstrating unequivocally the existence of neutrino flavor oscillations."

Eugene W. Beier is the Fay R. and Eugene L. Langberg Professor of Physics at the University of Pennsylvania. He received his B.S. from Stanford University in 1961 and M.S. and Ph.D. degrees from the University of Illinois in 1963 and 1966, respectively. He has been a member of the faculty of the University of Pennsylvania since 1967.

Professor Beier has studied neutrino interactions and properties for the past thirty years. He has been involved in experimental work on neutrinos at Brookhaven National Laboratory, the Kamiokande II experiment, and the Sudbury Neutrino Observatory. Current work seeks to determine if neutrinos are their own antiparticles through a search for neutrinoless double beta decay.

Earle K. Plyler Prize for Molecular Spectroscopy

Lester Andrews

University of Virginia

Citation: "For vibrational spectroscopy in cryogenic matrices that combined with quantum calculations, has led to the identification and characterization of many molecules, ions, and complexes across the periodic table."

W. Lester S. Andrews, born in Lincolnton, North Carolina, received his B.S., Chemical Engineering, Mississippi State University, 1963 and his Ph.D., Physical Chemistry, University of California, Berkeley, 1966. Lester Andrews has authored or co-authored over 750 scientific papers in refereed journals from 1966 to date.

These papers involve matrix isolation spectroscopy of metal oxides, free radicals, hydrogen-bonded

complexes, molecular ions, metal hydrides, methylidene and methylidyne complexes, metal dihydroxide and tetrahydroxide molecules, and other novel chemical species. His current sponsored work is aimed at using the laser-ablation process to make new transition metal, lanthanide metal, and actinide metal-containing molecules.

Polymer Physics Prize

Michael Rubinstein

University of North Carolina

Citation: "For his leadership in the field of structure and dynamics of polymer liquids, interfaces and gels."

Michael Rubinstein received B.S. with honors in physics from Caltech in 1979 and Ph.D. in physics from Harvard University in 1983 specializing in soft condensed matter theory. Between 1983 and 1985 he was a post-doctoral fellow at AT&T Bell Laboratories in Murray Hill, NJ where he started his research in polymer physics.

In 1985 he joined Research Laboratories of Eastman Kodak Company in Rochester, NY where he worked for ten years in different areas of polymer theory. In 1994 he was Juliot Curie Visiting Professor at ESPCI in Paris.

In 1995 he moved to the University of North Carolina at Chapel Hill where he is currently a John P. Barker Distinguished Professor in the Department of Chemistry and in the Curriculum of Applied Sciences and Engineering as well as a member of the Program in Molecular and Cellular Biophysics and of the Institute for Advanced Materials, Nanoscience and Technology. In 1998 he was Visiting Professor at College de France.

Aneesur Rahman Prize for Computational Physics

Frans Pretorius

Princeton University

Citation: "For his brilliant computational solution of a fundamental problem in Einstein's theory of General Relativity, the collision of two black holes, with implications for fundamental physics, astrophysics, and gravitational wave observations."

Frans Pretorius received his undergraduate degree in computer engineering from the University of Victoria, British Columbia, in 1996, and a M.Sc. in Physics at the same institute under the supervision of Werner Israel in 1999. Pretorius completed a Ph.D. in Physics at the University of British Columbia in 2002. Pretorius was the Richard Chase Tolman Postdoctoral Fellow at the California Institute of Technology from 2002 to 2005, an Assistant Professor of Physics at the University of Alberta from 2005 to 2007, and is presently an Assistant Professor of Physics at Princeton University.

Pretorius's main area of research is Einstein's theory of general relativity. His work has included studies of gravitational collapse, cosmic singularities, and binary black hole mergers. His latest efforts have focused on high speed black hole collisions (of relevance to putative black hole formation scenarios at the Large Hadron Collider), and the structure of gravitational waves emitted by compact object mergers in the universe.

SAKHAROV PRIZE

Joseph Birman
CCNY-CUNY

Morris (Moishe) Pripstein
National Science Foundation

Herman Winick
SLAC

Citation: "For tireless and effective personal leadership in defense of human rights of scientists throughout the world."

Joseph L. Birman received his B.S. from CCNY in 1947, his Ph.D. from Columbia University in 1952 and a Docteur es Sciences, h.c from Université de Rennes in 1974. He was Professor of Physics at NYU from 1962 to 1974 and Senior Scientist at GTE Research Labs from 1952 to 1962.

His research is in symmetry related aspects of phase transitions and response functions, mechanisms of optical properties and cooperative and competitive many particle effects. He is known for work on resonant light scattering, mechanisms of light emission, and the dynamical symmetry (Lie Algebra) collective effects in condensed matter systems.

He supports repressed scientists around the world by personal intervention with authorities, as well as by being a member or chair of numerous international committees.

His work toward international cooperation includes co-organizing three US-USSR Bi-National Symposia on Light Scattering in Solids. He also negotiated a US-China Cooperative Program in AMO



and Condensed Matter Physics.

Morris Pripstein pursued his undergraduate studies at McGill University in engineering physics where he received his Bachelor of Engineering degree in 1957. He then went to the University of California, Berkeley for graduate work and earned his PhD there in experimental elementary particle physics in 1962, conducting his research at the Lawrence Radiation Laboratory (LRL) as it was then known. In 1965 he returned to LRL to join Luis Alvarez's bubble-chamber research group. He was promoted shortly thereafter to Staff Senior Scientist and later became a research group leader, including that of Group A, the successor of the Alvarez Group.



Since retiring from the Lawrence Berkeley National Laboratory (as LRL became known) in 2005, he has been a program director at the National Science Foundation, overseeing its support of the U.S. Large Hadron Collider (LHC) Program at CERN. For two years before then, while on leave from LBNL, he held the corresponding position at the Department of Energy.

Herman Winick, received his Bachelor of Arts from Columbia College in 1953 and his Ph.D. from Columbia University in 1957. Winick played a major role in developing synchrotron radiation sources and research at Stanford and around the world. After positions at the University of Rochester and Harvard University, in 1973 he led construction of the Stanford Synchrotron Radiation Project. He served as Deputy Director until semi-retirement in 1998.



His work on wiggler and undulator magnets as advanced radiation sources has received awards, including the DOE Distinguished Associate Award. In 1992 he initiated studies of the Linac Coherent Light Source Project to construct an x-ray laser at SLAC.

He has had extended stays abroad and continues to work on the UNESCO-sponsored SESAME Project, modeled on CERN, which he was instrumental in initiating in 1997. His strong interest in human rights and international science led to chairing the APS Committee on International Freedom of Scientists and the Forum on International Physics.

J.J. Sakurai Prize for Theoretical Particle Physics

Robert Brout

Université Libre de Bruxelles

François Englert

Université Libre de Bruxelles

Gerald S. Guralnik

Brown University

Carl R. Hagen

University of Rochester

Peter W. Higgs

University of Edinburgh, Emeritus

T.W.B. Kibble

Imperial College

Citation: "For elucidation of the properties of spontaneous symmetry breaking in four-dimensional relativistic gauge theory and of the mechanism for the consistent generation of vector boson masses."

Robert Brout obtained his undergraduate degree from New York University in 1948 and doctorate from Columbia in 1953. His research began in Rochester in 1953, continuing at the Université Libre de Bruxelles from 1954 to 1956, then at Cornell from 1956 to 1961, as a Sloan Fellow from 1959 to 1961 and as a Guggenheim Fellow from 1961 to 1962. He was established in Europe as a Solvay Fellow from 1962 to 1966 then as a professor in the "Service de Physique Théorique" co-directed with François Englert. He became active in three main fields: statistical mechanics, particle physics and cosmology.



His paper, "The Causal Universe," published in 1978, introduced the inflation mechanism and received first award of the International Gravity Contest by the "Gravity Research Foundation" along with Englert and Gunzig.

François Englert received his diplôme d'ingénieur in Civil Electricien-Mécanicien from the Université Libre de Bruxelles in 1955, his licencié in physics in 1958 and his doctorate in 1959. Englert did his post doctoral research at Cornell from 1959



to 1961 before returning to the Université Libre de Bruxelles. He lectured there until 1964 when he assumed the position of a full time professor at the university. In 1980 he became the director of the Theoretical Physics Group until 1998 and is now professor emeritus at the university.

His research interests range among the fields of Solid state physics, Statistical mechanics, Field Theory, Gravity, Supergravity, Cosmology and different

approaches to Quantum Gravity. His present research is centered on Kac-Moody approaches to gravity and supergravities and on the quantum significance of event horizons.

Gerald Guralnik received his BS Degree from MIT in 1958 and his PhD degree from Harvard in 1964. He went to Imperial College in London as a postdoctoral fellow supported by the National Science Foundation from 1964 to 1965 and then became a postdoctoral fellow at the University of Rochester. In the fall of 1967 he became an assistant Professor at Brown University and became a full Professor in 1973.



He frequently visited Imperial college and Los Alamos National Laboratory where he was a staff member from 1985 to 1987. While at Los Alamos, he did extensive work on the development and application of computational methods for lattice QCD. His primary interests are currently in quantum field theory and general relativity. He is particularly interested in the phase structure and the full solution set of quantum field theory analyzed both abstractly and through numerical techniques.

Carl R. Hagen was born and raised in Chicago. He pursued his studies in physics at M.I.T. obtaining his bachelor and master degrees in 1958. Also at M.I.T. he completed his Ph.D. in 1963 with a thesis topic in quantum electrodynamics. Later that year he became a research associate at the University of Rochester, eventually rising to the position of professor. On leave to Imperial College in London in 1964 he collaborated on the broken symmetry problems. He worked at the ICTP in Trieste, Italy in 1967, spending a month of that time at the American University in Beirut lecturing and carrying on research.



His research work has largely been concerned with various aspects of quantum field theory. This has included the formulation and quantization of higher spin field theories within the context of Galilean relativity as well as that of special relativity. More recent applications include studies of Chern Simons field theories and their special cases such as the Aharonov Bohm effect.

Peter Higgs graduated with 1st class Honors in Physics from King's College, University of London, in 1950. A year later, he was awarded an MSc and started research, initially under the supervision of Charles Coulson and, subsequently, Christopher Longuet-Higgins. In 1954, he was awarded a PhD for a thesis entitled "Some Problems in the Theory of Molecular Vibrations", work which signaled the start of his life-long interest in the application of the ideas of symmetry to physical systems. In 1954, Higgs moved to the University of Edinburgh and remained for a further year as a Senior Research Fellow. He returned to London in 1956 to take up an ICI Research Fellowship, spending a year at University College and a little over a year at Imperial College, before taking up an appointment as Temporary Lecturer in Mathematics at University College. October 1960 saw Peter Higgs return to Edinburgh where he stayed until retiring in 1996.



Tom Kibble was born in Madras, India. He graduated from the University of Edinburgh earning his masters in 1955, his BSc in 1956 and his PhD in 1958. Following a year at Caltech he came to Imperial College London in 1959, joining the group led by Professor Abdus Salam. He was appointed to the faculty as a lecturer in 1960, and promoted to professor in 1970. He was head of the Imperial College Physics Department from 1983 to 1991, and since 1998 has been a senior research fellow and emeritus professor of Theoretical Physics. Dr Kibble spent a year in 1967-68 at the University of Rochester, Rochester, NY, and in 2007 was Lorentz Professor at the University of Leiden, Netherlands.



His primary interests are in quantum field theory and cosmology, especially formation and properties of topological defects such as cosmic strings and analogs in condensed matter.

Arthur L. Schawlow Prize in Laser Science

Henry C. Kapteyn

University of Colorado—Boulder

Margaret M. Murnane

University of Colorado

Citation: "For pioneering work in the area of the ultra-fast laser science, including development of ultra-fast optical and coherent soft x-ray sources."

Henry C. Kapteyn has been a Professor of Physics at the University of Colorado at Boulder and a fellow of JILA since 1999. Previously he held faculty positions at Washington State University (1990-1995) and the University of Michigan (1996-1999). He received his BS from Harvey Mudd College in 1982, MS from

Princeton in 1984, and a PhD in Physics from the University of California at Berkeley in 1989. He and his wife and long-term collaborator, Margaret Murnane, are well known for research in ultrashort pulse laser science and technology, particularly for pioneering developments making it possible to access new physics in the few-optical-cycle and sub-optical cycle (attosecond) regime of laser matter interactions, and in techniques for upconverting laser light to make coherent beams of x-rays.



Margaret Murnane is a Fellow of JILA and a Professor in the Department of Physics and of Electrical and Computer Engineering at the University of Colorado. She runs a joint research group with her husband, Professor Henry Kapteyn. She received her B.S. and M.S. degrees from University College Cork, Ireland, and her Ph.D. from the University of California at Berkeley in 1989. She joined the faculty at Washington State University in 1990, moved to the University of Michigan in 1996, and to Colorado in 1999.



Prof. Murnane and her group use coherent beams of laser and x-ray light to capture the fastest dynamics in molecules and materials at the nanoscale.

Prize for a Faculty member for Research in an Undergraduate Institution

Enrique Galvez

Harvey Mudd

Citation: "For his contributions to quantum optics, his enthusiastic inclusion of undergraduates in a significant way in his research, and his contributions to the wider physics community."

Enrique "Kiko" Galvez completed his undergraduate studies in physics at the Pontifical Catholic University of Peru in 1980. He received his Ph.D. in physics at the University Notre Dame in 1986, and did a postdoc at Stony Brook University. He has been permanent faculty at Colgate University since 1988.



His early research involved experimental atomic physics of ion and atomic beams, measuring the Lamb shift in two-electron ions and studying highly excited Rydberg atoms. More recently he has been studying classical and quantum properties of light, which includes geometric phases, helical modes of light, optical vortices and quantum interference with correlated photons. He has also been active in developing new undergraduate laboratories and modernizing the physics curriculum.

Robert R. Wilson Prize for Achievement in the Physics of Particle Accelerators

John Peoples, Jr

Fermilab

Citation: "For critical and enduring efforts in making the Tevatron Collider the outstanding high energy physics accelerator of the last two decades."

John Peoples was Director of Fermilab from 1989 until 1999 when he was appointed Director Emeritus in 1999. He received a B.S.E.E. from Carnegie Institute of Technology in 1955. After working at the Martin Aircraft Corporation as an engineer, he entered Columbia University in 1959, where he received a Ph.D. in Physics in 1966. After serving on the faculties of Columbia University and Cornell University he joined Fermilab in 1972. He collaborated in high energy photoproduction experiments, which observed the J/Y particle, providing evidence that it was a hadron. He was appointed project manager of Tevatron I in 1981 and led the construction and commissioning of the Antiproton Source.



Under his leadership, the Tevatron luminosity increased by a factor of 20 between 1990 and 1994, making it possible for CDF and D0 to discover the top quark. Under his leadership the Main Injector Project was completed in 1999 which increased the collider luminosity by another factor of 20, further extending its potential for discovery.

AWARDS

David Adler Lectureship Award in the Field of Materials Physics

Patricia Thiel

Iowa State University

Citation: "For seminal contributions to surface structure and dynamics of complex metallic alloys, including quasicrystals and kinetically limited growth and relaxation of nanostructures in thin metal films."

Patricia A. Thiel is a Senior Scientist in the Ames Laboratory, and a Distinguished Professor of Chemis-

try at Iowa State University. Her current research areas include nanostructure evolution on surfaces, and surface properties and structures of complex metallic alloys, including quasicrystals. She earned her B.A. in Chemistry at Macalester College in 1975, and her Ph.D. in chemistry at the California Institute of Technology in 1981. After postdoctoral work at the University of Munich as a von Humboldt Fellow, she joined the technical staff at Sandia National Laboratories, Livermore, then moved to Iowa State University in 1983.



LeRoy Apker Award (2009)

Kathryn Greenberg

Mount Holyoke College

Citation: "Thermal Coupling and Lensing in Arrays of Vertical Cavity Surface Emitting Lasers."

Bilin Zhuang

Wellesley College

Citation: "Thermodynamics of Ising Systems on the Triangular Kagome Lattice and Small-Model Approximations to Geometrically Frustrated Systems."

Kathryn Greenberg received her B.A. in physics from Mount Holyoke College in 2009, as well as a minor in mathematics. As an undergraduate, Greenberg studied heating in vertical cavity surface emitting lasers (VCSELs) as well as thermal coupling in VCSEL arrays in Professor Janice Hudgings' laboratory. Specifically, she used high resolution thermorelectance microscopy to investigate the temperature distribution across the surface of the VCSELs and VCSEL arrays.



Greenberg is currently pursuing a Master of Philosophy in physics at the University of Cambridge on a Gates Cambridge Scholarship where she is working in Professor Sir Richard Friend's laboratory to create more efficient organic light emitting diodes. Following her year of study at the University of Cambridge, Greenberg will be attending Harvard University to pursue a Ph.D. in Applied Physics.

Bilin Zhuang received her B.A. degree with majors in Physics and Chemistry from Wellesley College in June 2009. She conducted her undergraduate thesis research in the thermodynamic properties of frustrated Ising systems under Professor Courtney Lannert in Wellesley College. Her thesis research focused on modeling the thermodynamic properties of extended two-dimensional frustrated Ising systems with much smaller systems of less than 30 atoms.



Currently, she is employed by the Agency for Science, Technology and Research in Singapore and works on theories related to MRAM devices. She intends to pursue PhD studies in theoretical physics or chemistry starting in fall 2010.

Edward A. Bouchet Award

Herman B. White

Fermilab

Citation: "For his contributions to KTeV experiments and the establishment of a new kind of interaction distinguishing matter from antimatter, as well as his outstanding public service and mentorship roles."

Herman B. White, Jr. completed his A.B. physics degree at Earlham College in 1970, M.S. degree in Nuclear and Accelerator Physics at Michigan State University in 1974, and Ph.D. in Elementary Particle Physics at Florida State University in 1991.



He was a Resident Research Associate in Nuclear Physics at Argonne National Laboratory in 1971, an Alfred P. Sloan Travel Fellow at the CERN Laboratory (1972), and University Fellow at Yale from 1976 to 1978. He has been a scientist at Fermilab for the past 35 years, and early in his career he contributed to the development of an empirical formula widely used at that time in the calculation of neutrino flux in high-energy interactions. His work in HEP has included studies in prompt muon production, hadronic pair production, neutrino and kaon physics, including the discovery of direct CP violation in neutral K-meson interactions with the KTeV collaboration. His current research focuses on neutrino cross-section measurements and muon conversion experiments.

Joseph A. Burton Forum Award

Pervez Hoodbhoy

Quaid-e-Azam University

Abdul Nayyar

Sustainable Development Policy Institute

Citation: "For broadening the public understanding of science in Pakistan and for informing the public of the dangers of the nuclear arms race in South Asia."

Pervez Amirali Hoodbhoy is chairman and pro-

essor at the department of physics at Quaid-e-Azam University, Islamabad, where he has taught for 36 years. He received a PhD in nuclear physics from MIT in 1978.



His research interests lie in theoretical high energy physics. Dr. Hoodbhoy has spoken and written extensively for over 25 years against nuclear weapons in South Asia, produced a widely viewed documentary film "Pakistan and India Under the Nuclear Shadow", was a member of the Pugwash Council, and is a sponsor of the Bulletin of the Atomic Scientists, and authored "Islam and Science: Religious Orthodoxy and the Battle for Rationality", now in seven languages. He was a post-doctoral fellow at the University of Washington in Seattle and a visiting professor at MIT, Carnegie Mellon University, and the University of Maryland. Dr Hoodbhoy produced several documentary series for Pakistan Television popularizing science, and analyzing the Pakistani education system.

Abdul Hameed Nayyar received his MSc from Karachi University, Pakistan, in 1966, and his PhD in theoretical condensed matter physics in 1973 from Imperial College, London. He served on the faculty of the Department of Physics, Quaid-e-Azam University, Islamabad, from 1973 to 2005. He is currently a Senior Research Fellow at the Sustainable Development Policy Institute, Islamabad, directing programs on education reform and energy policy.



Since 1998, Nayyar has been a visiting researcher at Princeton University's Program on Science and Global Security, working on technical and policy studies of nuclear weapons and nuclear energy programs in Pakistan and India that can inform the South Asian nuclear-policy debate and foster a process of arms control and disarmament. He has also held visiting positions at the University of Manitoba, Winnipeg, Canada, and at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste.

John Dawson Award for Excellence in Plasma Physics (2009)

Yitzhak Maron

Weizmann Institute of Science

Citation: "For revolutionary, non-invasive spectroscopic techniques to measure magnetic fields in dense plasmas and for resolving in detail in space and time the implosion phase of the Z pinch."

Yitzhak Maron received his Ph.D. in Physics from the Weizmann Institute of Science in 1977, served as a postdoctoral fellow at the Weizmann, and in the years 1980-1984 became a Research Associate at the Laboratory of Plasma Studies at Cornell University. Then, as a Professor in the Faculty of Physics of the WIS, he has been heading the Plasma Laboratory there. His Laboratory focuses on spectroscopic investigations of high-energy-density plasmas, together with developing kinetics, line-shape, and radiation-transport computations. Among the accomplishments in his studies are pioneering determination of the electric-field distribution and ion velocities in high power ion diodes; determination of the magnetic field distribution in particle diodes, Plasma Opening Switches, Z-pinch, and laser-produced plasmas; investigations of electric and magnetic fields in turbulent plasmas; demonstration of the Hall effect in magnetic field penetration; observation of simultaneous field penetration and particle reflection, studying the implosion dynamics of a Z-pinch plasma; and determining the energy balance in the stagnating plasma.



John H. Dillon Medal for Research in Polymer Physics

Yueh-Lin Loo

Princeton University

Citation: "For insightful experiments connecting structure with performance in conducting polymers, organic electronics, and fundamental block copolymers."

Yueh-Lin (Lynn) Loo received her BSEs in Chemical Engineering and Materials Science and Engineering from the University of Pennsylvania in 1996 and a Ph.D. in Chemical Engineering from Princeton University in 2001. After a year at Bell Laboratories, Lynn started her independent program at the University of Texas at Austin. In 2007, she returned to Princeton's Chemical Engineering department where she is now an associate professor.



Her group is interested in understanding the structure-function relationships that govern block copolymers, organic semiconductors and polymer conductors, especially in organic solar cells and thin-film transistors. She and her group have also been recognized for developing non-invasive printing and patterning methods for fabricating organic electronic devices.

Excellence in Physics Education Award

Activity Based Physics Group (Priscilla Laws, Ronald Thornton, David Sokoloff)

Citation: "For twenty-three years of national and international leadership in the design, testing, validation, and dissemination of research-based introductory physics curricula, computer tools and apparatus that engage students in active learning based on the observation and analysis of real phenomena."

Priscilla Laws received a B.A. from Reed College (1961) and a Ph.D. from Bryn Mawr College (1966) in nuclear theory. She joined the faculty at Dickinson College in 1965 and began research on the health effects of radiation. This led to the publication of two consumer books on medical and dental x-rays.



Since 1986, she has dedicated herself to the development of physics education research-based curricular materials to enhance student learning in introductory physics courses. She has co-authored educational computer software and a series of books as part of the Activity-Based Physics Suite including: the Workshop Physics Activity Guide; The RealTime Physics Laboratory Modules; and a calculus-based introductory physics text entitled Understanding Physics with Karen Cummings, Edward F. Redish & Patrick J. Cooney.

Dr. Laws is a Research Professor of Physics at Dickinson College where she is promoting active learning through the development of curricular materials for physics instructors. Dr. Laws is also working on ways that physics education can be used to enhance sustainable development in Africa, Asia and Latin America.

Ronald K. Thornton, now at Tufts University, holds a Ph.D. from Brown University in High Energy Physics. He is Director of the Tufts Center for Science and Mathematics Teaching and a professor in both Physics and Education. He has been a visiting professor at the Universities of Sydney, Rome, Naples, and Pavia. With P. Laws and D. Sokoloff he leads the Activity-based Physics Group. He does research on student learning and has co-authored several texts. He has led the development of *Tools for Scientific Thinking* Microcomputer-based Laboratory software and hardware, and the LoggerPro, Visualizer, and WebILD software packages. He has developed student and teacher conceptual understanding evaluations including the Force and Motion Conceptual Evaluation. These materials, developed with support from the National Science Foundation and the U.S. Department of Education, F.I.P.S.E. He has led teaching workshops for physics professors, K-12 teachers, and teacher educators around the world and is an author of the Teacher Education Module



David Sokoloff is a professor of Physics at the University of Oregon. He earned his BA in physics at Queens College of the City University of New York in 1966, and his Ph.D. in AMO physics at the Massachusetts Institute of Technology in 1972 under Ali Javan. For over two decades, he has studied students' conceptual understandings, and developed active learning approaches (with NSF and FIPSE support) including the four modules of RealTime Physics: Active Learning Laboratories and Interactive Lecture Demonstrations (both developed with Ronald Thornton and Priscilla Laws, and published by Wiley). He has conducted numerous international, national and local institutes and workshops to disseminate these active learning approaches.



Since 1999, he has been part of a UNESCO team presenting active learning workshops in developing countries. He is the editor of the Training Manual for the ALOP workshop that has now been presented in Ghana, Tunisia, Morocco, India, Tanzania, Brazil, Mexico, Zambia, Cameroon and Colombia.

Joseph Keithley Award for Advances in Measurement Science

Eugene Ivanov

University of Western Australia

Citation: "For advances in microwave interferometry, ultra-low phase noise microwave oscillators and high resolution noise measurement and for elucidation of noise mechanisms affecting the fidelity of optical to microwave frequency transfer."

Eugene N. Ivanov was born in 1956 in Moscow. He graduated from Moscow Power Engineering Institute in 1979 and received a PhD in Radiophysics from the same institution in 1987.



In 1991, he joined the Physics Department at the University of Western Australia where he constructed microwave readout system for the cryogenic gravitational wave detector "Niobe" and discovered a new type of parametric interaction

between mechanical and electromagnetic resonators. Since 1994, he has been working on applications of interferometric signal processing to generation of spectrally pure microwave signals and precision noise measurements. This research resulted in more than two orders of magnitude improvement in the phase noise of microwave oscillators relative to the previous state-of-the-art.

From 1999 to 2008, Eugene worked as a Visiting Scientist at the National Institute of Standards and Technology in Boulder, Colorado. He identified and studied a number of noise mechanisms affecting fidelity of frequency transfer from the optical and the microwave domain.

Maria Goeppert Mayer Award

Alessandra Lanzara

University of California, Berkeley

Citation: "For high-resolution angle-resolved photoemission spectroscopy and imaging studies of the cuprate superconductors and graphene that elucidate their electronic properties."

Alessandra Lanzara received her Ph.D. in Physics from University of Rome La "Sapienza" in 1999, and her Laurea (equivalent to M.S.) from the same University in 1995. In 2002 she joined the physics department of the University of California, Berkeley as an assistant professor and became an associate professor in 2006.



Her main research interests lie on the frontier aspects of condensed matter physics, motivated by the search for new states of matter with main focus on high temperature superconductivity and Dirac materials. Her main contributions to these fields are the discovery of a universal energy scale in cuprates superconductors, which might hide the secret for superconductivity, and the discovery of a new way of band gap engineering of graphene through graphene/substrate interaction, a fundamental step toward graphene electronics. She is also pushing the frontier of photoemission spectroscopy to the time and spin realm, with the development of a novel concept of electron analyzer for spin detection.

Dwight Nicholson Medal for Human Outreach (2009)

Marcia C.B. Barbosa

Universidade Federal do Rio Grande do Sul

Citation: "For her leadership of the first International Conference on Women in Physics, that changed the visibility of women in physics, and her personal commitment to supporting and encouraging women in physics around the world."

Marcia C.B. Barbosa did her undergraduate and graduate studies at the Universidade Federal do Rio Grande do Sul. After finishing her doctoral degree in 1988 she travelled to the United States for postdoctoral studies at Maryland University with Professor Michael Fischer. In 1991 she was hired at the Universidade Federal do Rio Grande do Sul.



As part of her research she found using computer simulations that water diffuses faster when compressed at the supercooled region. She also theoretically and experimentally designed a DNA-lipid complex for gene therapy purposes.

In 2000 Marcia became the chair of the International Union of Pure and Applied Physics Working Group on Women in Physics and organized the First and the Second IUPAP International Conference in Women in Physics in 2002 and in 2005 respectively. In 2008 she was elected director of the Physics Institute of the Universidade Federal do Rio Grande do Sul where she is in charge 120 people between professors and staff.

Leo Szilard Lectureship Award

Frank von Hippel

Princeton University

Citation: "For his outstanding work and leadership in using physics to illuminate public policy in the areas of nuclear arms control and nonproliferation, nuclear energy, and energy efficiency."

Frank von Hippel, a nuclear physicist, is a Professor of Public and International Affairs at Princeton University, where he has worked since 1974. He has worked on fissile material policy issues for the past 30 years including those relating to commercialization of plutonium recycle, ending the production of plutonium and highly-enriched uranium for weapons, and ending the use of highly enriched uranium as a reactor fuel. He has also worked in other areas of nuclear arms control, nonproliferation and energy policy.



He is currently Co-Chair of the International Panel on Fissile Materials. In 1993-4, he served as Assistant Director for National Security in the White House Office of Science and Technology Policy and played a major role in developing US-Russian cooperative programs to increase the security of Russian nuclear-weapons materials.

DISSERTATION AWARDS

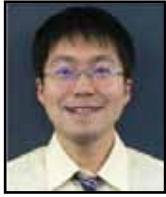
Andreas Acrivos Dissertation Award in Fluid Dynamics (2009)

Xiaoyi Li

United Technologies Research Center

Citation: "Computational study of fluid particles: dynamics of drops, rheology of emulsions and mechanics of biological cells."

Xiaoyi Li received a Bachelor of Science in Thermal Fluid Engineering from the University of Science and Technology of China in May 2001. He conducted graduate research in the Department of Mechanical Engineering at the University of Delaware and obtained his PhD in 2007.



His thesis work on the multi-phase flow of drops, capsules and cells and was published in several fluid dynamics journals.

After graduation, he was working as a Postdoctoral Research Associate in the Center for Advanced Modeling and Simulation at Idaho National Laboratory. The work involved multi-phase fluid dynamics modeling of complex subsurface reactive transport processes with applications to contaminant immobilization and shale oil extraction. Currently, Xiaoyi is working as a Senior Research Scientist at United Technologies Research Center. His current research focuses on multi-scale multi-phase flow modeling of spray atomization in reacting environment as manifested in aero-engines, rockets and industrial gas turbines.

Outstanding Doctoral Thesis Research in Atomic, Molecular and Optical Physics Award (2009)

Andrew Ludlow

NIST-Boulder

Citation: "The Strontium Optical Lattice Clock: Optical Spectroscopy with sub-Hertz Accuracy."

Javier von Stecher

JILA-NIST

Citation: "Trapped Ultracold Atoms with Tunable Interactions."

Andrew Ludlow pursued his undergraduate studies at Brigham Young University in Provo, Utah. There he worked with Dr. Scott Bergeson, using optical cavities and laser thermometry techniques to study two photon absorption processes in crystals. After graduating magna cum laude with a B.S. in physics from BYU, in 2002 he began his doctoral studies at the University of Colorado in Boulder. Following time in various laboratories as part of the Optical Science and Engineering Graduate Fellowship Program at CU, he began research in the group of Dr. Jun Ye at JILA.



Andrew's doctoral dissertation presents the development of an optical atomic clock based on ultracold neutral strontium atoms confined in an optical lattice. This work culminated in an accuracy evaluation of the newly constructed strontium optical frequency standard, demonstrating one of the smallest frequency uncertainties of any standard. These efforts contributed to the international acceptance of the strontium standard.

Javier von Stecher attended the University of Buenos Aires where he worked on the Casimir effect under Prof. F. D. Mazzitelli of the Physics Department. In 2002, he earned his Licenciatura degree in physics. In 2003, he moved to Boulder, Colorado, to begin graduate studies at the University of Colorado. In 2004, he joined Chris Greene's group at JILA, a joint institute of the National Institute of Standards and Technology and the University of Colorado, Boulder.



His research focused on the study of ultracold few-body systems with tunable interactions. He was able to improve the general understanding of few-body phenomena, in particular four-body processes. Since defending his dissertation in 2008, he has joined Dr. Ana Maria Rey's group at JILA as a post-doctoral research associate.

He is currently studying ways to control and manipulate quantum mechanical interactions in many-body quantum systems at both nano and mesoscopic scales.

Outstanding Doctoral Thesis in Beam Physics Award (2009)

Ryoichi Miyamoto

University of Texas, Austin

Citation: "Diagnostics of the Fermilab Tevatron using an AC Dipole"

Ryoichi Miyamoto was born in Tokyo in 1975. He earned a BS in Physics in 1999 from Tokyo Science University, and then moved to the University of Texas at Austin where he earned his PhD degree in Physics

Vodopyanov, Konstantin L.
Stanford University
Laser Science (DLS)
Citation: For development of a new class of broadly-tunable infrared and terahertz sources based on nonlinear-optical conversion in bulk, micro- and nano- structured media, and their application to spectroscopic studies including demonstration of electromagnetically-induced transparency in quantum wells.

Wang, Juwen
SLAC
Physics of Beams (DPB)
Citation: For his leadership in designing, building and testing a large variety of disk-loaded accelerator structures for electron-positron linear colliders and his pioneering studies of RF breakdown in these structures.

Wang, Michelle D.
Cornell University
Biological Physics (DBP)
Citation: For developing novel single molecule techniques in biophysics for measuring protein binding locations on DNA and the torsion of DNA under stress, with applications to the investigation of DNA packing/unpacking and studies of molecular motors which operate on DNA.

Wei, Timothy
Rensselaer Polytechnic Institute
Fluid Dynamics (DFD)
Citation: For development of high resolution flow measurements for turbulent flow studies of relevance to fundamental fluid mechanics, industrial applications, and medicine, and contributions to the fluid dynamics profession through outreach to government and the community.

Weitering, Hanno H.
University of Tennessee
Condensed Matter Physics (DCMP)
Citation: For contributions to electronic instabilities and magnetic phenomena at surfaces, interfaces, and in thin film materials.

Westfall, Catherine L.
Michigan State University
History of Physics (FHP)

Citation: For her pioneering historical research on five American national laboratories, and for her organizational work in the history of physics, especially in the productive ongoing series of Laboratory History Conferences.

White, Nicholas E.
Goddard Space Flight Center
Astrophysics (DAP)
Citation: For his visionary leadership of data archiving for astrophysics missions and activism in initiating and promoting new missions in NASA's astrophysics program.

Whitesides, George M.
Harvard University
Biological Physics (DBP)
Citation: For his manifold contributions to the physics of biology, materials, and surfaces, including new scientific insights in studies of molecular self-assembly, soft lithography, and micro-fluidics.

Wilks, Scott
Lawrence Livermore National Laboratory
Plasma Physics (DPP)
Citation: For pioneering contributions to the understanding of intense and ultra-intense laser plasma interactions and their applications to high energy density science, including fast ignition, ion acceleration, and positron generation.

Winer, Brian L.
Ohio State University
Particles and Fields (DPF)
Citation: For his leadership, direction and contributions in the discovery of the top quark and his development of state-of-the-art high speed trigger electronics which maximized the physics potential of Run II at the Tevatron.

Wojtsekhowski, Bogdan B.
Thomas Jefferson National Accelerator Facility
Hadronic Physics (GHP)
Citation: For outstanding contributions to instrumentation at Jefferson Lab and his leadership role in studies of nucleon structure, particularly real Compton scattering on the proton and the neutron charge form factor.

Wolfson, Richard
Middlebury College
Physics and Society (FPS)
Citation: For outstanding work in educating the general public and college-level students on energy, environmental issues, and physics, in contributing to the local and state communities in Vermont in striving to achieve carbon neutrality, and in research in astrophysics involving numerous undergraduates.

Wood, Darien R.
Northwestern University
Particles and Fields (DPF)
Citation: For contributions to the exploration of the electroweak sector and technical and scientific leadership of the DZero experiment.

Wu, Yue
University of North Carolina, Chapel Hill
Materials Physics (DMP)
Citation: For pioneering NMR studies of structures and dynamics of bulk metallic glasses, and of nanotubular materials including their interactions with guest molecules.

Xu, Nu
Lawrence Berkeley National Laboratory
Nuclear Physics (DNP)
Citation: For important contributions to the observation of partonic collectivity.

Yakovlev, Dmitri
Univ. of Dortmund
Condensed Matter Physics (DCMP)
Citation: For investigations of carrier and ionic spin dynamics in low-dimensional structures, including magnetic polaron formation.

Yazdani, Ali
Princeton University
Condensed Matter Physics (DCMP)
Citation: For electronic structure studies of high-temperature superconductors and magnetic semiconductors through scanning-tunneling microscopy and spectroscopy.

Zakhidov, Anvar
University of Texas at Dallas

Materials Physics (DMP)
Citation: For pioneering contributions to the design, fabrication, characterization and understanding of advanced functional nanomaterials and associated devices, from carbon nanotubes, superconducting or magnetic fullerenes and photonic crystals to solar cells, OLEDs and cold field emission cathodes.

Zegenhagen, Jorg
European Synchrotron Rad Fac
International Physics (FIP)
Citation: For his innovative contributions to the study of surfaces and interfaces with synchrotron radiation and his support of international science.

Zhang, Jin Z.
University of California, Santa Cruz
Chemical Physics (DCP)
Citation: For important fundamental understanding of photo-physical properties and charge carrier dynamics of semiconductor and metal nanomaterials based on ultrafast studies.

Zhang, Shiwei
College of William & Mary
Computational Physics (DCOMP)
Citation: For pioneering work in algorithmic innovation of quantum Monte Carlo methods and their applications to many fields of fermion physics including condensed matter, quantum chemistry, nuclear physics, and cold-atom research.

Zhong, Dongping
Ohio State University
Biological Physics (DBP)
Citation: For his outstanding contributions to biophysics, by brilliantly integrating techniques of molecular biology and state-of-the-art laser physics to elucidate the mechanism of macromolecular hydration and the impact of protein structure on dynamics.

Zurek, Wojciech H.
Los Alamos National Laboratory
Quantum Information, Concepts, and Computation (GQI)
Citation: For his seminal contributions to the theory of quantum decoherence, and his contributions to quantum foundations more generally.

Call for Nominations for 2011 APS Prizes and Awards

To nominate a candidate for any of the APS prizes or awards, visit the appropriate link under the prize name to complete a nomination form. Nomination deadline is July 1, 2010, unless otherwise indicated on the website.

PRIZES	cfm?PRIZE=LILIENFELD	Arthur L. Schalow Prize	cfm?PRIZE=DUVALL
Hans A. Bethe Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=BETHE	James Clerk Maxwell Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=MAXWELL	http://prizes.aps.org/prizes/login.cfm?prize=SCHAWLOW	Excellence in Physics Education Award http://prizes.aps.org/prizes/login.cfm?PRIZE=EDUCATION
Tom W. Bonner Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=BONNER	James C. McGroddy Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=MCGRODDY	Prize to a Faculty Member for Research in an Undergraduate Institution http://prizes.aps.org/prizes/login.cfm?PRIZE=UNDERGRADUATE	Joseph F. Keithley Award http://prizes.aps.org/prizes/login.cfm?PRIZE=KEITHLEY
Herbert P. Broida Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=BRUIDA	Lars Onsager Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=ONSAGER	Robert R. Wilson Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=WILSON	Maria Goeppert-Mayer Award http://prizes.aps.org/prizes/login.cfm?PRIZE=MGM
Oliver E. Buckley Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=BUCKLEY	Abraham Pais Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=PAIS	AWARDS, MEDALS & LECTURESHIPS	Nicholson Medal http://prizes.aps.org/prizes/login.cfm?PRIZE=NICHOLSON
Davisson-Germer Prize http://prizes.aps.org/prizes/login.cfm?PRIZES=DAVISSON	George E. Pake Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=PAKE	David Adler Lectureship http://prizes.aps.org/prizes/login.cfm?PRIZE=ADLER	Francis Pipkin Award http://prizes.aps.org/prizes/login.cfm?PRIZE=PIPKIN
Max Delbruck Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=DELBLRUCK	W.K.H. Panofsky Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=PANOFSKY	Leroy Apker Award http://www.aps.org/programs/honors/awards/apker.cfm	Leo Szilard Lectureship http://prizes.aps.org/prizes/login.cfm?PRIZE=SZILARD
Einstein Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=EINSTEIN	Earle K. Plyler Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=PLYLER	Edward A. Bouchet Award http://prizes.aps.org/prizes/login.cfm?PRIZE=BOUCHET	John Wheatley Award http://prizes.aps.org/prizes/login.cfm?PRIZE=WHEATLEY
Fluids Dynamics Prize http://prizes.aps.org/prizes/login.cfm?prize=FLUID	Polymer Physics Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=POLYMER	Joseph A. Burton Award http://prizes.aps.org/prizes/login.cfm?PRIZE=BURTON	DISSERTATION AWARDS
Dannie Heineman Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=HEINEMAN	I.I. Rabi Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=RABI	John Dawson Award for Excellence in Plasma Physics Research http://prizes.aps.org/prizes/login.cfm?PRIZE=PLASMA	Andreas Acrivos Patrice Le Gal, IRPHE, 49 rue F. Joliot-Curie, Marseilles 13384, France, Phone (334) 961-3977 Email legal@irphe.univ-mrs.fr
Irving Langmuir Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=LANGMUIR	Aneesur Rahman Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=RAHMAN	John H. Dillon Medal http://prizes.aps.org/prizes/login.cfm?PRIZE=DILLON	Marshall Rosenbluth Joel Fajans, University of California, Berkeley, Dept of Physics, MS 7300 LeConte Hall, Berkeley, CA 94720, Phone (510) 642-3872, Fax (510) 643-8497 Email joel@physics.berkeley.edu
Julius Edgar Lilienfeld Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=SAKURAI	J.J. Sakurai Prize http://prizes.aps.org/prizes/login.cfm?PRIZE=SAKURAI	George E. Duvall Shock Compression Science Award http://prizes.aps.org/prizes/login.cfm?PRIZE=SHOCK	

2010 APS Fellowship Nomination Deadlines

Fellowship nominations may be submitted at any time, but must be received by the deadlines listed below for the next review. For submittal information see: <http://www.aps.org/programs/honors/fellowships/nominations.cfm>.

DIVISIONS		TOPICAL GROUPS	APS General Nominations
Astrophysics	04/01/2010	Few Body	06/01/2010
Biological Physics	05/01/2010	Gravitation	04/01/2010
Chemical Physics	PAST	Hadronic Physics	04/01/2010
Computational Physics	05/01/2010	Instrument & Measurement Science	05/01/2010
DAMOP (Atomic, Molecular, Optical)	04/01/2010	Magnetism and Its Applications	06/01/2010
DCMP (Condensed Matter) PAST		Plasma Astrophysics	04/01/2010
Fluid Dynamics	03/29/2010	Precision Measurement & Fund. Const.	05/01/2010
Polymer Physics	05/01/2010	Quantum Information	05/01/2010
Laser Science	04/01/2010	Shock Compression	04/01/2010
Materials Physics	PAST	Statistical & Nonlinear Physics	05/01/2010
Nuclear Physics	04/01/2010		
Particles & Fields	04/01/2010		
Physics of Beams	03/01/2010		
Plasma Physics	04/01/2010		
FORUMS			
Education	04/01/2010		
History of Physics	06/01/2010		
Industrial and Applied Physics	05/01/2010		
International Physics	05/01/2010		
Physics & Society	05/01/2010		