

Spring 2012 PRIZES AND AWARDS

APS Announces Spring 2012 Prize and Award Recipients

Thirty-four prizes and awards will be presented during special sessions at three spring meetings of the Society: the 2012 March Meeting, February 27-March 2, in Boston, MA, the 2012 April Meeting, March 31-April 3, in Atlanta, GA, and the 2012 Atomic, Molecular and Optical Physics Meeting, June 4-8, in Orange County, CA.

Citations and biographical information for each recipient follow. The Apker Award recipients appeared in the December 2011 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 website (<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 pages 8 of this insert.

2012 Prizes, Awards and Dissertations

Will Allis Prize for the Study of Ionized Gases

Philip G. Burke
Queen's University Belfast

Citation: "For pioneering and sustained theoretical development of R-Matrix computational methods for electron-atom and electron-molecule collisions important in modeling ionized gases and plasmas."

Emeritus professor Phil Burke obtained his B.Sc in physics from University College Exeter in 1953 and his Ph.D. in theoretical nuclear physics at University College London in 1956 under the supervision of Sir Harrie Massey. He was appointed assistant lecturer in the University of London Computer Centre in 1957. In 1959 Burke took up an appointment at the Lawrence Radiation Laboratory Berkeley where he carried out research in Luis Alvarez's Bubble Chamber group and in Ken Watson's theory group. He returned to the UK in 1962 to take up an appointment at the Atomic Energy Research Establishment Harwell. In 1967 he was appointed professor of mathematical physics in Sir David Bates's department at Queen's University Belfast where he established his group which uses R-matrix computational methods in the study of collision processes in atomic, molecular and optical physics of importance in many applications including the analysis of astronomical observations and the modeling of ionized gases and plasmas.



framework for the physics of exotic nuclei."

Witold Nazarewicz is a professor of physics at the Department of Physics, University of Tennessee and University of Warsaw, Poland, and Distinguished R&D Staff at the Physics Division, Oak Ridge National Laboratory. His broad expertise is in nuclear physics, interdisciplinary many-body science, and computational physics. His research has made important contributions to nuclear structure and reaction physics, especially in the areas of rare isotopes and nuclear dynamics at the extremes of isospin, mass, and angular momentum. He has served on three committees of the National Research Council of the National Academies. He serves as a Co-Director of the UNEDF SciDAC Program; Associate Editor in *Nuclear Physics, Reviews of Modern Physics*; Editor with *Computer Physics Communications*; member of FRIB Science Advisory Committee; member of the steering committees of JUSTIPEN and FUSTIPEN.



Oliver E. Buckley Condensed Matter Physics Prize

Charles L. Kane
University of Pennsylvania

Laurens W. Molenkamp
University of Wuerzburg

Shoucheng Zhang
Stanford University

Citation: "For the prediction and subsequent discovery of the new phase of matter known as topological insulators in two dimensions, also known as quantum spin Hall insulators, which lead to its generalization and prediction in three dimensional system."

Charles Kane received an undergraduate degree in physics from the University of Chicago in 1985 and a Ph.D. in physics from MIT in 1989. After a two-year postdoc at IBM T.J. Watson Research Center he joined the faculty at the University of Pennsylvania, where he is currently Professor of Physics and Astronomy. Kane is known for his theoretical work on the quantum Hall effect, Luttinger liquids and carbon nanotubes. Recently his research has focused on the theory of topological phenomena in insulators, superconductors and strongly correlated electronic materials. Kane is a Fellow of the APS and shared the 2010 Europhysics prize, awarded by the European Physical Society.



Laurens Molenkamp received undergraduate in 1980 and graduate degree in 1985 in physical chemistry from the University of Groningen, the Netherlands, specializing in coherent optical spectroscopy. After completing his Ph.D., he joined Philips Research Laboratories in Eindhoven, the Netherlands, where he soon became involved in quantum transport studies in semiconductor-based nanostructures. This remained his field of interest when he moved back into academia, first joining the RWTH in Aachen, Germany, as an associate professor (1994), and subsequently (1999) the University of Würzburg, where he holds the Chair of Experimental Physics 3 and leads the II-VI MBE unit. His research currently revolves around quantum transport and semiconductor spintronics, combining nanolithography and low temperature transport experiments with the specialized semiconductor epitaxy available at Würzburg.



Shoucheng Zhang is the JG Jackson and CJ Wood professor of physics at Stanford University. He received his BS degree from the Free University of Berlin in 1983, and his Ph.D. from the State University of New York at Stony Brook in 1987. He was a postdoctoral fellow at the Institute for Theoretical Physics in Santa Barbara from 1987 to 1989

and a Research Staff Member at the IBM Almaden Research Center from 1989 to 1993. He joined the faculty at Stanford in 1993. He is a condensed matter theorist known for his work on topological insulators, spintronics and high temperature superconductivity. He received the Guggenheim fellowship in 2007, the Alexander von Humboldt research prize in 2009 and the Europhysics prize in 2010 for his theoretical prediction of the quantum spin Hall effect and topological insulators.



Davison-Germer Prize in Atomic or Surface Physics

Jean Dalibard
Laboratoire Kastler Brossel

Citation: "For the development of soft x-ray based spectroscopy and microscopy leading to fundamental contributions to the understanding of chemical bonding, magnetism and dynamics at surfaces and interfaces."

Jean Dalibard is director of research at CNRS and works in the Kastler Brossel laboratory at Ecole normale supérieure (ENS). He is also professor at Ecole polytechnique. After an internship in Alain Aspect's team on the violation of Bell's inequality (1982), Dalibard earned his doctorate in Physics at ENS in 1986 under the supervision of Claude Cohen-Tannoudji. In 1991 he was an invited scientist at NIST in the group of Bill Phillips. Dalibard has been involved in the developments of methods for cooling and trapping atoms with light, with contributions from experimental and theoretical sides. His recent interests deal with the physics of quantum gases, such as the dynamics of vortices in rotating Bose-Einstein condensates. He is also interested in low-dimensional aspects of many-body physics, in particular the Berezinskii-Kosterlitz-Thouless superfluid transition that shows up in 2D atomic quantum gases.



Max Delbruck Prize in Biological Physics (2011)

William A. Eaton
NIDDK, National Institutes of Health

Citation: "In recognition of his contributions to the understanding of protein folding, dynamics, and function. Eaton's innovative experiments provided a detailed characterization of the energy landscape of proteins."

William Eaton is Distinguished Investigator at the National Institutes of Health in Bethesda, Maryland. Eaton is a leading expert on the physics of proteins. His lab introduced optical triggering methods to dramatically increase the time resolution in kinetic studies of protein folding, function, and aggregation, and developed statistical mechanical models for these processes. His current research is focused on single molecule fluorescence studies of protein folding dynamics. Eaton earned B.A (1959), M.D. (1964), and Ph.D. (1967) degrees from the University of Pennsylvania. His Ph.D. thesis research on the electronic spectroscopy of heme-proteins was supervised by Robin Hochstrasser. In 1968 he moved to the NIH as a Medical Officer in the US Public Health Service. Since 1986 Eaton has served as Chief of the Laboratory of Chemical Physics, NIDDK, the principal biophysical science laboratory at NIH.



Fluid Dynamics Prize (2011)

Tony Maxworthy
University of Southern California

Citation: "For outstanding and sustained contributions to fluid dynamics, elucidating stability of fluid interfaces, vortex dynamics, insect flight and, notably, to geophysical and environmental

fluid dynamics, including stratified and rotating flow phenomena, gravity currents, and convective processes."

Tony Maxworthy is Smith International Professor of Mechanical Engineering and Professor of Aerospace Engineering at the University of Southern California. He received his B.Sc (with 1st Class Honours) from Imperial College, London in 1954, an M.S. degree in 1955 from Princeton University and a Ph.D. in 1960 from Harvard University, all in Mechanical Engineering. His primary research interests are in the areas of environmental and geophysical fluid mechanics, aerodynamics, turbulence, solidification, convection and bio-fluid mechanics. He has received the G. I. Taylor Award of the Society of Engineering Science, a von Humboldt Senior Scientist Award and the Otto Laporte Award of the American Physical Society among several. He has been a Visiting Professor and Fellowship holder at a number of universities and research centres across the world as well as a consultant to several industrial concerns.



Dannie Heineman Prize for Mathematical Physics

Giovanni Jona-Lasinio
University of Rome

Citation: "For contributions to the interaction between statistical mechanics, field theory and the theory of elementary particles, including spontaneous symmetry breaking, critical phenomena and a general theory of dissipative systems."

Giovanni Jona-Lasinio graduated in physics at the University of Rome in 1956. He then became a researcher at the Istituto Nazionale di Fisica Nucleare and an assistant professor in the physics department of the University of Rome. He was nominated to be full professor at the University of Padua in 1970 and he returned to the University of Rome in 1974 where he is currently professor emeritus. He has spent several years abroad visiting the University of Chicago, CERN, MIT, IHES and the Université Pierre et Marie Curie in Paris.

He is most widely known for having constructed with Yoichiro Nambu the first model in elementary particle physics with spontaneous symmetry breaking (NJL model), for the early introduction with Carlo Di Castro of the field-theoretic renormalization group in the study of critical phenomena and for having developed recently a theory of stationary states far from equilibrium, going for the first time beyond the near equilibrium theory of Onsager.



Frank Isakson Prize for Optical Effects in Solids

Dimitri Basov
University of California, San Diego

Citation: "For innovative and insightful use of infrared spectroscopy to probe correlated electron systems."

Dimitri N. Basov received the M.S. degree in 1988 from Moscow Engineering Physics Institute and the Ph.D. in 1991 from Lebedev Physics Institute, Academy of Sciences of Russia. He was a postdoctoral Research Associate at the University of Regensburg in 1991 and McMaster University from 1992 to 1996. In 1996, he held an Assis-

Table of Contents

- 1 Prize and Award Recipients
- 5 New APS Fellows
- 8 Nominations for 2013 Prizes and Awards

Tom W. Bonner Prize in Nuclear Physics

Witold Nazarewicz
University of Tennessee

Citation: "For his foundational work in developing and applying nuclear Density Functional Theory, motivating experiments and interpreting their results, and implementing a comprehensive theoretical



Manuel Peimbert received his BA in physics from the Universidad Nacional Autónoma de México, UNAM, in 1962 and his Ph.D. in Astronomy from the University of California, Berkeley, in 1967. He has been a Professor at the Institute of Astronomy, UNAM, since 1968.

Both Sylvia Torres-Peimbert and Manuel Peimbert have been working on the study of physical conditions in gaseous nebulae, in particular on the chemical composition of H II regions and planetary nebulae in our Galaxy and other galaxies, the study of the chemical evolution of galaxies and together with Silvia Torres-Peimbert on the determination of the primordial helium abundance based on very metal poor extragalactic H II regions.



Sylvia Torres-Peimbert received her BA in physics from the Universidad Nacional Autónoma de México, UNAM, in 1964 and her Ph.D. in Astronomy from the University of California, Berkeley, in 1969. She has worked at the Instituto de Astronomía UNAM, since 1969, where she became Professor in 1973. She was director of the same institution from 1998 to 2002.

tant Physicist appointment at Brookhaven National Laboratory. He joined the faculty of the University of California, San Diego as an Assistant Professor in 1997 and was promoted to Professor in 2001. At present, he serves as the Chair of the Physics Department. Throughout his career, Basov has developed and used various infrared techniques to investigate novel electronic and magnetic phenomena in a wide variety of materials including high- T_c superconductors, transition metal oxides, ferromagnetic semiconductors, organic materials, and—most recently—graphene. A leitmotif of his research is to explore optical phenomena originating from many body effects and electronic correlations.



Julius Edgar Lilienfeld Prize

Gordon Kane

University of Michigan

Citation: "For important contributions to the phenomenology of elementary particle physics, especially supersymmetry, and for his accomplished record as a popularizer of science."

Gordon Kane got his Ph.D. at the University of Illinois in 1963, was a postdoc at Johns Hopkins University, and in 1965 became assistant professor at University of Michigan, becoming full professor in 1975. He was a J.S. Guggenheim Fellow at Oxford University and Rutherford Laboratory for 1971-1972, visitor at Stanford Linear Accelerator Laboratory (1979), Scientific Associate at CERN (1986), and Member, Institute for Advanced Study (2007). He is Victor Weisskopf Distinguished University Professor, Director Emeritus of the Michigan Center for Theoretical Physics, and Adjunct Professor, School of Art and Design.



Kane works in theoretical particle physics, astrophysics, and cosmology, focusing on Large Hadron Collider physics, dark matter, supersymmetry, Higgs boson physics, and string phenomenology. He has written or edited eight books, and three *Scientific American* articles. Two books are for the general public, and others for larger segments of the physics community.

James Clerk Maxwell Prize for Plasma Physics (2011)

Gregor Morfill

Max-Planck Institut für Extraterrestrische Physik

Citation: "For Pioneering, and seminal contributions to, the field of dusty plasmas, including work leading to the discovery of plasma crystals, to an explanation for the complicated structure of Saturn's rings, and to microgravity dusty plasma experiments conducted first on parabolic-trajectory flights and then on the International Space Station."

Gregor Morfill received his B.Sc. degree in physics and his Ph.D. in space plasma physics from Imperial College, London University, in 1967 and 1970, respectively.



After research appointments at Max Planck Institute for Extraterrestrial Physics (MPE), Garching, and Max Planck Institute for Nuclear Physics, Heidelberg, he was appointed Director at MPE in 1984. He holds honorary professorships at the University of Leeds (United Kingdom) and the University of Arizona, Tucson (U.S.A.). In 2003 he received an Honorary Doctorate from the Technical University of Berlin (Germany), in 2010 he was awarded Fellow of the Institute of Physics (United Kingdom) and in 2011 he was appointed into the Scientific Council of Bauman University, Moscow.

His current scientific interests are mostly focused on complex (dusty) plasmas—theory, laboratory and experiments on the International Space Station, planetary and astrophysical plasmas, and plasma applications in hygiene and medicine.

James C. McGroddy Prize for New Materials

Robert Cava

Princeton University

Citation: "For pioneering discovery of new strongly correlated materials, especially novel superconductors."

Robert Cava is a Professor in Chemistry and Materials at Princeton University. He began at Princeton in 1997 after working at Bell Laboratories for 17 years, where he was a Distinguished Member of Technical Staff. He received his undergraduate degree in Materials Science in 1974 and his Ph.D. in Ceramics in 1978, both from MIT, after which he was a National Research Council Postdoctoral Fellow at the National Institute of Standards and Technology. He has been recipient of the New Materials and Inorganic Chemistry prizes of the American Chemical Society, and the President's



Award for Distinguished Teaching and the Phi Beta Kappa Teaching Award at Princeton. His research is in the discovery and structural and chemical characterization of new materials with interesting physical properties, with a particular emphasis on superconductors, geometrically frustrated magnets, 4d and 5d metal oxides, and, recently, topological insulators.

Lars Onsager Prize

Ian Affleck

University of British Columbia

Citation: "For his pioneering role in developing and applying the ideas and methods of conformal field theory to important problems in statistical and condensed matter physics, including the quantum critical behavior of spin chains and (with Ludwig) the universal behavior of quantum impurity systems."

Ian Affleck received his B.Sc. in Physics and Mathematics from Trent University (Peterborough, Ontario) in 1975 and his Ph.D. from Harvard in 1979, with Sidney Coleman. After a post-doc in the Harvard Society of Fellows, Affleck held faculty positions at Princeton, Boston University and University of British Columbia, where he has spent most of the last 24 years. He began his research career in high energy theory, working mainly on instantons and supersymmetry, before switching into condensed matter theory in 1984, during a sabbatical at CEN Saclay, while his colleagues back at Princeton were all switching into string theory. Since then his research has benefited from applying field theory techniques from high energy theory to problems in condensed matter theory with notable accomplishments in quantum magnetism, theories of high- T_c superconductivity and the Kondo effect. He delights in finding mathematically elegant solutions to experimentally relevant problems.



Abraham Pais Prize for History of Physics

Lillian Hoddeson

University of Illinois

Citation: "For her leadership and contributions to writing the history of twentieth-century physics, her pioneering studies of American research laboratories—particularly Bell Labs, Los Alamos and Fermilab—and her perceptive scientific biography of John Bardeen."

Lillian Hoddeson, Professor of History Emeritus and the Thomas Siebel Chair in the History of Science at the University of Illinois, began her career in physics (AB, Barnard, 1961; Ph.D., Columbia, 1965). After a decade of teaching at Barnard and Rutgers, she returned in the history of science at Princeton and embarked on a study of the beginnings of solid-state physics culminating in *Out of the Crystal Maze*, the first comprehensive history of solid-state physics. Meanwhile, she co-edited three volumes on the rise of particle physics and coauthored: *Critical Assembly*, the first technical history of the atomic bomb; *Crystal Fire*, a history of the transistor; *True Genius*, a biography of John Bardeen; and *Fermilab: Physics, the Frontier, and Megascience*. She is presently completing a co-authored history of the Superconducting Super Collider, a monograph on oral history and human memory, and a book about the inventor Stanford Ovshinsky.



George E. Pake Prize

Thirumalai Venkatesan

National University of Singapore

Citation: "For his exemplary scientific career in research, industrial leadership, and guidance of new generations of physicists in the creation new ventures by innovation."

Prof. Venkatesan spent 17 years with Bell Labs and Bellcore in various capacities before becoming a Professor of ECE and Physics at the Superconductivity Center at University of Maryland for the next 17 years. In between he was the founding director of the Surface Modification Labs at Rutgers University and over the last 4 years he has established a multi-disciplinary Nano Institute at the National University of Singapore where he is the Director. He is the inventor of the pulsed laser deposition process and has published over 500 papers in the field of oxide films and hetero structures and has been a pioneer in the field of Oxide Electronics. He is among the top 100 most cited Physicists (global rank of 66) with a Hirsch index of ~80. He founded Neocera in 1989 and this company is globally recognized for PLD systems and magnetic field imaging magma systems. His students/ researchers (about 10 of them) have founded close to 15 different companies. He is a Fellow of the APS, Fellow of the World Innovations Forum, and winner of the Bellcore Award of excellence and has been a member of the Physics Policy Committee in Washington DC. He got his Ph.D. from The City University of



New York in 1977 and his MS and BS degrees from the Indian Institute of Technology at Kanpur and Kharagpur respectively. His current field of interest is electronic and magnetic properties of nano structured oxide films and interfaces.

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

William B. Atwood

University of California, Santa Cruz

Citation: "For his leading work on the design, construction, and use of the Large Area Telescope on the Fermi Gamma-Ray Satellite, enabling numerous new results in gamma-ray astrophysics and fundamental physics."

William Atwood received his B.S. degree from the California Institute of Technology in 1970. Atwood was employed for his final two years at Caltech by the HEP Users group.



Atwood did his graduate studies at SLAC, Stanford University under Richard Taylor. His thesis was on deep inelastic electron scattering. Atwood received his Ph.D. in 1975.

After spending a year at CERN working in Sam Ting's group at the ISR, Atwood returned to SLAC where he became an assistant professor and then a permanent staff physicist in 1983. He participated in the Delco-at-PEP experiment, the SLD, and also worked on the SLC machine in the later 1980's.

In 1989 he spent a sabbatical year at CERN working on ALEPH. In 1992 he joined with Peter Michelson of the Stanford Physics Dept. to propose a satellite-born gamma ray telescope called GLAST. The concept quickly gained traction in both the HEP and Astrophysics communities and was successfully launched into low earth orbit in June of 2008.

Atwood became an adjunct professor at UCSC in 2001 and continues in that position today. Atwood and his colleagues at UCSC played pivotal roles in the fabrication of the hardware and analysis software for GLAST.

Earle K. Plyler Prize for Molecular Spectroscopy

Andrei Tokmakoff

Massachusetts Institute of Technology

Citation: "For pioneering work in the development and application of two-dimensional infrared spectroscopy."

Professor Andrei Tokmakoff received his B.S. from California State University at Sacramento in 1988, and his Ph.D. degree from Stanford University in 1995. He joined the Department of Chemistry at MIT in 1998, following postdoctoral stays at the Technical University in Munich, the University of Chicago, and the University of California, Berkeley. He has been a Professor of Chemistry at MIT since 2007.



Tokmakoff's research interests focus on studies of molecular dynamics in chemistry and biophysics using ultrafast vibrational spectroscopy. He has developed two-dimensional infrared spectroscopy for use in characterizing hydrogen-bonding dynamics in water, and conformational dynamics of proteins and peptides.

His awards and honors include the David and Lucille Packard Fellowship, the Alfred P. Sloan Research Fellowship, the Coblentz Award, the National Fresenius Award, and Fellowship in the Optical Society of America.

Polymer Physics Prize

Matthew Tirrell

University of Chicago

Citation: "For his pioneering achievements in the area of polymer dynamics, polymers at surfaces and interfaces, and polymers in confined geometries."

Biography unavailable at press time.

Aneesur Rahman Prize for Computational Physics

Kai-Ming Ho

Iowa State University

Citation: "For his pioneering work in the development of computational physics for photonic crystal and atomic cluster structures calculations."

Biography unavailable at press time.

Andrei Sakharov Prize

Mulugeta Bekele

University of Addis Ababa

Richard Wilson

Harvard University

Citation: "For tireless efforts in defense of human rights and freedom of expression and education anywhere in the world, and for inspiring students, colleagues and others to do the same."

Mulugeta Bekele did his undergraduate stud-

ies in physics at the then Haile Selassie I University (currently Addis Ababa University) and at Union College, Schenectady, NY graduating in 1970. He was employed as a Graduate Assistant during the year 1970/71 at HSIU. He then went to the University of Maryland, College Park, MD for his graduate studies for two years and received his masters degree in 1973. Mulugeta returned to Ethiopia immediately after graduation and became a Lecturer at HSIU. The Ethiopian Revolution took place in 1974 when the Emperor was removed and a military government came to power. Mulugeta was put in prison by the government for seven years. After prison, he joined his old department and continued teaching physics for the six years.



He then went to India to do his Ph.D. at Indian Institute of Science, Bangalore. After six years of his stay there, he returned to AAU in 1997. He is part of a research group involved in polymer and biological physics that has been getting support from Swedish International Science Programme as far back as the late nineteen eighties. He is a founding member of the Ethiopian Physical Society and currently serving the Society as its President.

Richard Wilson was born in Putney, London, UK on April 29th 1926 (in the middle of a general strike). He went to St Paul's School, not in the London building but when evacuated to Easthampstead Park in Berkshire, from 1939 to 1943. From 1943 to 1955 he was at Christ Church, Oxford. He was awarded the BA in 1946, MA, DPhil in 1949 and then became research lecturer. Since 1955 he has been at Harvard University and is now Mallinckrodt professor of Physics (emeritus). His initial work was on nucleon-nucleon scattering, and then electron and muon scattering. He has received several awards including a medal as "Chernobyl Liquidator" in the USSR in 1987 and the Ettore Majorana (Erice) Prize for Science for Peace in 2006 and a Presidential Citation from the American Nuclear Society in 2008. He has written over 900 papers and publications.



J.J. Sakurai Prize for Theoretical Particle Physics

Guido Altarelli

Universita di Roma Tre

Torbjörn Sjöstrand

Lund University

Bryan Webber

University of Cambridge

Citation: "For key ideas leading to the detailed confirmation of the Standard Model of particle physics, enabling high energy experiments to extract precise information about Quantum Chromodynamics, electroweak interactions and possible new physics."

Guido Altarelli received his degree in physics from the University La Sapienza in Rome, in 1963. He then attended the University of Florence, graduating in 1965. He was at the University of Florence from 1965 to 1968 then moved to New York University in 1968 through 1969 then again moved to Rockefeller University until 1970. He then moved back to University La Sapienza where he stayed until 1992 when he became a professor at the University of Roma Tre. He was also the Senior Staff Physicist at the Theory Division of CERN from 1987 to 2006.



He is author or coauthor of more than 200 scientific papers that cover a broad range of problems on particle interactions. In QCD he contributed corrections to the weak non-leptonic effective Hamiltonian, parton evolution equations, theory of Drell-Yan processes, polarized parton densities, and structure functions at small x. In electroweak interactions, he contributed precision tests, epsilon parameters, weak decays, and theoretical bounds on the Higgs mass.

Torbjörn Sjöstrand obtained his Bachelor degree in 1976 and his Ph.D. in 1982, both from Lund University (Sweden). He spent shorter postdoc periods at DESY and Fermilab, was back a few years in Lund, and then 1989-95 was staff member in the CERN theory group. He thereafter returned to Lund, at first as a researcher and since 2000 as a full professor. Starting in 2004 he was on a three-year "sabbatical" at CERN.



Sjöstrand is most known as the main author of the Jetset and Pythia event generators, which describe collision processes by a combination of theory and phenomenological models, many of them developed by himself. These generators have been used by essentially all high-energy collider experiments from the early 80s onwards, and are highly cited. Currently he is working on improving the understanding of LHC data.

Bryan Webber graduated from Oxford in 1964, and joined the Alvarez research group at Berkeley, working on neutral kaon decays at the Bevatron and completing his Ph.D. in experimental particle physics in 1969. He then switched to theoretical physics and began working on strong interactions as a postdoc at LBL. In 1971 he moved to Cambridge, where he headed the theoretical high-energy physics group at the Cavendish Laboratory from 1973 until his retirement in 2010. His main research interest has remained strong interactions, first phenomenological models and then quantum chromodynamics. He enjoys working closely with experimentalists and has made many contributions at the interface between theory and experiment, including the Herwig event generator, new jet-finding algorithms, event shape variables and models for non-perturbative QCD. He continues this kind of work, seeking a more precise description of complex final states at the LHC, as Emeritus Professor of Theoretical Physics at Cambridge.



terests include oxide thin films and heterostructures, high-temperature superconductors, magnetic thin film structures and spintronic materials and devices for advanced sensor, memory, and logic applications. Parkin's discoveries in magnetoresistive thin film structures enable a 1000 fold increase in the storage capacity of magnetic disk drives in little more than a decade. Most recently, Parkin is working on a novel storage class memory device, "Race-track Memory," which could replace both hard disk drives and many forms of conventional solid state memory.



LeRoy Apker Award (2011)

Bethany Jochim
Augustana College

Citation: "Strong-field dissociation dynamics of NO₂⁺: A multiphoton electronic or vibrational excitation."

Djordje Radicevic
Princeton University

Citation: "Holography from Renormalization Group Flows."

Bethany Jochim received her B.A. (summa cum laude) with a major in physics (departmental distinction) from Augustana College in Sioux Falls, SD in May 2011. Her early undergraduate research examined bond rearrangement in ammonia and methane following fast ion impact. Much of her subsequent work has focused on closed-loop coherent control of intense ultrafast laser-induced fragmentation of molecular systems. These research experiences have led her to co-author five articles as an undergraduate, including two as the primary author. Bethany's current research endeavors include laser-induced dissociation of a metastable NO₂⁺ ion beam, the focus of her senior thesis, and also adaptive femtosecond control of isomerization dynamics in acetylene and ethylene. She is currently pursuing her Ph.D. in atomic, molecular, and optical physics at Kansas State University, where she is supported by the Timothy Donoghue Fellowship.



Djordje Radicevic received a BA in physics from Princeton University in May 2011. In 2009, he worked with Professor James Olsen on the search for a new gauge boson at the BaBar experiment at SLAC National Laboratory. In 2010, he worked with Professor Michael Aizenman on generalizing the reflection positivity technique in the rigorous study of phase transitions. Finally, in the summer of 2011 he started working with Professors Herman Verlinde and Christopher Herzog on various aspects of the AdS/CFT correspondence. This work resulted in a senior thesis that linked the renormalization group flow of a d-dimensional planar CFT and the Hamilton-Jacobi flow of a (d+1)-dimensional classical field theory without invoking the AdS/CFT dictionary from string theory. Starting in September 2011, he will pursue his graduate studies at Stanford University, where he plans to study quantum field theory and its applications to particle physics, condensed matter and cosmology.



Edward A. Bouchet Award

Ramon Lopez
University of Texas, Arlington

Citation: "For his contributions to the understanding of magnetic storms, substorms, and solar wind-magnetosphere coupling, his communication of space science to the public, and his extensive work in physics education at all levels."

Ramon E. Lopez is a Professor of Physics at the University of Texas at Arlington. He received a B.S. in Physics from the University of Illinois, Urbana-Champaign, in 1980, and his Ph.D. in Space Physics from Rice University in 1986. His primary research is in space plasma physics, focusing on solar wind-magnetosphere interactions, magnetic storms and substorms, and space weather. He also has an active research program in physics education, with an emphasis on studies of spatial/visual cognition. In addition to his physics research, Dr. Lopez is engaged on a national level in K-12 science education. He was a member of the writing team for the College Board's Standards for College Success Science Standards, and is a member of the team leading the development of the Next Generation Science Standards. He is also active in the communication of space science to the public, publishing in 2002 *Storms From the Sun*, a popular science book about space weather.



Joseph A. Burton Forum Award

Arian Pregonzer
Stanford University

Citation: "For her intellectual and managerial leadership in creating centers that allow international technical and policy experts to explore confidence building measures and other arms control regimes."

Arian L. Pregonzer retired from Sandia National Laboratories in Albuquerque, New Mexico in December 2011. At Sandia, she was Senior Scientist in the Global Security Program, where her responsibilities included initiating new programs in arms control and non-proliferation and developing strategies for nuclear security that intersect multiple laboratory missions. In 2009–2010 she was a visiting scholar at the Center for International Security and Cooperation at Stanford University, where she initiated new research in applying the concepts of systems resilience to nuclear non-proliferation. In 1994 she led the establishment of Sandia's Cooperative Monitoring Center, which promotes dialogue between policy and technology experts. In 2003 she worked with the National Nuclear Security Agency and the Arab Science and Technology Foundation to initiate the Iraqi S&T Engagement Program. Arian Pregonzer has Bachelor's degrees in Physics, Mathematics, and Philosophy from the University of New Mexico. In 1983 she received a Ph.D. in Theoretical Physics from the University of California at San Diego.



Stanley Corrsin Award (2011)

Charles Meneveau
Johns Hopkins University

Citation: "For his innovative use of experimental data and turbulence theory in the development of advanced models for large-eddy simulations, and for the application of these models to environmental, geophysical and engineering applications."

Charles Meneveau is the Louis M. Sardella Professor in the Department of Mechanical Engineering at Johns Hopkins University. He serves as the director of Johns Hopkins University's Center of Environmental and Applied Fluid Mechanics and as the deputy director of JHU's Institute for Data Intensive Engineering and Science. He received his B.S. degree in Mechanical Engineering from the Universidad Técnica Federico Santa María in Valparaiso, Chile, in 1985 and a Ph.D. degree from Yale University in 1989. During 1989/90 he was a postdoctoral fellow at the Stanford University/NASA Ames' Center for Turbulence Research. His area of research is focused on understanding and modeling hydrodynamic turbulence, and complexity in fluid dynamics in general. Special emphasis is placed on the multi-scale aspects of turbulence, using appropriate tools such as subgrid-scale modeling, downscaling techniques, fractal geometry, wavelet analysis, databases, and applications to Large Eddy Simulations, environmental transport and wind energy.



John Dawson Award for Excellence in Plasma Physics (2011)

William Bertsche
Swansea University

Paul Bowe
Aarhus University

Michael Charlton
Swansea University

Joel Fajans
University of California, Berkeley

Makoto Fujiwara
TRIUMF

Jeffrey Hangst
Aarhus University

Niels Madsen
Swansea University

Francis Robicheaux
Auburn University

Daniel Silveira
RIKEN

Dirk van der Werf
Swansea University

Jonathan Wurtele
University of California, Berkeley

Citation: "For the introduction and use of innovative plasma techniques which produced the first demonstration of the trapping of antihydrogen."

Will Bertsche received his Bachelor's degree in Physics from Cornell University in 2000. He received his Ph.D. in 2007 from the University of California, Berkeley where he researched nonlinear kinetic effects in plasmas. Since then, he has been employed as a post-doctoral research assistant for Swansea University and stationed full-time with the ALPHA collaboration at CERN. With the ALPHA collaboration, he



significantly contributed to the design, construction, and operation of the ALPHA apparatus, focusing on topics of plasma manipulation and antihydrogen production.

Paul Bowe bio. unavailable at press time.

Mike Charlton studied Physics at University College London (UCL), graduating with a 1st Class Honours BSc in 1978, before completing his Ph.D. in 1980, also at UCL, on the interactions of low energy positrons in gases. He stayed at UCL for postdoctoral work, being awarded a Science Research Council Postdoctoral Fellowship in 1982 followed by a Royal Society Research Fellowship in 1983. He held this position until 1991, when he was promoted to Reader in Physics at UCL. In 1999, he moved to Swansea, where he took up a Chair in Experimental Physics. He has held the Chairmanship of the Department of Physics, and of the School of Physical Sciences, whilst at Swansea. He began antihydrogen research in 1986, and this is now his main area of endeavour.



Joel Fajans received his undergraduate degrees in Physics and in Electrical Engineering from the Massachusetts Institute of Technology in 1980. He stayed at MIT for his 1985 doctoral degree on Free Electrons Lasers under the guidance of Professor George Bekefi, where he was supported by a Hertz Foundation Fellowship. His thesis was honored by a Marshall N. Rosenbluth Outstanding Doctoral Thesis Award (then called the Simon Ramo Award) from the APS, and by a Hertz Foundation Doctoral Thesis Prize. He then went to the University of California, San Diego for post-doctoral studies under Professors John Malmberg and Tom O'Neil on non-neutral plasmas. In 1986, Fajans joined the faculty of the University of California, Berkeley, where he is now a Professor of Physics. In 2003, he joined the newly-formed ALPHA collaboration at CERN, which studies the trapping and properties of antihydrogen.



Makoto Fujiwara received a Bachelor's degree at Yamanashi University, Japan, in 1992, and a Ph.D. in Physics at University of British Columbia in 1999. Fujiwara has been working on antihydrogen physics since the beginning of the Antiproton Decelerator facility at CERN in 1999. From 1999 to 2004, he worked on the ATHENA experiment at CERN as a Japan Society of the Promotion of Science Fellow, and a RIKEN Fellow. Dr. Fujiwara contributed to ATHENA's success in producing cold antihydrogen atoms in 2002.



In 2004, Fujiwara joined TRIUMF, Canada's National Laboratory for Particle and Nuclear Physics in Vancouver, as a Research Scientist, and initiated significant Canadian involvement in the ALPHA experiment.

Jeffrey S. Hangst is a graduate of MIT (SB,SM) and of the University of Chicago (Ph.D.). He worked at Fermilab and at Argonne while doing his Ph.D. at Chicago. He moved to Aarhus University in Denmark in 1994 and has been there since. Hangst received the European Physical Society's 1996 accelerator award for a young scientist for his work on laser cooling of stored ion beams in the ASTRID storage ring in Aarhus. He has been stationed at CERN full-time since 2001. He was the Physics Coordinator of the experiment that produced the first cold antihydrogen atoms at the CERN Antiproton Decelerator in 2002. He is the founder and Spokesperson of the ALPHA collaboration, which demonstrated trapping of antihydrogen atoms in 2010. Hangst was elected to fellowship of the APS, Division of Plasma Physics, in 2005.



Niels Madsen is Reader at the Department of Physics, Swansea University. He received his Ph.D. in physics on laser-cooling of ion beams in 1998 from the University of Aarhus, Denmark. Subsequently he was awarded a CERN fellowship to work on the Antiproton Decelerator at CERN. In 2001 he started work on antihydrogen as part of the ATHENA collaboration. He was furthermore part of the team that pioneered the ALPHA collaboration. Since 2005, where he joined Swansea, he has led a group within the ALPHA collaboration that has made substantial contributions to the development of plasma physics techniques allowing the formation of trappable antihydrogen. This work led to the first trapping of antihydrogen in 2010.



Francis Robicheaux received his B.A. from the University of Chicago in 1985. He received a Ph.D.

Arthur L. Schawlow Prize in Laser Science

Michael D. Fayer
Stanford University

Citation: "For seminal contributions to laser science in the development of ultrafast nonlinear and multidimensional vibrational spectroscopy."

Michael D. Fayer received both his B.S. (1969) and Ph.D. (1974) in chemistry from the University of California at Berkeley. He started his academic career at Stanford University in 1974 as an Assistant Professor. Today he is the David Mulvane Ehrsam and Edward Curtis Franklin Professor of Chemistry at Stanford University. Fayer is a pioneer in the development and application of ultrafast non-linear laser techniques for the study of complex molecular systems ranging from solids at liquid helium temperature to flames. Currently his work emphasizes liquids and biological molecules. In large part due to his work, ultrafast nonlinear and coherent spectroscopic techniques such as transient gratings, photon echoes, and vibrational echoes have become powerful techniques that have spread worldwide for studying complex molecular systems in chemistry, biophysics, and materials science.



Prize for a Faculty Member for Research in an Undergraduate Institution

David S. Hall
Amherst College

Citation: "For his ground breaking experimental investigations of Bose-Einstein condensates and the dynamics of quantum vortices and for his enthusiastic inclusion of undergraduates in his research."

David Sumner Hall is Professor of Physics at Amherst College. He earned an A.B. in Physics from Amherst College in 1991, and a Ph.D. from Harvard University in 1997. After two years as a postdoc at JILA and the University of Colorado, he returned to Amherst as a member of the faculty in 1999. With his students, he constructed an apparatus to create Bose-Einstein condensates—the first at an undergraduate institution. His research with his students, supported over the years by the Research Corporation and the National Science Foundation, has focused on the dynamics of multicomponent condensates and quantized vortices. He has supervised 16 undergraduate theses and involved over 30 research students, including a high school student, in his laboratory; many of these students appear as co-authors on published papers or in conference proceedings.



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

John Madey
University of Hawaii, Manoa

Citation: "For the invention and first experimental demonstration of the free electron laser and important contributions to its conceptual development."

Biography unavailable at press time.

David Adler Lectureship Award in the Field of Materials Physics

Stuart Parkin
IBM Almaden Research Center

Citation: "For inspiring experimental research, lectures, and writing in the area of metallic spintronics."

Stuart Parkin is an IBM Fellow (IBM's highest technical honor), Manager of the Magneto-electronics group at the IBM Almaden Research Center, San Jose, CA and a Consulting professor in the Dept. of Applied Physics at Stanford University. He is also director of the IBM–Stanford Spintronic Science and Applications Center. Dr. Parkin's research in-

from the University of Chicago in 1991 for work in theoretical atomic and molecular physics. From 1990 to 1993, he was a postdoctoral fellow at the Joint Institute of Laboratory Astrophysics. Robicheaux joined the physics faculty of Auburn University in 1993 where he is currently a professor. He received an NSF Young Investigator's Award in 1994 and was named a Fellow of the APS in 2002. His research focuses on simulations for the ALPHA collaboration which has successfully trapped the anti-hydrogen atom, and on the behavior of highly excited atoms exposed to various strong fields, and on the fully quantum calculation of two and three electron systems.



Daniel de Miranda Silveira received his undergraduate degree in Physics in 1995 from the State University of Campinas, where he also received his M.Sc. degree. He then moved to the Federal University of Rio de Janeiro, where he did his doctoral studies working on cold atom spectroscopy. After receiving his Ph.D. in 2004, he worked for some time as a junior post-doctoral researcher between UFRJ, the University of California-Berkeley and CERN, where he first got involved with antihydrogen research. In 2006 he moved to Switzerland to work on the recently started ALPHA Collaboration, where he worked as a senior post-doctoral fellow until 2011. During this time, he and his colleagues demonstrated for the first time the magnetic trapping of antihydrogen atoms, as well as their long term confinement. In 2011 he became an assistant professor at UFRJ.



Dirk van der Werf gained his first degree at the University of Groningen, the Netherlands in 1989. His received his Ph.D. in 1995 also in Groningen on "Helium in Tungsten: A Calculational Approach". After a three year postdoc at the Royal Holloway College, University of London, working on positron beams and positronium formation on carbon surfaces, he became involved with antihydrogen research with the ATHENA collaboration in 1998, first at University College London and subsequently at Swansea University where he gained in 2005 a five year RCUK fellowship. He is presently a Senior Lecturer at Swansea University. He is a founding member of the ALPHA collaboration. He built the positron accumulator, instigated research on non-neutral plasma stability in multipolar fields and designed the neutral magnetic traps in collaboration with BNL and LBNL.



Jonathan Wurtele received his B.A. (Physics and Mathematics) in 1979 and his Ph.D. (Physics) in 1985 from the University of California, Berkeley. He spent a decade at MIT as a research scientist at the Plasma Fusion Center and as Assistant and Associate Professor in the Department of Physics. In 1995, he returned to UC Berkeley, where he is Professor of Physics and Faculty Senior Scientist at the Lawrence Berkeley National Laboratory. Wurtele is a Fellow of the APS and was a Foreign Research Fellow at the Institute of Space and Astronautical Science in Japan. He has served on the Executive Committee of the APS Division of Physics of Beams, and has co-authored numerous National Research Council reports. His theoretical and computational research focuses on beam and plasma physics. Among the topics he has investigated are free-electron lasers, laser-plasma interactions, non-neutral plasmas, and novel accelerator concepts, such as plasma-based accelerators and muon colliders. He is a member of the ALPHA collaboration, which in 2010 reported the first trapping of antihydrogen.



John H. Dillon Medal for Research in Polymer Physics

Rachel Segalman
University of California, Berkeley

Citation: "For fundamental and technological contributions to the field of polymer science and engineering, especially in the area of rod-coil block copolymers."

Rachel A. Segalman received her B.S. in Chemical Engineering with highest honors from the University of Texas at Austin in 1998. She then performed her doctoral work in Chemical Engineering at the University of California, Santa Barbara in 2002. Following her Ph.D., Segalman was a postdoctoral fellow at the Universite Louis Pasteur in Strasbourg, France working on conjugated polymer synthesis. She joined the faculty of UC Berkeley in the spring of 2004 as the Charles Wilke Assistant Professor of Chemical Engineering and was promoted to Associate Professor in 2009.



Segalman is also a faculty scientist in the Lawrence Berkeley National Laboratory Materials Science Division. Her research focuses on understanding and controlling the self-assembly of functional block copolymers, particularly those with rod-coil shape. She also has interest in designing polymeric and hybrid materials for energy applications involving thermoelectrics, photovoltaics, and solar fuels.

Joseph Keithley Award for Advances in Measurement Science

Andreas Mandelis
University of Toronto

Citation: "For seminal contributions to the development of new experimental techniques based on photothermal science, and the application of these techniques to a variety of real-world problems."

Andreas Mandelis; Yale College Class of '74. Ph.D. in Applied Physics and Materials Science: Princeton University 1979. He joined the electronics industry in the silicon Process R&D as a Member of Scientific Staff, Bell Northern Research Labs, Ottawa, in 1980-1981. Since 1981 he has been with the University of Toronto where he holds multiple appointments in the Department of Mechanical and Industrial Engineering, Electrical and Computer Engineering and the Institute for Biomaterials and Biomedical Engineering. He is the Director of the Center for Advanced Diffusion-Wave Technologies at the University of Toronto. His scientific and technical research interests are focused on fundamental physical processes as they impact instrumentation science and signal generation in the fields of thermophysics, non-radiative and radiative phenomena in electronic, optical and biomedical materials, and thermal-wave and diffusion-wave phenomena in electronic and photonic media. More recent interests include building the foundations of biophotonic and biophotoacoustic transport phenomena in hard (dental and bone) and soft tissues.



Maria Goepfert Mayer Award

Nadya Mason
University of Illinois

Citation: "For innovative experiments that elucidate the electronic interactions and correlations in low-dimensional systems, in particular the use of local gates and tunnel probes to control and measure the electronic states in carbon nanotubes and graphene."

Nadya Mason received her bachelor's degree in physics from Harvard University in 1995 and her doctorate in physics from Stanford University in 2001. She engaged in postdoctoral research at Harvard University, where she was a Junior Fellow in the Harvard Society of Fellows. Mason joined the Department of Physics at the University of Illinois at Urbana-Champaign as an assistant professor in 2005, and was promoted to associate professor in 2011. A condensed matter experimentalist, Mason focuses on electron behavior in low-dimensional materials such as carbon nanotubes, graphene, and nano-structured superconductors. Her projects include studies of superconducting bound states in quantum dots, tunneling spectroscopy of carbon nanotubes and graphene, and phase transitions in nano-patterned 2D superconductors. Mason's research is relevant to the fundamental physics of small systems, as well as to applications involving nano-scale electronic elements.



2012 Nicholas Metropolis Award

Justin Weber
University of California, Santa Barbara

Citation: The Impact of Defects on Computer Technology: From CMOS to Quantum Computers

Justin Weber was born and grew up in northern Ohio, near Lake Erie. In 2004, he received his Bachelor of Science degrees in physics and electrical engineering from The Ohio State University. After earning an MS degree in Electrical Engineering from The Ohio State University in 2005, he attended the University of California, Santa Barbara.

At UC Santa Barbara, he pursued a PhD in Physics. He studied defects in semiconductors with his advisor Chris G. Van de Walle, and examined the impact of atomic scale defects on modern computer technology, with specific focus on nonclassical CMOS devices and quantum computers. After completing his PhD, Justin joined Intel Corporation, where he continues to work in computational materials science.



Nicholson Medal for Human Outreach (2011)

David Ernst
Vanderbilt University

Citation: "For his career-long efforts to promote

diversity in physics and for his success in increasing minority participation in physics in the USA."

Biography unavailable at press time.

Henry Primakoff Award for Early-Career Particle Physics

Daniel Jafferis
Harvard University

Citation: "For the construction and study of three-dimensional supersymmetric quantum field theories."

Daniel Louis Jafferis is a Five-Year Post-Doctoral Fellow in Physics at Harvard University. He was home-schooled before matriculating at Yale University at the age of 14. He received his B.S. in physics and in mathematics from Yale in 2001, and his Ph.D. in physics from Harvard University in 2007. He did postdoctoral work at Rutgers University, became a member at the Institute for Advanced Study in 2010, and assumed his current position at Harvard in March 2011.

He was one of the discoverers of the low energy three dimensional superconformal Chern-Simons-matter theory describing multiple M2 branes, which led to a new concrete arena for the gauge-gravity correspondence. His work on supersymmetric quantum field theories in three dimensions involved finding an exact method for determining the dimensions of all chiral primary operators in strongly coupled conformal field theories, and led to a conjecture for a quantity that measures the number of degrees of freedom in interacting quantum field theories in three dimensions.



Leo Szilard Lectureship Award

Siegfried Hecker
Stanford University

Citation: "For his leadership in developing international science and technology cooperation in areas critical to global security resulting in real reductions in the dangers of nuclear proliferation and nuclear terrorism."

Siegfried S. Hecker is co-director of the Stanford University Center for International Security and Cooperation, Senior Fellow of the Freeman Spogli Institute for International Studies, and Professor (Research) in the Department of Management Science and Engineering. He is also director emeritus at the Los Alamos National Laboratory, where he served as director from 1986-1997 and senior fellow until July 2005. He received his B.S., M.S., and Ph.D. degrees in metallurgy from Case Western Reserve University. His current professional interests include plutonium research, cooperative nuclear threat reduction with the Russian nuclear complex, and global nonproliferation and counter terrorism. He is a member of the National Academy of Engineering and a foreign member of the Russian Academy of Sciences. He is a fellow of numerous professional societies and recently received the Presidential Enrico Fermi Award.



DISSERTATION AWARDS

Andreas Acrivos Dissertation Award in Fluid Dynamics (2011)

Paolo Luzzatto-Fegiz
Cornell University

Citation: "Equilibrium and stability in vortex and wave flows."

Paolo Luzzatto-Fegiz graduated with a BEng in Aerospace Engineering from the University of Southampton in 2003. He spent the following summer working with the ATLAS Magnet Team at CERN, and subsequently completed an MSc in Applied Mathematics at Imperial College in 2004, and an MS in Aerospace Engineering at Cornell University in 2007. His Ph.D. thesis focused on equilibrium and stability of vortex and wave flows, and was advised by Charles H.K. Williamson. Luzzatto-Fegiz is presently the Devonshire Postdoctoral Scholar at the Woods Hole Oceanographic Institution. His current interests include vortex dynamics, fluid stability, and large-amplitude internal waves.



Award for Outstanding Doctoral Thesis Research in Biological Physics (2011)

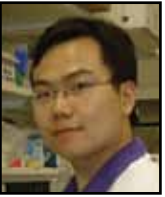
Siyuan (Steven) Wang
Princeton University

Citation: "For pioneering studies of the contribution of cytoskeletal filaments to the stiffness of E. coli cells, observations of growth-driven motions of bacterial actin homologs, and probes of the chiral origins of cell wall robustness."

Siyuan (Steven) Wang received his Ph.D. in Molecular Biology from Princeton University in 2011. Using a combination of experimental and the-

oretical approaches, Wang and colleagues studied the mechanics, dynamics, and organization of the bacterial cytoskeleton and cell wall. Their findings provided a quantitative and spatiotemporal description of the bacterial cell growth at the molecular level.

Wang graduated from Peking University (China) with a B.S. in Physics in 2007. As an undergrad he conducted research on gene regulatory network dynamics. Wang is currently doing postdoctoral research on chromatin organization and dynamics in Dr. Xiaowei Zhuang's group in Harvard University.



Outstanding Doctoral Thesis Research in Atomic, Molecular and Optical Physics Award (2011)

Elmar Haller
University of Innsbruck

Citation: "A one-dimensional quantum gas with tunable interactions."

Elmar Haller pursued his undergraduate studies at the University of Heidelberg and received his diploma in physics in 2004. His thesis focused on Bose-Einstein condensates close to metallic surfaces on atom-chips. In 2005 Elmar started his doctoral studies at the University of Innsbruck, Austria, where he joined the group of Hanns-Christoph Naegerl to set up an experiment to study the properties of quantum gases with tunable interactions in optical lattice potentials. His dissertation is largely about the behavior of strongly interacting bosons in one-dimensional geometry. During the course of his thesis, a new type of scattering resonances was observed, resonances that result from the mixing of the scattering potential and the external confinement. Elmar showed that in the vicinity of such resonances a new metastable many-body state of attractive bosons in 1D called "super-Tonks-Girardeau gas" can be populated.



Outstanding Doctoral Thesis in Beam Physics Award (2011)

Ian Blumenfeld
Archimedes Model

Citation: "For his research on the physics of plasma wakefield acceleration; in particular, the scaling of the longitudinal electric fields and transformer ratio in the nonlinear "blowout" regime."

Roderik Bruce received a M.Sc. in applied physics from Linköping University in 2005 and continued with a Ph.D. in physics at Lund University. He was supervised by Dr. John Jowett and Dr. Simone Gilardoni at CERN and Dr. Erik Wallen at Lund University. His thesis work focused on beam-loss mechanisms in ultra-relativistic heavy-ion colliders, such as LHC and RHIC, where the charge-to-mass ratio of ions is changed through electromagnetic or nuclear interactions between colliding beams or between beams and collimators. He also studied models of the luminosity time evolution in heavy-ion colliders. The thesis work is reported in four publications in refereed journals (*Physical Review Letters* and *Physical Review Special Topics - Accelerators and Beams*) and in a number of conference papers. Roderik is presently a research fellow at CERN, working on collimation and experimental backgrounds in the LHC.

Ian Blumenfeld received his BSc in Engineering Science with a physics concentration from the University of Toronto in 2004. After beginning his Ph.D. at Stanford University the subsequent fall, he joined the lab of Dr. Robert Siemann, to work on plasma wakefield acceleration experiments at SLAC. Under Bob's tutelage, his work focused on the scaling behavior of non-linear wakefields as related to the peak drive beam current. After Bob's passing, he completed his Ph.D. with the supervision of Dr. Alex Chao. As one of Bob's last students, Ian feels honored to contribute to the legacy of a literal and figurative giant in the field of advanced acceleration research. He is currently the lead scientist of cardiovascular disease modeling at Archimedes, Inc., an innovative health care consulting start-up based around mathematical models of disease and treatment processes, in San Francisco.



Roderik Bruce received a M.Sc. in applied physics from Linköping University in 2005 and continued with a Ph.D. in physics at Lund University. He was supervised by Dr. John Jowett and Dr. Simone Gilardoni at CERN and Dr. Erik Wallen at Lund University. His thesis work focused on beam-loss mechanisms in ultra-relativistic heavy-ion colliders, such as LHC and RHIC, where the charge-to-mass ratio of ions is changed through electromagnetic or nuclear interactions between colliding beams or between beams and collimators. He also studied models of the luminosity time evolution in heavy-ion colliders. The thesis work is reported in four publications in refereed journals (*Physical Review Letters* and *Physical Review Special Topics - Accelerators and Beams*) and in a number of conference papers. Roderik is presently a research fellow at CERN, working on collimation and experimental backgrounds in the LHC.



Nuclear Physics Dissertation Award

Phillip Barbeau
Stanford University

Citation: "For pioneering work in developing a

new type of germanium detector with the capability to measure very low energy nuclear recoils, with applications to the measurement of elastic scattering of reactor neutrinos, in searches for dark matter candidates, and for germanium based double-beta decay experiments.”

Emanuele Mereghetti
University of Arizona

Citation: “For his ground-breaking work in applying effective field theory as a single, consistent, theoretical framework to a wide range of topics at the intersection of particle and nuclear physics, which include beyond-the-Standard Model Physics, Quantum Chromodynamics, hadronic physics, and nuclear processes.”

Phil Barbeau received his B.A. in Physics (with Honors) and his B.S. in Mathematics (with Honors) from the University of Chicago in 2001. He remained at the University of Chicago, receiving his Ph.D in Physics in 2009. At the University of

Chicago, Barbeau worked with Prof. Juan Collar to develop new large mass, low threshold, low background detector concepts in order to search for coherent neutrino-nucleus scattering, low mass dark matter, and neutrinoless double beta decay.



Currently Barbeau works with Prof. Giorgio Gratta at Stanford University as part of the EXO experiment, a liquid xenon detector designed to look for neutrinoless double beta decay. T.

Emanuele Mereghetti received his Bachelor of Science degree in 2005 from the Università degli Studi di Milano (Italy) and his Ph.D. in 2011 from the University of Arizona. He is currently working as a postdoctoral researcher at Lawrence Berkeley National Laboratory (LBNL). His research has focused

on Effective Field Theories (EFTs) of the strong interaction. In particular, with collaborators, he has set up a unitary framework, based on chiral perturbation theory, to describe in a model-independent way the manifestations of violation of time reversal symmetry in one, two, and three nucleon systems. His current research interests are low-energy probes of physics beyond the Standard Model, and the application of EFT ideas to LHC physics.

Marshall N. Rosenbluth Outstanding Doctoral Thesis Award (2011)

Felix Parra
University of Oxford

Citation: “For demonstrating limitations in the gyrokinetic theory of the radial electric field for plasmas in an axisymmetric magnetic field and formulating an alternative procedure—insights that have inspired research around the world.”

Parra studied Aeronautical Engineering in the Escuela Técnica Superior de Ingenieros Aeronáuticos of the Universidad Politécnica de Madrid from 1999 to 2004 where he first got interested in plasma physics. He continued his studies at the MIT, where his interests shifted to nuclear fusion by magnetic confinement. In 2009, he graduated from MIT with a Ph.D. His thesis focused on self-consistently calculating the radial electric field in tokamaks, particularly in the presence of turbulence. After graduation, he moved to the University of Oxford, where, he continued his research on tokamaks, working on scaling laws for Ion Temperature Gradient turbulence. He has recently moved back to MIT, where he is now an Assistant Professor in the Nuclear Science and Engineering Department.



APS Council Announces 2011 APS Fellows

The APS Council elected the following as Fellows of the Society at its November 2011 meeting. Nominations for fellowship are received at APS Headquarters throughout the year, and are forwarded for review to the appropriate division, topical group or forum fellowship committees. The deadlines for the various units appear on page 8 of this insert, and are posted on the web.

Fellowship nomination forms may be completed on the web at <http://fellowship.aps.org/>. Information for completing the form is available at <http://www.aps.org/programs/honors/fellowships/nomination-requirements.cfm>

Adams, Nikolaus

Technische Universität München

Division of Fluid Dynamics (DFD)

Citation: For the development of novel numerical methods for Computational Fluid Dynamics, and for their successful application to elucidate dynamics of turbulent boundary layers and shock-turbulence interactions.

Ambrosch-Draxl, Claudia

University of Leoben

Division of Computational Physics (DCOMP)

Citation: For her seminal contributions to the development and applications of first principle theoretical techniques to the study of spectroscopic properties of condensed systems, and her pioneering work on the ab-initio theory of organic semiconductors.

Ansermet, Jean-Philippe

Ecole Polytechnique Fédérale de Lausanne

Division of Condensed Matter Physics (DCMP)

Citation: For research on spintronics in metallic systems and magnetic nanowires.

Atkinson, William

Boeing Company

Forum on Industrial and Applied Physics (FIAP)

Citation: For academic contributions in the areas of nuclear physics and for substantial applications of radiation technology to spaceborne applications in the aerospace community.

Avagyan, Harut

Jefferson Laboratory

Topical Group on Hadronic Physics (GHP)

Citation: For pioneering studies of Single Spin Asymmetries in electroproduction of hadrons in deep inelastic scattering, providing access to orbital motion of quarks.

Balandin, Alexander

University of California, Riverside

Division of Laser Science (DLS)

Citation: For pioneering optothermal studies of phonon transport in graphene and outstanding contributions to investigation of spatially confined phonons and excitons in semiconductor nanostructures.

Baron, Edward A.

University of Oklahoma

Division of Astrophysics (DAP)

Citation: For work at the forefront of computational astrophysics, especially for important contributions to the theory of core collapse supernovae and leadership in the theory of radiative transport in stars and supernovae.

Barr, Stephen

University of Delaware

Division of Particles and Fields (DPF)

Citation: For his original contributions to grand unified theories, CP violation and baryogenesis.

Bayer, Manfred

University of Dortmund

Division of Condensed Matter Physics (DCMP)

Citation: For optical spectroscopy of charge and spin excitations in semiconductor quantum-dot structures

Beamish, John

University of Alberta

Division of Condensed Matter Physics (DCMP)

Citation: For measurements of the shear modulus of solid ⁴He at low temperatures.

Bean, Alice

University of Kansas

Division of Particles and Fields (DPF)

Citation: For her unique contribution in the design and construction of silicon detectors and other instrumentation. Her expert work of heavy quark decays in B decays. She created a novel outreach physics project Quarked™ and also led unique undergraduate research opportunities.

Bennett, Brian

Naval Research Laboratory

Division of Materials Physics (DMP)

Citation: For pioneering contributions to the epitaxial growth, characterization, and design of narrow band-gap semiconductor heterostructures.

Birse, Michael

University of Manchester

Topical Group on Few-Body Systems (GFB)

Citation: For groundbreaking work on the implications of chiral symmetry for nucleon structure and nuclear interactions, and applications of the renormalization group to few-body systems.

Block, Steven

Stanford University

American Physical Society (APS)

Citation: For his originality in the direct measurement of the forces and motions in single biomolecular complexes using optical trapping approaches.

Bonitz, Michael

Università di Kiel

Division of Plasma Physics (DPP)

Citation: For pioneering contributions to the field of strongly correlated classical and quantum plasmas, including the development of a statistical theory and first-principle computer simulations.

Booske, John

University of Wisconsin, Madison

Division of Plasma Physics (DPP)

Citation: For pioneering contributions to the development of coherent radiation sources in the submillimeter wave and terahertz regime, in particular in the physics of sheet electron beams, advanced cathode, and interaction of high power microwave with materials.

Boykin, Timothy

University of Alabama, Huntsville

Forum on Industrial and Applied Physics (FIAP)

Citation: For contributions to the theory and full-bandstructure modeling of semiconductor nanostructures.

Brans, Carl

Loyola University

Topical Group in Gravitation (GGR)

Citation: For developing the Brans-Dicke Scalar-tensor gravitational theory alternative to Einstein's general relativity.

Brataas, Ane

Norwegian University of Science & Technology

Topical Group on Magnetism (GMAG)

Citation: For contributions to the theory of spin transport and dynamics in magnetic nanostructures and mesoscopic systems.

Brizard, Alain

Saint Michael's College

Division of Plasma Physics (DPP)

Citation: For pioneering the modern formulation of nonlinear gyrokinetics, including the development of methodology for general geometry, the theory of dynamical reduction, and a variational formulation of the gyrokinetic-Maxwell system.

Brown, April

Duke University

Forum on Industrial and Applied Physics (FIAP)

Citation: For outstanding contributions to development and application of molecular beam epitaxy to the formation advanced device structures, with particular contributions to the advancement of the strained heterostructures forming modern microwave devices.

Brown, Michael F.

University of Arizona

Division of Biological Physics (DBIO)

Citation: For the development and application of nuclear spin relaxation in biophysics and applications to investigating the molecular dynamics of proteins and lipids in membranes; for introduction of concepts of membrane elastic deformation on the mesoscale to explain functional lipid-protein interactions in cellular membranes.

Brune, Harald

Ecole Polytechnique Fédérale de Lausanne

Division of Condensed Matter Physics (DCMP)

Citation: For contributions to understanding of nucleation, epitaxial growth, and the self-assembly of nanostructure superlattices.

Bruus, Henrik

Technical University of Denmark

Division of Fluid Dynamics (DFD)

Citation: For contributions to microfluidics including innovative research in lab-on-a-chip systems, electrohydrodynamics, and acoustics, and as the author of a leading textbook on theoretical microfluidics.

Buonanno, Alessandra

University of Maryland, College Park

Topical Group in Gravitation (GGR)

Citation: For revolutionizing our understanding of quantum optical noise in interferometric gravitational-wave detectors (with Chen), creating the EOB approach to 2-body dynamics (with Damour), and leading the creation of template families for searches for gravitational waves from compact binaries.

Carson, Cathryn

University of California, Berkeley

Forum on the History of Physics (FHP)

Citation: For her contributions to the history and philosophy of physics, especially regarding Heisenberg in post-war West Germany, and for her professional leadership as program director, book and journal editor, and conference organizer.

Cavalleri, Andrea

Oxford University

Division of Laser Science (DLS)

Citation: For pioneer advances in the understanding of the ultrafast dynamics of strongly correlated electron materials using ultrafast lasers and x-ray pulses.

Chakrabarty, Deepto

Massachusetts Institute of Technology

Division of Astrophysics (DAP)

Citation: For his pioneering research on neutron stars, including the discovery and analysis of accretion-powered millisecond pulsars.

Chakraborty, Tapash

University of Manitoba

Division of Condensed Matter Physics (DCMP)

Citation: For understanding of the spin structure of the fractional quantum Hall effect and the electronic properties of quantum dots.

Charity, Robert

Washington University, St Louis

Division of Nuclear Physics (DNP)

Citation: For contributions to: statistical decay, continuum spectroscopy, and for implementing an n/p asymmetry dependent dispersive optical model.

Chertkov, Michael

Los Alamos National Laboratory

Topical Group on Statistical and Nonlinear Physics (GSNP)

Citation: For Fundamental Theoretical Contributions in Statistical Hydrodynamics and Physics of Information and Algorithms.

Chilingarian, Ashot

Yerevan Physics Institute

Forum on International Physics (FIP)

Citation: For bringing one of the world's largest facilities for monitoring different species of secondary cosmic rays located in Armenia to the International Space Weather initiative as a global warning system from violent space events.

Chong, Min

University of Melbourne

Division of Fluid Dynamics (DFD)

Citation: For contributions to the development of series-expansion approaches to the Navier-Stokes equations to the use of topology in the study of flow patterns in turbulence, and to our understanding of the structure of jets, wakes, wall turbulence and hot-wire anemometry.

Christen, Hans

Oak Ridge National Laboratory

Division of Materials Physics (DMP)

Citation: For pioneering studies of effects of strain, confinement, and interfaces on the properties of complex oxide films enabled by novel pulsed-laser deposition and characterization methods.

Cleveland, Jason

Asylum Research

Forum on Industrial and Applied Physics (FIAP)

Citation: For remarkable and lasting contributions to the field of scanning probe microscopy, both academic and commercial.

Cox, Daniel

University of California, Davis

Division of Condensed Matter Physics (DCMP)

Citation: For identifying energetic and symmetry principles for observation of non-Fermi liquid and Kondo impurity physics.

Curro, Nicholas

University of California, Davis

Division of Condensed Matter Physics (DCMP)

Citation: For application of nuclear magnetic resonance techniques to heavy fermion and superconducting materials.

Cutler, Curt

Jet Propulsion Laboratory

Topical Group in Gravitation (GGR)

Citation: For pioneering contributions to gravitational-wave science, including the astrophysics of anticipated sources and the scientific potential of current and planned gravitational-wave detectors.

Dalnoki-Veress, Kari

McMaster University

Division of Polymer Physics (DPOLY)

Citation: For the development and use of innovative experimental approaches and deeply intuitive physical insight to probe the physical properties of polymers in nanoscale systems.

de Gironcoli, Stefano

SISSA

Division of Computational Physics (DCOMP)

Citation: For his seminal and far reaching contributions to density-functional perturbation theory, and for his outstanding services to the electronic-structure community, including the creation and distribution of top-class simulation software and the dissemination of knowledge throughout the developed and developing world.

Delfyett, Peter

University of Central Florida

Division of Laser Science (DLS)

Citation: For pioneering contributions to the understanding of the physics and implementation of ultrafast diode lasers.

Demina, Regina

University of Rochester

Division of Particles and Fields (DPF)

Citation: For significant contributions to hadron collider physics, especially measurements of the mass and properties of the top quark, and for leading the construction of silicon trackers for the CMS detector.

Devlin, Mark

University of Pennsylvania

Division of Astrophysics (DAP)

Citation: For the advancement of observations and instrumentation in millimeter-wave astronomy.

Driscoll, Judith

University of Cambridge

Division of Materials Physics (DMP)

Citation: For pioneering contributions in design and understanding of nanostructured functional oxides, including superconductors, magnetic materials, ferroelectrics, multiferroics and semiconductors.

Dunlap, Brett

Naval Research Laboratory

Division of Chemical Physics (DCP)

Citation: For pioneering contributions to the development of variational fitting methods that enable reliable density-functional and ab initio calculations on large molecules and clusters.

Edwards, Michael J.

Lawrence Livermore National Laboratory

Division of Plasma Physics (DPP)

Citation: For fundamental contributions to hydrodynamics in high energy density physics, and for his leadership in the National Ignition Campaign on the National Ignition Facility.

Edwards, Robert

Jefferson Laboratory

Division of Computational Physics (DCOMP)

Citation: For developing key theoretical, algorithmic and computational methods to enable Lattice QCD to address vital questions in nuclear physics, and in particular the spectrum of excited states and the origin of the nuclear force.

Efetov, Konstantin

Ruhr Universität Bochum

Division of Condensed Matter Physics (DCMP)

Citation: For applying the supersymmetry method to disordered, granular, and mesoscopic metals and superconductors.

Ehrenfreund, Eitan

Technion - Israel Institute of Technology

Division of Condensed Matter Physics (DCMP)

Citation: For elucidating magnetic and optical phenomena in conducting polymers, semiconductor quantum wells and quantum dots.

El-Khadra, Aida

University of Illinois, Urbana-Champaign

Division of Particles and Fields (DPF)

Citation: For contributions to lattice QCD and flavor physics including pioneering studies of heavy quarks on the lattice, semileptonic and leptonic heavy-light meson decays, the strong coupling constant, and quark masses.

Elsaesser, Thomas

Max Born Institute, Berlin

Division of Laser Science (DLS)

Citation: For contributions to ultrafast phenomena in condensed matter, including generation and application of ultrashort pulses from THz to hard x-rays, combining ultrafast techniques with optical near-field methods and x-ray diffraction, nonequilibrium dynamics of elementary excitations in solids, and ultrafast processes in molecular systems.

Ent, Rolf

Jefferson Laboratory

Division of Nuclear Physics (DNP)

Citation: For his leadership in advancing the experimental nuclear physics program at Jefferson Laboratory, particularly regarding the study of the transition between quark-gluon and hadronic degrees of freedom.

Evrard, August

University of Michigan, Ann Arbor

Division of Astrophysics (DAP)

Fiebig, Manfred

University of Bonn

Division of Materials Physics (DMP)

Citation: For developments in non-linear optics and their application to solving seminal problems in multiferroics.

Fineberg, Jay

Hebrew University of Jerusalem

Topical Group on Statistical and Nonlinear

Physics (GSNP)

Citation: For his clever experiments and analyses of the dynamics of nonequilibrium systems, particularly concerning the propagation and instabilities of cracks in solids and gels, the dynamics of friction and earthquakes, and instabilities in oscillated liquid layers.

Finkelstein, Noah

University of Colorado, Boulder

Forum on Education (FEd)

Citation: For advancing physics education research through studies of student learning in context and for extensive professional service at all levels from individual mentoring, to developing model programs, to national advocacy.

Flaughter, Brenna

Fermilab

Division of Astrophysics (DAP)

Citation: For her important contributions to experimental particle astrophysics, particularly her leadership of and seminal contributions to the design and construction of the Dark Energy Camera.

Forrey, Robert C.

Penn State University

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For contributions to the understanding of internal energy transfer in atomic and molecular systems and for meaningful involvement of undergraduate students in research.

Freedman, Wendy

Carnegie Institute of Washington

Division of Astrophysics (DAP)

Citation: For fundamental contributions in observational cosmology, including the determination of the Hubble constant.

Freund, Jonathan

University of Illinois, Urbana-Champaign

Division of Fluid Dynamics (DFD)

Citation: For his pioneering and incisive numerical simulation studies of atomic-scale and biological flows, free shear flow turbulence, and jet aeroacoustics.

Gaarde, Mette B.

Louisiana State University

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For important contributions to the macroscopic theory of high harmonic generation and attosecond light formation

Gai, Feng

University of Pennsylvania

Division of Biological Physics (DBIO)

Citation: For his pioneering contributions to the field of protein folding, in particular the innovative use of infrared spectroscopy and the novel development of vibrational probes to elucidate the fundamental folding mechanism.

Gerhard, Reimund

University of Postdam

Division of Polymer Physics (DPOLY)

Citation: For his contributions to the investigation, the understanding and the application of charge and polarization phenomena in polymer electrets and ferroelectret systems.

Germann, Timothy

Los Alamos National Laboratory

Division of Computational Physics (DCOMP)

Citation: For fundamental contributions to the application of large-scale molecular dynamics simulations to the study of shock-induced plasticity and phase transitions in metals, as well as applications of these techniques in the development of large-scale agent-based models in computational epidemiology.

Gerry, Christopher

CUNY Lehman College

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For pioneering work in quantum optical interferometry using photon number parity measurements, quantum state engineering for superpositions of macroscopically distinguishable states, and application of group theoretical methods to quantum optics.

Ghosal, Sandip

Northwestern University

Division of Fluid Dynamics (DFD)

Citation: For insightful mathematical models of multi-physics and multi-scale fluid flow phenomena.

Giele, Walter

Fermilab

Division of Particles and Fields (DPF)

Citation: For his detailed investigation of the perturbative structure of QCD, and the performance of calculations that have significantly increased the discovery potential of hadron colliders.

Gingras, Michel J.P.

University of Waterloo

Division of Condensed Matter Physics (DCMP)

Citation: For the theory of geometrically-frustrated magnetic materials and the spin ice ground state in pyrochlore magnets.

Ginley, David

National Renewable Energy Laboratory

Forum on Industrial and Applied Physics (FIAP)

Citation: For sustained scientific contributions in the broad area of solar energy conversion devices and services to the physics community, including chairing and organizing a series of focus sessions on energy related topics and giving invited talks and active participation in outreach to young physicists.

Graham, Michael

University of Wisconsin

Division of Fluid Dynamics (DFD)

Citation: For diverse contributions to the understanding of complex fluids, including the flow of polymer solutions in confined geometries, the nonlinear dynamics of viscoelastic flows at low and high Reynolds numbers, and the collective dynamics of swimming microorganisms.

Grinstein, Fernando F.

Los Alamos National Laboratory

Division of Fluid Dynamics (DFD)

Citation: For outstanding technical leadership in the formalization, development, and validation of novel large-eddy simulation strategies, and for their application to transitional and turbulent flows.

Gu, Genda

Brookhaven National Laboratory

Division of Materials Physics (DMP)

Citation: For outstanding contributions to the synthesis of high quality single crystals for experimental research, particularly the high T_c superconducting cuprates.

Guenza, Marina

University of Oregon

Division of Polymer Physics (DPOLY)

Citation: For significant contributions to the field of polymer physics through the development of theoretical methods to study macromolecular structure and dynamics.

Hanany, Shaul

Division of Astrophysics (DAP)

University of Minnesota, Minneapolis

Citation: For developing novel techniques for, and making important measurements of, the anisotropy of the cosmic microwave background radiation and its polarization, particularly on balloon borne instruments.

Hanke, Werner

Universitat Wurzburg

Division of Condensed Matter Physics (DCMP)

Citation: For the theory of quantum many-body effects and optical properties of materials.

Harrison, Fiona

California Institute of Technology

Division of Astrophysics (DAP)

Citation: For fundamental contributions in gamma-ray, X-ray, and optical observations of gamma-ray bursts, active galaxies, and black hole systems.

Hayes, Robert

Washington TRU Solutions, LLC

Forum on Industrial and Applied Physics (FIAP)

Citation: For furthering the use of nuclear technology in the areas of radiation safety, nuclear engineering and nuclear waste disposal through the use of physical science.

Hedin, David

Northern Illinois University

Division of Particles and Fields (DPF)

Citation: For his many important contributions to the D0 muon system design, construction, and operation, and his leadership in exploiting muons in a variety of physics studies at D0 both in Run I and Run II of the Tevatron.

Hernandez, Rigoberto

Georgia Institute of Technology

Division of Chemical Physics (DCP)

Citation: For theoretical and computational advances in modeling and characterizing chemical and molecular dynamics in complex environments.

Hinde, David

Australian National University

Division of Nuclear Physics (DNP)

Citation: For his sustained contributions to the physics of fusion reactions below the Coulomb Barrier.

Hobbs, John

SUNY, Stony Brook

Division of Particles and Fields (DPF)

Citation: For leadership and personal contributions to understanding electroweak symmetry breaking through studies of the top quark, electroweak bosons, and searches for the Higgs boson and phenomena beyond the standard model.

Hoffmann, Axel

Argonne National Laboratory

Topical Group on Magnetism (GMAG)

Citation: For contributions to the understanding of magnetic and superconducting hybrid systems, novel insights into exchange bias systems, and the investigation of pure spin currents.

Holmgren, Donald

Fermilab

Division of Computational Physics (DCOMP)

Citation: For leadership and innovation in the design and operation of massively parallel computers for lattice gauge theory.

Hong, Minghwei

National Taiwan University

Forum on Industrial and Applied Physics (FIAP)

Citation: For pioneering in III-V semiconductor metal oxide semiconductor field effect transistors including the landmark discovery of high dielectric constant oxide films on GaAs surface with low interface states and unpinned Fermi level, and the first demonstration of inversion-channel GaAs MOSFET, timely for science and technology beyond Si CMOS.

Hu, Howard

University of Pennsylvania

Division of Fluid Dynamics (DFD)

Citation: For pioneering contributions to the understanding of multiphase flows, particularly the direct numerical simulations of Newtonian and viscoelastic particulate flows.

Huang, Danhong

Air Force Research Lab - Kirtland

Forum on Industrial and Applied Physics (FIAP)

Citation: Significant contributions to our understanding of optical absorption and electron transport properties of quantum devices.

Hwang, Harold

Stanford University

Division of Materials Physics (DMP)

Citation: For fundamental contributions to the materials physics of correlated electron materials through the prudent use of doping, artificial interfaces, dimensional confinement, and electronic reconstruction.

Jacobsen, Chris

Northwestern University

Topical Group on Instrument and Measurement Science (GIMS)

Citation: For seminal contributions to x-ray microscopy.

Jaime, Marcelo

Los Alamos National Laboratory

Division of Materials Physics (DMP)

Citation: For pioneering techniques for the study of thermal properties of materials in high pulsed magnetic fields and for contributions to the understanding of colossal magnetoresistance compounds, Kondo insulators, correlated-electron systems, and quantum magnets.

Ji, Chueng-Ryong

North Carolina State University

Topical Group on Hadronic Physics (GHP)

Citation: For his remarkable and pioneering contributions in QCD applying light-front dynamics to fundamental aspects of hadron physics, including spectroscopy, wave functions, and form factors.

Johnson, Alan

University of Pennsylvania

Division of Materials Physics (DMP)

Citation: For creative and influential discoveries furthering

our understanding of the electronic and vibrational properties of single-walled carbon nanotubes.

Kaiser, Raif

University of Hawaii, Manoa

Division of Chemical Physics (DCP)

Citation: For pioneering experimental investigations of the chemical evolution of the Solar System and the Interstellar Medium, using crossed molecular beams and surface scattering to probe the underlying phenomena on the most fundamental, microscopic molecular level.

Kaiser, Robin

Institut non Lineaire

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For fundamental investigations of multiple scattering of light in atomic vapors, especially coherent backscattering of light by cold atoms and Lévy flights of photons in hot atomic vapors.

Kaneda, Yukio

Nagoya University

Division of Fluid Dynamics (DFD)

Citation: For seminal achievements in the understanding of high Reynolds number turbulence, especially through pioneering the conduct of direct numerical simulations at massive scale, and for international leadership in the turbulence and computational science communities.

Katine, Jordan

Hitachi Research Center, San Jose

Topical Group on Magnetism (GMAG)

Citation: For contributions to the fabrication, characterization, and understanding of nanoscale magnetic devices, especially magnetic recording head sensors and spin transfer devices.

Katz, Jonathan

Washington University, St Louis

Forum on Physics and Society (FPS)

Citation: For his significant and wide-ranging physics analyses at the interface of science and society, including nuclear weapons policy and the killing of oil well blow-outs.

Kaviany, Massoud

University of Michigan, Ann Arbor

Forum on Industrial and Applied Physics (FIAP)

Citation: For seminal contributions to the understanding of phonon physics and thermal transport in fluids and solids; and for pioneering developments in the semiclassical simulation of electronic and phonon transport.

Keller, Sarah L.

University of Washington

Division of Biological Physics (DBIO)

Citation: For her pioneering, fundamental contributions to the understanding of miscibility phase transitions in model surfactant and membrane systems.

Khurgin, Jacob

Johns Hopkins University

Forum on Industrial and Applied Physics (FIAP)

Citation: For diverse contributions to understanding the underlying physics and improving the performance of numerous electronic and optical devices, such as semiconductor second-order nonlinear optical generators, intersubband semiconductor lasers and Raman oscillators, slow light, and plasmonic devices.

Klein, Joshua

University of Pennsylvania

Division of Nuclear Physics (DNP)

Citation: For contributions to neutrino physics, especially through leadership of the data analysis for the Sudbury Neutrino Observatory showing that solar neutrinos change flavor between the Sun and the Earth.

Klewicki, Joseph

University of New Hampshire

Division of Fluid Dynamics (DFD)

Citation: For insightful studies revealing the properties and scaling of turbulent boundary layers over a large Reynolds number range, and for developing and sharing with the research community unique flow facilities to carry out such studies.

Klimeck, Gerhard

Purdue University

Forum on Industrial and Applied Physics (FIAP)

Citation: For the development, application, and dissemination of atomistic, quantum simulation tools for nanoelectronic devices.

Koch, Volker

Lawrence Berkeley National Laboratory

Division of Nuclear Physics (DNP)

Citation: For his contributions to the understanding of fluctuations and penetrating probes in high-energy nuclear collisions.

Kotochigova, Svetlana

Temple University

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For insightful theoretical description of the formation and control of ultracold molecules in optical trapping potentials.

Krylov, Anna

University of Southern California

Division of Chemical Physics (DCP)

Citation: For developing and implementing robust theoretical models and accurate computational tools for treating complicated open-shell electronic structure problems ranging from small radicals to the complex environment of solution and proteins.

Kurtz, Michael

Harvard University

Division of Astrophysics (DAP)

Citation: For making significant contributions to spectroscopic data reduction systems, analyzing the large-scale structure of the universe, and for being the prime mover behind the Astrophysical Data System, the pioneering on-line library for astronomy.

Kuzyk, Mark

Washington State University

Division of Laser Science (DLS)

Citation: For outstanding contributions to the development of an understanding of the origins of the nonlinear optical response and applying this understanding to the development of novel organic nonlinear optical materials.

Lafamme, Raymond

University of Waterloo

Topical Group on Quantum Information (GQI)

Citation: For his visionary leadership in the field of quantum information science, and for his numerous fundamental contributions to the theoretical foundations and practical implementation of quantum information processing, especially quantum error correction and linear optical quantum computing.

Law, Bruce

Kansas State University

Division of Chemical Physics (DCP)

Citation: For fundamental contributions in vapor-liquid interface science of critical binary liquids, including surface-tension, adsorption, wetting, and orientational ordering phenomena.

Liu, Feng

University of Utah

Division of Condensed Matter Physics (DCMP)

Citation: For contributions to the theory of nanostructures and strain-induced nanoscale self-assembly.

Long, Gui

Tsinghua University

Forum on International Physics (FIP)

Citation: For his significant contribution in quantum information, including quantum secure direct communication, distributed quantum communication and quantum search algorithms, and for his important role in advancing physics and development in international physics.

Lukens, Patrick

Fermilab

Division of Particles and Fields (DPF)

Citation: For his significant contributions to the success of the CDF II experiment. In particular for the leadership role he played during the construction, installation and data-taking operations and for the data analyses he spear-headed and published, including the observation of three new baryons that carry b-quark and their precision determination of their masses.

Machta, Jonathan

University of Massachusetts, Amherst

Topical Group on Statistical and Nonlinear

Physics (GSNP)

Citation: For his many contributions to understanding the statistical physics of disordered and complex systems and for the development, analysis and application of algorithms for simulating these systems.

Mackenzie, Andrew

University of St Andrews

Division of Condensed Matter Physics (DCMP)

Citation: For studies of the electronic structure of ruthenium oxides.

Mahesh, Krishnan

University of Minnesota

Division of Fluid Dynamics (DFD)

Citation: For the development of novel numerical algorithms and creative physical insights leading to enhanced understanding of complex turbulent flows, including shock/turbulence interactions, jets in cross flow, reacting flows, and multiphase flows.

Makins, Naomi C.

University of Illinois, Urbana-Champaign

Division of Nuclear Physics (DNP)

Citation: For her contributions to our understanding of the transverse quark structure of the nucleon through the study of polarized semi-inclusive deep-inelastic lepton scattering.

Mamin, H. Jonathon

IBM Almaden Research Center

Topical Group on Instrument and Measurement

Science (GIMS)

Citation: For development of advanced force detection techniques, including their application to magnetic force microscopy, single electron spin detection and nanoscale magnetic resonance imaging.

Mantsch, Paul

Fermilab

Division of Astrophysics (DAP)

Citation: For his scientific leadership of the successful construction and operation of the Pierre Auger Observatory yielding qualitative and quantitative advances in our knowledge of the highest-energy cosmic rays.

Martin, Piero

University of Padova

Citation: For experimental studies of strongly correlated electron systems using x-ray and neutron scattering.

Megaridis, Constantine

University of Illinois, Chicago

Division of Fluid Dynamics (DFD)

Citation: For pioneering the development of thermophoretic sampling, as well as contributions to the fluid dynamics of droplet impact and the behavior of fluids in nanoenclosures.

Mehlhorn, Thomas

Naval Research Laboratory

Division of Plasma Physics (DPP)

Citation: For scientific leadership in developing physics-based simulation tools, discriminating diagnostics, and validation experiments, producing a predictive capability that contributed to major advances in ion and electron beam physics, Z-pinchs, inertial confinement fusion, and dynamic materials.

Meinhart, Carl

University of California, Santa Barbara

Forum on Industrial and Applied Physics (FIAP)

Citation: For contributions to the seminal developments of micron resolution particle image velocimetry and free-surface microfluidics for surface enhanced Raman scattering technology, and for providing deeper understanding of the flow of fluids over surfaces in the extremes of microscopic slip and high Reynolds number turbulence.

Menikov, Kirill

Johns Hopkins University

Division of Particles and Fields (DPF)

Citation: For outstanding contributions to the theory of high energy hadron collisions, heavy quark physics, and low-energy tests of the Standard Model, and for development of innovative techniques for perturbative calculations.

Meunier, Vincent

Rensselaer Polytechnic Institute

Division of Computational Physics (DCOMP)

Citation: For advancing the fields of nanoscience and nanotechnology through the application of innovative theory and advanced computation for the understanding of energy flow and storage mechanisms in nanostructured materials including carbons and metal oxides.

Mihaila, Bogdan

Los Alamos National Laboratory

Division of Computational Physics (DCOMP)

Citation: For contributions to the development of accurate numerical methods for the study of nonlinearity in many-body theory with applications to cold-atom, condensed-matter, nuclear, and high-energy physics.

Mishin, Evgeny

Air Force Research Lab - Hanscom

Division of Plasma Physics (DPP)

Citation: For pioneering contributions to the understanding of interaction of intense particle and electromagnetic beams with ionosphere and Alfvénic aurora, and for observation and interpretation of nonlinear structures and turbulence in sub-auroral plasmas.

Mitin, Vladimir

SUNY, Buffalo

Forum on Industrial and Applied Physics (FIAP)

Citation: For contributions to phonon enhancement of sensors and detectors and to controlled carrier kinetics in sensors with high responsivity.

Mittal, Rajat

Johns Hopkins University

Division of Fluid Dynamics (DFD)

Citation: For fundamental contributions to the development of immersed boundary methods in computational fluid dynamics and for the understanding of the structure of bluff body wakes, fluid dynamics of locomotion, active flow control, and biomimetics & bioinspired engineering.

Mulders, Piet

Vrije University

Division of Nuclear Physics (DNP)

Citation: For his influential contributions to the field of spin physics and in particular to the development of the theoretical formalism of transverse momentum dependent parton distribution functions.

Muller, David

Cornell University

Division of Materials Physics (DMP)

Citation: For pioneering contributions to the development of electron energy loss spectroscopy as a quantitative tool and its application to unraveling connections between changes in electronic-structure and macroscopic behavior.

Napolitano, James

Rensselaer Polytechnic Institute

Division of Nuclear Physics (DNP)

Citation: For contributions to fundamental problems of nature through experiments in nuclear physics.

Narayanan, Vijay

IBM T.J. Watson Research Center

Forum on Industrial and Applied Physics (FIAP)

Citation: For seminal contributions to the science and technology of high dielectric constant oxide materials and metal gate based transistors that have redefined silicon microelectronics.

Nayak, Chetan

University of California, Santa Barbara

Division of Condensed Matter Physics (DCMP)

Citation: For the study of non-Abelian anyons in condensed matter systems and their applications to topological quantum computing.

Newman, David E.

University of Alaska, Fairbanks

Division of Plasma Physics (DPP)

Citation: For seminal contributions in a broad range of nonlinear problems relating to plasma turbulence, transport in fusion plasmas, and complex nonlinear systems.

Nir, Yosef

Weizmann Institute of Science

Division of Particles and Fields (DPF)

Citation: For profound contributions to our understanding of the physics of flavor, within the Standard Model and beyond, and for elucidating possibilities for realization of supersymmetry in nature.

Noheda, Beatriz

University of Groningen

Division of Materials Physics (DMP)

Citation: For fundamental structural studies of new phases in perovskite-type ferroelectric materials and of domain nanostructures in epitaxial films of multiferroics.

O'Brien, Jeremy

University of Bristol

Topical Group on Quantum Information (GQI)

Citation: For his seminal contributions to quantum optics, in particular for founding contributions to the field of integrated quantum photonics and its applications to quantum information processing and quantum metrology.

Oganessian, Yuri

Joint Institute for Nuclear Research

Division of Nuclear Physics (DNP)

Citation: For validating the concept of the long sought island of stability for super-heavy nuclei.

Ogut, Serdar

University of Illinois, Chicago

Division of Computational Physics (DCOMP)

Citation: For his contributions to understanding and predicting properties of nanostructures and bulk defects, surfaces, and interfaces through the development and application of first principles computational techniques.

Olchanyi, Maxim

University of Massachusetts, Boston

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For contributions to theories of confined ultracold collisions and quantum-degenerate Bose gases in one dimension.

Schieck, Hans

Universität Köln

Topical Group on Few-Body Systems (GFB)

Citation: For significant contributions to experimental few-nucleon physics with polarized projectiles and setting new standards for testing predictions of rigorous three-nucleon and four-nucleon calculations.

Paus, Christoph

Massachusetts Institute of Technology

Division of Particles and Fields (DPF)

Citation: For his many contributions to the success of the CDF experiment including his leadership and creative analysis approach in the observation of B_s mixing and measurement of delta_M_s along with his hardware leadership of the of our level-3 trigger and Time-of-flight system.

Perahia, Dvora

Clemson University

Division of Polymer Physics (DPOLY)

Citation: For her outstanding contributions to the understanding of complex fluids formed by assemblies of strongly interacting polymers, through the use of elastic and inelastic neutron scattering.

Peterson, Kirk

Washington State University

Division of Chemical Physics (DCP)

Citation: For his substantial accomplishments in quantum chemistry, notably his development of quantum chemical methods including the extension of the correlation consistent basis sets to nearly the entire Periodic Table and for his elegant applications in main group chemistry.

Phelps, A.

University of Strathclyde

Division of Plasma Physics (DPP)

Citation: For his outstanding contributions to the application of relativistic electron beams for novel high power microwave generation and the laboratory simulation of electromagnetic wave phenomena in natural plasmas.

Pochan, Darrin

University of Delaware

Division of Polymer Physics (DPOLY)

Citation: For experimental explorations of molecular design parameters, kinetic effects, and rheological properties of peptide and block copolymer solution assembly.

Politi, Antonio

Istituto Nazionale Ottica

Topical Group on Statistical and Nonlinear Physics (GSNP)

Citation: For his innovative studies of the nonlinear dynamics of complex systems, including characterization of space-time chaos, theory of stable chaos, microscopic foundations of heat conductivity of nonlinear lattices.

Pordes, Stephen

Fermilab

Division of Particles and Fields (DPF)

Citation: For important contributions to a wide range of experiments from measurements of nucleon structure functions to neutrino oscillations, and particularly for his studies of charmonium in proton-antiproton annihilation.

Pratt, Scott

Michigan State University

Division of Nuclear Physics (DNP)

Citation: For seminal contributions to the theory of pion interferometry and the phenomenology of heavy ion collisions.

Preston, Dean

Los Alamos National Laboratory

Topical Group on Shock Compression of Condensed Matter (GSCCM)

Citation: For rigorous scientific contributions in the field of shock compression theory, and in particular for contributions leading to a better understanding of material strength at very high strain rates.

Pretorius, Frans

Princeton University

Topical Group in Gravitation (GGR)

Citation: For the computational solution of the problem of the collision of two black holes.

Prozorov, Ruslan

Iowa State University

Division of Condensed Matter Physics (DCMP)

Citation: For high-resolution measurements of the London penetration depth of superconductors.

Rafelski, Johann

University of Arizona

Division of Nuclear Physics (DNP)

Citation: For path-breaking research on the properties of hot, dense hadronic matter, especially strangeness enhancement in the search for quark deconfinement, and seminal research into the vacuum state in supercritical fields.

Rees, William

Los Alamos National Laboratory

Forum on Physics and Society (FPS)

Citation: For applying technical expertise and policy knowledge to strengthen the nation's physics enterprise.

Reich, Daniel

Johns Hopkins University

Topical Group on Magnetism (GMAG)

Citation: For opening new directions in quantum magnetism, nanomagnetism and biomagnetics through incisive experiments and analysis.

Reichhardt, Charles

Los Alamos National Laboratory

Division of Computational Physics (DCOMP)

Citation: For seminal work on the dynamics of collectively interacting particles on random or periodic substrates, including superconducting vortices, colloids, electron crystals and Bose-Einstein condensates.

Reichhardt, Cynthia

Los Alamos National Laboratory

Division of Condensed Matter Physics (DCMP)

Citation: For characterization of collective phenomena in driven systems with long-range interactions, including non-equilibrium phase diagrams, avalanches, noise and fractal flow.

Reula, Oscar

Topical Group in Gravitation (GGR)

Citation: For his contributions to mathematical relativity, in particular the study of hyperbolic and elliptic formulations of the Einstein equations and the positivity of mass.

Riess, Adam

Johns Hopkins University

American Physical Society (APS)

Citation: For his seminal role in the discovery that the expansion of the Universe is speeding up and for his contributions to the study of dark energy and to precision measurements of the Hubble constant.

Ritz, Thorsten

University of California, Irvine

Division of Biological Physics (DBIO)

Citation: For illuminating our understanding of photosynthesis and of the role of magnetoreception in magnetonavigation.

Robertson, John

University of Cambridge

Division of Materials Physics (DMP)

Citation: For outstanding achievements in theoretical understanding of electronic materials including high dielectric constant oxides, diamond-like carbon, carbon nanotubes, and amorphous silicon.

Ruoff, Rodney

Northwestern University

Division of Materials Physics (DMP)

Citation: For comprehensive contributions to the science and physics of fullerenes, nanotubes, and graphene, including novel methods of synthesis, detailed characterization, and measurement of physical properties.

Safronova, Marianna S.

University of Delaware

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For innovative development of high-accuracy first-principles methods of computational atomic structure and dynamics, and their application to optical atomic clocks, quantum computing with neutral atoms, and tests of fundamental symmetries

Saito, Susumu

Tokyo Institute of Technology

Division of Materials Physics (DMP)

Citation: For major contributions to the theoretical understanding of low-dimensional systems and nano-structures.

Saldin, Dilano

University of Wisconsin, Milwaukee

Division of Condensed Matter Physics (DCMP)

Citation: For advancement of the theory of electron and X-ray diffraction and microscopy.

Sangster, Thomas

University of Rochester

Division of Plasma Physics (DPP)

Citation: For leading the high-areal-density cryogenic target implosion campaigns on OMEGA that demonstrated a fuel areal density of 0.3 g/cm² using direct-drive capsules and the development of nuclear diagnostics required to measure cryogenic target performance on OMEGA and NIF.

Schiff, Eric

Syracuse University

Forum on Industrial and Applied Physics (FIAP)

Citation: For pioneering applied physics research on thin film silicon photovoltaic materials and devices.

Schmid, Peter J.

CRNS Ecole Polytechnique

Division of Fluid Dynamics (DFD)

Citation: For profound contributions to non-modal stability theory which have elucidated the mechanisms responsible for by-pass transition in shear flows. For the development of powerful methods capable of extracting the dominant dynamic modes and reduced-order models from experimental and numerical data.

Schuber, Mathias

University of Nebraska, Lincoln

Forum on Industrial and Applied Physics (FIAP)

Citation: For the development of generalized ellipsometry and the invention of the Optical Hall Effect, and their transformative potential for industrial characterization of materials properties, for example in liquid crystal displays and semiconductor device structures.

Schwartz, Daniel K.

University of Colorado, Boulder

Division of Condensed Matter Physics (DCMP)

Citation: For research into the behavior of molecules at interfaces.

Scime, Earl

West Virginia University

Division of Plasma Physics (DPP)

Citation: For fundamental and wide-ranging contributions to the measurement of ion heating in laboratory and space plasmas.

Shea, Joan

University of California, Santa Barbara

Division of Biological Physics (DBIO)

Citation: For fundamental contributions in the field of theoretical and computational biophysics and the study of protein folding and aggregation.

Shen, Jian

Fudan University

Topical Group on Magnetism (GMAG)

Citation: For contributions to the understanding of dimensionality effects on magnetism and emergent phenomena in spatially confined complex magnetic oxides.

Shiu, Gary

University of Wisconsin, Madison

Division of Particles and Fields (DPF)

Citation: For his breadth and leadership in the field of string phenomenology, and for his numerous pioneering contributions to elucidating the implications of string theory to particle physics and early universe cosmology.

Shluger, Alexander

University College London

Division of Chemical Physics (DCP)

Citation: For contributions to the theory of local excited states and atomic forces at insulating surfaces.

Sigrist, Manfred

ETH Honggerberg

Division of Condensed Matter Physics (DCMP)

Citation: For research on unconventional superconductivity in cuprates, ruthenates, and heavy fermion materials.

Singh, Chandrlekha

University of Pittsburgh

Forum on Education (FEd)

Citation: For pioneering research extending the impact of physics education research to advanced topics, especially quantum mechanics, and for leadership in organizing physics education activities at the national level.

Smolin, John

IBM T.J. Watson Research Center

Topical Group on Quantum Information (GQI)

Citation: For his profound contributions to the elucidation of phenomena and techniques central to our current understanding of quantum information theory.

Soles, Christopher

National Institute of Standards & Technology

Division of Polymer Physics (DPOLY)

Citation: For contributions to measuring properties of polymeric materials in thin films, nanoporous films, and nanoscale structures and then demonstrating the impact of these properties on critical aspects of the semiconductor and nanomanufacturing technology sectors.

Staebler, Gary

General Atomics

Division of Plasma Physics (DPP)

Citation: For his leadership role in developing the trapped gyro-Landau fluid (TGLF) equations and establishing that a quasilinear transport theory model based on these provides an accurate model of nonlinear gyrokinetic turbulence simulations enabling large dataset validation of gyrokinetic transport against experiment.

Stalder, Kenneth

Stalder Tech & Research

Forum on Industrial and Applied Physics (FIAP)

Citation: In recognition of his application of atomic, molecular and plasma physics in the industrial and commercial sector and of his pioneering work in the area of plasmas created in liquids.

Starobinsky, Alexei

Landau Institute for Theoretical Physics

Topical Group in Gravitation (GGR)

Citation: For his pioneering contributions to cosmology, especially to inflationary cosmology, phase transitions in the early universe, and cosmic acceleration.

Stern, Ady

Weizmann Institute of Science

Division of Condensed Matter Physics (DCMP)

Citation: For understanding decoherence processes in quantum electronic devices, and for proposing experiments to study fractional charges.

Suzuki, Yuri

University of California, Berkeley

Division of Materials Physics (DMP)

Citation: For seminal contributions to the measurement, understanding and application of optical nonlinearities.

Vaseashta, Ashok

Department of State

Forum on International Physics (FIP)

Citation: For exceptional contributions and leadership in promoting scientific collaborations throughout America, Europe with focus in Black-Sea Region, and Asian-Pacific Rim for research in nanomaterials to solve grand challenges of the 21st century.

Volpe, Cristina

CNRS Paris

Division of Nuclear Physics (DNP)

Citation: For her work on neutrino-nucleus interactions and understanding the role of neutrinos in astrophysical sites, and for her suggestion of building a source of low-energy beta beams using the beta decay of radioactive nuclei.

Walker, Barry

University of Delaware

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For investigations of multiple ionization in the non-relativistic and relativistic regimes that have contributed to the understanding of intense laser-atom interactions.

Wang, Lian-Ping

University of Delaware

Division of Fluid Dynamics (DFD)

Citation: For pioneering contributions to the understanding of turbulent flows and turbulent particle-laden flows, relevant to fine-scale dynamic similarity, turbulent dispersion, settling rate, preferential concentration, collision rate and collision efficiency of inertial particles.

Wang, Xiaogang

Peking University

Division of Plasma Physics (DPP)

Citation: For seminal contributions to the theory of magnetic reconnection with broad applications to fusion and space plasmas, and to studies of waves and instabilities in complex plasmas.

Wang, Yuh-Lin

Accademia Sinica

Forum on International Physics (FIP)

Citation: For his experimental work on surface nanoparticles, including the discovery of "surface magic clusters" with extraordinary stability, the creation of the first two-dimensional lattice of these clusters, and the demonstration of controllable high-density arrays for enhancing surface Raman scattering.

Weeks, Eric

Emory University

Topical Group on Statistical and Nonlinear Physics (GSNP)

Citation: For innovative experiments and significant contributions in nonlinear dynamics and soft condensed matter physics, including the colloidal glass transition, soft matter

rheology, and development of confocal microscopy dynamic imaging.

Wei, Ching-Ming

Accademia Sinica

Division of Computational Physics (DCOMP)

Citation: For the development and application of theoretical tools for surface structure determination, and for the significant computational work on surface clusters and the quantum size effect in metal thin films.

Weller, Robert

Vanderbilt University

Forum on Industrial and Applied Physics (FIAP)

Citation: For contributions to the understanding of the interactions of radiation with microelectronic materials and devices.

White, Andrew

University of Texas, Arlington

Division of Particles and Fields (DPF)

Citation: For his leadership role in experimental particle physics, including invention of the DZero Experiment Inter-cryostat Detector, searches for new phenomena at DZero, and contributions to national and international committees.

Willander, Magnus

Linköping University, Norrköping

Forum on Industrial and Applied Physics (FIAP)

Citation: Pioneering work on realization of polymer and silicon-germanium transistors and silicon carbide. Significant contributions on modeling solid and soft nanostructures, and experimental works on nanostructures, particularly zinc oxide nanostructures.

Wiseman, Howard

Griffith University

Topical Group on Quantum Information (GQI)

Citation: For his seminal contributions to the quantum theory of measurement, particularly to the formulation of continuous measurement, feedback, and control.

Wong, George

University of Science & Technology, Hong Kong

Division of Laser Science (DLS)

Citation: For his seminal contributions to discoveries of new optical materials for lasers, nonlinear optics and optical detectors.

Wong, Gerard

University of California, Los Angeles

Division of Biological Physics (DBIO)

Citation: For his fundamental contributions to the understanding of electrostatic self-assembly in biological systems.

Wraback, Michael

U.S. Army Research Laboratory - Adelphi

American Physical Society (APS)

Citation: For contributions to the understanding of the physics of carrier dynamics and transport in semiconduc-

tor materials and devices for optoelectronic applications.

Wukitch, Stephen

Massachusetts Institute of Technology

Division of Plasma Physics (DPP)

Citation: For pioneering contributions to the physics of high power heating of fusion plasmas using ion cyclotron RF waves, including fundamental advances in understanding RF sheaths and plasma-wall interactions, ICRF heating, flow drive and current drive, and study and application of wave plasma interactions in the scrape-off-layer enabling world record ICRF antenna power densities in a tokamak.

Xiang, Tao

Chinese Academy of Science

Forum on International Physics (FIP)

Citation: For his innovative contributions to the development of numerical renormalization group method and theoretical study of strongly correlated electronic systems, and for tireless promotion of international collaborations in condensed matter physics.

Xiao, John

University of Delaware

Topical Group on Magnetism (GMAG)

Citation: For the discovery of giant magnetoresistance in granular solids and the exploration of spin polarized transport and spin dynamics in magnetic tunneling junctions.

Yamamoto, Hiroaki

California Institute of Technology

Forum on International Physics (FIP)

Citation: For his commitment to establishing the global gravitational wave network through his contributions to the design and conceptualization of the Large Cryogenic Gravitational Wave Telescope in Japan and the EU Advanced Virgo Interferometer in Italy.

Yan, Yanfa

National Renewable Energy Laboratory

Division of Materials Physics (DMP)

Citation: For contributions to the understanding of defect physics and structure and electronic property relationship of energy materials, quasicrystals, and wide band gap metal oxides, through electron microscopy and first-principles electronic structure calculations.

Yang, Jinlong

University of Science & Technology of China

Forum on International Physics (FIP)

Citation: For his original and outstanding contributions to single-molecule phenomena at surfaces, first-principles design of functional materials, and his efforts in promoting international scientific collaborations.

Yang, Kun

Florida State University

Division of Condensed Matter Physics (DCMP)

Citation: For significant theoretical contributions to our understanding of novel phenomena in quantum Hall systems.

Yeh, Syun-Ru

Albert Einstein College of Medicine

Division of Biological Physics (DBIO)

Citation: For fundamental contributions to the understanding of protein structure, function and folding and for technological advances that opened new windows of opportunity for the study of rapid biological reactions.

Yeshurun, Yosef

Bar Ilan University

Division of Condensed Matter Physics (DCMP)

Citation: For elucidating vortex dynamics in the cuprate superconductors.

Young, Albert

North Carolina State University

Division of Nuclear Physics (DNP)

Citation: For leading a collaboration that has built a new source of ultra cold neutrons in Los Alamos that leads the world in ultra cold neutron densities and that has performed the first measurements of spin correlations in neutron beta decay using ultra cold neutrons.

Zanardi, Paolo

University of Southern California

Topical Group on Quantum Information (GQI)

Citation: For his profound theoretical contributions at the interface of quantum information processing and condensed matter physics, in particular his pioneering work on noiseless subspaces, holonomic quantum computation, and the fidelity approach to quantum phase transitions.

Zhou, Ruhong

IBM T.J. Watson Research Center

Division of Biological Physics (DBIO)

Citation: For outstanding research on structure and bio-dynamics of proteins, particularly the hydrophobic effect and the role of water, using massively parallel molecular dynamics computations.

Zhu, Shiyao

Hong Kong Baptist University

Division of Atomic, Molecular & Optical Physics (DAMOP)

Citation: For pioneering contributions in quantum optics, particularly work on spontaneous noise quenching and lasing without inversion, and for championing Chinese-American collaborations in quantum optics and physics in general.

Zhu, Xiaoyang

University of Texas, Austin

Division of Chemical Physics (DCP)

Citation: For pioneering investigations of surface molecular structure, electronic band alignment, and femtosecond electron and nuclear dynamics at molecule-solid interfaces, including applications to surface photochemistry, molecular electronics, and solar energy conversion.

Zhu, Yuntian

North Carolina State University

Division of Materials Physics (DMP)

Citation: For pioneer work on the fundamental understanding of deformation physics in nanocrystalline materials.

Call for Nominations for 2013 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, 2012, unless otherwise indicated on the website.

PRIZES

Hans A. Bethe Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=BETHE>

Tom W. Bonner Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=BONNER>

Herbert P. Broida Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=BROIDA>

Oliver E. Buckley Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=BUCKLEY>

Davisson-Germer Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZES=DAVISSON>

Einstein Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=EINSTEIN>

Fluids Dynamics Prize

<http://prizes.aps.org/prizes/login.cfm?prize=FLUID>

Dannie Heineman Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=HEINEMAN>

Irving Langmuir Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=LANGMUIR>

Julius Edgar Lilienfeld Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=LILIENFELD>

James Clerk Maxwell Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=MAXWELL>

James C. McGroddy Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=MCGRODDY>

Lars Onsager Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=ONSAGER>

Abraham Pais Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PAIS>

George E. Pake Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PAKE>

W.K.H. Panofsky Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PANOFSKY>

Earle K. Plyler Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PLYLER>

Polymer Physics Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=POLYMER>

I.I. Rabi Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=RABI>

Aneesur Rahman Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=RAHMAN>

J.J. Sakurai Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=SAKURAI>

Arthur L. Schalow Prize

<http://prizes.aps.org/prizes/login.cfm?prize=SCHALOW>

Prize for Industrial Applications of Physics

<http://prizes.aps.org/prizes/login.cfm?PRIZE=INDUSTRIAL>

Prize to a Faculty Member for Research in an Undergraduate Institution

<http://prizes.aps.org/prizes/login.cfm?PRIZE=UNDERGRADUATE>

George E. Valley, Jr. Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=VALLEY>

Robert R. Wilson Prize

<http://prizes.aps.org/prizes/login.cfm?PRIZE=WILSON>

AWARDS, MEDALS & LECTURESHIPS

David Adler Lectureship

<http://prizes.aps.org/prizes/login.cfm?PRIZE=ADLER>

Leroy Apker Award

APKER@APS.ORG

Edward A. Bouchet Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=BOUCHET>

Joseph A. Burton Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=BURTON>

Stanley Corrsin Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=CORRSIN>

John Dawson Award for Excellence in Plasma Physics Research

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PLASMA>

John H. Dillon Medal

<http://prizes.aps.org/prizes/login.cfm?PRIZE=DILLON>

George E. Duvall Shock Compression Science Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=DUVALL>

Excellence in Physics Education Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=EDUCATION>

Joseph F. Keithley Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=KEITHLEY>

Landau-Spitzer Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=LANDAU>

Maria Goeppert-Mayer Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=MGM>

Nicholson Medal

<http://prizes.aps.org/prizes/login.cfm?PRIZE=NICHOLSON>

Francis Pipkin Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PIPKIN>

Henry Primakoff Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=PRIMAKOFF>

Leo Szilard Lectureship

<http://prizes.aps.org/prizes/login.cfm?PRIZE=SZILARD>

John Wheatley Award

<http://prizes.aps.org/prizes/login.cfm?PRIZE=WHEATLEY>

DISSERTATION AWARDS

Andreas Acrivos

<http://prizes.aps.org/prizes/login.cfm?PRIZE=ACRIVOS>

Marshall Rosenbluth

Mark Gilmore, University of New Mexico, Electrical & Comp Engr Dept, MSC01 1100, Albuquerque, NM, 87131

Email gilmore@ece.unm.edu