

# 2015 ELECTION CANDIDATE INFORMATION

*The 2015 APS Nominating Committee is pleased to present an outstanding slate of candidates for the 2015 APS annual election. Those who are elected will begin their terms on 1 January 2016.*

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## FOR VICE PRESIDENT

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**Roger Falcone** • *University of California, Berkeley*  
**Lyman Page** • *Princeton University*

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## FOR TREASURER

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**Thomas Halsey** • *ExxonMobil*  
**Jim Hollenhorst** • *Agilent*

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## FOR CHAIR-ELECT, NOMINATING COMMITTEE

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**Deborah S. Jin** • *University of Colorado*  
**Robert D. McKeown** • *Jefferson Laboratory*

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## FOR INTERNATIONAL COUNCILOR

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**Johanna Stachel** • *University of Heidleberg, Germany*  
**Joachim Hermann Ullrich** • *Physikalisch-Technische Bundesanstalt*

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## FOR GENERAL COUNCILOR

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**Bonnie T. Fleming** • *Yale University*  
**Brad Marston** • *Brown University*

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**THE AMERICAN PHYSICAL SOCIETY STRIVES TO:**

Be the leading voice for physics and an authoritative source of physics information for the advancement of physics and the benefit of humanity;

Provide effective programs in support of the physics community and the conduct of physics;

Collaborate with national scientific societies for the advancement of science, science education and the science community;

Cooperate with international physics societies to promote physics, to support physicists worldwide and to foster international collaboration;

Promote an active, engaged and diverse membership, and support the activities of its units and members.

**THE APS STRATEGIC PLAN, 2013-2017:**

[www.aps.org/about/strategy/index.cfm](http://www.aps.org/about/strategy/index.cfm)

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**FOR VICE PRESIDENT**


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**Roger Falcone**  
University of California, Berkeley

**BIOGRAPHICAL SUMMARY**

Roger Falcone has been a physics professor at the University of California, Berkeley since 1983. He chaired the department from 1995-2000, and is an affiliated faculty member of Berkeley's Energy and Resources Group. He has been the director of the Advanced Light Source x-ray synchrotron facility at Lawrence Berkeley National Lab since 2006.

Falcone received his A.B. in Physics (1974) from Princeton, and Ph.D. in Electrical Engineering (1979) from Stanford, and was a Marvin Chodorow Fellow in Applied Physics (1980-83) at Stanford.

He serves on the Science and Technology Committee for the Board of Governors of Los Alamos and Lawrence Livermore Labs; chairs the Advisory Board for Paul Scherrer Institut in Switzerland; is director of the UC Institute for Materials Dynamics at Extreme Conditions; was Co-Chair of the NSF-DMR Committee for the report: NSF Materials 2022; and is past member of the APS Panel on Public Affairs.

Falcone chairs the faculty advisory committee for Berkeley's Lawrence Hall of Science; was a founding trustee of the Lafayette Library and Learning Center in his hometown; was co-faculty director of California Teach at Berkeley, a program training science and math undergraduates to become K-12 teachers; and was elected to his local school board.

Falcone is a Fellow of APS, OSA, and AAAS. He shared the APS Szilard Lectureship (2005) with the APS Study Group for National Missile Defense; shared the Halbach Prize for Instrumentation at the ALS, LBNL (2000) with R.W. Schoenlein; was a Distinguished Traveling Lecturer of the APS Laser Science Topical Group (1992-93); and received a Young Investigator Award from the NSF (1984).

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*Roger Falcone bio continued on page 4*



**Lyman Page**  
Princeton University

**BIOGRAPHICAL SUMMARY**

Lyman Page received his BA in physics from Bowdoin College in 1978. After wintering over at a cosmic ray lab in the Antarctic, rebuilding and sailing an old 37' wooden ketch for two and a half years, and then working as a carpenter in Boston, he began graduate school at MIT in 1983. He received his Ph.D. in 1989. After a year as a joint MIT/Princeton postdoc, he was an instructor at Princeton for a year, then joined the Princeton faculty, received tenure in 1995 and is currently the Cyrus Fogg Brackett Professor and Chair of the Department. He is also on the associated faculty of the Department of Astrophysical Sciences.

Page's research is on the measurement and analysis of the cosmic microwave background (CMB). He has had a leading role on more than half a dozen separate experiments to map the CMB anisotropy and polarization from a time before COBE/DMR's discovery of the anisotropy in 1992 to the present day. Page was one of the founding members of the WMAP satellite, a partnership between NASA's Goddard Space Flight Center and Princeton, and took over as the Princeton PI from Wilkinson. Page was the founding director of the Atacama Cosmology Telescope (ACT) project. ACT is an international collaboration of roughly 70 scientists at 20 institutes with major hubs of activity in Canada, Chile, the UK, South Africa, and the US. Our group built a 6m mm-wave telescope along with the related infrastructure at a 5200m altitude site in northern Chile and have been collecting data for six years. With data from these measurements and others, we now have a standard model of cosmology. Current research focuses include measuring the sum of neutrino masses cosmologically and the search for primordial gravitational waves. There is still a wealth of beautiful

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*Lyman Page bio continued on page 5*

Falcone's research primarily involves the interaction of intense light and x-rays with matter, and he has co-authored over 150 publications. He uses lasers to create and probe plasmas, to study chemical dynamics in gas phase, and to compress matter to pressures near a billion atmospheres. His experiments range from those involving single students in university labs, to teams at large-scale national lab facilities, including the NIF laser at LLNL, the ALS synchrotron at LBNL, the OMEGA laser at LLE, and the LCLS laser at SLAC. He has developed technologies and techniques to study matter at extreme conditions using ultrashort-pulse lasers and fast detectors.

#### **CANDIDATE'S STATEMENT**

The breadth of physics extends from searching for deeper understanding of the organizing principles of the universe to meeting societal needs, with the APS acting as a community-driven structure that helps scientists address these areas. APS can strengthen the collective impact of physicists, and improve the educational, industrial, private, and government institutions within which science is carried out.

Global challenges facing science broadly include inherently limited resources, while the need for research and new ideas are expanding, as well as (arguably) increasingly costly educational and research institutions. APS serves as a place where conversations can happen, about funding policies, approaches to teaching and learning, impacts, the benefits of international collaborations as well as the challenges of international competition, new directions for philanthropic foundations, infrastructure needs, and innovation for economic growth. APS can help develop strategies for the physics community and com-

municate with decision makers. Physicists have often played important roles in influencing policy, for projects involving fundamental studies of the universe, in enhancing national and international security, and in understanding human impacts on the environment.

My early interest in physics was influenced by my technically-inclined father and eclectic NYC public high school teachers. My interest in teaching and citizenship was stimulated by my mother, who had a career in editing. As a physics undergrad I discovered how engineering was coping with emerging problems in energy and the environment, and was encouraged by mentors to go to grad school in engineering and later take a fellowship in applied physics. An understanding of work outside of academia came through helping friends start an instrument company, as well as research experiments with friends at Bell Labs.

I am attracted to greater service within the APS because of the broader influence our community can have on institutional policies. Also, given my own career trajectory, I understand that there are many paths for students who have interests in science to allow them to contribute, and I believe APS can reinforce that idea. As educators, leaders, and scientists we should act on the concept that diversity (most broadly defined) is necessary to meet challenges. We should therefore celebrate and expand APS' outreach activities—including conferences that encourage underrepresented groups to consider pursuing science, climate surveys that provide institutional feedback, and outreach that informs and excites the public and government—all of which should lead to more inclusive and creative environments, and encourage the broadest participation and strongest performance overall. ■

astrophysics waiting to be done with the CMB.

Page is an APS Fellow, a member of the National Academy of Sciences, and a member of the American Academy of Arts and Sciences. He has delivered a number of named lectures. He has received the Marc Aaronson Memorial Lectureship award, the Shaw Prize, the Gruber Prize (with the WMAP team), and three Princeton teaching awards. In addition to reviewing papers (including a term on the JCAP editorial board) and proposals for different journals and agencies, Page is on the board of trustees of Associated Universities Incorporated (AUI) and an adviser for the Cosmology & Gravity program of the Canadian Institute for Advanced Research (CIFAR).

#### CANDIDATE'S STATEMENT

It is an honor to be considered for Vice President and would be an honor to represent physics through the APS. Physics is as alive as ever. New and beautiful properties of condensed matter avail themselves almost with regularity while in atomic physics, condensed-matter-like systems of atoms are being assembled; the LHC is entering a new phase; we are on the verge of a laboratory observation of gravitational waves; through a series of efforts we are unveiling the properties of neutrinos; and we are learning about the properties of fundamental particles through detailed observations of the cosmos. And these are but just a handful of examples.

Mixed in with the excitement are significant challenges. The public and the legislature need to be kept aware of how vital physics is to our country's intellectual identity and to how deeply rooted our prosperity and security are in the curiosity and experimentation of our scientific forebears. The non-scientific public also needs to be aware of the power that understanding new things in Nature has for inspiring the next generation.

Deeply connected to the core of what we do is how we convey it. The credibility of physics is rooted

in the verifiability of experiments and ideas combined with a high bar for acceptance of a new result, and a minimal number of incorrect results. This conservatism is at apparent odds with the twitterverse and similar modes of communication but it need not be. Relatedly, new formats for data, the sheer volume of data, the ability to archive on the century or longer time scale, and the high cost of scientific journals call for a regular reassessment of what it means to "publish." The arXiv has been revolutionary, but it is likely just a start. I look forward to working with colleagues to navigate these waters.

My own path through physics has not been the usual one, and I am well aware that there are many paths and many ways to be a physicist. Out of curiosity about the low numbers of minorities in our field, I went to a joint NSBP/NSHP conference in 2009. I learned in more detail than I had read of the significant challenges facing underrepresented minorities with interests in physics. This led to proposals to the APS to start a Bridge Program. Although they were not successful, the follow-up conversations were. We were in the end fortunate to receive internal funding at Princeton to start a program that also includes Astrophysics.

I have learned about different perspectives on the challenges and hurdles for doing physics on the home front as well. My wife is a biophysicist, one son is in graduate school in physics, and another is a physics/computer science major.

I have had the amazing good fortune of being part of the revolution in cosmology, and through that have had the opportunity of working in small and now mid-sized international collaborations. These experiences along with those of managing multimillion yet tight budgets and participating on the board of a scientific NGO seem to mesh well with APS's new governance structure. I look forward to working with colleagues at the APS and the broader physics community to represent and promote physics. ■

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**FOR TREASURER**


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**Thomas Halsey**  
ExxonMobil

**BIOGRAPHICAL SUMMARY**

Thomas Halsey is currently Chief Computational Scientist at ExxonMobil Upstream Research Company in Spring, Texas. In this role, he exercises technical leadership of modeling physics, applied mathematics, technical software engineering, and high performance computing for ExxonMobil's global hydrocarbon exploration and production research, development, and business activities. During his tenure at the Upstream Research Company, ExxonMobil has developed a world-class petascale high performance computing capability, which has been used by Halsey and other company researchers to create major innovations in geophysical imaging and in the modeling of subsurface hydrocarbon reservoirs.

Halsey joined ExxonMobil (then Exxon) in 1994 at the Corporate Strategic Research Laboratories in Annandale, NJ. Since then, he has served in a variety of research, staff, and management jobs within the company, including Director of the Physical and Mathematical Sciences Laboratory in Annandale, a stint in Corporate Planning in ExxonMobil headquarters in Irving, TX, and a role as the founding manager of a computational sciences division at the Upstream Research Company, where he also managed a "break-through" innovation program for seven years.

From 1984 until 1994, Halsey was a postdoctoral fellow and then a faculty member at the University of Chicago, in the Department of Physics and the James Franck Institute. He received his Ph.D. from Harvard in 1984 under the supervision of David R. Nelson, and attended the University of California, Riverside, as an undergraduate, graduating with a B.S. in 1980.

Halsey has worked in a variety of areas of statistical physics, soft-condensed matter physics, and ap-

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*Thomas Halsey bio continued on page 7*



**Jim Hollenhorst**  
Agilent

**BIOGRAPHICAL SUMMARY**

Jim Hollenhorst is Senior Director of Technology for Agilent Technologies. He served previously as Vice President and Director of Molecular Technology, as VP and Director of Technology Management and as Director of Electronics Research.

He received his B.S. in Physics from the University of Minnesota and his M.S. and Ph.D. in Physics from Stanford University. His thesis work initiated a flood of research on "squeezed states" named after the "squeeze operator," which he introduced. He was the first to suggest that these states could improve the sensitivity of an optical interferometer, beyond what had been thought to be a fundamental quantum limit. He spent eleven years at Bell Laboratories, where his team developed the avalanche photodiodes that became a mainstay of AT&T's network. His team also developed pump lasers that enabled the world's first optically-amplified submarine cable.

The following 25 years were spent at HP and its spin-off, Agilent, where he led research spanning a wide range of disciplines. A notable accomplishment was his initiation and early leadership of the development of FBAR filter technology, arguably the most successful MEMS technology ever developed and a key enabler of compact smart phones. Agilent's spin off, Avago, is currently shipping billions of FBAR filters per year and that volume is growing rapidly.

In addition to his financial experience in leading research organizations, he received training in finance and accounting in executive development programs at AT&T and HP and through executive training at the Kellogg School of Management. He is currently serving as chair of the audit committee for a biotech startup, Gen9, for which he is a board member and

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*Jim Hollenhorst bio continued on page 8*

plied mathematics. He was an author of a widely cited paper on the singularity spectra of multifractal measures, as well as a series of works applying these and other ideas to diffusion-limited aggregation; wrote key early papers on electro- and magneto-rheological fluids, and has investigated a number of topics in the statistical mechanics and dynamics of Josephson junction arrays. Since joining ExxonMobil, he has worked in the dynamics of granular systems as well as on the diagenesis (shape evolution over time) of porous media.

Notwithstanding the industrial direction of his career, he has remained engaged with both the academic and national laboratory physics communities. He has held visiting positions at CE-Saclay (France), New York University, and Boston University; he has also served on advisory boards at Harvard, Northwestern, Rice, and New York Universities. He is a past chair of the APS Group on Statistical and Nonlinear Physics, and is a Fellow of the American Physical Society.

#### **CANDIDATE'S STATEMENT**

The heart of modern science is communication, and the most important function of the APS is to promote scientific communication, which it achieves through its publishing and meeting activities. Indeed, most members are aware of the APS mainly through these activities, which are the primary means by which the APS supports our careers. The APS has promoted communication extremely well for over one hundred years, but the current state of both physics and society require that we continue to improve our performance in advancing scientific communication. I thus believe that the APS Treasurer, with lead oversight responsibility for APS budgeting, investment, and development, must be committed to effective use of APS resources to maintain and enhance scientific communication.

We are all aware of the challenges facing the business model for scientific publishing. A larger issue is the gap that has emerged in the last generation between the activities of those members, primarily in academia and national labs, focused on open, peer-reviewed science, and the growth of industrially-focused physics research (much of it in universities!),

which creates a variety of forms of intellectual property. This gap weakens both sides. Application-focused scientists need to apply the most recent insights into nature, which usually emerge from academic researchers. On the other hand, academic researchers interested in addressing major social problems in energy, the environment, health care, homeland security, or manufacturing need insights into how to scale technologies to succeed in the marketplace, insights that industrial scientists are best placed to provide.

Physics advances through the fertile interaction between its rigorous and deep exploration of nature and its powerful impact on our society. Early in my career, these two sides of physics were effectively linked by large industrial basic research operations such as Bell Labs and IBM Watson. While physics is still widely practiced in industry (as reflected in industrial membership statistics for the APS), much physics now occurs in smaller companies, or is embedded in efforts including, and perhaps led by, other disciplines.

Physics is thus still important in industry, but it is less visible, which has frayed the links between the "academic" and "industrial" sides of the discipline. The APS has laid a strong foundation for addressing this through the activities of the Forum on Industrial and Applied Physics and the establishment of the journal *Physical Review Applied*. While fully solving this problem is well beyond the resources of any one APS leader (or even of one learned society), I believe that my exposure to both fundamental and applied research conducted at a top level will help me to contribute unique insights on how the APS can maintain and improve strong communication among all of its members.

In addition to this overarching challenge, we must not neglect our other important goals. These include advocating for physics to governments and society at large, promoting open international mobility of physicists (a key avenue of communication), and ensuring that the next generation of talent needed to advance our beloved science can receive the education needed. This applies especially to those who might be excluded, or exclude themselves, due to class, sex, ethnicity, or other characteristics. ■

former chair of the compensation committee.

Hollenhorst is a Fellow of APS and IEEE. He served two terms on the governing board of the American Institute of Physics, as Chair of the Physics Today Advisory Committee, and as Chair of the Corporate Associates. He is currently serving as chair of the search committee for the new Editor-in-Chief of Physics Today. He has served on numerous prize committees for the AIP, APS, EPS, and IEEE, as well as serving on the selection committee for the National Medal of Technology and Innovation under two presidential administrations. He served on numerous industrial and academic advisory committees including the California Nanosystems Institute, the Stanford Center for Integrated Systems, the Berkeley Wireless Research Center, and the Center for Analytical Biotechnology.

#### **CANDIDATE'S STATEMENT**

I was pleased to be asked to stand for election as APS Treasurer. While most of my career has been in management, my passion has always been phys-

ics. The APS plays an increasingly important role in nurturing the community of physicists, using its influence to strengthen science policy, and providing authoritative information in a world overloaded with information from questionable sources.

The APS and its membership face many challenges, not the least of which is the threat to the business model due to rapid changes in the scientific publishing field. Open access is the rallying cry from the government, the universities, and from the readers and authors of our journal articles; but someone has to pay for the added value that APS brings.

I would bring an industrial perspective to the APS. Most physics graduates find jobs in the public sector, often working in interdisciplinary teams and rarely identified by their academic disciplines; but they can still benefit greatly from the role that APS plays. As Treasurer, I would bring the conviction that sound financial management is a top priority. Without it, none of the exciting goals of APS will survive the test of time. ■

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**FOR CHAIR-ELECT, NOMINATING COMMITTEE**


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**Deborah S. Jin**  
University of Colorado

**BIOGRAPHICAL SUMMARY**

Dr. Deborah S. Jin is a Fellow of the National Institute of Standards and Technology (NIST) and an adjunct professor of physics at the University of Colorado, Boulder. She is a Fellow of JILA, which is a joint research institute of NIST and the University of Colorado at Boulder. Jin received an A.B. in physics from Princeton University and a Ph.D. in physics from the University of Chicago.

Jin is an experimental physicist whose research explores the behavior of atomic gases at ultracold temperatures. She is known for her creation of the first ultracold gas of fermions and the realization of a superfluid of paired fermions.

She is a Fellow of the American Physical Society and a member of the National Academy of Sciences. Her other honors include the American Physical Society's Maria-Goeppert Mayer Award, a John D. and Catherine T. MacArthur Fellowship, the Service to America Medal: Science and Environment, the American Physical Society's I. I. Rabi Prize, the Benjamin Franklin Medal in Physics, Sigma Xi's William Proctor Prize for Scientific Achievement, a Department of Commerce Gold Medal, the L'Oreal-UNESCO Women in Science Award for North America, and the National Academy of Sciences Comstock Prize.

**CANDIDATE'S STATEMENT**

The American Physical Society is a great resource for our community and an important advocate for physics. The institution's success is built on the willingness of many of its members to serve in various capacities. If elected, I would work to identify and attract strong candidates for APS leadership roles. ■



**Robert D. McKeown**  
Jefferson Laboratory

**BIOGRAPHICAL SUMMARY**

Robert D. McKeown received a B.S. in physics in 1974 from Stony Brook University in Stony Brook, NY and a Ph.D. in physics from Princeton University in 1979. After one year on the scientific staff at Argonne National Laboratory, McKeown took a position as Assistant Professor of Physics at the California Institute of Technology. He became an Associate Professor in 1986 and a Full Professor in 1992. In 2010 he joined the Thomas Jefferson National Accelerator Facility as the Deputy Director for Science and Technology. He also currently holds a Governor's Distinguished CEBAF Professorship at the College of William and Mary. His research interests have included studies of weak interactions in nuclei, neutrino oscillations, parity-violating electron scattering, and the electromagnetic structure of nuclei and nucleons.

While Professor of Physics at Caltech, McKeown and his research group pioneered new techniques using spin-dependent electron scattering to study novel aspects of nucleon structure, including the form factors of the neutron and the role of strange quark-antiquark pairs. As a collaborator on the KamLAND experiment in Japan and the Daya Bay experiment in China, McKeown contributed to important discoveries in neutrino oscillation physics. These collaborations also provided him with experience in the development and execution of international research projects. As Deputy Director of Science and Technology at Jefferson Lab, McKeown oversees the nuclear physics program that includes participation by over 1300 user scientists at this DOE facility.

McKeown received a National Science Foundation Presidential Young Investigator award in 1984, was the Alexander M. Cruickshank Lecturer at the

1999 Gordon Conference on Nuclear Physics, and is a Fellow of the American Physical Society. In 2009 he was awarded the APS Tom W. Bonner prize, for “his pioneering work on studying nucleon structure using parity-violating electron scattering, in particular for the first measurement of the strange quark contribution to the electromagnetic structure of the proton.” He has served on the Nuclear Science Advisory Committee, the Physical Review C editorial board, the editorial board for Progress in Particle and Nuclear Physics and on advisory committees for Jefferson Lab, Brookhaven National Laboratory, Argonne National Laboratory, and Fermilab. He served as the chair of the APS Division of Nuclear Physics in 2012.

#### **CANDIDATE’S STATEMENT**

The APS is of paramount importance to the community of physicists, providing a forum for our views and aspirations, a first-rate set of publications for documenting and communicating our research, and serving as a valuable motivator for education of the next gen-

eration of physicists as well as the broader public. The communication of science to the public has never been more important, as technical and scientific issues loom larger than ever in public policy. We are also witnessing a period of rapid change in scientific publication, and it is essential that the APS maintain its leadership position in this area. It is increasingly evident that science has become a more international enterprise as more countries develop their research capabilities, often in collaboration with the US and other nations with well-established programs. The APS has appropriately embraced a view to develop a more international profile in the future.

It is essential that the officers that participate in the APS governance structure represent the breadth in scientific coverage of the discipline, exhibit the diversity of our research community and the broader public, and also continue to advance the international posture of the Society. As Chair of the Nominating Committee, I would endeavor to implement these principles while also upholding the ideals and standards of the Society. ■

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**FOR INTERNATIONAL COUNCILOR**


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**Johanna Stachel**  
University of Heidelberg,  
Germany

**BIOGRAPHICAL SUMMARY**

Johanna Stachel has been Professor of Experimental Physics at the University of Heidelberg, Director of the Physikalische Institut, as well as Dean and Vice Dean of the Faculty of Physics and Astronomy in the period since 1996. She studied Chemistry and Physics at the University of Mainz and the ETH Zuerich. She received her diploma in 1978 and her doctoral degree of the University of Mainz in 1982 with work at the research reactor at the University of Mainz and at GSI.

After graduation, Stachel went in 1983 to the State University of New York at Stony Brook as Feodor-Lynen Fellow of the German Alexander-von-Humboldt Foundation. In 1985 she joined the faculty there as Assistant Professor, later as Associate and finally as Full Professor. In this time she performed experiments at the Nuclear Structure Laboratory in Stony Brook, at ORNL and MSU and at the BNL AGS.

In 1996 she moved to the University of Heidelberg to build up the German effort in the ALICE experiment at the CERN LHC.

Stachel has worked in nuclear structure physics, then intermediate energy heavy ion physics and is since 1985 part of the high energy heavy ion physics community studying the quark-gluon plasma, first at Brookhaven and then at CERN. In addition, she has worked on high energy heavy ion phenomenology and has much cited publications in the area of hadronization of the quark-gluon plasma and on charmonia as probe of deconfinement.

She was spokesperson of the CERN SPS experiment CERES/NA45 and is project leader of the ALICE Transition Radiation Detector and member of the ALICE Management Board. She heads the German BMBF Forschungsschwerpunkt ALICE201.

*Johanna Stachel bio continued on page 12*



**Joachim Hermann Ullrich**  
Physikalisch-Technische  
Bundesanstalt

**BIOGRAPHICAL SUMMARY**

Joachim Hermann Ullrich is the President of the Physikalisch-Technische Bundesanstalt (PTB) the German equivalent of NIST with about 2,000 employees. Directly connected to the office of PTB President are his duties as Chairman of the Foundation Council of the Werner von Siemens Ring Foundation as well as Chairman of the Helmholtz-Fonds e. V. In 2013, Joachim Ullrich was elected to be the Second Vice President on the Presidial Board of DIN, the German Institute for Standardization. Within the framework of the Metre Convention, Joachim Ullrich is a Member of the International Committee for Weights and Measures (CIPM), has been a Vice-President of the CIPM since 2015 and, at the start of 2014, was appointed as the President of the Consultative Committee for the International Units (CCU).

Joachim Ullrich studied Geophysics and Physics at Johann Wolfgang Goethe University Frankfurt, where he graduated in 1983. He received his Ph.D. in 1987 and attained the highest academic qualification (habilitation) in 1994. From 1989 to 1997 he was a Research Scientist at the Gesellschaft für Schwerionenforschung (GSI) in Darmstadt (a member of the Helmholtz Association). After a period as a Visiting Scientist at Kansas State University and being appointed as a Visiting Professor at the University of Missouri in 1995, he held the Chair of Experimental Physics at the University of Freiburg from 1997 to 2001. In 2001 he was appointed Director at the Max Planck Institute for Nuclear Physics (MPIK) in Heidelberg, heading the “Experimental Few-Particle Quantum Dynamics” Division. As the Managing Director of the MPIK from 2002 to 2006, he was significantly involved in shaping the future scientific directions of the institute, initiating among other things the design and construction

*Joachim Hermann Ullrich bio continued on page 13*

Stachels research was awarded with the Preis der Johannes Gutenberg Universitaet, an A.P. Sloan Fellowship, a Presidential Young Investigator Award, the Lautenschlaegerpreis, the German Bundesverdienstkreuz and in 2014 the EPS Lise-Meitner Preis. She is Fellow of the APS, Member of the Berlin-Brandenburgische Akademie der Wissenschaften, the Academia Europaea, the Heidelberger Akademie der Wissenschaften and was just elected as Member of the Leopoldina.

Stachel has served on many national and international committees, including two terms on NSAC, on the Board of Physics and Astronomy of the National Research Council, the AUI visiting committee for BNL, the Deans advisory committee for the MIT LNS, the CERN SPS and GSI experiment committees, the NIKHEF, DESY, Helsinki Institute of Physics, DAPNIA, FIAS, ECT\* and EMMI scientific councils, the CERN scientific policy committee and others. Currently she serves on the University councils in Heidelberg and at the KIT.

Currently Stachel is in the 5th year of the presidential line of the German Physical Society DPG; after one year as president elect and two years as president, she is currently in the middle of the two year term as vice president of the oldest and with about 63 k member largest physical society in the world.

#### CANDIDATE'S STATEMENT

I love to stay grounded in research and teaching of physics and view this as my main profession. Research is a truly international enterprise and, in my field, we are looking ahead to very exciting times of studying the quark-gluon plasma both at the CERN LHC and at RHIC at BNL. More generally, I am convinced of the value of basic research for our society. We need to establish and maintain a good balance between basic and applied research and R&D towards innovation. Therefore we need to convince law and policy makers as well as the general public of the value of basic research. At the same time, I realize that our society needs scientifically educated people and in particular needs physicists. Therefore, beyond educating physics students, I focus on the next generation of physicists, Kto12 physics education and the 'supply' in physics teachers and their education. My past 4 years in the presidential line of the DPG were rewarding and interesting. I was continuously promoting a balance between basic and applied research. I initiated several studies on physics and teachers education and we are currently in Germany following through with recommendations and initiatives from these. Many of the questions and challenges for the German and American Physical Societies are similar (and some are not). I would be happy to bring my experience in the DPG, in international research and research organization and my knowledge of the US research landscape and of the APS together as International Councilor of the APS. ■

of a “cryogenic storage ring,” the CSR for investigating cold molecules. He furthermore actively contributed to teaching at the University of Heidelberg as an Honorary Professor from 2002 onwards. From 2006 to 2011, he was the Head of the Max Planck Advanced Study Group at the Hamburg Center for Free Electron Laser Science (CFEL), which was supported by the Max Planck Society, DESY and Hamburg University. As a CFEL Board Member and, after 2008, as Chair of the CFEL Management Board, he was able to substantially help shape the construction of the CFEL building and the development of science within CFEL.

His main research interest is in few-particle quantum-dynamics as well as in the structure of atoms, ions and molecules. During his thesis, he initiated the development of Recoil-ion Momentum Spectroscopy (RIMS) and, as a researcher at GSI, he invented, together with Robert Moshhammer, the “reaction microscope” (COLTRIMS), which allows the performance of kinematically complete experiments of atomic and molecular reactions. Later, his interest turned to precision spectroscopy of highly charged ions using and developing a suite of electron-beam ion traps (EBIT) as well as to the interaction of intense short-pulse lasers with atoms and molecules. Among his recent accomplishments is the development of the CAMP multipurpose measuring instrument, which combines a reaction microscope with forefront X-ray semiconductor detectors, and was first used at the X-ray laser LCLS in Stanford. Here the focus was on the investigation of basic energy transfer mechanisms from intense X-ray pulses to atoms, molecules and matter in general. Moreover, CAMP enabled ground-breaking structural imaging experiments on increasingly complex systems, molecules, clusters, biomolecules and biological samples such nano-crystals and viruses.

His scientific work is documented in more than 500 publications, among them about one hundred in the Physical Review Letters, Science, and Nature. In 1999, Joachim Ullrich was awarded the Gottfried Wilhelm Leibniz Prize of the German Research Foundation. He received the David Bates Medal from the London Institute of Physics in 2004 and the Philip Morris Research Award in 2006. He has been a Consultant Professor at Fudan University Shanghai since 2003, is a Fellow of the American Physical Society, an External Scientific Member of the Max Planck Society and a Member of the “National Academy of Science and Engineering”, acatech. He is a Member of the Advanced Science Institute Advisory Council (ASIAC), Japan, a Member of the Scientific Advisory Board of the Linac Coherent Light Source, LCLS, at SLAC operated by Stanford University, and of several institutions of the Helmholtz Association.

#### **CANDIDATE’S STATEMENT**

It is my strong conviction that curiosity-driven research, with excellence being the exclusive requirement, is the basis of international innovation, economic and cultural growth. As an APS International Councilor, having hands-on experience and excellent connections with all major research institutions in Germany, including the Max Planck Society, the Helmholtz Association, various universities and governmental research institutions like PTB and standardization bodies like DIN, along with significant knowledge of the research landscape in the European Union, in Japan, in the United States as well as worldwide within the Metre Convention, I will strive to foster increased international, interdisciplinary and excellent collaboration in basic research and science across the disciplines. ■

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**FOR GENERAL COUNCILOR**


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**Bonnie T. Fleming**  
Yale University

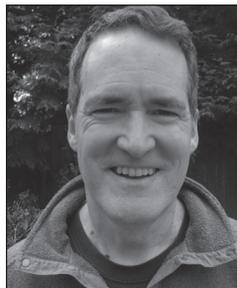
**BIOGRAPHICAL SUMMARY**

Bonnie T. Fleming, a Professor of Physics at Yale University studies neutrinos to both understand their nature and learn what they can tell us about the rest of the Standard Model of particle physics and the universe. Prior to graduate school, Prof. Fleming work as a beam operator on the AGS accelerator complex at Brookhaven National Laboratory. As a graduate student at Columbia University, Prof. Fleming studied proton structure by observing high energy neutrino-nucleon interactions at the NuTeV experiment at Fermilab. Following her Ph.D. work, she held a Lederman Fellowship at Fermilab working on the MiniBooNE experiment, searching for neutrino oscillations. While at Fermilab, Prof. Fleming started hands-on program called the “Girls Science Salon” encouraging middle school girls in science. At Yale, Prof. Fleming built on this program founding “Girls Science Investigations” for middle school girls. GSI is a Saturday program held 4 times per year, typically drawing 150 middle school girls per session from the surrounding community engaging them in hands-on science activities in the physics labs at Yale.

In her research program at Yale, Prof. Fleming is pursuing next generation, precision neutrino detection techniques. She combines a rigorous R&D program on Liquid Noble Gas detectors with pressing questions in neutrino physics. Prof. Fleming is the founding Scientific Spokesperson and now Co-spokesperson of the MicroBooNE experiment, a Liquid Argon Time Projection Chamber designed to examine low energy neutrino interaction phenomena observed by MiniBooNE, and serve as a prototype detector for future neutrino oscillation experiments. Prof. Fleming also collaborates on the short

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*Bonnie T. Fleming bio continued on page 15*



**Brad Marston**  
Brown University

**BIOGRAPHICAL SUMMARY**

Brad Marston is a professor of physics at Brown University. A graduate of Caltech, he received his Ph.D. from Princeton University in 1989 and did postdoctoral work at Cornell University. He has been a visiting scientist at the Institute for Theoretical Physics at UC Santa Barbara, a visiting professor at MIT, a visiting associate at Caltech, and a visiting professor at ENS-Lyon. Marston is an Alfred P. Sloan Fellow and a recipient of a National Young Investigator Award. In 2008 he was designated a NSF American Competitiveness and Innovation Fellow, and in 2010 an APS Outstanding Referee.

He is a Fellow and lifetime member of the American Physical Society and is also a member of the American Geophysical Union and the American Meteorological Society. He has chaired the Advisory Board of the Kavli Institute for Theoretical Physics (KITP), and is currently Vice-Chair of the APS Topical Group on the Physics of Climate (GPC).

Marston was originally trained in theoretical condensed matter physics but has also worked on climate physics since 1990. He co-organized workshops and programs at the Aspen Center for Physics in 2005 and 2012, at the KITP in 2008 and 2014, and an invited session at the 2013 APS DFD meeting. His research interests in condensed matter focus on systems with strong electronic correlations and/or driven far from equilibrium. He has made contributions to the theory of quantum antiferromagnetism, bosonization, the electronic properties of layered materials, atom-surface scattering, and the numerical simulation of quantum many-body systems.

He has presented over 65 colloquia on climate physics and is co-editing an issue of the New Journal

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*Brad Marston bio continued on page 16*

*Bonnie T. Fleming, continued from page 14*

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baseline neutrino experiments ArgoNeuT and SBND, and the DUNE long baseline experiment. Her work in the community has included membership on the High Energy Physics Advisory Committee, HEPAP's DMSAG (2007) and P5 (2014) sub-committees, and the DPF's CPAD committee (2014-2015). Combined with her research program and community participation, Prof. Fleming actively encourages women and girls to pursue science through mentoring and several programs including the APS Conference for Undergraduate Women in Physics, and Girls Science Investigations. Prof. Fleming was elected a fellow of the American Physical Society in 2013.

#### **CANDIDATE'S STATEMENT**

The APS has a long history of representing and responding to the physics community towards the advancement of science and society both nationally and

internationally. I am honored to stand for election as a General Councilor for the APS and hope that I can, if elected, help in this endeavor.

Working within and leading a relatively large collaboration in particle physics, I have learned that a large part of what I love about what I do is working with different people and finding solutions to research puzzles within this context. I hope that I can take this appreciation and my ability to work with people to the tasks and goals that face the APS and its constituency.

I would bring to the APS as a General Councilor my experience from a number of other committees including physics advisory committees, the APS Division of Particles and Field's CPAD (Coordination Panel for Advanced Detectors) committee, and on the APS DPF Nominating Committee. ■

of Physics focused on “Stochastic Flows and Climate Statistics.” His NSF-funded climate research program is focused on the direct statistical simulation of large-scale atmospheric and oceanic circulation using concepts adapted from non-equilibrium statistical physics and large deviation theory. He is also interested in the atmospheric dynamics of other planets including exoplanets. His app “GCM,” freely available on the Apple Mac App Store and installed over 2,200 times, illustrates the statistical approach and can also be used in the classroom as an educational tool. He is currently working to incorporate subgrid processes such as boundary-layer turbulence and clouds within the framework of direct statistical simulation.

#### **CANDIDATE’S STATEMENT**

The APS bylaws state: “In the firm belief that an understanding of the nature of the physical universe will be of benefit to all humanity, the Society shall have as its objective the advancement and diffusion of the knowledge of physics.” The uniquely powerful ways that physicists understand nature—experimentally, observationally, computationally, and theoretically—have made invaluable contributions to both basic and applied science. In a time when the scientific method is under political and ideological attack, the APS plays a vital role by reminding both the public and those in government of contributions made by physicists. This is essential if physics is to enjoy continued support, but it is even more important to

ensure that the spirit of scientific inquiry is not lost but rather embraced by humanity.

Seeing the minds of first-year college students in my introductory physics course light up when they first encounter relativity and quantum mechanics reminds me that young people are the future of the APS. Most will go on to careers outside of physics departments and laboratories, and not join the APS, but many will continue to think of themselves—correctly—as physicists. Many members of the American Geophysical Union (AGU) for instance are physicists but do not (yet!) belong to the APS. The APS should strive to attract and retain these and other physicists as members, as they can bring invaluable knowledge and perspectives.

Topical Groups allow the APS to respond flexibly to new areas of member interest. As a member of the initial Organizing Committee, and later the Executive Committee of the newly formed Topical Group on the Physics of Climate (GPC), I had the privilege and challenge of helping the GPC evolve from an idea into a functioning entity. Several other Topical Groups have organized recently, and by expanding the range of topics studied by physicists, the Groups are in an excellent position to interest members of underrepresented groups to participate in the journey towards a deeper understanding of nature. At the same time each Topical Group confronts challenges that differ from those facing the larger Divisions. As a General Councilor I would bring a working knowledge of a Topical Group to the APS Council. ■