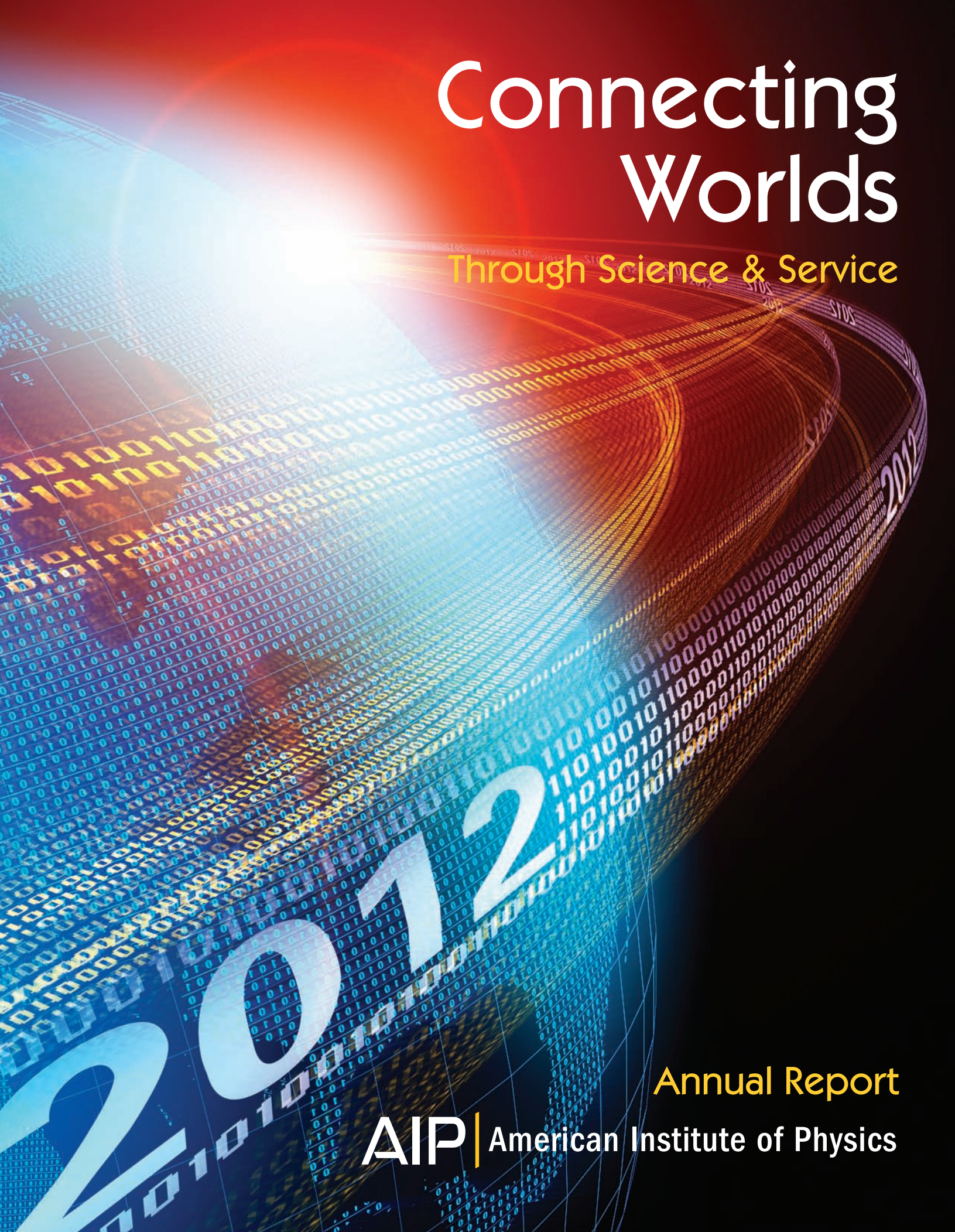

Connecting Worlds
Through Science & Service
2012
Annual Report
AIP | American Institute of Physics

*"**We are connected now more than ever before — at every level — as physicists, scientists, members of society, and as humans.** The advent of faster travel and instant communication connects people of all backgrounds across national, political, and ethnic borders. Physical scientists collaborate with biologists, engineers, and economists to help with education, climate science, and energy production. These are issues that affect everyone, so scientists must choose to forge the links between science and society, between the lab and the living room, and across barriers that divide the world. We must choose to bring physics to all."*

CHRIS FAESI, SOCIETY OF PHYSICS STUDENTS, HARVARD UNIVERSITY

LOUIS J. LANZEROTTI
Chair
AIP Governing Board

H. FREDERICK DYLLA
Executive Director
& CEO

These words set the thematic context for the 2012 Physics Congress, the largest conference ever planned for undergraduate physics students, organized by the Sigma Pi Sigma physics honor society. The context also defines the responsibility that we all face as members of the physical sciences community.

AIP is a facilitator of relationships and a conduit of knowledge, connecting people with people, and people with potential. Physical scientists, 135,000 of whom make up the collective membership of the AIP Member Societies, are our primary audience. Our Member Societies — AAS, AAPM, AAPT, ACA, AGU, APS, ASA, AVS, OSA, and SOR — are our primary stakeholders, and together we strive to advance human well-being by advancing the physical sciences.

AIP's scholarly publishing mission to bring quality science to the world compels us to continually improve our publishing offerings and content delivery, meeting demands for better, faster, and more cost effective information resources. AIP is committed to increasing public access to scholarly information and committed to the scholarship of peer-reviewed published works. As a strong advocate for publishing policy that upholds both of these ideals, AIP is a driver of federal agency–publisher–academia partnerships that are developing tangible progress toward greater public access.

AIP Physics Resources span demographics, geography, and the economy. The Society of Physics Students expanded professional development activities for undergraduate physics majors, with close attention to minority students, at the Physics Congress and at Member Society meetings. AIP industrial outreach sought to build capacity for industrial physics in developing countries by taking the Industrial Physics Forum outside the US for the first time. AIP's historians uncovered the vital role entrepreneurial physicists have played in new technology development in the United States.

We recognize that AIP's ability to bring value to our community is dependent on our ability to engage our customers and Member Society stakeholders, and to stay connected to their needs in the years to come.

About AIP

The American Institute of Physics (AIP) is an organization of 10 physical science societies, representing more than 135,000 scientists, engineers, and educators. As one of the world's largest publishers of scientific information in physics, AIP employs innovative publishing technologies and offers publishing services for its Member Societies. AIP's suite of publications includes 16 journals, three of which are published in partnership with other organizations; magazines, including its flagship publication *Physics Today*; and AIP Conference Proceedings. Through its Physics Resources Center, AIP also delivers valuable services and expertise in education and student programs, science communications, government relations, career services for science and engineering professionals, statistical research, industrial outreach, and the history of physics and other sciences.

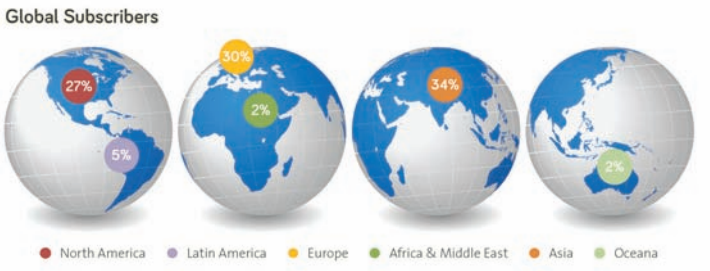
AIP Member Societies

ASA Acoustical Society of America
AAPM American Association of Physicists in Medicine
AAPT American Association of Physics Teachers
AAS American Astronomical Society
ACA American Crystallographic Association
AGU American Geophysical Union
APS American Physical Society
AVS Science & Technology of Materials, Interfaces, and Processing
OSA The Optical Society
SOR The Society of Rheology

Through Science

AIP JOURNALS PROVIDE WORLD-CLASS CONTENT, and nowhere is their value more evident than in the extraordinary number of physical scientists who cite AIP articles in their own research papers. According to the *2011 Journal Citation Reports* (Thomson Reuters, 2012), researchers hold AIP's entire portfolio of publications in high regard. For example:

- *Applied Physics Letters* and *Journal of Applied Physics* retained their positions as the first and second most-cited journals by applied physics researchers.
- The front-runner for citations in the Atomic, Molecular, and Chemical Physics category, *The Journal of Chemical Physics'* impact factor increased by 14%.
- *Physics of Fluids* is among the top three most highly cited journals in both the Physics, Fluids & Plasmas, and Mechanics categories with a 12% increase in impact factor.
- *Physics of Plasmas* continues to be the most highly cited journal dedicated entirely to plasma physics.
- *Journal of Renewable and Sustainable Energy* experienced a 39% jump in its impact factor.
- *Physics Today* saw an impressive 27% increase.



RESEARCHERS IN NEARLY 4,000 INSTITUTIONS AROUND THE WORLD ACCESS AIP journals and Conference Proceedings. Complementing the record number of articles published in 2012 was the extensive usage of content — article downloads also reached an all-time high.

JOURNAL HIGHLIGHTS. *AIP Advances* Executive Editor Robert Austin spearheaded the special topic section "Physics of Cancer," examining the behavior of tumors from the physical, genomic, and biological perspectives.

Biomicrofluidics published a special topic section "Multiphase Microfluidics," ranging from fundamental enquiries into fluid physics to frontier applications in experimental biology and materials science.

Journal of Mathematical Physics published a special issue "Incompressible Fluids, Turbulence and Mixing," providing a rigorous look at important practical problems in fluid mechanics.

Chaos included the focus section "Fifty Years of Chaos: Applied and Theoretical," which takes a broad look back at the last half century of developments in the field.

Review of Scientific Instruments featured 14 invited articles, perspectives, and review articles covering such topics as atomic clocks, greenhouse gas collection, and attosecond photonics.

Marking its 50th Anniversary, *Applied Physics Letters* introduced an increased article length limit, providing authors with more flexibility. APL has evolved to meet changing needs and has grown from 15 articles every two weeks to about 100 articles weekly.

Through Service

TO STUDENTS. Over 800 students and their mentors came together for the largest meeting in history for physics undergraduates. The 2012 Physics Congress, or "PhysCon," connected students in the earliest stages of their physics journeys to alumni, dedicated faculty, graduate school recruiters, and professional scientific societies. Among the distinguished speakers was Freeman Dyson, who mesmerized the audience with tales of revolution in science during his career. Former astronaut John Grunsfeld recounted his exacting, successful spacewalks to repair the Hubble Telescope. Several of the plenary talks, including that of renowned astronomer Jocelyn Bell Burnell, are available online at www.spscongress.org.

Continues inside left panel

NASA scientists led special tours of the Kennedy Space Flight Center. Above, SPS members from Southeast University in China pose at the visitor complex.

AAPT, AAS, APS and OSA generously supported PhysCon. NSF also provided funds through the Career Pathways project for 40 minority students to attend and present their research.

PHOTO CREDIT: KEN COLE

Participants from 33 countries gathered for the 2012 IPF to advance "Capacity Building for Industrial Physics in Developing and Emerging Economies."

PHOTO CREDIT: ROBERTO BARNABA, ICTP

Through Service *Continued*

TO INDUSTRY. The Abdus Salam International Centre for Theoretical Physics hosted the AIP Industrial Physics Forum (IPF) in Trieste, Italy. The program was designed to foster partnerships between industry, academia, and government laboratories.

AIP's Industrial Outreach team works closely with Member Societies to enhance their annual conferences with offerings for members to learn about innovations, to interface with the people driving them, and to strategize for future economic and scientific progress.

TO THE INTERNATIONAL AUTHOR COMMUNITY. Outreach is the first step in forming collaborations and partnerships. For publishing, outreach enables the international community to get to know AIP and our journals, and fosters connections that can lead to groundbreaking developments being published in AIP journals.

Seeking to deepen relationships with the growing physics community in China, AIP Publishing hosted sessions at the annual meeting of the Chinese Physical Society, the largest gathering of physicists in China. *Biomicrofluidics* Editor Leslie Yeo and *AIP Advances* Executive Editor A. T. Charlie Johnson gave research presentations; general talks addressed AIP's publishing process and how to publish in *AIP Advances*. In the city of Dalian, the *Journal of Renewable and Sustainable Energy* sponsored the joint International Green Energy Conference and Dalian National Laboratory Conference on Clean Energy. JRSE invited submissions of full papers presented at the meeting and sponsored "best poster" awards. Marsha Lester, editor of *The Journal of Chemical Physics*, traveled to China where she gave talks at a forum cosponsored by AIP and the Science China Press at the Chinese Chemical Society Meeting. Lester also hosted 30 top Chinese scientists working in chemical physics at a "Meet-the-Editor" banquet and visited with research groups.

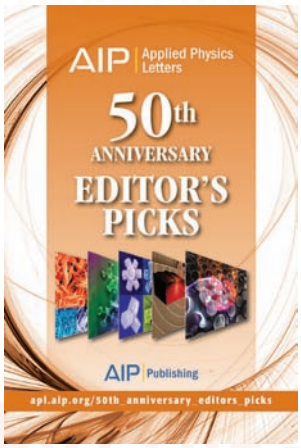
Through Access to Scholarship

AIP CONTINUES TO FOSTER DIALOGUE TO PROMOTE PUBLIC ACCESS. Increasing access to scholarly work is a core value of AIP's mission. In 2012 AIP was a vocal advocate and active participant, working to pragmatically expand public access while protecting the value that publishers bring to science and scholarship. In his testimony to the House Committee on Science, Space, and Technology on "Federally Funded Research: Examining Public Access and Scholarly Publication Interests," CEO Fred Dylla stressed the importance of involving all stakeholders — federal funding agencies, publishers, and research institutions — in the creation of public access policy. Dylla cited examples of productive partnerships underway intended to comply with the America COMPETES Act of 2010.

Working closely with the National Science Foundation and the US Department of Energy, AIP and its Member Societies have been instrumental in enriching public access collaborations. Efforts include creating universal identifiers for data sets; linking published works with their associated data; supporting sustainable business models for publication; standardizing funding metadata; and linking to published works from funding agency websites. The latter two initiatives are being developed through FundRef, a collaborative project of scholarly publishers and funding agencies, facilitated by CrossRef, in which AIP plays an active role.

AIP EXPANDS ITS OPEN ACCESS PUBLISHING PROGRAM. *AIP Advances*, an online open access journal introduced in 2010, surpassed the milestone of 500 articles published. Having earned the respect of the community, *AIP Advances* will now be indexed in key Thomson Reuters databases. AIP also announced the launch of *APL Materials*, affiliated with AIP's premier letters journal, *Applied Physics Letters*. This new open access journal will feature research on materials, their functions,

and their potential applications. *APL Materials* will be led by Editor Judith MacManus-Driscoll, University of Cambridge (UK), who publishes extensively on complex oxide materials and nanostructures.



OFFERING FREE ACCESS TO SELECT ARTICLE COLLECTIONS enables AIP to broadly share particularly compelling content. In recognition of the 2012 Nobel Prize in Physics, AIP opened public access to *all of its journal and proceedings content* — as far back as 1999 — during the full month of October. The editors of *The Journal of Chemical Physics* compiled a list of the 60 most influential articles published in 2011, making them freely available for several months. And for an entire year, researchers had free access to 50 of the most highly cited articles from *Applied Physics Letters*.

PROVIDING ACCESS TO THE DEVELOPING WORLD is part of AIP's mission. At the 10th Anniversary of the Electronic Journals Delivery Service event, AIP and other publishers agreed to expand terms of access to individual scientists in developing countries.

Connecting Worlds

Through Cultivating Broad-Based Appreciation

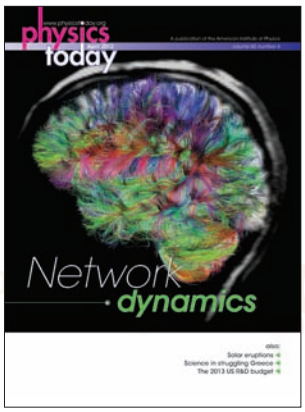
PROVIDING ORIGINAL CONTENT FOR MAINSTREAM AUDIENCES who do not ordinarily seek out science news, Inside Science launched a revamped website showcasing its news articles, videos, blog posts, and guest columns. In 2012, the Inside Science website experienced a sixfold increase in pageviews over 2011 to 1.9 million, and a fourfold growth in unique visitors, to 650,000. This growing web audience comes in addition to the reprinting of Inside Science content by mainstream news outlets such as FoxNews.com, NBCNews.com, CSMonitor.com, and LiveScience.com. Inside Science TV ended its first year with 33 local television stations across the United States subscribing to its video content.

The Library of Congress recommended Inside Science for its news article on the Higgs boson, as did the highly respected Knight Science Journalism Tracker, which also recognized AIP's coverage of the 2012 Physics Nobel Prize.

AIP'S MEDIA SERVICES staff continued to offer their services to Member and Affiliated Societies, publicizing frontier science content presented at meetings to news outlets around the world, and this year included video webcasting. AIP supported meetings of the ACA, APS, ASA, AVS, OSA, and the Biophysical Society.

Connecting Worlds

Through Collaboration and Partnerships



April 2012

PHYSICS TODAY. The 135,000 readers of *Physics Today* represent AIP's largest and most successful collaboration. This partnership between AIP and its 10 Member Societies spans 65 years and makes *Physics Today* the most-recognized physics magazine in the world. The magazine has a robust web presence, uniting scientists in virtually every scientific discipline.

PUBLISHING PARTNERSHIPS. Throughout 2012 AIP has emphasized a renewed focus on serving the five Member Societies that partner with AIP in the publication of their journals. The Committee on Publishing Partnerships has grown in scope, engaging more staff and editors in constructive dialogue to help the societies define their long-term publishing goals and identify ways for AIP to help achieve them.

AIP promoted its journals and those of its Member Society publishing partners at various conferences, including participation in the Frankfurt Book Fair for the 25th consecutive year.

What Do Publishers Do? — To promote awareness of publishers' crucial role in research, AIP entered and took first prize in the International STM Association's video competition (stm-assoc.org/video-library).

CULTIVATING STUDENT PARTICIPATION. The Society of Physics Students (SPS) continued to expand engagement with undergraduate physics students at AIP Member Society national meetings. SPS sponsored contributed and invited sessions, supported student reporters, hosted receptions, and conducted public outreach at AAPT, AAS, AGU, APS, and OSA meetings. Other Member Society collaborations included the USA Science and Engineering Festival, Physics Day at Six Flags, and summer internships.

CAREER NETWORK. AIP's Career Network provides a specialized job board in physics for SPS and participating Member Societies. Job seekers can find more than 250 openings, and employers tapping into the network can find more than 8,000 highly qualified resumes, saving them time and effort with recruitment.

Through Informing Public Policy

POLICY THAT SUPPORTS SCIENCE. Working closely with the Member Societies, AIP informs policy makers about critical issues and the public about how developments on the Hill affect the health of science and science education.

AIP'S CONGRESSIONAL AND STATE DEPARTMENT SCIENCE FELLOWS PROGRAM is an important part of AIP's Government Relations efforts. The legacy of our policy fellows is distinctive, channeling new scientists every year into science policy and diplomacy roles. James Borgardt is the 2012–13 AIP State Department Fellow working on nuclear arms control and disarmament policy. As a physics professor at Juniata College, Jim earned the distinguished SPS Outstanding Chapter Advisor Award. As a scientist, teacher, mentor, and contributor to science policy, Jim serves the public in many positive ways. AAS provides partial support for this fellowship. ASA cosponsors the congressional fellowship currently filled by theoretical astrophysicist Amitai Bin-Nun. Amitai is working for Senator Christopher Coons (D-DE) on a variety of science and technology, and economic issues.

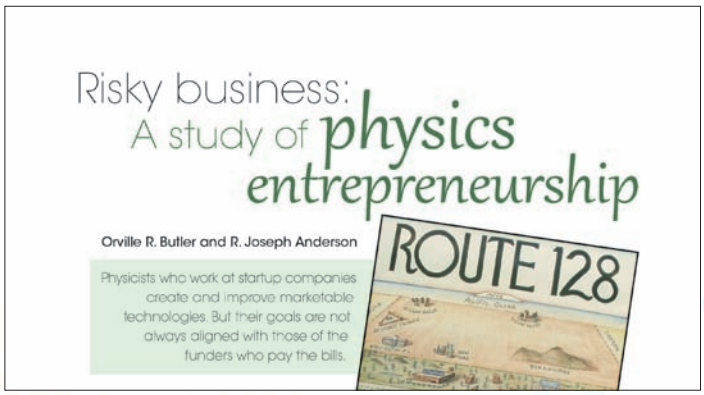
Through Linking Our Past With Our Present

50 YEARS OF PRESERVING HISTORY. In 1962, J. Robert Oppenheimer dedicated the Niels Bohr Library and Archives (NBL&A), beginning AIP's rich programs directed at preserving the history of physics and allied disciplines. AIP History Programs celebrated their 50th Anniversary with an evening of talks by renowned science historians, including Gerald Holton and Roger Stuewer, both named recipients of the APS Abraham Pais Prize. With 18,000 book titles, hundreds of manuscript collections, 1500 oral interviews, and 30,000 photographs, AIP's resources have grown to be a leading collection in the history of science.

RUTHERFORD'S NUCLEAR WORLD was unveiled by the Center for History of Physics in October as the newest online exhibit to help visitors learn about the 1911 discovery of the atom's nucleus (aip.org/history/exhibits/rutherford). Historians, science writers, teachers, and students everywhere tap into AIP's history resources and online research tools.

J. Cockcroft, E. Rutherford, and E. T. S. Walton in 1932, shortly after they accelerated protons against a lithium target, splitting the lithium nucleus into two alpha particles.

CREDIT: UK ATOMIC ENERGY AUTHORITY, COURTESY OF THE AIP EMILIO SEGRÈ VISUAL ARCHIVES.



AIP historians shared their preliminary findings of "The History of Physics Entrepreneurship" study in Physics Today, *December 2012. Supported by the NSF, the project examined the culture, funding sources, and other dynamics of high-tech startups, one of the major sources of private sector innovation.*

(POSTER BY KIRBY SCUDDER, 1987)

NBL&A IS THE OFFICIAL REPOSITORY for the records of AIP and its Member Societies, and in 2012 staff completed the accessioning and cataloging of AGU's archives, going back to its founding in 1919.

AIP SPECIALIZES IN DATA ON EDUCATION, EMPLOYMENT, AND DEMOGRAPHICS in physics, astronomy, and allied fields.

In 2011–12, data collected and analyzed by the Statistical Research Center (SRC) revealed:

- The total number of faculty in physics-degree-granting departments increased by 12% over the last 10 years.
- Of the 6,300 physics bachelor's degrees awarded in academic year 2010–11, about 1,300 were earned by women.
- Astronomy bachelor's degrees have doubled since 2000, with more than 400 conferred in 2010–11.
- For the seventh consecutive year, most first-year graduate students admitted into physics PhD programs were US citizens.

A SURVEY ON PHYSICS IN TWO-YEAR COLLEGES (TYCs), conducted in partnership with the AAPT, revealed that physics and physical sciences classes are offered on 1,060 TYC campuses, educating nearly 220,000 students. More than one-fourth of students taking physics at a postsecondary institution took physics at a TYC that year; this is up from one-fifth in 1995–96. Almost 3,300 faculty members taught physics and astronomy at TYCs and nearly half held part-time positions.

Revitalization, Investment and Development

PUBLISHING CONTINUED TO FOCUS ON ITS CORE CONTENT TECHNOLOGIES. Efforts accelerated toward the migration of our Scitation online journal platform to Publishing Technology's pub2web system, which in 2013 will provide powerful semantic web technology for an optimal user experience. AIP implemented technical infrastructure enhancements, such as the adoption of the National Information Standards Organization's new Journal Article Tag Suite, which facilitates the exchange of journal information among various platforms. AIP implemented CrossMark on its publications, indicating the published version of record maintained by the publisher through any updates, corrections, enhancements, and retractions. CrossMark tells readers whether or not they are accessing the most recent and reliable version, with a link to the updated version of record.

PUBLISHING RESHAPED ITS EDITORIAL DEVELOPMENT STRATEGY with a new, diverse team of staff who work in tandem with our editors and editorial boards to ensure the further success of the journal program. An important aspect of editorial development relates to ethical policy, and AIP journals are now members of the Committee on Publication Ethics, a forum for editors and publishers of peer-reviewed journals to discuss all aspects of publication ethics.

A NEW SET OF COVER DESIGNS brings higher visibility to AIP's robust suite of physical science journals, giving each journal a fresh, consistent appearance. Between the covers, the high-quality content that the physics community relies on remains unchanged.

Our "One Science. Many Minds.℠" video illustrates the positive impacts of our history and student programs (www.aip.org/donate).

DEVELOPMENT. AIP Development connects members of the science community to giving opportunities that deepen their involvement. By strengthening relationships with corporations, foundations, and individual partners, we are building a philanthropic culture and broad-based support. The institute gratefully acknowledges the Avenir Foundation for its $3 million endowment of the R. Joseph Anderson Directorship of the Niels Bohr Library and Archives.

Financial Overview

in the thousands

	2008	2009	2010	2011	2012
Investments	$103,858	$126,126	$137,656	$122,504	$141,373
Total Assets	$139,449	$165,305	$172,172	$168,536	$181,429
Unrestricted Net Assets	$86,595	$108,852	$116,651	$107,770	$123,471
Annual Investment Return	-26.1%	28.0%	12.6%	-2.8%	13.8%
Total Revenue	$75,775	$77,432	$75,956	$74,098	$71,988
Publishing Center, Net	$9,017	$10,947	$9,550	$11,651	$15,418
Physics Resources Center, Net	($11,618)	($11,360)	($11,207)	($11,300)	($12,740)
Net Operating Revenue (Expense)	($1,820)	$311	$259	$539	$3,686

AIP Publications

MAGAZINES

Physics Today
Computing in Science and Engineering (jointly with IEEE Computer Society)

JOURNALS

AIP Advances
APL Materials
Applied Physics Letters
Biomicrofluidics
Chaos: An Interdisciplinary Journal of Nonlinear Science
Journal of Applied Physics
The Journal of Chemical Physics
Journal of Laser Applications (jointly with Laser Institute of America)
Journal of Mathematical Physics
Journal of Renewable and Sustainable Energy
Physics of Fluids
Physics of Plasmas
Review of Scientific Instruments
Journal of Physical and Chemical Reference Data (jointly with NIST)
Low Temperature Physics (a translation journal)
Theoretical and Applied Mechanics Letters (jointly with Chinese Society of Theoretical and Applied Mechanics)

** Identifies members of the 2012 Executive Committee*

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Corporate Secretary

Other Member Organizations

Sigma Pi Sigma (the physics honor society)
Society of Physics Students
Corporate Associates

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