

[illegible]

2014 ANNUAL REPORT

CONNECTING & BROADENING THE COMMUNITY

The year 2014 was a historic one for the American Institute of Physics. A landmark change transpired in the Institute's governance. After more than four years of self-examination, research, and analysis, the AIP Governing Board and AIP Member Societies approved a governance restructure and new bylaws in November. Among other changes, the membership of the corporation's Board of Directors has been greatly reduced to less than half the size of its former Governing Board. The new board will be strategic and engaged, and will ensure the value proposition for AIP's Member Societies (MS), as well as enable AIP's ability to keep pace with the fast-changing global environment of physical science communication, education, and outreach.

AIP's board restructuring and new bylaws are highpoints in an ongoing strategic process that included the February 2013 spin-off of AIP's publishing arm into a wholly owned subsidiary, AIP Publishing LLC, and the March 2014 adoption of an updated mission statement: *to advance, promote, and serve the physical sciences for the benefit of humanity*. An updated scope statement associated with the mission reaffirms AIP's long-standing functions and emphasizes AIP's corporate form as a federation of physical science societies. We expect AIP's governance enhancements to contribute significant and long-lasting value toward the health, success, and growth of the federation.

AIP was fortunate to have had consistent leadership throughout the entire process. One of us, Fred Dylla, announced that 2014 would be his final full year as AIP Executive Director & CEO. Fred has been delighted to serve the physical sciences community since he took the office of CEO in 2007; his successor will be named in 2015.

Programmatically, AIP had a busy year in supporting Member Societies, the greater physical sciences community, and the public by providing statistical research in education and employment, promoting science in the news and media, expanded opportunities for students, career preparation and development, making history more accessible, initiatives to affect science policy, and outreach to industry. This report briefly touches on the Institute's important work, with several examples of its successes in 2014.



Louis J. Lanzerotti
Chair, AIP Board of Directors



H. Frederick Dylla
Executive Director & CEO



Physics Today

AIP worked to raise the Member Society profile among readers of *Physics Today*, a benefit delivered to all members of the societies in the AIP federation. This broad-interest monthly publication helps readers, who often pursue careers in a specialized field, to follow developments in other areas of the physical sciences.

MEMBER SOCIETIES

Member Societies and year of joining AIP

AAPM	American Association of Physicists in Medicine, 1973
AAPT	American Association of Physics Teachers, 1932
AAS	American Astronomical Society, 1966
ACA	American Crystallographic Association, 1966
AMS	American Meteorological Society, 2013
APS	American Physical Society, 1931
ASA	Acoustical Society of America, 1931
AVS	Science & Technology of Materials, Interfaces, and Processing, 1976
OSA	The Optical Society, 1931
SOR	The Society of Rheology, 1931

AIP also has 24 Affiliated Societies

Other Member Organizations

Sigma Pi Sigma (the physics honor society)

Society of Physics Students

Corporate Associates



PROGRAMS FOR THE PHYSICAL SCIENCES

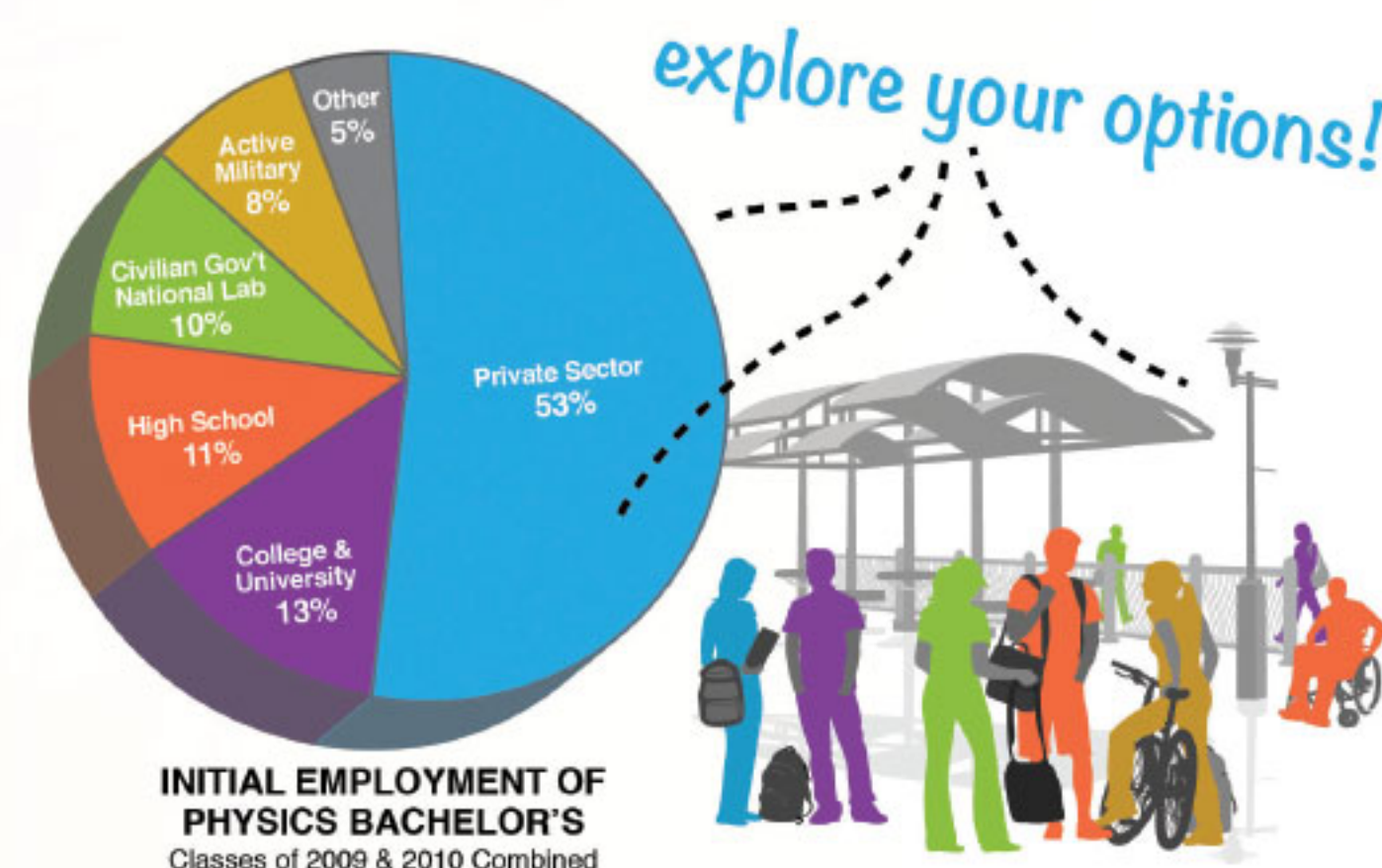
Paving the Way to Successful Careers in Physics

High-quality lab courses, research opportunities, curricular flexibility, mentoring, strong community—these are among the qualities of the strongest physics programs in the United States for preparing undergraduates to join the STEM workforce according to the results of AIP's **Career Pathways Project** (CPP). Funded in part by NSF, this four-year project produced three influential products to help physics departments strengthen their offerings so that more students might find meaningful employment:

- **Careers Toolbox for Physics Students**
www.spsnational.org/careerstoobox/
- **Fact Sheet for Career Professionals**
- **Equipping Physics Majors for the STEM Workforce**
(guide for faculty)

Findings were shared with the Joint Taskforce on Undergraduate Physics Programs (AAPT and APS) and through 10 workshops for students and/or faculty held at Member Society meetings and other venues.

Students can find gainful employment through the **AIP Career Network**—partners AAPT, AAPM, AVS, APS, SPS, Physics Today, and the IEEE Computer Society. Jobs posted to the AIP Career Network rose by 30% in 2014, and a new webinar series instantly became popular, with 700 participants for the first event.



Broadening Students' Professional Exposure

Career paths are further influenced by being introduced to new fields and communities. The **Society of Physics Students** (SPS) signed new membership agreements with all ten AIP Member Societies; SPS members now receive two free memberships so that they are exposed to a diversity of fields during their

undergraduate years. Reciprocal memberships were also established with the National Societies of Black Physicists and Hispanic Physicists. SPS's new online membership community enables students to enter the larger physical sciences community with a simple click.



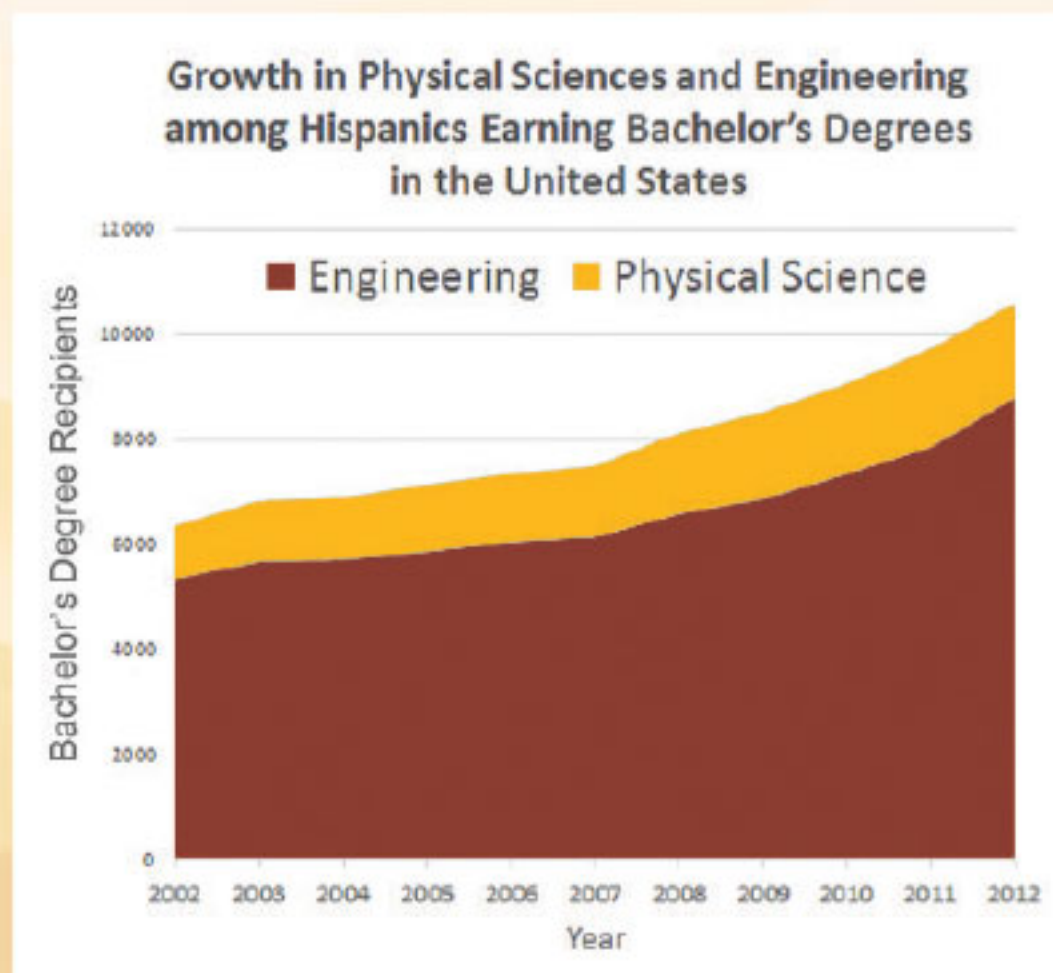
Working with APS, AAPT, and OSA, SPS staff and volunteers collaborated on major public outreach events. The “Big Top Physics” exhibit at the USA Science & Engineering Festival drew more than 325,000 people.

Taking the Pulse of the Community

The strength of a discipline is as healthy as the community that drives it. AIP's **Statistical Research Center** (SRC) collects data directly from the community, keeping them well informed about important trends affecting the physical sciences. In 2014, SRC found that the Hispanic community, although still very much underrepresented, has made promising strides.

From 2002 to 2012, bachelor's in the physical sciences experienced a 47% growth overall, but among Hispanics the numbers jumped to 77%. In engineering, the national average increase for bachelor's degrees was 34%, but it was significantly higher for Hispanics, at 64%.

SRC also learned that the number of high school students who have taken physics has more than doubled between 1990 and 2013, from around 625,000 to nearly 1.4 million.



Data collection for Member Societies

In 2014, the SRC partnered with AAS, AAPM, AAPT, AMS, and APS on surveys related to their programs and concerns of their members.

PROGRAMS FOR THE PHYSICAL SCIENCES



Doug Arion, the IPF short course organizer, demonstrates a concept to student participants over dinner.

Connecting Industrial Researchers, Globally

Scientists collaborate with their colleagues across borders, and the scientific workforce is becoming more globally mobile with each passing year. The 2014 **Industrial Physics Forum** (IPF) at the University of Campinas in Brazil explored how physical scientists could contribute to their regions' emerging economies. The IPF drew 200 participants from 20 countries and included representatives from 20 companies, ranging from international giants like IBM, to small startups like Altanet Communications.

Advancing the Understanding of—and Appreciation for—Science

Inside Science covers hard-hitting issues that are critically important to society, as well as science that's purely engaging. Its influential article, "My 1975 'Cooling World' Story Doesn't Make Today's Climate Scientists Wrong," gained attention from *Newsweek* and the *Knight Science Journalism Tracker*. Inside Science's first infographic, The British Invasion in Space, ran in major news outlets, including Fox News and CBS San Francisco. AAS played an integral role by ensuring its information was accurate and authoritative.

AIP's media team works with Member and Affiliated Societies, as well as AIP Publishing, to bring newsworthy research to the attention of national and international reporters and the public. This results in major media hits covering the discoveries and ideas of society authors and presenters, and increased awareness among their peers and the general public.

Amplifying Acoustical Research. AIP produced the first press releases from the *Journal of the Acoustical Society of America*. Interesting articles began making their way into the popular media in 2014, which led to numerous major media hits. For many years our team has worked with ASA to draw attention to their meetings, and the online press conference on the acoustics of charismatic voices at the 2014 ASA Fall Meeting was our best-attended webcast ever. Dozens of reporters from New York to Los Angeles logged on, and it sparked stories in *The Wall Street Journal* and the *LA Times*.



Abridged; see the full version at:
insidescience.org/blog/2014/02/05/british-invasion-space

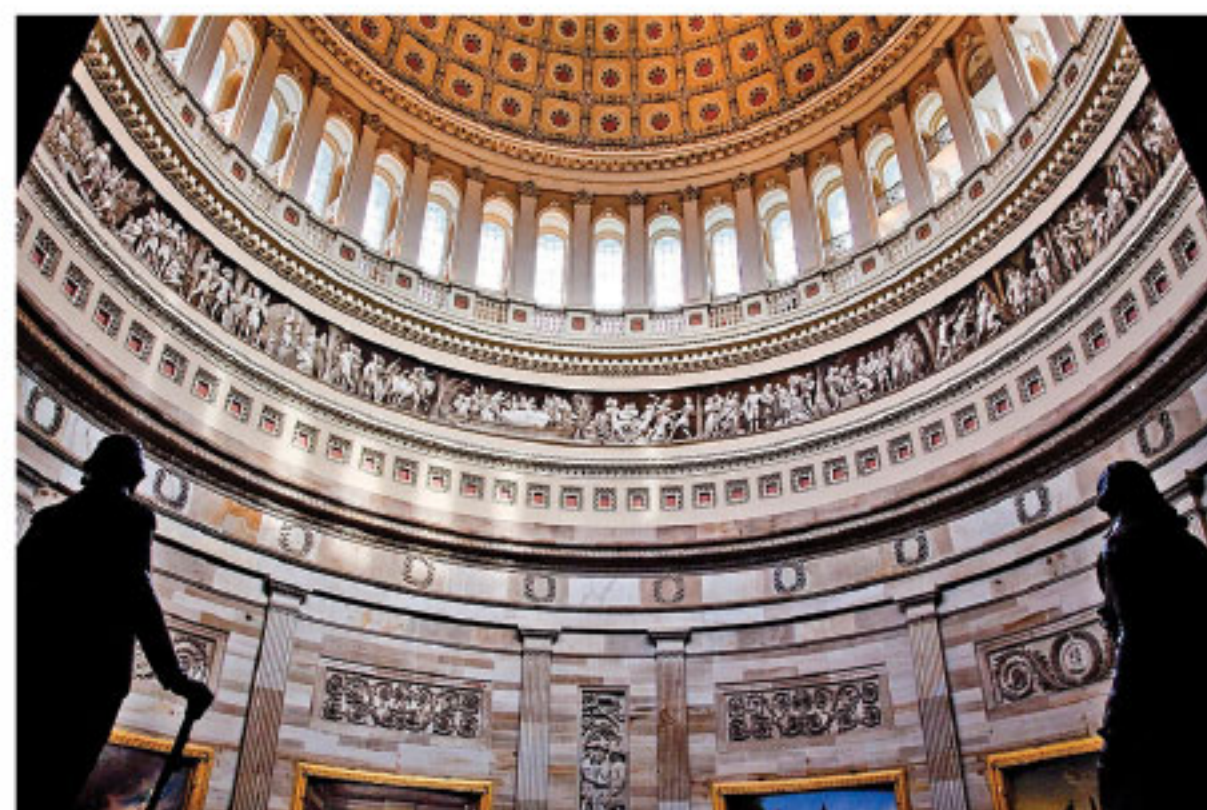


Infographic presented in May 2014 at the 167th ASA Meeting, Providence, RI. Brays, consisting of inhaled "hees" and exhaled "haws," are thought to be exclusive to the donkey, its equine cousin the Grevy's zebra, and the African "jackass" penguin. They release more air in the "haw" than they take in during the "hee," so after a few cycles, the brayer is breathless.

Strong Science Needs Strong Policy

AIP and its Member Societies encourage policy makers to think in the long term. Through **AIP-facilitated visits to Capitol Hill**, AAPT, AAS, APS, and AVS members advocated for strong, sustained science funding as vital to US economic growth. To raise visibility for the future of science, AIP worked with AAPT to bring the high school members of the US Physics Team to Congress. The effort was expanded in 2014 to include undergraduate members of SPS, who discussed research experiences and their hopes to find careers in science.

AIP, along with AAS, AAPT, APS, and OSA, formed the **Physical Sciences Education Policy Coalition** (PSEPC) to communicate with policy makers about the importance of effective teacher preparation and professional development, discipline-specific education research, quality high school physics courses, and other issues, such as the need to increase underrepresented minority representation.



CHORUS

To advance public access policy, AIP, AIP Publishing, and the Member Societies continued to promote CHORUS—the Clearinghouse for the Open Research of the United States—to publishers, federal agencies, and academic institutions. In July, the US Department of Energy, the first agency to release its public access plan, named CHORUS as a partner to support its PAGES public access portal.

Intertwining of History and Community

Communities make their own history, every day, but it takes communities to tell that history and preserve shared heritage for future generations. AIP's History Programs hosted its **2nd Early-Career Conference for Historians of the Physical Sciences**. Young historians from ten countries discussed their work on topics ranging from the Cold War, to masers, space, and seismological research.



Brazilian delegation to the 2nd Early-Career Conference for Historians of the Physical Sciences.



Working closely with AMS, NBL&A added its first 200 meteorology texts to its holdings and began identifying important meteorology and climate science manuscript collections, worldwide, to include in its International Catalogue of Sources.

In 2014 the Niels Bohr Library and Archives (NBL&A) began **digitizing rare and brittle texts** using a new specialized scanner. The pilot project focused on a collection of late 19th and early 20th century German literature donated by historian Paul Forman. The “Forman thesis” argues that the culture of Weimar Germany strongly influenced early interpretations of quantum mechanics and challenges established notions of rationalist philosophies of science. These historical treasures will soon be available online.

AIP PUBLISHING



AIP Publishing LLC supports the scientific and educational mission of AIP through scholarly publishing activities in the physical sciences. Its portfolio comprises 18 highly regarded, peer-reviewed journals, including the flagship journals *Applied Physics Letters*, *Journal of Applied Physics*, and *The Journal of Chemical Physics*, in addition to the *AIP Conference Proceedings*. AIP Publishing also works proactively with Member Society and other publishing partners to help them advance their publishing missions.

Launched in 2014 *Applied Physics Reviews*

Previously a key component of *Journal of Applied Physics*, *Applied Physics Reviews* began independent publication in January 2014. Guided by Editors-in-Chief John M. Poate, Colorado School of Mines, and Bill R. Appleton, University of Florida, Gainesville, the journal has already established itself as the **dedicated home for cutting-edge reviews in applied physics**.

Facts:

- 29 reviews published in 2014, more than twice the number compared to *Journal of Applied Physics* in 2013.
- Reviews are already downloaded on average 2.5 times more often* than articles from *Applied Physics Letters*.

*2014 content only

Open Access

AIP Publishing's mission is to facilitate the widest possible access to the best peer-reviewed scientific information, offering authors Gold, Green, and hybrid open access options. These access models ensure the integrity and permanence of the scholarly record. AIP Publishing continues to work in tandem with representatives from the library and academic communities to develop pragmatic, sustainable solutions to public access to federally funded research, such as the CHORUS initiative.

AIP Publishing's three **Gold Open Access** journals (publication funded by an article processing charge paid by the author or other sponsor) achieved impressive growth in 2014:

AIP Advances

- More than 300,000 article downloads, 2.5 times more than in 2013
- Impact factor increased by 15% to 1.591**

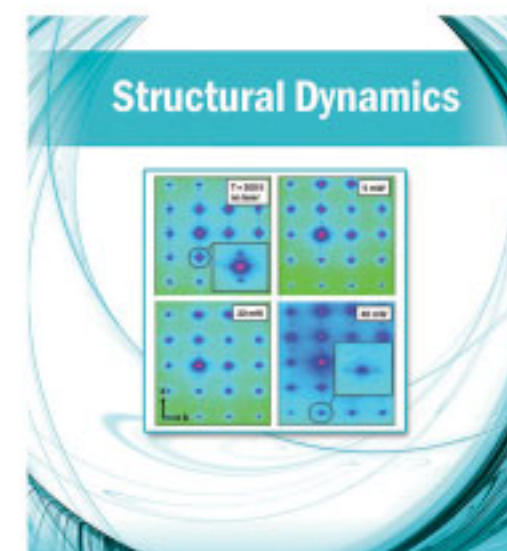
**According to the 2013 Journal Citation Reports*

APL Materials

- A major international materials science forum for physicists, chemists, biologists, and related researchers
- Strong submissions from important research institutions around the world
- Indexed by Thomson Reuters with impact factor expected in 2016

Structural Dynamics

- Successfully launched in 2014
- Co-published with the American Crystallographic Association (ACA)



VALUE FOR RESEARCHERS

Broad Reach and Dissemination



Serving Science, Connecting Communities, Dedicated to Quality

In 2014, AIP Publishing initiated a program to significantly increase the development of its flagship publications, *Applied Physics Letters*, *Journal of Applied Physics*, and *The Journal of Chemical Physics*, to effectively address the changing research landscape and offer authors the premier choice for submission of their most significant work.

Expanded Article Acceptance Criteria

An expanded set of criteria was established by the editorial teams in 2014 and is being applied for the review of manuscripts, now requiring that submissions **fulfill at least one of the following**:

- **Contain** novel research that represents a significant advancement or improves scientific understanding in a particular field
- **Introduce** or be at the forefront of an emerging line of research
- **Develop** innovative theoretical or experimental methods for the physical sciences
- **Present** interdisciplinary scientific advancements that generate new avenues of research
- **Lead to or take** critical steps toward real-world applications

Enhanced Editorial Structure and Peer-Review Process

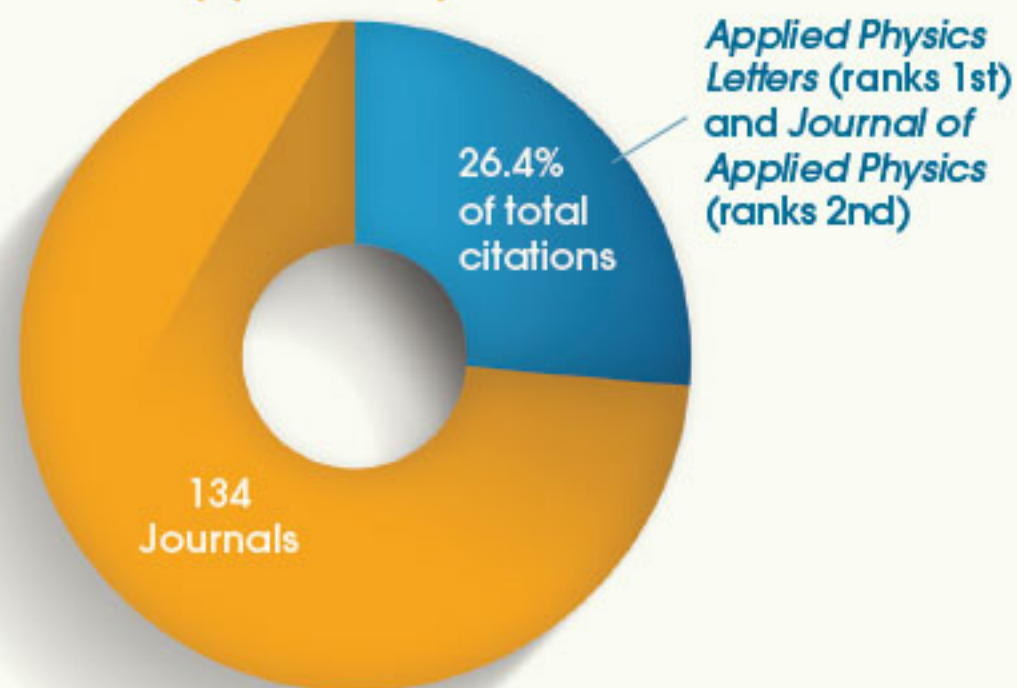
AIP Publishing began implementation of important changes to the editorial structure to increase topical expertise, ensure consistent and fair evaluation of manuscripts, broaden geographic representation, and provide more rapid service to our authors.

Our Commitment to Our Member Societies and Publishing Partners

AIP Publishing continues to be the publisher of choice of several Member Societies and other publishing partners. Committed to helping this very important customer base advance their publishing goals, AIP Publishing demonstrates this by keeping an individual focus on their publications—while at the same time ensuring operational and strategic support for the publishing services provided. From serving their members, authors, and researcher communities, to promoting their publications at key industry conferences, AIP Member Societies' and publishing partners' interests and resource needs continue to be an important focus.

Outstanding Quality

2013 Journal Citation Reports®
Applied Physics

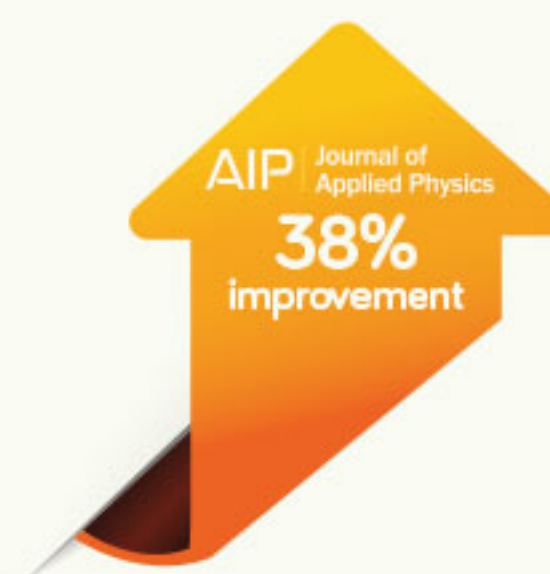


Fast Publication Times

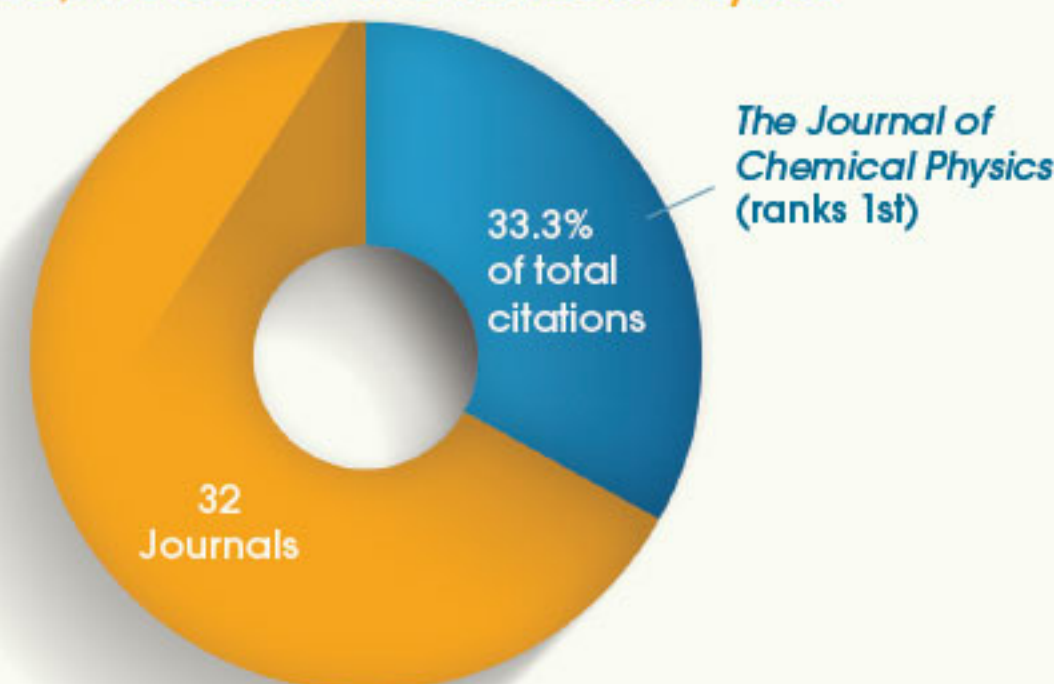
All AIP Publishing Journals
19% improvement in time to publication
(2012-2014)



Journal of Applied Physics
38% improvement in time to publication
(2012-2014)



2013 Journal Citation Reports®
Atomic, Molecular & Chemical Physics



Rigorous and Fair Peer Review



The American Institute of Physics is a federation of scientific societies in the physical sciences, representing scientists, engineers, and educators. AIP offers authoritative information, services, and expertise in physics education and student programs, science communication, government relations, career services for science and engineering professionals, statistical research in physic employment and education, industrial outreach, and history of the physical sciences. AIP publishes *Physics Today*, the most closely followed magazine of the physical sciences community, and is also home to the Society of Physics Students and the Niels Bohr Library and Archives. AIP owns AIP Publishing LLC, a scholarly publisher in the physical and related sciences.
www.aip.org

Location

American Institute of Physics
 One Physics Ellipse
 College Park, MD 20740
 +1 301.209.3100

AIP Governing Board

Until November 2014

- *Louis J. Lanzerotti, *Chair*
- *H. Frederick Dylla
Executive Director & CEO
- *Judith Flippen-Anderson
Corporate Secretary
- Samuel H. Aronson (APS)
- Malcolm Beasley (APS)
- G. Fritz Benedict (AAS)
- *J. Daniel Bourland (AAPM)
- *Charles Carter (ACA)
- *Beth Cunningham (AAPT)
- Bruce Curran (AAPM)
- Robert Doering (MAL)
- Judy Dubno (ASA)
- *Michael Duncan (OSA)
- David Ernst (MAL)
- Janet Fender (OSA)
- Steve Iona (AAPT)
- *Marcia Isakson (ASA)
- Paul Kelley (OSA)
- Angela Keyser (AAPM)
- *Kate Kirby (APS)
- *Rudolf Ludeke (AVS)
- Jonathan Malay (AMS)
- *Kevin Marvel (AAS)
- Mary Mogge (AAPT)
- *Faith Morrison (SOR)
- Homer Neal (APS)
- Elizabeth Rogan (OSA)
- *Dian Seidel (AMS)
- Keith Seitter (AMS)
- Joseph Serene (APS)
- Neal Shinn (AVS)
- Scott Sommerfeldt (ASA)
- Gene Sprouse (APS)
- Gay Stewart (AAPT)
- Hervey (Peter) Stockman (AAS)
- Michael Turner (APS)
- H. Joe Witte (AMS)

*Identifies members of the 2014 Executive Committee

Members of the AIP Board of Directors

Seated in December 2014

- Louis J. Lanzerotti, *Chair*
- H. Frederick Dylla,
Executive Director & CEO
- Judith Flippen-Anderson,
Corporate Secretary
- J. Daniel Bourland (AAPM)
- Charles Carter (ACA)
- Beth Cunningham (AAPT)
- Robert Doering (At-Large)
- Judy R. Dubno (ASA)
- Michael D. Duncan (OSA)
- David Ernst (At-Large)
- Kate Kirby (APS)
- Rudolf Ludeke (AVS)
- Kevin B. Marvel (AAS)
- Faith Morrison (SOR)
- Dian Seidel (AMS)

AIP Officers

- Louis J. Lanzerotti
Governing Board Chair
- H. Frederick Dylla
Executive Director & CEO
- Catherine O’Riordan
*Vice President,
 Physics Resources*
- Catherine “Gigi” Swartz
Treasurer & CFO
- Theresa Braun
*Vice President,
 Human Resources*
- Judith Flippen-Anderson
Corporate Secretary

Consolidated Financial Overview

(\$ in thousands)	2014	2013
Investments	\$140,231	\$145,217
Total Assets	\$200,086	\$193,473
Unrestricted Net Assets	\$141,193	\$138,624
Annual Investment Return	4.1%	11.2%
Total Revenue	\$73,232	\$70,784
Publishing Center, Net	\$11,720	\$11,070
Physics Resources Center	(\$12,703)	(\$12,184)
Net Operating Revenue	\$2,049	\$2,522

AIP PUBLISHING

AIP Publishing LLC is a scholarly publisher in the physical and related sciences, providing the global science community with a comprehensive collection of highly cited, peer-reviewed scientific information. It became a wholly owned subsidiary of the American Institute of Physics in 2013 and publishes on behalf of several of AIP’s Member Societies and other publishing partners.

www.journals.aip.org

Locations

AIP Publishing LLC
 1305 Walt Whitman Road, Suite 300
 Melville, NY 11747
 +1 516.576.2200

AIP Publishing Beijing Office
 556, South Wing,
 Raycom Infotech Tower C
 Kexueyuan South Road
 Beijing 100190, China

Members of the AIP Publishing Board of Managers

- Louis J. Lanzerotti, *Chair*
- John Haynes
- H. Frederick Dylla
- Robert Brown
- David Campbell
- Beth Cunningham
- Judith Flippen-Anderson
- A. Jeffrey Giacomini
- Marsha Lester
- John Regazzi
- Greg Tananbaum
- Charles Schmid
- Alan Singleton
- Ivan Petrov

AIP Publishing Publications

- AIP Advances
- AIP Conference Proceedings
- APL Materials
- Applied Physics Letters
- Applied Physics Reviews
- Biomicrofluidics
- Chaos
- Journal of Applied Physics
- The Journal of Chemical Physics
- Journal of Mathematical Physics
- Journal of Physical and Chemical Reference Data
- Journal of Renewable and Sustainable Energy
- Low Temperature Physics
- Physics of Fluids
- Physics of Plasmas
- Review of Scientific Instruments
- Chinese Journal of Chemical Physics
 Co-published with the Chinese Physical Society
- Journal of Laser Applications
 Co-published with the Laser Institute of America
- Structural Dynamics
 Co-published with the American Crystallographic Association

Member Society Journals published through AIP Publishing

- The Journal of the Acoustical Society of America – ASA
- Medical Physics – AAPM
- American Journal of Physics – AAPT
- The Physics Teacher – AAPT
- JVST A – AVS
- JVST B – AVS
- Biointerphases – AVS
- Surface Science Spectra – AVS
- Journal of Rheology – SOR