Let’s Talk about AIP and Its Future

On many fronts, 2018 has been an exciting year, including for me personally. I was honored to become the ninth CEO in our Federation’s 87-year history, chosen to lead this great organization as we head toward our second century of existence with a compelling history behind us and an inspiring future ahead. As an experimental physicist, former diplomat, public policy expert, and AIP’s new leader, I believe strongly in the power of communication, innovation, and building community consensus to advance our science. We need to collaborate and innovate not only to advance the success of our 10 Member Societies—which collectively represent more than 120,000 scientists, engineers, educators, and students around the world—but also to advance the role of the physical sciences in society.

At this compelling moment in human history, science is changing rapidly and becoming more inter-, multi- and trans-disciplinary. Many of the frontiers of our knowledge are being advanced through research that aims to integrate knowledge across disciplines to address a specific challenge or opportunity, whether it arises from deep scientific questions or pressing societal needs. Also, the human experience today is tightly integrated with the development of technology that, of course, is based clearly on the underlying fundamental discoveries of science. These are important contexts for AIP as we consider how to advance our mission.

Capitalizing on last year’s theme of “Excellence Matters,” the Institute has embarked on a strategic planning process to build on that excellence to help guide us further into the 21st century. We are examining our value proposition internally and externally. We are reviewing our goals to ensure they are aligned with our efforts to support the physical sciences and advance the success of our Member Societies.

In the end, we are one AIP, one Federation, with one mission: to advance, promote, and serve the physical sciences for the benefit of humanity. Our collective future will continue to be linked to progress being made by scientists and engineers around the world, including those who are members of the professional societies that constitute AIP. I look forward to working with the AIP community to ensure we can continue to pursue this mission. On the following pages, read about some of the ways we have done that in 2018.

—Michael H. Moloney, CEO

“The AIP Board is united in its conviction that the Institute has a vital role to play in advancing the success of our Member Societies and in promoting evidence-based decision-making, and we are enthusiastically engaged in aligning our strategic priorities with those goals.”

—David Helfand, Interim Chairman of the Board (2018)
Do your part to promote and support LGBTQ+ people in STEM. Follow the #LGBTSTEMDay hashtag on social media and contribute to the conversation by sharing personal stories, photos, and videos.

Let’s Talk about Diversity and Inclusion

While progress has been made toward increasing diversity and inclusion in the physical sciences, much work still needs to be done. AIP and its Member Societies are committed to ensuring workplaces are more representative of society.

AIP’s Task Force to Elevate African American Representation in Undergraduate Physics & Astronomy (TEAM-UP), formed in December 2017, is examining the persistent underrepresentation of African Americans in physics and astronomy. In May, the task force, working with AIP’s Statistical Research Center, surveyed African-American students to better understand the factors that contribute to a student’s persistence in a physics or astronomy program, as well as factors that lead some students to leave physics or astronomy.

The task force also visited colleges and universities to hear from students, faculty, and administrators about the challenges and opportunities around increasing diversity and inclusion.

For the latest updates, follow the task force on Twitter, @AIP_TEAMUP, and join in on the Twitter Chat series, #TEAMUPTalks.

In June, AIP also held a special workshop for Member Societies, “How to Achieve Diverse, Equitable, and Inclusive Professional Meetings,” to consider optimal codes of conduct, policies, statements, and best practices that can be applied before, during, and after society meetings.

In an effort to increase diversity and inclusion in STEM, AIP partnered with organizations around the world on July 5 in celebration of LGBTSTEM Day. The goal of this global initiative is to raise awareness and increase support for LGBTQ+ people in science, technology, engineering, and math.

To help shine a light on the many contributions that minorities have made to the field, the October cover story of Physics Today recounted the accomplishments of Elmer Imes (1883–1941), the second African American to earn a PhD in physics.

The Statistical Research Center collects degree data on physics graduates across the US and tracks trends, such as the increasing number of women and members of under-represented groups among physics degree recipients.
Let’s Talk about the Science Community

In recognition of the International Day of Light on May 16, OSA and APS partnered with AIP, through a grant from the AIP Venture Partnership Fund, to underwrite and produce an interactive art exhibit at Washington, DC’s ARTECHOUSE, an innovative space dedicated to arts and technology. The exhibition, NAKED EYES, was the first solo exhibition in the US by the world-renowned artist studio NONOTAK, which works with audiovisual installations and performance pieces to create ethereal, immersive, and dreamlike environments.

The event drew more than 20,000 visitors. AIP’s Inside Science produced a documentary, which will premiere in 2019, about the artists who created the exhibit.

AIP Science Communication Awards turned 50 this year. The annual program recognizes the best science writing aimed at improving the public’s appreciation of physical sciences, astronomy, math, and related scientific fields.

The 2018 winners are:

• BOOKS: American Eclipse: A Nation’s Epic Race to Catch the Shadow of the Moon and Win the Glory of the World by David Baron
• ARTICLES: The Economist: “Here, there and everywhere” by Jason Palmer
• WRITING FOR CHILDREN: What a Waste! Where Does Garbage Go? by Claire Eamer
• BROADCAST/NEW MEDIA: Science Channel: “How the Universe Works—Secret History of Pluto” by Wyatt Channell

The Andrew Gemant Award was presented to particle physicist David Kaplan for his achievements in producing “Particle Fever,” a documentary about the Large Hadron Collider’s first discoveries. The annual prize recognizes contributions to the cultural, artistic, and humanistic dimension of physics.

“[NAKED EYES] reflects the notion of “light” being an abstract matter, which needs intervention and design to become shape and volume. In this exhibition, light has been sculpted, contained, diffused, projected and reflected so Naked Eyes can enjoy the 3 dimensionality of it.”

—Noemi Schipfer, Visual Artist and Co-founder of NONOTAK
In support of its Member Societies, AIP contributed to the national meetings of all 10 members: AAPM, AAPT, AAAS, ACA, AMS, APS, ASA, AVS, OSA, and SOR. AIP provided media and government relations services; special programming and events for students; job board support; career development events; government relations training and support; and invited talks on public policy, history of science, and data on diversity and education in the physical sciences community.

Let’s Talk about Public Policy

FYI, AIP’s source for breaking news in federal science policy, has expanded its policy tracking tools. For example, FYI was the first public news outlet to report on the House Science Committee’s plans to introduce the National Quantum Initiative Act, and FYI published detailed updates as the bill progressed through Congress. FYI also has enhanced its web-based tools for tracking federal science budgets, legislation, and leaders.

Top officials at several federal science agencies have affirmed that FYI helps them stay abreast of what is happening at other science agencies and is a tool they use to inform others about the trajectory of developments in their own agencies. FYI also educates the broader community about science policy and budgetary developments in Washington, DC.

AIP convened stakeholders from Member Societies to share messaging on policy options related to open access in scientific scholarly publishing. This effort aided in coordinating the message delivered to the White House Office of Science and Technology Policy by AIP, AIP Publishing, and Member Societies.

Every year since 1988, AIP and its Member Societies sponsor two scientists to spend a year providing analytical expertise and scientific advice to members of Congress. This year’s Congressional Science Fellows are Rukmani Vijayaraghavan and Gina Mazzuca, who were placed within the offices of Rep. Derek Kilmer (D-WA) and Sen. Dick Durbin (D-IL), respectively.

The Tate Medal for International Leadership in Physics went to Italian physicist Fabiola Gianotti for her leadership as spokesperson of the ATLAS international collaboration and as Director-General of CERN in promoting science as a vehicle for broad international cooperation. The Tate Medal is awarded every two years to non-US citizens for their leadership, research contributions, and service to the international physics community.

The Dannie Heineman Prize for Astrophysics was awarded to Vicky Kalogera for her contributions to advancing the understanding of the evolution and fate of compact objects in binary systems, with particular regard to their electromagnetic and gravitational wave signals. The Heineman Prize for Astrophysics is awarded jointly by AIP and AAS to recognize outstanding mid-career work in the field of astrophysics.

The Dannie Heineman Prize for Mathematical Physics was awarded to Barry Simon for his contributions to the mathematical physics of quantum mechanics, quantum field theory, and statistical mechanics, including spectral theory, phase transitions, and geometric phases, and his many books and monographs that have deeply influenced generations of researchers. The Heineman Prize for Mathematical Physics is awarded jointly by AIP and APS to recognize valuable published contributions made in the field of mathematical physics.

To educate the public at large, the Lyne Starling Trimble Science Heritage Public Lecture Series feature discussions led by prominent science historians and writers who highlight the important roles that science plays in modern society and culture. Lectures are held at AIP headquarters in College Park, MD and open to the public.

2018 lectures included:

• “Light and Shadow: Cold War Physics in Secret and in Public”
• “The Trouble with Einstein’s Time”
• “Shifting Problems in Modern Physics and in the Histories That We Write”

Mazzuca, sponsored by AMS, received her PhD in atmospheric and oceanic science in 2018 from the University of Maryland, College Park. Her research focused on the relationship between mesoscale meteorology and air pollution.

Vijayaraghavan, sponsored by AAS and APS, received her PhD in astronomy in 2015 from the University of Illinois at Urbana-Champaign. Her research focused on understanding the evolution of galaxies in the extreme environments of galaxy clusters using numerical simulations on supercomputers.
Let’s Talk about History

AIP received nearly $1 million in grants for the Niels Bohr Library & Archives, one of the nation’s most concentrated collections dedicated to the history of physics, astronomy, geophysics, and allied fields.

A $300,000 grant from the National Endowment for the Humanities will help AIP create a secure vault to house rare books and archival material, including the recently acquired Wenner Collection. Covering nearly 500 years of history, the Wenner Collection contains more than 3,800 rare books and journals that include works by Ptolemy, Galileo, Huygens, Halley, Newton, Laplace, and many early 19th-century natural philosophers. A $646,700 grant from the Alfred P. Sloan Foundation will be used to support global access to the collection through cataloging and digitization.

AIP received a $66,000 grant from the Gordon and Betty Moore Foundation for planning a workshop on new ways to build history partnerships with large scientific collaborations. AIP also received a $75,000 grant from an individual donor to help underwrite the cost of administering AIP’s Oral History program, which has amassed a collection of interviews dating back to the 1960s and provides insights into the lives, work, and personalities of many modern physicists. AIP began the process of digitizing its oral history collection in 2007. Today, nearly two-thirds of the collection is available online.

The Melba Phillips papers is the latest archival collection to be digitized and is now accessible to researchers in the Niels Bohr Library & Archives’ online digital repository. The collection, which spans from 1922 to 1999, provides a glimpse into the life of physicist Melba Phillips. In 1952, she lost her job for refusing to testify before the US Senate’s Internal Security Subcommittee (also known as the McCarran Committee), which was charged with investigating alleged communist activities. Throughout her career, Phillips received numerous awards and honors, including the AIP Karl Taylor Compton Medal for Leadership in Physics in 1981. The full, digitized collection of the Melba Phillips papers is available at repository.aip.org/islandora/object/nbla:AR2007746.
More than 3,800 rare books and journals made a road trip in temperature- and humidity-controlled trucks from their home in Florida to their new home, the AIP Niels Bohr Library & Archives in College Park, MD.

“The Wenner Collection’s value is not just in the individual items that are in the collection, but the way they’ve been collected, the way they’ve been catalogued, and the stories that they tell.”

—Michael H. Moloney, CEO of AIP
Let’s Talk about Students and Jobs

The 2018 job market was a healthy one, and performance of the AIP Career Network reflected this trend. In 2018, institutions and organizations posted 25 percent more jobs than in 2017 on the online job board network for the physical science, engineering, and computing disciplines. The Career Network is managed by Physics Today Jobs and its partners: AAPM, AAPT, APS Physics, AVS, IEEE Computer Society, SPS, and Sigma Pi Sigma.

AIP also continued to expand and update its resources. The Statistical Research Center launched Physics Faculty Salary Calculator, which allows faculty members to see how their compensation compares to their colleagues. AIP’s most popular web resource, Who’s Hiring Physics Bachelors, was updated with more current employment data. The resource provides a state-by-state listing of companies that recently have hired physics bachelor’s degree recipients. SPS, working with AIP’s Statistical Research Center, updated the popular “Physics is for YOU” brochure with new employment and career data.

Nurturing the future generation is also a major priority. In 2018, AIP funded 90 travel awards to students representing more than 50 organizations and schools. In total, AIP gave away more than $100,000 in grants, scholarships, and awards to students. AIP also supported and helped conduct more than 20 regional meetings for students across the United States.

SPS and Sigma Pi Sigma launched the Alumni Engagement Program to connect undergraduates, departments, and professional alumni in physical science careers. Students can request alumni to serve as speakers, tour leaders, mentors, and department visitors.

SPS also coordinated the relaunch of JURP, recast as the Journal of Undergraduate Reports in Physics, featuring original research by undergraduates along with student-authored articles about outreach, advocacy, Member Societies, and professional development efforts among undergraduates.

The SPS summer internship program offers 10-week positions for undergraduate physics students in science research, education, and policy with various organizations in the Washington, DC, area. In 2018, SPS placed 15 interns at various organizations, including NASA, NIST, and AIP Member Societies.

In May, AIP coordinated contiguous exhibits by AAPM, AAS, ACA, AMS, APS, ASA, OSA, and AIP’s Inside Science under the shared theme, “Every Day Physics,” for the USA Science and Engineering Festival in Washington, DC.

To cultivate middle school and high school students’ interest in the history of science, AIP began a three-year cooperative agreement with National History Day, a nonprofit education organization, to sponsor the first-ever History of the Physical Sciences & Technology Prize.

“SPS has helped me forge connections and gain lifelong friendships in my chapter. Interning with SPS has also expanded my professional connections by exposing me to new physicists and career paths.”

—AMANDA WILLIAMS, WEBER STATE UNIVERSITY, OGDEN, UT
Let’s Talk about News and Magazines

AIP offers news and media services at meetings organized by our Member Societies—such as APS, OSA, ACA, AVS, and ASA. AIP also promotes the activities of AIP programs and the journals of AIP Publishing and its publishing partners. The result in 2018 has been coverage in a number of top-tier national and international media outlets: the *New York Times*, *The Washington Post*, *People* magazine, *USA Today*, BBC, Associated Press, the *Los Angeles Times*, and *Wired*, among others.

*Physics Today*—AIP’s flagship magazine—won four EXCEL Awards from Association Media & Publishing, an organization that promotes excellence in print and digital publishing by nonprofit organizations. AIP received the following awards:

- **Gold**: “Olive Spoons and Terrapin Forks”, February 2017 editorial
- **Bronze**: Journals, General Excellence, 2017
- **Bronze**: Journals, Cover Design, February 2017
- **Bronze**: Magazines (circulation of 100,001+), Feature Article Design: “The secret search for uranium in Cold War Morocco”, June 2017

“The war over supercooled water” (*Physics Today*, August) was the most popular story on the magazine’s website with more than 34,000 page views. The article reported on a seven-year dispute about supercooled water between two condensed-matter theorists.

AIP, through its **Inside Science News Service** (ISNS), continues to reach new audiences in the US and overseas. ISNS cemented syndication agreements with Chinese internet giant Tencent, ABC’s Good Morning America, and Kalmbach Media, publisher of *Astronomy* and *Discover* magazines. The Tencent syndication has resulted in more than 28 million story views of ISNS content.

AIP also took home a Gold MarCom Award for its 2017 Annual Report. The MarCom Awards, administered by the Association of Marketing and Communication Professionals, honors excellence in marketing and communication. Each year about 6,000 print and digital entries are submitted from around the world.

**INSIDE SCIENCE AUDIENCE TRENDS**

![Graph showing INSIDE SCIENCE AUDIENCE TRENDS](image_url)
Let’s Talk about AIP Publishing

As part of a year-long strategic planning process, AIP Publishing spent a great deal of time in 2018 talking with key stakeholders to better understand their needs—as authors, readers, referees, editors, librarians, and publishing partners. The resulting strategy supports AIP Publishing’s goal to expand the reach and impact of physical sciences research to the global community.

One key step is developing the high-impact journal *Applied Physics Reviews* into a flagship title through the addition of original research content. Another is developing a digital books publishing program to meet the needs of researchers who need to get up to date quickly in a new field.

AIP Publishing continues to meet the needs of the global research community for quality open access journals in topical areas, including *APL Bioengineering*, *APL Photonics*, *APL Materials*, and *Structural Dynamics*. Submissions to the multidisciplinary open access journal *AIP Advances* set a record high, up 23 percent over the previous year. Across the portfolio, AIP Publishing published more than 15,000 peer-reviewed articles and 135 volumes of conference proceeding.

AIP Publishing launched two new initiatives to assist with author workflows. In an ongoing effort to strengthen connections among researchers around the world, AIP Publishing launched a Chinese language version of the AIP Author Services website to better serve the fastest growing scientific authoring community with language editing services. A new partnership with Overleaf provides authors with AIP Publishing’s LaTeX article templates, collaborative authoring tools, and simplified submission process. More than 91,000 authors from across the globe submitted their work to AIP Publishing in 2018.

AIP Publishing also forged new partnerships with two international societies for publishing services beginning in 2019: The Physical Society of Japan and the China Academy of Engineering Physics.

**AIP PUBLISHING BOARD OF MANAGERS (2018)**

David Helfand, Interim Chair  
Alan Singleton, Secretary  
John Haynes, CEO, AIP Publishing  
Michael H. Moloney, CEO, AIP  
Diane Bartoli  
Wolfgang Christian  
Susan Fox  
Gerald Fuller  
A. Jeffrey Giacomin  
John Helliwell  
Kathleen Kingscott  
Ivan Petrov  
Kristen Ratan  
Greg Tananbaum  

Member Society and other journals published by AIP Publishing can be found at scitation.org/publications.

Let’s Talk about Us

**WHO WE ARE**

- A federation of 10 professional societies in the physical sciences, representing scientists, engineers, and educators.
- Publisher of the most influential and closely followed physics magazine in the world, *Physics Today*. Established in 1948, the magazine has a circulation of 115,000 and more than 350,000 monthly online page views.
- Home of the Niels Bohr Library & Archives, one of the nation’s most comprehensive collections dedicated to the history of physics, astronomy, geophysics, and allied fields.

“Our ultimate goal is to disseminate top-quality research as quickly as possible, and eliminating complexity caused by language barriers gives Chinese authors an opportunity to contribute their work to the global scientific community without unnecessary delay.”

—JASON WILDE, CHIEF PUBLISHING OFFICER, AIP PUBLISHING
“As a young scientist, AIP has been invaluable. I can tap into a plethora of resources and learn from and network with a wide range of accomplished professionals who have helped me advance my career and my knowledge.”

—NATHAN SANDERS, CHIEF SCIENTIST, WARNERMEDIA APPLIED ANALYTICS, BOSTON, MA

- Owner of AIP Publishing, a prominent scholarly publisher in the physical sciences and related disciplines.
- Home to the Society of Physics Students, the professional association for students majoring in physics, astronomy, chemistry, computer science, engineering, geology, mathematics, medicine, and other fields.

LEADERSHIP

AIP Board of Directors
David J. Helfand, Interim Chair, AAS
J. Daniel Bourland, AAPM
Beth Cunningham, AAPT
Judy R. Dubno, Interim Corporate Secretary, ASA
John Kent, Treasurer, At-large
Kate Kirby, APS
Rudy Ludeke, AVS
Michael Morgan, AMS
Faith Morrison, SOR
Elizabeth Nolan, OSA
Cheryl R. Stevens, ACA
Allison Macfarlane, At-Large
Nathan Sanders, At-Large

AIP Officers
Michael H. Moloney, Chief Executive Officer
Catherine “Gigi” Swartz, Chief Financial Officer

OUR MEMBER SOCIETIES AND THE YEAR THEY JOINED

Acoustical Society of America (1931)
American Physical Society (1931)
The Optical Society (1931)
The Society of Rheology (1931)
American Association of Physics Teachers (1932)
American Crystallographic Association (1966)
American Association of Physicists in Medicine (1973)
Science & Technology of Materials, Interfaces, and Processing (1976)
American Meteorological Society (2013)

Other Member Organizations
Sigma Pi Sigma
Society of Physics Students
Corporate Associates

NOTE: AIP also has 27 Affiliated Societies (visit aip.org/member-societies for more details)

OUR FINANCES

This year marked the ninth consecutive year of positive operating results for AIP. The overall financial position remained strong in 2018 despite a decrease of $13 million in net assets from $191 million in 2017 to $178 million in 2018.

This decrease is attributed primarily to the following:
- investment losses of $9.6 million
- net releases from restricted reserves of $7.8 million
- purchase of the Wenner Rare Book Collection of $5 million
- increase in equity investment in the American Center for Physics of $4.3 million
- a net surplus from operations of $5 million

The Board-approved guidance provides for financial discipline that allows for a long-term approach, diversified portfolio, and annual spending from reserves between 3 and 5 percent.

AIP received an unmodified opinion (clean) from BDO USA, LLP in the Independent Auditors Report that was reviewed by the Audit Committee.

AIP is grateful for the generous support provided by donors and sponsors for its programs and awards.

CONSOLIDATED FINANCIAL OVERVIEW (IN THE THOUSANDS)

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<th>2018</th>
<th>2017</th>
<th>2016</th>
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<tr>
<td>Investments</td>
<td>$157,486</td>
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<td>Total Net Assets</td>
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<td>Operating Activities</td>
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<tr>
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<td>AIP Publishing, Net</td>
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<td>Net Operating Surplus</td>
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1. John Regazzi took a leave of absence as Chair. At that time, David Helfand became Acting Chair and then Interim Chair in September.
2. Judith Flippen Anderson passed away in March. At that time, Judy Dubno became Interim Corporate Secretary.
3. Michael Duncan was the OSA Director until his term ended at the March meeting.
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