

# 2018

## Annual Report



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# 2018 in Review

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# President's Report

GORDON P. RAMSEY



**S**trategic Plan: During this year, the Board of Directors approved an update of the Strategic Plan with the following priorities, set by the Board:

- Continue to engage and invigorate the vibrant community of physics students and educators by developing programs, products, and services that build on the strengths of physics educators throughout their careers.
- Enhance continuing development opportunities by providing support and professional development for physics educators and physics education researchers.
- Enrich the field by supporting the diversity of physics students and educators at all levels.

This was accomplished as a team effort with the Executive Office, members of the AAPT Staff and other AAPT members. The process consisted of recognizing trends in physics education, formulating tactics to address them, and charting a course for action. This is an ongoing process and we are continuing to identify tasks that support the plan and help move AAPT and physics education forward for our members and the communities of physics educators and learners.

To assist in accomplishing these tasks we established a Development Task Force to suggest strategies in fundraising and acquiring resources for these projects. To enable early career physics educators to become more involved in governance, we have established an early career emerging leadership award (ExCEL Award). The ExCEL Task Force, chaired by Nathan Quarderer, has made recommendations regarding the qualifications and selection criteria for the Award. We have already raised enough funds through donations to offer the first Award and begin the process toward endowing the Award. The winner will receive a monetary award, trip to a national meeting and begin a mentoring phase toward leadership. Awards are being accepted via the web page at [https://aapt.org/Programs/awards/Early\\_Career\\_Emerging\\_Leader\\_Award.cfm](https://aapt.org/Programs/awards/Early_Career_Emerging_Leader_Award.cfm).

“This is an ongoing process and we are continuing to identify tasks that support the plan and help move AAPT and physics education forward for our members and the communities of physics educators and learners.”

Member support: In addition, thanks to our 2018 Board member, Dyan Jones, we are now offering the option for graduate credit through Mercyhurst University for participation in various AAPT workshops and activities. As these activities are announced, there will be information on how to earn this credit. The Board and appointed task forces also reviewed the AAPT Books Program and are working on the electronic publications review. The results of these reviews have the potential to add resources to provide our members with publications that will assist in the classroom and in programs at all levels.

Meetings: Thanks to the AAPT meetings staff, Tiffany Hayes and Cerena Cantrell, and the program chair, Mel Sabella, we had two very successful national meetings at San Diego and Washington, DC. The Winter Meeting was joint with the National Society of Hispanic Physicists. The plenaries covered state-of-the-art research in physics and the numerous sessions and workshops were excellent.

Advocacy: The Board approved changes to the AAPT Event Participation Code of Conduct for the adjudication process. Information can be found at [https://aapt.org/aboutaapt/organization/code\\_of\\_conduct.cfm](https://aapt.org/aboutaapt/organization/code_of_conduct.cfm).

As an advocate for physics education and educators, we also passed statements on “Fostering Safe and Inclusive Environments” and “Guns in the Classroom” (<https://aapt.org/Resources/policy/index.cfm>).

In supporting the fostering of safe, inclusive environments that reflect our strategic vision for inclusivity, the Board has created a related policy statement. This emphasizes AAPT's support for teachers and administrators to create safe, welcoming and inclusive atmospheres that promote learning. We encourage teachers to use pedagogies that emphasize student assets, not deficits.

In light of recent violence in schools around the country, these events have elevated the need to keep students safe while attending school. Some legislators and citizens have called for arming teachers in the event of an active shooter in their school. In response, we have passed a policy statement that reflects our view that we strongly oppose arming teachers and professors in classrooms and on campuses. Our feeling is that teachers are in the classroom to teach and

foster a comfortable and open environment for learning. Further, possession of firearms should be limited to qualified school security officers, who receive ongoing training on handling weapons during an emergency of this type.

AAPT signed on, with 153 other societies and universities, to the Multi-Society letter to President Trump on Immigration. Finally, the Board, in conjunction with the Advocacy Group at AIP, participated in a Congressional Visit Day in July, prior to SM18 to speak with Congressional staffers on issues related to physics education.

Our members are encouraged to make reference to these policy statements when contacting their Congressional representatives regarding these topics.

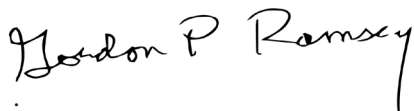
Collaborations and communication: The first AJP articles have been translated into Chinese and published in their journal, "College Physics". National AAPT provided support for the Ibero-American Physics Olympiad to help increase involvement in the Puerto Rico Section, as part of a section grant.

We continue to maintain relations with AIP, PhysTEC, APS and APS FED through joint grants, projects and activities.

The Board has increased our connection with members through Town Hall sessions at summer meetings in addition to assisting the AAPT Staff at the AAPT booth to provide direct contact between members and the Board. I provided quarterly updates in to Board activities in the eNNOUNCER.

Fiscal responsibility: One of the key responsibilities of the Board of Directors is to ensure the financial stability and health of the organization. Thanks to our Treasurer, Tom O'Kuma and Chief Financial Officer, Michael Brosnan, the Board was provided with the necessary information to ensure that our finances are sound for the short and long term. I am pleased to say that AAPT is in good financial health and we have established a path to continue this trend.

Finally I thank the membership for supporting AAPT and physics education and encourage you to become involved in AAPT governance to keep the positive trend moving forward



Gordon P. Ramsey  
2018 AAPT President

"AAPT signed on, with 153 other societies and universities, to the Multi-Society letter to President Trump on Immigration. Finally, the Board, in conjunction with the Advocacy Group at AIP, participated in a Congressional Visit Day in July, prior to SM18 to speak with Congressional staffers on issues related to physics education."



# Executive Officer's 2018 Annual Report

BETH A. CUNNINGHAM



We have had quite a busy year in 2018. This short report provides a summary of those activities as well as a preview of the work we will do in 2019 and beyond. I am not able to mention all of the important 2018 activities but this summary should give you a taste of the most visible or important activities that the Executive Office led.

One of the most visible activities was the release of the new website. I'm sure that you've seen how the website has changed to be more visually appealing and present information in a way that conforms to current best practices. The release isn't the end of our work on the website. Like many businesses, we continue to improve its functionality. We also made sure that AAPT's website and membership practices conform to the new European Union privacy laws that went into effect in May. We anticipate that the U.S. will pass similar privacy laws sometime in the near future.

"One of the most visible activities was the release of the new website. I'm sure that you've seen how the website has changed to be more visually appealing and present information in a way that conforms to current best practices.

A member survey was distributed via email in late 2017 and concluded in early 2018. We learned that our members highly value the three journals they receive as a benefit of membership (The Physics Teacher, American Journal of Physics, and Physics Today). Our K-12 members value AAPT's contests such as the Physics Bowl and the F=ma exam, continuing education units, and webinars more than higher education members. We also learned that 91% of members have used AAPT resources for teaching and/or professional development at least once per year. Ninety-six percent of our members rate the value of dues with respect to member benefits as Excellent or Satisfactory. This percentage is the same whether a member lives in the U.S. or resides outside the U.S. Members still find value in attending in-person meetings but the use of online learning is on the rise. Many thanks to everyone who responded to this survey!

We also entered into an agreement with Mercyhurst University to be able to offer graduate credit for AAPT professional development activities. We anticipate that we will have several opportunities for our members to take a workshop at a AAPT national meeting or take an online course with the option for graduate credit. We are still ironing out details about how this will work. However, the cost per credit hour will be much lower than typically charged by universities. We hope that this new collaboration will allow our K-12 and two-year college community to advance their careers. Look for more information in the coming year.

We also entered into a long-term agreement with our publisher, the American Institute of Physics Publishing. We have published with AIP since AAPT's formation in 1930. In fact, AAPT is one of the organizations that created AIP in response to the financial challenges of the Great Depression and to achieve economies in publishing journals. This new long-term agreement for publishing will strengthen our partnership with AIP. We anticipate greater cost savings and further development of activities around publishing.

We continue to be very successful in obtaining Federal and private grant funding to support AAPT's activities. The following projects were funded in 2018:

- “Get the Facts Out” – This joint project with the American Physical Society, American Chemical Society, Mathematical Association of America, and Colorado School of Mines provides resources about teaching as a career. Many perceptions about high school science and mathematics teaching (low pay, no benefits, no retirement, etc) are not based on fact and are actually misconceptions or myths. A toolkit developed by the project will help “get the facts out.” See <https://getthefactsout.org> for more information. Supported by the National Science Foundation under grants 1821710 and 1821462.
- “Effective Practices for Physics Programs” – This project is joint with the American Physical Society (APS) and aims to help physics programs respond to challenges they already face with a collection of knowledge, experience, and proven good practice. The EP3 Guide will allow programs to create, improve, and assess their individual programs in a way that can respond to local constraints, resources, and opportunities, while being informed by current research and good practice within the discipline. See <https://www.aps.org/programs/education/ep3/> for more information. Supported by the National Science Foundation under grants 1738311, 1747563, and 1821372.
- “Conference on Advancing the Integration of Interdisciplinary Computational Thinking in the Physical Sciences and Life Sciences” – This project, joint with Michigan State University, will develop a three-day conference to evolve a research-driven strategy for the application of computational approaches and computational thinking in physical science education and closely-related disciplinary areas. Having students develop computational thinking competencies will have a major influence on college and career readiness and the enhancement of the nation’s computational workforce. The results of the conference will provide advice to secondary school educators about how to develop STEM and computer science education programs that foster the development of computational thinking for students, potentially affecting millions of students across the nation. Supported by the National Science Foundation under grant 1812860.
- “AAPT/AIP Master Instructional Leader Policy Fellowship – Underrepresented Teachers of Physics” - This project will build a cohort of 18 secondary African American physics teachers (12 novices / 6 experienced) as AAPT/AIP Master Teacher Instructional UToP Fellows (Underrepresented Teachers of Physics) with the goals to improve the diversity, quality, and persistence of physics teachers. In coordination with Physics Teacher Education Coalition (PhysTEC) sites, project leaders will reach out to Historically Black Colleges and Universities (HBCUs), Minority-Serving Institutions (MSIs), and districts where African American physics teachers may be present, and recruit outgoing physics education graduates, novice, and master teachers into a two-year induction program. Supported by the American Institute of Physics Venture Partnership Fund.

*“We now have several years of events that have been held under the Event Participation Code of Conduct. We continue to educate attendees about the Code of Conduct.”*

We now have several years of events that have been held under the Event Participation Code of Conduct (see [https://aapt.org/aboutaapt/organization/code\\_of\\_conduct.cfm](https://aapt.org/aboutaapt/organization/code_of_conduct.cfm)). We continue to educate attendees about the Code of Conduct. We had the following incident that occurred in 2018:

- One incident was reported and deemed outside the realm of the Code of Conduct. No action was warranted.

I attended several workshops on preventing sexual harassment at meetings including one held by the American Institute of Physics for its member societies. The National Academies of Science, Engineering, and Medicine released a report in June on the sexual harassment of women in academia and ways to prevent it. I urge our members

in higher education to read this report (see <http://sites.nationalacademies.org/shstudy/index.htm>). Following the release of the report the American Association for the Advancement of Science held a convening of STEM professional societies to discuss how we might implement some of the recommendations of this report. I will summarize the steps that the professional societies are taking in the 2019 annual report.

We continue to have successes as well as challenges. AAPT’s finances continue to be healthy. However, we continue to see a decline in our K-12 membership numbers. This is a phenomenon being experienced by many other professional societies that support the K-12 STEM community. We rely on



current members to articulate the value of an AAPT membership. We hope you will assist AAPT in bringing in new members, particularly those teaching high school physics.

We hope you continue to see value in membership and continue to renew. We also ask that you consider making a contribution to the annual fund or to a program that resonates with you (see website for complete list). Finally, spread the word about the value of an AAPT membership to your colleagues (especially those entering the profession), friends, and students. AAPT is stronger with a robust and diverse group of members.

Sincerely yours,

Beth A. Cunningham  
Executive Officer



# Publications

*Having a strong publications program enables AAPT members to obtain greater insight into physics and learn about new teaching methods.*

## AMERICAN JOURNAL OF PHYSICS (AJP.AAPT.ORG)

*Richard Price*, Editor, Massachusetts Institute of Technology  
*Joseph D. Romano*, Assistant Editor, University of Texas Rio Grand Valley

AJP continued to inform physics education globally with member subscriptions, institutional subscriptions, such as libraries and physics departments, and consortia agreements. The mission of the American Journal of Physics (AJP) is to publish articles on the educational and cultural aspects of physics that are useful, interesting, and accessible to a diverse audience of physics students, educators, and researchers. Our audience generally reads outside their specialties to broaden their understanding of physics and to expand and enhance their pedagogical toolkits at the undergraduate and graduate levels.

### AMERICAN JOURNAL OF PHYSICS STATISTICS

- 12 issues—January–December 2018 (Volume 86)
- 960 pages, 668 reviewers, 78 papers published—13% acceptance rate (?)
- 4 open access articles
- 8,730 individual and institutional subscriptions
- Approximately 56% of subscribers teach at the college and university level and 24% teach at the high school level. The remaining 20% are scientists at research facilities, students, and other interested members of the physics community.

### Resource Letters - 3 letters

Resource Letters Editorial Board: Ray Burnstein, Jon Gaffney Anthony Kuchera, Shane L. Larson, Jan Tobochnik

### Research in Physics Education - 8 articles

### Computational Physics - 5 articles

### Apparatus and Demonstration Notes - 11 articles

### Notes and Discussions - 6 articles

### Back of the Envelop - 5 articles

### Seasonal Articles - 1 articles

### Book Reviews - 16 reviews

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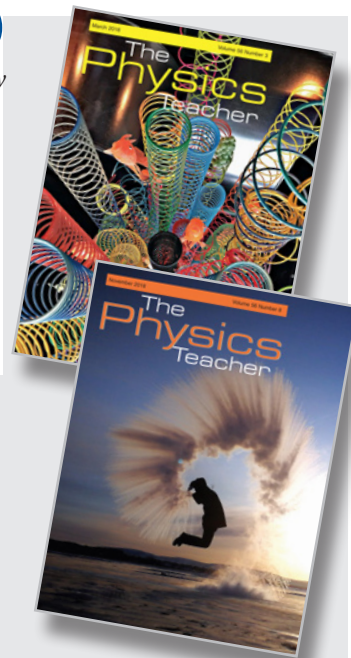
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# THE PHYSICS TEACHER (TPT.AAPT.ORG)

Gary D. White, Editor, *The George Washington University*

*The Physics Teacher (TPT)* continues the mandate of supporting, inspiring, and challenging our target audience—high school and college teachers of introductory physics—as well as our many other readers. In December, a Call for Papers was issued on the topics of sex and gender in the introductory physics classroom, an invitation to write and submit manuscripts to *TPT* covering as many facets of these subjects as can be imagined. Articles submitted in response to the call that successfully make it through the *TPT* double-blind peer-review process are to be featured in upcoming issues of *TPT*. See the editorial in the December 2018 issue of *TPT* for more details



## COLUMN EDITORS

### And the Survey Says...

Susan C. White, AIP, College Park, MD

### AstroNotes

Joe Heafner, Catawba Valley Community College, Hickory, NC

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Larry Weinstein, Old Dominion University, Norfolk, VA

### Figuring Physics

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### iPhysicsLabs

Jochen Kuhn, University of Kaiserslautern, Germany

Patrik Vogt, Realschule Plus Herxheim, Herxheim Germany

### Little Gems

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### Physics Challenge for Teachers and Students

Boris Korsunsky, Weston High School, Weston, MA

### Talkin' Physics

Dolores Gende, North Broward Preparatory School, Coconut Creek, FL

### Technology in the Classroom

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### Visual Physics

Gary D. White, AAPT, College Park, MD

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## THE PHYSICS TEACHER STATISTICS

- 9 issues—January–May, September–December 2018 (Volume 55)
- 656 pages, 714 reviewers, 135 papers, and 109 contributions to monthly columns (107 international authors/co-authors)—39% acceptance rate
- 8,352 individual and institutional subscriptions
- Approximately 40% of subscribers teach at the college and university level and 33% teach at the high school level. The remaining 27% are scientists at research facilities, students, and other interested members of the physics community.

# Electronic Communicationss



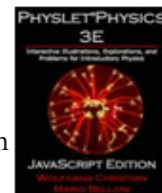
AAPT/ComPADRE provides digital library and electronic publication services to the physics education community. It is designed to help educators, researchers, and students in physics find, use, and share high quality educational resources. AAPT/ComPADRE collaborates with a wide range of authors, projects, and organizations involved in physics education.



**Living Physics Portal:** The Living Physics Portal, a new vision for peer-to-peer curriculum sharing focused on physics for the life sciences, became a reality in 2018. This project is led by Sam McKagan and involves experts in physics for the life sciences, education researchers, and technical staff. The portal infrastructure and user interface were completed in 2018 for a beta launch in early 2019. The content contributors on the project posted nearly 200 resources to the portal and well over half of these went through an editorial review for quality and suitability for the collection. This collection will continue to grow with contributions from both those involved with the project and external users.

**PICUP:** The web site of the PICUP collaboration for computation in the physics curriculum is now in regular use. Ongoing efforts are focused on increasing contributions, peer review, and supporting PICUP workshops. A Faculty Commons section of the site for sharing smaller resources has received significant use since its launch.

**Physlet Physics:** The authors of Physlet Physics and the ComPADRE staff published a third edition of this book in 2018. This is an interactive, simulation-based exploration of topics in introductory physics. The simulations in this online edition have been translated to javascript so that the simulations run on mobile devices as well as computers. Work is ongoing for a similar update to Physlet Quantum Physics.



**PhysPort:** The usage of Physport, the collection of research-based resources for physics instructors, almost doubled between 2017 and 2018. Both the Assessment Database and Expert Recommendations receiving increased traffic. A project to study and improve the impact of PhysPort began in 2018.

**ComPADRE Books:** Several resource collections were published through the ComPADRE Books interface in 2018. These include Digi-Kits on Energy and Sunspot Science. This interface was also used to create a collection of resources for those interested or involved in incorporating coding in high school physics and physical science classes.

**Conferences:** AAPT/ComPADRE again in 2018 provided the web infrastructure to host and publish physics education conferences. The 2018 Physics Education Research Conference web site and Proceedings are available on PER Central and the Proceedings of the 2018 Advanced Labs Topical Conference are published on the Advanced Labs website.

**Traffic Report:** Overall, ComPADRE served over 500,000 users in 685,000 sessions in 2018, with between 45,000 and 65,000 sessions per month during the school year.



# Electronic Communications

AAPT.ORG

Having strong online publications offers AAPT members convenient access to physics education resources, news, and other member benefits. AAPT.org continues to emphasize ease-of-access and user-friendliness, and aims to be more inviting to new visitors. The landing page includes a new navigation system with many new photos and information pertaining to upcoming or ongoing programs, projects, events, and resources; and buttons to donate, join, and to sign into the e-commerce member website. The new website design implemented in 2018 stresses ease of navigation and will guide visitors based on their role in the physics education community.

## Features

AAPT.org organizes the association's many assets into appropriate categories allowing the user (both members and non-members) to easily access information regarding topical news, governance, member benefits and profiles, conferences and workshops, awards, publications, local sections, teaching and student resources, partners, giving, and marketing opportunities.

Added features include.

- A new diversity emphasis which promotes women in the sciences
- A new member spotlight that highlights those members that are doing or have done significant work on AAPT projects and other projects that support the greater physics education community

## What's next?

Efforts to enhance AAPT.org are ongoing and numerous. Some areas of activity are the area committee reports, awards nominations, online advertising, and member recruitment.

For 2018 aapt.org had:

- 488,579 visits • 1,439,306 pageviews • 2.94 pages per visit
- 281,444 new visitors *All from 198 countries/territories*  
#1 U.S., #2 India, #3 Pakistan #4 China, #5 Canada

## SOCIAL NETWORKING

AAPT continues to open the channels of communication and community using online social networking platforms. Below is a list of online social networks

AAPT uses:

- [facebook.com/AAPTHQ](https://facebook.com/AAPTHQ)
- [twitter.com/AAPTHQ](https://twitter.com/AAPTHQ)
- [flickr.com/physicsteachers](https://flickr.com/physicsteachers)
- [youtube.com/physicsteachers](https://youtube.com/physicsteachers)
- [pinterest.com/AAPTHQ/aboutaapt/socialnetworks.cfm](https://pinterest.com/AAPTHQ/aboutaapt/socialnetworks.cfm)
- [instagram.com/AAPTHQ/](https://instagram.com/AAPTHQ/)

## AAPT.ORG

AAPT has created a new website.

## MEETING PRESENTATIONS

AAPT continues to preserve content from the national meetings. In addition to meeting abstracts, other content including posters, talks, plenaries, photos, and videos will be archived for future reference. The archive will be searchable. This will be a very useful source of information for members as well as area committees as they plan sessions for future meetings.

# eNNOUNCER

The *eNNOUNCER*, AAPT's electronic newsletter publication, is distributed to members by e-mail. The *eNNOUNCER* issues are published at the beginning of each month and archived on AAPT.org. The *eNNOUNCER* contains dates and deadlines for upcoming conferences, meetings, symposiums and events, member news and information, and recent news from the worlds of physics and teaching. Topics covered include organization specific items, action items and notable dates, news from the AAPT Executive Office, member news, section news, recommended reading, and science and education news.

## eNNOUNCER TOPICS

*eNNOUNCER* publishes monthly news for members including:

- Recent AAPT related events and programs
- Members in the news
- Section news
- Workshops and topical conferences
- Scholarship and fellowship announcements
- Awards announcements
- Science related festivals
- Video and photo contests
- Career and teaching opportunities

## 2018 TOP AAPT NEWS STORIES

Listed below are highlighted news stories for 2018 from the *eNNOUNCER*. To read the full story go to <http://www.aapt.org/aboutaapt/ennouncer/index.cfm>.

### JANUARY

- Thomas O'Kuma Appointed AAPT Treasurer
- 2018 Homer L. Dodge Citation for Distinguished Service to AAPT Announced

### FEBRUARY

- AAPT/AIP Master Teacher Policy Fellowship
- Applications Now Being Accepted for Jossem Fund Grants

### MARCH

- Gordon Conference on Physics Research and Education on "Energy as a Subtle Concept"
- The Physics of Winter Olympic Sports Resource Page"

### APRIL

- Clifford V. Johnson Named as Recipient of the 2018 Klopsteg Memorial Lecture Award
- Millikan Medal Awarded: Kyle Forinash
- Halliday and Resnick Award: Bradley S. Ambrose
- Paul W. Zitzewitz Excellence in K-12 Teaching Award -Frank Noschese

### MAY

- 2018 Homer L. Dodge Citation for Distinguished Service to AAPT to Ximena C. Cid, Jose D'Arruda, Joy Elaine Gwinn, Warren W. Hein, and David P. Jackson



eNNOUNCER August 2018

## AAPT News

### 2018 AAPT Board of Directors Election

The election of officers for the AAPT Board of Directors will begin in September. Members will receive instructions through email or, if no email is on file, through the mail to help you vote electronically. Be sure your email address and membership are current so you can participate. Learn more about the candidates. [Read more](#)

### Abstracts for the 2019 AAPT Winter Meeting

AAPT will be accepting abstracts for the 2019 AAPT Winter Meeting in Houston, Texas from August 7 to September 18. This is a great opportunity to present your innovative research and share creative teaching methods with your peers. [Please click here](#) to submit your abstract.

### 2018 U.S. Physics Team Three Gold and Two Silver Medals

The United States Physics Team ranked seventh place out of 88 countries in the overall medal count and sixth in the aggregate point count at the 48th International Physics Olympiad that was held July 21–29, 2018 in Lisbon, Portugal. [Read more](#)

### AAPT Privacy Statement Update

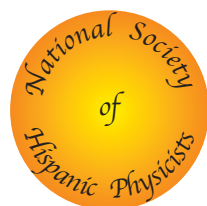
Privacy laws in the European Union changed on May 25, 2018. In an effort to strengthen your privacy rights, AAPT has updated its [Privacy Statement](#). The update is part of AAPT's ongoing commitment to provide transparency and safeguard your privacy. Changes include new information about how we process personal data. We encourage you to review the new privacy statement to familiarize yourself with the changes that have been made. These updates went into effect for all existing AAPT members and users of AAPT websites on May

### In this issue

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- 2018 AAPT Board of Directors Election
- Abstracts for the 2019 AAPT Winter Meeting
- 2018 U.S. Physics Team Three Gold and Two Silver Medals
- AAPT Privacy Statement Update
- eAlliances: Uniting Isolated Women Physicists and Astronomers
- **AAPT Programs**
- Support the U.S. Physics Team - Donate Now
- New Faculty Workshop
- Experienced Faculty Workshop
- Greater Chicago/Land P/CIP Computational Physics Workshop
- **AAPT Members**
- AAPT Member Spotlight
- Membership Renewal
- Applications Now Being Accepted for Jossem Fund Grants
- AAPT Member Named PhysTEC Teacher of the Year
- Call for Award Nominations
- **In the News**
- Longtime Professor Publishes Helpful Intro to Physics Tool
- Career Toolbox for Undergraduates
- Help students find the right grad program. Tell them about [GradSchoolShopper.com](http://GradSchoolShopper.com)
- Highly Trained STEM Teachers Needed to Boost America's Global Competitiveness, According to New Study
- The International Conference on Physics Education (ICPE)
- American Modeling Teachers Association



# National Meetings



## WINTER MEETING

January 6–9, 2018, San Diego, CA

### Statistics:

There were 832 attendees, 24 exhibitors, 1 sessions, 15 workshops, 2 Tutorials, 2 Topical Discussions, and 117 posters.

Program Committee Chair  
Mel Sabella

### Paper Sorters:

Brad Conad, Society of Physics Students-Beverly (Trina) Cannon, Charlene Rydgren, Jackie Doyle, Katie Ansell, Frank Lock, Ryan Hazelton, Bahar Modir, Andy Rundquist, Rob Salgado, Ernie Behringer, Dan Jackson, Jeremiah D. Williams

### Local organizer:

Greg Severn, University of San Diego for organizing the workshops

## Plenaries

The plenary talks were given Monday at by Gabriela Gonzalez gave the NSHP talk, “Gravitational-wave Astronomy.” González is a physicist working on the discovery of gravitational waves with the LIGO team. Lynne Talley, Distinguished Professor of Physical Oceanography in the Climate, Atmospheric Sciences, and Physical Oceanography division at Scripps Institution of Oceanography, University of California, San Diego gave spoke on “Physics and the Changing Climate of the Southern Ocean and Antarctica.” On Monday, Andrew Gemant Awardee, Don Lincoln talked about “God’s Thoughts: The Modern Search for a Theory of Everything.” AIP hosted a panel on Communicating Science to the Public.

The 2018 Richtmyer Memorial Lecture Award talk, “Preparing Our Students for Quantum 2.0,” was given by Mark BeckMark, Benjamin H. Brown Professor of Physics and Chair of the Department of Physics at Whitman College in Walla Walla, WA.

Barbara L. Whitten Professor Emerita of Physics, at Colorado College in Colorado Springs, CO received the 2018 Oersted Medal. Her talk was on “The Value of Diversity in Physics.”

The 2018 John David Jackson Excellence in Graduate Physics Education Awarded to Mehran Kardar. Kardar was selected to receive the Jackson Award in recognition of his work as a teacher of graduate statistical mechanics. His talk was “Force from Non-equilibrium Fluctuations in QED and Active Matter.”

## Highlights

A joint meeting with the National Society of Hispanic Physicists (NSHP), the plenaries, sessions, tutorials, posters, and workshops covered a wide range of interests and levels from the novice to the experienced teacher. NSHP sessions included “History of Physics and PER in Latin America” and “Culturally Sensitive Mentoring.”

WM18 attendees at on field trip to Chicano Park. The University of San Diego Shiley Center for Science and Technology was host to workshops on Saturday and Sunday with selections ranging from “Preparing to Succeed in AP Physics 1 and 2” to “LIGO and Interferometers.” Commercial Workshops were hosted by PASCO Scientific, Expert TA, Perimeter Institute, Pearson, and Vernier. AAPT and NSHP cosponsored a tour Chicano Park which is the only recognized National Landmark focused on Chicano populations in the United States.

In conjunction with the joint meeting, the societies hosted the Conference on Enhancing Undergraduate Physics Programs at HSIs (EUPP-HSI). The conference brought together representatives from Hispanic Serving Institutions in order to articulate the challenges and opportunities of physics education at HSIs; explore suggested best practices of teaching, mentoring and retaining students, both majority and minority students; and to develop a list of suggestions for institutional and programmatic changes at the HSIs and also physics professional societies.

Member service to AAPT was recognized with the presentation of the Homer L. Dodge Citations for Distinguished Service to AAPT to Nancy Easterly, Daniel Schroeder, MaryAnn Hickman Klassen, Steve Spicklemire, and Jon Anderson.





WM18 Walk Run Participants WM18 attendees also enjoyed a variety of social opportunities such as the Early Arrivals Networking Event, Rise and Shine Yoga, the First Timers' Gathering, Meet-up for Members and Supporters of LGBTQ Community, Game Room Night, SPS Undergraduate Awards Reception, the AAPT Fun Run/Walk, the Early Career Speed Networking event, and the High School Teachers' Lounge.



## PHYSICS EDUCATION RESEARCH (PER)

### PER Conference 2018—Washington, DC

August 1-2, 2018

Having Wonderful Ideas: Connecting the Content, Outcomes, and Pedagogies of Physics  
(446 attendees)

#### PER LEADERSHIP ORGANIZING COUNCIL

Natasha Holmes, Chair  
 Luke D. Conlin, Vice Chair/Treasurer  
 Cassandra Paul, ex officio  
 (chair of AAPT Research in Physics Education Committee)  
 Vashti Sawtelle, Mini-Grants  
 Chandra Turpen, GOER Liaison  
 Eric Williams, PERCoGS representative  
 Genaro Zavala, PERC Proceedings review

#### PERC ORGANIZING COMMITTEE

Steve Kanim, New Mexico State University  
 Suzanne White Brahmia, University of Washington  
 Michael Loverude, California State University Fullerton  
 John Thompson, University of Maine

#### Plenary Sessions:

*Teachers as Learners: Seeing “wonderful ideas” in preservice teacher thinking*, Rosemary S. Russ, University of Wisconsin, Madison  
*The multimodal interactional work of Having Wonderful Ideas*, Megan Wawro, Benedikt W. Harrer, San Jose State University  
 Inclusive and transformative epistemic agency: Broadening participation by valuing “wonderful ideas,” Déana Scipio, IslandWood

Many physics instructors have educational goals for their students that go beyond understanding physics concepts and problem-solving approaches. These goals can include understanding how physics knowledge is generated, understanding how to learn difficult concepts, learning more general problem-solving skills, developing confidence in physics/science, and developing a physics identity. Our conference theme is inspired by an educational goal articulated by Eleanor Duckworth, a goal connected to the ones just mentioned but different in flavor: “The having of wonderful ideas is what I consider the essence of intellectual development. And I consider it the essence of pedagogy to give [students] the occasion to have [their] wonderful ideas and to let [them] feel good about [themselves] for having them.” What does “having wonderful ideas” mean in physics courses and other physics learning environments?.

# National Meetings



## SUMMER MEETING

July 28–August 1, Washington, DC

### Statistics:

There were 1,382 attendees, 36 exhibitors, 98 sessions, 40 workshops, 5 topical discussions, and 295 posters.

### Program Committee Chair

Mel Sabella

### Paper Sorters:

Tom Carter, College of DuPage, Glen Ellyn, IL

Brad Conrad, Society of Physics Students, College Park, MD

Shahida Dar, Chair, Teacher Education Committee

Ronald Freeman, Northcentral University, Prescott, AZ

Brianne Gutmann, University Of Illinois - Urbana Champaign, Urbana, IL

Mary Ann Hickman Klassen, Swathmore College, Swathmore, PA

Eric Kuo, University of Pittsburgh, Pittsburgh, PA

Daniel MacIsaac, SUNY College at Buffalo, Buffalo, NY

Kari Meyers, Pima Community College, Tucson, AZ

Adriana Predoi-Cross, University of Lethbridge, Lethbridge, AB

Gregory Putman, Kent State University, Kent, OH

Brian Pyper, BYU-Idaho, Rexburg, ID

## Plenaries

The Klopsteg Memorial Lecture Award was given to Clifford Victor Johnson, University of Southern California, Los Angeles. A little over a hundred years ago, Einstein helped us rethink space and time, and shook our conception of the universe to its foundations. Concepts like black holes, warped spacetime, wormholes, the multiverse, and time travel solidified and entered discussions of both our real universe and the universe of our imaginations. Johnson talked about some of these ideas, including aspects of exciting current research into them, and about the role of these concepts in popular culture, describing his work helping creators to interweave these concepts into their storytelling in blockbuster movies, primetime TV, and bestselling books

Kyle Forinash, emeritus professor of physics at Indiana University Southeast, New Albany, IN, received the 2018 Robert A. Millikan Medal for his notable and creative contributions to the teaching of physics. His talk, *Breaking Out of the Physics Silo*, discussed how Robert Millikan became a physics teacher when his Greek professor at Oberlin College asked him to teach a preparatory class in physics at the college. Although this was not an easy transition for Millikan, the world is better off for him having been obliged to venture into unfamiliar territory.

On Monday evening AAPT hosted a Plenary, *A Conversation with Shirley Malcolm*. In this plenary session we invited four members of the diverse AAPT community to participate in a discussion with Dr. Malcolm. Shirley Malcolm is Head of Education and Human Resources Programs of the American Association for the Advancement of Science (AAAS).

David W. Cash, Dean of the John W. McCormack Graduate School of Policy and Global Studies at UMass Boston and a founding Dean of the Sustainable Solutions Lab. His talk, *Dispatch from the Front Lines: Confessions of a Science Teacher, Researcher and Government Bureaucrat* reviewed his career as a researcher, teacher, and government official trying to understand and better harness scientific knowledge to solve pressing policy challenges.

The APS Plenary, co-sponsored by the American Physical Society Forum on Education, featured Steven Rolston from the University of Maryland. In his talk, *The Coming Quantum Revolution*, Rolston noted that The Information Revolution was built on the insights of quantum physics — semiconductor properties, lasers, and magnetism.

The other invited plenary speaker was Evangeline J. Downie, George Washington University. Her talk, *The Proton Radius Puzzle*, discussed the difference between the radius of the proton when measured with electrons, and that measured with muons. Its potential resolutions could be very exciting, include beyond-standard-model physics. The puzzle has resulted in several papers in *Science* and *Nature*, and much popular media interest.

## Highlights

Almost 1400 physics educators participated in the 2018 Summer Meeting, making it the largest AAPT conference to date. With this meeting being held in Washington, DC and with science funding and science education high on the national agenda, attendees increased their skills as communicators and advocates for science education in general and physics education in particular.

AAPT Board members met with their representatives to formally voice AAPT's priority messages:

- All teachers of physics at all levels should receive suitable investment and education in content and pedagogy.
- Physics education research is a critical component of developing effective pedagogical approaches.
- Tackling issues in physics education requires infrastructure at all scales: local, state and national.
- We recognize the importance of increasing the diversity of physics teachers and students at all levels through the development of curriculum, financial support for students and teachers, and increasing communication among physics teachers across all academic levels.



# National Meetings continued

AAPT/PTRA held its Summer Leadership Institute July 25-28 in tandem with the ALPHA/PIRA conference at Loyola University. The Summer Institute provides annual training that focuses on updates in pedagogy, technology, and content. This professional development for the leaders allows the participants to become certified in specific content areas that they may then offer to peers in their own district or state.

Some attendees took advantage of the location and enjoyed a tour of the NOAA Weather Operations floor and saw satellite data being modeled into forecasting for ocean conditions, precipitation, tropical storms, climate and more! They saw the input, analysis, and output model side of this National Weather Service operation. Physics Education Researchers participated in the post-meeting PER Conference, *Having Wonderful Ideas: Connecting the Content, Outcomes, and Pedagogies of Physics*. (<https://www.compadre.org/per/conferences/2018/>).

The meeting included a wide variety of inspiring plenary and award talks. We made time during the schedule to remember two outstanding past leaders, John W. Layman and John L. Hubisz,



The AAPT Fun Run/Walk continues to be a popular event providing a break from the intense learning format of the meeting and the Speed Networking event, providing an opportunity for new physics educators to interact “one on one” with seasoned professionals, continued to grow. Much anticipated features of the Summer Meeting, The High School Physics Photo Contest and the Apparatus Competition, are always highlights and this year the entries were exceptional.

The Halliday and Resnick award for Excellence in Pre-College Teaching was presented to Bradley S. Ambrose from Green Valley State University, Allendale, MI. His talk, *We Teach More Than Physics*, focused on the enterprise of teaching physics, which has always been guided by lessons learned from his experience working in the physics education research (PER) community. Much of their work has helped us all discern more clearly the impact that our teaching can (and should) have on our students.



The 2018 Paul W. Zitzewitz Award for Excellence in Pre-College Physics Teaching was presented to Frank Noschese from John Jay High School in Cross River, NY. His talk was *#iTeachPhysics – Can Social Media Make Us Better Educators?* He discussed how social media has moved beyond status updates about breakfast and is changing how we engage in our profession as educators. Social media allows classroom teachers to connect with each other and share lesson ideas. But social media can also evoke empathy — allowing us to see the previously unknown personal and professional struggles of others. It can transform our perceptions about our students and colleagues and thus spark action to seek change within ourselves and within our institutions.

The Summer 2018 recipients of the Homer L. Dodge Citations for Distinguished Service to AAPT were Ximena Cid, California State University, Dominguez Hills, CA; Jose D’Aruda, University of North Carolina Pembroke, ; Joy Elaine Gwinn, Shenandoah High School ; Warren Hein, Kettering University in Flint, Michigan; and David Jackson, Dickinson College in Carlisle, Pennsylvania.



# Workshops and Programs

## WORKSHOP FOR NEW PHYSICS AND ASTRONOMY FACULTY

June 25-28, 2018 and  
October 25-28, 2018

AAPT, in conjunction with the American Astronomical Society (AAS) and the American Physical Society (APS), held two workshops for new physics and astronomy faculty members at the American Center for Physics. These workshops helped 170 new faculty understand how students learn physics and astronomy, and suggested how this information can impact a new professor's teaching methods. The workshop is intended for faculty in the first few years of their initial tenure-track appointment at a four-year college or university.

Department chairs at research and four-year institutions are asked to nominate tenure-track faculty. The ideal candidate would have a year or two of teaching experience and be aware of the challenges of teaching.

The New Physics and Astronomy Workshop program was funded by grants # DUE-0813481, DUE-0121384, and DUE-9554738 from the National Science Foundation. Read more online at: [www.aapt.org/Conferences/newfaculty/](http://www.aapt.org/Conferences/newfaculty/)



## PHYSICS TEACHER RESOURCE AGENTS (AAPT/PTRA) PROGRAM

Read more online at: [www.aapt.org/PTRA](http://www.aapt.org/PTRA)



Workshops were held during the AAPT 2018 Summer Institute in conjunction with the AAPT Summer Washington, DC.

AAPT maintains a nationwide cadre of more than 150 accomplished high school teacher-leaders who are trained and continually involved in professional development. These teacher-leaders are certified as PTRAs by AAPT to lead workshops throughout the country.



### 2018 PTRAs COMMITTEE

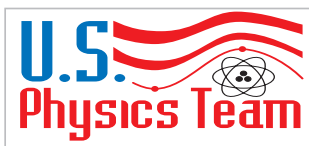
Karen Jo Matsler, Program Director

### OVERSIGHT COMMITTEE

Jill Marshall, Chair, Earl D. Blodgett, Christopher J. Chiaverina, Janie Head, Tommi Holsenbeck, Jan Landis Mader, Kelly O'Shea, Beth A. Cunningham, Ex Officio, Karen Jo Matsler, Ex Officio, Rebecca Vieyra, Ex Officio



## 2018 UNITED STATES PHYSICS TEAM



Read more at: [www.aapt.org/physicsteam/2018](http://www.aapt.org/physicsteam/2018)

The 49th International Physics Olympiad that was held July 21–29, 2018 in Lisbon, Portugal. The nine day competition among 412 of the world's top high school physics students from 90 nations consisted of an Experimental Exam and a Theoretical Exam. The team also experienced several cultural outings and visits.

The participants representing the 2018 U.S. Physics Team were:

- Gopal K. Goel, Krishna Home School, Portland OR
- Anthony C. Ou, Carmel High School, Carmel IN
- Michelle C. Song, Mission San Jose High School, Fremont CA
- YuQing Xie, The Charter School of Wilmington, Wilmington DE
- Daniel G. Zhu, Montgomery Blair High School, Silver Spring MD

### DIRECTOR

Paul Stanley, Beloit College

### ACADEMIC COACHES

The U.S. Team was led by Paul Stanley of Beloit College, JiaJia Dong of Bucknell University, and Mark Eichenlaub from University of Maryland..



The traveling team, from left to right, Gopal Goel, Daniel Zhu, Michele Song, YuQing Xie, Anthony Ousi

### 2018 US PHYSICS TEAM

Vincent W. Bian, Poolesville High School, Poolesville MD - Sean S. Chen, Canyon Crest Academy, San Diego CA - Swapnil Garg, The Harker School, San Jose CA - Gopal K. Goel, Krishna Home School, Portland OR - Matthew Guo, Evergreen Valley High School, San Jose CA - Hagan E. Hensley, Stanford Online High School, Stanford CA - Raymond B. Li, Canyon Crest Academy, San Diego CA - Kiran Linsuain, Homeschool, Pittsburgh PA - Richard R. Liu, William Mason High School, Mason OH - Edward P. Lu, Cinco Ranch High School, Katy TX - Pranav M. Murugan, Texas Academy of Math and Science, Denton TX - Graham L. O'Donnell, Lincoln High School, Tallahassee FL - Anthony C. Ou, Carmel High School, Carmel IN - Dilhan Salgado, Montgomery Blair High School, Silver Spring MD - Michelle C. Song, Mission San Jose High School, Fremont CA - Shannon Y. Weng, West Windsor - Plainsboro High School South, West Windsor NJ - Jason Xia, Naperville North High School, Naperville IL - YuQing Xie, The Charter School of Wilmington, Wilmington DE - David T. Xiong, West Windsor - Plainsboro High School South, West Windsor NJ - Daniel G. Zhu, Montgomery Blair High School, Silver Spring MD

### PHYSICS BOWL SPONSORS

AAPT  
Arbor Scientific  
Cambridge University Press  
CPO Science  
Educational Innovations, Inc.  
John Wiley & Sons  
PASCO Scientific  
Princeton University Press  
Turner Publishing Company  
Vernier Software & Technology  
WebAssign

# PHYSICSBOWL

### AAPT PHYSICS BOWL

Read more at: [www.aapt.org/Programs/contests/physicsbowl.cfm](http://www.aapt.org/Programs/contests/physicsbowl.cfm)

This year there were almost 4500 students participating from more than 280 schools across the United States and Canada, China, and Spain. Michael C. Faleski served as the PhysicsBowl Academic Coordinator. China participated for the third year.

### 2018 TOP 10 GLOBAL WINNERS

#	SCORE	STUDENT, SCHOOL, CITY, STATE
1	39	CHUNING GAO Beijing No.4 High School Beijing
2	39	ZACHARY DENG SpringLight Education Institute CA
3	39	PATRICK LIU SpringLight Education Institute CA
4	39	HUIYUAN WANG Shenzhen College of International Education Guangdong
5	39	VICTOR ZHANG Gauss School of Math and Science NJ
6	38	JOSEPH LI Saratoga High School CA
7	38	ZEESHAWN WANI Debakey High School TX
8	38	Jeffrey Tao Lynbrook High School CA
9	38	JIAJUN LU Suzhou High School-SIP Jiangsu
10	s37	SEAN CHEN San Diego Math Circle @ UCSD CA

### PHYSICSBOWL ADVISORY BOARD

Jon Anderson, Myra West, Michael Bush, Beverly Trina Cannon, Scott Dudley, Sean Flaherty, Thomas Herring, Joel Klammer, Andrzej Sokolowski, Eric Stron, and Courtney Willis

# 2018 High School Physics Photo Contest

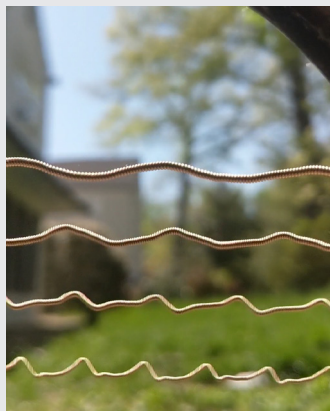
*The High School Physics Photo Contest is open to high school students in grades 9-12 (or equivalent international grade level). Photos may be entered in one of the categories described below, and are judged on the quality of the photo and the accuracy of the physics in the explanation that accompanies the photograph. Out of over 700 submissions, the 100 finalist photos were selected, displayed, and judged during the 2018 Summer Meeting.*

high school physics  
**photo contest**

See [www.aapt.org/Programs/contests/winners.cfm?theyear=2018](http://www.aapt.org/Programs/contests/winners.cfm?theyear=2018) for information on the following overall winners of 2018.

**Contrived photos** are those that are set up to show a particular physics concept or related set of concepts. Contrived photos represent non-spontaneous events.

FIRST

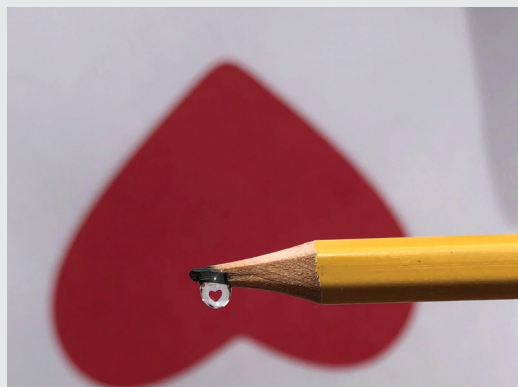


**Natural photos** are those that involve everyday situations that may demonstrate a variety of physics concepts. Any spontaneous event is considered natural.

FIRST



SECOND



SECOND



THIRD

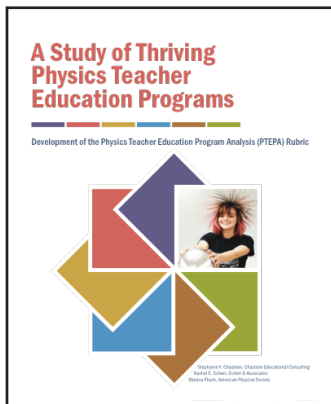


THIRD



# Collaborative Projects

## THRIVING PROGRAMS STUDY



The PhysTEC project conducted a study of “thriving” physics teacher education programs (defined as programs that frequently graduate five or more physics teachers per year). The goal of the study was to identify common practices and structures of these highly successful programs so that these approaches may be emulated by other physics teacher education programs.

A new instrument, the Physics Teacher Education Program Analysis (PTEPA) Rubric, was developed to characterize the practices and structures observed at thriving programs, providing a guide for program leaders to reflect upon and improve their programs, and enable measurement and research over time.

The PTEPA Rubric and other supporting materials are available at <https://www.phystec.org/thriving/>

2018 Area Conference on Science Education: Reno, NV  
October 11–13, 2018  
Reno-Sparks Convention Center, 4590 S Virginia St, Reno, NV 89502  
Elevating Science: Digging Deeper

2018 Area Conference on Science Education: National Harbor, MD  
Gaylord National Resort & Convention Center • 201 Waterfront St. • National Harbor, MD  
November 15–17, 2018  
Science Education: A National Priority

2018 Area Conference on Science Education - Charlotte, NC  
November 29–December 1, 2018  
Charlotte Convention Center, 501 South College St, Charlotte, NC 28202  
Energize Science: Educate and Engage

## 2018 DEPARTMENT CHAIRS CONFERENCE

June 7 - 9, 2018  
American Center for Physics  
College Park, Maryland

The American Physical Society and American Association of Physics Teachers hosted the 2018 Physics Department Chairs Conference, held on June 7-9, 2018. Designed by chairs, for chairs, the program featured extended discussions and networking with other chairs on topics prioritized by attendees.



### Plenary Speaker Presentations

June 7, 2018  
A New Guide to Effective Practices and Departmental Review - EP3: Effective Practices for Physics Programs, Michael Jackson  
format\_pdf

June 8, 2018  
Phys21: Preparing Physics Students for 21st Century Careers, Paula Heron format\_pdf  
Departmental Leadership in the 21st Century, Neal Abraham format\_pdf  
Departmental Data, Theodore Hodapp format\_pdf

June 9, 2018  
How to Effect Pedagogical Change at the Department Level, Charles Henderson format\_pdf  
OTHER PROGRAMS AND RESOURCES, THEODORE HODAPP



# Collaborative Projects (cont.)

## PHYSTEC TEACHER OF THE YEAR

The PhysTEC Teacher of the Year program aims to recognize outstanding high school physics teachers and to demonstrate the impact and value of physics teacher preparation programs as members of PhysTEC. PhysTEC recognizes up to one local Teacher of the Year per PhysTEC institution and a single national Teacher of the Year. Awardees recognized by PhysTEC are points of pride for the physics teaching community.

Tiffany Taylor of Heritage High School in Rogers, AR, was named the 2018 National PhysTEC Teacher of the Year. The selection committee noted her recruitment efforts and increase in enrollment of students in AP Physics 1 and 2, from only 26 students in her first year of teaching, to over 80 students in recent years. Tiffany places emphasis on using evidence-based teaching techniques such as Modeling Instruction, and helps students develop a growth mindset by using Standards Based Grading and regular formative assessment. Tiffany is a leader in her field, and supports pre-service teachers from the University of Arkansas as they prepare for student teaching.

Over 40% of her students are typically underrepresented groups in physics (including females and Hispanic populations), and she pays close attention to ensuring that all students feel welcome in her class. Tiffany is a leader in her field, and supports pre-service teachers from the University of Arkansas as they prepare for student teaching. She has also been recognized by the AP community and serves as an online professional development provider.



## 2018 PHYSTEC CONFERENCE

The 2018 Physics Teacher Education Coalition Conference, February 9-10 was held in College Park, Maryland at the American Center for Physics. It featured workshops on best practices, panel discussions by national leaders as well as excellent networking opportunities for physics teacher educators.

February 9

Plenary, Integrated Elements of an Action Plan Leading to Institutional Change, Charles Henderson

Share-a-Thon, Share-a-Thon, Trevor Smith

Workshop, Chair's Guide to Establishing a Teacher Preparation Program, Theodore Hodapp

February 10

Plenary, Get the Facts Out: Changing the Conversation around STEM Teacher Recruitment, Wendy Adams

Workshop, Self-assessment with the PTEPA: Slides & Handout, Stephanie Chasteen

The workshop was held jointly with the 2018 Building Thriving Programs Workshop.

Plenary Speakers

Wendy Adams, Colorado School of Mines and Charles Henderson, Western Michigan University



# 2018 Awards and Grants

## HANS CHRISTIAN OERSTED MEDAL

**Barbara Whitten, Kalamazoo College, Kalamazoo, MI**  
*The Value of Diversity in Physics*



Barbara L. Whitten was the 2018 recipient of the prestigious Hans Christian Oersted Medal, presented by the American Association of Physics Teachers (AAPT). The Medal was awarded at a Ceremonial Session of the 2018 AAPT Winter Meeting, in San Diego, California. The Oersted Medal recognizes her outstanding, widespread, and lasting impact on the teaching of physics through her work on diversity and inclusion in physics.

Whitten is Professor Emerita of Physics, at Colorado College in Colorado Springs, Colorado. She earned her B.A. in Physics at Carleton College and her M.A. and Ph.D. at the University of Rochester, Rochester, New York. She is an excellent physicist, teacher, mentor who is strongly committed to education and the wider physics community. Prior to joining the faculty of Colorado College, she taught in the Western College Program of Miami University and worked as a research scientist at Lawrence Livermore National Laboratory.

Though she has emphasized physics teaching and learning practices in the classroom to develop a more inclusive physics community, Whitten has also championed the role of peer mentoring and near-peer mentoring to help mentor junior faculty and for on-going professional development at all stages. Along with four of her colleagues she pioneered a long-distance, mutual mentoring network. And they have extended their collaboration to an AAPT sponsored program, the e-Alliance.

Whitten's impact in diversity and inclusion in physics is widely felt in the physics education community, particularly at the undergraduate level. From "What Works" articles to her development of a site visit program to assess departmental climates, she got the physics community to seriously consider the ways in which we could recruit and retain women in physics. She was a pioneer in providing meaningful scholarship on this topic and her work continues to change the ways in which departments think about their inclusiveness. Her work was the forerunner of current efforts to explore ways in which gender and sexual identity interact with development of an identity as a physicist. As the physics community strives to be more inclusive, we honor and celebrate the work by Whitten.

The full press release is available at <https://www.aapt.org/aboutaapt/Barbara-Whitten-to-Receive-AAPT-2018-Oersted-Medal.cfm>.

## JOHN DAVID JACKSON EXCELLENCE IN GRADUATE PHYSICS EDUCATION AWARD

**Mehran Kardar, Francis Friedman Professor of Physics Massachusetts Institute of Technology (MIT), Cambridge, MA**  
*Force from Non-equilibrium Fluctuations in QED and Active Matter*



This award was presented to Mehran Kardar during the Winter Meeting in San Diego, California. He was selected to receive the Jackson Award in recognition of his work as a teacher of graduate statistical mechanics. He has written two graduate textbooks in statistical mechanics that are used in many graduate programs.

Starting early in his career, Kardar developed notes for his graduate Statistical Mechanics classes and made them available on line. By 2007 they became two text books published by Cambridge University Press, "Statistical Physics of Particles" and "Statistical Physics of Fields." These popular books are widely used, for example in graduate classes at MIT, Caltech, Cornell, Rutgers and the University of Illinois.

Kardar's meticulous style of teaching, selfless devotion to his students, and skillful mentorship of graduate research over the past 30 years have inspired a generation of graduate students to modern statistical physics, and transformed the lives of all the graduate students he has mentored. As his disciples mature and flourish in different areas of statistical physics, condensed matter physics, biological physics, and computer science, his style and devotion to graduate physics education are being propagated to all these diverse disciplines.

The full press release is available at <https://www.aapt.org/aboutaapt/Mehran-Kardar-2018-John-David-Jackson-Award.cfm>

ESTABLISHED IN 1936, THE OERSTED MEDAL HONORS THE DANISH PHYSICIST HANS CHRISTIAN OERSTED (1777-1851). THIS PRESTIGIOUS AWARD IS PRESENTED ANNUALLY TO A PERSON WHO HAS HAD OUTSTANDING, WIDESPREAD, AND LASTING IMPACT ON THE TEACHING OF PHYSICS.

THE JOHN DAVID JACKSON AWARD FOR EXCELLENCE IN GRADUATE PHYSICS EDUCATION IS PRESENTED TO PHYSICISTS AND PHYSICS EDUCATORS WHO, LIKE JOHN DAVID JACKSON AFTER WHOM THE AWARD IS NAMED, HAVE MADE OUTSTANDING CONTRIBUTIONS TO CURRICULUM DEVELOPMENT, MENTORSHIP, OR CLASSROOM TEACHING IN GRADUATE PHYSICS EDUCATION.

# 2018 Awards and Grants (cont.)

## THE DAVID HALLIDAY AND ROBERT RESNICK AWARD FOR EXCELLENCE IN UNDERGRADUATE PHYSICS TEACHING

**Bradley S. Ambrose, Grand Valley State University, Allendale, Michigan**  
*We Teach More Than Physics*



Bradley S. Ambrose received the 2018 David Halliday and Robert Resnick Award for Excellence in Undergraduate Physics Teaching. Ambrose earned his B.S. in Physics at Yale University. Both his M.S. and Ph.D. in Physics are from the University of Washington. Since 2013 he has served as Professor of Physics at Grand Valley State University in Allendale, Michigan.

The physics department at Grand Valley State University (GVSU) offers a B.S. in physics, as well as a few graduate courses in support of an M.Ed. During his time at GVSU, Ambrose has taught a variety of courses. The courses for teachers have long been taught in an inquiry-based style, but he has incorporated inquiry-based components into all of his other courses as well. His approach is student-centered, actively engaging the students in the learning process and empowering students to take the next step on their own. He is a master at asking questions to stimulate student learning, helping students solve problems themselves rather than just telling them the answers. Students and colleagues alike rate his teaching as excellent, as evidenced by his being selected for one of several campus-wide teaching awards in 2006 as well as GVSU's Outstanding Teacher Award in 2014.

Beyond the classroom, Ambrose has been a great asset to the physics department by distributing his classroom materials to other faculty both at GVSU and nationally. He helps mentor new faculty by discussing the current understanding of student learning and by presenting the wide range of teaching and assessment strategies that are being developed in PER.

Read the full press release at: [aapt.org/aboutaapt/Brad-Ambrose-2018-Halliday-Resnick-Award.cfm](http://aapt.org/aboutaapt/Brad-Ambrose-2018-Halliday-Resnick-Award.cfm)

ESTABLISHED IN 1993 AND NOW NAMED FOR THE AUTHORS OF A VERY SUCCESSFUL COLLEGE-LEVEL TEXTBOOK ON INTRODUCTORY PHYSICS AND FUNDED SINCE 2010 PRIMARILY BY A GENEROUS ENDOWMENT FROM JOHN WILEY AND SONS, THE PUBLISHER OF THAT TEXTBOOK, THE DAVID HALLIDAY AND ROBERT RESNICK AWARD FOR EXCELLENCE IN UNDERGRADUATE PHYSICS TEACHING RECOGNIZES OUTSTANDING ACHIEVEMENT IN TEACHING UNDERGRADUATE PHYSICS, WHICH MAY INCLUDE THE USE OF INNOVATIVE TEACHING METHODS.



## THE PAUL W. ZITZEWITZ AWARD FOR EXCELLENCE IN PRE-COLLEGE PHYSICS TEACHING

**Frank Noschese, John Jay High School, Cross River, NY**  
*#ITeachPhysics – Can Social Media Make Us Better Educators?*

The 2018 Paul Zitzewitz Excellence in Pre-College Physics Teaching Award winner is **Frank Noschese**, a physics teacher from John Jay High School, Cross River, NY. This award is in recognition of contributions to pre-college physics teaching and awardees are chosen for their extraordinary accomplishments in communicating the excitement of physics to their students.

Educated at Cornell University with a BA in Physics and an MAT in Science and Mathematics Education, Noschese is an inspiration for hundreds of physics teachers across the world. His very popular teaching blog, *ActionReaction*, is a treasure trove of excellent teaching ideas, and lessons. His ideas have had a tremendous influence on the larger teaching community.

He is a member of the New York State Master Teacher Program which fosters collaboration among New York's outstanding STEM educators and offers high-quality professional learning. He was given the 2011 Presidential Award for Excellence in Mathematics and Science Teaching. In 2017 he received an AAPT Fellows Award.

Noschese has been incredibly active in engaging larger conversations about teaching pedagogy. He is outspoken defender of inquiry learning and the thoughtful use of technology. In addition to many sectional AAPT invited talks and a TEDxNYED talk, Noschese has been featured on numerous news programs, including MSNBC discussing the power of actively engaging students in inquiry. In all of his communication and advocacy, Noschese is a positive voice for the pivotal role of the teacher in the classroom.

Read the full press release at: [aapt.org/aboutaapt/Frank-Noschese-to-Receive-2018-Zitzewitz-Award.cfm](http://aapt.org/aboutaapt/Frank-Noschese-to-Receive-2018-Zitzewitz-Award.cfm)

ESTABLISHED IN 1993 AND FUNDED SINCE 2010 BY A GENEROUS GIFT TO AAPT FROM PAUL W. AND BARBARA S. ZITZEWITZ AND NAMED FOR PAUL W. ZITZEWITZ, THE PRINCIPAL AUTHOR OF THE HIGHLY ACCLAIMED AND WIDELY ADOPTED HIGH SCHOOL PHYSICS TEXT *PHYSICS: PRINCIPLES AND PROBLEMS* AND A LONG-TIME MEMBER AND SUPPORTER OF AAPT, THE PAUL W. ZITZEWITZ AWARD FOR EXCELLENCE IN PRE-COLLEGE PHYSICS TEACHING RECOGNIZES OUTSTANDING ACHIEVEMENT IN TEACHING PRE-COLLEGE PHYSICS.



# 2018 Awards and Grants (cont.)

THE KLOPSTEG MEMORIAL LECTURE AWARD IS NAMED FOR PAUL E. KLOPSTEG, A PRINCIPAL FOUNDER, A FORMER AAPT PRESIDENT, AND A LONG-TIME MEMBER OF AAPT, AND RECOGNIZES OUTSTANDING COMMUNICATION OF THE EXCITEMENT OF CONTEMPORARY PHYSICS TO THE GENERAL PUBLIC. THE RECIPIENT DELIVERS THE KLOPSTEG LECTURE AT AN AAPT SUMMER MEETING ON A TOPIC OF CURRENT SIGNIFICANCE AND AT A LEVEL SUITABLE FOR A NON-SPECIALIST AUDIENCE AND RECEIVES A MONETARY AWARD, AN AWARD CERTIFICATE, AND TRAVEL EXPENSES TO THE MEETING.

## KLOPSTEG MEMORIAL LECTURE AWARD

**Clifford V. Johnson**

University of Southern California, Los Angeles

*Black Holes and Time Travel in Your Everyday Life*



**Clifford Victor Johnson**, University of Southern California, Los Angeles, is the 2018 recipient of the Klopsteg Memorial Lecture Award. Johnson graduated with a Bachelor of Science in Physics from Imperial College, London, in 1989 and he completed his PhD in Physics at the University of Southampton in 1992. He is a theoretical physicist and professor at the Department of Physics and Astronomy of the University of Southern California. He previously worked as a postdoctoral researcher at the Kavli Institute for Theoretical Physics at the University of California, Santa Barbara, and at the Institute for Advanced Study, Princeton, and held professorships at the University of Durham, and the University of Kentucky. He received a National Science Foundation CAREER Award in 1997. In 2005 he received the Maxwell Medal and Prize for theoretical physics from the Institute of Physics. In 2005, the *Journal of Blacks in Higher Education* listed Johnson as the most highly cited black professor of mathematics or a related field at an American university or college. In 2015 he was awarded a Simons Research Fellowship. His colleagues observe that Johnson “is a truly outstanding scientist and teacher in many respects. His field of expertise is theoretical high energy physics, with an emphasis on string theory, gravity, gauge theory and M-theory. In his current research, he is applying insights gained from mappings between gravity and field theory to tackle some of the most challenging interacting many-body problems. He has authored a very well received textbook on D-branes published in 2003 by Cambridge University Press.

Read the full press release at: [aapt.org/aboutaapt/Clifford-Johnson-2018-Klopsteg.cfm](http://aapt.org/aboutaapt/Clifford-Johnson-2018-Klopsteg.cfm)

## ROBERT A. MILLIKAN MEDAL

**Kyle Forinash**, Indiana Univ. Southeast, New Albany, IN

*Breaking Out of the Physics Silo?*



**Kyle Forinash** was the Robert A. Millikan Medal awardee for 2018. Forinash is emeritus professor of physics at Indiana University Southeast, New Albany, IN. In nominating him for this honor his colleagues noted his remarkable career as a physics educator with an interest in societal issues, as a department chair who has shaped the curriculum at his university, and as an author.

After receiving his BS from the University of Georgia, Forinash worked as a physics teacher with the Peace Corps in Ghana. He completed his PhD at the University of Clemson while he worked as a Teaching Assistant. Before taking a position at Indiana University Southeast in 1985 he was Visiting Assistant Professor at East Tennessee State University. Forinash was Coordinator of Physics at Indiana University Southeast for 32 years. During this time, he was a Fulbright Scholar in Argentina, a visiting scientist at Los Alamos, and the author of a BA degree program with a physics major at IUS.

He has produced two interactive electronic books. *Sound: An Interactive eBook* is an introduction to the physics of sound and “Waves: An Interactive Tutorial” includes advanced material on waves, nonlinear waves and solitons. Waves received two awards for online materials: the Multimedia in Physics Teaching and Learning “MPTL Excellence Award for a Multimedia Resource” (2013); and the Multimedia Educational Resource for Learning and On-line Teaching, “Award for Exemplary Online Learning Resources –MERLOT Classics 2014”. His most recent book, *Physics and the Environment*, was published by IOP Press in 2017.

In addition to writing texts, Forinash’s leadership and creativity as a teacher show in innumerable other activities and accomplishments. He was also co-author of the recently approved BA and BS degrees in Sustainability and Regeneration at IUS. He is also the author of more than 30 peer-reviewed articles (10 with student co-authors) in non-linear physics, physics pedagogy, and other topics.

Read the full press release at: [aapt.org/aboutaapt/Kyle-Forinash-2018-Millikan.cfm](http://aapt.org/aboutaapt/Kyle-Forinash-2018-Millikan.cfm)

THE ROBERT A. MILLIKAN MEDAL, ESTABLISHED IN 1962, RECOGNIZES TEACHERS WHO HAVE MADE NOTABLE AND CREATIVE CONTRIBUTIONS TO THE TEACHING OF PHYSICS.

# 2018 Awards and Grants (cont.)

HOMER L. DODGE CITATIONS  
RECOGNIZE AAPT MEMBERS  
FOR THEIR EXCEPTIONAL  
CONTRIBUTIONS TO THE  
ASSOCIATION AT THE NATIONAL,  
SECTIONAL, OR LOCAL LEVEL.

## HOMER L. DODGE CITATIONS FOR DISTINGUISHED SERVICE TO AAPT

Winter Meeting 2018



Jon Anderson earned his BS and MEd. at the University of Minnesota and took Post-MEd courses at Aurora University. He began his teaching career as a high school science teacher in 1986 and has taught at Southwest High School (Minneapolis), Thomas Jefferson High School (Bloomington), Mounds View High School (Arden Hills), and Centennial High School (Circle Pines), Minnesota. As a long-time member of AAPT, Anderson has attended numerous national meetings as both a presenter and a participant. He is currently serving on the Committee on High School Physics, is the new Academic Coordinator for the PhysicsBowl, and was named an AAPT Fellow in the spring of 2017. Anderson has been involved in the PhysTEC project since 2007, first serving as a Teacher in Residence (TIR) at the University of Minnesota. He became the coordinator of TIRs and Visiting Master Teachers (VMT), an AAPT position in the PhysTEC project, in 2009. <http://www.aapt.org/aboutaapt/Jon-Anderson-2018-Dodge-Citation-for-Distinguished-Service.cfm>



Nancy Easterly earned her BA in physics with a minor in mathematics at Ohio Wesleyan University, Delaware, Ohio. Her MEd is in Curriculum and Instruction with a minor in oceanography from Texas A&M University, College Station, Texas. She began teaching as a Science and Math teacher for grades six through eight in 1975 at Wunderlich Intermediate School, Houston, Texas. In 1978 she took a position as physics teacher at Cypress Creek High School in Houston teaching Regular Physics, Honors Physics, AP-C, and serving as Physics Team Leader. In 2004 she started teaching Physical Science for Elementary Education Majors at the University of Houston-Downtown, as an adjunct professor. Since 2008 she has taught Elementary Physics at Lone Star College North Harris/Greenspoint. <http://www.aapt.org/aboutaapt/Nancy-Easterly-2018-Dodge-Citation.cfm>



Mary Ann Hickman Klassen earned her BA in Astrophysics at Agnes Scott College and her MS in Physics at the University of Wyoming. She started her career at Swarthmore College as Lab Coordinator in 1995 and is currently Senior Lecturer at Swarthmore. An active member of AAPT since 1995, Klassen has volunteered in the Southeastern Pennsylvania Section of AAPT, serving as President from 2010-11. Her AAPT committee service has included the Committee on Laboratories 2008-2011 and 2016-18, serving as Chair 2017-18; Programs Committee 2017-18; and Meetings Committee 2017-19. She has organized or presented in the Introductory Laboratories workshops at Summer AAPT meetings since 2007 and served as a reviewer for *The Physics Teacher* in 2016..



Daniel Schroeder earned his BA in physics at Carleton College and his PhD in physics at Stanford University. He began teaching at Weber State University in 1993 and continues to teach there. He is probably best known among physicists as the author of *An Introduction to Thermal Physics* (2000) and coauthor, with Michael Peskin, of *An Introduction to Quantum Field Theory* (1995). He has been an active member of the Idaho-Utah Section of AAPT since 1993, serving as its President in 2003. His service to the *American Journal of Physics* began in 1998 when he was appointed to the Editorial Board. He served as Book Review Editor from 2003 through 2008 and as Associate Editor from 2012 to 2016. He now serves as a Consulting Editor



Steve Spicklemire earned his B.S. in physics at Rose Hulman Institute of Technology, Terre Haute, IN. His M.S. and Ph.D. in physics were earned at California Institute of Technology, Pasadena, CA. His teaching career began at the University of Indianapolis (UIndy), Indianapolis, Indiana, in 1988. He was Assistant Professor of Physics in the Department of Physics and Earth-Space Science and was recognized as "Outstanding Teacher of the Year" in the division of science and mathematics for the academic year 1992-1993. In 1996 he became Associate Professor of Physics and Astronomy, Department of Physics and Earth-Space Science, University of Indianapolis where he focused on development of web based distance learning resources, and web interfaces to undergraduate research projects such as their radio telescope, high altitude ballooning, laboratory instrumentation, and parallel/cluster computers.

# 2018 Awards and Grants (cont.)

## HOMER L. DODGE CITATIONS FOR DISTINGUISHED SERVICE TO AAPT

Summer Meeting 2018

**Jose D'Arruda**, Pembroke Professor of Physics at the University of North Carolina Pembroke, earned his BS in Physics and Mathematics at the University of Massachusetts, Lowell. His MS and PhD in Physics are from the University of Delaware. A member of AAPT since 1975, D'Arruda has been active in the North Carolina Section. He served as Section Representative (2003-2006) and was elected to the Presidential Chain in 2006, serving for three years. He has been a leader in physics education, working at a regional campus serving in one of the poorest areas of the state with a high percentage of Lumbee Indians. His service to AAPT includes membership on the Committee on Minorities in Physics (2000-2002), articles published in *The Physics Teacher* and *American Journal of Physics*, and presentations at numerous NC Section meetings and AAPT national meetings.

<https://www.aapt.org/aboutaapt/Jose-D-Arruda-2018-Dodge-Citation.cfm>

**Ximena C. Cid**, Assistant Professor, Department of Physics, California State University, Dominguez Hills, CA, will receive the association's Homer L. Dodge Citation for Distinguished Service to AAPT, during the 2018 Summer Meeting in Washington, DC. Cid got her BA in Astrophysics at the University of California, Berkeley and her MS and PhD in Physics and Applied Physics at the University of Texas, Arlington. While in graduate school she switched her field of focus from Space Physics to Physics Education Research (PER). In switching to PER her national societies and colleagues also started switching. She found like-minded people in AAPT and STEM education communities. She is currently serving as a friend of the Committee on Diversity and has organized many sessions for AAPT over the years on diversity issues as well as cognitive load and spatial reasoning issues.

<https://www.aapt.org/aboutaapt/Ximena-Cid-2018-Dodge-Citation.cfm>

**Joy Elaine Gwinn**, Shenandoah High School Chemistry and Physics Teacher, earned her BS in Chemistry at West Texas A&M University and her Masters of Art in Physics Education at Ball State University. She started her career at Amarillo Independent School District (Amarillo, TX), as a Middle School Science & Math Teacher then moved on as a Physics and Chemistry Teacher at Canyon High School (Canyon, TX), teaching there for 12 years. Elaine currently teaches Physics and Chemistry at Shenandoah High School (Middletown, Indiana). An active member of AAPT since 2006, Gwinn has been an active member of the Indiana Section. She served as Indiana Section Representative from 2010-2017. The Section Representatives elected her as their representative to the AAPT Executive Board in 2013 and she served as the Vice Chair of Section Representatives before moving into the role of Chair of Section Representatives in 2015.

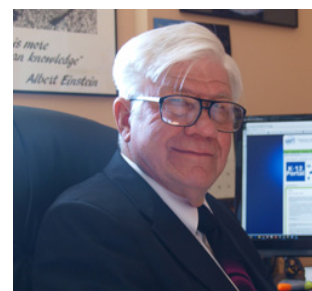
<https://www.aapt.org/aboutaapt/Elaine-Gwinn-2018-Dodge-Citation.cfm/>

**David Jackson** is Associate Professor of Physics, Dickinson College in Carlisle, Pennsylvania. A member of AAPT since 1994, he served as Editor of the *American Journal of Physics (AJP)* from September 2011 through August 2017, and currently serves as Video Abstracts Editor for the journal. His role as editor included service on the AAPT Board of Directors and the Publications Committee. From 2001 through 2004 he was a member of the AAPT Committee on Science Education for the Public. After receiving his Ph.D. in physics from Princeton University in 1994, he has held faculty positions at Santa Clara University and Dickinson College, including a term as Chair of the Dickinson Department of Physics and Astronomy from 2006-2009. While serving as *AJP* editor, an open-access policy was developed and instituted, the journal focused on more educationally-oriented articles, and a video abstract option was initiated.

<https://www.aapt.org/aboutaapt/David-Jackson-2018-Dodge-Citation.cfm>

**Waren Hein**, Adjunct Professor of Physics at Kettering University in Flint, Michigan, served as both the Associate Executive Office (AEO) and Executive Officer for AAPT prior to his retirement in 2010. His service to AAPT and the physics community stretches well beyond his duties when he was in these positions with AAPT. Hein had been an outstanding faculty member for many years before he came to the national office as AEO. He was department chair, SPS advisor, recognized for his outstanding service at his university both for his teaching and for his service. Hein was a founding member of the South Dakota Section of AAPT and served as a section officer for many years. He has served the AAPT in a variety of ways after retiring as the EO of AAPT. He has worked with the PTRAs, served on New Faculty Workshop and PhysTEC Noyce Advisory committees and is chairing The Barbara Lotze Scholarship for Future Teachers Committee.

<https://www.aapt.org/aboutaapt/Warren-Hein-2018-Dodge-Citation.cfm>







# AAPT 2018 Fellows Award

The criterion for selection of Fellows is exceptional contribution to AAPT’s mission, to enhance the understanding and appreciation of physics through teaching. Fellowship is a distinct honor signifying recognition by one’s professional peers. Any AAPT member who has maintained an active membership for at least 7 years is eligible for nomination for Fellowship. Nominations are evaluated by the AAPT Awards committee and approved by the AAPT Board of Directors.

The 2018 recipients of the AAPT Fellows Award were:

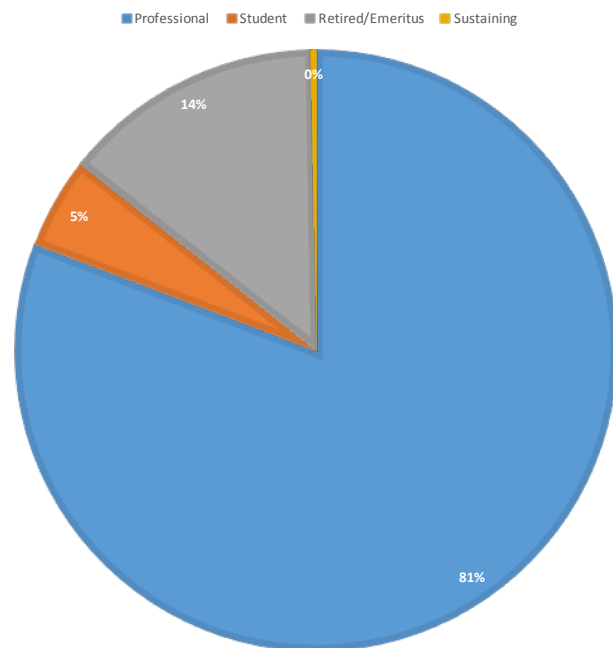
- Bradley S. Ambrose, Grand Valley State University, Allendale MI
- Kathleen Ann Falconer, Buffalo State College, Buffalo NY
- Kyle Forinash, Indiana University, Southeast, New Albany IN
- Randall D. Knight, California Polytechnic State University San Luis Obispo CA
- Dan MacIsaac, Buffalo State College, Buffalo NY
- Jitendra B. Sharma, Univ. of North Georgia-Gainesville, Oakwood GA
- Gay B. Stewart, West Virginia University, Morgantown WV
- John C. Stewart, West Virginia University, Morgantown WV

## Membership

*Spanning academia, research, and industry; comprised of educators, Nobel Prize winners, and students alike; our members bring a wealth of experience, diversity, and individual recognition. Most importantly, all share the same dedication to physics and the physics education community.*  
(December 31, 2018)

### MEMBERSHIP BY MEMBER TYPE

Professional	4,861	80.8%
Student	295	4.9%
Retired/Emeritus	846	14.1%
Sustaining	17	0.3%
<b>Total Members</b>	<b>6,019</b>	



# NSF Funded Projects

## eALLIANCES:

### UNITING ISOLATED WOMEN PHYSICISTS AND ASTRONOMERS

Helping women physicists find other women physicists who understand their experience--as the only Hispanic in the department, the only PER researcher, the only full-time physicist at your Two Year College, the only one who brings a newborn in a sling to department meetings, eAlliances, an NSF-sponsored faculty development project for women physics faculty, provides a peer-mentoring alliance with other women who share similar experiences.



The eAlliances program includes opportunities to:

- Connect with other women physicists and astronomers
- Get and give advice and affirmation
- Gather a variety of insights to help you address professional issues
- Address work-life balance issues
- Receive encouragement and support in achieving your goals

eAlliances is sponsored by AAPT with Support from NSF ADVANCE-PLAN D (HRD-1500529).

## JOINT TASKFORCE ON UNDERGRADUATE PHYSICS PROGRAMS

This project supports the activities for the AAPT/APS Joint Task Force on Undergraduate Physics, which is charged with developing guidelines and recommendations for enhancing undergraduate physics programs to meet the needs of students' diverse careers.



### LEARNING GOALS FOR PHYSICS PROGRAMS

Physics-specific knowledge, e.g.  
Basic laws of physics  
Mathematical representation  
Problem-solving, including in applied areas

Scientific and technical skills, e.g.  
Solve both well-posed and ill-posed questions and problems.  
Competency in basic experimental technologies  
Coding competency: write and execute a software to explore, simulate or model physical phenomena  
Software competency: learn and use industry-standard computational, design, analysis and simulation software  
Data analytics competency: analyze data (incl. statistical and uncertainty analysis), distinguish between models, present results appropriately

Communication skills, e.g.  
Communicate with audiences from different cultures with maximum impact  
Orally communicate physics and technology concepts to scientists and non-scientists  
Organize and communicate ideas using words, mathematical equations, tables, graphs, pictures, diagrams and other visualization tools

Professional/workplace skills, e.g.  
Collegiality and collaboration in diverse teams  
Awareness of standard practices for effective resumes and job interviews  
Critical life skills: completing work on time, listening, optimism, time management, responsibility, cultural and social competence, ...  
Awareness of career opportunities and pathways for physics graduates

JTUPP is sponsored by AAPT with support from NSF (DUE-1540574)

## SPECIAL THANKS TO OUR 2018 DONORS

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# Committee Contributions

## Committees are essential to AAPT.

*In addition to committees that advise and oversee operations, such as publications, awards, and budget, there are those that focus on advancing physics education. There are currently 18 Area Committees, each with nine members who hold staggered three-year terms: One new member is appointed each year by the Nominating Committee and two are appointed by the incoming President. Their responsibilities range from developing academic content for the meetings to acting as stewards for their particular area of interest.*

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# AAPT Physics Education Funds

Contributions support the future of physics education and are an investment in the enhancement of physics teaching, from high school to far beyond the graduate level.

## Membership Development Funds

- E. Leonard Jossem International Education Fund—Provides grants to individuals in support of international programs dealing with teaching and learning of physics.
- New Teacher Fund—Support outreach and provide reduced membership fees for first and second year physics teachers.
- Student Fund—Support reduced membership fees for physics students and outstanding teaching assistants.

## Program Funds

- AAPT Annual Fund—Support ongoing outreach and development programs
- Betty Preece SEES Memorial Fund—The SEES program provides 100 minority, low-socioeconomic students with the opportunity to engage in three hours of hands-on science activities. AAPT provides lunch, career and science materials
- ComPADRE Continuation Fund—Sustain and continue the operation of the ComPADRE website
- Memorial Fund—zDiscretionary fund resulting from donations given in memory of members who are deceased. Funds are used to honor deceased members and help preserve and share their interest(s) in physics education with the greater physics community.
- Physics Olympiad Fund—Promote academic excellence by helping U.S. students prepare for and participate in the International Physics Olympiad, providing a meaningful scientific and cultural experience for team members.
- PTRA Continuation Fund—Continue the work of the PTRA program.
- Undergraduate Curriculum Task Force Fund—Provides data on the current status of undergraduate physics and guidelines for enhancing undergraduate physics programs.

## Excellence in Physics Education Award Funds

- AAPT-ALPhA Award—The AAPT-ALPhA Award will be given to a student (or group of students) majoring in physics, who has built, and possibly developed, an advanced laboratory experiment that becomes part of their school’s advanced laboratory program
- John David Jackson Excellence in Graduate Education Award recognizes physicists and physics educators who, like Jackson, have made outstanding contributions to curriculum development, mentorship, or classroom teaching in graduate physics education
- Melba Newell Phillips Award Endowment—Restricted fund to endow the award that is presented to an AAPT leader whose creative leadership and dedicated service have resulted in exceptional contributions within AAPT.
- Oersted, Phillips, Millikan, Klopsteg, and Richtmyer Endowments fund the awards for AAPT’s recognition of contributions to physics education.



# AAPT 2018 Section Representatives

## Local sections increase the impact of AAPT programs and resources.

*AAPT Sections spread across the United States sand Canada to Mexico. Some sections follow geopolitical boundaries, serving a province, a state, or a territory. Others may serve part of a state or areas as large as six combined states. AAPT members' activity in their local sections strengthens physics education. Sections provide an outstanding opportunity to interact and network with other local physics educators. Acting together we are much stronger and have a bigger impact on physics education. Section Representatives are AAPT members who are officers in the local section.*

<b>ALABAMA SECTION</b> Tommie Holsenbeck	<b>IDAHO-UTAH SECTION</b> Brian A. Pyper	<b>NEBRASKA SECTION</b> Kendra J. Sibbernsen	<b>SOUTHEASTERN PENNSYLVANIA SECTION</b> Jeremy P. Carlo
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## THE AMERICAN ASSOCIATION OF PHYSICS TEACHERS, INC.

### Statement of Financial Position As of December 31, 2018 (With comparative totals for 2017)

### Statement of Activities and Change in Net Assets for the Year Ended December 31, 2018 (With Comparative Totals for 2017)

	DECEMBER 2018	DECEMBER 2017
<b>ASSETS</b>		
<b>CURRENT ASSETS</b>		
Cash and Cash Equivalents	1,264,465	\$1,694,145
Investments	894,546	885,926
Accounts Receivable	100,315	90,443
Grants receivable	1,176,351	1,004,201
Inventory	5,569	76,462
Prepaid expenses	63,314	113,409
Total current assets	<u>\$3,504,560</u>	<u>\$3,864,586</u>
<b>FIXED ASSETS</b>		
Equipment	140,148	\$136,541
Capital lease	15,000	15,000
Software	159,614	116,815
	314,762	268,356
Less: Accumulated depreciation and amortization	(234,674)	(193,504)
Net fixed assets	<u>80,088</u>	<u>74,852</u>
<b>OTHER ASSETS</b>		
Investments, net of current portion	5,261,790	5,672,087
Investment in ACP	1,244,025	976,738
Deposit	15,833	-
Total other assets	<u>6,521,648</u>	<u>6,648,825</u>
<b>TOTAL ASSETS</b>	<b><u>\$10,106,296</u></b>	<b><u>\$10,588,263</u></b>
	DECEMBER 2018	DECEMBER 2017
<b>LIABILITIES AND NET ASSETS</b>		
<b>CURRENT LIABILITIES</b>		
Capital lease obligation, current position	-	4,053
Accounts payable and accrued liabilities	309,264	264,481
Accrued payroll and related liabilities	163,414	153,262
Unearned Revenue	2,326,064	2,356,054
Refundable advance	-	112,908
Total current liabilities	<u>2,798,742</u>	<u>2,890,758</u>
<b>LONG-TERM LIABILITIES</b>		
Accrued postretirement benefit obligation	368,684	359,919
Total liabilities	<u>3,167,426</u>	<u>3,250,677</u>
<b>NET ASSETS</b>		
Without donor restrictions:		
Undesignated	4,639,196	4,778,236
Board designated	1,192,678	1,336,265
Total unrestricted	<u>5,831,874</u>	<u>6,114,501</u>
With donor restrictions	1,106,996	1,223,085
Total Net Assets	<u>6,938,870</u>	<u>7,337,586</u>
<b>TOTAL LIABILITIES &amp; NET ASSETS</b>	<b><u>\$10,106,296</u></b>	<b><u>\$10,588,263</u></b>

	WITHOUT DONOR UNRESTRICTIONS	WITH DONOR RESTRICTIONS	2018 TOTAL	2017 TOTAL
<b>REVENUE &amp; SUPPORT</b>				
American Journal of Physics	\$1,556,854	-	\$1,556,854	\$1,618,644
The Physics Teacher	960,210	-	960,210	963,679
Membership	801,755	-	801,755	821,605
Meetings, workshops and projects	904,015	-	904,015	715,669
Grants	1,309,584	-	1,309,584	1,422,381
Investment Income (Loss)	(316,536)	(85,142)	(401,678)	722,049
Other Publications	67,868	-	67,868	56,586
International Physics Olympiad	139,375	-	139,375	138,705
Earnings (Loss) on investment in ACP	267,287	-	267,287	(41,723)
Contributions	42,952	145	43,097	60,590
Miscellaneous Income	43,080	-	43,080	4,793
Net assets released from donor restrictions	31,092	(31,092)	-	-
<b>TOTAL REVENUE AND SUPPORT</b>	<u>5,807,536</u>	<u>(116,089)</u>	<u>5,691,447</u>	<u>6,552,978</u>
<b>EXPENSES</b>				
Program Services:				
American Journal of Physics	539,837	-	539,837	591,133
The Physics Teacher	712,237	-	712,237	766,149
Memberships	628,112	-	628,112	695,183
Meetings, workshops and projects	1,152,474	-	1,152,474	1,180,310
Grants	1,596,045	-	1,596,045	1,430,302
Other Publications	857,641	-	857,641	717,603
Total program services	<u>5,486,346</u>	<u>-</u>	<u>5,486,346</u>	<u>5,380,680</u>
Supporting services:				
General and administrative	580,006	-	580,006	490,952
Fundraising	1,316	-	1,316	595
Total supporting services	<u>581,322</u>	<u>-</u>	<u>581,322</u>	<u>491,547</u>
Total Expenses	<u>6,067,668</u>	<u>-</u>	<u>6,067,668</u>	<u>5,872,227</u>
Change in net assets before other item	(260,132)	(116,089)	(376,221)	680,751
<b>OTHER ITEM</b>				
Change in post-retirement plan obligation	(22,495)	-	(22,495)	(28,231)
Change in net assets	(282,627)	(116,089)	(398,716)	652,520
Net assets at beginning of year	6,114,501	1,223,085	7,337,586	6,685,066
<b>Net asset at End of year</b>	<b><u>\$5,831,874</u></b>	<b><u>\$1,106,996</u></b>	<b><u>\$6,938,870</u></b>	<b><u>\$7,337,586</u></b>



# 2018 In Memoriam

## AAPT Member and Physics Community Obituaries

*Remember someone special by giving a gift in their memory...*

*Donate to the Memorial Fund at [aapt.org/Membership/memoriam.cfm](http://aapt.org/Membership/memoriam.cfm).*

### Richard Daniel Heckathorn

JULY 1, 2018

Richard Daniel "Dick" Heckathorn, longtime AAPT member active in the PTRA program, passed away on July 1st. Dick was a U.S. Army veteran, and was a retired educator, having taught and instructed for 52 years, with 26 years teaching physics at Midpark High School. Dick was a Jennings Scholar, and a Shell Merit Fellow at Cornell University. He received the Presidential Award for Excellence in Science Teaching in Ohio in 1987 and was recognized as a Distinguished Teacher in the Berea City School District in 2002. For 25 years, Dick served on the Christian Academy School Board, and was a longtimemember of AAPT and a Physics Teachers Resource Agent (PTRA),

Dick's big website is at <https://rheckathorn.weebly.com/>. Of particular interest are the Operation Physics materials.

Obituary at <http://obits.cleveland.com/obituaries/cleveland/obituary.aspx?n=richard-d-heckathorn&pid=189458465&fhid=4399>

### Donald F. Holcomb

AUGUST 9, 2018

Emeritus professor of physics Donald F. Holcomb, who served two terms as chair of the department and championed the cause of improving physics education, died Aug. 9 in his residence at Kendal at Ithaca. He was 92. For the full article see the Cornell Chronicle.

Don was also AAPT President (1987-88) and the 1996 Oersted Medal recipient (Oersted talk). He was associated with the Introductory University Physics Project <https://physicstoday.scitation.org/doi/abs/10.1063/1.881388?journalCode=pto> along with Jim Stith and John Rigden as PI. .

### John Lawrence Hubisz

MARCH 6, 2018

Born June 6, 1938 in Salem, MA, Hubisz's teaching experience began, like many physicists, as a physics lab instructor. He taught at St. Francis Xavier University in Nova Scotia, Canada, where he also completed his Bachelor of Science in physics and mathematics with honors. He received his M.S. degree from the University of Tennessee and, in 1968 he received his Ph.D. in physics and space science from York University and the Centre for Research in Earth and Space Science in Toronto.

After entering physics teaching early in his career, Hubisz taught across North America in Knoxville, Toronto, Texas City, and Raleigh. His colleagues at the College of the Mainland in Texas City, where he spent 22 years of his career, honored his dedication and talent as a teacher by nominating him five times for the Minnie Stevens Piper Professor of the Year Award. Honored for his leadership in the Texas Section with the prestigious Robert N. Little Award for Outstanding Contributions to Physics in Higher Education (1987), Hubisz's long and impressive record of involvement in the Texas Section provided the impetus and rationale for establishing this new coalition of physics educators in North Carolina.

When Hubisz moved to North Carolina and joined the North Carolina State University Physics Department in 1993, he had a dramatic effect on physics educators in North Carolina. He worked diligently and collegially

with officers of the South Atlantic Coast Section of AAPT to separate and establish a new AAPT section in North Carolina.

At NCSU, his research centered on physics education. Along with Professor Gould, he carried out a study of errors in middle school science texts, which was covered by the NY Times, USA Today, and Reader's Digest, in addition to other news media in the U.S. and abroad. In connection with this work, he was interviewed by ABC, CBS, NBC, and the Fox network.

In 1999 the NCS-AAPT established the John L. Hubisz Award to recognize outstanding service to the section. Appropriately, John was the first recipient.

In his retirement he held the titles of Professor Emeritus from College of the Mainland, Texas City, Texas where he taught from 1970-92. and Visiting Professor of Physics at North Carolina State University.

He joined AAPT on May 1, 1959, becoming president in 2001. His dedication to AAPT includes an extensive list of service on committees and task forces. This service to AAPT and to the Texas and North Carolina AAPT Sections reflects his interest in the physics education of children and his love of history and philosophy of science. He served as the Member-at-Large on the AAPT Executive Board from 1991-94 and is remembered by those on that Executive Board for his thoughtful contributions and his excellent chocolate chip cookies. AAPT honored Hubisz with a Distinguished Service Citation in 1990 and with the AAPT Fellow recognition in 2014.

### Gregory Paul Puskar

OCTOBER 23, 2018

Gregory Paul Puskar, 62, of Morgantown, passed away October 23, 2018 at UPMC Montefiore Hospital, Pittsburgh, PA. He was born July 11, 1956 in Mt. Pleasant, PA a son of the late Joseph A. Puskar and Mercedes Galley Puskar. Greg graduated from Mt. Pleasant High School and WVU with a BS in Physics, an MBA, and was hired immediately by the Department of Physics and Astronomy where he remained for thirty nine years and eventually became the Academic Laboratory Manager for the department. He also was the owner of Envirocheck Inc., where he did environmental testing services. In 1984, he became a member of the American Association of Physics Teachers and a life member in 2007 and served on the executive board as chairman of the section representatives and numerous committees. Greg received the Distinguished Service Citation Award in 2006 and was named a Fellow in the association in 2014. He worked passionately to promote effective, safe, and well managed physics laboratory programs and his advice and knowledge was sought by many in the organization. Greg was a founding member of the Mountaineer Chapter of BNI in 2004 and remained an important figurehead until his passing. In his private time, he was an avid reader, enjoyed the New York Times crossword puzzles, collected stamps, liked traveling and following sports, and always had a thirst for learning. He was a member of the St. Mary's Roman Catholic Church, Star City, WV. Donations may be made in Greg's memory at [www.aapt.org](http://www.aapt.org) or AAPT, 1 Physics Ellipse, College Park, MD 20740.

