

AAPT 2021 Annual Report

FACE^{TO}FACE Back in the classroom after the Pandemic

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2021 in Review

PRESIDENT’S 2021 REPORT

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President's Report

JAN LANDIS MADER



Being President of AAPT has been a true privilege. During the past year, I have been witness to and participant in num

Sincerely yours,

Jan Mader

"Thanks to the efforts of Executive Officer Beth Cunningham and her office team and former treasurer Steve Turley, AAPT is in excellent fiscal shape."

A handwritten signature in black ink, appearing to be 'Jan Mader', written over a light blue circular stamp.

Executive Officer's 2021 Annual Report

BETH A. CUNNINGHAM

community. We continue to revise current programs and i

Sincerely yours,

Beth A. Cunningham



"AAPT continues to have very healthy finances. AAPT now has had five years of a surplus in operations and the reserves continue to grow."

“The association continues to provide leadership through the work of many AAPT members and volunteers to enrich the education and future employment prospects of all students.”

Ben Acuff

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)

Beth Parks, Editor, Colgate University

AJP informs physics educators globally with member subscriptions, institutional subscriptions, such as libraries and physics departments, and consortia agreements. The mission of the American Journal of Physics 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 2021 (Volume 89)
- 1160 pages, 731 reviewers, 144 papers published—17.5% acceptance rate
- 11 open access articles
- 8 video abstracts
- 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 - 2 letters

Resource Letters Editorial Board: Darsa Donelan, Michelle Kuchera, Benjamin Crider, Anne Goodsell, Maury Goodman, Stephanie Chasteen

Editorials and Guest Editorials - 3 editorials

Computational Physics - 3 articles

Instruction Laboratories and Demonstrations - 8 articles

Notes and Discussions - 3 articles

Back of the Envelope - 5 articles

Letters to the Editor - 9 letters

Book Reviews - 12 reviews

CONSULTING EDITORS

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David J. Griffiths-Reed College

Barry R. Holstein-University of Massachusetts

Harvey S. Leff-California State Polytechnic University, Pomona

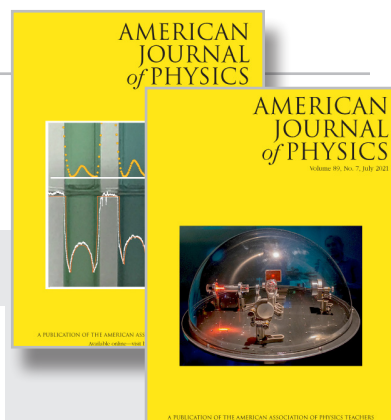
June L. Matthews-Massachusetts Institute of Technology,

Kirk T. McDonald-Princeton University

William J. Mullin-University of Massachusetts

Daniel V. Schroeder-Weber State University

Daniel M. Zuckerman-Oregon Health & Science University



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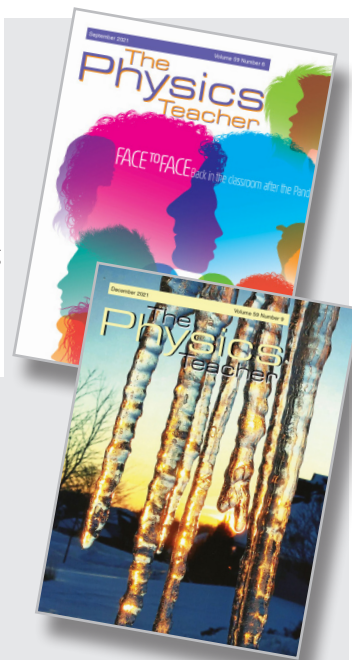
Todd Springer, Illinois Institute of Technology

Timothy D. Wisner, Truman State University

THE PHYSICS TEACHER (TPT.AAPT.ORG)

Gary D. White, Editor, The George Washington University
Pamela R. Aycock, Managing Editor, Appalachian State 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. Recently, TPT has seen a surge of submissions, many related to teaching remotely and in “hybrid” mode, and resulting in a first for the journal—a double issue! One hundred twenty-eight pages of excellent teaching guidance and advice housed within a beautiful cover with colorful silhouettes in face-to-face poses by Jen Geanakos. Other highlights from 2021 include Joe Redish’s extremely popular series of papers on “Using Math in Physics” and Don Lincoln’s fascinating piece “Have Astronomers Found a Star Older Than the Universe?” The final issue for the year featured an arresting wintry scene of icy stalactites submitted by Declan Reed St. John from Minnetonka High School in Minnesota (teacher: Kim Hoehne), and selected as one of the top 100 photographs in the 2019 AAPT High School Photo Contest.



COLUMN EDITORS

And the Survey Says...

Susan C. White, AIP, College Park, MD

AstroNotes

Joe Heafner, Catawba Valley Community College, Hickory, NC

Janelle M. Bailey, Temple University, Philadelphia, PA

Donald A. Smith, Guilford College, Greensboro, NC

Fermi Questions

Larry Weinstein, Old Dominion University, Norfolk, VA

Figuring Physics

Paul G. Hewitt, City College of San Francisco, San Francisco, CA

iPhysicsLabs

Jochen Kuhn, University of Kaiserslautern, Germany
Patrik Vogt, Institute of Teacher Training, Mainz, Germany

Just Physics?

Deepak Iyer, Bucknell University, Lewisburg, PA

Shannon Wachowski, Wyoming Department of Education, Cheyenne, WY

Little Gems

Chris Chiaverina, New Trier High School, Winnetka, IL

Physics Challenge for Teachers and Students

Boris Korsunsky, Weston High School, Weston, MA

Talkin' Physics

Dolores Gende, Shorecrest Preparatory School, St. Petersburg, FL

Technology in the Classroom

James Lincoln, Physics Videos.com, Newport Beach, CA

WebSights

Dan MacIsaac, SUNY-Buffalo State College, Buffalo, NY

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AAPT, College Park, MD

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Debbie Bott, Advertising, AIP, Melville, NY

THE PHYSICS TEACHER STATISTICS

- 9 issues—January–May, September–December 2021 (Volume 59)
- 738 pages, 683 reviewers, 173 papers, and 85 contributions to monthly columns (184 international authors/co-authors)—45% 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 Communications (Update)



The AAPT supports its members and the physics education community at large by hosting and sharing resources online for instructors and students. AAPT/ComPADRE provides traditional digital resource libraries for K-12 and higher education audiences, community-focused online collaborations for developing and sharing curricular content, recommendations and best practices for physics instructors, and proceedings of national physics education conferences. AAPT/ComPADRE collaborates with many authors, projects, and organizations to highlight best in physics education.

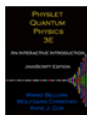


Living Physics Portal: The Living Physics Portal, a collaboration of curriculum developers and education researchers with expertise in introductory physics for life sciences courses, enables peer-to-peer curriculum sharing and support. The portal was available for beta-test users in 2019. More than 200 instructional modules were added to the portal in 2019, with about half these resources submitted for and receiving an editorial review. 300 users joined the portal to take advantage of the available materials and about two dozen instructors participated in three “curriculum swap” events.

NEXUS Physics: The AAPT/ComPADRE staff collaborated with the authors of NEXUS Physics to create a new, online home for the content developed in this project. While the Living Physics Portal is meant for instructors, the NEXUS Physics Wiki provides students reading materials, worked examples, and problems.



PICUP: The PICUP collaboration promoting computation in the physics curriculum uses the AAPT/ComPADRE web infrastructure. 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 Quantum Physics: The third edition of Physlet Quantum Physics was published in 2019. This is an interactive, simulation-based exploration of topics in quantum physics and relativity. The simulations in this online edition have been translated to JavaScript so that they run on computers, laptops, and mobile devices.

PhysPort: Physport is a collection of research-based resources for physics instructors. PhysPort Expert Recommendations were very popular in 2019. These short articles explain best practices and education research results for the average physics instructor. Use of PhysPort increased by 50% over 2018.

Curricula Sharing: An easy-to-use interface for sharing curricular materials has been used by several authors to make their materials available. Examples of these shared materials include the Maryland Open Source Tutorials, Just in Time Teaching,

Physlets Instructor Guides, Thinking Critically in Physics Labs, and the Lawrence University computational resources.

Conferences: AAPT/ComPADRE again provided the web infrastructure to host the web interface and publish the proceedings of the 2019 Physics Education Research Conference. Proceedings for all PERCs are available on PER Central.

Traffic Report: Overall, ComPADRE served over 600,000 users for more than 800,000 sessions in 2019, an increase of more than 20% over the previous 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 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 website stresses ease of navigation and guides visitors based on their role within 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 diversity emphasis which promotes minorities in the sciences using a community management system
- A 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
- A K-12 portal for high school teachers and students
- Resources for members in higher-education

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, member recruitment, and a books program through a partnership with the American Institute of Physics.

For 2020 aapt.org had:

- 459,233 visits • 1,215,665 pageviews • 2.65 pages per visit
- 256,837 new visitors *All from 203 countries/territories*
#1 U.S., #2 India, #3 China, #4 Canada, #5 United Kingdom

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
- twitter.com/AAPTHQ
- flickr.com/physicsteachers
- youtube.com/physicsteachers
- pinterest.com/AAPTHQ/aboutaapt/socialnetworks.cfm
- instagram.com/AAPTHQ/

AAPT.ORG

AAPT will deploy a member engagement platform in 2021.

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



eNNOUNCER September 2021

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AAPT News

Lillian McDermott Medal

We had earlier notified you that during the Spring AAPT Board of Directors' (BOD) meeting, the AAPT Board voted unanimously to remove Robert A. Millikan's name from the award that recognizes "those who have made notable and intellectually creative contributions to the teaching of physics." This decision follows the recent decision by Cal Tech to remove Millikan's name from buildings based on his participation in the eugenics movement through affiliation with the Human Betterment Foundation, an organization which supported eugenic sterilization research. The BOD then sought nominations from AAPT members for renaming the award. Based upon nominations from members, at the Summer AAPT BOD meeting, the BOD unanimously approved renaming the award to Lillian McDermott Medal with the citation "Lillian McDermott Medal recognizes those who are passionate and tenacious about improving the teaching and learning of physics and have made intellectually creative contributions in this area". We are in the process of updating this information on the AAPT awards website. We anticipate that the first Lillian McDermott Medal will be awarded at the Summer 2022 AAPT Meeting.

[AAPT News](#)

- [Lillian McDermott Medal](#)
- [2021 AAPT Board of Directors Election](#)
- [The AAPT Lyris Listserv to be Sunset](#)
- [AAPT Author Series](#)
- [2022 AAPT Winter Meeting Abstracts](#)
- [2023 AAPT Winter Meeting Update](#)
- [Apply to be the next U.S. Physics Team Academic Director!](#)
- [AAPT Virtual Coffee Hour](#)
- [Help Support AAPT!](#)
- [AAPT Career Center](#)
- [New Book Companion: Statistical and Thermal Physics Programs](#)
- [AAPT Books Program - Calling All Authors!](#)
- [Explore Educator Resources from AIP Publishing](#)

2021 TOP AAPT NEWS STORIES

Listed below are highlighted news stories for 2019 from the *eNNOUNCER*. To read the full story go to <http://www.aapt.org/aboutaapt/ennouncer/index.cfm>.

JANUARY

- Kenric Davies to Receive First Doc Brown Futures Award
- Nina Morley Daye and Mary Jane Head to receive Homer L. Dodge Citation

FEBRUARY

- Statement on Violence in the U.S. Capitol on January 6, 2021
- Jan Landis Mader Steps into Role of AAPT President
- Shirley Jackson to Receive 2021 Oersted Medal

MARCH

- Ramón Barthelemy names as Recipient of the Doc Brown Futures Award

- Millikan Medal Awarded to Gregory E. Francis
- New Fellowship Opportunity for Underrepresented Minority Teachers of Physics

APRIL

- Anne J. Cox to receive David Halliday and Robert Resnick Award
- Paul W. Zitzewitz Excellence in K-12 Teaching Award winner is Bradford N. Talbert

- Alexis V. Knaub to receive Homer L. Dodge Citation

- 2021 AAPT Fellows

MAY

- 2021 Physics Department Chairs Conference

- New Physics and Astronomy Faculty Workshop

JUNE

- Nomination for Renaming of the Robert A. Millikan Medal
- Helen Czerski Names as Recipient of the 2021 Klopsted Memorial Lecture Award

JULY

- Warren W. Hein Obituary

AUGUST

- Virtual Coffed Hour and Remote Instruction Share-a-thon
- US Virtual Physics Team Wins Fiive Gold Medals at 51st IPHO

SEPTEMBER

- Lillian McDermott Medal

- AAPT Author Series
- PhysTEC Teacher of the Year is David Wirth

OCTOBER

- Undergraduate Physics Website Launched
- Celebrating 110 Years of AAVSO Citizen Astronomy!

NOVEMBER

- 2021 AAPT Board of Directors Election Results
- APS and AAPT Announce Beth Cunningham as 2021 APS Fellow

DECEMBER

- Tengiz Bilalashvili to be U.S. Physics Team Academic Director

National Meetings



WINTER MEETING

January 9–13, 2021, Virtual Meeting

Statistics:

Attendees: 667

Exhibitors: 7

Workshops 10

Sessions: 70

Tutorials: 2

Poster Sessions: 8

Program Committee Chair

Jan Landis Mader

Paper Sorters:

Janie Head, Steve Henning, Tommie Hol-
senbeck Jan Mader, David Mararsco, Karen
Jo Matsler, Nina Morley Daye

Highlights

Over 700 physics educators joined in AAPT's Winter Meeting using a virtual platform. Plenary and general talks for this meeting were presented live and sessions were pre-recorded with access throughout the conference. The meeting concluded with the Presidential Transfer where Gordon P. Ramsey turned the Presidential Gavel over to incoming president, Mel Sabella.

Plenaries

Kenric Davies, Doc Brown Futures Award

The first recipient of the Doc Brown Futures Award is Kenric Davies. He has the honor of being the first recipient of this new award. The Doc Brown Futures Award recognizes early-career members who demonstrate excellence in their contributions to AAPT and physics education and exhibit the potential to serve in an AAPT leadership role.



AIP GEMANT AWARDEE



Geraldine Cox's talk, Finding Patterns, reported on her work about finding resonant ways to express hidden aspects of nature and the journey of discovery. This research has taken her to the heart of the atom, the beginnings of the Universe and the essence of light. She has bachelor's degrees in Physics and Painting, and a Leverhulme Trust Artist in Residence Award for her residency at the Physics Department of Imperial College London. She uses various media to share perspectives on the experience of discovery and some of the beautiful things we know through art.

Adriaan Bax, Ph.D., NIH Distinguished Investigator, National Institutes of Health

Adriaan (Ad) Bax is a Dutch-American molecular biophysicist. He was born in the Netherlands and is the Chief of the Section on Biophysical NMR Spectroscopy at the National Institutes of Health. Dr. Bax is a pioneer in the development of advanced nuclear magnetic resonance (NMR) experiments and their use for structure determination of isotopically enriched proteins. Much of his recent work focuses on folding and misfolding of proteins, related to amyloid diseases. In 2002, he was elected a member of the National Academy of Sciences and in 2018 he was awarded the Welch Award in Chemistry. team to help scientists and teachers bring the science of FRIB into the hands of students of any age.





Diversity Plenary

McKensie Mack is a trilingual anti-oppression consultant, facilitator, educator, researcher, and the Founder of McKensie Mack Group (MMG) and the Creator #BoundaryWork. McKensie holds more than 10 years of experience helping organizations, community groups, governing agencies, and healthcare organizations expand dialogues of power, identity, and equity across race, gender, class, disability, and LGBTQ+ identity with clients based in the U.S, the UK, India, France, Germany, Spain, Peru, and more.

Wendy Freedman, John and Marion Sullivan University Professor in Astronomy and Astrophysics and the College, Department of Astronomy and Astrophysics, University of Chicago

Wendy Freedman's research is in observational cosmology (measures of the expansion rate of the universe using the Hubble Space Telescope, Spitzer Space Telescope and the ground-based Magellan telescope). Her current projects involve measurements of the Hubble constant -- the current expansion rate, as well as the past expansion rate, providing constraints on the acceleration

of the universe and dark energy. Her other field of interest is the stellar populations of galaxies, the evolution of galaxies, and the initial mass function.



Awards

Homer L. Dodge Citations

Nina Morley Daye and Mary Janae Head received the association's Homer L. Dodge Citation for Distinguished Service to AAPT. Established in 1953 and renamed in recognition of AAPT founder Homer L. Dodge in 2012, the Homer L. Dodge Citation for Distinguished Service to AAPT is presented to members in recognition of their exceptional contributions to the association at the national, sectional, or local level.

2021 AAPT Winter Fellows

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 AAPT Fellows awards were presented to Ximena Cid, Caruso, CA; Kathleen Koenig, Cincinnati, OH; David Marasco, Los Altos, CA; and Paul Robinson, San Francisco, CA

Presidential Transfer

The role of AAPT President was transferred from Chandralekha Singh to Jan Landis Mader

We thank our sponsors for their generous support of this virtual meeting. We couldn't have done it without them and our supportive members.

National Meetings

SUMMER MEETING

July 31–August 4, Virtual Meeting

Statistics:

Attendees: 839

Exhibitors: 8

Sessions: 72

Commercial Workshops: 6

Topical Discussions: 8

Posters: 112

Workshops: 14

Program Committee Chairs

Jan Landis Mader and Toni Sauncy

Paper Sorters:

Jon Anderson

Alice Churukian

Jan Landis Mader

Karen Jo Matsler

Duane Merrell

Nina MorleyDaye

Emma Smith



Highlights

Over 800 physics educators joined in AAPT's Summer Meeting using a virtual platform. Plenary and general talks for this meeting were presented live and sessions were pre-recorded with access throughout the conference. Physics Education Researchers participated in the virtual post-meeting PER Conference, Making Physics More Inclusive and Eliminating Exclusionary Practices in Physics (<https://www.compadre.org/per/conferences/2021/>).

Plenaries

Diversity, Equity and Inclusion Plenary

Dr. Angela Michelle White has an extreme passion for teaching and learning science. She earned a Bachelor of Science in Biology from the University of North Carolina at Chapel Hill, a Master of Science in Biology from North Carolina Agricultural and Technical State University, and a Doctor of Philosophy in Curriculum and Instruction with a concentration in Educational Psychology from North Carolina State University. Dr. White has served as an educator for 17 years at various levels and currently serves as the Assistant Dean of Student Success for the College of Science and Technology at North Carolina Agricultural and Technical State University. In this role she strategically develops and implements initiatives that promote the participation, academic achievement, and success of students within the College. Her current research interests, publications, and presentations give attention to racial identity, science identity, science self-efficacy, metacognition, and STEM achievement of African American students. As a strong advocate for the participation of African American females in STEM, Dr. White continuously engages in discourse and research that will promote greater access to STEM-related opportunities and recognition of African American females. Dr. White is also the co-founder of NoireSTEM, an educational consulting firm that seeks to increase access and achievement of African Americans in STEM degree programs and careers.

APS Plenary on Quantum Computing

NISTRay—Based Framework for Tuning Quantum Dot Devices: Two Dots and Beyond

Justyna Zwolak is a scientist in the Applied and Computational Mathematics Division at National Institute of Standards and Technology in Gaithersburg, MD. She received an MSc in Mathematics from The Faculty of Mathematics and Informatics, Nicolaus Copernicus University, and a PhD in Physics from the Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University, in Toruń, Poland. She subsequently was a research associate in the Department of Physics at Oregon State University, at the STEM Transformation Institute at Florida International University, and an assistant research scholar in the Joint Center for Quantum Information and Computer Science at University of Maryland, College Park, MD. Her research pursuits range from quantum information theory and machine learning to complex network analysis to mathematics and physics education. In her current work, Justyna uses machine learning algorithms and artificial intelligence, especially deep convolutional neural networks, to enhance and control quantum system and quantum computing platforms. In particular, she is investigating methods to automatically identify stable configurations of electron spins in semiconductor-based quantum computing. She is also developing a complete software suite that enables modeling of quantum dot devices, training recognition networks, and—through mathematical optimization—calibrating and controlling experimental setups. Success in this endeavor will eliminate the need for heuristic calibration and help scale up quantum computing into larger system. She is also involved in studies on diversity and inclusion at NIST.

Crystal Point Defects for Quantum Information Applications: From Deep Centers in Diamond to Shallow Impurities in Semiconductors

Kai-Mei is an Associate Professor of Physics and Electrical and Computer Engineering at the University of Washington. She is the Director of the UW NSF Research Traineeship program Accelerating Quantum-Enabled Systems. Her research focuses on understanding and engineering the



National Meetings continued

quantum properties of point defects in crystals, and utilizing these properties in photonic devices for quantum information and sensing applications. Kai-Mei Fu received her A.B. in Physics from Princeton University in 2000 and Ph.D. in Applied Physics from Stanford University in 2007.

Picture a Scientist Discussion

Picture a Scientist is a movie that chronicles the groundswell of researchers who are writing a new chapter for women scientists. Biologist Nancy Hopkins, chemist Raychelle Burks, and geologist Jane Willenbring lead viewers on a journey deep into their own experiences in the sciences, ranging from brutal harassment to years of subtle slights. Along the way, from cramped laboratories to spectacular field stations, we encounter scientific luminaries—including social scientists, neuroscientists, and psychologists - who provide new perspectives on how to make science itself more diverse, equitable, and open to all.

AAPT invited attendees to participate in the President's Town Hall led by AAPT President, Chanraleka Singh. The new candidates for the Board of Directors were introduced using individual introductory videos. The Strategic Plan was discussed and members had an opportunity to participate in a Question and Answer

Awards

Dr. Shirley Ann Jackson has been named as the 2021 recipient of the prestigious **Hans Christian Oersted Medal**. The Oersted Medal recognizes her outstanding, widespread, and lasting impact on the teaching of physics through her pioneering national leadership in physics education, her exceptional service to AAPT, and her mentoring of students and in-service teachers. Dr. Jackson, President of Rensselaer Polytechnic Institute, is a theoretical physicist. She has had a distinguished career that includes senior leadership positions in academia, government, industry, and research. She holds an SB in Physics, and a PhD in Theoretical Elementary Particle Physics—both from MIT. She is the first African American woman to receive a doctorate from MIT—in any field—and has been a trailblazer throughout her career, including as the first African-American woman to lead a top-ranked research university. In her talk, *Physics: The River that Runs Through It All*, Jackson discussed her own educational path, which led her to a doctorate from MIT in theoretical elementary particle physics, and the ways that her research career in condensed matter physics expanded into government, corporate, and academic leadership roles at the highest national levels. She considered “the Quiet Crisis,” America’s national need to bring women and underrepresented minorities into STEM fields in sufficient numbers, while continuing to attract talent from abroad. She offered observations and ideas for the ways that the nation’s physics teachers can help to bring the full talent pool into the field, as well as comment on the role of physics and physics-based education in creating a foundation for addressing complex global challenges for individuals and collaborative groups.

The **Halliday and Resnick Award for Excellence in Under Graduate Physics Teaching** was presented to Anne J. Cox. This award is given in recognition of contributions to undergraduate physics teaching and awardees are chosen for their extraordinary accomplishments in communicating the excitement of physics to their students. John Wiley & Sons is the principal source of funding for this award, through its donation to the AAPT. Cox is Professor of Physics, Eckerd College, St. Petersburg, FL. She graduated magna cum laude with her BS in Physics at Rhodes College, where she was the only female physics major, and earned her PhD in Physics at the University of Virginia. In her talk, *Mission Possible*, she noted that the work of physics teachers is unique. She reflected on what she has learned about physics teaching from many others as she celebrated the joint mission, shared pedagogical strategies, and highlighted challenges ahead. This talk was grounded in the tools of the physics teaching trade: simulations, laboratories, video analysis, and makerspaces. But it also acknowledged the human side of physics and the ways in which we connect with each other and our students, particularly through mentoring and JEDI-B work (Justice, Equity, Diversity, Inclusion and Belonging).

The **Klopsteg Memorial Lecture Award** was given to Helen Czerski in recognition of her notable and creative contributions to the teaching of physics. Czerski is a physicist, first and foremost, but she’s acquired a few other labels along the way: oceanographer, presenter, author, and bubble enthusiast. She grew up near Manchester, in northwest England, and spent her childhood playing by the canals and along the old railway routes of the early Industrial Revolution. She studied Natural Sciences (Physics) at Churchill College, Cambridge, finishing with a first class degree. A year later, she returned to Cambridge to study for a PhD in experimental explosives physics, motivated by the opportunity to use high-speed photography to explore the physical world further. When the Apollo astronauts travelled to the Moon, the most memorable photograph they took was of the “Blue Marble”: the view of Earth from space. It was undeniable recognition that the blue – the ocean - is the defining feature of our planet. When you look at the physics of Earth, the ocean engine also dominates the story. This talk will be about the physics of the ocean, and the perspective on our planet that we get from exploring it. Zooming in from the very large, we’ll get to the very small: the breaking waves and bubbles that are found at the ocean surface. Her talk, *An Ocean of Bubbles*, recognized that these bubbles help the ocean breathe, and her research is focused on understanding how they form, and how they help that breathing process. But before you can study them, you need to work out how to measure them, so she also covered

the ways to use sound and light to detect bubbles that are too small to see, or too fleeting to catch.

Bradford N. Talbert, recipient of the 2021 **Paul W. Zitzewitz Award for Excellence in K-12 Physics Teaching** is a high school teacher at Lone Peak High School, Highland, Utah. 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 Brigham Young University, Provo Utah, Talbert earned his Bachelor of Science in Mechanical Engineering and his Master of Science in Instructional Psychology and Technology. He earned a second Bachelor of Science, and Teacher Certification with Math Level IV and Physics endorsements from Southern Utah University. He received advanced training in Modeling Instruction for High School Physics at Arizona State University. His talk, *Physics Is the Portal*, he noted that Early physics instruction (9th or 10th grade) opens doors to higher achievement in chemistry, math, advanced biology, and engineering. As students learn to organize complex information to find solutions to assigned problems and engineering tasks, they improve abstract reasoning skills and gain increased self-confidence. A first experience with physics ought to include challenging mathematical structure but also provide many concrete hands-on learning experiences.

Gregory E. Francis received the 2020 **Robert A. Millikan Medal** for his notable and creative contributions to the teaching of physics. Francis is the Director of the Master of Science in Science Education Program at Montana State University, Bozeman, MT. This program offers a unique blend of online and field courses for K-12 educators. In his talk, *Two Red Bricks: Is A Good Lecture Better Than No Lecture At All?* he noted that it has been said the typical lecture is every bit as effective as placing two red bricks in front of the class for fifty minutes. He has spent his teaching career trying to improve upon that baseline. He discussed different techniques used in his large introductory algebra-based courses to make the lecture experience more active and student centered. He has found that using the lecture as a support platform built around the *Tutorials in Introductory Physics* by Lillian McDermott, Peter Shafer, and the Physics Education Group at University of Washington yields measurable gains in student conceptual understanding and retention./

Ramón Barthelemy Ramón S. Barthelemy has been named the recipient of the **Doc Brown Futures Award**. This award recognizes early-career members who demonstrate excellence in their contributions to AAPT and physics education and exhibit the potential to serve in an AAPT leadership role. Barthelemy's talk, *Queering Physics Education Research: A History of Queer Rights in the USA and Physics* presents his work in Physics Education Research. A member of AAPT since 2011, Ramón Barthelemy is an early-career physicist with a record of groundbreaking scholarship and advocacy. He has advanced the field of Physics Education Research (PER) as it pertains to gender issues and LGBT+ physicists. Through service and advocacy, he has strengthened AAPT's efforts to broaden participation in physics.

Homer L. Dodge Citation

Alexis V. Knaub received the association's **Homer L. Dodge Citation for Distinguished Service to AAPT**. Established in 1953 and renamed in recognition of AAPT founder Homer L. Dodge in 2012, the Homer L. Dodge Citation for Distinguished Service to AAPT is presented to members in recognition of their exceptional contributions to the association at the national, sectional, or local level.

2021 AAPT Summer Fellows

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 AAPT Fellows awards were presented to Dan Burns, Cabrillo College, Aptos, CA and Doug Brown, Los Gatos High School in Los Gatos, CA

PHYSICS EDUCATION RESEARCH (PER)

PER LEADERSHIP ORGANIZING COUNCIL

Erin Scanlon (2019-2022)

Chair

Adrienne Traxler (2020-2023)

Vice Chair

Edward Price (2019-2022)

Treasurer, PERTG Mini-Grants

Charlotte Zimmerman (2021-2023) PERCoGS Rep,

PERTG MiniGrants

Bethany Wilcox (2020-2023)

PERC Liaison

Rebecca Rosenblatt (2021-

2024) PERC Liaison

Rachel Henderson (2021-2024)

GPER Liaison

John Buncher (2021-2022) Ex-

officio/RiPE Chair

PERC ORGANIZING COMMITTEE

Geraldine L. Cochran, University of Colorado

Suzanne White Brahmia, University of Central Florida

Eric Brewae, University College Dublin

Debbie Andres, University of California,

Gina Passante, Michigan State

PER Conference 2021—Virtual Conference

August 4 - 5, 2021

“Making Physics More Inclusive and Eliminating Exclusionary Practices in Physic”

(410 attendees)

As a gateway discipline to STEM majors and careers, physics plays a central role in deciding who does, and who doesn't, get to discover and pursue scientific careers. Technical and scientific professionals are rewarded with economic privilege and status which affords them both social and cultural power. Therefore, social justice will be realized only when the opportunity, and the choice, to excel in physics is open to all students. The culture and practices of the physics classroom reflect the culture of physics at large, which raises the question of how our professional physics communities can embrace, rather than inadvertently repel, a diverse group of academics that can help improve physics culture. To this end, the 2021 Physics Education Research Conference will focus on defining inclusive spaces and practices. Additionally, we will explore strategies for eliminating exclusionary practices in our classrooms, research spaces, and professional organizations. We call on the community to propose sessions that will drive conversations related to these initiatives throughout PERC 2021.

What would it mean for physics and physics education research to be inclusive fields?

How might faculty hiring and promotion practices be restructured to establish and support work in social justice as an important departmental value?

What implicit expectations and practices in our courses result in students from majority groups and more privileged backgrounds having increased opportunities for success at the expense of marginalized populations?

How could success in physics be redefined as an inclusive practice?

We approached this conference with the knowledge that historical inequities in K-20 education exist and are exacerbated by current practices, which have become even more evident in light of the current economic crisis, global pandemic, and civil unrest due to racialized violence. We share the world view that it is incumbent on us as researchers and academics to understand the landscape of those inequities in our field. We also framed this work as hopeful and optimistic, that within our communities we have the intellectual power, deep commitment and strong intention to help create a better tomorrow.

The Conference Proceedings are available online at: <https://www.compadre.org/per/perc/conference.cfm?Y=2021>



Workshops and Programs

VIRTUAL WORKSHOP FOR NEW PHYSICS AND ASTRONOMY FACULTY

*June 28-July 1, 2021 and
November 11-14, 2021*

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/



workshop for
new physics and
astronomy faculty

PHYSICS TEACHER RESOURCE AGENTS (AAPT/PTRA) PROGRAM

Read more online at: www.aapt.org/PTRA



Workshops were held during the AAPT 2019 Summer Institute in Capital Reef National Monument.

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.



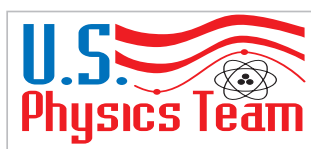
2021 PTRA COMMITTEE

Karen Jo Matsler, Program Director

OVERSIGHT COMMITTEE

Jill Marshall, Chair, Mario Belloni, Christopher J. Chiaverina, Steve Henning, Ann Robinson, Emma R. Smith, Davic E. Sturm, Beth A. Cunningham, Ex Officio, Karen Jo Matsler, Ex Officio, Mark S. Hannum, Ex Officio

2021 UNITED STATES PHYSICS TEAM

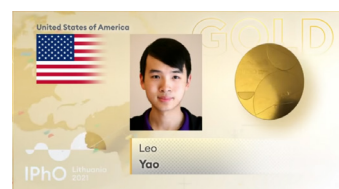


Read more at: www.aapt.org/physicsteam/2021

The 51st International Physics Olympiad that was held July 17 –24, 2021 in Vilnius, Lithuania Tel Aviv. The virtual competition among 366 of the world's top high school physics students from 76 nations consisted of an Experimental Exam and a Theoretical Exam. The team also experienced several cultural outings and visits.

All five participants representing the 2021 U.S. Physics Team won gold medals. They were:

- Eddie Chen, West Windsor-Plainsboro High School North, Plainsboro, New Jersey Gold medal, ranked 6th overall
- Evan Erickson, Erickson Homeschool Academy, Lake Elmo, Minnesota, Canyon Crest Academy, San Diego, CA Gold medal
- William Huang, Lynnbrook High School, San Jose, California
- Zhening Li, Sir John A. Macdonald Secondary School, Waterloo, Ontario, Canada
- Leo Yao, West Windsor-Plainsboro High School North, Plainsboro, New Jersey



DIRECTOR

JiaJia Dong, U.S. Physics Team Academic Director, Bucknell University, Lewisburg, PA

ACADEMIC COACHES

Mark Eichenlaub, U.S. Physics Team Senior Coach, Art of Problem Solving
Abijith Krishnan, U.S. Physics Team Junior Coach, MIT, Cambridge, MA
Kye Shi, U.S. Physics Team Junior Coach, Harvey Mudd College, Claremont, CA
Brian Skinner, U.S. Physics Team Coach, The Ohio State University, Columbus, OH
Mike Winer, U.S. Physics Team Coach, University of Maryland, College Park, MD
Kevin Zhou, U.S. Physics Team Coach, Stanford University, Stanford, CA.

PHYSICS BOWL SPONSORS

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Turner Publishing Company
Vernier Software & Technology
WebAssign

PHYSICSBOWL

AAPT PHYSICS BOWL

Read more at: www.aapt.org/Programs/contests/physicsbowl.cfm

This year there were almost 7100 students participating from 307 schools from Australia, Canada, Costa Rica, Guam, Hong Kong, Indonesia, the Republic of Korea, the Netherlands, the Philippines, Serbia, Singapore, Switzerland, Turkey, the United Kingdom, and the United States, as well as 341 schools participating from China.

2019 TOP 10 GLOBAL WINNERS

#	SCORE	STUDENT, SCHOOL, CITY, STATE
1	38	Yixian Huang, Zenith Institute CA
2	38	Joey Zou, Inspiration Private School-Oakville ON
3	38	Medha Venkatapathy, Redmond High School WA
4	37	Wantong Tong Zhang, Stamford Polytechnic CT
5	37	Junyi Liu, Temple City High School CA
6	37	Cheb Zhang, Guangdong Country Garden School Guangdong
7	37	Jian Wuhan Liu, Britain-China School Hubei
8	36	Jingxiao Zhong, American International School of Guangzhou Guangdong
9	36	Mindao Wang, Guangdong Guangya High School Guangdong
10	36	Zhihan Zhang, Minhang Crosspoint at Shanghai Wenq Middle School Shanghai

PHYSICSBOWL ADVISORY BOARD

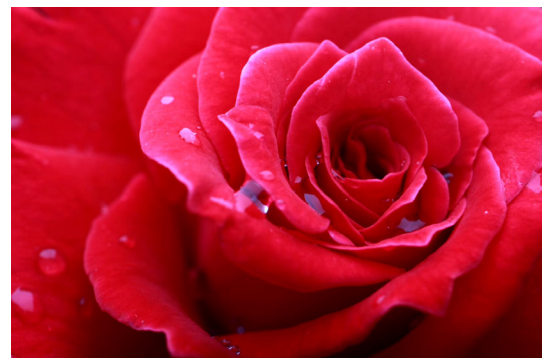
Jon Anderson, Myra West, Michael Bush, Beverly Trina Cannon, Scott Dudley, Sean Flaherty, Thomas Herring, Joel Klammer, Andrzej Sokolowski, Eric Stron, and Courtney Willis

2021 High School Physics Photo Contest

The High School Physics Photo Contest for 2021 was cancelled due to Covid-19. Selected images from the winning photos, 2010-2019 were used to create the 2021 Photo Contest Calendar.

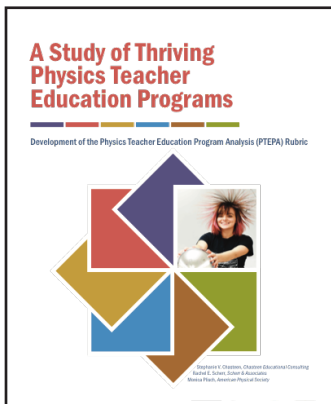


high school physics
photo contest



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.

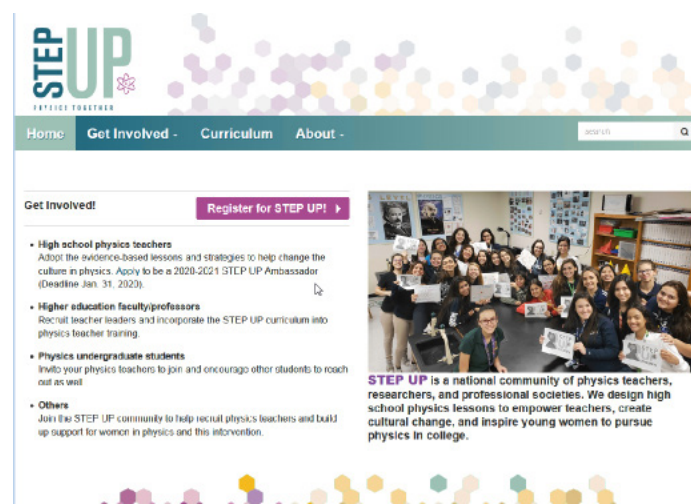
A new instrument, the Physics Teacher Education Program Analysis (PTEPA) Rubric, was developed to characterize the practices and structures observed at thriving programs, providing a guide for program leaders to reflect upon and improve their programs, and enable measurement and research over time.

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

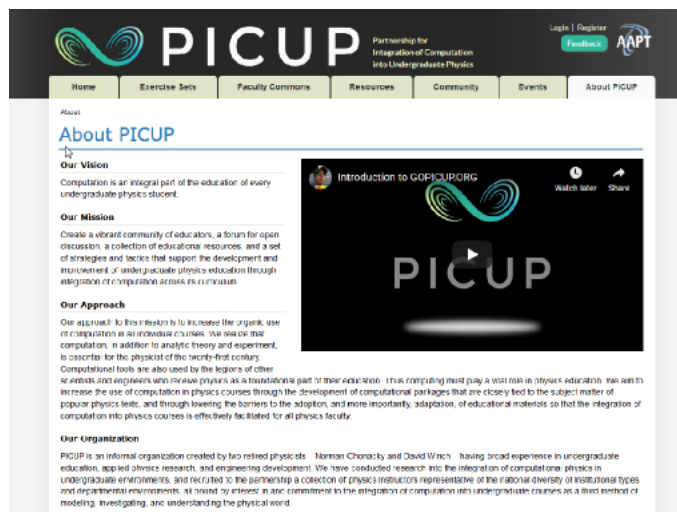


STEP UP

Project Goals:

- Mobilize thousands of high school physics teachers to help engage young women in physics
- Change deep-seated cultural views about physicists
- Inspire young women to pursue physics in college

We will achieve this if each of the high school physics teachers in our community inspires at least one young woman into physics each year. <https://www.aps.org/programs/education/su4w/index.cfm>



PICUP

PICUP is an informal organization created by two retired physicists having broad experience in undergraduate education, applied physics research, and engineering development. We have conducted research into the integration of computational physics in undergraduate environments, and recruited to the partnership a collection of physics instructors representative of the national diversity of institutional types and departmental environments, all bound by interest in and commitment to the integration of computation into undergraduate courses as a third method of modeling, investigating, and understanding the physical world. <https://www.compadre.org/PICUP/>

Collaborative Projects (cont.)

PHYSTEC TEACHER OF THE YEAR

The 2021 National PhysTEC Teacher of the Year is David Wirth of Millennium High School in Goodyear, AZ. Wirth was nominated by PhysTEC institution Arizona State University, from which he graduated.

Throughout his 29-year career, Wirth has created an environment where students act as advocates for science, their communities, themselves, and the world. He co-founded STEMCon, an annual district-wide expo that drew nearly 1000 students to explore science and math in 2020, its 10th. He also participates in the “I am a Scientist” campaign to give his students clear role models in science. Between these efforts, daily classroom excellence, and more, he has inspired countless students to pursue science.

Wirth is a champion for physics and physics education, and the success of his students is personal to him. He uses Modeling Instruction methods, partners with mathematics teachers to create integrated math/physics courses, and has earned over \$50,000 in grants for classroom equipment, all in the effort to give students the tools they need to succeed. And it works: Wirth’s physics enrollment has quadrupled, and his students drive high-level physics discussions and have clear confidence in themselves and their scientific skill.

When students leave his classroom, Wirth’s support for them continues. He started a Science Olympiad club on campus to provide further opportunities with STEM and often challenges students to build applicable Science Olympiad projects in class then compete at the state level. His students also compete in AAPT contests such as Physics Bowl and the High School Physics Photo Contest. These opportunities both recruit students to physics and provide them with experiences that are helpful when interviewing for top tier colleges.

Outside the classroom, Wirth has mentored many colleagues in the adoption of phenomena-based and inquiry-driven education and learning techniques, many of which he first tested and implemented in his own classroom, all while teaching evening physics courses at Estrella Mountain Community College. Most recently, he has partnered with Jeff Andretti (son of racing legend Mario Andretti) to write curriculum materials for a new middle school STEM program that integrates modeling techniques and will go national later this year.

By all accounts, Wirth’s classroom is an inspiration. His intentional and successful efforts to recruit and connect with students of all kinds has encouraged each of them to see themselves as scientists, and his mentorship of his colleagues ensures the legacy of his work will continue on long after he retires. For these accomplishments and more, we applaud David Wirth, PhysTEC’s 2021 National Teacher of the Year!



2021 PHYSTEC CONFERENCE

The 2021 Physics Teacher Education Coalition Conference, March 5-6 was a virtual conference. The meeting focused on how to Enhance Your Institution’s Physics Teacher Education Program 116 participants joined in the meeting dedicated to the education of future physics teachers with workshops, plenary sessions, panel sessions, and table discussions led by physics teacher preparation experts. The conversations revolved heavily around:

Online Teaching and the Future of Physics and Physics Teacher Education\n- Maintaining Physics Teacher Education Through Budget Cuts, and Creating Inclusive Culture

Plenary Speakers were Ramon Barthelemy, Eugenia Etkina, Rochelle Gutiérrez, Kelly Hogan, Robynne Lock, William Newton, Jennifer Porter, and Viji Sathy

Plenary: Strategies for Inclusive Teaching

Plenary, New Online Teaching Strategies for Physics Teacher Education

Breakout Sessions:

Session 1: An Introduction to PhysTEC and Physics Teacher Education Today; Fostering a critical awareness in physics teaching and learning; Leveraging cultural resources to address trauma; Periscope Video Lessons: Looking into learning in best-practices physics classrooms

Session 2: Recruiting Using Get the Facts Out Materials; Online Teacher Community; Teacher preparation and departmental survival: Using the EP3 Guide

Session 3: Lightning Session: Successful Strategies from PhysTEC Supported Sites; Creating an Inclusive Culture with a Learning Assistant Program; Maintaining PTE through budget changes Institutional Commitment and Advocacy for PTE and PTE programs.

Session 4: NSF Funding Opportunities in Division of Undergraduate Education; Engaging in Equity & Justice Work as a White Educator; Let’s go on a Pandemic TIR-AIDE - Teacher-in-Residence Aiding Students and Faculty

2021 Awards and Grants

HANS CHRISTIAN OERSTED MEDAL

Dr. Shirley Ann Jackson was the 2021 recipient of the prestigious Hans Christian Oersted Medal, The Oersted Medal recognizes her outstanding, widespread, and lasting impact on the teaching of physics through her pioneering national leadership in physics education, her exceptional service to AAPT, and her mentoring of students and inservice teachers.



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

In her plenary address, *Physics: The River that Runs Through It All*, Dr. Jackson discussed her own educational path, which led her to a doctorate from MIT in theoretical elementary particle physics, and the ways that her research career in condensed matter physics expanded into government, corporate, and academic leadership roles at the highest national levels. She considered “the Quiet Crisis”, America’s national need to bring women and underrepresented minorities into STEM fields in sufficient numbers, while continuing to attract talent from abroad. She will offer observations and ideas for the ways that the nation’s physics teachers can help to bring the full talent pool into the field, as well as comment on the role of physics and physics-based education in creating a foundation for addressing complex global challenges – for individuals and collaborative groups.

Dr. Jackson, President of Rensselaer Polytechnic Institute, is a theoretical physicist. She has had a distinguished career that includes senior leadership positions in academia, government, industry, and research. She holds an SB in Physics, and a PhD in Theoretical Elementary Particle Physics—both from MIT. She is the first African American woman to receive a doctorate from MIT—in any field—and has been a trailblazer throughout her career, including as the first African-American woman to lead a top-ranked research university.

The full press release is available at <https://www.aapt.org/aboutaapt/Shirley-Jackson-to-Receive-AAPT-2021-Oersted-Medal.cfm>

DOC BROWN FUTURES AWARD

Winter 2021

Kenric Davies

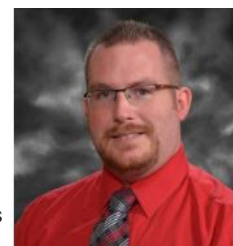
ESTABLISHED IN 2020, THE DOC BROWN FUTURES AWARD IS ENDOWED BY ROBERT WILLIAM BROWN (DISTINGUISHED UNIVERSITY AND INSTITUTE PROFESSOR IN THE PHYSICS DEPARTMENT AT CASE WESTERN RESERVE UNIVERSITY) AND HIS WIFE, JANET GANS BROWN TO RECOGNIZE AND SUPPORT EARLY CAREER PHYSICS EDUCATORS.

The first recipient of the Doc Brown Futures Award is Kenric Davies. The Doc Brown Futures Award recognizes early-career members who demonstrate excellence in their contributions to AAPT and physics education and exhibit the potential to serve in an AAPT leadership role. The award will be presented during the 2021 Virtual Winter Meeting.

A member of AAPT since 2010, Davies teaches Advanced Placement Physics at Liberty High School in Frisco, TX. He has been a consistent contributor to Texas Section (TS) AAPT meetings and events. He has made numerous oral presentations and workshop presentations. He has been and continues to be a valued contributor to physics and physics education in Texas. He has served in a leadership role in Texas Section AAPT, running for the Texas Section AAPT Council as the High School Member at Large in spring 2018 and has served in this position since the Fall 2018 meeting exhibiting a high level of professional conduct and professional interest that has improved the TS AAPT Council.

It is not just his ability to run a vibrant high school physics program, to conduct excellent workshops and give excellent talks, to help run the TS AAPT, to make major contributions to the PTRA Texas and national programs, and to motivate students and faculty in physics, it is just as much about his intense interest in physics education that he was selected as the first recipient of The Doc Brown Future Leaders Award.

The full press release is available at <https://www.aapt.org/aboutaapt/Kenric-Davies-named-as-First-Recipient-of-The-Doc-Brown-Futures-Award.cfm>



2021 Awards and Grants (cont.)

DOC BROWN FUTURES AWARD

Summer 2021



Ramón Barthelemy

Barthelemy earned his BS in Astrophysics at Michigan State University and his MA and Ph.D. in Physics Education Research at Western Michigan University. He received a Fulbright Fellowship at the University of Jyväskylä, in Finland in 2014 and a AAAS Science Policy Fellowship in 2015. He is also the recent recipient of two National Science Foundation grants to continue his work on gender in physics but also expand it to people of color in STEM and graduate program reform.

He began his position as an assistant professor of physics and astronomy (P&A) at the University of Utah in 2019. He is the first tenure track PER faculty hired in P&A at “The U” and has begun their first PER research group, the Physics Education Research Group at the University of Utah (PERU). Barthelemy also teaches courses in calculus based introductory physics and physics education.

His involvement with AAPT has included serving on the Committee on Women in Physics and organizing sessions for that committee as well as the Committee on Diversity. He was one of the early advocates for LGBT+ voices in AAPT, leading discussions and organizing the first AAPT session on the topic. He is also one of the authors of the APS report “LGBT Climate in Physics: Building an Inclusive Community.” Though this work was not done under the auspices of AAPT, the report has been a valuable resource to many AAPT members--both those whose stories were being told for the first time, and others who want to improve their departments and workplaces for LGBT colleagues and students. He was also a coauthor on the first edition of the LGBT+ Inclusivity in Physics and Astronomy best practices guide, which helps to offer actionable strategies. He also recently published a peer reviewed paper on this topic in the European Journal of Physics with more in review.

Barthelemy is a valued collaborator and can be relied on to challenge biases and inequities. He has been a leader in pushing forward Physics Education Researchers’ understanding of gender and LGBT issues in physics.

The full press release is available at <https://www.aapt.org/aboutaapt/Ramón-Barthelemy-2021-Doc-Brown-Futures-Award.cfm>

2021 Awards and Grants (cont.)

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

Anne Cox, Eckerd College, St. Petersburg, FL.

Mission Possible

Anne Cox received the 2021 David Halliday and Robert Resnick Award for Excellence in Undergraduate Physics Teaching.

Her plenary talk, *Mission Possible*, was grounded in the tools of physics teaching: simulations, laboratories, video analysis, and makerspaces. But it also acknowledged the human side of physics and the ways in which we connect with each other and our students, particularly through mentoring and JEDI-B work (Justice, Equity, Diversity, Inclusion and Belonging). When you know your mission, you know what you do better than, different than, other than... for you alone do." (attributed to Robert Hutchins, President of the University of Chicago, 1929- 45) What is it that we, physics teachers, do that is unique—what is our mission and why have we chosen to accept it? Cox reflected on what she has learned about physics teaching from many colleagues as she celebrate our joint mission, share pedagogical strategies, and highlight challenges ahead. "Access to a dark night sky—to see and be inspired by the universe as it really is—should be a human right, not a luxury for the chosen few." (Chanda Prescod-Weinstein, *The Disordered Cosmos*, p. 165).

Cox is Professor of Physics, Eckerd College, St. Petersburg, FL. She graduated magna cum laude with her BS in Physics at Rhodes College, where she was the only female physics major, and earned her PhD in Physics at the University of Virginia. She began teaching at Eckerd College in 1995 and has been a dedicated teacher and researcher at the Physics Department, with her appointment as Professor in Physics in 2006.

Read the full press release at: <https://www.aapt.org/aboutaapt/Anne-Cox-2021-Halliday-Resnick-Award.cfm>



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 CONTEMPRARY 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.

THE PAUL W. ZITZEWITZ AWARD FOR EXCELLENCE IN K-12 PHYSICS TEACHING

Bradford N. Talbert

Lone Peak High School

Educated at Brigham Young University, Provo Utah, Talbert earned his Bachelor of Science in Mechanical Engineering and his Master of Science in Instructional Psychology and Technology. He earned a second Bachelor of Science, and Teacher Certification with Math Level IV and Physics endorsements from Southern Utah University. He received advanced training in Modeling Instruction for High School Physics at Arizona State University.

His career as a teacher began at Southern Utah University where he worked as a Teaching Assistant for College Algebra. In 1997 he began working as an author and instructor of high school physics offered through BYU's Independent Study. His role as a high school physics teacher began at Pleasant Grove High School in 1994. After teaching physics and AP Physics for 15 years, Talbert worked at the state office of education for five years as the state science assessment specialist. During this time he was directly involved with the state end of level science testing. He traveled throughout the state leading trainings and workshops about effective strategies for assessing science content and practices. Near the end of his tenure at the state, Lone Peak High School had an opening for a Physics teacher, and he took the job. He currently teaches Physics, AP Physics 1, and Concurrent Enrollment Physics 1010 in partnership with Utah Valley University.

Read the full press release at: <https://www.aapt.org/aboutaapt/Bradford-Talbert-to-Receive-2021-Zitzewitz-Award.cfm>



2021 Awards and Grants (cont.)

ROBERT A. MILLIKAN MEDAL

Gregory E. Francis, Montana State University, Bozeman, MT
Two Red Bricks: Is A Good Lecture Better Than No Lecture At All?



Gregory E. Francis will receive the Robert A. Millikan Medal. This award recognizes educators who have made notable and intellectually creative contributions to the teaching of physics.

Francis is the Director of the Master of Science in Science Education Program at Montana State University, Bozeman, MT. This program offers a unique blend of online and field courses for K-12 educators. In its 23rd year, the program has produced over 1200 graduates.

Francis is co-author of two introductory textbooks: *Physics: A Conceptual World View* with Larry Kirkpatrick, and *College Physics: Putting It All Together* with Ron Hellings and Jeff Adams. His BS in physics is from Brigham Young University and his PhD in physics is from Massachusetts Institute of Technology.

First and foremost a teacher, Francis began his work touching young minds early. As an undergraduate at Brigham Young University he taught recitation sections normally reserved for graduate students. Later, as a graduate student studying plasma physics at MIT, he regularly found opportunities to teach classes normally reserved for research faculty. After finishing his doctorate in 1987 he served as a postdoctoral fellow at Lawrence Livermore National Laboratories. Although his day job gave him the opportunity to work with worldclass scientists on exciting problems, he found that he really preferred his night job, teaching physics classes at the local community college.

In 1990, Francis joined the Physics Education Research Group at the University of Washington-Seattle, working with Lillian McDermott and Peter Shaffer to explore the science of effective physics teaching. Since 1992 he has continued to experiment with active learning approaches in large introductory classes at Montana State University where he is currently Professor of Physics.

Read the full press release at: <https://www.aapt.org/aboutaapt/2021-Millikan-Medal-Awarded-to-Gregory-E-Francis.cfm>

KLOPSTEG MEMORIAL LECTURE AWARD

Helen Czerski, University College London, London, England
An Ocean of Physics



Czerski is a physicist, first and foremost, but she's acquired a few other labels along the way: oceanographer, presenter, author, and bubble enthusiast. She grew up near Manchester, in northwest England, and spent her childhood playing by the canals and along the old railway routes of the early Industrial Revolution. She studied Natural Sciences (Physics) at Churchill College, Cambridge, finishing with a first class degree. A year later, she returned to Cambridge to study for a PhD in experimental explosives physics, motivated by the opportunity to use high-speed photography to explore the physical world further.

After her PhD, she looked for a pathway that would allow her to continue to build that sort of experiment, but with an application in the natural world. That's when she found out about bubbles and oceans. The Scripps Institution of Oceanography in San Diego was her door into that world, followed by a postdoc at the Graduate School of Oceanography in Rhode Island. She returned to the UK to start her own research program on the physics of oceanic bubbles, first at the University of Southampton and then at her current academic home, University College London.

Czerski gets particularly excited about the physics of the everyday world and the oceans. The oceans are the heart of the Earth's engine, the system of atmosphere, rocks, ice, life and ocean that makes up our planetary life support system. She is fascinated by the relationship between human civilizations and the oceans, and how these vast expanses of blue have shaped and influenced the structure of human society.

Read the full press release at: <https://www.aapt.org/aboutaapt/Helen-Czerski-Named-as-Recipient-of-the-2021-Klopsteg-Memorial-Lecture-Award.cfm>

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

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 CONTEMPRARY 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.



2021 Awards and Grants (cont.)

AAPT 2021 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 2021 Winter Fellows:

Ximena Cid, California State University-Dominquez Hills, Carson CA/
Kathleen Koenig, University of Cincinnati, Cincinnati, OH
David Marasco, Foothill College, Los Altos, CA
Paul Robinson, Rockstar Science, Inc., San Francisco, CA

The 2021 Summer Fellows:

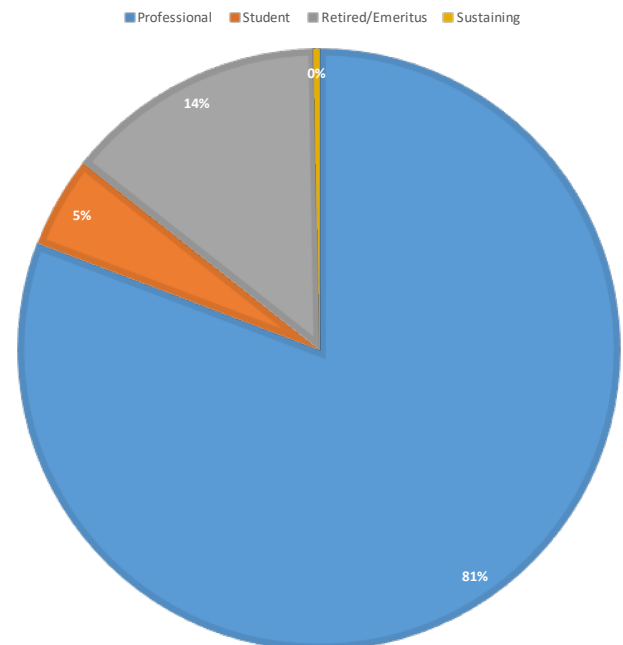
Dan Burns, Cabrillo College, Aptos. CA
Doug Brown, Los Gatos High School in Los Gatos, CA

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, 2021)

MEMBERSHIP BY MEMBER TYPE

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



2021 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 2021



Nina Morley Daye is a National Board Certified teacher and received the Presidential Award of Excellence in Secondary Science in 1997 for North Carolina. She finds ways to share physics with teachers, students and the public. A PTRA since 1986, she is a highly respected physics workshop leader, teacher, and has spent the last thirty-eight years dedicated to improving the teaching and learning of physics. Daye has done numerous presentations at AAPT meetings and at the North Carolina AAPT Section meetings. She has been a leader in workshops in several states and will travel to the locations where she is needed. She is always ready to share her love of science and the importance of supporting STEM education for all students. Daye has retired from Orange High School and has founded a company to support families with science education, 2 DayesScience, www.2Dayesscience.com.

<https://www.aapt.org/aboutaapt/2021-Dodge-Citation-to-be-awarded-to-Nina-Morley-Daye.cfm>



Mary Jane Head is Secondary Science Instruction Coach in Richmond, Texas. She earned her Ph.D. in physics education at Texas A&M, College Station, Texas in 2014. Janie began teaching in 1973 in general science and biology. An AAPT member since 1994, Head has worked tirelessly in almost every capacity with the National Science Teachers Association, the American Association of Physics Teachers, the Physics Teaching Resource Agents, and numerous districts and universities to design research methods, develop and disseminate curriculum materials, plus provide training and workshops for in-service and pre-service teachers. Dedicated to learning, she was a participant in Physics Enhancement Programs, Modeling Tools workshops, Einstein Plus Academy for Teachers, an International Program at the Perimeter Institute in Canada, and many more. Along with all of her full-time education positions, she has been the Master Instructor at Texas A&M Mitchell Physics Institute summer program for many years.

<https://www.aapt.org/aboutaapt/Mary-Jane-Head-to-be-Recognized-as-a-2021-Recipient-of-the-Homer-L-Dodge-Citation-for-Distinguished-Service-to-AAPT.cfm>

Summer Meeting 2021



Alexis V. Knaub earned her BA in Physics at Smith College. Her MS in Physics is from DePaul University and her EdD in Physics Education at Boston University. A member of AAPT since 2014, Knaub has made several excellent and multifaceted contributions to the organization. In 2017, she co-designed and co-created the People of Color in Physics Education Research discussion space and has been deliberate and intentional in designing this as a “safe” space, where scholars of color in PER can be themselves. She co-authored the white paper, Emerging Reflections from the People of Color (POC) at PERC Discussion Space and supported the presentation of this paper as a poster at the Physics Education Research Conference (PERC) in 2019. The paper will continue to influence the discourse on race within the AAPT and PERC communities for many years. Knaub has served as a Member (2019-20) and Vice-Chair (2020-21) of the Committee on Diversity, playing a crucial role in the design and creation of the Equity, Diversity, Inclusion (EDI) room at 2020 AAPT Virtual Summer Meeting. The EDI rooms provided a space for concerted talks and discussion around one of the most significant challenges facing physics education.

<https://www.aapt.org/aboutaapt/2021-Homer-L-Dodge-Citation-to-be-awarded-to-Alexis-V-Knaub.cfm>

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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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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 2021 Section Representatives

Local sections increase the impact of AAPT programs and resources.

AAPT Sections spread across the United States and 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.

ALABAMA SECTION

Elizabeth C. "Tommi"
Holsenbeck

ALASKA SECTION

No representative

ALBERTA SECTION

Terry Singleton

APPALACHIAN SECTION

John C. Stewart

ARIZONA SECTION

Karie Meyers

ARKANSAS-OKLAHOMA-

KANSAS SECTION

Martin Shaffer

BRITISH COLUMBIA SECTION

Takashi Sato

CENTRAL PENNSYLVANIA SECTION

Michael P. Orleski

CHESAPEAKE SECTION

Jim Freericks

CHICAGO SECTION

Joseph F. Kozminski

COLORADO-WYOMING SECTION

Shannon Wachowski

FLORIDA SECTION

Shawn A. Weatherford

HAWAII SECTION

Lisa Agle

IDAHO-UTAH SECTION

Brian A. Pyper

ILLINOIS SECTION

Kimberly A. Shaw

INDIANA SECTION

Steve Spicklemire

IOWA SECTION

Nathan Quarterer

KENTUCKY SECTION

Richard Gelderman

LONG ISLAND SECTION

Tania Entwistle

LOUISIANA SECTION

No representative

MEXICO SECTION

Genaro Zavala

MICHIGAN SECTION

Bradley S. Ambrose

MINNESOTA SECTION

Jerry L. Artz

MISSISSIPPI SECTION

Carl M. Dewitt

MISSOURI SECTION

Daniel B. Marsh

MONTANA SECTION

Rich McFate

NEBRASKA SECTION

Kendra J. Sibbernsen

NEW ENGLAND SECTION

David E. Sturm

NEW JERSEY SECTION

Debbie S. Andres

NEW YORK SECTION

Samuel M. Sampere

NORTH CAROLINA SECTION

Mario J. Belloni

NORTH DAKOTA SECTION

Anthony Mwene Musumba

NORTHERN CALIFORNIA- NEVADA SECTION

David Marasco

OHIO SECTION

Myra R. West

ONTARIO SECTION

Tetyana Antimirova

OREGON SECTION

William A. Dittrich

PUERTO RICO SECTION

Carmen A. Pantoja

QUEBEC SECTION

Chris Whittaker

SOUTH DAKOTA SECTION

Margaret A. Norris

SOUTHEASTERN PENNSYLVANIA SECTION

Amber L. Stuver

SOUTHERN ATLANTIC COAST SECTION

Sarah Formica

SOUTHERN CALIFORNIA SECTION

Bryn Bishop

SOUTHERN NEVADA SECTION

John W. Farley

SOUTHERN OHIO SECTION

Kathleen A. Harper

SOUTHWESTERN SECTION

Alexander F. Burr

ST. LOUIS SECTION

Bob Brazzle

TENNESSEE SECTION

Spencer L. Buckner

TEXAS SECTION

Daniel Marble

WASHINGTON SECTION

Robert Hobbs

WESTERN PENNSYLVANIA SECTION

Paul Ashcraf

WISCONSIN SECTION

A. James Mallmann

Financials (new figures needed)

THE AMERICAN ASSOCIATION OF PHYSICS TEACHERS, INC.

Statement of Financial Position As of December 31, 2020 (With comparative totals for 2019)

Statement of Activities and Change in Net Assets for the Year Ended December 31, 2020 (With Comparative Totals for 2019)

	DECEMBER 2020	DECEMBER 2019
ASSETS		
CURRENT ASSETS		
Cash and Cash Equivalents	\$1,694,145	885,926
Investments	885,926	
Accounts Receivable, net of allowance for doubtful accounts of \$47,585	90,443	
Grants receivable	1,004,201	
Inventory	76,462	
Prepaid expenses	113,409	
Total current assets	\$3,864,586	
FIXED ASSETS		
Equipment	\$136,541	
Capital lease	15,000	
Software	116,815	
	268,356	
Less: Accumulated depreciation and amortization	(193,504)	
Net fixed assets	74,852	
OTHER ASSETS		
Investments, net of current portion	5,672,087	
Investment in ACP	976,738	
Total other assets	6,648,825	
TOTAL ASSETS	\$10,588,263	
	DECEMBER 2018	DECEMBER 2017
LIABILITIES AND NET ASSETS		
CURRENT LIABILITIES		
Capital lease obligation, current position	a	\$3,478
Accounts payable and accrued liabilities		264,481
Accrued payroll and related liabilities		153,262
Unearned Revenue		2,356,054
Refundable advance		112,908
Total current liabilities		2,890,183
LONG-TERM LIABILITIES		
Capital lease obligation, net of current portion		575
Accrued postretirement benefit obligation		359,919
Total long-term liabilities		360,494
Total liabilities		3,250,677
NET ASSETS		
Unrestricted		
Undesignated	4,778,236	
Board designated	1,336,265	
Total unrestricted	6,114,501	
Temporarily Restricted		
		734,850
Permanently Restricted		
		488,235
Total Net Assets		7,337,586
TOTAL LIABILITIES & NET ASSETS		\$10,588,263

	UNRESTRICTED	TEMPORARILY RESTRICTED	PERMANENTLY RESTRICTED	2020 TOTAL	2019 TOTAL
REVENUE & SUPPORT					
American Journal of Physics	\$1,618,644	-	-		\$1,618,644
The Physics Teacher	963,679	-	-		963,679
Membership	821,605	-	-		821,605
Meetings, workshops and projects	727,739	-	-		727,739
Grants	1,430,310	-	-		1,430,310
Investment Income (Loss)	620,873	184,662	-		805,535
Other Publications	56,586	-	-		56,586
International Physics Olympiad	138,705	-	-		138,705
Loss (Earnings) of investment in ACP	(41,723)	-	-		(41,723)
Contributions	60,292	298	-		60,590
Miscellaneous Income	4,793	-	-		4,793
Net assets released from restrictions	35,710	(35,710)	-	-	-
TOTAL REVENUE AND SUPPORT	6,437,213	149,250	-		6,586,463
EXPENSES					
Program Services:					
American Journal of Physics	591,133	-	-		591,133
The Physics Teacher	766,149	-	-		766,149
Memberships	695,376	-	-		695,376
Meetings, workshops and projects	1,180,310	-	-		1,180,310
Grants	1,430,302	-	-		1,430,302
Other Publications	750,895	-	-		750,895
Total program services	5,414,165	-	-		5,414,165
Supporting services:					
General and administrative	490,952	-	-		490,952
Fundraising	595	-	-		595
Total supporting services	491,547	-	-		491,547
Total Expenses	5,905,712	-	-		5,905,712
Change in net assets before phter item	531,501	149,250	-		680,751
OTHER ITEM					
Change in post-retirement plan obligationNet Assets	(28,231)	-	-		(28,231)
Change in net assets	503,270	149,250	-		652,520
Net assets at beginning of year	5,611,231	585,600	488,235		6,685,066
Net asset at End of year	\$6,114,501	\$734,850	\$488,235		\$7,337,586

2021 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.

Jack Willis

JANUARY 12, 2021

Jack Willis died at home in hospice on Oct. 27, 2020 from metastasized prostate cancer at age 95. Professor Emeritus of Physics, University of RI, Jack's main interest was teaching. For many years he and his colleague, Don Kirwan, presented "Fun with Physics" shows where physics phenomena were shown and they held NSF sponsored workshops for high school teachers. Jack was selected as one of the Inaugural Cohort of Fellows in 2014. He served as Associate Editor of *The Physics Teacher*, 1985-1989. An accomplished wood and metal worker, he loved contributing to and heading the Apparatus Committee. AAPT demonstration workshops and shows were a delight for him. He was similarly active in the NES-AAPT. A WWII Army veteran, he saw action in Europe as a mortar launcher. His wife of 45 years, Clarice D. Anderes, survives him. They met at an NSF workshop for demonstrations in Annapolis, MD. He leaves four children, three great-grandchildren, and three stepchildren.

Warren W. Hein

JULY 1, 20121

Warren Walter Hein, former AAPT Executive Officer, passed away suddenly on June 11, 2021, while living in Fenton, Michigan. Warren served as both the Executive Officer (2008-2010) and Associate Executive Officer (1997-2007) of AAPT and a program officer at the National Science Foundation. He served as Department Head & Professor of Physics at South Dakota State University for 27 years, and he was active with the Society of Physics Students (SPS) organization. Additionally, he held positions at Northern State University and Kettering University. He graduated from the University of Wisconsin-Whitewater and Iowa State University, earning degrees in Physics, Mathematics, and a PhD in Nuclear Physics.

Warren Hein was a special friend and colleague, and I will miss his warm smile and gentle leadership. I first met Warren as a PTR, when he would attend our summer workshops as AEO. He took an interest in what we were learning and often enjoyed participating in our activities. We later interacted on several AAPT committees. His love of physics and AAPT were always evident. By far our closest relationship was during my time on the Executive Board and my presidential year. He served graciously through times of great transition. Warren worked quietly behind the scenes to provide whatever service AAPT needed. - *Lila Adair (AAPT President 2008-2009)*

Warren and I served in many of the same roles when he came to the DC area. We worked together in the leadership of several AAPT and American Institute of Physics (AIP) projects, particularly digital library efforts. He was remarkably humble. He seldom did anything to draw attention to himself, but always was supportive and encouraging of others in the physics community. Warren appreciated the importance of AAPT sections and worked to increase their participation. He was instrumental in a major transition era for AAPT. Warren will be remembered as a quiet man who worked hard and served physics well. - *Jack Hehn (AAPT AEO 1992-1999)*

In 2018 Warren was a recipient of the Homer L. Dodge Citation for Distinguished Service to AAPT. Warren was a member of the Fenton

Lions Club, American Association of Physics Teachers, American Physical Society (APS), and Sigma Xi. Warren is survived by his wife, Melanie; children, Benjamin Hein, Elizabeth Hein, and Suzyn Daniel; five grandchildren; and a great-grandchild.

Elizabeth Frazier Karplus

OCTOBER 6, 2021

Elizabeth "Betty" (Frazier) Karplus passed away at home in Orinda, California, on September 22, 2021, aged 96.

Just a few of her many achievements are listed below:

- She obtained her bachelor's degree in physics from Oberlin, continuing to Wellesley for a physics master's degree.
- She worked with many notable people, included, her husband Robert "Bob" Karplus, Grace Hopper, and John von Neumann.
- She helped Bob with research on how children reason and with developing the Science Curriculum Improvement Study (SCIS).
- With colleagues she published in math education and was a pioneer in protecting rights of students with disabilities.
- She also served on the Orinda School Board, and was honored as Orinda's 1982 Citizen of the Year.
- She lead a program at Mills College to train scientists and engineers as teachers, serving the Peace Corps in Jamaica, teaching English in China, becoming an Americorps leader, bringing weekly hands-on science lessons to local elementary schools.
- For her exceptional contributions to science education, Betty was elected a fellow of the American Association for the Advancement of Science (AAAS) in 2019.

Donations in her memory can be sent to the 'Robert and Elizabeth Karplus Outdoor Nature Lab' under construction at the Lawrence Hall of Science in Berkeley (<https://capitalstrategies.berkeley.edu/karplus-outdoor-nature-lab>).

Excerpts shown here are from an obituary published by New York Times from Sep. 30 to Oct. 1, 2021. Full obituary can be found at: (<https://www.legacy.com/us/obituaries/nytimes/name/elizabeth-karplus-obituary?pid=200269892>).

Frieda Stahl

NOVEMBER 8, 2021

Frieda Stahl (CSU Los Angeles), professor emerita of physics, died in October 2021 at the age of 99.

She joined the campus in 1958 as the first woman physicist in the department, was a fellow of the American Physical Society for her scholarly contributions in the history of ideas in physics, the history of condensed matter physics, and the history of women in physics. She was a fellow of the American Association of Physics Teachers (AAPT) and was awarded its Homer L. Dodge Distinguished Service Citation in 2006.

Frieda was a vigorous supporter of CSU-ERFSA for many years, a former chair of her campus academic senate, and vice chair of the state-wide academic senate. Additionally, she was very active in encouraging women to major in science.

