AAPT PHYSICS EDUCATION

Section News

Spring 2016

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Chicago Section

The CSAAPT Spring Meeting was held at Chicago State University on Saturday April

30, 2016. There were 29 paying attendees (9 4-year college faculty, 3 TYC faculty, 8 high school teachers, 7 college students, and 2 community members) and our guest speaker, Robert Morse from St. Albans School in Washington D.C. There were eight contributed talks and a keynote talk given by Robert Morse. Morse also gave a workshop in the afternoon. 18 attendees stayed for the workshop. There seemed to be general agreement that the slate of talks was very good, and the workshop was

an excellent experience for those who attended.

During lunch, the business meeting was held. A main point of discussion was how to (and should we) get non-profit status for the CSAAPT so that we can resume providing CPDUs for high school teachers. This question is still open and under investigation.

—Joseph F. Kozminski, Section Representative

Colorado/ Wyoming Section

The Spring 2016 CO/WY AAPT Section Meeting theme was "The Spectrum of Physics Education", and took place at the University of Northern Colorado – Greeley on Saturday, April 23rd. There were approximately 60 in attendance, with representation from high schools, community colleges and universities, and from undergraduate students to graduate students. And for the first time in recent memory, there were several folks from institutions from Wyoming.

The morning started with a poster session by undergraduate and graduate students, followed by the first set of five contributed talks. After the contributed session there was two parallel discussion sessions focused on Advanced laboratories and How to help us become great teachers. The morning wrapped up with "30 Demos in 50 Minutes."

The lunch time presentation was given by the invited speaker, Daniel Dale, from the University of Wyoming:

Studio Physics at the University of Wyoming

Danny Dale

Department of Physics and Astronomy

University of Wyoming

Thanks to encouragement and guidance from the Colorado School of Mines, the University of Wyoming has recently incorporated the studio format for teaching introductory physics. UW fortunately also just completed construction on a fantastic new building dedicated to teaching introductory science labs. This presentation will review our approach to Studio Physics, the benefits afforded by the new physical space, and preliminary evidence for improved student success.

The afternoon started with presentations by two undergraduate students who received section travel support to attend the 2015 Summer Meeting in College Park. This was an initiative that the CO/ WY Section implemented in the spring of 2015. The students submitted applications to present at the national meeting through the section officers, and the winners received $500 that supported their travel, with the understanding that they in turn present at the spring section meeting in the following year. Last year's winners were Libby Booton from the Colorado School of Mines and Jasmine Knudsen from Metro. State University.

These presentations were followed by a demo competition, where the presenters brought and explained their favorite physics demonstrations, home-made or otherwise. This was open to all, and there were over a dozen demonstrations. The winner was Lindsey Hart, an undergraduate student from the

Colorado School of Mines, who, in real-time, made a "Plasma Cutter" using a 9V battery and lead from a mechanical pencil. Lindsey won a plaque and a cash prize.

Adam Pearlstein from The Little Shop of Physics then held a workshop on Infrared Explorations where the participants built-and-took their own infrared goggles. This was followed by the second set of six contributed talks.

The conference ended with the section business meeting and officers were elected for the 2016-2017 term.

—Vincent H. Kuo, Section Representative

Michigan Section

Despite a morning snowfall that was rare for mid-April (even in Michigan), the Spring 2016 meeting of MIAAPT was held on April 9, 2016, at **Cranbrook Education Community** in Bloomfield Hills, Michigan. Approximately 35 attendees from the high school, two-year college, and four-year college communities were present. The meeting was chaired by our President Les Latham (Port Huron Northern High School) and coordinated by our 1st Vice President David Shane (Lansing Community College). The meeting began with welcoming remarks by Dan Lorts, upper school physics instructor at Cranbrook.

Contributed presentations. Conferees enjoyed no less than 16 contributed presentations that were scheduled throughout the morning and afternoon. Presenters offered high-quality talks that focused on topics as varied as: student learning of rotational motion and collisions; innovations in "flipping" advanced college-level mechanics courses, introductory undergraduate physics labs, and implementations of standards-based grading in the high school classroom. Many of these were delivered by physics teachers who were first-time presenters at MIAAPT. These presenters included James DeHaan (De La Salle Collegiate High School), Wathiq Abdul-Razzaq (West Virginia University), Joanna DeMars (Grosse Ile High School), Bryan Battaglia (Utica Academy for International Studies), Vince Nannini (Divine Child High School), Frank Norton (Cranbrook),Samanthi Wickramarachchi (Kalamazoo College), Michael Obsniuk (Michigan State University).

Workshops. The Spring 2016 meeting included three (3) well-attended workshops on varied topics. Ron Schlaack (Delta College) shared a clever game that might be called "free body diagram telephone," in which students alternate between converting a sketch of a situation into a free-body diagram and vice versa. The objective is to see how well one's students reproduce the same free-body diagram at the beginning and end of the chain. In another workshop, Don Pata (Grosse Point North School) showed how teachers can help students become more fluent with representational models (beyond mathematical ones) of phenomena in electricity and magnetism. Finally, Mike LoPresto (Henry Ford CC) demonstrated in-class experimental and data analysis activities by which students can mathematically model the effect of energy of an impacting object on the diameter of the crater it leaves.

Featured speaker. The plenary talk was delivered by **Dr. Evgeniy Khain**, associate professor at Oakland University. Dr. Khain shared insights learned from his research—both experimental and computational—in which he endeavors to model and understand the clustering and invasion of living cells, such as those responsible for cancerous tumors. Starting with a 2D Ising model for ferromagnetic materials, Dr. Khain described how he has been able to utilize an analogous model for the diffusion, proliferation, and cell-cell adjoining of cells. He also discussed how the model can be extended to investigate tumor growth and wound healing. Dr. Khain's presentation provided conferees a unique look at how physical insights can be used to help account for and explain biological processes.

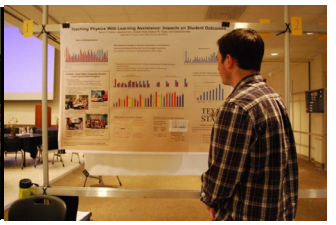
Important business for next year. In addition to the section meetings that will be taking place next academic year—our next meeting will be scheduled for a Saturday in October, 2016, at Lansing Community College, in Lansing, MI—the conferees held an election for a new 2nd Vice President. Taoufik Nadji of Interlochen Arts Academy was elected to this role from among the ranks of high school instructors. David Shane advances to the role of President and Larry Tarini (U. Michigan-Flint) becomes 1st Vice President. The new Executive Board will begin

serving at our annual meeting this May (exact date and time TBD).

—Bradley S. Ambrose, Section Representative

Texas Section

The conference was hosted in the Setzer Student Center of Lamar University and offered 10 plenary talks, 6 APS breakout sessions, one AAPT break out session, one SPS session, and two poster sessions with a total of 34 poster presentations. Our conference started in the evening of March 31st with the 'SPS Get Together!' event and the Executive Board meetings of the Texas Sections of APS and AAPT. The Archer-Physics building hosted 9 AAPT workshops split in three parallel sessions coordinated by Dr. Tom O'Kuma from Lee College with nearly 60 participants (teachers, students, faculty and staff) from various schools in Texas. There were approximately 200 papers submitted to our conference with 185 registered participants according to the American Physical Society headcount.



Our conference also hosted a Career Pathways in Physics workshop led by Dr. Toni Sauncy from Texas Lutheran University and the former Director of SPS, and welcomed a special guest from the Workforce Solutions of Southeast Texas, Ms. Lauren van Gerven.

The plenary speakers were from various national labs (NASA Goddard Space Flight Center, NIST, Oak Ridge National Lab), several schools from Texas (Rice University, UT Austin, Texas A&M, Baylor University) and other states (University of Central Florida, Kansas State University). A list of our invited guests and the title of their talks is given below. Our 185 participants to the conference came from states as far as New Jersey or from nearby states such as Louisiana and Mississippi, and from almost all major schools in Texas. In addition we had 35 honors student volunteers from Lamar. Many Lamar faculty, students, and staff members visited the site of the conference and attended some of the plenary talks. We had talks and posters contributions from various STEM programs at Lamar, including from Chemistry, Biology, Mathematics, Electrical and Mechanical Engineering.

Dr. Dean Zollman, University Distinguished Professor and Distinguished University Teaching Scholar at Kansas State University was our AAPT keynote speaker at the special lunch offered on April 1st , in the Ballroom of the Setzer Student Center. His talk was about "Engaging Students in Quantum Physics Research and Practice"

The banquet was organized in the evening of April 1st and was hosted at the reception center of Lamar:

We had several special guests from Lamar's higher administration including President Kenneth Evans, Dean Joe Nordgren of the College of Arts & Sciences, Dean Kevin Dodson of the Reaud Honors College, Dr. Kumer Das, the Director of the Office of Undergraduate Research, Mr. Brian Sattler, the Director of Public Relations, and several Lamar faculty, staff, and students, who joined about 123 conference guests

The APS keynote speaker at the banquet was Dr. Tom Killian, Chair and Professor of Physics and Astronomy at Rice University. His talk was about: "From Ultracold Plasmas to White Dwarf Stars"

—Paul Williams, Section Representative

Southern California Section

On April 30, over 85 members of the Southern California Section gathered at Caltech (Pasadena, CA) for a day full of informative presentations and lively discussions. The meeting, which was held in the Richard P. Feynman Lecture Hall, was called to order by SCAAPT President James Lincoln.

James Lincoln shared some of his observations about

Richard Feynman that he has collected by listening, not reading, the Feynman Lectures. By listening to the original recordings, it was possible to hear Feynman's unique delivery and sense of humor that was not completely captured in the written version.

Gabriele Vajente (Caltech) described the basic physics of gravitational waves, the principles behind the instruments and the data analysis techniques that allowed the LIGO group to detect the signals and the properties of the astrophysical system that generated it. Dr. Vajente also took attendees on a tour of the Caltech laboratory facility where the group prototypes and tests optical instruments.

Art Huffman, UCLA (retired) described his pedagogy of teaching high school students quantum mechanics. He believes that there is an increased interest among physics educators to include more modern physics in the introductory curricula. He shared several demonstrations as well as illustrations from his book, "The Cartoon Guide to Physics", which teachers can easily incorporate into their classes.

Several SCAAPT members also gave engaging contributed presentations:

- Eric Tom (Don Bosco Tech), Faraday Effect Demonstrations
- Steve Wetrich (Chapman University), Color Temperature Physics in Photography
- John McGuffie (St. Francis High School), The Physics of Juggling

Elections were held and SCAAPT congratulates the following winners:
- President: Cliff Gerstman, Middle College High School
- Past-President: James Lincoln, Tarbut V' Torah High School
- VP for 4 Year Colleges: Chad Kishimoto, University of San Diego
- VP for 2 Year Colleges: Lee Loveridge, Pierce College
- VP for High Schools: Bryn Bishop, Westview High School
- Web Manager: Chija Bauer, La Salle High School
- Treasurer / Secretary: Nuria Rodriguez, Santa Monica College (retired)
- Section Representative: Jeff Phillips, Loyola Marymount University

The ever-popular Show 'n' Tell featured demonstrations by Myron Mann, Sonia Tye, James Lincoln, Megan Bartley, and Don Krotser. The meeting ended with the World Famous "Order of Magnitude Contest." This meeting's question was: How long in seconds does it take for a typical binary star system to annihilate by emitting gravitational waves?

SCAAPT thanks its corporate sponsors: PASCO, Arbor Scientific, Active Statics, xUmp, Educational Innovations– for their support and donation of door prizes. SCAAPT also thanks Bradley "Peanut" McCoy, who served as Program Chair of the meeting.

The Southern California Section will hold its next meeting in the fall. Please bookmark the SCAAPT homepage <http://www.scaapt.org/> and check the site for more information in the fall.

New Physics Teacher Workshop (NPTW)
SCAAPT's New Physics Teacher Workshop program expanded this year to include both San Diego and Los Angeles Counties. This expansion was highly successful and both sets of workshops were well attended. At each workshop, 20 to 30 teachers received nearly $100 worth of equipment, lab materials and ideas. The NPTW program is largely supported by the Brown Foundation, with supplemental funding coming from a few individual donors.

—Jeff Phillips, Section Representative

Southern Ohio Section

The Southern Ohio Section's spring meeting was April 9, 2015 at the University of Dayton, in conjunction with the Ohio Section of the APS. About 20 AAPT members were in attendance. Many thanks go to Lenore Horner for coordinating our schedule with APS and to Perry Yaney and his colleagues for hosting us.

In the business portion of the meeting, the section conducted its annual election of officers. The new president-elect is Jennifer Blue (Miami University). Terry Toepker (Xavier University) was re-elected to serve as vice president for 4-year colleges, and Kevin

McChesney (Pickerington High School – Central) is the new secretary. Stepping into the recently vacated position of president is Lenore Horner (The Seven Hills School), and Mark Plano Clark (University of Cincinnati) is now past president. The board has also appointed Matthew Kennedy (Columbus Torah Academy) as associate treasurer and Mark Plano Clark as associate secretary. Many thanks to outgoing officers John Rowe (Cincinnati Public Schools) and Krista Wood (University of Cincinnati – Blue Ash) for their service on the board.

In addition to the variety of APS presentations, we enjoyed two contributed talks from our membership: "Measuring School Students' Reasoning Abilities" (Gordon Aubrecht, Jennifer Esswein, Jessica Creamer, and Bill Schmidt) and "Elucidating Ray Diagrams" (Lenore Horner). There were also two invited APS talks on nanophotonics, and we were treated to a discussion led by Robert Brecha (University of Dayton) on interdisciplinary content, particularly sustainability, and how it might fit into traditional physics courses. Lenore Horner, Kevin McChesney, and Rick Jacox (Ontario High School) coordinated a hands-on technology session for members to learn more about a variety of potential classroom tools, including Expert TA, GeoGebra, VPython, Glowscript, and podcasting.

There was also a special session for AAPT and APS members alike to mourn the loss and celebrate the life of Jim Sullivan (University of Cincinnati), who passed away suddenly last October. The speakers (Kay Kinoshita, Mark Plano Clark, John McNay, Bill Kuhlman, Erica Brownstein, Sandy Doty, and Gordon Aubrecht) painted a lovely mural of Jim's many contributions to multiple organizations: St. Xavier High School (where he was a student), the University of Cincinnati (where he was on the faculty, coordinated the regional science fair, and was active with the AAUP), SOS-AAPT and OS – APS. He was one of the co-founders of the Southern Ohio section of AAPT and was one of the constant pillars of the executive board since its inception. He is sorely missed.

State Science Day

On the morning of Saturday, May 14, 19 intrepid volunteers served as judges at Ohio's State Science Day competition to determine the awarding of special physics prizes. As he has for many years, Gordon Aubrecht of The Ohio State University coordinated the judging effort. Matthew Kennedy assisted him, in preparation for taking on the task in the future. The prizes are awarded by the Southern Ohio Section of AAPT, with the generous financial support of the Ohio Section of APS. The winning projects this year were:

Elementary:
Ms. Mackenna Gibson, Lake MS, "Physical Bond Strength and Elasticity: Polyurethane vs. Rubber with Fabric"

Mr. Jack Wolf, Welsh Hills School, "The Effect of Wind Turbine Blade Shape and Quantity on Performance"

Mr. Bailey Gallagher, East Richland Christian School, "Battery Life and Air Exposure"

Middle:
Ms. Shifra R Narasimhan, Athens HS, "Determining Sugar Concentration in Multiple-solute Solutions"

Mr. Nicholas Pitrof, Incarnation School, "Ground Effect on Lift of an Airfoil"

Ms. Emily Jernejcic, Village Academy, "How do Different Wind Speeds and Wing Shapes Affect Lift?"

High:
Mr. Alan Fong, Southview HS, "Solubility of ITO as a TCO for Superstrate Configuration Perovskite Solar Cells"

Mr. Sulekh Fernando-Peiris, Mt. Vernon HS, "A Label Free Optical Technique to Detect Protein-protein Binding"

Mr. Peter Menart, Carroll HS, "Numerical and Analytical Model Development for Tidal Barrage Energy Output"

Upcoming Events

The Fall 2016 section meeting is scheduled for Saturday, October 1 at Xavier University. Our host will be Terry Toepker. More information will be posted as it becomes available at the section's web

site: www.sosaapt.weebly.com.

The Spring 2017 section meeting will be hosted by Joe Griffith at Reynoldsburg eSTEM on Saturday, April 1. We are very excited that we will be featuring the antics of the Flying Bernoulli Brothers at this meeting.

The section also extends a warm invitation to all of the AAPT membership to join us in Cincinnati in July of 2017!

—Kathy Harper, Section Representative

Southeast Pennsylvania Section

It's been an active year for the Southeast Pennsylvania Section (SEPS), which represents Philadelphia and the surrounding counties.

Our SEPS Fall Demo Day was held Saturday, October 17, 2015, hosted by Dave Montalvo at Upper Merion Area High School, and featured a variety of demonstrations and presentations by SEPS members. There were about 20 attendees.

Our annual SEPS Spring Meeting was held at Saint Joseph's University on April 1-2, 2016, with about 45 attendees present. SJU has graciously hosted a number of past SEPS meetings, so we were delighted for them to host us again. Friday evening's speaker was Paul Hewitt, author of the famous Conceptual Physics text, who presented "Equations as Guides to Thinking." On Saturday morning, our speakers were Paul Steinhardt of Princeton University, who presented "Once Upon a Time in Kamchatka," regarding the fascinating story of the discovery of quasicrystals, and Rick Van Berg of the University of Pennsylvania, who presented "Sixty Years of Experimental Neutrino Physics – A Somewhat Personal Perspective." On Saturday afternoon, we were treated to two interactive workshops. Jim Ferrara (Bernards High School) presented "A Guide to Teaching the New AP Physics 1 & 2 courses," while representatives of PASCO (Chris Wilhelm and Chong Yang) presented a workshop on their latest offerings for physics laboratory courses.

In addition to our two formal meetings, SEPS has co-sponsored, together with the Philadelphia Regional Noyce Program (PRNP), several workshops over the past year, serving nearly 30 participants in total. In October 2015, a workshop at Saint Joseph's University entitled "Measuring Mass and Moment of Inertia" was hosted by Kathleen Hennessy and Barry Feierman. In February 2016, a workshop at LaSalle University was hosted by Jay Bagley and Bill Berner. In May 2016, Bryn Mawr College hosted a workshop, led by Barry Feierman, Mark Matlin, and Harriet Slogoff, presenting sixteen labs on a variety of topics. Upcoming workshops are currently planned at LaSalle University and other institutions in the region.

Another event of interest was the University of Pennsylvania Annual Holiday Demonstration Show, hosted by UPenn lab coordinator and SEPS member Bill Berner. A long-time tradition, the Holiday Demonstration show features a variety of physics demos set up and performed by Bill. This year's show, "Post-Holiday Blues (& Reds!) in a Whole New Light" was presented January 11 and 12, 2016, entertaining – and educating – hundreds of high school students and the general public with demonstrations on waves and light.

At the Spring 2016 meeting, Section officers for the upcoming year were elected. They were: Kathleen Hennessy, Saint Joseph's University (President), Ryan Batkie (Vice-President), Barry Feierman, Bryn Mawr College (Secretary), Art Zadrozny, West Chester East HS (Treasurer), and Jeremy Carlo, Villanova University (Section Representative). Bob Schwartz, last year's President, became Past President, and we would like to thank our outgoing Section Representative Jay Bagley, for his years of service to SEPS.

You can find SEPS on the web at http://www.physics.upenn.edu/aapt/.

—Jeremy P. Carlo, Section Representative

Utah Section

The IdahoUtah Section of the American Association of Physics Teachers met April 1516 at Idaho State University in Pocatello, hosted by local organizer and Section vice president Steve Shropshire. The meeting combined with an SPS Zone 15 meeting as well. About 70 people were in attendance for the meeting, which featured a banquet dinner, several guest speakers, and the perennially popular demo show (http://www.physics.isu.edu/events/conference/AAPTDemoSchedule.shtml) and make and take.

The program was excellent, with a varied collection

of contributed talks and posters. The full program of events is available at http://www.physics.isu.edu/events/conference/schedule.shtml.

The business meeting Saturday reelected Adam Beehler from the University of Utah as the section treasurer, and tentatively elected Matt Zachreson of BYUI to serve as president elect, and host the meeting in Rexburg in

2018 on the condition that Boise State, whose turn it should be, can't do it, and that his oneyear appointment at BYUI is renewed.

So the Current slate of officers for the section is as follows:

Matt Zachreson (BYUI) – President Elect (rotates to Vice President in 2017) Adam Beehler (UofU) – Vice President and Treasurer (2017)

Steve Shropshire (ISU) – President (2017) Larry Smith (Snow) – Past President (2017)

Brian Pyper (BYUI) – Section Representative (term expires in 2018)

A sincere thanks to Steve Shropshire and the department at ISU for hosting the section so well. Keep abreast of the section doings and plans for the Spring 2017 section meeting at the University of Utah on the section's web page at idahoutah.aaptsections.org.

—Brian A Pyper, Section Representative

To list your section meeting in the AAPT Calendar of Events, e-mail the information to mgardner@aapt.org

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