

Alberta Section

1. Wed Feb 25, 2015 5:00 PM at Physics Department, University of Alberta. Approximately 24 in attendance. David Miles, Dept of Physics, presented:

Space Weather

In his talk, David highlighted space weather and research at the University of Alberta and, in particular, a rocket mission launched in February 2015 from northern Norway.

2. Wed May 6 2015 at Physics Department, University of Alberta. Approximately 18 in attendance. The Hidden Beauty of Bubble Chambers” by Dion Skitsko, Mother Margaret

Mary High School, presented:

The Hidden Beauty of Bubble Chambers

As part of his time at CERN’s High School Teacher program in 2014, Dion had the chance to contribute to the development of some teacher resources that included hands-on analysis of bubble chamber images can be used to connect topics taught in Physics 30 to the cutting edge world of experimental particle physics.

3. CAP Teacher’s Day: Tues June 16 2015 at Physics Department, University of Alberta. Approximately 30 in attendance.

We joined forces with the Canadian Association of Physicists to present a day of presentations and workshops for CAP’s Teacher Day. Calvin Kalman (CAP’s Chair of Division of Education) started the day with “Changing student’s approach to learning physics”.and Zubin Jacob, (Electrical and Computer Engineering, University of Alberta) followed with “Metamaterials: Controlling light, heat, sound and electrons at the nanoscale”, We joined the main session for talks by Chitra Rangan, University of Windsor, “CAP Teaching Medal Talk” and Matin Laforest (Senior manager, Scientific Outreach,

Institute for Quantum Computing, University of Waterloo) “Quantum superposition and the uncertainty principle in the class room; a hands-on experience”.

In the afternoon we presented a series of seven workshop experiments for the participants to rotate through such as Cavendish experiment, e/m for electrons, Faraday rotation, and, Franck-Hertz experiment. Also, participants were able to tour Dr. Jacob’s Metamaterials lab.

4. Mon October 5, 2015, at Physics Department, University of Alberta. Approximately 18

in attendance. After a pizza, we joined Royal Astronomical Society’s public meeting to

hear Dr. Alan Stern, Principal Investigator of the New Horizons Mission to Pluto, present

on:

New Horizons: The Exploration of the Pluto System

Dr. Stern described the history of this mission, the science behind it, the capabilities of payload, our encounter with planet Pluto, and the major scientific discoveries made to date.

5. Physics Teachers Day: Friday Dec 11 2015 at Physics Department, University of Alberta Approximately 80 in attendance.

Program: We started the day with a annual general meeting and followed it with four speakers, a breakout session and lunch.

Dr. Joel St. Aubin, University of Alberta Radiation Oncology (Design and operation of

the first linac-MR system) talked about the linac-MR hybrid built at the Cross Cancer Institute overcoming the mutual interferences that merging of an MRI with an Linac presented. This unit takes continuous MRI images of the subject to guide, in real-time, the linac radiation beam to the tumour avoiding healthy tissues providing incredible potential for treatment.

Three breakouts were presented, The first was a tour

of Cross-Cancer Institute Department of Medical Physics, including the therapy units and the linac-MR unit, hosted by Dr. Terence Riauka. The second workshop was conducted by robotics educator Jeff Warner who provided a hands experience for novice users on controlling robots. A third roundtable workshop was for college instructors on changes in curricula.

Our final speaker of the day was Dr. Roger Moore, University of Alberta (Beyond the Standard Model) The first run of the Large Hadron Collider (LHC) lead to the discovery of the Higgs boson, the last missing piece of the Standard Model. After a two year shutdown for upgrades and repairs the LHC is now running again at almost twice the energy with the goal of looking for new physics beyond the Standard Model such as Supersymmetry. This talk will present the latest results from the ATLAS experiment as well as how we might see Supersymmetry and why we have hoped that it could be within reach of the LHC.

—Terry Singleton, *Section Representative*

British Columbia Section



Figure 1: Inside the Trottier Observatory BCAPT held its Annual General Meeting on Saturday, May 2, 2015 at SFU Burnaby. It was a very successful event that included Keynote Speaker Professor John Bechhoefer who shared ‘What is Super-resolution Microscopy?’ Our day continued with a panel discussion of secondary teachers and post secondary instructors on the objectives and challenges of the transition from high school to post secondary for students. We also had Professor Barbara Frisken sharing information on restructuring the First Year Physics Lab at SFU. We ended our day with a fantastic tour of the Trottier Observatory and Science

Courtyard. We are grateful to SFU Department of Physics for sponsoring us. We also voted to elect new Executive Committee members and changed the constitution to create a BCAPT Advisory Board.



Figure 2: Participating in hands-on teaching activities. BC Association of Physics Teachers and Telus World of Science hosted a very successful physics Pro-D event on Friday, February 19, 2016. The event was very well attended even though it was NOT a provincial Pro-D day! We were very impressed with many teachers who had to do special arrangement with their schools to attend the event (we are grateful for their participation).

The meeting began with a panel discussion on the new BC curriculum, which was found to be very helpful. Special thanks to Dr. Leigh Palmer, Dr. Howard Trottier and Mr. Philip Freeman for their valuable insights! After the panel discussion there were many engaging presentations. Science World’s presentation on “Today’s Students, Tomorrow’s Scientists” was very relevant. Our own past BCAPT presidents and active BCAPT Executive Board members, Edel Vo and Philip Freeman, did an excellent presentation on an electrical project for grades 9 and 12. Friderike Moon from Science World spoke about the Scientists and Innovators in the Schools Program. Joe Muise conducted a fascinating session about teaching with White Boards, Philip Freeman presented an activity on Particle Physics, which is especially relevant to BC new curriculum, and Louay El Halabi presented a session about using Algoodoo. In addition, the “unconference discussion” on “Project-based learning” and “Design your Experiment”, which concluded the meeting, also went extremely well. Most of the participants also spent a little time wandering through

the exhibits at Science World, which we were encouraged to do. Science World's staff and especially Samsara Marriott were extremely supportive and helpful through the day. It was a very good venue! The collaboration with Telus World of Science once again proved to be a success. We hope this collaboration will continue into the future.

—Sarah Johnson, Section Representative

Central Pennsylvania Section

The 63rd Annual Conference of the American Association of Physics Teachers, Central Pennsylvania Section (CPS) was held Friday March 27, and Saturday March 28, 2015 at Messiah College, in Mechanicsburg, Pennsylvania. The conference was organized by the Vice President Dr. Abaz Kryemadhi.

On Friday Dave McCachren of Mifflin County High School in Lewistown, PA (retired) and Pat Callahan of Delaware Valley Regional High School in Frenchtown, NJ PA (retired) led an all day workshop entitled "TIPERs: Sensemaking Tasks for Introductory Physics". The workshop was part of the Physics Teachers Resource Agents (PTRA) program.

Dr. Ted Davis, Distinguished Professor of the History of Science at Messiah College, gave the Plenary entitled "The Story of Isaac Newton".

Plenary sessions were held on Saturday. There were 16 presentations, and the talks were well attended. The General Business meeting was conducted before the lunch break. After the afternoon sessions there was a presentation of award certificates to student presenters followed by the closing of the meeting.

2015 CPS Executive Board Meeting and Fall PTRA Workshop

On Friday October 30, 2015 CPS hosted another day long PTRA workshop entitled "Hollywood Physics & Measurement APPS" at the University of Scranton. Once again, the workshop was led by Dave McCachren and Pat Callahan.

The following day the CPS executive board met on campus, in part to finalize plans for the 64th Annual Conference, which will be held Friday and Saturday, April 8 and 9, 2016 at Moravian College in Bethlehem, Pennsylvania. The associated day-long PTRA workshop "NASA resources and Rocket Science 101" will be led by Dave McCachren and Pat Callahan on Friday. The plenary speaker, former

astronaut Terry Hart, will speak on "Topic: 100 Years from the Wright Brothers to Space Travel".

-Michael R. Gallis, Section Representative

—Michael R. Gallis, Section Representative

Chesapeake Section

Major challenge faced by the section:

The Chesapeake Section spans three states – Virginia, Maryland, and Delaware. To date, we have not had much, if at all, participation from anyone in the state of Delaware. We need to find ways to connect with these individuals. Also, we have limited attendance from high school teachers and professors at major R-1 institutions. The majority of us are from smaller colleges and community colleges. On the positive side, we continue to see our attendance at meetings range from 30 – 40, of which approximately one third are new attendees. These new participants join us due to the meeting being somewhat "local" for them. It is highly unlikely that they would travel elsewhere. However, we remain hopeful that they would attend again when the meeting returns to their area.

Recommendation on how AAPT can help the section meet this challenge:

We have been receiving email updates on new members. Thanks! Please keep that up. We have added them to our list-serv and will continue to correspond with them about upcoming meeting dates and locations. It would be good to have the contact information (Section Rep and President) for adjacent sections. One idea that was discussed at SM2015 was the possibility of holding a regional section meeting in place of a local section meeting. Additionally, it would be good to let our members know of other sections meetings happening in the event that these meetings are closer for them as compared to our upcoming Chesapeake Section Meeting.

—Deonna Faye Woolard, Section Representative

Iowa Section

The Iowa Section of AAPT held its annual meeting at Central Academy in Des Moines, IA on November 7, 2015. After being welcomed from President Nate Quarderer, local host Sara Karbeling, and the Director of Central Academy Jessica Gogerty, we had a report from Section Representative John Zwart

and announcements of several opportunities for members. We then moved into the morning session of contributed talks.

Tuafiki Lee of WebAssign gave a commercial talk describing “WebAssign’s Custom Lab Solutions in the Undergraduate Physics Laboratory.” He was followed by Ben Rislow of Ellsworth Community College with “Physics and STEM Updates from ECC” where he outlined his successful efforts to grow STEM interest and programs at his institution. Retired Dowling Catholic HS physics teacher next performed a “Centripetal Force Demo” and entertained us with a description of a time where he used an egg in a glass of wine for the demo and it went wrong.

In “Introducing Computer Programming into a Projectile Motion Lab,” Susa Stonedahl of St. Ambrose University explained how they use MATLAB programming code to produce projectile motion plots and have students change values in the code to both learn coding basics and develop projectile motion understanding. Nathan Quarderer of Northwest Iowa Community College described turning traditional 1-D motion textbook problems (such as asking when and where two trains traveling towards each other with specified speeds and starting separation collide) into a hands-on activity using constant velocity cars. He further models the problems using Glowscript (see www.glowscript.org). The morning session was completed by Dordt College students Kolter Bradshaw and Zach Van Engen reporting on their summer research project in “Viscous Fluid Motion in a horizontally Rotating Cylinder” where we learned that having varying amounts of viscous fluids in a hollow cylinder can have a significant impact on the way it rolls down an incline.

After lunch and the awarding of door prizes, we enjoyed a session of “What is it?” (aka “Can you Stump Dale Stille?”) featuring arcane pieces of equipment from our collective store rooms. Contributed presentations continued where John Zwart of Dordt College showed how the placement of the reference length and camera orientation when shooting video clips can lead to errors of up to 40% in “Systematic Errors in Intro Lab Video Analysis.” Steve Hart of Mercy Colleges of Health Sciences presented “Flexing Our Physics Muscles: Teaching students about models in physics” which looked at models of a bicep curl with varying levels

of sophistication (stick model, then adding finite arm thickness, then using a physical PASCO arm model) and helping students learn how one decides what level of model is needed.

Our final presentation was an invited talk by Kristen Thompson of Loras College. Her talk, “Encouraging Young Women in the Physical Sciences” presented statistics highlighting that women continue to be underrepresented in the physical sciences and reasons for that, including cultural stereotypes, lack of support, women feeling less capable, and their preference to pursue an altruistic career. We discussed ways of addressing these concerns with our students.

In our business meeting, we approved the minutes of our last meeting, directed the section rep to look into the possibility of a joint meeting with the Minnesota or Wisconsin sections and discussed locations for our next meeting. The executive committee will pursue options. Officers were elected: Dale Stille and Craig Kletzing will continue as secretaries, John Zwart will continue as section rep, (secretaries and section rep by acclamation), Ian Spangenberg was elected President-Elect and Ben Rislow was elected Vice President – 2 Year Colleges. Our finances are strong. We authorized Kristen Thompson to spend \$200 on supplies for a continuation of her Arduino workshop next year. We ended the business meeting with a discussion of reasons for state section members to also join national AAPT.

Following a break and more door prizes we ended with “Using Arduino,” a workshop led by Kristen Thompson on the basics of using these devices.

—John Zwart, *Section Representative*

Long Island

As the end of the year approaches, a review of our Fall activities is in order. The monthly board meetings began for the year in September, where we made final preparations for Physics Day at Adventureland, managed by Rich Yngstrom, retired teacher from Patchogue-Medford High School. Six hundred students from all over Long Island converged on Adventureland amusement park in Farmingdale, NY on October 21 to experience the thrill of Physics as they rode roller coasters, swinging boats, and the ferris wheel. Attendance was up 20 percent from last year!

Plans were also completed for our Fall Conference which took place at Mephram High School, courtesy of Bill Leacock, our First Vice President, on October 24 from 8:30 to noon. He also provided us with the guidance and materials for constructing a small Tesla coil. Thirty five teachers participated in the soldering, wrapping and gluing necessary to create this clever device.



After a hearty breakfast, our audience was ready for the featured speaker Noah Segal from Trinity High School in Manhattan who spoke about “Special Relativity for Your Classroom.” The participants expressed their appreciation for the different perspective that Noah presented about the subject.

On October 17, Teslamania, a demonstration smorgasboard took place at SUNY Stony Brook from nine to three o’clock. Member Rich Gears, NY State Master Physics Teacher of Sachem High School organized local Physics teachers in sharing their own classroom delights in all Physics subject areas, assisted by Dr. Gillian Winters. Our newsletter published by editor Terese Keogh helped promote Teslamania and the other activities via the Fall edition. Board member Bill Lynch assisted by Harry Stuckey also keep our members informed via our attractive website at lipta.org.

At our December executive board meeting, we explored some interesting new paths for our organization while enjoying a holiday breakfast. Dr. Gillian Winters of Smithtown High Schools, our Second Vice President and NY State Master Physics Teacher, has offered to explore a field trip opportunity for our members for the first time. A trip to the Albany Nanocenter or a shorter trip to Consolidated Aircraft Supply Company are some options under consideration. We discussed trying to expand our largely high school membership to college level educators. We also finished our plans for our

springtime conference and Physics Olympics, stuffing and stamping the booklets created by our Physics Olympics Committee. Rich Slesinski, of Syosset High school and NY State Physics Master Teacher, has joined the board and is taking on the job of Section Representative beginning at the Winter Meeting in New Orleans. *Laissez les bon temps rouler, Rich!*

—Richard E. Slesinski Jr., Section Representative

Michigan Section

The fall meeting of MIAAPT took place October 3, 2015, and was hosted by Interlochen Arts Academy (IAA) in Interlochen, Michigan. Approximately 30 attendees from the high school, two-year college, and four-year college communities were present as well as many undergraduate students. 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 Dr. Mary Ellen Newport, director of the R. B. Annis Math and Science Division at IAA, and Taoufik Nadji, physics instructor at IAA. As attendees helped themselves to early morning refreshments and settled into their seats, we were treated to an outstanding performance by a talented trio of jazz musicians. IAA’s tradition of including artistic and musical offerings as part of their warm hospitality set a wonderful tone to kick off the meeting.

Contributed presentations. Conferees enjoyed numerous contributed presentations during the morning session. These included presentations by undergraduate student Lauren DeVries (Saginaw Valley State University) and Joshua Veazey (Grand Valley State University) on, respectively, investigations of student reasoning patterns in chemistry and strategies to dialogue with learners via instructor feedback on graded coursework. Steve Dickie (Divine Child High School) showed applications of using inexpensive 3D printers for classroom activities. Michael Faleski (Delta College) presented in-depth examples for objects rolling with and without friction, showing how deceptively difficult such situations can be. Other insightful presentations were given by Steve Rea (Plymouth High School, retired), Michael LoPresto (Henry Ford

Community College), and Alan Grafe (U. Michigan-Flint).

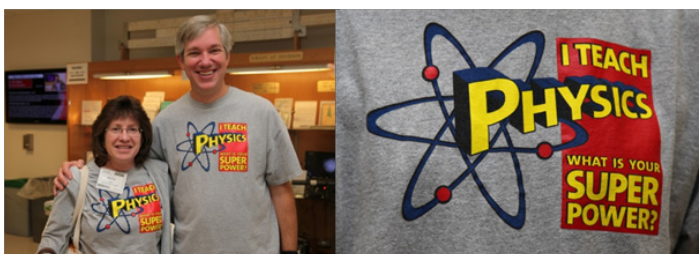
Workshops. The Fall 2015 meeting included four (4) well-attended workshops on varied topics. Two workshop presenters, Taoufik Nadji and Michael LoPresto, shared ways in which students at their respective institutions are engaged in the process of blending physics, art, and music. In another workshop, Alexander Robinson (Thornapple Kellogg High School) highlighted how their experiments in reordering the usual sequence of Newtonian mechanics topics can more effectively attend to student' pre-instruction intuitions about force, energy, and momentum. Finally, Jim Gell (Plymouth High School) and Steve Dickie co-led one of our ever-popular make-and-take sessions.

Featured speaker. The centerpiece of the meeting was the keynote address, which happened to be delivered by a distinguished alumna of IAA. Welcomed by MIAAPT attendees and members of the IAA community, Dr. Holly Gilbert, Deputy Director of the Solar Physics Lab at NASA Goddard Space Flight Center, delivered a fascinating talk on the solar atmosphere, phenomena associated with coronal mass ejections, and the resulting space weather that reaches Earth. Dr. Gilbert gave an overview of prior research efforts in solar physics and provided glimpses into current and future missions, including those by both Earth- and space-based observation platforms.

Next meeting. We look forward to our next section meeting, which will be hosted the Cranbrook Institute of Science in Bloomfield Hills, MI. The meeting will be scheduled for sometime in April.

—Bradley S. Ambrose , *Section Representative*

North Carolina Section



The 20th Annual Spring Meeting of the North

Carolina Section of the American Association of Physics Teachers was held March 27-28, 2015 at Wake Forest University in Winston-Salem, NC. Our local hosts were Dr. Jack Dostal and the Department of Physics.



The Friday night banquet speaker was Dr. Louis J. Rubbo of Coastal Carolina University. His talk was titled, “Adventures in Toyland: Using LEGO Robotics to Inspire the Next Generation of STEM Professionals.” On Saturday morning, Dr. Robert M. Panoff, Founder and Executive Director of the Shodor Education Foundation, gave an invited talk titled, “Computational Thinking in Physics” which described the impact of computational physics that goes beyond coding and programming. Dr. David Carroll of Wake Forest University discussed “Power Fabrics: Thinking about power differently,” which described a fabric that can scavenges thermal waste and kinetic waste to behave as an electric generator. In addition to these two invited talks, there were six contributed talks, a poster session with 5 student posters, and also one afternoon workshop.

Helen Meskhidze of Elon University received the Best Undergraduate Paper Award for the poster “An Atlas of Starburst Galaxy Emission Lines.” Colleen Lanz Countryman of NCSU received the Best Graduate Student Paper for her talk, “The Educational Impact of Smartphone Implementation in Introductory labs.” Tony Crider of Elon University received the Best Pedagogical Paper for the presentation “Experiential Education Activities for Teaching SETI.”

The North Carolina Section Business Meeting was held Saturday afternoon. David Sitar of Appalachian State University was elected Vice President (4-year presidential chain). Tony Crider of Elon University was elected Four-Year College/University Representative. Denise Wetli of Wake Technical Community College was re-elected Secretary-Treasurer. Mario Belloni of Davidson College was re-elected Section Representative.

The 20th Annual Fall Meeting of the North Carolina Section of the American Association of Physics Teachers was held on October 16-17 at Davidson College, in Davidson, NC. Our local hosts were Mario Belloni, Larry Cain, and Wolfgang Christian. The meeting was also held jointly with the Zone 5 Society of Physics Students Meeting.



On Friday evening there were two talks by Peer Instruction's author Eric Mazur. The first talk, "Confessions of a Converted Lecturer," was about how Eric's teaching evolved away from lecturing and the second talk, "Flat Space, Deep Learning," was about Mazur's new engineering physics class. In between the talks will be refreshments and an opportunity to meet Eric.

On Saturday there were two invited talks. Dr. Mazur discussed the pedagogy in his new introductory physics textbook in a talk entitled, "Teaching Physics, Conservation Laws First." Dr. Abigail Mechtenberg (Notre Dame) talked about her pedagogical approaches to teaching and outreach in a talk titled, "Physics Education: Experimental Design Pedagogy from the US to Uganda."

In addition to these two invited talks, there nine contributed talks presented. The hour-long poster session with both Society of Physics Students and AAPT members alike talking with student researchers about their recent work and snacking on some refreshments. There were 10 students who presented their research to over 80 meeting participants.



The North Carolina Section Business Meeting was

held Saturday afternoon. During the Business Meeting the Great T-Shirt Giveaway of over 80 T-shirts from John Hubisz's collection were either given away or auctioned. As door prizes were drawn, winners received a bonus prize of a T-shirt from John's collection. Two special T-shirts were auctioned off to the highest bidders: "Heisenberg Uncertainty Principle with the equation backwards" to Wolfgang Christian for \$200.00 and "University of Mars by 2026" to Narasimhan Sujatha for \$50.00.

John's Great T-shirt Giveaway raised almost \$500 for the NCS-AAPT Mary Creason fund. This fund is dedicated in honor of a beloved NCS-AAPT officer and member of Duke's department of Physics and is used to discount the cost of meetings for high school teachers and all students. The Great T-shirt event was the highlight of the recent Fall NCS-AAPT meeting at Davidson College.



Bjorn Ordoubadian of Davidson College received the Best Undergraduate Paper Award for the poster "Determining Magnetic Field Strengths in Molecular Clouds." Natalie Kamitsuka, Jack Hendrick, Nathan Hodges, Chris James, Mike Kuczuda of UNC Asheville also received the Best Undergraduate Paper Award for the poster "Student and Facilitator Learning Gains in Peer Facilitated Study Groups." Colleen Countryman of North Carolina State University received the Best Pedagogical Paper for the presentation "Making Real World Connections in Mechanics Labs Using Smartphones."

Our Spring 2016 Meeting is scheduled for Elon University in Elon, NC.

—Mario Belloni, Section Representative

Ontario Section Section

1. OAPT Annual Conference and other activities

OAPT's Thirty Seventh Annual conference titled "Bridging the Gap: Strengthening Ties between K-12 and Postsecondary Educators" took place May 7-19, 2015. It was hosted by the Department of Physics, University of Guelph. Once again the program featured an array of captivating hands-on workshops. The examples of topics the participants discussed include (but are not limited to) 21st century skills for success beyond high school, inquiry-based 7-10 science classroom, a 21st century approach to knowledge building in Modern Physics and teaching physics with mobile technology. The detailed program and the highlights of the conference can be found at <http://www.oapt.ca/conference/2015/program.html>.

2. OAPT Website and Newsletter

Ontario Section maintains a very vibrant website at <http://www.oapt.ca>. Various teaching resources assembled by OAPT are posted at <http://www.oapt.ca/resources/index.html>. For example, past OAPT Contest questions collected by topic and ready to use in the classrooms can be found at <http://www.oapt.ca/resources/contestQB.html>, while the page about Concept Questions for Peer Instructions can be found at <http://www.oapt.ca/resources/conceptquestions.html>. Many presentations from past are posted as well. Also, all of the Demonstration Corner contributions collected over 27 years are available online.

Members of OAPT participated in a number of science education-related events that took place in the Greater Toronto Area during 2015. The complete list of recent and upcoming events that OAPT members are involved can be found at <http://www.oapt.ca/events/index.html>.

Our Newsletter in a new format can be found at <http://newsletter.oapt.ca/>. Copies of older issues are posted at <http://www.oapt.ca/newsletter/index.html>. The OAPT web site now features OAPT Newsletters dating back to 1979.

3. Awards and Recognitions.

3.1. Congratulations to our long-term member and current Vice-President (Conference) James Ball who collected two prestigious awards in 2015! James Ball is a winner of the 2015 Canadian Association of Physicists (CAP) Award for Excellence in Teaching High School/CEGEP Physics (Ontario). He was awarded for his "mastery at recognizing how

individual students learn best," his "extraordinary personal engagement of students in class" and "his contributions in physics education beyond the classroom."

To be eligible for the prize, a teacher must teach children between the ages of five and 18. According to a bio posted on the award's website, Wagner "aims to engage students within a fun, cooperative learning environment, providing lessons that advance students' thinking and promote positive social interactions with their peers." Wagner has also received a number of awards for his teaching, and has developed various workshops and presentations for his peers.

3.3. Congratulations to our Vice President (Physics Education) Chris Myers for 2015 Teaching Excellence Award (Toronto District School Board).



One former student writes "In the classroom, he was always an understanding and patient teacher, working with students one-on-one to make sure they were meeting their goals." He is known for his innovative use of in-class YouTube videos to show real-world physics and his effective use of demonstrations, particularly those involving the entire class acting out phenomena such as collisions of elementary particles. He has delivered workshops for teachers at the EinsteinPlus program at the Perimeter Institute of Theoretical Physics, at OAPT and STAO conferences, and at the Perimeter Teachers' Network. He has been a leader in the OAPT having served as President, newsletter editor, conference organizer, membership secretary and has written a number of articles for the OAPT Newsletter. He recently initiated and developed the Guelph-Waterloo Physics Teachers Alliance (GWPT), an annual gathering of local physics teachers for the purpose of sharing ideas about best teaching practices. In addition, his work with students as a swim coach and his in-school leadership involvement with major charities illustrate to students, through

his examples, what it means to make a difference in the lives of others. For a complete press release please see http://www.cap.ca/medal/publicity/press.php?year=2015&medal_id=11

James Ball is also a winner of the Irwin Talesnick Award for Excellence in the Teaching of Science by the Science Teachers' Association of Ontario (STAO). Among the many requirements of the recipient of the STAO award are unique and extraordinary accomplishments in teaching science to students in the province. Ball's colleagues and students attest to his dedication and passion both in and out of the classroom.

Former students recall Ball's lessons as fuelled by passion and creativity. They also praised Ball's ability to take complicated subject matter and present it to each student in a unique and effective way.

"Knowing how to teach well is a gift. Some people have a natural passion and dedication that just pushes them to go above and beyond what they are required to do – there aren't any words to truly describe it – but that was Mr. Ball," said former student Anita A. who is now studying biochemistry at the University of Guelph.

"In his classroom he transforms physics into an enthralling, enjoyable expedition through time," said Martha Rogers, Director of Education at the Upper Grand District School Board. "He is constantly experimenting to discover a more creative, engaging, and effective means of transferring knowledge." "[He] is a fabulous teacher who has not only endeavored to grow his own teaching expertise but has also become a pedagogical leader helping to shape physics education in Ontario and beyond," said Greg Dick, Director of Educational Outreach at the Perimeter Institute. A complete press release can be found at <http://www.oapt.ca/front%20page/stubpages/james.ball.talesnick.html>.



3.2. Glenn Wagner of Centre Wellington District High School (Fergus, Ontario), another distinguished member of OAPT, is a finalist for the Global Teacher Prize. He is one of 50 people in the running for the award that delivers a \$1 million prize to one teacher each year.

To be eligible for the prize, a teacher must teach children between the ages of five and 18. According to a bio posted on the award's website, Wagner "aims to engage students within a fun, cooperative learning environment, providing lessons that advance students' thinking and promote positive social interactions with their peers." Wagner has also received a number of awards for his teaching, and has developed various workshops and presentations for his peers.

3.3. Congratulations to our Vice President (Physics Education) Chris Myers for 2015 Teaching Excellence Award (Toronto District School Board).

4. Future Events: 2016 OAPT Conference

Our next (38th!) annual conference titled "Capturing Diverse Perspectives in STEM" will take place on May 12-14, 2016 and will be hosted by Wilfrid Laurier University in Waterloo, 12- 14 May, 2016.

We are looking forward to refine and further expand our activities by building upon our successes and strengths in 2016 and beyond.

Ontario Section 2015 report is submitted by the Ontario Section Representative Tetyana Antimirova on December 30, 2015.

—Tetyana Antimirova, *Section Representative*

Oregon Section

The Oregon Section held our 2015 Spring Meeting on Saturday, March 7, along with an evening show on March 6 at the University of Oregon. The demo show "The Physics of Rock 'n' Roll, Celebrating the International Year of Light 2015!" was lead by Stan Micklavzina and was a fun way to start off the meeting events.

Roger Smith opened the Saturday meeting by giving a brief overview of the educational outreach efforts organized by graduate students in the Department of Physics at the University of Oregon in an effort to raise awareness and excitement in the general

public in Eugene and Springfield. Following the brief presentation, graduate students presented various demonstrations regarding optics designed for students in grades K-12.

The year-long introductory calculus-based physics course at the University of Oregon has recently been altered to implement new interactive learning activities and instructional models. Ben McMorran described the changes that have occurred in the past two years. They have begun using tools designed to get students to learn the subject outside of class, so that in-class time can be used to discuss, demonstrate, practice, and expand upon the concepts the students learned from the textbook and online videos.

Ross Hatton, from Oregon State University, described how animals and robots locomote by changing their interactions with the environment at different portions in their gait cycles, so that the “return motion” does not undo the effects of the “power stroke” and how differential geometry – calculus defined over curved spaces – provides a useful language for describing such changes in constraints.

Bruce Emerson, from Central Oregon Community College, shared what he learned from building 3D printers from scratch in a physics lab.

MRI is not only an important medical imaging tool (and really cool), it requires only a few simple physics concepts to understand. Jolinda Smith, from the University of Oregon, explained how nuclear spin dynamics have revolutionized cognitive psychology and neuroscience.

Our spring meeting concluded with a workshop by David Sokoloff on active learning in optics. The workshop provide direct experience with methods for promoting active involvement of students in the learning process by using Interactive Lecture Demonstrations and RealTime Physics materials.

The Oregon Section 2015 Fall meeting was generously hosted by David and Christine Vernier on October 24th. Those in attendance were treated to a tour of the high tech Vernier building and a preview of upcoming probes and gadgets.

John Bell, from Corban University, started the meeting

with a presentation on pendulum motion analysis using accelerometers and strain gauges. This was followed by KC Walsh sharing his experiences in flipping the large enrollment algebra-based physics sequence at Oregon State University. Content delivery was provided outside of class and during lecture students practiced physics. He also gave an overview of a new project that tracks student’s engagement with out-of-class material. The goals of which is to explore if data can help determine the best content and the best path to mastery through that content.

Dennis Gilbert, from Lane Community College, talked about his sabbatical experience and his hopes for creating faculty Scholarship of Teaching & Learning in the Community College, as well as how to operate a cell phone during a presentation. This was followed with Greg Mulder sharing his experiences creating STEM research and design cohorts at Linn-Benton community College.

The meeting concluded with an open discussion of The Great American Eclipse of 2017, which Oregon is in prime position to enjoy.

—Patrick S. Keefe, *Section Representative*

SACS Section

SACS-AAPT had our last meeting on April 10-11 at the campus of Georgia State University downtown Atlanta GA. The meeting was well attended and many local students participated in the meeting. The meeting started on Friday night with a keynote address titled “What can we learn from HyperPhysics” by Dr. C. Rod Nave. The meeting continued on Saturday morning with interesting presentations from many speakers. Some of the topics were about how to teach some physics topics in a more attractive way. Others focused on helping students develop critical thinking and group dynamic to foster better student gain. We even had topic on how anthropology can guide the PER. Presentation came from high school teachers as well as college and university professors. The afternoon had a poster session and the section business meeting where new officers were elected. The meeting ended with participants attending various workshops.

Southern California Section

On Saturday, October 24, 2015, seventy members of the Southern California Section of AAPT gathered at California State University at Long Beach (CSULB) for an exciting day filled with new physics and helpful advice for the classroom. The first portion of the meeting was conducted as a joint session between SCAAPT and CSULB PhysTEC's annual open house. This included "Brunch with a Physicist", where students and professors mingled and exchanged ideas.

The meeting was called to order by SCAAPT President James Lincoln, Galen Pickett of CSULB, Chuhee Kwon of CSULB, and Laura Henriques of CSULB.

The meeting included many fascinating invited presentations:

Claudia Ojeda-Aristizabal (CSULB) gave an overview of graphene and buckyballs. She discussed potential applications in electronics for graphene and buckyballs and why Physicists are so excited about these materials.

Peter Pesic (St. Johns College, NM) presented a thorough tour of the history behind the question- why is the sky blue? He began with the inquiries that scholars made into the nature of light and progressed through many studies on color, polarization and scattering. Among twists and turns of the solution pathway, he shared many ideas for demonstrations and presentations.

Bill Owen (NASA) described the history of Pluto exploration and the New Horizons mission. He gave a first-hand account of working on the New Horizons mission and watching the images come in from the spacecraft. Currently, the New Horizons mission is considering exploring additional Kuiper Belt Objects with the remaining fuel.

Several other SCAAPT members also gave engaging contributed presentations:

- Enson Chang, Azusa Pacific University- Quantum Eraser Demo with TeachSpin Double-Slit

Apparatus

- Melissa Taylor, Huntington Beach High School- AP Physics vs. IB Physics
- Laura Henriques, CSULB- Update on NGSS in California
- Amy Shira Teitel, Vintage Space- The Story of Spaceflight before NASA & Other Vintage Space Travel
- James Lincoln, President SCAAPT- Top 10 Rocks & Minerals for Teaching Physics
- Joseph Calmer, Lawndale High School- Physics and the NGSS: (more or less) How and Why?
- Annie Maben, LA County Science & Engineering Fair/UCLA Science Project- Addressing NGSS through Science Fairs

The ever-popular Show 'n' Tell featured demonstrations by Steve Paik (Sample range as a substitute for sample standard deviation) and David Haley & James Lincoln (Physics Libraries of Southern California)

The meeting ended with our traditional "World Famous Order of Magnitude Question" discussion, led by Bill Layton, and the raffle of donated door prizes.

SCAAPT thanks its corporate sponsors –Arbor Scientific, Educational Innovations and PASCO– for their support and donation of door prizes. SCAAPT also thanks the CSULB Physics Department and CSULB chapter of PhysTEC for hosting the meeting and providing the high school teachers who attended free parking and brunch. Finally, thanks to Bradley "Peanut" McCoy, for serving as Program Chair of the meeting.

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

New Physics Teacher Workshops

The New Physics Teacher Workshops (NPTW) program continues to grow. This year we have 6 workshops planned- three in Los Angeles and three in San Diego. Each workshop serves approximately 30 attendees. The funding from the Brown Foundation has nearly doubled this year to accommodate our San Diego expansion. The total budget for the school year is about \$20,000. Because of this funding, and the

efforts of the expert teachers, each participant receives free lunch, free lab equipment, and lots of practical advice.

SCAAPT Merchandise

SCAAPT has recently opened an online store to sell clothing, mugs, tote bags and more with the SCAAPT logo. No inventory is stored as all items are printed on-demand via CafePress, so the section doesn't have to make an initial investment. SCAAPT receives a portion of each sale and uses those funds to support its meetings, workshops and outreach efforts. The store can be found via <http://scaapt.org/store>

—Jeff Phillips, *Section Representative*

Southern Ohio Section

The Southern Ohio Section of AAPT met on Saturday, October 10, 2015 at Mason High School. DeeDee Messer was host, John Rowe coordinated the events of the day, and we had between 20 and 25 participants. The day started with a featured presentation from Kathy Koenig (University of Cincinnati) on the Interactive Video Vignettes project, including time for attendees to start creating some of their own. Following that, Kathy Harper (The Ohio State University) gave a presentation highlighting the differences research has found between expert and novice problem solvers, along with some instructional implications.

We enjoyed the following contributed papers and “How I Do It” sessions: Windchime Physics (Lenore Horner, The Seven Hills School); Weigh in on Deflategate (Terry Toepker, Xavier University), Frozen Water Droplets (Mark Brooks-Hedstrom, Oakwood High School) Car Theft, Cell Phones, and Faraday's Cage (Shan Huang, Sinclair Community College) and Units, Unit Conversion, and Scales (Lori Cartwright, Sinclair Community College). Frank Huss shared information from the Cincinnati Observatory about their many upcoming events.

The next meeting of the section will be Saturday, April 9, 2016 at the University of Dayton, in conjunction with the Ohio Section of the American Physical Society. Lenore Horner will be coordinating the AAPT activities for the day, and Perry Yaney will be the host for the joint meeting.

Finally, it is with great sadness that we report the death of Jim Sullivan, former professor at the University of Cincinnati. Jim was the one who started the process to form the Southern Ohio Section of AAPT and worked tirelessly to support its efforts and preserve its history. His cheerful presence will be very much missed. A longer obituary is available on the national AAPT website.

—Kathy Harper, *Section Representative*

Western PA Section

On Saturday, March 15, 2015 approximately 40 educators and students from the area came together at Grove City College for our Spring Meeting. The day began with a light breakfast and a poster session for undergraduate research. We were delighted to have Sean Bently, Director of the Society of Physics Students, present our keynote address. The day was then filled with contributed talks from a variety of members on topics ranging from physics pedagogy to fluorescence spectroscopy research. After a brief business meeting, the day concluded with two very well received workshops.

Our Fall Meeting was held on Saturday, October 17, 2015 at the University of Pittsburgh, Johnstown campus. This was a rather small meeting with only 26 attendees, which may be attributed to the fact that it was held on the same day as our SPS Zone meeting and also over many campus's fall break weekends. Still, a total of eight talks were contributed for the Fall meeting, and all attendees reported a beneficial experience.

In the future, hosts will be strongly encouraged to consider and effectively work around conflicting academic and AAPT/SPS events so that no WPA-AAPT member is asked to choose between organizations. The membership also discussed starting a WPA-AAPT Facebook Page, in addition to our WordPress site, that could be used to share notifications with interested people.

The upcoming Spring 2016 Meeting was also scheduled, and will be held on April 2nd at the Indiana University of Pennsylvania campus.

—Dyan Jones, *Section Representative*

Wisconsin Section

The Fall 2015 meeting of the Wisconsin Association of Physics Teachers was held on October 30-31, 2015 at UW-La Crosse, La Crosse, Wisconsin.

The banquet speaker was Andy Rundquist from Hamline University
His talk was titled: “Physics Education Engineering.”

Papers presented:

CUR REU at UW-Lacrosse
Seth King, UW- La Crosse

REUs and Summer Research Opportunities at UW-River Falls
Surujhdeo Seunarine, UW-River Falls

Women in Physics
Matt Evans, UW-Eau Claire

Where do the Math equations come from?
Gary Baier, Green Bay East High School

Recent Results from the IceCube Neutrino Laboratory
Jim Madsen, UW-River Falls

Some surprising facts about spherical aberration for thin lenses
Jim Mallmann, Milwaukee School of Engineering

“But what good is it?” The 3-D printer in the physics and astronomy classroom
Carey Woodward, UW-Fond du Lac

Visualizing the Maxwell Equations in an Electromagnetic Wave
Roberto Salgado UW-La Crosse

The incredible Story of Physicist Fritz Houtermans
Alan Scott, UW-Stout

Technology to Support Learning Cycles in the 5th Grade (and beyond)
Andrew Ferstl, Winona State University

Recruiting and Retaining Future Physics Teachers at UW- La Crosse

Jennifer Docktor, UW-La Crosse

Deep Learning in Introductory Physics: Exploratory Studies of Model-Based Reasoning
Chris Christopherson, Carol Paschke, and Mark Lathery, UW-Oshkosh

Posters

Teaching for Deep Learning: Facilitating Classroom Discourse in a Model-Centered Physics Classroom
Chris Christopherson, Carol Paschke, and Mark Lathery, UW-Oshkosh

Comparing Alternate Approaches to Spacetime Diagrams; The Loedel Diagram
Tobias A. Nelson, UW-La Crosse

Upgrade and Optimization of Muon Taggers for Calibrating IceTop
Joseph Wagner, UW-River Falls
Observation of the Cosmic-Ray Shadows of the Sun and the Moon with IceCube
Laura Lusardi, UW-River Falls

Using Eye Tracking Technology to Study Motion Graphs
Jennifer Docktor, UW-La Crosse

Observing Nebulosities: The Cygnus Superbubble
Chris Christopherson, UW-Oshkosh

Workshops:

Modeling Method of Physics Instruction: An Introduction
Mark Lathery, Chris Christopherson, and Carol Paschke, UW-Oshkosh

Excel Physics!
David Tamres, UW-Stevens Point

Lego Mindstorms as a Bridge to STEM in the Classroom
Josh Hertel, UW-La Crosse

Two-year Institution Roundtable Discussion
Mike LeDocq, Western Technical College

Enhancing Student Learning through Formative Assessment
Jennifer Docktor, UW-La Crosse

Build a Windfarm! (or How to teach renewable energy on the cheap!)
Seth King, UW- La Crosse

—A. James Mallmann, Section Representative

AOK Section

1. We are proud to announce Clint McGaha as the Oklahoma Physics Teacher of the Year. This year's award includes a plaque, a \$50 award, and registration to the 2016 meeting.



2. Winter Meeting – Jan. 9-12, 2016 New Orleans, LA

Several members from the AOK section will be in attendance.

3. NSTA Physics Day: Kansas City, MO, December 3-5, 2015

Steve Maier from Northwestern Oklahoma State University is coordinating the activities, since the AOK section will run the physics day at the NSTA meeting. Steve will notify the sections of any additional assistance that is needed.

4. We would like a web presence to make it easier to find out what is happening in the AOK section. Shannon Clardy from Henderson State University will contact the AAPT national office to see if there is web space available. Meanwhile, section members should join our facebook page: <https://www.facebook.com/groups/AOKAAPT>

(search AOK – American Association of Physics Teachers on facebook)

5. Membership numbers in our section are low. In order to encourage more participation among high school teachers and college professors, the following suggestions were made:

- Send postcards to high school teachers in each state inviting teachers to check out our resources.
- Invite teachers to join our facebook page

(AAPT members should post useful links and resources there for teachers to access).

- Allow first time meeting attendees to pay the student registration rate for meetings.
- Investigate the option of offering a “membership scholarship” to the teacher of the year winner.
- Make contacts with K-12 Science Coordinators and STEM centers to make them aware of our resources and meetings.
- Offer Professional Development credit for high school teachers who attend meetings.
- Share information on our organization at teacher workshops and in-services.

6. Update on Funds:

Carry-over from 2014:	\$347.71
Registrations for 2015 meeting:	\$840.00
Meeting Costs:	\$657.00
*approximate	
Teacher of the Year Award:	\$ 50.00
Balance:	\$480.71
*approximate	

The funds remaining in the account at the conclusion of this meeting will be forwarded to Chris Pettit for the hosting of the 2016 meeting.

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

American Association of Physics Teachers
One Physics Ellipse • College Park, MD 20740
ph. 301.209.3333 • fax 301.209.0845 • web **aapt.org**