AAPT PHYSICS EDUCATION

Section News

July 2013

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Alabama Section

The Alabama Section of AAPT met in conjunction with the Alabama Science Teachers Association at the Space and Rocket Center in Huntsville, Alabama on Saturday, February 16, 2013. The setting was out of this world, and the hospitality of our hosts was warm on a chilly Saturday.

The day started with a meet and greet mixer for new and old members to renew friendships and membership. Then came a Make and Take Session organized by Tommi Holsenbeck and other Alabama Science in Motion (ASIM) Specialists. Participants were shown how to make demos on the Doppler shift, Inertia, DC motors, Palm Pipes, Marshmallow launchers and more.

Other papers presented during the day included:

3D Printing in Zero Gravity
Carol Bohatch, Madison City Schools
Jeremy Raper, Jessye Gaines, co-presenters

Can you print replacement equipment while circling the Earth aboard the Space Station? We have tested our hypothesis in zero gravity. This session will share details of our trip aboard the Zero Gravity plane sponsored by NASA.

Project(v.) a Project(n.) for Your Physics StudentsThat Motivates Interest
Tommi Holsenbeck, ASU/Auburn University
Christina Steele, co-presenter

Significant projects in physics class can be the highlight for students. They use physics concepts to create a concrete item. Some examples are: King of the Hill, Model Rockets, Rube Goldberg contraptions, Cardboard Boat Races, Musical Instruments, Haiku, Vector Vectorines, New Version of a Science Biography, Toothpick Bridges, etc. Come hear about possible projects, long term and short term, for physics class. Share your ideas too.

APEX / AMSTI at AAMU
Barbara Cady, Alabama A&M University
Mostafa Dokhanian, John Reutter, Marius Schamschula, co-presenters

Presentation of information on the NSF MSP grant to Alabama A&M University entitled, “Alliance for Physics Excellence (APEX)” and how it transforms secondary physics education in Alabama by imparting the latest teaching practices to in-service teachers through a partnership with AMSTI.

University of Alabama PhysTEC Program
J.W. Harrell, University of Alabama
Penni Wallace, Stan Jones, Dennis Sunal, co-presenters

The University of Alabama has been awarded a PhysTEC grant to increase the number of certified HS physics teachers. Major components include a Learning Assistant program, a Teacher-in-Residence, and a collaboration with Science in Motion.

Measuring what you intend to measure: pitfalls in laboratories
Justin Sanders, University of South Alabama
Michael Boleman, co-presenter

Students are often discouraged when they fail to obtain expected results in an introductory laboratory even when they correctly follow the experimental procedure. Sometimes the discrepancy is due to incorrect instructions or assumptions that may not be valid for all experimental conditions. Pitfalls in a “straightforward” projectile motion laboratory will be given as one example.

Hands-On Newton’s Laws of Motion with NASA
Tyson Harty, Ph.D., Jasper County High School

Help your students discover Newton’s Laws of Motion through true inquiry with over 25 simple hands-on activities featuring everyday objects and toys. Get free color NASA posters and all instructions for setup in your classroom!

APS PAIR Pilot Physics Project at Amelia L. Johnson High School
Deborah A. Harper, MAEd, Amelia L. Johnson High School
Lisa M. Ramirez, PhD, co-presenter

APS PAIR pilot program pairs physicist with HS teacher providing physics content / materials support. Effectiveness of PAIR experiments (Water Rockets, Hot Air Balloons, Bumper Cars) evaluated by pre- and post-ACT physics and science-process assessments.

Simple Speed of Sound

Julie Covin, The University of Alabama
Penni Wallace, co-presenter

A simple speed of sound lab done outside with cell phones or walkie talkies and an air horn. Instructions will be given for collecting data, calculating actual speed of sound based on temperature and helpful hints on marking distance (or asking JROTC to do it for you!)

The closing session was an open forum which included a brief presentation by Tom Nordlund, University of Alabama in Birmingham, on teaching physics to non-traditional audiences. Jaime Demick gave a presentation on working with elementary-age students. During the business session that followed, Jaime was elected president-elect of the section. Tommi Holsenbeck was re-elected to the Secretary/Treasurer position , and Stan Jones was re-elected as Section Representative. Justin Sanders assumed the presidency and announced that the 2014 meeting will be held in Mobile.

—Stan Jones, Section Representative

Alberta Section

The Alberta, Canada section of AAPT held 3 meetings in 2012.

1. Wednesday, February 8, 2012 at Physics Department, University of Alberta with approximately 19 in attendance. Program presented by Dr. Andrzej Czarnecki, Department of Physics University of Alberta
   i. Revisions to the International System of Units (SI)
   ii. Participating in the Alberta and International Physics Olympiad
2. Wednesday, October 17, 2012 at Physics Department, University of Alberta with approximately 20 in attendance. Program: Elections to Executive Committee Talk: *Searching for Dark Matter at SNO-LAB* by Dr. Carsten Kraus, Department of Physics,University of Alberta
3. Physics Teachers Day: Friday Dec 7 2012 at Physics Department, University of Alberta with approximately 62 in attendance. Program: Our speakers for the day included Dr. Craig Heinke (*The Deaths and Afterlives of Stars*), Dr. Richard Marchand (*Space Exploration and Enviroment*), and Drs. Peter Mahaffy and Brian Martin (*Global Warning(s) – What the Earth is Trying to Tell Us*). Two workshops were held including *Using visualizations of the science behind climate change to change the climate of science teaching* with Drs. Brian Martin and Peter Mahaffy and a *Make-and-Take Workshop* with Laura Pankratz and Jeff Goldie.

For 2013 and beyond the Alberta section will develop new bylaws and a financial model; involve more of the physics teachers throughout the province; and renew memberships as many of the older members are leaving.

—Terry Singleton, Section Representative

British Columbia Section

The May 2013 Annual General Meeting of the British Columbia Section of the AAPT (BCAPT) was held on May 3rd as part of the Surrey, BC Teacher's Association (STA) Annual Convention (http://www.staconvention.ca/). This year, for the first time, the STA Convention ran a Science Focus meeting at Fraser Heights Secondary School. The BCAPT arranged for many well-received physics workshops at the meeting including: "Student Preconceptions and Motion and Force" by Dan Phelps, "Fifty Shades of Physics ..." by Peter Hopkinson, "Environmental Physics" by Susan Hunter-Jivung, and "Junior Physics (Grades 8-10)" by Edel Vo. All of these presenters are current members of the BCAPT Executive Committee.

In addition to the workshops, the Annual General Meeting of the BC Section was held during the "Physics Teachers Lunch, AGM and Sharing Session". During the AGM, the 2011-2012 Financial Statement was presented and approved. In addition, elections were held for the 2013-14 BCAPT Executive Committee:

President: Edel Vo
Vice-President: Louay El Halabi
Past President: Bev McLeod
Treasurer: Mike Hengeveld
Secretary: Terry Coates
AAPT Section Representative: Sarah Johnson
BCAPT Web Designer: Marina Milner-Bolotin
Members-at-Large
Paul Cheng, Mike Coombes, Philip Freeman, David Harding, Michael Hasinoff, Peter Hopkinson, Susan Hunter-Jivung, Michael Jackson, Rachel Moll, Dan Phelps, Takashi Sato

Congratulations to all of our new Executive Committee Members, especially Louay El Halabi who is new to the BCAPT.

—Sarah Johnson, Section Representative

Colorado/Wyoming Section

The spring meeting of the Colorado/Wyoming Section was held on Saturday, April 20, 2013 at Valor Christian High School in Highlands Ranch, CO. This year attendance was over 50 people representing 11 different colleges and 17 high schools.

Listed below are some of the program highlights:

Keynote Speaker

The morning started with a keynote presentation by Steve Spangler, the founder of SteveSpanglerScience.com, who prestend a talk titled "Exploding Soda & Flying Potatoes — Secrets to Creating Unforgettable Learning Experiences." Steve earned his credentials as an author, teacher, toy designer, and Emmy award-winning television personality. The abstract of his talk is as follows:

> There are good teachers and then there are truly great teachers. Understanding the differences in teaching styles is the key to learning how to turn ordinary moments into unforgettable learning experiences – the kind that kids talk about at the dinner table and remember for a lifetime. The secret to becoming the best teacher possible is to learn how to engage students on a whole new level using creative methods that promote wonder and exploration. Steve Spangler combines his experience as a science teacher and an award-winning toy designer to create educational experiences that make learning fun. In this special kick-off to the conference, Steve will share insights as to some exciting things that are taking place in informal science education. Learn how to better leverage the amazing assets available on YouTube and how to use this medium to advance your own efforts to reach more students. Steve will also share some of his most memorable experiences over the past 12 years and nearly 900 science segments as the science education specialist on 9NEWS - KUSA TV in Denver. Don't be surprised if he scouts you to appear on an upcoming Morning Show segment. Guaranteed to make you laugh a little and learn a lot… but watch out for those flying potatoes!

Morning Talks

The morning concluded with three ~25-minute contributed talks. The titles and authors are:

- *Just-in-Time Teaching Pedagogy*, Dr. Gregor Novak (USAFA/IUPUI)
- *PhET*, Dr. Ariel Paul (CU - Boulder)
- *Ubiquitous Professional Development with the Global Physics Department*, Dr. Danny Caballero (CU - Boulder)

Business Meeting

The section business meeting was held right after lunch. The meeting agenda included approval of previous minutes, values that the CO/WY Section offer, and discussion of possible recruitment efforts to expand future membership and solicit participation. Officers' reports were followed by the election of new officers; President Elect, Vice President, Secretary/Treasurer, Webmaster, and Members At Large. The election results are:

- President Elect: Christine Vadovszki
- Vice President: Bethany Wilcox
- Secretary/Treasurer: Richard Krantz
- Webmaster: Adam Pearlstein
- Members At Large: Hank Weigel and Jared Krueger

The new VP, Bethany Wilcox, agreed to host our next CO/WY Section AAPT meeting, in the spring of 2014, at the University of Colorado – Boulder campus in Boulder, CO.

The Executive Board of the CO/WY Section of the AAPT is now as follows:

- President: Brian Huang
- President Elect: Christine Vadovszki
- Vice President: Bethany Wilcox
- Past President: Cherie Bornhorst
- Secretary/Treasurer: Richard Krantz
- Members At Large: Katie Hinko, Hank Weigel, Jared Krueger
- Webmaster: Adam Pearlstein
- Section Representative: Vince Kuo

Afternoon Talks

There were five ~20 minute contributed talks in the afternoon. The titles and authors are:

- *The Boosting Engineering Science and Technology Robotics Competition*, Joes Lopez (Rocky Mountain BEST Executive Director)
- *Productive and Fun use of Lab Time!* Dr. Wendy Adams (University of Northern Colorado)
- *Literacy in Physics*, Stephan Graham (Arrupe Jesuit High School)
- *Using Arduino Processors in the Physics Classroom*, Brian Huang (SparkFun)
- *Using Model Rocketry to Teach Physics*, Tom Spicer (Valor Christian High School)

Acknowledgements

The Section would like to thank the Valor Christian High School, for hosting the meeting, and the outgoing vice president Tom Spicer for putting together the program. Good luck Tom on your next position! Fly high.

—Vince Kuo, Section Representative

Hawaii Section

Nomination of new officers

Mike Weber agrees to continue as Treasurer

Liz King would like to step down as secretary, but agrees to continue. The new VP should, ideally, be a high school teacher. Paul Sherard agrees to be the next VP.

Representative: Mike Nassir will be going to the Summer (July) meeting in Portland, anyway. Also, there's a good chance that his teaching schedule won't conflict with the winter meeting in Florida (January 6-8, 2014).

Joe Lazlo agrees to take on the role of "provider of food" for the rest of the foreseeable future. This should boost attendance . . . . .

Slate of officers (Eric Dodson as President, Paul Sherard as VP, Mike Weber as Treasurer, Liz King as Secretary, Mike Nassir as Representative, and Joe Lazslo as Foodie) is proposed and motion passes.

Dates of next year's Fall and Spring meetings:

Fall meeting on Saturday August 24th, at Chaminade

April 26, 2014 at Kamehameha

Committee Reports

24th Physics Olympics, a joint production of 5 college campuses, with 120 high school students competing, was another huge success. Paul notes that he never knows about it till it's over, which is something that needs to be remedied.

Treasurer's Report

Presented by Liz as Mike is absent. Two slides of Phys Olympics costs over time and our bank account balance over time. No correlations seen. We give money to a teacher of the best science fair phy/astro project (went to a guy at Mililani High this year), and we fund the Phys Olympics. We get money from membership dues and occasionally from Paul Hewitt.

New Business

From Hanno – kids are playing on iPads a lot at his school. He has a class set to use. Anyone with experience using these in class, especially data collection? The Vernier system offers a mini that will wirelessly broadcast data from old sensor to iPads. The Minis don't interface well with the motion detectors, so you need to run the labs first to see how it works. The minis cost roughly $100 each, compared to $400 for new LabQuests. You can get a site license for Vernier on the iPad. OnCloud is a free app that is the Microsoft Office programs, but limited in application and free. Or you can pay $20 to Microsoft for an authentic version that works better. But for taking data, it works just fine, creates Excell spreadsheets and graphs with analysis, etc.

From Mike Nassir: The National AAPT membership is $120 and comes with an excellent magazine, the Physics Teacher. Also gives good discounts to members. A reminder: you are supposed to be a member of the national organization in order to join the local organization.

Presentations

Eric Dodson

Presentation for Physics Olympics – motion detector graphs. Graphs (dist/time) are pre-made, students must move to match the graph. The program which presents the graph tracks the movement and generates a different-colored line on same graph, then computes the correlation as a score. At each pixel, it calculates the difference between target and performance. He created the software in C and Python with a micro-processor kit. Vernier provides a very similar lab, but doesn't provide a score. Then he showed us a game that he programmed that's like Pong, but you are the paddle, running back and forth (the motion sensor is used to move the paddle on the screen based on your position from the sensor).

Peter Grach

Using data from Muon detectors (Quarknet) in the classroom. Historical overview: we start teaching Newton's Laws (1700s) and usually end with EM Induction/Lenz's Law (1830 – Queen Kaahumanu was regent here, Andrew Jackson was President). But we can bring TODAYS physics into the classroom without needing to build ATLAS or any other particle accelerator in our prep rooms. Quarknet brings high-energy, modern physics into the classroom; there are 4 classroom muon detectors in the Islands and hundreds around the world. You don't have to build or troubleshoot anything – you can pull up data from anywhere for your kids can analyze (the data from all the detectors is on a Website). They can put their data analysis right onto the eLab Website. Go to www.i2u2.org/elab/cosmic, log in as a guest, and start with the pretest. There are simulations, explanations, and activities concerning sub-atomic particles (for example, a muon entering the atmosphere and creating a particle shower). Students can even build a poster of their work right on the site. The site even provides rubrics for grading, if you want to grade the posters. There's a post-test, too. Use this in conjunction with another excellent Website, www.particleadventure.org.

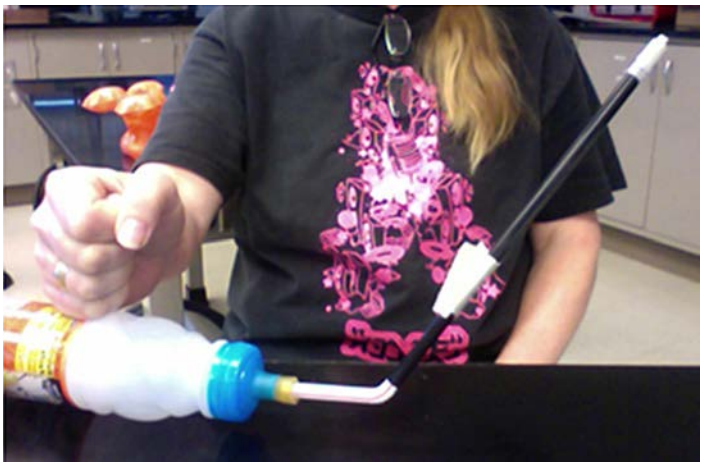
Eric

Demonstration – a cheap alternative to Gencon. Go to the swapmeet and buy an old drill, no battery needed. Put a hand crank (bend a metal rod) into where you would put a drill bit. You can attach to a little breadboard and a display to show the watts generated by hand cranking. Cool for those of you who can build electronic stuffs.

Joe Lazlo make-n-take straw rockets

Start with a blowgun (straw, bit of bamboo skewer with cotton, see photo), then go to a balloon (blow up, let go – Newton's 3rd law, compare long balloons to round balloons), then attach a balloon to a straw (slurpee straws and jamba juice straws work well, bigger diameter) and tape the straw to the balloon (anchor the tape by wrapping it around the straw – only the straw – first, then the balloon , and then blow up the balloon and let go and you'll get a much more directed/stable flight pattern). Then the kids can cut the straw

down to find the optimum nozzle length. And, they can put tape (so it's flat) onto the straw to act as a fin and see how that affects the flight pattern. Finally, put a small-diameter bendy straw into a larger-diameter straw, bend, and blow; no dice. Block the end of the large straw by putting a "nose cone" of tape on the end and blow – good results. Then put fins on (the same way as before) and see what happens – much better flight path!!



Then, attach to a Sunny D bottle (with a little rubber tubing) and hit it and make a true rocket launcher:
You can wrap a piece of paper around a piece of narrow-gauge PVC and improvise a nose cone and use as a blow pipe, super results. Attach a bicycle innertube (used, get 'em from bike stores for free) using masking tape to the end of the pvc pipe and put that on the sunny D bottle to make a stomp rocket. They can go 50 yards!!

Paul Sherard

The Expanding Universe, a simple geometric model.
Paul showed us a graphic using standard drawing tools, but I can't reproduce that here, sorry. You just had to be there to get the message.

—Mike Nassir, Section Representative

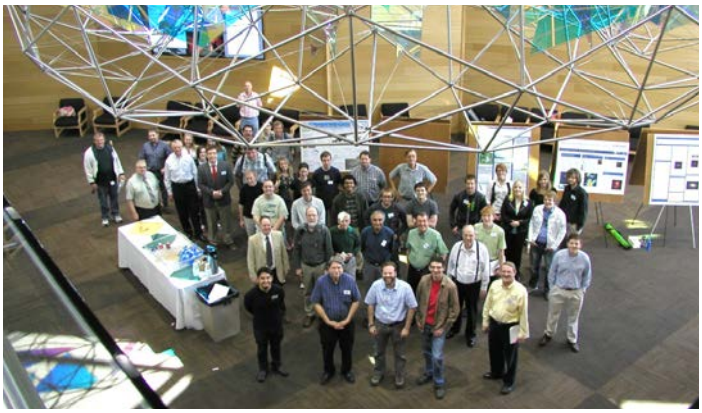
Idaho-Utah Section

The Section Meeting for the Idaho-Utah Section of the American Association of Physics Teachers was held at Utah Valley University March 15-16 2013. The meeting was excellently organized by Phil Matheson, the section President-Elect, and was attended by 64 people, 4 HS Faculty, 26 College/University Faculty/Staff, and 34 students some of whom were jointly attending the combined SPS Zone 15 meeting.

The program included the ever-popular Demonstration Show, and a collection of contributed talks, a make-and-take ferro-fluids activity, and the section business meeting and annual section officer election.

The results of the election were as follows, with terms from 3-17-13 to 5/31/14:
Farhang Amiri from Weber State rotated off the presidential chain.
Brian Pyper, also the section representative, rotates from President to Past President.
Phil Matheson, of Utah Valley University rotates from President-Elect to President.
Kathryn Devine, of College of Idaho, rotates from Vice President to President-Elect.
Larry Smith, of Snow College was elected Vice President.

This means that the section meeting next year (2014) will be held at the College of Idaho in Caldwell, with Kathryn Devine as the local organizer, and the following year (2015) the section meeting will be held at Snow College in Ephraim, UT, hosted by local organizer Larry Smith.



—Brian Pyper, Section Representative

Illinois Section

The Illinois Section of AAPT held two local meetings in 2012. Our spring meeting was hosted by the University of Illinois in Urbana, IL and our fall meeting was held jointly with the Chicago Section at Joliet Junior College in Joliet, IL.

The theme of the spring meeting was "Engage to Excel". Over 80 faculty, students, and guests participated in workshops, invited, and contributed talks. Workshops included "Mini Modeling" presented by Carl Wenning, "Using Clickers to Engage Students in Class" presented by Mayla Sanchez, and the cracker barrel discussion "Entrepreneurial Science". Invited talks were given by Tony Liss ("The Large Hadron Collider: Probing the Universe at the biggest science project ever"), Tim Stelzer ("Engage to Excel: Opportunities and risks of the national initiative to improve STEM education"), Mats Selen ("Interactive Online Labs: Hands-on activities exactly when you need them"), Rob White and Bill Sadler ("Flex Paced Flipped Mastery Physics"), and Morten Lundsgaard ("Support to Excel: Professional development for in-service teachers"). Full program details are available at www.isaapt.org/s12/isaapt.html.

Our winter meeting activities were centered around the theme "Minds-On Physics." Three workshops were available for the attendees. Arduino Open-Source

Electronics presented by Andrew Morrison, New Vernier Physics Apparatus and the Connected Science System presented by John Gastineau, and Using TIPERS to Help Students Make Sense of Physics presented by Steve Kanim. Invited speakers included Steve Kanim, John Gastineau, Dave Maloney, Shawn Cornally, Diandra Leslie-Pelecky, Robert C. Hilborn, and Beth A. Cunningham. Full program details are available at www.isaapt.org/f12/isaapt.html.

The Illinois section will meet twice in 2013; March 1-2 at Western Illinois University and October 4-5 at Heartland Community College. More information about both of these meetings as well as other details about the Illinois Section can be found at www.isaapt.org.

Jeremy Paschke (left) receives the 2011-12 Outstanding H. S. Teacher Award from Brian Davies at the Spring Meeting

Doug Brandt (right) receives the 2012 Distinguished Service Citation at the Fall meeting.

More photos are available at http://helios.augustana.edu/isaapt/s12/pictures.html and http://helios.augustana.edu/isaapt/f12/pictures.html.

—Zak Knott, Section Representative

Long Island Section

The **2012 Physics Olympics** was held at the Farmingdale State College on March 30 with high schools from all over Long Island participating in such events as Physics Bowl, Pendulum of Doom, and Sensing the Fundamentals. Division High School from Levittown Public Schools triumphed over the 16 participating schools. Our Committee Chair, Gillian Winters from Smithtown High Schools, was responsible for coordinating this entertaining and challenging event.

An April 20, 2012 field trip to Farmingdale to our local amusement park, Adventureland, served as the venue for our **Spring Conference**. Twenty participants met with the park engineer to get a behind the scenes look into the operation of the rides. Teachers also made suggestions to the park engineer about how students could take more effective measurements. For example, he agreed that students could use tethered balls on the carousel and could be permitted to climb to an upper level to drop balls.

After a break for conversation and breakfast snacks the group met to work on revising the workbook used in our Adventureland student field trip in October. Tania Entwistle, section representative and Treasurer, led the effort to make revisions in format (to make the appearance more consistent) and to restructure the activities and content to make more sense. Extension of the activities to include work that would be useful for Conceptual Physics students through AP C Physics students were made. The group adjourned at noon, after Tania Entwistle and Gillian Winters agreed to incorporate the new information into a Word file that could be downloaded from our website for Physics Day at Adventureland.

Our annual **AP Physics Exam Review Conference** took place on March 22nd from 7 to 9 PM at Western Suffolk Boces in Dix Hills, Bill Leacock, Lipta's Vice-President from Mepham High School worked the solutions to the AP B exam and Gillian Winters handled the AP C solutions. Our 15 participants got a chance to discuss the exam in a relaxing atmosphere, while sharing refreshments.

The **LIPTA Barbeque**, on June 28, 2012 from 12-3 PM, at Bill Leacock's house, started off the summer. . Bill provided the grilling skills and our President Ed McDaniels, supplied the food. The beautiful day enhanced the discussion about our recent Regents Physics exam and a recap of the year's activities.

Physics Day at Great Adventure drew about 700 students from around Long Island who became involved in the fun of Physics on October 23, 2012. Rich Yngstrom, from Patchogue-Medford High School, handles the logistics of this event where the measurements and activities can be used by teachers through the semester as the concepts are encountered in the curriculum. Teachers were able to download the new workbook created at the Spring Workshop.

The **Fall Conference** on November 17, 2012 from 8:30 AM to 12:00 PM and was hosted by Bill Leacock at Mepham High School. The day started with breakfast, followed by a representative from The Center for Children and Technology speaking about a program to find science teachers to create and evaluate professional development modules for NASA's Physics and Engineering Collection of digital resources. Bill Leacock then took the stage to talk about demonstrations in a wide variety of topics. The emphasis was on showing demonstrations that can be use readily available lab equipment. But the presentation also appealed to veteran teachers when more unusual demos where shown.

Rich Yngstrom stepped up next to participants how to set up a bridge building program. Rich drew on his 15+ years of experience judging and coaching students for the Brookhaven National Labs competition. Rich also came up with the idea and provided the guidance for the Make and Take that participants made next. Bill Lynch, our recording secretary and website manager, scouted out the materials for the pair of heavy wire demonstrators that teachers can use to help their students understand the behavior of transverse waves. The conference ended with a discussion of the the new AP B Physics configuration led by Bill Leacock. Our thirty participants left well fed, with a new piece of demonstration equipment and some great new ideas for their students.

Overall, our section had a successful year. We helped promote the **Teslamania** demonstration festival organized by Rich Gearns from Sachem High School at SUNY Stonybrook in November. Many of our members shared great demonstrations and got their students involved doing demonstrations, too.

Monthly executive board meetings continue to be amazing breakfasts because of the competitive spirit of our ten faithful members who supply the brains and the brawn for our activities.

—Tania Entwistle, Section Representative

Michigan Section

The fall meeting of MIAAPT took place October 6, 2012 and was hosted by Hope College in Holland, Michigan. Almost 50 attendees from the high school, two-year college, and four-year college communities were present as well as a few students. The meeting was chaired by our President Jim Gell (Plymouth High School) and coordinated by our 1st Vice President Scott Cochran (Kirtland Community College).

The keynote address at the meeting was delivered by Dr. Don Lincoln, Senior Physicist at the Fermi National Accelerator Laboratory. Dr. Lincoln collaborates with researchers from both the Tevatron and from the CERN Large Hadron Collider in Switzerland. He is a member of the team that discovered the Top Quark and now what is likely to be the Higgs Boson.

In addition to the excellent talk about the Higgs Boson by Dr. Lincoln, there also were many interesting presentations during the morning session. These included presentations by Chris Pearson and Alan Grafe both from the University of Michigan – Flint discussing the transition that was implemented from traditional lecture style classes to a studio format. Steve Dickie and Serge Danielson-Francois from Divine Child High School presented how they are implementing physics journal articles into their current Honors Physics Seminar class.

Based on a survey done by MIAAPT about two years ago, a new session format was tried with great success in which there were roundtable discussions among different groups. For ninety minutes, groups were broken down by four-year college, two-year college, and high school faculty discussing issues of importance to that group. The discussions were vigorous among the attendees. When we reconvened before lunch, it was decided that perhaps a different structure could be used in the next roundtable simply because, for example, ideas that came up in the four-year college group could have used input and perspective from the other groups. We plan to hold more of these at future meetings.

After lunch, the 2012 Distinguished Service Award for Michigan, provided by Arbor Scientific, was presented to Dr. Drew Isola for his service to the physics and science community in Michigan. Drew has presented numerous workshops for teachers at MIAAPT, MSTA, APS, and AAPT meetings. He also has served on several Michigan Department of Education's Science Content committees and was in the executive office chain of MIAAPT, serving as president during the 2009-2010 school year. He teaches AP Physics, AP Calculus, Algebra, Geometry, and Personal Finance at Allegan High School.

Finally, the meeting closed with its workshops. Dr. Don Lincoln presented a workshop titled "What a kid needs to do to become a researcher" which included a good deal of interaction through informal conversation and question and answer. Mandi Frantti from Munising Middle/High School also gave a workshop titled "Active Galaxies: What is All This Energy?" She presented activities suitable to a high school physics or astronomy class related to conclusions made from current research in astrophysics.

The next Michigan meeting will take place April 20th at Henry Ford Community College in Dearborn, Michigan. We hope to see everyone there.

The Fall 2012 and Winter 2013 MIAAPT newsletters are online at http://www.miaapt.org

—Michael Faleski, Section Representative

Minnesota Section

The 2013 Spring Meeting of the Minnesota Area Association of Physics Teachers was held on Saturday April 27, 2013 at Bethel University. About 50 students and teachers were in attendance. There were 10 talks and 13 posters on topics ranging from lasers to black holes to undergraduate physics laboratories to biological monolayers. For the first time, four of the posters came from high school students.

Prizes (gift certificates to Barnes and Noble) were awarded for the best student oral and poster presentations. The award for the best oral presentation went to Curtis Heyda of Bethel University for his talk "Single Slit to Double Slit Transitions" describing an experiment to observe the transition between single and double slit interference patterns using a movable barrier. The award for the best poster presentation went to Travis Neumann and Ben Sather from Henry Sibley High School for their poster "Carbon-fiber hockey sticks: Does flex-rating affect slapshot speed?" in which they used high speed video to measure hockey stick deflections and resulting puck speeds during slapshots.

Books from the national AAPT were given away as door prizes.

At this meeting, it was decided by general consensus that the MAAPT would eliminate its fall meeting for the forseeable future, holding only one meeting a year in the spring. Attendance by members at the Wisconsin section's meeting (which occurs in the Fall) would be encouraged and perhaps ties between the two sections could be strengthened.

—Michael Faleski, Section Representative

New York Section

We scheduled a joint meeting with the New York State section of APS for October 2011. We have had a number of joint meetings in the past and they were very successful. This meeting was planned by APS with little involvement by AAPT. The result was that only one 60 minute workshop was of interest to our members. Less than half dozen AAPT members attended.

After some discussion, the Board was re-organized and a section meeting was held in April 2012. The meeting was held at the Anheuser-Busch plant, located just outside of Syracuse. About thirty people attended. The first session was devoted to a discussion of the future of the section.

The morning concluded with a two-hour Ranking Tasks workshop presented by Steve Henning and a Make and Take by Sam Sampere. After lunch, we toured the world's most modern brewery and its amazing computer controlled robotic warehouse.

Our Fall Meeting, held in November of 2012, was held at Marist College in Hyde Park NY, and organized by Robert Robinson. The program included 13 paper sessions, a PTRA workshop, and a Hot Air Balloon Make and Take. About 40 teachers attended the meeting.

Our next meeting is scheduled for April 2013 in Rochester. This will be an election year.

—John Fitzgibbons, Section Representative

North Carolina Section

The 18th Annual Fall Meeting of the North Carolina Section of the American Association of Physics Teachers was held November 16-17, 2012 at High Point University in Greensboro, NC. Newly elected four-year college and university representative to the AAPT, Aaron Titus, was one of our hosts. The theme of the meeting was the "Physics of Everyday Life." The theme could have been "flipping the meeting" as the meeting emphasized workshops, posters and "flipping the classroom." This focus included discussions of simulations for feature films, new building materials to save on energy costs, microelectronics, and optics for medical devices. There was a poster session, a panel discussion with industrial physicists, multiple workshops, and a teaching share-a-thon.

The Friday night keynote speaker was Dr. Jerry Tessendorf, Professor of Visual Computing, and Director of the Digital Production Arts program at Clemson University. His talk, "I'm Ready for My Close-up Mr. Newton," described film-making advantages and disadvantages of the choice of computer algorithm. On Saturday morning, Dr. Jerry Tessendorf spoke again, this time discussing the application and manipulation of physical concepts for fluid dynamics, clouds, and light propagation in the movie, The A Team in: "I Love it When a Cloud Comes Together."

Following this invited talk were "workshop" style parallel sessions on: role-playing "The Pluto Debate" in the classroom, high speed imaging, and teaching kinematic graphs using mobile robots. After the workshops was the concurrent Society of Physics Student's panel discussion with industrial physicists (and Thomas Olsen, Assistant Director of SPS & Sigma Pi Sigma) and the NCS-AAPT Invited Talk, "What's class time for?" by Professor Andy Rundquist of Hamline University. Professor Rundquist described his experiences with "flipping" a classroom and made suggestions on what worked and what does not work. Lunch was concurrent with the poster session of 16 student and faculty posters. After lunch and the poster session was the second set of "workshop" style parallel sessions on: so how do you flip a class?, a modeling meetup —a gathering of modelers, and hacking for humanity— building an inexpensive amplitude modulated laser. The meeting ended with a Teaching Share-a-thon which was a "figurative buffet of great ideas where teachers share their favorite videos, demos, lessons, experiments, simulations, interesting homework problems, pedagogical innovations, or any other teaching tip." Nine NCS-AAPT members shared their ideas in the share-a-thon.

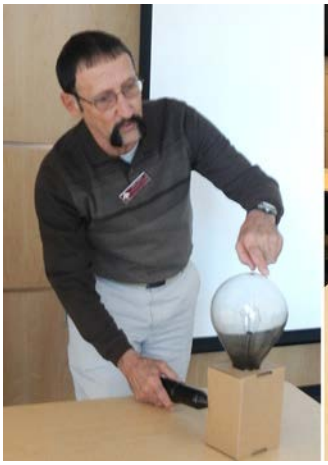
The North Carolina Section Business Meeting was held Friday Night.

Our Spring 2013 Meeting is scheduled for April 19-20 co-hosted by North Carolina State (Friday) and Meredith College (Saturday).

—Mario Belloni, Section Representative

North Dakota Section

The North Dakota section of the American Association of Physics Teachers met on 23 Feb 2013 in Bismarck, ND, on the Bismarck State College (BSC) campus. The meeting was held in conjunction with the North Dakota Science Teachers Association's annual meeting which was held on the same site. The meeting opened with section business and election of officers. The business meeting was followed by discussion and sharing of demonstrations and teaching ideas.



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—Donald Hoff, Section Representative

Northern California/Nevada Section

In 2012, our section ventured to the Sierra Nevada Mountains for both meetings. Our spring meeting in South Lake Tahoe was followed by a lower elevation fall meeting in Rocklin in the foothills.

Spring Meeting, April 20-21, Lake Tahoe Community College, South Lake Tahoe, CA

About 30 members attended our fall meeting. Our keynote speaker, Dr. David Bennum (U Nevada, Reno), spoke about his "Physics on the Road" program which brings buses to students in grades 2-8, sparking their interest in physics. In our Share and Tell session, members showed off their best demos and lesson plans. In the afternoon, we elected our officers and heard members' presentations on Fathom in the Classroom, Review Strategies, "The Beneficial Application of Stupidity in Inquiry," NASA Research Opportunities for Community College Students, and "Remediation that does not Suck."

This was our first meeting where we experimented with online registration through our website. Many members registered online, helping us to estimate attendance in advance.

Fall Meeting, November 2-3, Sierra College, Rocklin, CA

For our fall meeting, we went full-boar with online registration. While we still offered registration at the meeting, most members opted to register online, in advance.

About 80 members attended our meeting in the beautiful Sierra Nevada foothills. Sierra College through open the doors for us, providing a planetarium show on Friday evening, and a tour of their natural history museum.

With the SF Giants' World Series victory in our short-term memories, two members provided a talk on the Physics of Baseball—including analysis of the latest ultra-high speed/ slow motion film of the World Series.

Dr. David J. Webb (UC Davis) presented a talk entitled "Prior Understanding of Physical Concepts Improves Students' Problem Solving Skills," in which he presented research showing a connection between improved problem solving skills when the first 60% of the quarter was used for largely conceptual presentations of physics concepts, and the final 40% introducing and focusing on algebraic problem solving.

At lunch at this meeting we experimented with focused "Table Talk" discussions, where lunch-goers gathered at tables where the discussion focused on one topic, from "physics first" to AP to the Next Generation Science Standards. Some tables focused better than others, but everyone enjoyed the food and the company.

More details of any of our meetings can be found on our website: ncnaapt.org

—Lee Trampleasure, Section Representative

Ohio Section

The Spring Meeting of the Ohio Section AAPT met at Lakeland Community College on March 2, 2013. The program consisted of two plenary speakers: Robert Morse from St. Andrews School in Washington, D.C. gave a talk on the new Advance Placement course in physics and Susan Ramlo, University of Akron, spoke about her experience with the "flipped classroom." In addition to these Jay Reynolds gave a short talk on the partnership between Lakeland CC students and Cleveland State University students to actually do some astronomy research using astrophotography techniques.

Elections were for the following year. Nate Van Way was elected to be the Vice-President for High Schools and Claudia Bartley was elected to fill out the remaining part of the term for the Vice-President for Two-Year Colleges. Steve Majoros is now the President-Elect and Aaron Ballonoff is President for the 2013-2014 year.

Following the business meeting was the "How I Do It" session. Fred Jarka talked about "everyday, backyard gravity," Gary Wood discussed the second law demonstration using Vernier's wireless dynamics senor system, Francis Graham presented the non-uniform Gravity inside the Earth, Juliana Williams and Jim Andrews presented "How I Integrate IPads in my Classroom" Gene Ewald talked about the "spring constant" of Therabands, and Jon Schutter presented several quick demonstrations.

In the afternoon two workshops were held. Bob Morse led the workshop on Electrostatics and Steve Majoros presented Near Infrared Imaging with Digital Cameras. Following the workshops was the awarding of $25 to the best How-I-Do-It (determine by ballot of those present) to Juliana and Jim Andrews. The Great-Give-Away with donations provided by several vendors and members concluded the meeting.

Participants in the Electrostatics workshop.

—Myra West, Section Representative

Quebec Section

QcAPT Section Officers

President: Nathaniel Lasry – John Abbott College
Vice President: Jesus Vazquez-Abad – Université de Montréal
Secretary-Treasurer: Calvin Kalman – Concordia University
Section Representative: Chris Whittaker – Dawson College
Webmaster: Michael Dugdale – John Abbott College

2012 Events & Activities

• **Jan.13th, 2012: QcAPT Annual Meeting**
The annual meeting of the QcAPT was held on Jan.13th. The executive for 2012 and plans for the year were approved.

• **April 3rd, 2012: Taking Active Learning to the Next Level**
The QcAPT helped to coordinate an evening of workshops on Active Learning. The evening included keynote talks by Dr. Julie Schell (Harvard U. and The University of Texas at Austin) and Dr. Michael Dubson (Colorado University at Boulder). The evening was attended by over 150 people.

• **May 23rd, 2012: The Scientific Approach to Teaching**
QcAPT helped to coordinate a day-long series of workshops on Science teaching pedagogy with a keynote speech by Dr, Eric Mazur. The event was attended by over 140 people from across the province of Quebec and was highly successful in promoting research-based approached to science education.

Plans for 2012

• A workshop for high school physics teachers from several English- speaking Montreal high schools has been organized for Tuesday, January 14th 2013. This initiative is the first of its kind for the QcAPT and it is being jointly planned with the Science Education Consultant for the Lester B. Pearson School Board. The workshop will focus on technology and pedagogy and will pair-up high school teachers with a college teacher for a series of seminars.

• The QcAPT is working in conjunction with the SALTISE1 initiative (Supporting Active Learning and Technological Innovation in Science Education) and the CAP (Canadian of Physicists) PER Division to coordinate one day of workshops and seminars at the 2013 CAP Annual Congress to be held in Montreal from May 27-31. The keynote speaker for this event will be Joe Reddish.

• The QcAPT is working with SALTISE to coordinate the Second Annual Summer Workshops (June 11th, 2013) that will feature Dr. Manu Kapur (National Institute of Education and Nanyang Technological University, Singapore) as keynote speaker.

—Chris Whittaker, Section Representative

Southern California Section

On April 20, over fifty members of the Southern California Section gathered at Santa Monica College (SMC) for a day full of informative presentations and lively discussions. SCAAPT thanks Nuria Rodriguez, Jacob Morris and Steve Paik, who hosted the meeting at SMC, and Bradley "Peanut" McCoy, who served as Program Chair of the meeting. The meeting was called to order by SCAAPT President James Lincoln.

Thanks to several invited speakers from the Jet Propulsion Laboratory, this meeting had a strong astronomy emphasis. James Bauer shared results of his work where he studies "primitives" in the solar system—comets and other outer solar system objects. Dr. Bauer also described his work with NEOWISE, the Near Earth Object component of the Wide-field Infrared Survey Explorer telescope. Because dark asteroids re-radiate strongly in the infrared, NEOWISE observations can often provide better estimates for NEO diameters than can optical telescopes. He also suggested to attendees that they mark their calendars to look for comet ISON in early to mid-December. Since its perihelion distance will be 1.7 solar radii it's expected that people should be able to view comet ISON with the naked eye, perhaps even during the daytime.

Bonnie Buratti presented the latest findings from Titan, the only known celestial body, other than earth, that has standing liquid. This moon of Saturn has conditions are near the triple-point of methane. Cassini has observed erosion features and lakes the size of Lake Superior. The atmosphere is remarkably like earth's as it has similar pressure and composition (large component of nitrogen). There also seasonal cloud patterns and a methane cycle similar to the water cycle on earth. In fact, Titan could be considered another planet as it is larger than Mercury. In addition to her scientific work, Dr. Buratti is also passionate about science education, which has lead her to run summer institutes for science teachers. In her presentation, she showed some of the class activities that she shares with those teachers.

Amy Mainzer studies asteroid belt looking for answers to questions such as: How have these objects, which have been around for billions of years, now been kicked out of their stable orbits and toward earth? In discussing the recent impact near Chelyabinsk Russia, Dr. Mainzer shared information on the scale of meteors. For example, while the meteor in Russia was 17-20m across, most of the "shooting stars" that are observed are much smaller, closer to a grain of rice. Despite their small mass, their kinetic energies are several mega joules thanks to their high velocities.

In the final invited presentation, Erick Wolf of Airwolf3D demonstrated the latest in 3D printing technology and discussed classroom applications. Airwolf3D sells not only assembled printers, but also kits, which can in of themselves become classroom projects. Mr. Wolf pointed out that the printers are now lower price than before. Contributing to 3D printers affordability is the fact that it is now possible to use open-source software when preparing the files. During the discussion, SCAAPT member Joe Wise mentioned that the necessary file to print out your own 3D version of the Vesta asteroid is available on JPL's website <http://dawn.jpl.nasa.gov/multimedia/pdfs/Asteroid_Vesta_STL_File.zip>

During the Business Meeting, members congratulated Mary Mogge on her recent election to Vice-President of AAPT and thanked her for twenty years of service to SCAAPT.

Several other SCAAPT members also gave engaging contributed talks:

- Jacob Morris, SMC - Circuit Voltages and Magnetic Flux
- Gary Reynolds, Santa Ana HS - Physics and the Next Generation Science Standards
- Walter Gekelman, UCLA; Pat Pribyl, UCLA; Joe Wise New Roads School; Bob Baker, University High; Nathan Agmon (student), North Hollywood High; Camie Katz (student), Harvard Westlake; Chris Ha (student), Palos Verdes High - Using resonance cones to produce plasma jets
- James Lincoln, Tarbut V'Torah HS - 10 Demonstration Experiments with a Plasma Ball
- Martin Simon, UCLA - Can Cell Phones Cause Cancer?
- Bernard Cleyet, UCSC (retired), Is Popping Corn Kernels an Example of the Poisson Distribution?

The ever-popular Show 'n' Tell featured demonstrations by Steve Paik, SMC; Harry Manos, Los Angeles City College; Beth Stoeckly, CSU Channel Islands; Raymond Gilmartin (student) and Dean Papadakis, South Pasadena High School.

The meeting ended with the World Famous "Order of Magnitude Contest." This meeting's question was: How many carbon atoms are tied up in all the diamond jewelry now possessed by all the people on earth? which was submitted by Bill Layton.

SCAAPT thanks its corporate sponsors – Edmund Scientific and Arbor Scientific– for their support and donation of door prizes. (Be sure to check out ideas for using a plasma globe, much like the two that were awarded as door prizes, at <http://www.arborsci.com/cool/top-10-demonstrations-with-the-plasma-globe>.)

The Southern California Section will hold its Fall Meeting in late October or early November. Please bookmark the SCAAPT URL <http://www.scaapt.org/> and check for more information in early Fall.

New Physics Teacher Workshop (NPTW)

SCAAPT has been organizing interactive workshops for new physics teachers in Southern California for the past two years and has recently received addition support that will ensure that they continue for years to come. NPTW has grown in popularity and serves approximately 30 new teachers at each of the three annual workshops. These meetings involve four master teachers (James Lincoln,

Bill Layton, Chija Bauer, and Frank Lee) who share their expertise and advise with the participants. The focus is on demonstrations and hands on training. Typically, in the first half of the workshops the participants view demonstrations and receive a content primer to help them organize their instructional units. In the second half of the workshops (after lunch), the participants work in teams to perform the actual laboratories recommended to them by the master teachers. Often the lab equipment is given to the participants. The participant feedback for the program has been very positive. Funding for NPTW has come from both SCAAPT and the Brown Foundation. The previous budget was $2,000/year but is now being increased by the Brown Foundation to $8,000/year with intent of expanding the workshop to all parts of Southern California and improving the package of materials that are given to the new teachers. More information about NPTW, including workshop schedules and contact information can be found at <http://www.nptw.org>.

—Jeff Phillips, Section Representative

Southern Nevada Section

SNAAPT's spring 2013 meeting was held at CSN's East Cheyenne Campus on Saturday, March 9.

Section President David Mills welcomed the attendees and briefly summarized the history of AAPT and of SNAAPT.

Host Carlos Delgado described the recently-completed remodeling of CSN's East Cheyenne Campus' science laboratories.

David presented a PPP entitled *TIPERS: In-Class Learning Activities for Electric Fields, Magnetic Fields, and Circuits*. This PPP is available upon request (david_mills@cox.net).

Carlos shared a series of demonstrations, presented in chronological order, that he regularly uses in his Physics 152 courses (both during the term and as a review at the end), that trace the development of the discoveries and concepts associated with electromagnetism. These demonstrations begin with the attraction and repulsion of charged objects (Thales of Miletus), continue with the discoveries of charges in motion (Benjamin Franklin), electric current and potential (Alessandro Volta), Oersted's observations of the relationship between electric current and magnetic fields, J.J. Thomson's discovery of the electron and the deflection of electron beams by magnetic fields, Michael Faraday's discovery of electromagnetic induction, Nicola Tesla and electric generators, the prediction and verification of electromagnetic radiation (James Clerk Maxwell and Heinrich Hertz) and, finally, microwave- and visible-spectrum optics.

David presented a demonstration and paper entitled *Forced Oscillations and Magnetic Resonance*. He expressed the opinion that, while the demonstration is appropriate for all high school physics students, the physics and mathematics may be appropriate only for AP students. This paper is also available upon request (david_mills@cox.net).

John Farley (UNLV) shared a PPP entitled *Going Beyond the Lecture* in which he called our attention to the ineffectiveness of teaching by lecture and introduced some of the methodology and advantages of interactiveengagement methods identified by physics-education research. He described some of his experiences using "clickers" to obtain immediate feedback and to motivate his student's learning.

The business portion of the meeting included the following:

(1) Janelle Bailey (Section Representative, UNLV) provided dates and locations for several future Summer and Winter Meetings. She also suggested that we fill the offices of Second Vice-President, Secretary/Treasurer, and Section Representative by announcing these vacancies via a message to everyone on our emailing list that would invite interested individuals to nominate candidates (including themselves) and volunteered to prepare such a document. It was agreed that we would proceed in this manner.

(2) John Farley explained that he had been made aware that, of the four yearly in-service days in the CCSD, only one is at the discretion of the site principal. He and David were authorized to continue the Section's efforts to persuade the high-school principals to authorize their physics teachers to satisfy this in-service collaboration requirement through participation in one or more SNAAPT meeting(s) that would be devoted to issues associated with teaching physics at the high school level.

(3) Because there was a general consensus among participants that our academic year 2012-2013 meetings were both instructive and enjoyable, it was decided that we will continue our emphasis on the high school physics curriculum during the academic year 2013-2014.

2012-2013 Officers

David Mills, President - Professor Emeritus–College of the Redwoods
Tim Waters, Secretary/Treasurer - UNLV
Jim Barker, 1st Vice President - Valley High School
John Farley, Past President - UNLV
Mitch Johnson, 2nd Vice President - West Career and Technical Academy
Janelle Bailey, Section Representative - UNLV

—Janelle Bailey, Section Representative

Southern Ohio Section

The Southern Ohio Section's spring meeting was March 9, 2013 at Dublin Jerome High School. About 30 members were in attendance, including several first-time attendees. Many thanks to Barb Hilligoss for hosting an educational and enjoyable meeting.

The opening session focused on inverted classroom practices with invited presentations from Kathy Koenig (University of Cincinnati) and Brooke Morin (The Ohio State University). Participants then chose between a workshop session with Lenore Horner (The Seven Hills School) on Geogebra or Rick Jacox (Ontario High School) on podcasting.

In the afternoon, there were contributed presentations from James Sullivan (University of Cincinnati) about how the conversion from quarters to semesters affected physics instruction at Cincinnati, Gordon Aubrecht (The Ohio State University – Marion) on global warming and (a separate presentation) on formative assessment with middle school teachers. Spontaneous presentations by Folden Stumpf (Ohio Univesrity) on lab apparatus and Gabriella Popa (Ohio University – Zanesville) were also given.

The section also conducted its annual election of officers. The new president-elect is Mark Plano Clark of the University of Cincinnati. Krista Wood of the University of Cincinnati – Blue Ash was re-elected to serve as secretary, and Terry Toepker of Xavier University is the new Vice President for 4-year Colleges and Universities. Stepping into the position of President is Lenore Horner, and Sandy Doty (Ohio University – Lancaster) is now past president. The board has also appointed Sandy as the new editor of our newsletter, The Dialog.

State Science Day

On the morning of Saturday May 11, 25 volunteers from central and southern Ohio served as judges at Ohio's State Science Day competition to determine the awarding of physics prizes for students in high school and middle school. As he has for many years, Gordon Aubrecht of The Ohio State University coordinated the efforts of judging over 150 projects. The prizes are awarded by the Southern Ohio Section of AAPT, with the generous financial support of the Ohio Section of APS.

Upcoming Events

The Fall 2013 section meeting is scheduled for Saturday, October 5 at the University of Cincinnati, in conjunction with the Ohio Section of the American Physical Society, which will run October 4 and 5. Our host will be Jim Sullivan. More information will be posted as it becomes available at the section's web site: www.susaapt.weebly.com.

—Kathy Harper, Section Representative

Washington Section

The meeting this year continued our recent practice of Friday evening workshops for high school teachers with an entirely new lineup of workshops that emphasized the conference theme of creating spaces for student creativity. This years selection contained some new material and some old favorites. Bruce Palmquist of Central Washington University oppened the evening showing how teachers can use the PhET Simulations to help students create and test hypothesses. His semistructured activities provide a balance between defined and open ended questions appropriate to beginning students who may have little experience formilation a useful experimental question.

He was followed by fellow CWU faculty member Michael Jackson treated participants to hands on activities useful either as inquiry explorations, or as tools to assess student progress. Special apparatus designed at CWU and more PhET simulations were the main elements in the activities.

Our reigning President Andrew Boudreaux of Western Washington University closed the evening with Invention Tasks around developing Proportional Reasoning in students. Here the participants tried first hand to devise signature parameters or models to help rank scenarios or products we might encounter in our lives. Proportional reasoning in its raw form is the starting point uncluttered by math phobic reactions that can be stimulated by exposure to variables at the early stages.

Saturday Invited Talks

Bruce Palmquist opened the show with a very nice presentation of the highlights of his workshop in a format suitable to the larger audience. He included several nice examples and an excellent guide to resources that would allow the listener to borrow or create their own hypothesis building and testing activities. Bruce was followed by a trio from Green River Community College presenting a slate of practices employed there to foster student creativity. Ajay Narayanan described the care and nourishment of a healthy physics club and showed many friuts of the students creativity from rockets and trebuchets, to cosmic rays. These activities changed the students involved and act as outreach to students who did not know about their interest in physics. Keith Clay and Adrienne Battle took up two ends of open exploration in the laboratory. Keith described mini laboratory experiences focused on answereing a single question but posed without any lab manual guidence. Students are typically able to devise a test to answer the question in a short time and Keith shares the diversity of approaches from around the room with the whole class. Students see that nature is the final arbiter, but that there is more than one way to come to the answer. Adrienne prefers a more risky and comprehensive start to an instructional challenge. "Here is some stuff, can you build an electric motor?" True they had a reading assignment the night before, but even the best students are pretty shocked that she really believes they can do this. Amazingly, students can make surprising steps in an appropriate environment and Adrienne described how these labs succeed even when the students fail at the specific task. Here is student creativity in its raw form.

The Green river team was followed by Jeff Hashimoto of Ellensberg High School. He reminded us that creativity in its essential form only requiires that invention is new to you.

He described activities or prompts that allow his students to create many of the key elements of the introductory mechanics themselves. This might be a reconstruction of Galileo's lab or "OK you have a solution, find two more ways to solve this problem." Jeff loves to have conferences. His annual conference on centripetal force brings renowned research teams together to present their findings on this mysterious phenomena.

Donna Messina of the University of Washington spoke to us about preparing K-12 teachers to foster creativity in their own classrooms. The UW summer institute is well known for its PER based preparation of K-12 teachers. Donna explicitly drew the connection between the programs features and supporting teachers in this goal and how other features help prevent back-sliding into teaching as telling. Some features she identified were assessment using RTOP and instilling a habit of being reflexive through practices such as the brown bag lunch series. She noted that in the end creativity was fostered in both populations: K-12 students, and the teachers who participated in the institute.

Lezlie DeWater followed with the anatomy of the pre-service program at Seattle Pacific University with the same outcome. The structure of quality PER based teacher preparation is directly connected in many places with fostering creativity. Particularly interesting was how many elements of the SPU program are different from the UW Summer Institute. From the use of Learning Assistants (LAs) to the rights and responsibilities contract for the classroom learning community, we were treated to a much wider variety of examples and best practices than one might have supposed just knowing that each speaker would describe a PER based teacher preparation program.

Next up was Don Pringle of Ferndale High School. His students construct a representation of behaviors and phenomena using modeling pedogogy developed at Arizona State by Hestenes et all. Don laid out the steps his student go through on a typical modeling unit showing us the important elements we would need to implement this pedegogy and illustrating it all with artifacts and photos from the classroom. He made excellent use of his time, providing motivation, structure, details, and outcomes, all backed up with helpful resource citations.

Invention activities were not be shorted in todays program. James Day at the university of British Columbia uses them to help students develop data analysis methods such as standard deviations and weighted averages of disparate data and linear regression. Elements students are typically poor at even after a year of laboratory instruction. What is more, at UBC they have devised a computer environment for serving the invention tasks and receiving the student submissions. This facilitates both the instruction and the assessment of its efficacy.

The morning talks ended with Christa Larsen an unregenerate foil to Andrew's PER efforts at Western Washington University. Her lively description of a problem based learning class that was truly entirely focused on problem solving might stimulate some eye rolling among the devotees of conceptual development, but there was no denying that this was an extremely successful atmosphere that supported and sustained student creativity. "I like an elegant syllabus" means just two categories for grading (exams and homework for example) to her. This spirit has led her to a working pedagogy that is stripped of nearly eveything that gets in the way of her stated instructional priority. In this alone she captured her audience at the meeting. While many may disagree with her focus, everyone found substantive food for thought and appreciation for her success with the conference theme.

Mark Buchli at Liberty High School wonders what you can do with AP students in the spring after they sit for the AP exam. You really have no hold on them then, so give them some real science to do. He had made contact with the Polar Science Center at the Applied Physics Lab at UW. The goal was to prepare students to look at the problem of climate change as it impacts the artic ice cover. He began with a series of experiments in Ice formation and calorimetry and follows up with openended analysis of large data sets. It was very motivating to see how similar student generated questions and analysis was to published work in many cases. And there was no problem with motivating ths students.

Natasha Holmes of UBC finished up with a slightly different window into the benefits of invention tasks. Where James had focused on the structure for their larger research efforts at UBC Natasha described how the invention support environment dilivered the invention tasks, provided scafolding as the students developed their models and recorded the results for evaluation and assessment.

WA-AAPT Meeting Program.

Workshops:

Bruce Palmquist, CWU, 5-5:50 p.m., Creating and using hypothesis-testing investigations using online simulations. In this workshop, you will learn how to develop investigations using PhET physics simulations (http://phet.colorado.edu/en/simulations/category/physics). PhET simulations are effective tools for teaching students physics concepts and helping them learn investigative skills. The presenter will share some investigations he created, guide you through the process of creating your own investigation, and provide feedback as you start developing your own.

Mike Jackson, CWU, 6-6:50 p.m., Exploration of electric circuits using hands-on activities and physics simulations. In this workshop, electric circuits will be explored using an experimental apparatus containing five light bulbs connected in various series and parallel configurations. This experiment has been used to assess student understanding of electric circuits in our introductory physics courses for majors, non-majors, and the general education program. Next, series and parallel circuits will be investigated using the PhET

physics simulation http://phet.colorado.edu/en/en/simulation/circuit-construction-kit-dc. Along with a brief review of electric circuits, the workshop facilitator will share some investigations created by colleagues at Central Washington University including an equipment list for the hands-on activities.

Andrew Boudreaux, WWU, 7-8pm, Invention tasks to support mathematical sense-making in physics. When we introduce new quantities in physics we usually explain mathematically how they are related to other quantities. Too often students misinterpret the reasoning and simply memorize, approaching physics as a match-the-equation activity. Invention instruction, pioneered by Dan Schwartz, presents open-ended situations in which students must create mathematical procedures to characterize physical situations. Invention tasks prime students to make sense of subsequent formal instruction. This workshop will engage participants in invention tasks and discuss classroom applications.

Invited Talks

Bruce Palmquist
Central Washington University *Facilitating student creativity using online simulations*
Ajay Narayanan, Adrienne Battle, and Keith Clay
Green River Community College *Sparking creativity through clubs and labs*
Jeff Hashimoto
Ellensburg High School *Opportunities for creativity in high school physics*
Donna Messina
University of Washington *Professional development that fosters teachers' creativity in bringing inquiry to the K-12 classroom*
Lezlie DeWater
Seattle Pacific University *Scaffolding creativity and imagination in physical science courses for pre-service elementary teachers*
Don Pringle
Ferndale High School *Modeling instruction in the high school physics classroom*
James Day
University of British Columbia *Invention activities as preparation for learning laboratory data handling skills*
Kristen Larson
Western Washington University *Putting my money where my mouth is: Adventures in using lecture time to foster creativity in problem solving*

Contributed Talks

Mark Buchli
Liberty High School *Ice investigations for physics students: A Post APExam Opportunity*
Natasha Holmes
University of British Columbia *Developing Skills Through Invention*
Thomas Haff
Issaquah High School *Tops and Gyro: How do you measure spin and precession at the same time?*

Posters

Natasha Holmes, Ida Roll, James Day, and Doug Bonn
University of British Columbia *The invention Support Environment – Where do we go from here?*
Alistair McInerny, Andrew Boudreaux and Sepideh P. Rishel
Western Washington University *Assessing the reflexive writing of introductory physics students*
Sepideh P. Rishel, Andrew Boudreaux
Western Washington University *Characterizing student metacognition: A case study approach.*
Alexis Olsho
University of Washington *Research as a guide for adapting curriculum on special relativity to a new population*
Stella Stylianidou
University of Washington *Identifying student difficulties with IV characteristic curves*

—Robert Hobbs, Section Representative

Western Pennsylvania Section

The Western Pennsylvania Section held 2 meetings in 2012. WPAAPT was challenged by attendance at local meetings and getting local members to join the National organization. Spring 2012 Joint Meeting with Central Pennsylvania Section – Penn State University (I do not know attendance – they kept track, though)
Fall 2012 Meeting – Mercyhurst University, Erie PA – 30
Find WPAAPT online at http://westernpa.aaptsections.org/

—Dyan Jones, Section Representative

Wisconsin Section

The Fall 2012 Meeting of the Wisconsin Section of AAPT was held on October 26-27, 2012 at UW-Platteville in Platteville, Wisconsin.

The banquet speaker was Dr. Mark Eriksson from UW-Madison. He presented a talk on: *Quantum Computing: embracing the limits of physics*

Papers presented:

Modeling Ocean Tides to Demonstrate Centripetal Forces
John Fons, UW-Rock County
Blown Away – Alan Scott, UW-Stout
TBD (It WILL be fun.)–Matt Vonk, UW-River Falls
Learning Objectives Based Assessment—The Next Grading Paradigm – Todd Zimmerman, UW-Stout
Eye Movements While Interpreting Graphical Representation of Motion – Jennifer Docktor, UW-LaCrosse
Harnessing the Wind: An Induction Lab for Engineering Students – Melissa Vigil, Marquette University
Physics Education Outreach, Wherever You Find It

Gary Baier, Green Bay East High School
New Results from the IceCube Project—Here, There, and Everywhere – Jim Madsen, UW-River Falls
Nonspherical Nuclei – John Karkheck, Marquette University
Emerging Technologies in Physics Education
Matt Evans, UW-Eau Claire
Teaching Special Relativity: A Software Aid for Spacetime Diagrams – Melissa Vigil, Marquette University
Optics Experiments/Demonstrations to Engage Students and Enhance Teaching of Physics and Astronomy
Swapnil Tripathi, UW-Washington County
Method of Generating Unique Problem Sets and Solutions
Aaron Steffen, UW-Marathon County
Double This, Triple That, Cut the Other Thing in Half: Proportional Reasoning Physics Problems – Mike Sinberg, Green Bay Preble High School
Determination of the Electrical Resistivity of Water
Jim Mallmann, Milwaukee School of Engineering
Teaching Physics in China. – Steve Sahyun, UW-Whitewater
Teaching the History of Science as a Short-Term Study abroad in Europe – Elizabeth Holden, UW-Platteville
Using Online Homework Data to Assess Students' Confidence in Their Knowledge – Andrew Pawl, UW-Platteville

Workshops:

Galileo's Inquiry Into Acceleration Revisited
Gary Baier, Green Bay East High School, and Mike Sinberg, Green Bay Preble High School
Interactive Demonstrations – Philip Young, UW-Platteville
Make and Take Physics – Larry Scheckel, Tomah High School–Retired
Introduction to Microsystems and Nanotechnology – Yan Wu, UW-Platteville
Interactive, Simulator-Based Online Resources for Astronomy
Adriana Durbala, UW-Stevens Point
Developing Animated Graphs and Diagrams Using Excel
David Tamres, UW-Stevens Point, and Mark Lattery, UW-Oshkosh

Current officers of the Wisconsin Section of AAPT:

President: Phil Young, UW-Platteville (2012-2013)
Vice-President Matt Evans, UW-Eau Claire (2012-2013)
Past-President: Brad Hinaus – UW-Stevens Point (2012-2013)
Secretary-Treasurer: Erik Hendrickson, UW-Eau Claire (2010-2013)
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High School Representative: Gary Baier, Green Bay East High School (2011-2013)
Section Representative: A. James Mallmann, Milwaukee School of Engineering (2012–2015)

—A. James Mallman, 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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