

AAPT Section News

2008

APPALACHIAN SECTION

On a Fall weekend in the Appalachian Mountain, under cloudy foggy skies among glimpses of colorful foliage, the Appalachian Section of the AAPT held its annual Winter Meeting in the beautiful campus of West Virginia Wesleyan College (WVWC), Buckhannon, WV, on October 26 and 27, 2007. Dr. Toufic Hakim, Executive Director of AAPT, who was scheduled to be the featured speaker, could not come due to AAPT business. The meeting was a tremendous success, however, thanks to Dr. Joe Wiest, who worked hard in planning, organizing and arranging for the meeting.

Friday evening activities started with registration and reception in Hyma Auditorium Christopher Hall of Science. A paper titled "Undergraduate Student Research in Physics" was given by Bert Popson, Joe Wiest, and WVWC students. Tours and open house followed for all introductory and advanced labs. The qualities of the research projects and lab instrumentation were impressive.

Saturday morning started with registration and continental breakfast. Greg Puskar was the Presider. Dr. Pamela Jubin Balch, President of WVWC, took time from her busy schedule to welcome the participants. With words of encouragement, she spoke about the importance of science and discovery in the education of students. The invited talks included a Panel Discussion on "Changes and New Missions/Visions of the AAPT." The Panelists were Steve Luzader of Frostburg State University (FSU), Greg Puskar of WVU, Bert Popson of WVWC, and Francis Tam of FSU as the moderator. The other invited paper was "The Diffusion Cloud Chamber Design & Operational Improvements with Laboratory Applications" by Joe Zambelli, President of Zambelli Labs. The contributed papers were as follows:

"Magnetic Study of $Zr_{0.9}Ni_{0.1}$ Alloy", Hailemichael Seyoum, WV State University

"A Novel Experiment for Determining the Half-life of Technetium - 99m" Greg Latta, FSU

"Relevant Labs", Greg Puskar, WVU

"Analyzing Motion from DVSS", John Lynch, Wheeling Jesuit University

"Improving Teacher Quality (ITQ) at FSU" by Eric Moore, Katya Dennison, and Francis Tam, FSU

During lunch a business meeting was held. A surprise Distinguished Service Award was presented to Bert Popson by Burt Stumpf, the Distinguished Service Committee, for Popson's faithful and outstanding service to the Appalachian Section. The following officers were elected.

President, Joseph Wiest
WV Wesleyan College
Buckhannon, WV

Vice-President & President Elect, Pam Sharma
WV Northern Community College
Wheeling, WV

Vice-President for High Schools, Sheila Stevenson
Wyoming East High School
New Richmond, WV

Secretary-Treasurer, John Lynch
Wheeling Jesuit University
Wheeling, WV

Section Membership & Recruitment, John Lynch
Wheeling Jesuit University
Wheeling, WV

Past President, Greg Puskar
WVU
Morgantown, WV

The afternoon session consisted of contributed papers. Joe Wiest was the Presider. The papers were as follows:

"Online Physics Teaching Specialization", Dwight Harris, Fairmont State University

"Curriculum Development of Fairmont State's Physics Specialization On-line Courses", Galen Hansen, Fairmont State University

"Using VPython for On-line Classes", Martina Bachlechner, Fairmont State University

"Physics and Art", Burt Stumpf, Ohio University, Athens

"Negative Mass?" George Carlson, WVU Institute of Technology

"Methods to increase Undergraduate Research in Physics and Astronomy", Ken Hicks, Ohio University, Athens

"Structure and Stability of C₂₀ and other Large Carbon Clusters", Majid Sawtari, Bethany College.

The next Fall meeting 2008 of the Appalachian Section will be held in North Community College in Wheeling, WV. Future Appalachian Section Meetings are tentatively scheduled in Bethany College, 2009, Marietta College with Southern Ohio Section, 2010, and Ohio University Athens, Ohio, in 2011.

Francis M. Tam, Section Representative

ARIZONA SECTION

The Arizona Section of the AAPT last met in Flagstaff on April 4, 2008. The theme of the meeting was the Physics of Music. Buzz Delinger, of the Northern Arizona University, gave a talk on the mathematics of music, and Bob Culbertson, of ASU, discussed a conceptual physics of music class that is part of a Freshman Learning Community at ASU. In addition, Mark James of NAU talked about his work on "Optics with a Light Bulb," which came out of a student's question about how a light bulb looks under water. The question led to an interesting consideration of the optics of the various coatings on the inside of a light bulb. The fall 2008 AzAAPT meeting will be in Phoenix at Tempe Preparatory Academy and the Spring 2009 meeting will be in Tucson at Pima Community College. The website for the AzAAPT is www.myeport/published/a/za/home/1/.

Karie Meyers, Section Representative

COLORADO/WYOMING

Fall 2007—Mechanic's Meyhem.

Don Cameron hosted about 15 enthusiastic members of the Denver Area Physics Teachers group, in a meeting co-sponsored by the AAPT CO/WY section. The agenda was action packed and CEUs were available for participants. (The agenda is attached).

Spring 2008—Optics and Electromagnetics Extravaganza

Kurt Miller (PIRA member) hosted a group of about 20 folks at Wheatridge HS, for a share-a-thon on Optics and Electromagnetic topics (The agenda is below). We also conducted our yearly business meeting and elected not just a new Secretary/Treasurer, but also two new Vice-Presidents. One for programs, and one for membership. We're meeting in executive session in early July and may have more to report in Baltimore.

SPRING EXTRAVAGANZA AMERICAN ASSOCIATION OF PHYSICS TEACHERS DENVER AREA PHYSICS TEACHERS APRIL MEETING, APRIL 19, 2008 (approximately 8 AM - 1 PM), Wheat Ridge High School, 9505 West 32nd Ave., Wheat Ridge, Colorado 80033 (On 32nd Ave between Wadsworth and Kipling, access from I-70 Colfax, US-6/6th Ave.)

Please plan to join your colleagues for this program. We already have the following presentations scheduled: * J.D. Birchmeier, Physics Demonstrations with Leftovers * Mike Fuchs, Boulder High School, Student built Loudspeakers * Brian Huang, Ideas from the Science Museum of Minnesota * Steve Iona, University of Denver, Biographies and Heat * Trish Loeblein, Evergreen High School/University of Colorado, PhET simulations for Optics and Electronics * Curt Miller, Demonstrations Galore * Stephen Wallin, CSU-Pueblo, Helmholtz coils—Torque on Magnets

Don Cameron, Section Representative

IDAHO/UTAH

The annual meeting of the Idaho-Utah Section was held March 28-29, 2007, at the College of Western Idaho in Nampa, Idaho. Gary Hunt from Boise State University hosted the meeting. There were 33 registered attendees.

Our meeting was held jointly with the Idaho Academy of Science (IAS), although our sessions were held separately. Activities began Friday afternoon with an oral session and a poster session, followed by a Physics Demonstration Show in the evening. Three more oral sessions were held on Saturday.

Altogether, 19 oral presentations given in four sessions. These included 5 students, 1 high-school teacher, and 11 college and university faculty.

We conducted our business meeting during lunch on Saturday. We elected as vice-president, Steve Shropshire (Idaho State University).

The meeting was concluded with a drawing for door prizes which included various physics "toys". The grand prize was an all-expense paid trip to the national AAPT meeting in Edmonton, Alberta, Canada, July 19-July 23, 2008. The donor providing this prize specified that it be awarded to a high-school teacher who has never attended a national AAPT meeting. The winner was Brett Guisti, a teacher at Lone Peak High School, Highland, Utah.

You can find out more details about the meeting, including photos and videos, at <http://stokes.byu.edu/aapt-idutsec/>.

Harold Stokes, Section Representative

IOWA

The Iowa Section held its fall meeting November 3, 2007 at Simpson College in Indianola, IA. The meeting's theme was "Students Doing Science: A New Level of Engagement" and featured two invited talks, six contributed talks, a 'Short 'n Sweet' session of brief demos, presentations, puzzling pieces of apparatus, etc, lunch at the 'Quantum Café' and a business meeting. President David Olsgaard of Simpson College presided over the meeting.

Larry Schwinger of West Central Valley HS, gave the first invited talk, titled "Scientific Research: Is It Only For Degreed Scientists?" He discussed his methodology of working with students in developing research projects and doing presentations at science fairs. His students have been very successful in reaching international levels of competition. Steve Fuller of Coe College gave the second invited talk "A Four-Year Undergraduate Research Program in Glass Science" in which he described his work with undergraduate researchers over all four years of their college career in grant supported, publishable research. Coe College is a rarity in being an undergraduate institution offering REU positions for students from other colleges during the summer.

The six contributed talks included Bettendorf HS teacher Peter Brueken's "Quarknet at the University of Iowa" in which he discussed his and his students work on the construction of CERN's Compact Muon Solenoid detector. John Zwart of Dordt College spoke on "Improving Problem Solving Skills by Mistake" in which he described how asking students to correct erroneous problem solutions can improve their problem solving skills. Doug Allen of Dordt College presented a four body gravitational interaction simulation which he used in an upper level classical mechanics course in "Earth's 'Other Moon': An Exercise in Computational Dynamics." It uses on-line available JPL data as a starting point for the simulation and allows a comparison of data to the simulation. In "A Short Explanation of the Delayed Choice Experiment,"

Robert Vaughn of Graceland University described an entangled photon experiment. Frank Curti of Simpson College discussed the use of tablet PC's to deliver course content in "Tablet PCs in Physics." In "Physics Activities with Global Warming" Bill Cox of Dowling HS described presentations that he does to a variety of groups on global warming and climate change.

At our business meeting, the following new Iowa Section officers were elected: Wade Sick (Southwestern Community College) is President-elect for 2008. Tom Stierman (Wahlert High School) is Vice President for High Schools for 2008. David Chybda (North Iowa Area Community College) is Vice President for Two Year Colleges, and Todd Pedlar (Luther College) is Vice President for Four Year Colleges. Peter Bruecken (Bettendorf High School) moves from being President-elect to being President in 2007. Current President David Olsgaard (Simpson College) becomes Past President in 2008. Craig Kletzing and Dale Stille were elected to a new joint term as Secretary for 2008-2010, and John Zwart is Section Representative for 2008-2010. We tentatively decide to hold our fall meeting in 2008 at North Iowa Area Community College (Mason City, IA) and 2009 at Coe College. The Executive Committee was given the mandate to meet to discuss ways of improving our outreach, to look at providing CEU granting workshops, and to propose amendments to our constitution to streamline our work in setting up meetings. The business meeting ended with the awarding of door prizes.

Our thanks go to our hosts at Simpson College, David Olsgaard and Frank Curti, for a well organized meeting and to Dale Stille for providing a selection of decommissioned physics lab apparatus free for the taking as well as providing the door prizes.

John W. Zwart, Section Representative

KENTUCKY

The Kentucky Association of Physics Teachers held its fall 2007 meeting in conjunction with the Kentucky Academy of Science, held on the campus of the University of Louisville on November 9 & 10. In addition to the activities and speakers scheduled as part of the Kentucky Academy of Science meeting the KAPT held a business meeting, organized the undergraduate student research competition for physics and astronomy, as well as other oral or poster presentations for faculty and industry researchers. Mr. Kenny Lee, the Kentucky Section's vice-president for

high schools was honored by the Kentucky Academy of Science as "2007 Outstanding Secondary School Science Teacher."

The spring 2008 meeting was held on March 1st at Centre College, consisting a brief business meeting and a full day of presentations and share-a-thon sessions.

A New Teacher Workshop is being planned as part of the 2008 Fall meeting, scheduled for October 31 and November 1 in conjunction with the Kentucky Academy of Science on the University of Kentucky campus.

Richard Gelderman, Section Representative

MICHIGAN

During the past year MIAAPT has participated in activities with NSTA and the MSTA. We did not have our usual Fall Meeting, but instead encouraged our members to attend the Regional NSTA meeting in Detroit. The section helped provide sessions for the AAPT Physics Day. Brad Ambrose of Grand Valley State University and Charles Henderson of Western Michigan University did a workshop on PER and our President Mike Faleski hosted a Demo show with demos provided by several Michigan colleges. The week before our Spring Meeting MIAAPT provided a Make and Take workshop at the state science teachers yearly convention. The workshop was so successful that we have decided to do another next year. We are intending to apply for an AAPT grant to help provide a PTRA New Teacher workshop that will be held in two sessions. One of the sessions will be at the MSTA Convention and the other will follow at our own Spring Meeting. We are hoping to provide 12 hours of in-service using this format.

Our Spring Meeting was held at Western Michigan University and hosted by our incoming President Charles Henderson. Sylvester (Jim) Gates of University of Maryland was our featured speaker. His topic, "Is There a Way to Use Research in Physics Education" can be found on a link at our webpage www.miaapt.org along with photos and information about our other speakers and the format of our meeting. Please check the website to see what we are doing in Michigan.

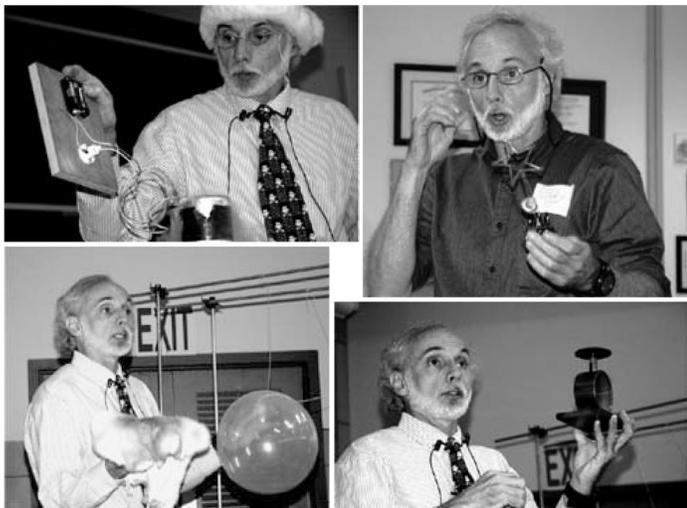
Alan Gibson, Section Representative

SOUTHEASTERN PENNSYLVANIA

The Spring SEPS/AAPT Meeting was held at St. Joseph's University April 11 and 12, 2008

The Friday night session began with a reception and dinner in the President's Lounge at the Student Union Center at St. Joseph's University. After a delicious dinner we walked over to the Science Center and heard from Gino Segre, Professor of Physics at University of Pennsylvania, on the topic of the Copenhagen Conference, and the early struggles with quantum theory. These were exciting times and controversy reined as the world's best minds in science struggled to understand the structure of the atom. Gino walked us through these sessions as a tour guide giving us a sense of the drama of the topic and the participants. Gino then signed copies of his latest book, *Faust in Copenhagen: A Struggle for the Soul of Physics*.

The Saturday session began at 8:30 with coffee and refreshments and after an introduction and welcome from our President, Fran Poodry, and our host and Vice President, Paul Angiolillo, Don Scholl introduced our Invited speaker, Robert Beck Clark. Robert Clark is part of a very successful physics teacher training program at BYU and discussed the nature of the program and how one university produces 5% of the Physics teachers of America. He also described how the growth in Physics education in the high school will require more, not fewer, high school Physics teachers in the next decade. Where are these new Physics teachers coming from? His wisdom and humor made for a fascinating discussion.



Bill Berner (U. Penn) was presented a special award and gift for all the years of interesting demo presentations, including his annual and now famous Christmas show for high school students.

After a short break we began our Contributed Papers session. Members were encouraged to offer a brief demonstration or give a contributed paper on a topic of interest. Our first speaker was Connie Cooper who discussed the growth of Physics education in China and brought us up to date on her recent trip to China.

Next, Marc Baron of Sun Valley HS did a neat demonstration with a laser beam showing how a person pushing on a wall actually deflects the wall a bit. The laser beam and mirror acted like a giant lever, amplifying the movement of the wall.

The next speaker was Barry Feierman, Westtown School, who showed how a motion sensor and volleyball can be used to demonstrate conservation of mechanical energy in six seconds. Participants were asked to predict the shapes of PE, KE, and total energy graphs as the ball made three bounces. This was a lab used for Barry's 9th grade Physics class at Westtown School.

Our next speaker was Jeff Wetherhold, Parkland HS. Jeff has become our expert on home-made video demonstrations and showed some of his newest creations on escape velocity and simulated gravity.

The next speaker was Deborah Goldader, Friends Central School. Deb showed how a plasma state can be made using simple equipment and described why states of matter were an important part of her course. It was fun to see how a fluorescent bulb can be lit up from a simple plasma state toy (without getting shocked).

Our last speaker was Harry Woodcock, Philadelphia University. Harry considers himself to be a theoretical physicist, and discussed some "errors" in textbooks. The title of his talk was "truths not told in physics textbooks."

We next held our annual election of officers. Unlike previous years where nominations were made from the floor, we had a Nominations Committee do the ground work before the election. The nominations submitted were voted in to office, including:

President: Paul Angiolillo (St. Joseph's University)

Vice President: Eldred Jay Bagley (Philadelphia School District)

Recording Secretary: Craig Halpern (Ewing HS)

Corresponding Secretary: Barry Feierman (Westtown School)

Treasurer: Art Zadrozny (East HS, West Chester)

Section Representative (3 year): Ling Liang (LaSalle University)

Web page: Harriet Slogoff (U.Penn) and Martha Takats (Ursinus College)

Members-At-Large: Marc Baron, Doug Vallette, Sardari Khanna, Deborah Goldader, Bob Schwartz, Bill Berner, Jeff Wetherhold

We next presented gifts of appreciation for all of their hard work for many years to John Patane, outgoing Treasurer, and Chet Zach (long-time secretary) of SEPS. Both of these men have held our section together for decades.

We then presented a special award and gift to Bill Berner (U.Penn) for all of the interesting demos he has shown us for years, including his annual and now-famous Christmas show for high school students.

Finally we held our annual door prize "give-away" by the master of give-aways, Bob Schwartz of Harriton HS.

After lunch we had three workshops:

Gravity Workshop led by Don Scholl and Jeff Wetherhold
Participants built lots of cool gadgets including a projectile launcher.

Modeling Workshop led by Doug Vallette and Jess Dykes
Doug and Jess took us through the paradigm of modeling using specific examples from kinematics. They are offering a follow up three-week course in Modeling Physics and Chemistry at Ridley HS this summer.

College topics: open discussion led by Paul Angiolillo

The day ended well with all of us realizing that there is much to engage us in our profession as teachers. Teachers teaching teachers about teaching is cool.

We also agreed to form some Standing Committees to help run the organization:

Outreach Committee: Fran Poodyr

Nomination Committee

Financial Planning Committee

Constitution Committee: update our Constitution

We agreed to hold the next year's Spring Meeting at Villanova University and hope to have it be a joint meeting with the NJ and Central Pa sections.

Our next officer's meeting will take place on May 2, 6 pm at St. Joseph's University. Members are welcome to attend and help plan next year's activities.

Barry Feierman, Section Representative

SOUTHERN CALIFORNIA

The Spring Meeting of the Southern California Section was held Saturday, March 29 at Pomona College in Claremont, California. Special thanks to the local host, David Tanenbaum, for arranging the meeting site and to the Pomona College Physics Department for providing coffee, fruit, and pastries. Approximately

40 people attended.

The meeting began with a workshop: "Downloading and Editing Internet Video for Use in a Physics Class" led by Gary Reynolds. The workshop provided hands-on experience searching the internet for useful video clips. Participants learned how to download clips, reformat them for editing, and edit them. Those attending the workshop were able to store their edited clips on flash drives or cd's for convenient use in the classroom.

Dr. Dwight Whitaker from Pomona College gave the morning invited talk "Rapid Motion in the Plant Kingdom: Nature's Weapon's of Mass Reproduction" Dr. Whitaker described how plants and fungi have developed a number of remarkable methods for the rapid dispersal of seeds and spores and how the most rapid movements come about from the sudden release of stored elastic energy. He showed several high-speed video images of these processes and discussed the biomechanical models developed to isolate the key features required for rapid motion and to assess how effective each plant is at its particular dispersal mechanism. The results of these analyses are combined with observations from the field and comparisons with similar species to gain insight into the adaptive significance of these extraordinary methods of reproduction. He described several methods of seed and spore dispersal from a variety of plant species, including the explosive launch of bunchberry pollen, the slingshot seed dispersal of Impatiens, and the exploding spore capsules of Sphagnum moss. For more about his work and a sample of his videos, please see <http://www.williams.edu/go/explodingflower/>.

Dr. David Tanenbaum from Pomona College presented the afternoon invited talk "Cornell Institute for Physics Teachers: A Lending Library for Class Sets of Laboratories Designed for High School Teachers" Dr. Tanenbaum's talk concerned the CIPT project, a nation wide resource for high school physics teachers supported by both the NSF and New York State. Libraries exist in several locations around the country, with the largest sites being hosted by Cornell in New York and Pomona College in California. He described the training workshops which are run to introduce teachers to the labs. The high school teachers can either assemble the lab equipment from parts lists, buy it from vendors, or check it out from the libraries. Dr Tanenbaum highlighted some of the laboratories that are available and described the process of teacher training and the development of new laboratories. For more information go to <http://www.cns.cornell.edu/cipt/index.html>.

A special event of the afternoon session was a planetarium show and astronomy software demonstration presented by Dr. Bryan Penprase of Pomona College. He demonstrated some of the available software, including a set of java applets for simulating apparent motions of the stars and planets, a desktop planetarium

program with a catalog of 200,000 stars which also enables "fly-throughs" of the solar system and nearby universe, and programs for viewing large assemblies of particle positions which can be used to visualize the largest structures in the universe. Dr. Penprase concluded his presentation with a quick sky show illustrating some of the capabilities of Pomona College's Millikan Planetarium and provided some updates on upcoming events in the sky. The Pomona College astrophysics simulations can be found at <http://galileo.astro.pomona.edu/common/Simulations/>

The ever popular Show 'n' Tell featured demonstrations by Gary Reynolds, Ertan Salik, Forouzan Faridian, and John Mallinckrodt.

The following contributed talks were presented:



Dr. David Tanenbaum shows some of the lab equipment that can be checked out from the CIPT lending library.

"Flight of the Wandering Albatross"
Bob Coutts, UCLA

"Calculus Based derivation of Simple Harmonic Motion" Martin Hoecker-Martinez, Mt. San Antonio College & Harvey Mudd College

"Ion Propulsion Simulation and the NASA Dawn Mission" Joe Wise, New Roads School

"Measuring Relative Phase Shift Incurred Upon Total Internal Reflection" Ertan Salik, Cal Poly Pomona

"History and Reality of the International Young Physicists Tournament" Tengiz Biblashvili, Wildwood Secondary School

There was a brief business meeting where the PTRAs initiatives and other news from AAPT were discussed and elections were held. The following officers were elected:

President:	Bill Layton
Vice President for High Schools:	Bob Baker
Vice President for 2-year Colleges:	Fred Carrington
Vice President for Universities:	Jeff Phillips
Past President:	Nuria Rodriguez
Treasurer/Secretary:	Forouzan Faridian
Web Manager:	John Mallinckrodt
Section Representative:	Mary Mogge

The meeting ended with our World Famous "Order of Magnitude Contest." This meeting's question was: (A variation on an oldie, but goody!) "How many sheets of paper would it take to cover your share of the Earth's surface?" The answers ranged from 0 to 1058. Alex Small and Dean Papadakis submitted the median entries of 104 and 105, respectively. Alex selected a \$50 gift certificate from Vernier as his prize. Dean chose a GoMotion from Vernier. Door prizes were won by Paul DeVoe (Vernier gift certificate), Marilyn Usher (The Flying Circus of Physics by Walker

from Wiley), and Tengiz Biblashvili (*The Flying Circus of Physics* by Walker from Wiley). We thank our corporate sponsors—Vernier and John Wiley & Sons, Publishers—for their support and donation of door prizes.

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 the date in early Fall.

Mary Mogge, Section Representative

SOUTHERN OHIO

The Southern Ohio Section held our spring meeting on April 26, 2008 at Olentangy High School in Lewis Center, OH (north of Columbus). Between 20 and 30 members were in attendance, including several first-time attendees. Our host, Mary Whalen, produced a well-organized, fun, and educational meeting for us. She had assistance from Jason Cervenec (Thomas Worthington High School) and Doug Forrest (Pickerington High School North).

The day opened with the first of two invited speakers, Bob Brown of Case Western Reserve University (in our neighboring Ohio section) who told us about his method to help students *Revisit, Reflect, Remember, and Really Learn?: The Latest Data on a Cycling Method of Teaching Introductory Physics*. Our second invited speaker was Jim Beatty from The Ohio State University, who explained the work he and his collaborators are doing in Argentina and Antarctica to learn more about *The Highest Energy Particles in the Universe*.

Kathy Harper of The Ohio State University presented a workshop on Jeopardy Problems, and the team of Jason Cervenec and Brian Geniysz from Thomas Worthington High School gave a workshop on lab practica, entitled, Practica with a Purpose.

Jim Sullivan of the University of Cincinnati OMI College of Applied Science contributed a presentation that was an update on some of his ongoing work, entitled, *Physics Assessment Tool – Part II*. We also had a brief *How I Do It* session, coordinated by Doug Forrest. Presentations included one by Minda Wesley of Olentangy Liberty High School on teaching rotational kinematics and one by Doug Forrest about a homework/lab exercise he has students do to measure their homes' levels of radon.

We also elected some new officers. The president elect is Jennifer Blue of Miami University, the new vice-president for high schools is Eric Towers of Summit Country Day School, and our new section representative is Kathy Harper, who will be at Denison University, effective Sept. 1.

On the morning of Saturday May 10, approximately 30 physicists 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 nearly 150 projects. The prizes are awarded by the Southern Ohio Section of AAPT, with the generous financial support of the Ohio Section of APS.

Also of note is that Fred Reuter, our current president, secretary, and webpage manager, has been updating our website with new features, including past issues of our newsletter, a blog, links to other physics websites, and a listing of educational opportunities. Our new web address is www.sosaapt.org.

Our Fall 2008 section meeting is scheduled for October 11 at Wright State University in Dayton, in conjunction with the Ohio Section of APS. Elizabeth George of Wittenberg University will coordinate the AAPT activities at the meeting.

At the request of the national AAPT, the section is coordinating a strand of physics-related presentations to be offered throughout the day at the upcoming regional meeting of the NSTA in Cincinnati. "Physics Day" will be Friday, December 5.

Kathy Harper, Section Representative

BRITISH COLUMBIA

Each year the BCAPT aims to hold three one day professional development events. Between October 2008 and August 2009 we partnered with different groups to hold five well attended events. In October we held an event aimed primarily at high school teachers on the province wide professional development day. This is always our largest event (since so many teachers are free to attend) and we are able to offer 6 parallel sessions for about 100 people who attend from across the province of British Columbia. Held on October 19th, 2007 the theme was "Sustainability and Energy: The Physics of Environmental Issues". Workshop activities included: fuel cell demos, fuel car demonstration and green building tours; research talks were about hydrogen fuel cells and climate change. This event was held with the support of Kwantlen University College in Surrey, BC.

In February the BCAPT partnered with the BC Association of Medical Physicists and the BC Cancer Agency to offer a Saturday morning workshop on "Radiation Treatment of Cancer". This event included research talks and a tour of the equipment and facilities used to conduct this research. Careers in medical physics were also featured. About 40 people attended this event on a Saturday, February 23rd, 2008.

Every two years the BC Science Teachers Association (BCScTA) organizes a large science teaching conference called Catalyst. For the second time the BCAPT partnered with the BCScTA to offer a physics strand of talks at Catalyst. From their proposals we chose the physics talks and also held our AGM at this conference. Again this is a large event where teachers receive funding from their school districts to attend. It was held in the interior of British Columbia in Kelowna and we were able to reach some of our members who can not travel to the lower mainland for our regular event. 27 new members joined our organization at Catalyst.

In addition to our partnership with the BCScTA we have also entered into an agreement with the Perimeter Institute to support each others' professional development activities. In March we helped advertise and host a Perimeter Institute professional development workshop on their new Dark Matter teaching resource. We are looking forward to working with the Perimeter Institute in the future.

Finally in August the BCAPT hosted a PTRAs workshop after receiving a \$1200 grant to offer a one day workshop on motion. This workshop was designed to support new teachers in British Columbia with physics topics that are being introduced into the new Grade 10 curriculum this year. Bill Franklin ran the workshop which included many free materials and books. 17 preservice and junior science teachers attended this workshop on

Saturday, August 9th, 2008.

The BCAPT is looking forward to another busy year as we start to plan our next big event. In October we will hold our next conference at TRIUMF (a linear accelerator facility) around themes on High Energy Physics and celebrating the opening of the Large Hadron Collider in CERN.

Rachel Moll, Section Representative

MINNESOTA

The spring meeting of the Minnesota Section was held at Macalester College in Saint Paul, Minnesota on April 26, 2008.

The highlight of the meeting was the plenary session, *QuarkNet History: Nationally and at the University of Minnesota*, presented by Bob Peterson of Fermilab and Jon Anderson from Centennial High School in Circle Pines, Minnesota. Bob described the history of QuarkNet as program designed to involve high-school teachers and their students in real

scientific research and the beginnings of the University of Minnesota site in 2002. With the help of three of his students, Jon talked about how the program has been implemented at Centennial High School and the impact that it has had on students there. Shane Wood from Irondale High School in New Brighton, Minnesota, joined the group to share some of his QuarkNet experiences and plug his poster presentation. Additionally, an overview of the Cosmic Ray Muon Detectors used by students was given and a description of how the data from these detectors are used as part of an online e-Lab. Other example e-labs from Ligo and CMS were shown.

Wrapped around the keynote address were seven contributed papers and four posters on subjects ranging from biophysics to pedagogical uses of technology. Among other things, participants were treated to a discussion of the construction of biodegradable plastics and dye-sensitized solar cells, the use of finite element methods in parachute modeling, and the properties of solid nitrogen. Three posters and two papers had to be cancelled because the presenters were unable to travel to St. Paul due to a late spring snowstorm.

The best student presentation awards was given to Sarah Anderson and Chad W. Hoyt from Bethel University for their talk, *A low-cost wavelength meter with picometer-level accuracy*. The best student poster award was given to Andrew Nguyen from Augsburg College on *Line tension measurements with lipid monolayers*.

At the business meeting which followed, a discussion of meeting formats took place and elections were conducted. Suggestions were solicited for the program of the fall meeting, tentatively scheduled for October 25, 2008 at Gustavus Adolphus College. For the latest information on this and future meetings, visit <http://www.maapt.org/>

Charles Niederriter, Section Representative

NORTHERN CALIFORNIA/NEVADA

The spring meeting of the Northern California/Nevada Section was held Friday and Saturday, April 18-19, 2008 at Heritage High School, Brentwood, CA.

Friday Afternoon Workshop, 1-4 PM

“Get Hands-On with Vernier’s LabQuest”

Clarence Bakken will present a hands-on workshop in Room B-114 for physics teachers that will explore the use of Vernier equipment for gathering and analyzing data in the physics lab. Learn about LabQuest, the newest tool from Vernier, WDSS, the wireless solution that’s perfect for many applications, and the use of video. Take home sample labs and other resources that you can use in your classroom. Email Clarence for more information (cbakken@mac.com).

Friday Night Social

6:30 – 8:00 Come check out this brand new high school in Dennis Buckley’s home town—little ‘ol Brentwood—you’ll be impressed! Come toast physics with us!

Attention New Physics Teachers! PTSOS is here to help you! PTSOS is an NCN-AAPT-sponsored project funded by a donation from the Karl Brown Foundation that assists physics teachers in their vulnerable first years of teaching. PTSOS is headed by Paul Robinson, Dean Baird, Stephanie Finander. New teachers should email Stephanie Finander at sfinander@sbcglobal.net for more information

Saturday, May 5, Morning Session

9:00 Show & Tell

Share your favorite demonstration or teaching tip. Since new teachers and section members will be at this meeting, you are encouraged to dust off some of your oldies but goodies. If you have handouts, please bring 100 copies. Pasco will present of their latest products. Time limit is 5 minutes per person. Presenting papers at Show & Tells is specifically discouraged. Beware of the dreaded Gong!

10:00 Invited Speaker

“The Latest Scoop on the LHC”

Beate Heinemann, Lawrence Berkeley Laboratory, BHEHeinemann@lbl.gov

Exploring Nature’s Fundamental Forces and Particles with the Large Hadron Collider

Abstract:

The “Large Hadron Collider” (LHC) is a new particle accelerator currently being constructed in Geneva in Switzerland. It is among the most powerful and largest scientific instruments ever built and will probe the fundamental forces and particles in Nature with unprecedented precision. Starting in summer 2008 proton-proton collisions will take place inside two huge detectors (called ATLAS and CMS) which record the particles produced in those collisions. More than 2000 scientists from all over the world are working on the construction of each of these detectors and will analyze the large data volumes they produce.

Nobody knows what new particles will be found at the LHC but it is very likely that some revolutionary discovery will be made: among the most likely discoveries are the “Higgs boson” (that will explain the origin of mass), “supersymmetric” particles

or extra spatial dimensions as predicted by theoretical models to solve problems in the current model of our Universe. I will explain the big questions the LHC will address, the LHC accelerator and detectors, and outline the experimental methods used to detect new particles and to reveal new laws of Nature.

12:30-12:50 Raffle/Business Meeting: Report from the Officers and other business. Future meetings and dates will be discussed. Paul Robinson will report on the National AAPT business. A motion to allow the Southern Section of Nevada to form their own Section will be presented.

Contributed Papers

1:00 “Why Does Saturn Have Rings and Earth Doesn’t?” Phil Gash, CSU Chico Physics Department, pgash@operamail.com

In short, Saturn’s quadrupole moment is much larger than Earth’s. Salient features of the ring system will be presented along with how Saturn’s girdle or bulge helps stabilize the rings to its equatorial plane.

1:20 “Explaining Hyperspace as Proposed by Lisa Randall and Sundrum” Douglas Leadenham, DeVry University, dleadenh@fre.devry.edu

Giving students a glimpse of new ideas in physics keeps them involved and keeps instructors focused. Explaining Randall-Sundrum theory was not as hard as one might think, but even better was finding that the so-called Compton wavelength is a misnomer. We get the Compton result in special relativity by explaining scattering of photons and electrons. The thing we call the Compton wavelength, h/mc , has the name because of its resemblance to the de Broglie wavelength, h/mv or h/p . That is as close as the resemblance gets, because the de Broglie wavelength is a variable, depending on the particle’s momentum, while the Compton wavelength is a constant property of a particle. Moreover, this confirms the Randall-Sundrum theory.

1:40 “Advances in Advanced Labs”

James M. Lockhart, San Francisco State University, lockhart@stars.sfsu.edu

An AAPT Advanced Lab Task Force (including local member Darryl Preston from CSU East Bay) recently submitted its report to the AAPT Executive Committee. The report recommended ways that AAPT could increase the degree and effectiveness of efforts to improve the teaching of advanced laboratories. An advanced labs topical conference is being planned for the Summer, 2009, AAPT meeting. Finally, the Advanced Laboratory Physics Association (ALPhA) was recently formed in order to promote the sharing of knowledge and experience among advanced lab instructors. Upgrades to advanced lab programs at local universities, including San Francisco State, UC Berkeley, and Stanford will be discussed.

2:00 “A Biophysics Experiment for the Advanced Physics Laboratory”

Thomas Colton, UC Berkeley, tcolton@berkeley.edu

A new experiment, Brownian Motion in Cells, allows students to use modern particle tracking techniques to investigate

Einstein’s model of random motion due to thermal energy and compare this motion with intracellular transport by motor molecules in a living cell. Students observe gold and polystyrene beads, 200nm-2 micrometers in size, suspended in liquids on an inverted microscope. They analyze the images from a CCD camera to measure particle trajectories and calculate squared displacements and a diffusion coefficient. They investigate the effects of particle size, fluid viscosity, and solvent molecular weight on particle motion. Students then examine cytoplasmic streaming in onion cells, mapping the intracellular highways along which small granules are transported by myosin motor molecules. Particle velocity distributions and the relative roles of directed transport and Brownian motion can be inferred. The particle tracking software is highly automated, and students add algorithms in the C# code to improve the performance and learn how image processing works. The lab write-up, documentation, and software are posted on our Wiki at <http://www.advancedlab.org>.

2:20 “A New Look at the Bouncing Ball” Tim Erickson, Epistemological Engineering, tim@eeps.com

A microphone can be used to record a bouncing ping-pong ball. Then we’ll use the sound to figure out the coefficient of restitution, see whether that coefficient really is constant, and put all of it together for pre-calculus students so they can see a practical application for summing infinite geometric series

2:40 “Extending Critical Thinking Beyond the Classroom” Dean Baird, Rio Americano High School, dean@phyz.org

Suppose our students leave our classes with the knowledge that the kinetic energy of an object is $\frac{1}{2}mv^2$. And supposed they take that knowledge home where they prepare some nice homeopathic remedies to consume amid their feng shui-arranged furniture while they search for clues to their future at www.psychicfriends.com. As a science teacher, I would fear we had done something wrong. So I developed some mini-lessons focusing on critical thinking and skepticism as it applies to the world beyond the classroom. Student worksheets will be shared, as will references to corresponding web video and presentations. You’ll laugh, you’ll cringe, and you might even want to slip some of these lessons into your curriculum.

3:00 “Newton’s Laws Poster Set”

Kevin John, Sonoma State University, johnk@universe.sonoma.edu

A set of posters were designed by the NASA E/PO office at Sonoma State in support of the Swift project. A brief review of the scientific concepts of the mission and a short discussion on in-class activities to assist educators in teaching these concepts will be presented. An online version of the posters can be viewed at <http://swift.sonoma.edu/education/index.html>

Dennis Buckley, Section Representative

NORTH CAROLINA

The NCS-AAPT met jointly with Zone 5 SPS at Davidson College in Davidson, NC on April 4-5, 2008, for the 13th Annual Spring Meeting of the Section. Guest speakers included N. David

Mermin who spoke at the banquet on “The Geometry of (Flat) Spacetime” and Susana Deustua who spoke on “The Supernova Acceleration Probe (SNAP) Project” as well as presenting a workshop on comPADRE.



Susana Deustua presented a workshop on comPADRE.

There were 65 attendees including 19 high school students and teachers whose registration costs were partially covered by the SHODOR Foundation, a special grant from Davidson College’s Dean of the Faculty, and the Mary Creason Fund. Other sponsors included AAPT, the Society of Physics Students, North Carolina State University, Pasco, Prentice-Hall, Spectrum Techniques, Vernier Software and Technology, and John Wiley and Sons.

There were a total of 18 papers and two workshops presented. The following prizes were announced:

Best Graduate Student Paper (Fall 2007)

“Is ‘Clicking’ Thinking? Using Clicker Sequences to Investigate Student Use of Deductive Reasoning” by Shawn Weatherford, North Carolina State University

Best Undergraduate Student Paper (Fall 2007)

“Flaw Detection through Nondestructive Means in Flex Hoses” by George Hall, Elon University

Best Pedagogical Paper (Fall 2007)

“Is ‘Clicking’ Thinking? Using Clicker Sequences to Investigate Student Use of Deductive Reasoning” Shawn Weatherford, North Carolina State University

The following two awards are presented at irregular intervals and were both presented at this meeting:

The Walter C. Connolly Award for Teaching at the Pre-College Level was presented to Sam Wheeler, William G. Enloe Magnet High School

The NCS-AAPT has established a new award at the Two-Year College level: Award for Outstanding Teaching and Service at the Two-Year College Level

The Award has been established to reward excellence in both teaching and service at the two-year college level in North Carolina. For consideration, a nomination letter, as well as two supporting letters detailing the nominees teaching and/or service at the two-year college level, must be sent to the Section Representa-

tive or the Secretary-Treasurer. Recipients receive a certificate, a cheque for \$300, a one-year membership in the national AAPT, and donated items from sponsors.

Bo Wessel is the first recipient. Hereafter the TYC Award will be known as the Conrad “Bo” Wessell Award for Outstanding Teaching and Service at the Two-Year College Level

Citation: For his long and fruitful career marked by service to the cause of physics education in general, and to the NCS-AAPT and the two-year college community in particular, the North Carolina Section of the American Association of Physics Teachers is proud to announce Conrad “Bo” Wessell as the first recipient of the NCS-AAPT two-year college award.

We received a note of appreciation from AAPT for our donation of \$1000 for the Physics Teachers Recognition Day, which was very successful.

Our next meeting will be a joint meeting with SESAPS and the SPS at North Carolina State University on October 31st – November 1st 2008.

Our hosts from the Physics Department included Larry Cain, Mario Belloni, and Tim Gfroerer with the able assistance of Nancy Brown and students from the department.

John Hubisz, Section Representative