

Michigan Section

The Spring 2017 meeting of MIAAPT took place **Saturday, April 8, 2017, at Lawrence Technological University (LTU)** in Southfield, Michigan. About 25 attendees from the high school, two-year college, and four-year college communities were present as well as many undergraduate students. The meeting was chaired by President David Shane (Lansing Community College, LCC) and coordinated by our 1st Vice President Laurence Tarini (U. Michigan-Flint). Dr. Scott Schneider, physics faculty member at LTU, offered words of welcome after attendees arrived to enjoy morning refreshments and conversation.

Contributed presentations. Conferees enjoyed ten contributed presentations during the morning session. Taoufik Nadji (Interlochen Arts Academy) shared results from a recent “TinkerVention” project assigned to his students, a project that blended aspects of physics, design, and film. Jim Gell (Plymouth High School) described a successful teaching experiment in which he engaged his students by having them critically analyze movie special effects for correct physics. Janelle Lie (Plymouth High School) discussed how to develop “habits of mind” to help high school students not just learn physics but develop into life-long learners. Paul Hosmer (Hillsdale College) shared his perspectives on physics teaching as a part of a classical liberal arts education. Two other presentations, by Michael LoPresto (Henry Ford Community College) and Carrie Swift (U. Michigan-Dearborn) demonstrated ways in which introductory astronomy instructors can access real data (e.g., from the Hubble Legacy Archive) for their students to access and analyze in order to learn astronomical concepts. Other engaging talks were given by Mike Faleski (Delta College), Changgong Zhou (LTU), Larry Tarini (UM-Flint), and David Shane (LCC).

Featured speaker. After lunch conferees were treated

to a plenary address delivered by Dr. Jordan Steckloff, Associated Research Scientist at the Planetary Science Institute and Postdoctoral Research Associate at Massachusetts Institute of Technology. In her presentation, “Breaking the Ice: How Sublimation Torques Alter Comet Activity and Structure,” Dr. Steckloff discussed recent research into the ways in which ice sublimation in comets can help shape their irregularly structured, sometimes bilobate, nuclei. He also described models that have been devised to help explain how some comets can experience outbursts or resurgences of sublimative activity.

Afternoon workshop. Following the plenary talk and business meeting, two afternoon workshops were offered. One was facilitated by Brad Ambrose (Grand Valley State University) and focused on classroom materials designed to bring the 2017 solar eclipse into physics and astronomy courses. The development of these materials has been supported by a grant by the NASA Heliophysics Education Consortium. A second workshop was run by Don Pata (Grosse Pointe North High School) and served as a “sequel” to a popular workshop he delivered at the Fall 2016 MIAAPT meeting. This workshop, Fundamental Labs for Exploring Electricity and Magnetism, provided participants with experiments and activities well-suited for teaching E&M in high school, particularly for courses that implement a Modeling teaching approach.

Next meeting. We look forward to our next section meeting, which will be hosted at Grand Valley State University in Allendale, MI. The meeting will be scheduled for sometime in October, with details to come soon.

—Bradley S. Ambrose, Section Representative

New Jersey Section

The New Jersey section was very active this winter and spring. The NJ section hosted our annual “Holiday Treats” outreach in December where teachers were given a bin of objects, some bought and some made by our members, to be used in their classrooms to help teach physics. The boxes included demonstrations, lab manuals, and lab activities, just to mention a few. There were also door prizes for those who did not register for a bin. This year, 35 bins were given out and the event was attended by over 60 members.

The NJAAPT Annual Demo Show took place on Feb 3, 2017 at Princeton University. This was a chance for members of NJAAPT to share the demonstrations that they use in their classrooms. The demonstrators explained how to perform the demos as well as explained the physics behind them. There were 10 presenters and the event was attended by over 30 members.

The annual spring meeting was held at Princeton University on Friday March 17th and Saturday March 18th. The title and focus of the 2017 section meeting was “New Approaches in Physics Education” On Friday night the schedule of events included dinner and a special presentation by speaker Dr. Kent Yagi, a Postdoctoral Research Scholar at Princeton University. Dr. Yagi gave a fascinating talk on the first observing run of LIGO and explain how fascinating the detection is, how amazing the gravitational events are, and what interesting physics we learn from them. He ended his talk by describing future prospects of gravitational wave astronomy. The dinner was attended by 39 members and guests. Saturday’s program included three presenters as well as breakfast, lunch and a general member meeting. Saturday’s program was attended by 60 members and guests. The first speaker was Craig Buszka, a teacher at Montgomery High School. Craig’s spoke about “Modeling in the Physics Classroom”. Modeling Physics is a pedagogy that helps students learn and do science by making and using models to describe phenomena. The discussion included descriptions of activities used in a Modeling learning cycle, examples of student work, and practical steps to raise the level of student discourse in the classroom.

The second speaker was Frank Noschese of John Jay High School Lewiston, NY. Frank topic was “Standards-Based Grading Strategies”. Standards-Based Grading (SBG) is a method of assessment and reporting that is framed around learning objectives rather than individual assignments. Instead of receiving a traditional letter or number grade on an assessment, SBG allows teachers to provide students with actionable feedback on their mastery of a set of specific skills and content knowledge. With SBG, conversations become more focused on learning itself rather than report card grades.

The last speaker was John Roeder of The Calhoun School, NYC. John talked about “The State of Physics First” In John’s own words ... “My teaching career underwent a major change when Paul Hewitt introduced me to teaching physics to ninth graders (“Physics First”) in 1989. I will relate how my teaching Physics First has evolved since and what I have learned about other ways other people are teaching it. If you are interested in implementing Physics First at your school, I have some comments on that, too.”

On June 3rd, the section hosted a workshop entitled “Adding Inquiry to Physics First” The workshop was designed to help new “Physics First” teacher integrate more accessible, inquiry-based activities and performance tasks into their curriculum. The workshop was attended by 9 members.

Finally the section hosted another workshop on June 28th at Rowan University. The title of the workshop was “Get your Graph On!” In this workshop, graphing techniques and analysis for Introductory Physics students (grades 9-12) were demonstrated and discussed, along with common errors and misconceptions that students have. Classroom and lab activities were provided. This is a “low-tech” workshop focusing mainly on teaching graphing techniques, analysis, and students’ areas of difficulty. The workshop was attended by 11 members.

—James A. Ferrara, Section Representative

Southern California Section

On Saturday, April 8, 2017, fifty-five members of the Southern California Section of AAPT gathered at Loyola Marymount University (LMU) for an exciting

day filled with new physics and helpful advice for the classroom.

The day began with two interactive workshops- “Incorporating Astronomical concepts in General Physics” and “Hands-On Demo Session.” John Bulman (LMU Physics) guided participants through multiple astronomical activities, including a derivation of Kepler’s laws, modeling of the nuclear reactions in the sun. Anatol Hoemke (LMU Physics) invited participants to join him in the lab rooms where he set out several dozen of his favorite demonstrations. Participants not only had the opportunity to use the equipment, but they also took time to share teaching tips with each other.

The meeting was called to order by SCAAPT President Cliff Gerstman and Jonas Mureika, Chair of LMU Physics Department.

The meeting included several fascinating invited presentations:

Michelle Feynman read from her book *Perfectly Reasonable Deviations from the Beaten Track*, which is a collection of personal letters from her father, Richard Feynman. Along with those letters, she recounted some of her memories of her father.

Walter Buell, Aerospace Corporation and member of the APS and AAPT Joint Task Force on Undergraduate Physics Programs, spoke about trends in physics education and employment and presented suggestions for preparing undergraduates for a wide range of careers.

Jonas Murioka, LMU, talked about alternative approaches to quantum gravity such as decreasing the number of spatial dimensions in the model of the universe. The behavior of gravity in these “Flatlands” and “Linelands” (two and one-dimensional spaces) may provide some insight into current observations.

Arnold Silver, talked about the interplay of chance, serendipity, and science in the invention of the SQUID (Superconducting Quantum Interference Device). Dr. Silver’s work at the Ford Motor Company Scientific Laboratory in the 1960’s on SQUIDS provided an interesting tale for scientific research.

Several other SCAAPT members also gave engaging contributed presentations:

- Walter Uriostegui, Alexis Rodriguez-Mejia, Johnny Vargas, Quan Do, Middle College High School, The Benefits of a High School Robotics Club
- Miana Smith, Los Angeles Physics Teachers Alliance Group, Comparison of Common B-Dot Probe Designs for Plasma Diagnostics
- Jeff Sanny, LMU, Teaching Physics Using Resources Available at OpenStax
- Vincent Colletta, LMU, An Invitation to Collaborate on the Thinking in Physics Curriculum

The ever-popular Show ‘n’ Tell featured demonstrations by Eric Tom (managing group projects), James Lincoln (semi-quantitative electrostatics), Bryn Bishop (recursive egg drop), Dean Papadakis (human air columns), John Altounji (using tablet accelerators), and Bob Baker (Quarknet).

At the business meeting members approved several changes to the section’s constitution and by-laws.

The meeting ended with our traditional “World Famous Order of Magnitude Question” discussion, led by Bill Layton, James Lincoln and Cliff Gerstman, and the raffle of donated door prizes.

SCAAPT thanks its corporate sponsors –Arbor Scientific, PhysicsVideos.com and PASCO– for their support and donation of door prizes. SCAAPT thanks Jeff Phillips and the LMU Physics Department for hosting the meeting. Thanks also to Chad Kishimoto, for serving as Program Chair of the meeting.

The Southern California Section will hold its next meeting in the fall.

—*Jeff Phillips, Section Representative*

Southern Ohio Section

The spring meeting of the Southern Ohio Section was held on Saturday April 1 at Reynoldsburg eSTEM Academy. Many thanks to Joe Griffith for volunteering the space and Chad Naiman for serving as our host. Since the day’s agenda included the Flying Bernoulli Brothers and Sister (Gene Easter, Bill Reitz, and Mary Kay Patton), they really didn’t know what they were getting into when they offered to help.

Of course, the 20+ attendees assisted with the clean-up, so everything turned out fine.

In addition to their preview of the summer AAPT meeting's demo show, the Bernoulli Bros & Sis led a make 'n take session. We also heard from Chris Orban (The Ohio State University – Marion) about his approach of strengthening student understanding of physics content through programming computer games.

We got out some boxes of tissues and remembered the life and legacy of Gordon Aubrecht, co-founder of the Ohio Section, and a presence in physics education locally, nationally, and internationally. The session was coordinated by Mark Plano-Clark (University of Cincinnati). We heard about Gordon's contributions to faculty governance by colleague Doug MacBeth of Ohio State, revisited his role in the Ohio section through Elizabeth George's (Wittenberg University) reflection, and were reminded of his passion for working with pre-service and in-service science teachers in Jessica Creamer's tribute.

At the business meeting portion of the program, the following officers were elected:

President-elect: Jeff Rodriguez (Anderson High School)

Vice-President for high schools: Doug Forrest (Pickerington High School - North)

—Kathy Harper , Section Representative

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

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