



Southeastern Pennsylvania Section of the American Association of Physics Teachers

*An organization to bring together high school and college physics
teachers and other professionals working in science education*

<http://www.physics.upenn.edu/aapt>

Spring Meeting – March 6-7, 2015 **Swarthmore College** **Theme: “Physics At All Scales”**

Location: Science Center
Swarthmore College, 500 College Avenue, Swarthmore, PA 19081
<http://www.swarthmore.edu>

Contacts: Mary Anne Klassen, Senior Laboratory Lecturer, mklasse1@swarthmore.edu
Jeremy Carlo, SEPS President, jeremy.carlo@villanova.edu

Friday events include buffet dinner, lecture, and an observatory viewing / tour of Swarthmore Astronomy facilities.

Friday Evening Invited Lecturer:

David Chuss, Professor of Astronomy, Villanova University
“Exploring the Infant Universe”

Saturday events include breakfast, invited talk, contributed talks/demos, business meeting, lunch, lab tours, and afternoon workshops.

Saturday Morning Invited Lecturer:

Catherine Crouch, Professor of Physics, Swarthmore College
“Connecting Introductory Physics to Biology and Chemistry to Engage Student Interest”

Saturday Afternoon Workshops:

“Foutan Board / Cornell Lending Library Workshop,” Marc Baron, Sun Valley High School
“The Physics of Musical Instruments,” Barry Feierman, Westtown School and West Chester University

Registration Rates

The following prices are for members of SEPS AAPT. If you are not currently a member of SEPS AAPT, or have not yet paid your dues for 2014-2015, **please include an additional \$10** with your registration to cover annual section dues.

Early registration (registration & payment received by February 25th)

Full conference: \$70

Friday only: \$35

Saturday only: \$45

Late registration (registration & payment received after February 25th)

Full conference: \$80

Friday only: \$40

Saturday only: \$50

Student rates (for eligible undergraduate/graduate students):

Full conference: \$35

Friday only: \$15

Saturday only: \$20

Please fill out the online registration form at <http://goo.gl/d6gvxu>, then mail your registration payment (including membership fee, if applicable) to:

Art Zadrozny

16 Painters Lane

Chesterbrook, PA 19087

(Note that this address has changed in the past few years!)

To qualify for the advanced registration rate, your check must be postmarked by February 27th. You may also bring your check in person to register on-site, at the higher on-site rate.

Please make checks payable to SEPS AAPT, and include your email address or phone number in the "comments" section of the check.

Contributed Talks, Posters, and Demos

If you are interested in presenting a talk, demo, or poster at the conference, please indicate as much on the registration form, include a brief abstract, and specify your equipment or A/V requirements. You may also send your abstract, technical needs, and preference as to whether you prefer to present a poster or an oral session, to:

Mary Anne Klassen

Department of Physics

Swarthmore College

500 College Avenue

Swarthmore, PA 19081

mklasse1@swarthmore.edu

The deadline for submissions is February 25th; we will do our best to accommodate all requests submitted before that date. You may contact Mary Anne directly if you have special needs.

Abstracts for AAPT Invited Lectures

Exploring the Infant Universe

Friday Evening, Science Center 199, 7 PM

David Chuss

Villanova University

Modern cosmological observations have elucidated the history and composition of our universe with remarkable precision. In addition to quantifying the parameters of the Big Bang, these observations imply that in the first tiny fraction of a second, the universe underwent a rapid exponential expansion called “inflation” that seems necessary to explain such phenomena as the initial homogeneity, flatness, and large scale structure of the universe.

Key contributions to this effort have come from observations of the cosmic microwave background (CMB), the light emitted from the so-called “Epoch of Recombination” in which the cooling associated with the expansion of the universe instigated the transition from an opaque plasma to a transparent hydrogen-dominated gas. Recently, the Planck satellite has released the most sensitive large-scale survey of the CMB to date. Beyond Planck, more sensitive measurements of the CMB are planned that will measure polarization with unprecedented sensitivity. The goal of these experiments is to detect and measure a faint polarization pattern that is predicted to be generated by gravitational waves from inflation. In doing so, the next generation of instruments may be able to probe the universe at an epoch when it was as young as $\sim 10^{-36}$ seconds.

Connecting Introductory Physics to Biology and Chemistry to Engage Student Interest

Saturday morning, Science Center 199, 9 AM

Catherine H. Crouch

Swarthmore College

At Swarthmore, as at several other colleges and universities, we have reorganized introductory physics for life science students around connections to biology and chemistry, while maintaining the core material of physics and the findings of the physics education research community on how to teach this material effectively. The purpose of this reorganization is both to make the value of physics for students interested in the life sciences and medicine explicit, and to select the physics topics and skills most relevant to these other sciences. We have observed that this optimized course appears to help students develop more positive attitudes to learning physics, as well as continuing to learn the content well. This talk will describe both the course and the assessment we have done, including identifying generalizable ideas that could be applied to teaching physics in high school as well as college.

Curriculum development and assessment funded by grants from HHMI (Science Education Grant to Swarthmore College) and NSF (DUE-1122941).

Abstracts for AAPT Invited Workshops

The Physics of Musical Instruments

Saturday afternoon, Science Center, 1-3 PM [room TBA]

Barry Feierman

Retired, Westtown School and West Chester University

In 2010 Barry Feierman and his music colleague offered a multi-disciplinary full-year, half-credit elective course for seniors at Westtown School called The Physics of Music. In this workshop, Barry will describe the course, its goals and results, and give illustrations with live demonstrations including: the physics of vibrating air columns, the physics of vibrating strings, and the physics of vibrating solids. We will use Vernier spectrum analyzers to examine the timbre (musical overtones) of a variety of instruments including bugle, recorder, saxophone, guitar, wind chime, and keyboard. If you play a musical instrument, please bring it to the Workshop.

Foutan Board / Cornell Lending Library Workshop:

Saturday afternoon, Science Center, 1-2 PM [room TBA]

Marc Baron

Sun Valley High School

As physics educators, we sometimes miss how difficult reading a circuit diagram is for students. In this workshop, I'll share some strategies for increasing students' comprehension of circuit diagrams. In today's climate, we're all covering Ohm's Law in our high school physics curricula to be "Common Core compliant."

I'll introduce to you the Foutan Board [FOW-tan] – a fun Ohm's Law activity that I guarantee your students cannot short circuit. The activity covers series and parallel circuits in a self-contained apparatus with virtually no set-up time. The Foutan Board is regarded as the overall favorite lab of my students and mine as well.

I will further introduce you to the Equipment Lending Library, an online outreach resource maintained by Cornell University. Attend this training session and you will be able to borrow Foutan Board lab kits for your students at no cost to your school.

Campus Map of Swarthmore College

**** If you are coming by car, it's easiest if you enter from the "North Entrance" off of Chester Road (PA-320). Free parking will be available for conference attendees in the DuPont parking lot (#18) adjacent to the Science Center (#47).****

