

Hi again! It was great seeing many of you last month at the first joint SEPS/La Salle teachers' workshop, and meeting a few of you for the first time! (And if this is the first newsletter you have received, welcome!) I've included a brief summary of the workshop below, with links to a slideshow summary with pictures of the demonstrations so you can refresh your memory or see what you missed, as well as get information about the next workshop on Saturday, 2/22. The next workshop will cover an inquiry-based approach to waves, sound, and light.

We are getting closer to having a registration form and rates set for our spring meeting, March 21-22 at Villanova University, and we will get those out to you as soon as possible. Please continue to watch this space, and your email inbox, for updates!

We also have an update from the NJ section of the AAPT, who are hosting their own spring meeting at Princeton, March 14-15. More information and a link to a registration form are below.

And in perhaps totally-obvious-to-everyone-else news, I recently discovered that if you ask PASCO nicely through their teacher support page, they will send you replacement parts for your expensive dynamics carts without charging you anything extra. Just in case I wasn't in fact the last person to figure that out, I thought I'd share!

There's a ton more stuff in this newsletter! Here's the list of the remaining contents:

1. Save the date for SEPS College Labs Workshop at Villanova (3/22)
2. Undergrad Physics Teaching Workshop preceding APS April Meeting (4/4, early bird registration by 2/14)
3. Environmental/Earth Science RET at Penn State this summer (deadline 2/15)
4. AP Institute Scholarships available for teachers in minority/low-income/rural schools (deadline extended to 3/1)
5. Two summer astrophysics workshops for teachers at Penn State (deadline 3/16, workshop dates 7/21-25, 7/28-8/1)
6. Job opening for physics teacher at St Andrew's School in Delaware
7. Registration now open for summer physics and chemistry Modeling Workshops around the country
8. Physics Workshops at LaSalle University (registration is closed, workshops are 2/22, 4/5)
9. Register now for NJAAPT's Spring Section Meeting at Princeton (pre-

registration deadline 3/9, section meeting 3/14-3/15)

10. Save the date for SEPS AAPT's spring meeting at Villanova (3/21-3/22)
11. 120 copies of Paul Zitzewitz's Physics Principles & Problems available for free
12. 2014 Pennsylvania Kidwind Challenge now open for registration (event date 3/1)
13. Opening for Lecturer at Penn State Harrisburg
14. Princeton Plasma Camp (application deadline 3/28, camp runs 7/14-7/18)
15. Penn Outreach Lectures at LRSM (next lecture 2/20)
16. LRSM Science Cafes at World Cafe Live and Stoney's British Pub (next science cafes 2/10 and 3/2 in Wilmington, 2/12 and 3/5 in Philadelphia)
17. American Helicopter Museum & Education Center seeks educators for Advisory Board
18. Free Science Saturday Open Lectures at Princeton's Plasma Physics Lab (next lectures 2/15, 3/1, 3/8)
19. Princeton hosts 13th annual Young Women's Conference in STEM (registration deadline 2/14, conference 3/21)
20. Free field trips and professional development workshops at the NASTAR Center (summer one-day workshops 7/7-8/1)
21. NASA Exploration Design Challenge (deadline 3/14/14)
22. eCYBERMISSION seeks faculty judges (judging Feb-April)
23. Cool physics links: Interactive solar system map, SpectraSnapp iPhone spectroscopy app, Free CollegePhysics textbook, Dave Maiulo on the weather channel, Ski jumping explained, Dan Burns' Science on Simpsons, Zaption interactive video maker
24. SEPS AAPT Online

Please continue to let me know about any exciting events, professional development opportunities, or resources you come across that you'd like to share with the rest of the Southeastern PA Section! I'm especially interested in getting more resources that will be useful to college faculty, since most of the mailing lists I am personally on pertain to my own grade level, and I'd like this list to be useful for everybody on it.

And as always, please let me know by email (jwaldman@archmereacademy.com) if you would like me to change your subscription, or if you have friends or colleagues who would like to be added.

Best,

Jillian Waldman

Secretary, SEPS AAPT

Science Teacher

Archmere Academy

Claymont, DE 19703

1. SAVE THE DATE FOR SEPS COLLEGE LABS WORKSHOP AT VILLANOVA

Saturday, March 22, as part of the SEPS AAPT Spring Meeting at Villanova, SEPS will be leading an afternoon workshop focusing on teaching college physics labs, specifically those for the introductory courses. The goal will be to present how these intro course physics labs have changed over the years, and to discuss the philosophy and goals of labs today, at area colleges and universities. Barry Feierman is working to put this together; if you have questions or are interested in participating, please contact him (bhfeier@aol.com).

2. UNDERGRAD PHYSICS TEACHING WORKSHOP PRECEDING APS APRIL MEETING

Are you or your colleagues planning to attend the APS April Meeting? Please spread the word about this workshop:

Faculty teaching undergraduates in Spring 2014 are cordially invited to a pragmatic workshop and discussion on physics teaching challenges and strategies. Please join us to learn and share practical tips that anyone can apply to improve student learning and engagement. To address challenges in our research, we know the benefits of building on prior work and of discussion and collaboration with our colleagues. Let's use the afternoon before APS to reap such benefits to address teaching challenges.

Registration fees: \$25 Early Bird Registration (by February 14), \$50 Regular Registration

Light refreshments will be provided.

Facilitators: Aatish Bhatia, Carolyn Sealfon, and Katerina Visnjic, Princeton University

More information here: <http://www.aps.org/meetings/april/events/teaching.cfm>

3. ENVIRONMENTAL/EARTH SCIENCE RET AT PENN STATE THIS SUMMER

Any teacher interested in an NSF-funded Research Experience for Teachers at Penn State focused on environmental and Earth surface science during summer 2014 visit <http://czo.stroudcenter.org/reu/> and/or contact Dr. Tim White (tsw113@psu.edu).

What is the Critical Zone?

The Earth's Critical Zone -- from the tops of the trees to the bottom of the groundwater -- is a constantly evolving boundary layer where rock, soil, water, air, and living organisms interact. Water and atmospheric gases move through the porous Critical Zone, and living systems thrive in its surface and subsurface environments, shaped over time by biota, geology, and climate. The CZO REU/RET Site will introduce undergraduate students and K-12 teachers to Critical Zone science.

Program Overview:

In mid-June 2014, participants will travel to Pennsylvania to gain a broad understanding of the geology, hydrology, ecology, soils, and land use of the Piedmont and Appalachian Mountain Valley and Ridge physiographic provinces. Working as a community of peers, CZO REU/RET participants will pursue interdisciplinary research to better understand the interconnectedness of Critical Zone processes.

Activities may include building and deploying environmental sensors and field instrumentation; geophysical surveys with ground penetrating radar; groundwater, surface water, and soil sampling; plant studies; GIS; and managing large data sets.

K-12 teachers interested in enhancing their Earth Sciences knowledge and taking it into the classroom are encouraged to apply. Participants will receive a stipend, travel costs, housing, and meals.

Application Deadline: February 15, 2014

Questions about this opportunity should be directed to Dr. Tim White at tsw113@psu.edu.

4. AP INSTITUTE SCHOLARSHIPS AVAILABLE FOR TEACHERS IN MINORITY/LOW-INCOME/RURAL SCHOOLS

The AP Fellows scholarships are awarded to AP teachers at schools in the U.S. with 50 percent or more of the student population consisting of underrepresented minority or low-income students. Each recipient will receive \$1,000 to attend a

College Board-endorsed AP Summer Institute.

New this year are AP Rural Fellows scholarships, which will be awarded to AP teachers from schools serving rural areas of the United States. Each recipient will receive \$1,500 to attend a College Board-endorsed AP Summer Institute. Visit the AP Grants Page for more information:

http://professionals.collegeboard.com/k-12/awards/ap-grants?ep_ch=PR&ep_mid=10869886&ep_rid=30887332

The application deadline has been extended to March 1, 2014.

5. TWO SUMMER ASTROPHYSICS WORKSHOPS AT PENN STATE

Greetings all Science Educators!

Keep pace with the latest science research, engage in standards-based classroom activities and explore ways to make science fun while working with Penn State faculty during these summer workshops for inservice science, technology, engineering and mathematics, or STEM, educators. Network with peers and earn graduate credits. Workshops are aligned with the national science education standards and Pennsylvania standards for science and technology.

All workshops take place on Penn State University Park campus facilities in Pennsylvania. Grants are awarded to all participants to cover lodging, parking, and partial tuition.

Applications for all workshops are due March 16, 2014.

The Origins and Fate of Our Cosmos: Understanding Big-Bang Cosmology (Grades 6-12) -- July 21-25, 2014

This workshop will introduce cosmology, the study of the Universe as a whole. We will cover what modern observational and theoretical work has taught us about the origin, fate, and nature of the Universe. The pillars and successes of the Big Bang model will be examined in detail. Modern ideas about space, time, and gravity will also be explored.

<http://teachscience.psu.edu/workshops/cosmology.html>

Hands-On Particle Astrophysics (Grades 9-12) -- July 28-August 1, 2014

This workshop will feature hands-on explorations of high-energy messengers from extreme cosmic phenomena, such as Galactic supernova blast waves. Strategies for classroom implementation will be highlighted.

http://teachscience.psu.edu/workshops/particle_astrophysics.html

Questions about the Pennsylvania Space Grant workshops should be directed to Alli Fox at spacegrant@psu.edu.

6. JOB OPENING FOR PHYSICS TEACHER AT ST. ANDREW'S SCHOOL IN DELAWARE

St. Andrew's school, a co-ed boarding school of 300 in Delaware, is looking for a full-time physics teacher for the 2014-15 school year. We are a 100% boarding school with a deep commitment to financial aid (nearly half the student body is on aid and the average grant is \$38,000). We offer introductory and honors physics, both of which follow a modified modeling curriculum, as well as a 2nd year physics course taught from the Matter and Interactions text. A typical class load is 3 or 4 sections of 12-15 students.

You can find more information about this position and the school at John Burk's blog:

<http://quantumprogress.wordpress.com/2013/11/26/looking-for-a-physics-teacher/>

and Mark Hammond's blog:

<http://physicsparsimony.wordpress.com/2013/12/03/job-opening-at-st-andrews-whats-it-like-to-work-here/>

You can find the job posting here: <http://www.standrews-de.org/aboutus/employment-opportunities/available-positions/index.aspx>. Note that St. Andrew's is also looking for a Computer Science instructor.

7. REGISTRATION NOW OPEN FOR MODELING WORKSHOPS AROUND THE COUNTRY

The American Modeling Teachers Association (AMTA) is sponsoring a number of workshops this summer for Biology, Chemistry and Physics teachers interesting in learning more about Modeling Instruction. Modeling is an instructional approach that has been in development since 1990 (under the leadership of [David Hestenes](#), Emeritus Professor of Physics, Arizona State University), and is designed to correct many weaknesses of the traditional lecture-demonstration method, including fragmentation of knowledge, student passivity, and persistence of naive beliefs about the physical world. Modeling Instruction organizes the course around a small number of scientific models, and focuses on applying structured inquiry techniques to the teaching of basic skills and practices in mathematical modeling, proportional reasoning, quantitative estimation and technology-enabled data collection and analysis.

A full listing of Summer 2014 workshops can be found at: <http://modelinginstruction.org/teachers/workshops-2014/>

The AMTA website also contains other information pertaining to modeling

instruction.

The Physics Teachers group in NYC (only 2 hours away, if traffic is your friend) is running a couple of particularly cool-sounding workshops at Columbia Teachers College, which are filling up quickly:

1. High School Chemistry (introductory level), led by Donghong Sun and Tammy Gwara.
2. Physics – Mechanics (introductory level), led by Paul Bianchi and Seth Guinals-Kupperman.
3. Physics - Models of Light (advanced level, requires one previous introductory level Modeling Instruction Workshop), led by Mark Schober and Kofi Donnelly.

All three workshops run simultaneously, July 21 – Aug. 8, 2014 (3 weeks, Monday through Friday) at Columbia Teachers College, 525 West 120th St., NY, NY.

Sign up for the workshop of your choice at:
<stemnycsummer14.eventbrite.com>.

\$50 registration fee; \$449 balance will be due later in spring.

Who Should Attend: Middle, high school, and university teachers, and prospective teachers, of physics, chemistry or physical science. Teachers of biology, other sciences, math, technology and engineering also may find these workshops useful. At least one year-long, algebra and trigonometry-based, college-level course in the subject matter of the workshop is strongly recommended. The chemistry and mechanics workshops are for teachers who have not previously taken a 3-week workshop on Modeling Instruction. Teachers who register for the Models of Light workshop are expected to have previously completed at least one 3-week workshop on Modeling Instruction at the introductory level.

Cost: \$499 (for one 3-week workshop), including 1-year membership in the American Modeling Teachers Association. \$50 deposit is required to reserve space; balance will be due later in spring. Each workshop is limited to 24 participants. Certificates are available. Graduate credit at SUNY Empire State College will very likely be available.

Detailed Description: In all workshops, the instructors teach by example, guiding participants through a series of well-defined scientific models using a detailed course manual including classroom-tested, teacher-developed labs, activities, discussions, worksheets, and assessments. An explicit modeling learning cycle is used. References describing Modeling Instruction and documenting its effectiveness are available at <<http://modeling.asu.edu/R&E/Research.html>> and

at <<http://tinyurl.com/modelingarticle> >.

All three workshops will follow outlines and use the course manuals developed by the American Modeling Teachers Association and its predecessor, the Modeling Instruction Program, over the past 20 years.

1. High School Chemistry. This workshop is intended for teachers who have not previously taken a workshop in Modeling Instruction. The workshop immerses teachers in Modeling Instruction so that participants develop the skills necessary to implement this student-centered, research-informed, standards-based curricular approach with their students. The instructors guide participants through the core units of a high school chemistry course as they would with high school students. In teacher mode, the pedagogical rationale for all aspects of the example instruction is explored as well as accommodating various student populations, class schedules, testing requirements, and laboratory resources. Through readings and discussion, the workshop also delves into cognitive research, pedagogical content knowledge, and the theoretical underpinnings of Models and Modeling that are essential to understanding Modeling Instruction as both a teaching practice and philosophy.

Specific topics of study include: particulate structure of matter, energy and kinetic molecular theory, stoichiometry, and energy and chemical change.

2. Physics (Mechanics). This workshop is intended for teachers who have not previously taken a workshop in Modeling Instruction. Eight explicit models, as detailed in the mechanics modeling course manual, are studied in “student mode”: constant velocity model, uniform acceleration model, free particle (balanced force) model, unbalanced (net) force model, projectile motion model, circular motion model, conservation of momentum model, conservation of energy model. In “teacher mode,” the pedagogical rationales for all aspects of the example instruction are explored, as well as accommodating various student populations, class schedules, testing requirements, and laboratory resources. Through readings and discussion, the workshop delves into cognitive research, pedagogical content knowledge, and the theoretical underpinnings of Models and Modeling so as to develop an understanding of Modeling Instruction as both a teaching practice and philosophy.

3. Models of Light. This workshop is intended for teachers who have previously taken a workshop in Modeling Instruction (usually the mechanics or chemistry workshops). As a result, there is less emphasis here on the details, advantages, and practice of modeling instruction, since we assume that teachers are already familiar with the approach and have used it to some extent in their classrooms. Additional details about the content and approach of this workshop will be posted soon.

8. FREE PHYSICS WORKSHOPS AT LASALLE UNIVERSITY IN SPRING 2014

I (Jillian) had the pleasure of attending LaSalle's first workshop last month,

presented by Bill Berner (Penn) and Barry Feierman (retired, Westtown, WCUPA), on the topic of Electricity and Magnetism, and organized by our gracious hosts at La Salle, especially Greer Richardson and Ling Liang. The workshop leaders presented us with a wide variety of thought-provoking demonstrations, including simple experiments we could construct with everyday objects, computer simulations, and some higher-tech equipment from the Penn Demo lab. I especially enjoyed improving my understanding of the construction of a Van de Graaff generator, playing with a variable-frequency LRC circuit, learning how to demonstrate the forces between current-carrying wires so students can actually see them, and figuring out an unfamiliar magnetic levitation apparatus. We had a great turnout -- thank you, everyone who came! -- which led to a lot of stimulating conversation among participants as we explored the demonstrations and ideas.

A more thorough and less biased (or at least, differently biased) summary of the workshop is available on the SEPS website:

<http://www.physics.upenn.edu/aapt/2014ws1/2014WS1.html>

If you attended the workshop and want digital copies of the handouts, please contact Bill (berner@physics.upenn.edu) or Barry (bhfeier@aol.com).

There are two remaining free Physics Workshops at LaSalle, co-sponsored by SEPS AAPT, LaSalle's Graduate Programs in Education, the Philadelphia Education Fund, and the Philadelphia Regional Noyce Partnership. Registration has closed, but for those who are registered, here's a quick summary of the information, with more details in the attached flyer.

All sessions:

Saturdays from 9 am – noon

La Salle University

Holroyd Hall 053

1900 West Olney Ave., Philadelphia, PA 19141

Workshop #2: Teaching Waves, Sound, & Light: An Inquiry Approach

Saturday, February 22, 2014

Presenters: Bob Schwartz & Jay Bagley

<https://www.eventbrite.com/e/free-physics-workshop-series-at-la-salle-university-teaching-wave-sound-light-an-inquiry-approach-tickets-9815138343>

(Attendees should bring a smart phone and/or a tablet, either Apple or Android. Android tablet users should download the free app 'Oscilloscope' (UberApp).

Apple iPad users should download 'E-scope 3-in-1' (e-skett Corp.) which costs \$1.99.)

Workshop #3: Use of Data Collection Technological Tools, Probeware, and Video Analysis in Teaching Physics

Saturday, April 5, 2014

Presenters: Bob Schwartz, Jay Bagley, Bill Berner, and Barry Feerman

<https://www.eventbrite.com/e/free-physics-workshop-series-at-la-salle-use-of-data-collection-technological-tools-probeware-and-tickets-9815314871>

(Though not a requirement, if attendees have an Apple iPad, they should download Video Physics (Vernier) and Graphical Analysis (Vernier) from the AppStore. Each costs \$1.99. If attendees do not have an iPad, another device capable of filming video, such as a smartphone or tablet, is highly recommended.)

For more information, see the attached flyer or contact

Greer Richardson, Ph. D

Director of Graduate Programs in Education

La Salle University

215-951-1806

richards@lasalle.edu

9. REGISTER NOW FOR NJAAPT'S SPRING SECTION MEETING, MARCH 14-15

The annual NJAAPT Spring Section Meeting will be held at Princeton University Friday and Saturday, March 14 & 15. Please check their website (<http://www.njaapt.org/>) for updates about the meeting. Registration information, including pricing and the registration form, is currently posted on their Spring meeting page: http://nj.aaptsections.org/?page_id=525

(Found by clicking "Calendar of Events" and then "Spring Meeting" from the main page.)

You may register for one or both days and there is a savings for the two-day attendance. Friday will include a wine and cheese reception, buffet dinner, and a talk entitled: "A Ray of Light in a Sea of Dark Matter" by Charles Keeton of Rutgers University. The pre-registration deadline is March 9th. Walk-up registration will be available on Saturday but not on Friday.

Saturday's fee will include registration, breakfast, and lunch. Wil van der Veen, the Program Director of the NJ Astronomy Center for Education, will address the Next Generation Science Standards discussing all the sciences. Revisions in the AP Physics B course will be discussed by Patty Zober, a Pennsylvania high school physics teacher and leader of workshops related to the changes. There will also be breakout sessions to discuss these topics and another to answer as many questions as possible on the subjects. The meeting will conclude with a demonstration show conducted by the Princeton University staff.

From Ray Polomsky, NJAAPT Section President:

The Spring Section Meeting is scheduled for Friday and Saturday, March 14 & 15 at Princeton University. We hope that you will participate in the meeting either on Friday or Saturday or both days to be brought up to date with changes that are occurring in the Next Generation Science Standards and the AP B Physics course. The NGSS will have an effect on physics, but it also does so to chemistry, physical science, biology, and earth science. Therefore, we suggest that you share this information with your colleagues and invite them to attend the meeting with you. You will be sent a registration form in another email that you can distribute to other science teachers you know.

A change in the program for Saturday relates to the Demonstration Show which is the final event of the meeting. This year we are planning to replace the presentation by the Princeton staff with a Demonstration Share-a-Thon. We are opening the session to all those attending who wish to share a favorite demonstration or two. This is a great opportunity to be a very active participant at the meeting. If you are interested in presenting, please contact me by email at: r7429@optonline.net to be added to the list of individuals sharing with the group.

Ray Polomski

President

10. SAVE THE DATE FOR SEPS AAPT'S SPRING MEETING, MARCH 21-22

We are continuing to work on putting together a schedule and agenda for SEPS' Spring Meeting at Villanova University. The theme is "Physics of the Future", and we've got some exciting speakers lined up -- astronomer Ed Guinan, of Villanova will be our Friday Night speaker, and plasma physicist Michael Brown of Swarthmore will speak on Saturday. We have also lined up most of our Saturday afternoon workshops leaders and other presenters. We are in the process of finalizing our budget, and we will be able to get registration forms out to you as soon as that's been done. The meeting will be held March 21-22, with Jeremy Carlo coordinating. Watch this space for updates as we finalize our plans.

11. 120 COPIES OF PAUL ZITZEWITZ'S PHYSICS PRINCIPLES & PROBLEMS

AVAILABLE FOR FREE

Marple Newtown HS is looking to give away the following physics textbooks: 120 copies of Physics Principles and Problems © 2009 edition (texts are generally in very good shape) by Zitzewitz, et. al. (Glencoe). We also have the associated teacher materials. The online text subscription is not included. Any school wanting the books must make arrangements to pick them up in person- we cannot ship, box or package the books. Contact Dennis Andrews, Science Department Leader at dandrews@mnsd.org .

12. 2014 PENNSYLVANIA KIDWIND CHALLENGE NOW OPEN FOR REGISTRATION

Event date: March 1, 2014

Location: Mt. Nittany Middle School, State College, PA

Audience: 4 – 12th grade teams

Prizes for winning teams AND the winning teams are eligible to attend the National Kidwind Challenge in DC!

For more information: <http://csats.psu.edu/projects/currentprojects/kidwindchallenge-archive.cfm>

The KidWind Challenge is a student-oriented wind turbine design contest. Over a period of a few months, students spend time designing and constructing their own wind turbines with the goal of creating a device that is efficient, elegant and highly functional. There are 2 divisions of the competition: 4th – 8th grade and 9th – 12th grade. Form a team and sign up! Scholarships are available for teams, contact Leah Bug at leahbug@psu.edu for details.

Any group of students who are of middle or high school age are eligible to enter a team in the KidWind Challenge. This includes students from public and private schools, home schoolers, after school clubs, boy and girl scout troops, 4-H clubs, etc. Each team must have a chaperone. Cash prizes for winning teams and a chance to attend the 2014 National Kidwind Challenge in DC, held at the USA Science and Engineering Festival April 26 & 27, 2014.

During the challenge, there will be activities for team members to join in and have fun! Not only will there be hands-on activities, but a tour of the school's wind turbine will be offered. For more information, rules, and registration, visit the web site listed above. For additional information not found on the web site, contact Leah Bug at leahbug@psu.edu.

Please share this information with individuals who may be interested in participating!

13. OPENING FOR LECTURER AT PENN STATE HARRISBURG

Penn State Harrisburg, School of Science, Engineering and Technology invites applications for the full-time, non-tenure track position, Lecturer/Senior Lecturer in Physics, effective Fall semester 2014. The successful candidate is expected to teach a broad range of undergraduate courses/labs in Physics, Astronomy, and/or Earth Science. In addition, all full-time faculty are expected to engage in scholarly activities, participate in University/College and professional service, assist with ABET accreditation processes, and advise undergraduate students. The minimum qualification is a Ph.D. in Physics or a closely related discipline plus relevant experience. Preference will be given to individuals who have demonstrated commitment to excellence in college teaching. Information about the College can be found at www.hbg.psu.edu.

This is a fixed-term appointment with excellent opportunity for re-funding. Applicants should submit a cover letter, curriculum vitae, three letters of reference, and a personal statement of teaching philosophy to Lecturer/Senior Lecturer in Physics Search Committee, c/o Mrs. Dorothy J. Guy, Director of Human Resources, Penn State Harrisburg, Box: AAPT-41003, 777 W. Harrisburg Pike, Middletown, PA 17057-4898 or via e-mail at HBG-HR@LISTS.PSU.EDU. Review of applications will begin on November 25, 2013, and will continue until the position is filled. Employment will require successful completion of background check(s) in accordance with University policies. Penn State is committed to affirmative action, equal opportunity, and diversity of its workforce.

A flyer suitable for posting in your department is attached.

14. PRINCETON PLASMA CAMP

The Plasma Science and Fusion Energy Institute (Plasma Camp) is a one-week intensive workshop designed to provide the opportunity to study plasma physics and fusion energy through experimental research in our state-of-the-art laboratories. Participants will perform experiments, in collaboration with laboratory scientists, that investigate the basic properties of plasmas. Finally, plasmas are ideal to illustrate many concepts in high school physics curricula including waves, atoms, nuclear reactions, relativity, electricity and magnetism. An integral part of the Institute will be the development of new plasma-based lesson plans, student-led investigations and demonstrations.

All participants will receive equipment similar to what is used during the workshop to take back to their classroom. In addition, up to \$2,000 is available through a mini-grant to purchase additional equipment after completion of the workshop. The 201 Plasma Camp program will run from July 14-18. The deadline to apply is 5 PM on Friday, March 28.

To find out more about Plasma Camp, check out the following website or contact

Deedee Ortiz at dortiz@pppl.gov.

<http://www.pppl.gov/education/science-education/programs/plasma-camp>

15. PENN OUTREACH LECTURES AT THE LAB FOR RESEARCH ON THE STRUCTURE OF MATTER (LRSM)

Since 1994, the LRSM has presented a monthly series of materials-based lectures during the school year to science teachers. These are given by faculty and staff associated with the LRSM. The lectures are free, generally take place on Thursday evenings at 5:30 pm and are followed by food and refreshments during which teachers can engage the speaker in conversation about the talk or other aspects of education. Teachers can also receive Act 48 credit. All talks take place at:

LRSM, 3231 Walnut Street, Philadelphia

A flyer for the complete lecture series is attached. Upcoming lectures include:

February 20: David Chenoweth, Chemistry, "Building Functional Molecules for Application in the Life Sciences"

(Note change of date from Feb 27th)

David Chenoweth is a vibrant new faculty member in Penn LRSM's Chemistry department so come along and give him your support. Remember that pizza and refreshment will follow and that parking is available on-street via Pay and Display kiosks.

More information about the LRSM's outreach lectures is available at the link below. If you are interested in attending, please contact Andrew R. McGhie at 215-898-6461 or at mcghie@lrsm.upenn.edu.

<http://www.lrsm.upenn.edu/outreach/teachers.html>

16. LRSM SCIENCE CAFES AT WORLD CAFE LIVE AND STONEY'S BRITISH PUB

LRSM also offers a series of science cafes, open to the public. The next Science Cafe at the World Cafe Live, 3025 Walnut St., will be on Wednesday, Feb. 12, 2014, at 6:00 pm. The speaker is Prof. William Wunner, Wistar Institute, and his topic is 'Rabies: A perpetual killer disease...' , see flyer attached. On-street parking is available on Walnut St. using Pay and Display kiosks. Come early for dinner and a good seat during Happy Hour, 5-7 pm. No purchase is necessary to attend this talk.

Upcoming Science Cafes include:

February 12, 2014 at World Cafe Live in Philadelphia: "Rabies - A perpetual killer

disease of humans challenges scientists, public health officials, and governments", William Wunner, Wistar Institute

March 3, 2014 at Stoney's British Pub in Wilmington: "Will it float? The science of keeping one's head above water", Bill "Bunsen" Berner, Penn

March 5, 2014 at World Cafe Live in Philadelphia: "Rock Mechanics of Fracking", Tim Bechdel, Enviroscan, Inc and Penn

Full schedule here: <http://www.lrsm.upenn.edu/events/sciencecafes/>

17. AMERICAN HELICOPTER MUSEUM & EDUCATION CENTER SEEKS EDUCATORS FOR ADVISORY BOARD

The American Helicopter Museum and Education Center, located in West Chester, PA, is looking for educators who might be interested in joining our Education Advisory Board. The Education Committee meets once a month, either on-site at the Museum, or via phone-in conference. They are looking to expand their education offerings and would like advice from educators, either current or retired, on what is needed in the classroom, as well as professional development. The Museum has an extensive collection of rotary-wing artifacts, helicopters, autogiros and convertiplanes on display, as well as a library and archives. Education Advisory Board members brainstorm the best way to use the Museum's resources in public education programs.

In addition, the museum is always looking for volunteers who may have an interest in the mission of the museum. Please refer to the attached flier describing a number of volunteer opportunities.

Inquiries should be directed to Patti Spackman at pspackman@americanhelicopter.museum.

18. FREE SCIENCE SATURDAY OPEN LECTURES JANUARY-MARCH AT PRINCETON'S PLASMA PHYSICS LAB

Science on Saturday is a series of lectures given by scientists, mathematicians, and other professionals involved in cutting-edge research. Held on Saturday mornings throughout winter, the lectures are geared toward high school students. The program draws more than 300 students, teachers, parents, and community members each Saturday. Topics are selected from a variety of disciplines.

The program runs January through March, and is free and open to the public. NO REGISTRATION IS REQUIRED to attend the lectures; however, a valid, government issued, photo ID is necessary to gain access to the Laboratory for anyone over 18 years of age.

Lectures begin promptly at 9:30 AM, but attendees are advised to show up early to make sure they can actually get a seat. Doors open at 8:15. Free breakfast is

provided before the lectures. The hour-long lectures are followed by a Q&A session which typically ends by 11:15 AM.

The next few lectures will be:

February 15: Blown Away: What Knot to Do When Sailing, by Sir Randolph Bacon III (Prof. Colin Adams, Williams College, cousin-in-law to Sir Randolph Bacon?)

[February 22 the DOE New Jersey Regional Science Bowl replaces the Saturday Lecture]

March 1: Can Studying Infinite Dimensional Space Help Us Improve Healthcare?

March 8: From MOOC to MIIC: Can Effective Learning Be Big?

More information here, and in the attached SOS flyer: <http://www.pppl.gov/events/upcoming>

19. PRINCETON UNIVERSITY HOSTS 13TH ANNUAL YOUNG WOMEN'S CONFERENCE IN STEM

Princeton's 13th Annual Young Women's Conference in STEM will be held on March 21, 2014 at Princeton University's main campus. Young women in grades 7-10 are invited to attend with their school groups of 3-10 students. Registration is free but must be completed by February 14th. More information on the YWC can be found here: https://pppl.princeton.edu/www.pppl.gov-ywc_information

20. FREE FIELD TRIPS AND PROFESSIONAL DEVELOPMENT WORKSHOPS AT THE NASTAR CENTER

The NASTAR CENTER -- ETC's National Aerospace Training and Research Center, is the premier air and space training, research, and education facility in the world. It is located in Southampton, PA, which Google tells me is a 35-minute drive north from Center City, Philadelphia. The NASTAR Center's Education Programs offer unique, hands-on learning experiences for K-12 Students, Educators, and the General Public in an authentic aviation and space training environment. Programs incorporate STEM (Science, Technology, Engineering, and Math) education objectives with fun, inspiring, and engaging activities centered on the worlds of aviation and space.

They offer field trips and scout programs geared towards PA academic science standards, as well as summer workshops for teachers. (The students will be disappointed to learn they don't get to play in the centrifuges, but some of the teacher workshops are more interactive!) For more information, or to schedule a Teacher Orientation and check out the facilities before planning a class trip, check out their website at: <http://www.nastarcenter.com/education>

Available teacher workshops (<http://www.nastarcenter.com/education/teachers>)

include:

- 500 Years of Flight (July 8, July 22): This program is designed to enhance teacher understanding of the history of aviation and the impact of technology on society using hands-on activities and projects.
- Acceleration (July 11, July 25): Designed to enhance teacher understanding of Newton's Laws of Motion through personal centrifuge flight experience and hands-on activities.
- The Atmosphere and Weather (July 14, July 29): Teachers construct simple weather instruments and practice hands-on activities that help communicate meteorological phenomenon and climate effects to students.
- K'NEX Energy, Motion, and Aeronautics (July 16, July 30): Teachers will use K'NEX to learn about Newton's Laws of Motion, forces of flight, ballistics, aircraft stability and control, and spatial disorientation.
- Exploring the Solar System (July 15, July 29): This program introduces educators to the environmental conditions on the planets and presents material on all objects in our solar system.
- The Magic of Flight (July 9, July 23): This program is designed to enhance teacher understanding of how and why airplanes fly. It features hands-on activities, a session in a NASTAR Center Aircraft Simulator, and classroom materials.
- Physiology of Flight (July 7, July 21): This program uses NASA Summer of Innovation curricula and lesson plans to enhance teacher understanding of the effects of space flight on the human body.
- Rocket Science (July 10, July 24): Designed to enhance teacher understanding of Newton's Third Law of Motion, rocketry and space exploration through hands-on activities and take away materials for in-classroom use.
- Rocket Science, Stage II (July 17, July 31): This program is designed for participants who already have an understanding and mastery of the basics of model rocketry.
- Space Suits (July 18, August 1): Participants will participate in a variety of hands-on activities that demonstrate elements of space suit design and operation.

21. NASA EXPLORATION DESIGN CHALLENGE

Audience: K-12 Educators and Students

Virtual Crew Registration Deadline: March 14, 2014

Students from Kindergarten through 12th grade will have the opportunity to play a unique role in the future of human spaceflight through participation in NASA's Exploration Design Challenge, or EDC. NASA EDC invites students around the world to think and act like scientists in order to overcome one of the major hurdles of deep space long-duration exploration -- the dangers associated with space radiation. Students taking part in the challenge will discover how to plan and design improved radiation shielding aboard the Orion Multi-Purpose Crew Vehicle, currently being developed by NASA, Lockheed Martin and other partners

to carry astronauts to space, venturing farther than humans have ever gone before.

Through a series of science, technology, engineering and mathematics, or STEM, engagement activities, students in grades K-8 will analyze different materials that simulate space radiation shielding and recommend materials that best block radiation and protect astronauts. Students in grades 9-12 will think and act like engineers as they apply what they learn to design shielding to protect a sensor on the Orion crew module from space radiation. After a review of the design solutions submitted by teams in the grades 9-12 challenge, five finalist teams will be selected and matched with a mentor from NASA to test their designs in a virtual simulator. The winning team will build a prototype radiation shield that will be analyzed and submitted to Lockheed Martin for flight certification on the inaugural flight of the Orion Exploration Flight Test, or EFT-1.

The five U.S. finalist teams from the grades 9-12 challenge will be invited to attend the EFT-1 launch, currently scheduled for November 2014. The names of all students, grades K-12, participating in the NASA EDC will fly aboard the spacecraft as honorary virtual crewmembers for Orion's first flight. The deadline to register students for the virtual crew is March 14, 2014 .

For more information and to register online, visit <http://www.nasa.gov/education/edc>. For more information about Orion, visit <http://www.nasa.gov/orion>. Email any questions about this opportunity to nasaedc@nianet.org .

22. eCYBERMISSION SEEKS FACULTY JUDGES

eCYBERMISSION is a web-based Science, Technology, Engineering, and Math (STEM) competition for students in grades 6-9 that promotes self-discovery and enables all students to recognize the real-life applications of science, math, and technology. Using either the scientific method or the engineering design process, teams of 3-4 students propose a solution to a real problem in their communities to compete for State, Regional, and National Awards and recognition. Sponsored by the US Army and supported by a diverse group of volunteers, eCYBERMISSION promotes the importance of STEM education to students across the company.

eCYBERMISSION is seeking adult volunteers in three capacities, which include:

Ambassadors: Serve as the "Face of eCYBERMISSION" by promoting the competition and recruiting both students and volunteers in your community and workplace.

Cyberguides: Provide online assistance to eCYBERMISSION students through the use of Discussion Forums, Chat Rooms, Instant Messaging, and interactive webinars.

Virtual Judges: Evaluate and score team Mission Folders via the

eCYBERMISSION website.

They are especially trying to recruit qualified faculty judges to evaluate virtual portfolios in February - April. For more information or to register, check out <https://www.ecybermission.com/>

23. COOL LINKS:

SpectraSnapp, a free app from APS physics that turns an iPhone into a hand-help spectroscope:

<http://go.aps.org/spectrasnapp>

CollegePhysics, a free Creative-Commons-licensed online physics textbook created through a collaboration between AAPT and Rice University:

<http://openstaxcollege.org//AAPTPhys>

Interactive map of the solar system, with cutaways of planetary structure:

<http://www.solarsystemscope.com/>

Weather channel showcases Rutgers physics demos by Dave Maiulo:

<http://www.youtube.com/watch?v=DpfTNbxTFhw>

Ski jumper talks about technique, ski angle, weightlessness

<http://www.nytimes.com/newsgraphics/2014/sochi-olympics/ski-jumping.html>

I recently learned from Dan Burns on the AP Physics Listserve about a website called Zaption that allows you to combine add interactive elements, such as clicker-type questions, to Youtube and Vimeo videos. There a number of possible question types, including having them draw on a figure, respond numerically, or select options from a list. The instructor can view the responses or download them as a spreadsheet file. You can also edit videos by combining them, changing the start/end times, or adding images or text windows next to a video to annotate it. If you like using screencasts or video lectures, this looks like a really cool way to make them more interactive and ensure that students actually watch and pay attention to them. It's not actually free -- it's \$49/year for the instructor, but free for students to view; there are also higher subscription levels and site licenses available, and a free 30-day trial so you can play with it. Here's the video Dan created to demonstrate some of the features -- he took a Veritasium video on temperature and a clip from "A Christmas Story" and added some educational, interactive elements: <http://zapt.io/t3tfsxpg>

The main website is here: <http://www.zaption.com/>

Dan Burns also maintains an extensive online collection of science clips from

The Simpsons:

<http://www.lghs.net/ourpages/users/dburns/ScienceOnSimpsons/Clips.html>

24. SEPS AAPT ONLINE

For news, upcoming events, and photos of past events, check out the SEPS AAPT web presence online and on Facebook!

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

Facebook: <https://www.facebook.com/?ref=logo#!/group.php?gid=166735829132>