

Hello again!

I'm happy to announce that we have set a tentative date and location for SEPS' Spring 2014 Meeting! Villanova has kindly agreed to host the meeting, which will be held March 21-22, with Jeremy Carlo coordinating. Watch this space for updates as we settle on a theme and speakers. (And if you have any good ideas for either theme or speakers, let us know! You can email me at [jwaldman -at- archmereacademy.com](mailto:jwaldman-at-archmereacademy.com), or our President, Paula Miller, at [pjmiller4 -at- comcast.net](mailto:pjmiller4 -at-comcast.net))

My notes on the demo show earlier this month in Aston are on the SEPS website now, along with pictures by Barry Feierman.

Summary: <http://www.physics.upenn.edu/aapt/fall2013demos.pdf>

Photos: <http://www.physics.upenn.edu/aapt/2013fallphotos.pdf>

There's a whole bunch more stuff going on -- read the rest of the newsletter for details!

Here's the list of the remaining contents of this newsletter:

1. Free Educators' Night out at the Franklin Institute (Wednesday 11/13)
2. Save the dates for Penn's 2014 Physics Demo Show (1/13 & 1/14)
3. Penn Outreach Lectures at LRSM (Science Cafe 11/13, Teachers Lecture 11/14)
4. American Helicopter Museum & Education Center seeks educators for Advisory Board
5. DuPont Challenge Science Essay Competition opens this week (opens 11/15, deadline 1/31)
7. Registration now open for AAPT Physics Olympiad (deadline 12/9 for contest in January)
8. Grant opportunities for Educators (various deadlines: 11/15, 11/30, 12/1)
9. Free Science Saturday open lectures at Princeton's Plasma Physics Lab (Jan-March)
10. Free field trips and professional development workshops at the NASTAR Center
11. Nobel Prize in Physics awarded to Peter Higgs and Francois Englert; Free Higgs resources from AAPT
12. NASA Exploration Design Challenge (deadline 3/14/14)
13. Cool physics links: XKCD's Little Prince, "Why I Study Physics" short
14. 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 -at-

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
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Claymont, DE 19703

1. FREE EDUCATORS' NIGHT OUT AT THE FRANKLIN INSTITUTE NOVEMBER 13TH

You're Invited! Educators' Night Out - See One Day in Pompeii
Wednesday, November 13, 3:30PM-8:00PM

The Franklin Institute in Philadelphia invites educators to tour the museum and experience first-hand their theater programs, energetic live shows and interactive workshops, and speak with educators and other program providers about the dynamics of your classroom. The highlight of the night will include a tour of One Day in Pompeii, their featured exhibit for the upcoming school year.

The program is free, but registration is required. You can still register by phone:

<http://www.fi.edu/educatorsnightout/>

2. SAVE THE DATES FOR PENN'S 2014 PHYSICS DEMO SHOW

The University of Pennsylvania's annual demo show, open to students around the area, is tentatively scheduled for Monday and Tuesday, January 13th and 14th. The topic will definitely be Electricity and Magnetism, and the timing is great for anyone who (like your SEPS secretary) is cramming all of AP Physics C into one year. More information will be published as it is available. For now, if you have questions, please address them to Bill Berner at [berner -at- physics.upenn.edu](mailto:berner-at-physics.upenn.edu).

3. 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

The November teachers lecture will be given by Prof. Arjun Yodh, Physics, on 'Imaging the body with light' at 5:30 pm on Thursday, Nov. 14 in the Reading Room, LRSM, 3231 Walnut St. Pizza and refreshments will follow. On street pay

and display parking is available.

There will also be an LRSM Science Cafe at the World Cafe Live, 3025 Walnut St. on Wednesday Nov. 13 at 6:00 pm , which will be given by Prof Nader Engheta, Electrical and Systems Engineering, Penn, on 'Abracadabra: Making things invisible and seeing the unseen.' This event is for the general public and is free. It has been designated a NOVA Innovation Cafe, our second, by which we will help to promote NOVA's series on 'Making Stuff' which is presenting four new Materials programs whose themes are: *Colder, Faster, Wilder, and Safer*. Come early for dinner and happy hour, 5-7 pm. A full listing of the science cafe dates and themes is available here: <http://www.lrsm.upenn.edu/events/sciencecafes/>

The two December Science Cafes will be at Stoney's British Pub in Wilmington on December 9th (William Kane Exponent & University of Pennsylvania, "The Expert Witness: Case Studies in Materials Science"), and at World Cafe Live in Philadelphia on December 11th (Eric L. Hume, MD, Penn Orthopaedics, Perelman SOM, University of Pennsylvania "Adventures and Misadventures in Materials and Biology: 50 Years of Hip Replacement Progress")

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

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

4. 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 -at-

americanhelicopter.museum.

5. DUPONT CHALLENGE SCIENCE ESSAY COMPETITION OPENS THIS WEEK

The DuPont Challenge Science Essay Competition is one of the foremost student science and technology prize programs in the United States and Canada. It has two primary objectives: to help increase science literacy among students and to motivate them to excel in communicating ideas in science, technology, engineering, and mathematics (STEM). Students may write a 700 to 1,000-word essay that addresses a topic of their interest within four categories of challenges. This year's four challenge areas are:

Challenge #1: Together, We Can Feed the World

Ensuring that enough healthy, nutritious food is available for people everywhere is one of the most critical challenges facing humanity. This focus on providing for the needs of a growing population will help developing countries prosper, and foster economic growth around the world.

Challenge #2: Together, We Can Build a Secure Energy Future

While the demand for energy grows, the supply of fossil fuels will not. With a growing population, we will need to use those existing resources as efficiently and effectively as possible, and find better ways to harness renewable energy sources, as well. These transitions will stimulate new industries and power clean economies.

Challenge #3: Together, We Can Protect People and the Environment

A growing global population places increased pressure on people and the environment. And as the world develops, humanity places greater value on both life and the earth we all share. We believe that life and our ecosystem are precious, and we're working to protect them.

Challenge #4: Together, We Can Be Innovative Anywhere

Innovations in science, technology, engineering, and mathematics (STEM) all help to make the world a better place. We can use scientific research to solve issues ranging from medicine and health to mathematical computation to any STEM topic we are passionate about. The diverse and ever-changing world of science is open to you!

The contest opens November 15 and closes to submissions January 31, 2014. For more information, check out <http://thechallenge.dupont.com>

7. REGISTRATION NOW OPEN FOR AAPT PHYSICS OLYMPIAD

The National AAPT runs an annual competition among high school students called the Physics Olympiad. The contest is a 75-minute multiple-choice and short-answer test that's called the "F = ma" test, and it's pretty much just on

mechanics (forces, kinematics, energy, momentum, rotation, oscillations), although some of the problems, especially near the end, are somewhat difficult. It's also the first round in the competition to be on the US Physics team -- if students do really well on it, they can take two more (harder) tests, and then if they do really well on those, they can spend a week of intensive training having the US Physics coaches cram physics into them, and then go compete internationally.

If you're interested in having your students take the test, the registration deadline is December 9th, 2013. There is an inexpensive version of the test where students take it on WebAssign, and a slightly more expensive version involving PDFs and Scantron sheets you mail in.

The registration process for the 2014 Fnet=ma Contest is quick and easy. Simply register online with a credit card or, if utilizing a purchase order, you may download a PDF form, complete and mail it to the AAPT National Office at One Physics Ellipse, College Park, Maryland 20740 or fax 301-209-0845. *The registration deadline is December 9, 2013.*

More details here, past exams, and information about some WebAssign practice tests you could look at: <http://www.aapt.org/physicsteam/2014/registration.cfm>

8. GRANT OPPORTUNITIES FOR EDUCATORS

(The following list has been compiled and edited from the list provided by the NJ Science Education Network, who themselves compiled it from information in "National Science Teachers Association Reports" Vol 25 No. 3 (www.nsta.org))

Walmart Foundation Grants -- The Walmart Foundation provides grants for K-12 public, private, and charter schools; colleges and universities through its Local Giving Program. Grants of between \$250 and \$2500 are available, and should be used to benefit areas served by a Walmart, Sam's Club, or a company logistics facility. Apply online at [Http://bit.ly/181X2Nu](http://bit.ly/181X2Nu) by December 1st.

The American Institute of Aeronautics and Astronautics (AIAA) Foundation provides grants of up to \$250 to teachers who develop or apply STEM in their curriculum. Grants can be used for demonstration kits and science supplies tied to specific lesson plans that impact at least 25 students. Applicants must be K-12 teachers and must first register -- at no charge -- as AIAA Educator Associates. Apply by Nov.30; Visit <http://bit.ly/YGU1f7>

National Park Service's Teacher-Ranger-Teacher (TRT) program is an extended professional development opportunity for teachers at K-12 schools. TRTs spend the summer learning about Park resources and developing lesson plans for their classrooms, and often living in one of the National Parks. Teachers from schools with under served populations in urban and rural areas are especially encouraged to participate. The TRT program dates vary by Park, but a typical

program lasts four to eight weeks. Requirements are outlined in a project agreement form provided by each Park TRT coordinator and vary by Parks. Visit www.teacherrangerteacher.org for a list of program contacts by region, and contact the specific National Park you are interested in for application materials. Many Parks have a January deadline for applications.

America's Home Energy Education Challenge, sponsored by the U.S Department of Energy. November 15 deadline to register your student teams. Students in grades 3-8 can participate if they have a Team Advisor. For more information go to www.homeenergychallenge.org

NSTA Awards for outstanding educators deadline is November 30th. For a listing of the various NSTA awards and more information visit www.nsta.org/awards

9. 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. Free breakfast is provided before the lectures.

More information here: <http://science-education.pppl.gov/SOS/Overview.html>

10. 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; I'm not sure if the teacher workshops are more interactive.) For more information or to schedule a Teacher Orientation and check out the facilities before planning a trip, check out their website at: <http://www.nastarcenter.com/education>

11. NOBEL PRIZE AWARDED TO PETER HIGGS AND FRANCOIS ENGLERT; FREE HIGGS RESOURCES FROM AAPT

The 2013 Nobel Prize has been presented for "the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider."

AAPT is proud to share a new resource, *Higgs Articles from AJP and TPT*, featuring information published in *American Journal of Physics* and *The Physics Teacher*. The link is also available on our website (aapt.org).

As a member society in the American Institute for Physics (AIP), AAPT also wants you to know about the 2013 Nobel Prize resources published on the AIP Website at <http://www.aip.org/nobel/physics2013.html>.

And the New York Times has published a very attractive interactive piece on the Higgs Boson in which your SEPS secretary only noticed one glaring error: <http://www.nytimes.com/interactive/2013/10/08/science/the-higgs-boson.html>

12. 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 -at- nianet.org](mailto:nasaedc-at-nianet.org).

13. COOL LINKS:

XKCD's "What If" takes on the bizarre orbital physics of Antoine de Saint-Exupery's The Little Prince: <http://what-if.xkcd.com/68/>

An animator explains why she studies (and loves to study) physics in a lovely short:

<http://io9.com/an-animator-explains-why-she-studies-physics-in-a-marve-1452993581>

MIT's Education Arcade releases a new MMO (massively multiplayer online game) whose primary goal is to teach students to think like scientists and mathematicians:

http://blogs.kqed.org/mindshift/2013/08/mit-unleashes-new-online-game-for-math-and-science/?utm_source=dvr.it&utm_medium=linkedin&goback=%2Egde_3391879_member_269389112#%21

14. 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>