

Hi everyone! It was great to see so many of you at the Force and Motion workshop this past Saturday! I hope you had fun and were able to bring back some neat insights and ideas for your classroom! If you have any pictures or video from the workshop that you'd like to share with us for our website, please pass them on to me, and I can send them to our webmaster to be posted.

Our next big upcoming event is our FALL DEMO DAY at WEST CHESTER EAST HIGH SCHOOL on Saturday, October 18th. A flyer is attached. All physics teachers are welcome! If you're planning on coming, please email our host, Art Zadrozny, artzadrozny -at- gmail.com, and let him know that you plan to attend! And if you have a demo you want to share — whether it's a cool lab, a quick demonstration, a new way of looking at something, a video you've used in instruction, or even an idea for an exercise or project — please tell Art that you're interested, and let him know of any electrical or technological needs you might have (projector, outlets, computer, etc).

Act 48 credits will be available for the demo show through Bryn Mawr College, a partner of the Philadelphia Regional Noyce Partnership (PRNP), which is co-sponsoring our demo show. Bring your PPID if you need to receive Act 48 credit.

And here's a brief summary of this newsletter:

1. Free Force and Motion workshop at Saint Joseph's University (workshop 10/4, registration full, wait list open)
2. Friends Central hosts lecture on the History of the Universe by Nobel Prize Winner John Mather (evening of 10/15)
3. Free K-12 educators night out at the Franklin Institute (10/8, registration required)
4. Register now for Inaugural Mid-Atlantic APS Meeting at Penn State University (meeting 10/3-10/5)
5. Register now for SEPS AAPT Fall Demo Day! (10/18 at West Chester East)
6. Save the date for SEPS AAPT's Spring Conference at Swarthmore College (March 5th and 6th, 2015)
7. Swarthmore College Hosts Telescope Open House on Second Tuesdays (next one 10/14)
8. Drexel University Hosts Annual Kaczmarczik Lecture: The 3D Universe (10/22)
9. Registration now open for Chesapeake Section AAPT Fall Meeting (10/24 at Loyola University in Baltimore)
10. EdCampNJ Hosts Free Education Unconference in North Brunswick (11/22)
11. Penn Outreach Lectures at LRSM (next lecture 10/17, then 11/14, 12/12)
12. LRSM Science Cafes at Saint Declan's Well and Stoney's British Pub (next science cafes 10/6 in Wilmington, 10/15 and 11/5 in Philadelphia)
13. Vanderbilt University hosts new NSF-funded MOOC on Undergraduate STEM Education (free course begins 10/6)
14. Updates to AP Physics Exams and Formula Sheets (effective May 2015, affects C as well)
15. Cool physics: MOOCulus online calculus course with free textbook and graded practice problems, Windows to the Universe website about earth/space science, Optics Rube Goldberg device, Physics and baseball, Chris Hadfield reassures a small child about Voyager.
16. SEPS AAPT Online

Please read on for more information and local events! If you know anyone who is in need of a biweeklyish info dump of local physics-education events, please pass their contact information on to me so that I can add them to the list! Or if you have any events you want to publicize, please let me know about those, too.

Feel free to email me or Jeremy Carlo (jeremy.carlo -at- villanova.edu) if you have any questions about our upcoming spring meeting. I look forward to seeing many of you at Villanova next month!

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  
Archmere Academy  
Claymont, DE 19703

#### **1. NOMINATIONS OPEN FOR AWIS-PHL TRAVEL GRANTS FOR FEMALE GRADUATE STUDENTS**

From Ellie Brown for AWIS-PHL (eb\_awisphl -at- earthlink.net)

Please alert eligible students to this opportunity. The deadline for applications is November 1, 2014. Forms and additional instructions are available at <http://www.awisphl.org/Awards.htm>

Travel Awards

AWIS-PHL will award two travel grants each year, in the amount of \$500.00 each, to support the attendance of female students at national or international meetings. The conference or meeting must be relevant to the student's field of study and provide the student with an opportunity to speak or present her own research in order to qualify.

\* The Robert E. Davies Student Travel Award was established in 1993 by AWIS-PHL in memory of Professor Robert E. Davies, whose life was characterized by untiring efforts toward the entry and advancement of women in science. This award is given to a female graduate student from a school in southeastern Pennsylvania, Delaware or southern New Jersey.

\* The Adelaide M. Delluva Student Travel Award was established by AWIS-PHL in 2008 with a bequest from Dr. Delluva who was a loyal and committed supporter of the AWIS-PHL travel award program. This award is given to a female graduate student from a school in southeastern Pennsylvania, Delaware or southern New Jersey.

Call for nominations: The application deadline for these awards is November 1, 2014 for conferences held any time during 2015. Advisors are encouraged to nominate students for conferences that will provide significant exposure for the student and her work.

## 2. INTEL SCIENCE TALENT SEARCH SEEKS STUDENT APPLICANTS

Since 1942, the Science Talent Search, a program of Society for Science & the Public, has been rewarding the best and brightest young scientists and engineers. In 2015, more than \$1.25 million in awards will be distributed to students and their schools.

We invite you and your students to [take a fresh look at the Intel Science Talent Search](https://student.societyforscience.org/intel-sts-educators) (Intel STS: <https://student.societyforscience.org/intel-sts-educators>) and to consider applying today! Students are eligible to apply in their last year of secondary school; the application deadline is in mid-November each year. Those students who complete an entry by the deadline will also be eligible for entry awards including t-shirts, laptop stickers, and digital badges.

Visit [student.societyforscience.org/intel-sts-educators](https://student.societyforscience.org/intel-sts-educators) to request an Intel STS jump-start packet for your classroom and to be automatically entered for a chance to win one of ten \$250 Fisher Scientific gift cards. The first 200 teachers to sign up will also receive a free Intel STS t-shirt.

We look forward to assisting you and your students with the Intel Science Talent Search application! Questions, please ask: Caitlin Sullivan, Program Manager, Intel Science Talent Search, Society for Science & the Public, [sts-at-societyforscience.org](mailto:sts-at-societyforscience.org)

## 3. FRIENDS CENTRAL HOSTS LECTURE ON THE HISTORY OF THE UNIVERSE BY NOBEL PRIZE WINNER JOHN MATHER

The evening of October 15th, Friends Central High School is hosting a lecture by [John Mather, 2006 Nobel Prize winner](#) and Senior Scientist at NASA, titled "The History of the Universe: How We Got Here, and Where We Are Going." The registration for free tickets for John Mather lecture is now online on Friends Central's website - it is Wednesday October 15th at 7:30 pm in our main Meeting Room in Shallcross Hall - info and registration link here:

<https://www.friendscentral.org/podium/default.aspx?t=36644&rid=12266&bl=%2fpodium%2fpush%2fdefault.aspx%3fs%3d88%26i%3d125812%26snd%3d0c9bf0ff-17cc-465a-8b93-69edf345bb35&rc=1>

Questions can be addressed to John Gruber, Upper School Science Department Chairman, at [JGruber-at-friendscentral.org](mailto:JGruber-at-friendscentral.org).

## 4. FREE K-12 EDUCATORS' NIGHT OUT AT THE FRANKLIN INSTITUTE

Join the Franklin Institute for their annual open house event just for Educators! Tour the museum and experience firsthand theater programs, dynamic live shows, and hands-on workshops that will spark the curiosity in your students. Take a walk through Your Brain and state-of-the-art classrooms in the new Nicholas and Athena Karabots Pavilion, and see BODY WORLDS: Animal Inside Out, the featured special exhibition for this school year.

SAVE THE DATE: October 8, 2014  
3:30 - 8:30PM

Preview the latest theater offerings in our Tuttleman IMAX® Theater, Franklin 3D Theater, and Fels Planetarium.

Experience live science shows, demonstrations, and hands-on workshops.  
Learn about special programs like Camp-In and Traveling Science Shows.  
Book your field trip that night and get instant confirmation of your date!  
15% off all purchases in the Sci-Store.  
Enjoy complimentary refreshments.

To learn more, visit our [Educators' Night Out Frequently Asked Questions](http://live-franklin.gotpantheon.com/faqs-educators-night-out). (<http://live-franklin.gotpantheon.com/faqs-educators-night-out>). To inquire about availability for this event, please call 215.448.1200 (Option 3).

Event is free, and complimentary refreshments will be provided, but registration is required, and school IDs will be checked. Sign up here now! <https://www.fi.edu/special-events/educators-night-out>

## 5. REGISTER NOW FOR SEPS AAPT FALL DEMO DAY!

Demo Days are a fun opportunity for physics teachers to gather and share their favorite class-

room demonstrations. Past Demo Days have presented a range of demonstrations, from those using everyday items, like popcorn and broken glass, to technology that can show students how to measure the speed of light. Attendees need bring nothing more than a love for Physics, but all are welcome to bring and share their unique ways of demonstrating physics concepts.

This year's Fall Demo Day will be held at East High School in West Chester, PA, starting at 9:00 with a light breakfast and conversation with area Physics teachers, followed by presentations of 5- to 10-minute demonstrations that can liven up your

classes.

You are asked to register for this event by emailing our host, Art Zadrozny: ArtZadrozny -at- gmail.com. If you have a demo you'd like to present, please let him know, and include any specific technical needs.

There is no cost to attend, although we strongly encourage you to pay the nominal (\$10) annual dues to support our work and officially join SEPS AAPT.

East High School is located at: 450 Ellis Lane, West Chester, PA 19380

Use the Gym entrance, from 9:00—11:30am

## **6. SAVE THE DATE FOR SEPS AAPT SPRING MEETING AT SWARTHMORE COLLEGE**

Our Spring conference will be held March 6-7, 2015, at Swarthmore College. This conference gives high school and college faculty the chance to hear from noted speakers on some of the most current topics in both Physics research and Physics education strategies.

Unlike the others, this will have an associated registration fee — details will follow later in the year as they are hammered out. If you have any questions or suggestions, our SEPS AAPT President, Jeremy Carlo, jeremy.carlo -at- villanova.edu, is probably the best person to ask.

## **7. SWARTHMORE COLLEGE HOSTS TELESCOPE OPEN HOUSE SECOND TUESDAYS**

The Swarthmore Department of Physics and Astronomy (located in Swarthmore, PA) hosts a telescope open house each month. It is on the second Tuesday of the month and is held from 8 to 9 PM from October through March and from 9 to 10 PM from April through September.

The open houses are held at the new [Peter van de Kamp Observatory](http://astro.swarthmore.edu/observatory_directions/index.html) on the roof of the Science Center. Here is a [map and directions](http://astro.swarthmore.edu/observatory_directions/index.html): [http://astro.swarthmore.edu/observatory\\_directions/index.html](http://astro.swarthmore.edu/observatory_directions/index.html)

Note: They cancel the open house if it is too cloudy. A notice will be posted on the [department page \(http://www.swarthmore.edu/physics-astronomy\)](http://www.swarthmore.edu/physics-astronomy), but sometimes not until the last few hours before the open house is due to start, as [the weather \(and weather forecast\)](#) can change quickly.

For more information, check out <http://astro.swarthmore.edu/>

## **8. ANNUAL KACZMARCZIK LECTURE AT DREXEL: THE 3D UNIVERSE**

The Drexel University Department of Physics cordially invites you:

19th Annual Kaczmarczik Lecture

"Click: The 3D Universe"

Margaret J. Geller, PhD  
Senior Scientist, Harvard-Smithsonian Center for Astrophysics

Wednesday, October 22, 2:00 PM  
Main Auditorium, Main Building  
3141 Chestnut Street  
Philadelphia PA, 19104

We live in the first time when it is possible to map the universe. We now know that galaxies like our own Milky Way trace the largest patterns in nature. These patterns, first seen in a slice of the universe in 1986, extend for hundreds of millions of light years. Now with large telescopes, we can trace the evolution of these patterns and compare them with some of the world's largest computer simulations. A new survey, HectoMAP shows us the patterns in the universe nearly 7 billion years ago. A HectoMAP movie takes us through the data. Comparison of HectoMAP observations with simulations provides new direct tests of our understanding of the evolution of structure in the universe.

Margaret Geller, PhD Princeton, is a Senior Scientist at Harvard-Smithsonian Center for Astrophysics. Acclaimed astrophysicist and recipient of numerous awards, Geller is best known for her pioneering maps of the distribution of galaxies in the nearby universe. These maps, together with COBE observations of fluctuations in the microwave background, profoundly changed the view of large-scale structure in the universe. Geller has also made substantial contributions to the study of galaxies and their environment. She has developed and applied techniques for measuring the matter distribution in clusters of galaxies. She is currently making a deeper map of the galaxy distribution called HectoMAP.

Open House - 12:00 Noon

Preceding the Lecture, the Department of Physics will hold an Open House consisting of exciting science demonstrations and exhibits with brief presentations on biophysics, astrophysics, computational physics, condensed matter physics, among others. You and your students will have the opportunity to tour some labs and refreshments will be served. All events are free and open to the public.

We hope that you will join us for this year's event. To participate, simply register online.

For more information please visit: <http://www.drexel.edu/physics/kacz>, and/or read the attached flyer.

## 9. REGISTRATION NOW OPEN FOR CHESAPEAKE SECTION AAPT FALL MEETING

The fall meeting of southern neighbors, CSAAPT, is coming up on October 24, 25 2014 at Loyola University in Baltimore. The Chesapeake Section includes physics teachers throughout Virginia, Maryland, Washington D.C., and Delaware. They hope that you will be able to attend, and perhaps submit a paper or physics demo. Father Frank Haig is their gracious host, and the Loyola Meetings in the past have always been terrific.

The details of the meeting are included in the attachment, along with a map of the campus. We hope to see you there. If you have any questions, please contact David Wright, CSAAPT President, [dwright-at-tcc.edu](mailto:dwright-at-tcc.edu).

## 10. EDCAMPNJ HOSTS FREE EDUCATION UNCONFERENCE IN NORTH BRUNSWICK

Check out [edcampnj.org](http://edcampnj.org). Tickets to this FREE unconference are going fast.

When: Saturday November 22, 2014

Where: Linwood Middle School, North Brunswick New Jersey

Cost: FREE!

Who should attend?: Teachers, Administrators, Superintendents... All Educators

What is Edcamp?

Edcamp is a form of unconference designed specifically for teachers and their needs.

What makes Edcamp an unconference?

Unlike traditional conferences which have schedules set months in advance by the people running the conference, Edcamp has an agenda that's created by the participants at the start of the event. Instead of one person standing in front of the room talking for an hour, people are encouraged to have discussions and hands-on sessions. Sponsors don't have their own special sessions or tables, all of the space and time are reserved for the things the people there want to talk about. People could pay hundreds of dollars to attend another conference, or they could go to Edcamp for free.

Built on principles of connected and participatory learning, Edcamp strives to bring teachers together to talk about the things that matter most to them: their interests, passions, and questions. Teachers who attend Edcamp can choose to lead sessions on those things that matter, with an expectation that the people in the room will work together to build understanding by sharing their own knowledge and questions.

Edcamps are:

free

non-commercial and conducted with a vendor-free presence

hosted by any organization interested in furthering the edcamp mission

made up of sessions that are determined on the day of the event

events where anyone who attends can be a presenter

reliant on the "[law of two feet](#)" that encourages participants to find a session that meets their needs

Over 250 Edcamp events have been held to date around the world.

## 11. 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 next teachers lecture of the year will be held on Friday, October 17th at 6:00 pm in the LRSM Reading Room, 3231 Walnut St. The talk will be preceded by a tour of the new Singh Center for Nanotechnology at 5:30 PM. The speaker will be Amush Patel, Chemical and Biomolecular Engineering, and the topic:

"Building a Bridge from Protein Structure to Protein Interaction."

Remember that pizza and refreshment will follow and that parking is available on-street via Pay and Display kiosks. Come and bring a colleague or good student! 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-at-lrsm.upenn.edu](mailto:mcghie-at-lrsm.upenn.edu).

Future lectures include:

November 14: Arjun Yodh, Physics & Astronomy

"Imaging the Body with Light"

December 12: Jan Van der Spiegel, Electrical and Systems Engineering

"From Microelectronics to Nanoelectronics;

the driver of the information revolution"

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

## 12. LRSM SCIENCE CAFES AT ST DECLAN'S WELL AND STONEY'S BRITISH PUB

LRSM also offers a series of science cafes, open to the public. The Science Cafés, which are science talks for laymen about materials-related topic of current interest, will take place at 7:30 pm at Stoney's British Pub, 3007 Concord Pike, Wilmington DE and Saint Declan's Well, 3131 Walnut St. Philadelphia, PA, at 6:00 pm.

Upcoming Science Cafes include:

October 6, 2014 at Stoney's British Pub in Wilmington: Dillon Brout, Physics & Astronomy, University of Pennsylvania, "Advances in Race Car Vehicle Dynamics and Race Strategy"

October 15, 2014 at St Declan's Well in Philadelphia: Igor Bargatin, Mechanical Engineering and Applied Mechanics, University of Pennsylvania, "Advances in Race Car Vehicle Dynamics and Race Strategy"

November 5, 2014 at St Declan's Well in Philadelphia: David Salas-de la Cruz, Ph.D., EIT, Rutgers University, Camden, "3D Printer: Materials and Custom-made Manufacturing Revolution"

November 10, 2014 at Stoney's British Pub in Wilmington: Karl Adamsons, Axalta, "Art Preservation Over the Last ~5000 Years"

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

### 13. NEW MASSIVELY OPEN ONLINE COURSE ABOUT UNDERGRADUATE STEM TEACHING

"An Introduction to Evidence-Based Undergraduate STEM Teaching" is a MOOC on undergraduate STEM teaching that starts in early October, aimed at new faculty, grad students, and post-docs. This seven-week course explores effective teaching strategies for college or university STEM (science, technology, engineering, mathematics) classrooms.

The course will draw on the expertise of experienced STEM faculty, educational researchers, and staff from university teaching centers, many of them affiliated with the [Center for the Integration of Research, Teaching, and Learning \(CIRTL\)](#), a network of 22 research universities collaborating in the preparation of STEM graduate students and post-docs as future faculty members. The seven-week course will be highly interactive, with many opportunities for peer-to-peer learning. Learning communities are at the heart of CIRTL's activities, and this open, online course is intended to foster a large, healthy learning community of those interested in undergraduate STEM teaching—including current STEM faculty.

"An Introduction to Evidence-Based Undergraduate STEM Teaching" has been developed by faculty, staff, and students at [Vanderbilt University](#), [Michigan State University](#), [Boston University](#), the [University of Wisconsin-Madison](#), and the [University of Colorado-Boulder](#).

For more information or to enroll (for free): <https://www.coursera.org/course/stemteaching>

### 14. UPDATES TO AP PHYSICS EXAMS AND FORMULA SHEETS

As you may have heard, the College Board has been talking about revamping the AP Physics B exam for several years now. This spring will be the first time that the new exams — AP Physics 1 and AP Physics 2, both three-hour exams, but each on approximately half of the previous AP Physics B material — will be offered. Note that the exam will be offered on May 6 — the Wednesday of the first week of AP Exams, the week before the Physics C exam.

More information here: <http://advancesinap.collegeboard.org/math-and-science/physics>

College Board is also offering a six-hour training course with information about AP Physics 1 and 2 (\$150): <http://apcentral.collegeboard.com/apc/html/aponlinepd/physics.html>

If you are a Physics C teacher, does this affect you? Maybe, maybe not. The College Board thought the Physics C exam worked quite well and did not need to be revised. The only change that definitely affects all AP teachers is that the equations sheets have been revised to bring them in alignment with each other and best practices. Here's the new Physics C sheet, with some small but crucial revisions — <https://prettygoodphysics.wikispaces.com/file/view/APC%20Equation%20sheet%202015.pdf/520996784/APC%20Equation%20sheet%202015.pdf>

And here are the new algebra-based equation sheets:

Physics 1: <https://prettygoodphysics.wikispaces.com/file/view/APC%20Equation%20sheet%202015.pdf/520996784/APC%20Equation%20sheet%202015.pdf>

Physics 2: <https://prettygoodphysics.wikispaces.com/file/view/P2%20Equation%20sheets%202015.pdf/519722914/P2%20Equation%20sheets%202015.pdf>

Both combined: <https://prettygoodphysics.wikispaces.com/file/view/P1%262%20Equation%20sheets%202015.pdf/519722990/P1%262%20Equation%20sheets%202015.pdf>

Also, if you're an AP Physics teacher who's been teaching the course for 3 years or more, OR if you're a college professor with the patience and interest, the College Board is looking to hire "AP Exam Raters" to spend a week grading exams in early summer 2015. Now is the right time to apply if you're interested — later in the year, everything will be full already! Getting into the rater pool is not a guarantee that you will be called to grade exam (e.g. they haven't actually called me yet) but you do stay in the pool for 5 years once you're in.

<http://apcentral.collegeboard.com/apc/public/homepage/4137.html?excmid=MTG2-ED-10-hnet>

### 15. COOL LINKS:

MOOCulus is a massively open online Calculus course hosted by Coursera, created by OSU, with a free downloadable PDF textbook and online automatically graded practice problems: <https://mooculus.osu.edu/>

Windows to the Universe, a neat website all about earth and space science. Do you know what anti-crepuscular rays are? Or how sinkholes form?

<http://www.windows2universe.org/>

Really cool optics version of a rube Goldberg device:

<http://www.youtube.com/watch?v=4nClzPuLYJA&list=PLbpi6ZahtOH7h9OULR1AVb4i8zo0ctwEr&feature=em-bc-148-b>

Physics and Baseball (from Arbor Scientific CoolStuff Newsletter): <http://www.arborsci.com/cool/physics-and-baseball/>

Chris Hadfield reassures a small child about the happiness of Voyager: <http://www.radiolab.org/story/its-very-tough-little-spaceship-and-it-knows-what-its-doing/>

#### **16. 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>