the SPS Observer
Volume XLVII, Issue 2
Summer 2013

Back to School!

IDEAS FOR GETTING THE MOST OUT OF SPS

// FACE TIME WITH SPS NATIONAL // GRADSCHOOLSHOPPER.COM // GALILEOSCOPES FUNDRAISER

the SPS Observer

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Welcome Back!

A LETTER FROM THE NEWLY ELECTED SPS PRESIDENT

by DJ Wagner, President of the Society of Physics Students
Professor of physics at Grove City College, PA

Greetings, and welcome back to another exciting year of physics! I am thrilled to be the new president of SPS and am looking forward to working with SPS members, advisors, and student leaders over the next two years as SPS continues to grow and make a positive impact on the undergraduate physics community. I am currently the chapter advisor at Grove City College in Pennsylvania, but my journey with SPS began when I was a sophomore at the College of William & Mary in Williamsburg, VA. A classmate revitalized our chapter and convinced me to join in the fun. We presented outreach activities at local schools, and I believe that we made a difference in our department. I knew then that SPS was cool, but little did I know where the SPS journey would take me! I knew that it had made an impact on my life, so I have continued my commitment to SPS throughout my career. Now I have the honor of taking the reigns as SPS president. And I have seen as a faculty advisor that SPS is still cool, and still making a difference in departments!

SPS is instrumental in the lives of many students and departments across the nation and even in some international schools, but there is always more that we can do to make a difference for students. I would love to see even more interaction between chapters, whether through increased zone meeting attendance or more shared events between nearby chapters.

SPS is the place where we begin our professional networks—Who knows? . . . That student at the college down the road may be your collaborator (or employee!) someday. Start expanding your network now by inviting a nearby chapter to your next event. Be sure to share your chapter's events and ideas in your annual chapter report and look for ideas in others' chapter reports. Start the year with a commitment to keep a good

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SPS PRESIDENT DJ WAGNER makes liquid nitrogen ice cream during a chapter meeting at Grove City College. Photo courtesy of DJ Wagner.

record of your activities. If you begin the document now and update it after every event, submitting it in June will be a lot easier.

Who knows where your journey with SPS will take you? To a local zone meeting? To Washington, DC, as an SPS summer intern? To local schools to practice physics with a fun outreach event? To a national meeting of one of the AIP Member Societies? Or even to the awesome 2016 Sigma Pi Sigma Congress in San Jose, CA? Will you decide to run for election to serve on the SPS National Council, or write about your research and earn a trip to the International Conference of Physics Students? SPS can help you get to each of these places, so consider applying for one or more of the numerous awards we offer thanks to our generous donors.

I hope you have a great year. Stay active in SPS and think lots of happy physics thoughts! //

ON THE COVER
SPS members at the University of Texas at Brownsville (UTB) join in a Charro Days student parade. See the "Back to School" feature beginning on page 8.
Photo courtesy of UTB.

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AIP Member Societies: American Association of Physicists in Medicine, American Association of Physics Teachers, American Astronomical Society, American Crystallographic Association, The American Physical Society, Acoustical Society of America, AVS–The Science & Technology Society, OSA–The Optical Society, The Society of Rheology

Other Member Organizations: Sigma Pi Sigma physics honor society, Society of Physics Students, Corporate Associates

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Shopping for Grad School

FIND THE BEST OPPORTUNITIES FOR GRADUATE SCHOOL IN PHYSICS OR A RELATED FIELD

by Daniel Greenberg, GradSchoolShopper.com product specialist at the American Institute of Physics

Finding your ideal graduate program in the physical sciences can be a daunting task, but GradSchoolShopper.com, created by the American Institute of Physics, can help.

The website has a long history. It grew out of AIP's big (and we mean big!) book *Graduate Programs in Physics, Astronomy, and Related Fields*, which has been published annually since 1965. The "big book" of graduate programs is a common feature in most physics department student lounges around the country. The 2014 edition will be mailed to all SPS chapter advisors in October.

The goal of GradSchoolShopper: to be the online resource to help students of the physical sciences make informed decisions about graduate school. That means providing everything from admission rates and financial aid information to data about the specialties of individual faculty members in an easy-to-use format.

Other websites may offer basic information about a program. "They give it a high number," as one University of Florida senior put it, "but what does that mean if there's nobody there I'd want to work for?" GradSchoolShopper.com, the online version of the "big book," gives you a more comprehensive set of data about hundreds of graduate programs of interest to physics students.

Custom search functions let you find programs in nearly 50 distinct specialties within the physical sciences. Nanotechnology? Materials science? Astrophysics? It's all there. These convenient features make searching for a grad school that much simpler, and more efficient.

"The most important thing for me was to be able to see very specific areas of specialization, what faculty do that doesn't fit into a larger category," Ian C. of the University of California, Santa Cruz, said about GradSchoolShopper.

Identifying the best fit for your graduate program is only the first step toward a fulfilling graduate school career. You may feel uncertain about how to submit the best application or what your career might look like once you earn that advanced degree. This is why GradSchoolShopper.com also features a student resource section (http://students.gradschoolshopper.com). Fresh content is continuously added, aimed specifically at helping students find their way into, through, and out of grad school. The site features interviews with faculty members and career physicists, advice from grad students who have been there before, and stories spotlighting noteworthy research done by grad students today (see the GradSchoolShopper.com special feature "Imaging Science at RIT" on the following page).

Tune in to the GradSchoolShopper podcasts for tips that could help to make your graduate school experience a little smoother. "Relax, don't panic," Nicole Gugliucci, an astronomer on the CosmoQuest team will tell you. "Grad school can be very hard and exhausting, especially in the beginning, but it will get better."

Countless undergrads have used AIP's GradSchoolShopper products to find their way into graduate school and into diverse, rewarding careers in every area of the physical sciences and beyond. Now it's your turn. This is one time when following the crowd is a good thing. //

MORE INFORMATION

To see what GradSchoolShopper.com is all about, follow us on social media and keep up with what's new.

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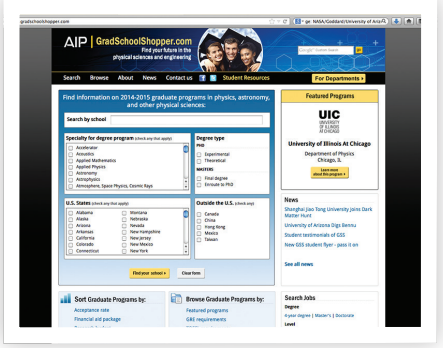
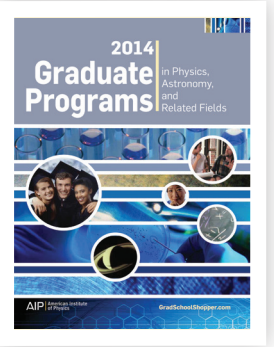
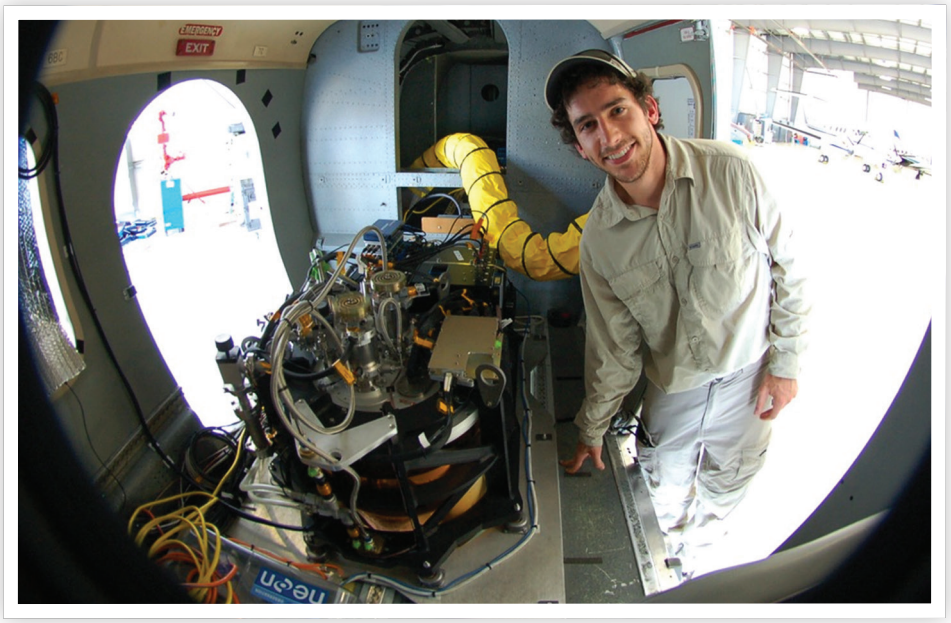




THE AUTHOR (far left) discusses GradSchoolShopper.com with a student at the 2012 Quadrennial Physics Congress in November 2012. Photo by Ken Cole. Center: GradSchoolShopper.com. Right: The *2014 Graduate Programs in Physics, Astronomy, and Related Fields*, which is mailed to all physics departments in October. Images courtesy of AIP.



DAVID KELBE IN THE FUSELAGE of NEON's (National Ecological Observatory Network) airborne imaging spectrometer. A spectrometer and waveform lidar (shown) are mounted to look out of a hole in the bottom of the aircraft. Photo courtesy of David Kelbe.

GradSchoolShopper.com special feature:

Imaging **Science** at RIT

by David Kelbe, PhD candidate at RIT's Center for Imaging Science

I am a third year PhD student at Rochester Institute of Technology's Center for Imaging Science. I chose the Imaging Science degree program because quite simply, nothing else like it exists. This was the first, and remains the only, program of its kind in the country.

We study in depth the physics-driven principles of imaging, from beginning to end. This comprehensive, systems-based approach to imaging sets us apart from other similar degree programs: Quite simply, the science of imaging is most powerful when it is understood as a chain of deeply interconnected links (e.g., image systems engineering, optical image formation, data processing, etc.) Any chain is only as strong as its weakest link. So our coursework focuses on understanding in depth the fundamental concepts of each link in the imaging chain, and how the links interact with each other in the context of a specific problem or application.

This precise, mathematical framework allows us to better understand and harness the complex data that is collected, and thus more aptly address the given application or objective. I am continually amazed by what can be done with this technology.

At RIT, this theoretical background is combined with an intensely practical and applied engineering focus. We are at the cutting edge of utilizing the latest technology (or designing and building it ourselves) with the end goal of solving problems. Once you know and understand how imaging systems work, you can apply this fundamental knowledge to a range of fascinating applications and objectives. To put it succinctly, we are problem solvers.

We understand each piece of the puzzle and how they all fit together, and so can tackle an incredibly diverse range of imaging-related problems with the core fundamental background.

This versatility is one of the things I love about the imaging science program. With a fundamental, systems-based understanding of imaging, you can apply these tools to a diverse range of applications. This really translates into career flexibility. You have the freedom to follow your career goals and interests as they evolve and change, without worrying about being pigeonholed into a single discipline.

To give you an example from my personal experiences, here is a snapshot of my current and future interests.

My dissertation research involves using laser scanning for structural ecological assessment. We have developed a portable laser-scanning system for rapid three-dimensional assessment of below-canopy forest structures. I am using this technology to help better understand the next generation of airborne and space-borne sensing systems.

"We are problem solvers"

But while my dissertation work focuses on ecological and laser scanning, I've also had the opportunity to become involved in other imaging projects, such as recovering erased text from ancient manuscripts using spectral imaging and image processing.

In the future, I see my work focusing on the nexus between remote sensing science and humanitarian policy. Earth imaging has already proven crucial in response to natural disasters. My hope in the future is that we can do a step better – and actually predict and prepare for preventable, slow-onset global crises (e.g., food shortage) in the developing world.

How can you make grad school work for you?

I earned my undergraduate degree at RIT and continued on in the PhD program. As a new grad student it's invaluable to get to know your classmates, professors, and staff. Become part of the group. A great strength of many higher education programs is the huge diversity of students, backgrounds, and experiences. Often we tend to stick to the familiar, but go outside your comfort zone! Get to know each other, work together, and learn from each other!

Finally, the degree is yours to create! //

This piece was originally published on GradSchoolShopper.com and is reprinted here with permission.

MORE INFORMATION

Learn more about a degree from RIT's Center for Imaging Science by visiting its profile on GradSchoolShopper.com.

Physics and the birth of the Emoticon

ORIGIN OF THE SMILEY TRACED TO A GROUP OF COMPUTER SCIENTISTS DISCUSSING A PHYSICS PUZZLE IN 1982

by Julianne Wyrick, freelance science and heath writer

The use of the smiley face may be frowned upon in professional communications, but it's an essential part of the lexicon of the Internet. It didn't take long after the invention of the message board for people to start using it. According to alumni of Carnegie Mellon University (CMU), it all began with a joke in a conversation about physics.

On Sept. 16, 1982, Neil Swartz, a computer scientist at CMU, posed a physics problem to his computer science colleagues on the department's "bboard," a form of early online message board similar to today's Facebook group. Bboard users often posted science puzzles for one another to solve and had been discussing the riddle of whether a canary could fly in an elevator during free fall.

Swartz presented a new scenario, which involved a lit candle mounted on an elevator wall and a drop of mercury on the floor. "The cable snaps and the elevator falls," Swartz wrote. "What happens to the candle and the mercury?"

That evening, fellow computer scientist Howard Gayle responded with a facetious message titled "WARNING!"

"Because of a recent physics experiment, the leftmost elevator has been contaminated with mercury," Gayle wrote. "There is also some slight fire damage. Decontamination should be complete by 08:00 Friday."

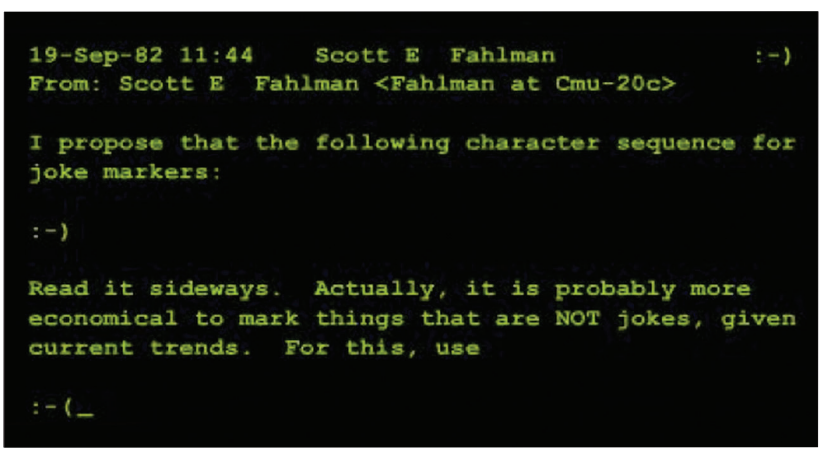
Despite posts noting that the warning was meant in jest, some people apparently took the notice at face value, believing a mercury spill had actually taken place. Various bboard users began joking about different symbols that could identify posts that weren't meant to be serious.

Eventually, Scott Fahlman, then a computer science research assistant professor, proposed using :-) for joke posts—or, given the preponderance of joke posts, simply using :-(for serious ones.

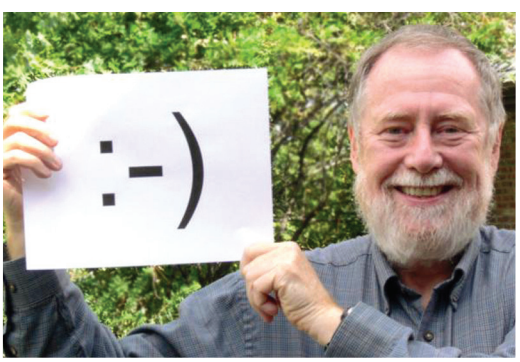
His smiley caught on at CMU and soon spread via messages to other universities and companies connected to ARPANET, a Department-of-Defense–funded network of computers that preceded today's Internet. (CERN software engineer Tim Berners-Lee later created the World Wide Web, which allowed computers connected via the Internet to simply access a common set of information.)

"Within a number of months, it was in common use in the computer science research community," says former CMU research programmer Mike Jones, who remembers reading Fahlman's suggestion while he was at the university. Jones, now a standards architect at Microsoft, led the effort to uncover the original thread containing Fahlman's post.

IT ALL BEGAN WITH A JOKE IN A **conversation about physics**



TEXT OF FAHLMAN'S ORIGINAL POST proposing the smiley. Photo courtesy of the School of Computer Science / Carnegie Mellon University.



SEE THE RESEMBLANCE? Scott Fahlman poses with the emoticon he invented. Photo courtesy of Scott Fahlman.

As ARPANET became linked to other networks across the world and eventually formed the Internet, the smiley went along with it.

"It just colonized each new place," Fahlman says.

Some have suggested that people used emoticons prior to Fahlman's smiley. A man named Kevin MacKenzie is reported to have used a version of the smiley in a 1979 mailing list called MsgGroup. However, the invention of the smiley is generally credited to Fahlman, who believes his use is the one that ultimately caught on.

Having survived the fake mercury spill, Fahlman still works at CMU, now a research professor in the university's Language Technologies Institute.

"I don't think any of us were actual physicists," Fahlman says of the participants in the physics conversation that led to his smiley, "but we were all sort of science nerds."

For any fellow science nerds who have been waiting for the answer to the elevator problem, here it is, straight from Swartz:

"The answer is that the candle goes out due to lack of oxygen. (There are no longer any convection currents to keep feeding it.) The mercury forms into an ellipsoid due to surface tension. In balling up it exerts a force on the floor, which sends it towards the ceiling. It will bounce back and forth between ceiling and floor until the elevator hits the ground. All of this neglects the friction on the guide rails, vibrations, etc." //

This piece was originally published in Symmetry magazine (www.symmetrymagazine.com) and is reprinted here with permission.

It's a bird, It's a plane, It's Supermoon!

THE ASTRONOMY OF SUPERSIZED MOONS

by Brooke Adams, Class of 2015 at the Florida Institute of Technology

JUNE'S SUPERMOON, which appeared as much as 13.5 percent larger and 30 percent brighter than a typical full Moon, is shown here behind the Washington monument. Image courtesy of NASA/Bill Ingalls.

We've all seen a full Moon. But did you ever notice that sometimes the full Moon is larger?

Popularly referred to as a supermoon, this larger apparent size happens when the Moon is closest to the Earth. The effect on June 22 and 23 was special because the Moon was approximately 356,991 kilometers away, the closest it will be to the Earth until August 2014. These different sizes remind us that our moon's orbit is not a perfect circle, but rather an ellipse, following Kepler's laws.

The giant impact hypothesis best explains the Earth-Moon system's current orbital patterns, as well as why the Moon's chemical composition is so similar to Earth's. This popular explanation of the Moon's origin says that when our planet was young, a gigantic collision with another body created debris, which then started orbiting Earth. Eventually the debris collected into the single body we now call the Moon.

Because the Moon orbits Earth more slowly than the rate at which the planet spins, it pulls on Earth and slowly reduces Earth's rate of rotation. This tug-of-war between the Earth and Moon also means the Moon's orbit is getting larger, at a rate of about 4 centimeters per year.

If enough time were to pass, the Moon would eventually drift away altogether, as the Earth's gravitation will not have enough pull to keep it. The Sun will probably turn into a red giant (in its late phase of stellar evolution) before that happens. Both the Moon and Earth will be destroyed by the expanding Sun.

This won't happen for billions of years, though, so we should always have our Moon to light up the night sky. But as the Moon drifts outward, our supermoons will become just a tiny bit less super every year. //

Back to School, Back to SPS!

TOP FIVE TIPS FOR A GREAT SPS YEAR

Adapted from resources in the SPS Information Handbook, www.spsnational.org/governance/handbook

01 DECIDE THAT YOUR SPS CHAPTER WILL BE AN AWESOME FORCE IN YOUR DEPARTMENT!

The physics department is home base for physics majors. As you plan your SPS year, think about the role that SPS can play in the department. A strong and active SPS chapter can make earning a physics degree more fun, fulfilling, and productive for everyone involved, and help departments meet many common needs, including:

- A cohesive student group—If your department does not have a place for students to work and relax together, consider leading the effort to establish an SPS student lounge.
- A morale boost—Remind everyone why studying physics is fun! Plan tours of places where science and technology take center stage, physics-inspired social activities, and science outreach events in the local community to engage and inspire members.
- More majors—An active SPS chapter can be the best recruiting tool in the department! Visit introductory physics classes during the first few weeks of class and invite students to SPS events. Participate in campus fairs, homecoming events, and other activities to attract those already on campus.
- Student engagement in research—Invite faculty to give short presentations about research opportunities. Ask faculty or senior-level students to provide tours of lab facilities or give research talks. Use *Physics Today* as discussion material in meetings.

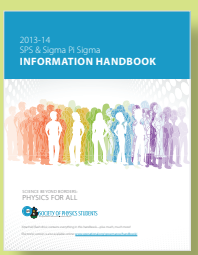
02 HAVE PURPOSE

Before you get started for the year, decide on some chapter goals. In addition to those mentioned above, your chapter might focus on increasing SPS membership, recruiting new physics majors, hosting outreach activities or developing new outreach tools, being more involved on campus, or attending more physics meetings and raising money to offset travel costs. If you need help in finding direction, meet with faculty in the department!

Post the goals in a prominent place and revisit them at each meeting to stimulate and celebrate progress.

03 JOIN THE SPS NETWORK

SPS is more than just local activity. SPS has thousands of members and chapters at 761 different institutions! Be inspired, challenged, and encouraged by SPS members from around the world virtually through Facebook and Twitter, and in person through SPS zone meetings, joint chapter activities, and professional physics meetings. These students are likely to be your future collaborators, peers, employees, and bosses, so start making connections now. Every geographic "zone" has an elected student and faculty representative whose job is to facilitate connections within their region, so reach out to them! Make sure you find out about SPS activities, meetings, awards, scholarships, internships, and more by being a dues-paying member of SPS National.



2013-14 SPS & SIGMA PI SIGMA INFORMATION HANDBOOK

This resource was created to help your chapter have a successful and productive year. Check in with your chapter advisor to make sure s/he received a copy. ***Then use it!***

2013 SPS FLASH DRIVE

The 2013 SPS flash drive contains a digital copy of the *2013 SPS Information Handbook* to which it was attached, plus much more.

SPS MEMBERS at the University of Texas at Brownsville (UTB) join in a Charro Days student parade. Photo courtesy of UTB.

04 BE CONSISTENT

Make SPS a highly visible, important, and REGULAR part of the life and culture of your department. Whether weekly, monthly, or something in between, meetings should be at a regular, fixed time so that attending becomes a regular habit. Always invite faculty! Meetings are usually more fun with food, so add pizza, cookies, tea, or whatever your chapter prefers. With consistent meetings you are more likely to accomplish your chapter goals and build a strong community.

05 BE VISIBLE

Be visible in your department community. Make sure that everyone in the department—faculty, students at all levels, and staff—knows about SPS events and feels welcome. Research has shown that a strong departmental community increases recruitment and retention, making the challenging process of earning a physics degree more enjoyable and rewarding for everyone involved.

Be visible in your campus community. SPS chapters have a history of hosting great campus events. Physics departments are usually small, but they can have a large impact on the culture of their institution.

Be visible in your local community. Reaching out through events provides a larger purpose for your chapter and is a great way to build community, give members teaching experience, and reinspire homework-laden physics students.

Be visible in the physics community. Start building your professional network by attending meetings, visiting laboratories and companies, joining professional physics societies, and being active in online forums. You will be amazed at the opportunities available in the broader physics community. //

GET CONNECTED AT: www.spsnational.org/governance/handbook/

START WITH A BANG!

IDEAS FOR MAKING THE MOST OUT OF SPS

SPS MEETINGS

- Skype with the SPS National Office (see page 15 for details).
- Feature student speakers, for example, those practicing their talks before going to zone meetings, or those who recently completed a summer research project. Make a schedule for the semester and post abstracts in advance, but also be flexible as new opportunities arise.
- Take on a physics research project as a chapter. Give updates at meetings throughout the semester.
- Eat lunch together while a speaker describes a project or recent trip to a conference.
- Discuss resume writing, job interviewing, and the job market. Invite someone from the career services office on campus to come for a discussion about physics-related career options.
- Discuss a recent physics discovery or journal article, or current issues related to physics.
- Invite the department chairperson and have an informal discussion about what the department is doing and what goals the department has for recruitment and retention.
- Invite recent alumni to talk about their graduate school or employment experiences.

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continued from page 9

OUTREACH ACTIVITIES

- Take the activities from an SPS Science Outreach Catalyst Kit (SOCK) into local classrooms.
- Participate in a science festival or host a science café.
- Hold a pumpkin launch, egg launch, or rocket launch contest for area children or community groups.
- Hold a demo show at a local school or community center, or hold one on campus and invite local groups. (Be sure to practice first!)
- Arrange for public viewing of astronomical objects through the department's telescopes.
- Work with other campus departments to arrange for tours of your campus laboratories for high school students.
- Hold "haunted" lab tours around Halloween.
- Volunteer to judge science fairs in your local schools.

SOCIAL EVENTS

- Hold a student–faculty picnic at the beginning of the academic year, and another at the end of the year. Be sure to include an icebreaker-type game to get faculty and students talking to and interacting with each other!
- Go on a chapter camping trip, hike, or other outdoor bonding event.
- Have parties at holiday times (don't forget Pi Day!).
- After a big exam, have a "decompression party" at a faculty member's house.
- Host a cheesy science movie night and serve liquid nitrogen ice cream.
- Challenge other groups on campus to bowling, ultimate Frisbee, or trivia games.
- Build a float for the homecoming parade.

SERVICE TO THE PHYSICS DEPARTMENT

- Conduct problem-solving sessions or tutoring sessions for students in introductory physics courses.
- Prepare bulletin boards and window displays for your department, illustrating physical phenomena, historical personalities, the influence of physics in society, or the department's programs and personnel.
- Host or attend an SPS zone meeting.
- Publish a departmental newsletter for alumni, prospective students, donors, university administrators, students, colleagues, and other friends of the department.
- Help organize physics department colloquia.
- Collect information about graduate schools and summer research opportunities (your department receives stacks of this stuff in the mail), and then organize and post this on bulletin boards in your department.
- Help organize a Sigma Pi Sigma induction ceremony.

RECRUITING MEMBERS

- Place prospective majors on your e-mail list during new student recruitment.
- Participate in freshman orientation and other programs that acquaint students with campus organizations.
- Visit introductory physics classes and invite the students to SPS events.
- Invite interested freshmen to all SPS activities.
- Encourage nonphysics majors with an interest in physics to join SPS.
- If your department has them, invite graduate students to SPS functions. //

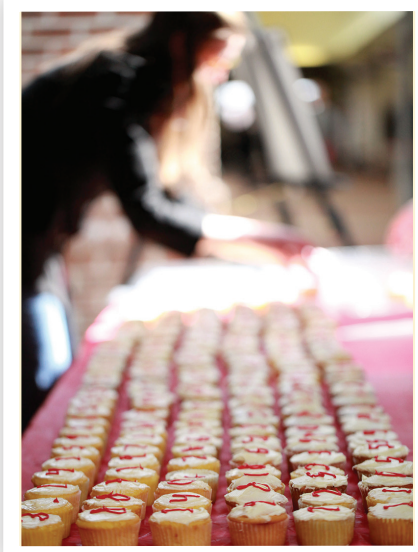


Photo by Kristi McMurray.

Photo courtesy of AIP.

Photo courtesy of the Galileoscope Task Group.

BAKE CUPCAKES FOR PI DAY! BUILD A PHYSICS-THEMED HAUNTED HOUSE! DO AN OUTREACH EVENT WITH GALILEOSCOPES AND RAISE FUNDS FOR YOUR CHAPTER! THEN TELL SPS NATIONAL ABOUT IT!

See SPS-Galilescope chapter fundraising program details on page 13, or visit: www.spsnational.org/galileoscopes/.

FUNDRAISER A GOOD PIECE OF Pie

PIE-A-PROFESSOR EVENT A HIT!

by Nathan Johnson, Henderson State University

This spring, the band director of Henderson State University (HSU) proudly took a whipped-cream pie to the face. He smiled and walked away with a jar of money for the music department, the winner of our SPS chapter's pie-a-professor fundraiser.

We asked professors from several departments to volunteer for the event. Each had a donation jar, and the rule was that the jar that collected the most money would become a donation to a student organization in that professor's department. The remaining donations would go towards funding SPS events, many of which are outreach events for local middle schools and high schools.

During the fundraiser, SPS members monitored the jars at a table in the middle of our campus. We explained to interested students and faculty what the Society of Physics Students does, what we plan to do with the money we raise, and, most importantly, who was winning and by how much. Many students (and quite a few faculty members) donated. Some wanted to see a particularly tough professor get pied, but several people gave to the lowest-value jar just to ensure our organization would receive their donations. A few of these people said that they will look to join SPS in the fall.

Although the winning jar accounted for nearly a third of the total money donated, we collected about $160 for the chapter and only had to pay for a dozen jars and two cans of whipped cream. This fundraiser is so simple, fun, and inexpensive that I expect our chapter to repeat the event next semester. //

BAND DIRECTOR STEVE KNIGHT braces for impact. Photo courtesy of the HSU SPS chapter.

Fundraising STORIES

Sean Bentley

For the past three years, our chapter has rented out a local laser tag arcade for a night, and sold tickets to students campus-wide as a fundraiser.

Ed Greco

My SPS chapter recently received the green light to solicit funds through our university's kick-starter site (https://starter.gatech.edu/). We are raising money to complete construction of a spark chamber. The spark chamber will be on display to the public for the 2014 Atlanta Science Festival (http://atlantasciencefestival.org/).

FOOD FOR THOUGHT...AND Travel!

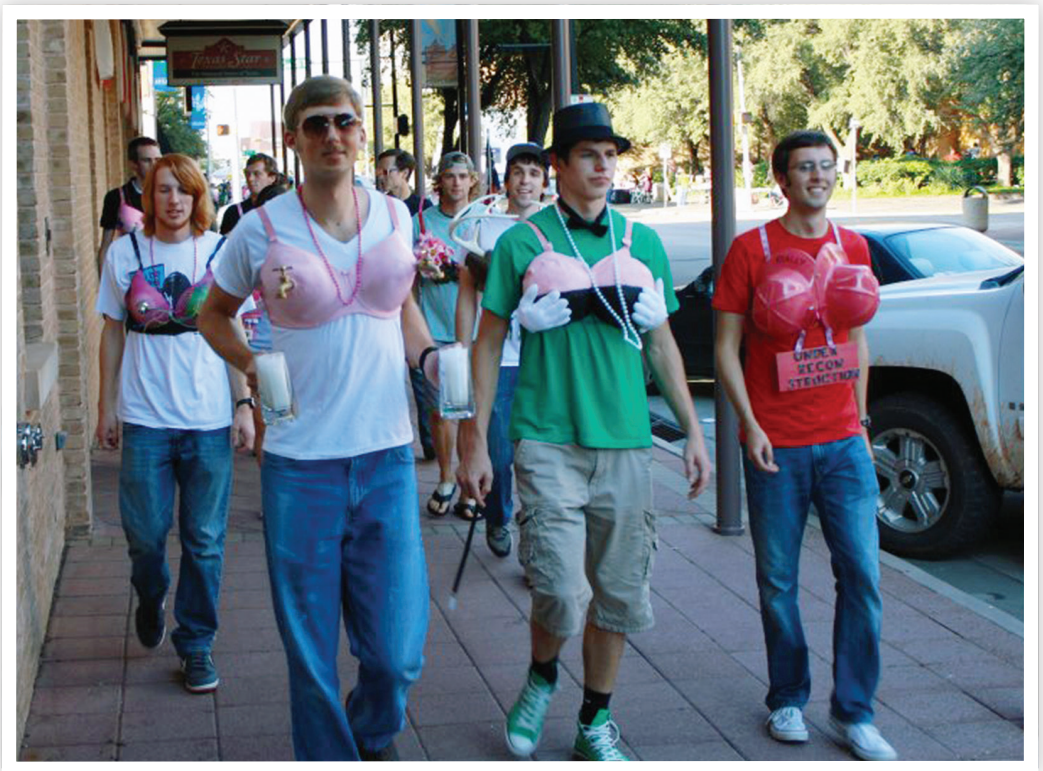
SPS CHAPTER INVESTS IN A VENDING MACHINE

by Richard Cody Prince,
Class of 2014 at the University of Tennessee, Knoxville
SPS Executive Committee student representative

Our chapter at the University of Tennessee, Knoxville, (UT) is trying out a new and tasty way to raise funds. We will soon install a vending machine in the physics department. This hands-off fundraising requires minimal effort to sustain and, we hope, will earn a good profit after a modest initial investment.

I came up with the idea one afternoon talking to Dr. Jim Parks, the former SPS advisor of our chapter. During the late 1980s, Dr. Parks served as the advisor of Western Kentucky University's SPS chapter. At the time, the only soda vending machine in the department was in a faculty lounge. Students who wanted a drink had to face scolding from indignant professors. After one particularly intense incident, Dr. Parks agreed to rent a soda vending machine for his students. Profits from the sales, he said, paid for the chapter's entire yearly budget! Trips, banquets, and social events were all funded by the highly successful machine.

Our department already has a drink machine. What it lacks are snacks. The nearest place to buy chips, candy, and other snacks is in the University Center building, a long hike up "the Hill" for busy students. I searched the Internet and found a small snack machine for less than $500, and we are now waiting for permission from our department head to move forward with the plan. We hope to put the profit toward outreach activities such as trebuchet competitions and a science café program in Knoxville starting in the fall. Part of the proceeds will be saved for the 2016 Quadrennial Physics Congress of Sigma Pi Sigma in Silicon Valley, California. //



ACU SPS MEMBERS act as human canvases for a breast cancer awareness project. Photo by Tim Head.

SPS on Parade

TEXAS CHAPTER RAISES MONEY BY RAISING AWARENESS FOR CANCER

by Spenser Lynn,
Class of 2013 at Abilene Christian University
Associate zone councilor for zone 13

It's not every day that you see SPS members parading through downtown wearing artistic bras, but that is exactly what we signed up to do on a Thursday night in October. Some were decorated with lace. Others glittered. One even had antlers.

We took to the streets for two reasons: to raise awareness for breast cancer and to raise funds for the 2012 Quadrennial Physics Congress of Sigma Pi Sigma (PhysCon).

PhysCon was serious business for our chapter in Abilene. By the start of the Fall 2012 semester, 30 SPS members had signed up to make the cross-country trip in November. Getting that many people from Abilene to Orlando would be financially nontrivial. Our goal was to raise $3,000 during the fall semester.

To offset costs for transportation, conference registration, and lodging, Abilene Christian University (ACU) SPS always raises funds between congresses. As soon as one ends, our preparations for the next one begin. Mostly we put on typical, run-of-the-mill events—hosting bake sales, selling t-shirts, and seeking sponsorships from local businesses.

> "We walked into a room that looked like Lady Gaga's dressing room"

Campus fundraisers had been profitable last year, but meeting our goal would require branching out into the larger Abilene community. The Center for Contemporary Arts hosts a monthly Art Walk where local artists display their work and vendors sell crafts and food. We decided that an evening of selling liquid nitrogen ice cream and talking to Art Walk attendees about physics would provide the perfect opportunity to get involved with the community while raising funds for the trip to Orlando.

Getting a table at Art Walk was no problem, but the director did have an unusual request. As part of a campaign for breast cancer awareness (October is breast cancer awareness month), artists had traded their canvases for underwear and created some of the most outlandish bras Abilene had ever seen. The underwear had been on display for a month at the Center's headquarters, and the director wanted it to be part of a parade that was being held jointly with the October Art Walk. If ACU could find people to wear the bras in the parade, then there would be no problem selling ice cream.

Sixteen SPS members, 15 of them men, showed up for the parade. We walked into a room that looked like Lady Gaga's dressing room and, with some nervousness, picked out our favorites, putting them on over our t-shirts. While a smaller group hosted the ice cream table, we strutted out into the public.

The parade was a resounding success. Amid the cheers and laughter, we costumed students grew bolder and waved back to the crowds. At the end of the night, ice cream sales made over $200 in profits, and we showed the community that physics students know how to have fun. //

NEW FUNDRAISING OPPORTUNITY

AN SPS TWO-FER: Fundraising PLUS Outreach

INTRODUCING THE SPS-GALILEOSCOPE PROGRAM FOR SPS CHAPTERS

Imagine doing great outreach and raising money for your chapter all at the same time! SPS National has teamed up with the Galileoscope team to offer SPS chapters a new outreach and fundraising opportunity: selling replicas of the instrument that Galileo Galilei used 400 years ago.

The Galileoscope is a high-quality, low-cost telescope kit developed by a team of leading astronomers, optical engineers, and science educators. With this easy-to-assemble, 50-mm (2-inch) diameter, 25- to 50-power achromatic refractor, anyone can see lunar craters and mountains, Jupiter's moons, the phases of Venus, Saturn's rings, and countless stars invisible to the unaided eye. Backyard astronomy has never been this fun or accessible!

These scopes are great for educational group activities as well as individual use, so consider approaching groups (such as scout troops) as well as individuals about purchasing Galileoscopes. For ideas on when, where, and how to sell them, visit the SPS website: www.spsnational.org/galileoscopes.

STUDENTS TRY OUT GALILEOSCOPES during the day using sun filters. Photo courtesy of the Galileoscope Task Group.

FUNDRAISING DETAILS

- The SPS Galileoscope fundraiser follows the "Girl Scout cookie" model. Participating SPS chapters receive a Galileoscope to use as a sales sample, along with order forms. Chapters collect orders and payments and submit their orders to the SPS National Office. Shipments of Galileoscopes will be sent out to chapters, who will be responsible for delivering them to customers.

- The selling price for a Galileoscope is $40. That's at least $10 less than in stores or on Amazon. Orders must be submitted by the case. A case contains six telescopes and costs $180, netting $60 in profit for the chapter.

Remember: Each chapter will have to deliver the scopes that it sells, so stay local if possible.

- Take orders during a public astronomy program—set up a Galileoscope during a viewing night. Or even during the day with a sun filter! Be visible at community events such as local festivals, farmers markets, science cafes, or family nights at community centers. Advertise on campus and set up a table near a busy spot, offering faculty members and students the chance to purchase a Galilescope at the discounted price.

- Reach out to educational groups, as well. Scout troops have astronomy programs and can use Galileoscopes on camping trips and for badge programs. Teachers in local schools are always concerned about enhancing programs for students at a low cost. Promote the Telescopes4Teachers donation program (www.telescopes4teachers.org). Have teachers collect donations for Galileoscopes for their classrooms, or encourage them to purchase classroom sets. There are lots of educational resources available for teachers and group leaders on the Galileoscope website, http://galileoscope.org, including lesson plans, activities, and observing guides. //

DEADLINES

- **December 1, 2013**, is the deadline for submitting fall orders, which will be delivered to chapters by December 15.

- **April 15, 2014**, is the deadline for spring orders, which will be delivered to chapters by May 1.

Meet and Greet

PHYSICS MEETINGS IN THE UPCOMING SCHOOL YEAR

by Kendra Redmond, SPS staff

Although they mean missed classes, travel expenses, and pre-presentation jitters, make attending a physics meeting a priority this year. Physics meetings provide forums for presenting research, connecting with collaborators, finding job leads, and attending professional development workshops. Many have special events—sessions, receptions, graduate school fairs, and more—designed for students. Most meetings even have a heavily discounted (or waived) student registration fee.

Several physics societies host annual or more frequent national meetings, and many host smaller regional meetings as well. SPS hosts undergraduate student research sessions at some of the national meetings (see listing below). Undergraduate students can submit abstracts to other sessions, but dedicated student sessions can be less intimidating and provide a great opportunity for students to meet. SPS members presenting at national physics meetings where SPS hosts a student session are eligible for $200 Travel Awards (see **www.spsnational.org/programs/awards/travel.htm**).

For students considering attending a national physics meeting, the "Student Perspectives" section of the SPS website is a great resource (**www.spsnational.org/meetings/reports/**). This section features articles written by SPS reporters, mostly undergraduate physics students, about their meeting experiences. Students who would like to be an SPS reporter at an upcoming meeting and write an article about their meeting experience can apply for $200 SPS Reporter Awards online at **www.spsnational.org/programs/awards/reporter.htm**.

SPS zone meetings are great places for students to present their work and network with physics students from schools in their geographic region. Zone meetings usually take place on a weekend and mix research talks with social events and professional development opportunities geared toward physics undergraduates. For more information about zone meetings, visit **www.spsnational.org/meetings/zones**.

National Meetings of Physics Societies

This is not an exhaustive list but includes most of the upcoming national meetings for the Member Societies of the American Institute of Physics.

FRONTIERS IN OPTICS 2013 & LASER SCIENCE XXIX

Hosted by the Optical Society and the American Physical Society Division of Laser Science

Topics: Optical physics, science, and engineering
SPS Presence: Undergraduate reception cosponsored by SPS on October 7
October 6–10, 2013, Orlando, FL
www.frontiersinoptics.com
Abstract deadline: September 23, 2013

THE SOCIETY OF RHEOLOGY: 85TH ANNUAL MEETING

Main topic: Rheology, the science of deformation and flow of matter
October 13–17, 2013, Montréal, Québec, Canada
www.rheology.org/sor/annual_meeting/2013Oct/
Abstract deadline: August 16, 2013

AVS 60TH INTERNATIONAL SYMPOSIUM & EXHIBITION

Hosted by AVS: Science & Technology of Materials, Interfaces, and Processing

Topics: The basic science, technology development, and commercialization of materials, interfaces, and processing
October 27–November 1, 2013, Long Beach, CA
www2.avs.org/symposium/AVS60/pages/greetings.html
Abstract deadline: May 6, 2013

AIP INDUSTRIAL PHYSICS FORUM: MANUFACTURING CHALLENGES IN EMERGING TECHNOLOGIES

Hosted by the American Institute of Physics, held in conjunction with the AVS 60th International Symposium & Exhibition

Topics: Manufacturing challenges for energy storage, electronics, and the life sciences
October 28–29, 2013, Long Beach, CA
www.aip.org/industry/ipf/2013/manufacturing-challenges.html

166TH MEETING OF THE ACOUSTICAL SOCIETY OF AMERICA

Topics: Acoustics as it relates to oceanography, biology and biomedicine, architecture, engineering, music, noise, signal processing, and more
December 2–6, 2013, San Francisco, CA
http://acousticalsociety.org/meetings/san_francisco
Abstract deadline: July 8, 2013

AMERICAN GEOPHYSICAL UNION FALL MEETING

Topics: All areas of Earth and space science
December 9–13, 2013, San Francisco, CA
http://fallmeeting.agu.org/2013/
Abstract deadline: August 6, 2013

AMERICAN ASSOCIATION OF PHYSICS TEACHERS WINTER MEETING

Topics: Physics education (high school and beyond), educational technologies, teacher preparation, physics research in all areas (for SPS session)
SPS Presence: SPS oral and poster sessions, undergraduate awards reception sponsored by SPS, SPS-led outreach activity (SEES)
January 4–7, 2014, Orlando, FL
http://www.aapt.org/Conferences/wm2014/
Abstract deadline: September 18, 2013

223RD MEETING OF THE AMERICAN ASTRONOMICAL SOCIETY

Topics: Detection, formation, and characterization of celestial objects, cosmology, computation, instrumentation, astrobiology
SPS Presence: Undergraduate reception cosponsored by SPS on January 5
January 5–9, 2014, Washington, DC
http://aas.org/meetings/223rd-aas-meeting-washington-dc
Abstract deadline: October 1, 2013

AMERICAN PHYSICAL SOCIETY MARCH MEETING

Topics: AMO physics, biological physics, chemical physics, computational physics, condensed matter, fluid dynamics, laser science, materials, beams, polymers, energy, instrumentation, magnetism, climate, quantum information, statistical and nonlinear physics
SPS Presence: SPS oral and poster sessions, undergraduate awards reception cosponsored by SPS
March 3–7, 2014, Denver, CO
http://www.aps.org/meetings/march/
Abstract deadline: November 8, 2013

2013–14 SPS Zone Meetings

Details on zone meetings are available on the SPS website, **www.spsnational.org/meetings/zones**. More zone meetings are currently being planned for the 2013–14 academic year, and the dates will be posted as they become available.

ZONE 13—TEXAS
October 10–12, 2013
University of Texas–Brownsville, TX

ZONE 8—ILLINOIS AND INDIANA (SOUTH OF I-74), KENTUCKY, TENNESSEE (EAST OF TN RIVER)
October 25–27, 2013
University of Louisville, KY

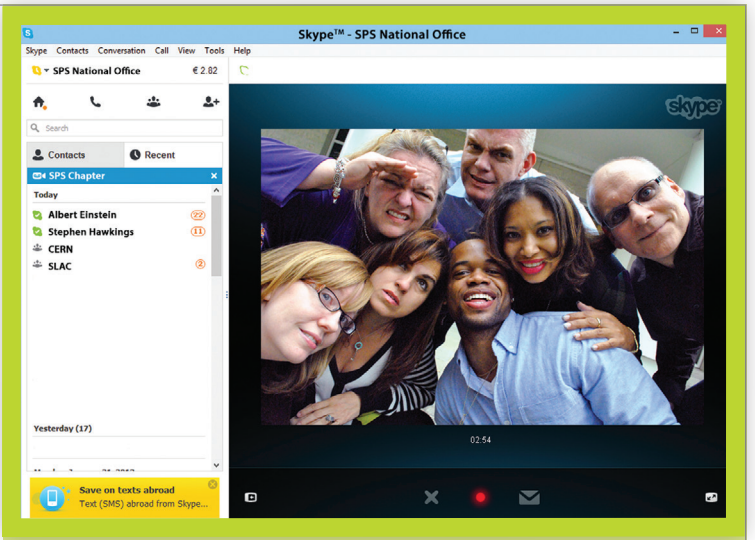
ZONE 9—ILLINOIS AND INDIANA (NORTH OF I-74), UPPER MICHIGAN, WISCONSIN
November 8–9, 2013
Carthage College, Kenosha, WI

ZONE 7—LOWER MICHIGAN PENINSULA, OHIO, PENNSYLVANIA (ZIP CODES BELOW 16700), WEST VIRGINIA
February 21–22, 2014
University of Michigan, Ann Arbor, MI

BE AN SPS REPORTER!

SPS provides $200 stipends for SPS chapters or individual students who report on international or national physics meetings for SPS publications.

FOR DETAILS, VISIT
www.spsnational.org/programs/awards/reporter.htm



Face Time with SPS National

The SPS National Office staff wants your chapter to do great things, and we want to help. Let us participate in one of your chapter meetings. Schedule a virtual chat with SPS National for your next chapter meeting.

www.spsnational.org/governance/chapters/face_time.htm

WE WANT TO HEAR:

- What your chapter is up to
- What your needs are
- What we can do to help

We also want to let you know about all of the programs and opportunities that your chapter and members are eligible for through SPS!

To request a brief, online video chat with a staff member, go to www.spsnational.org. We are just a click away.

SPS MEMBERS CAN ALSO CONTACT THE SPS NATIONAL OFFICE AT ANY TIME BY E-MAIL, PHONE, FAX, OR MAIL.

Society of Physics Students
American Institute of Physics
One Physics Ellipse
College Park, MD 20740

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General questions: sps@aip.org
Programs, awards, and scholarships: sps-programs@aip.org
SPS Director, Toni Sauncy: tsauncy@aip.org

ADDITIONAL STAFF CONTACT INFORMATION:

www.spsnational.org/about/office.htm

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Have an IDEA??? Get Money!

SPS National and Sigma Pi Sigma:
Upcoming Award Deadlines

NOVEMBER 15

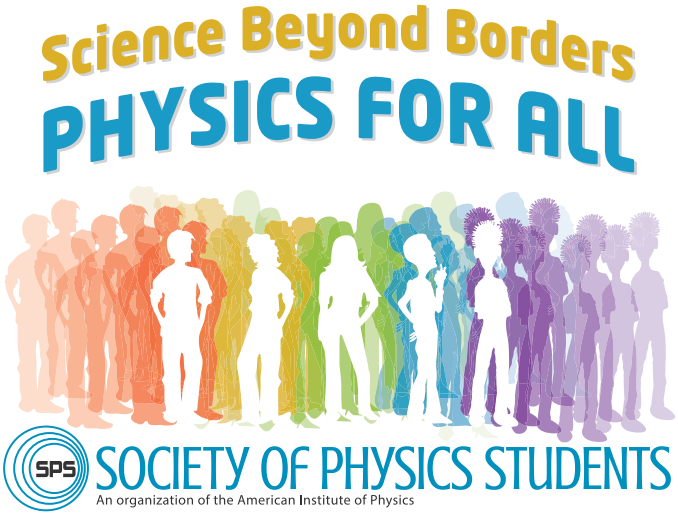
Proposal deadline: Marsh W. White Award ($300 for SPS chapter outreach activities)
Proposal deadline: Sigma Pi Sigma Undergraduate Research Award ($2,000 for SPS chapter physics research projects)

DECEMBER 15

Application deadline: Sigma Pi Sigma Chapter Project Award ($500 for Sigma Pi Sigma chapter projects to build community or raise awareness)

For more information, visit www.spsnational.org/programs.

Note that most deadlines are on the 1st or 15th of a month. Should a deadline fall on a weekend, the due date is moved to the following Monday.



TAKE ACTION

Incorporate the 2013 SPS theme in your chapter award proposals, outreach projects, and activities this year! Use these hashtags when you promote your events on social media: #SPS, #ScienceBeyondBorders, #PhysicsForAll

SCIENCE BEYOND BORDERS: PHYSICS FOR ALL

Science plays a key role in a connected world, but it is not an automatic one. We must choose to forge the links between science and society, between the lab and the living room, and across the barriers that constantly threaten to divide the world. We must choose to bring physics to all.
—Excerpt from 2013 theme text. See the full text at: www.spsnational.org/partnerships/2013.htm.