AIP Education in Review

2016 was a year of big events for the Education Division at AIP. Nov. 3-5, Sigma Pi Sigma (ΣΠΣ) and the Society of Physics Students (SPS) hosted the 2016 Quadrennial Physics Congress (PhysCon) in San Francisco, California. As the largest (known) collection of undergraduate physics and astronomy majors in the U.S., PhysCon supported 360 posters, an art exhibit, eight different workshops, and six fantastic plenary speakers, featuring Jocelyn Bell Burnell and Eric Cornell, among others. Coming from 45 states and more than 186 different universities, our 1,169 PhysCon registrants fostered a sense of community and excitement about the future of our Member Societies.

AIP and SPS also helped host a set of AIP Member Society booths at the 2016 USA Science and Engineering Festival (USASEF). Dubbed “Big Top Physics” and boasting a circuslike atmosphere, demonstrations included a bed of nails (APS), a light-painting booth (OSA), singing pipes (ASA), a photo wall (AIP), and several smoke cannons (SPS) that drew attendees toward the Big Top Physics Pavilion. With more than 8,000 attendees coming to each booth, AIP helped the general public and those of all ages see the excitement in physics.

Outreach efforts aren’t limited to these large events, as the Division also worked broadly across disciplines and in the community through programs such as Adopt-a-Physicist, GradSchoolShopper, conference Travel and Reporter awards, and local conferences like Zone Meetings and the UMD Conference for Undergraduate Underrepresented Minorities in Physics (CU2MIP). By working with others, we strive to build a stronger physics community.

“Through SPS, I experienced the public side of my physics degree: education, outreach and advocacy. My SPS experiences completely changed my career path.”

– Richard Cody Prince

Brad R. Conrad, PhD
Director
Sigma Pi Sigma and Society of Physics Students
I too have always been intrigued by the ‘big questions’ of our universe...Black holes, the big bang, and dark matter were just too cool not to research.

– Forum Student

The Quadrennial Physics Congress (PhysCon) brings together physics students, alumni and faculty members for three days of frontier physics, interactive professional development workshops, and networking. It is the largest gathering of undergraduate physics students in the world! Hosted by Sigma Pi Sigma, the physics honor society, anyone interested in physics is invited to attend.

PhysCon 2016 was a cutting-edge, life-changing meeting where participants were immersed in the theme of “Unifying Fields: Science Driving Innovation.” This meeting happens once every four years, and presents unique opportunities for attendees to:

» Bond with fellow physics students from across the United States and beyond;
» Explore graduate programs, summer research opportunities and workforce options;
» Be inspired by renowned physicists and tours of labs at the forefront of science and technology;
» Grow professionally through workshops on communication, inclusion and leadership;
» Expand their understanding of physics and its variety of applications;
» Present their research to fellow students, potential graduate school advisors and potential employers.
Adopt-a-Physicist connects high school students to real physics graduates, recruited primarily from among the Sigma Pi Sigma membership, who are eager to share their stories as a means of helping students understand the benefits of studying physics and the possible career opportunities it provides.

This Fall, We Had...

- **122 classes**
- **194 physicists adopted**
- **7,292 posts**
- **84 participating teachers**

Classrooms ranged from 6th–12th grade, and were from across the U.S. and in the U.K., Canada, the Philippines, India, Romania and China. Physicists participated from the U.S., Germany, Canada, Switzerland, Spain, U.K., Singapore and Saudi Arabia.

"As usual, the session has been very enjoyable to me, and hopefully for the student participants. I look forward to this every year, and I am always impressed and surprised at where the conversations go."

– Dr. Geoffrey Anderson, Computer Scientist, Keysight Technologies, Adopt-a-Physicist participant since 2009

Above: An “adopted” physicist in action in 2016. “A photo of an expedition we conducted in 2011 in which we took a 45-pound mass spectrometer into a cave for the first time. In the photo are one scientist, one engineer and one technician. It was 110 degrees F, with 100% humidity and there were 20 million bats perched over our heads. It was exhausting work, but when it was all over, we had accomplished a great deal, published papers, and continued developing instrumentation for harsh environments.”

Photo courtesy of Edward Patrick, Sr. Research Scientist, Space Science and Engineering Division, Southwest Research Institute
PhysCon Attendees

1,169 Registrants from 186+ Colleges and Universities
360+ Posters & 23 Art Submissions

Representation from 45 states, D.C., Puerto Rico, Canada, Hungary and Mexico
2016 Analytics & Website Improvement

908,322 page views
9,237 individual department PDF downloads
returning visitors up 8% over the last year
users from 163 countries

In 2016, the GradSchoolShopper.com website was improved to include a responsive design for use on mobile devices. Students can now create free user accounts, and save and compare their favorite schools.

I found the GradSchoolShopper extremely helpful in comparing programs when I was an undergraduate, so I will definitely be recommending this resource to my students!

Dr. Nicole Gugliucci
Saint Anselm College

GradSchoolShopper.com was really useful in the school search process. It was great to have all the info in one place—particularly hard-to-find numbers like acceptance rates.

Callie Hood
UNC Chapel Hill

I've used GradSchoolShopper before and I love how detailed it is. It lets me know about several deadlines and program requirements. I definitely recommend it to people looking at grad schools. An invaluable resource.

Anonymous

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Great source for jobs in physics, especially in academia and the national labs. Was able to apply to several universities and eventually secured a tenure-track position.

– Jeremy Armstrong

Recruitment advertising with Physics Today has generated superlatively talented applicants, many of whom have joined our firm. In seeking highly qualified professionals for our blend of IT and management consulting, we consider Physics Today to be a highly efficient way to engage this exceptional talent pool.

– Jim Weitzul
Princeton Consultants
The AIP Statistical Research Center provides definitive data on who is earning physics degrees and what they are doing with their careers. This past year, tens of thousands of people used its online tools to learn about issues such as job trends, financial support, and minorities in physical science fields.

SRC updated one such tool, “Who’s Hiring Physics Bachelors,” in June. The tool includes lists of employers in each state as well as a breakdown by employment sector — resources that can help undergraduates and bachelor’s degree holders plan their futures. Nearly 50,000 people used the tool in 2016, more than half again the number who used it in 2015.

The tool’s popularity is no surprise, given the steady increase in students graduating with physics bachelor’s degrees. SRC’s latest survey found that 2015 was another record-breaking year, with 8,081 physics bachelor’s degrees awarded across the country. That’s 7 percent more than in 2014, and 122 percent more than in 1999.

SRC also helped illuminate why women leave astronomy and astrophysics, using a longitudinal study that has tracked a cohort of astronomers since they were in graduate school in 2006. The study, published in Physical Review Physics Education Research in August, suggests that many women would benefit from better relationships with their advisers and a solution to the “two-body problem” — the dilemma faced by couples who can’t find work in the same place. The findings could help guide efforts to support women and improve diversity in physics and astronomy.

Rachel Ivie
Director, AIP Statistical Research Center

Photo credit: Drew Bird
A group tour of the SLAC National Accelerator Laboratory to
kick off the 2016 Quadrennial Physics Congress (PhysCon).