Texas-Sized APS March Meeting

The APS March Meeting is heading to the Alamo in 2015. It will take place in the Henry B. Gonzalez Convention Center in San Antonio, Texas from March 2 through 6. It is the largest yearly physics meeting in the United States and will feature about 110 invited sessions, more than 4,000 contributed sessions, and a total of more than 8,500 papers presented. Attendees are expecting almost 10,000 people to attend. The meeting highlights the latest research from the APS divisions of Atomic, Molecular, and Optical Physics; Biological Physics; Chemical Physics; Computational Physics; Condensed Matter Physics; Fluid Dynamics; Materials Physics; and Polymer Physics, as well as the topical groups on Statistical and Nonlinear Physics, Magnetism and its Applications, and Quantum Information.

This year’s Kavli Foundation Special Session theme will be “Frontiers of Light,” in conjunction with the International Year of Light in 2015 and the 2014 Nobel prizes awarded for advances in light and optics. Physics laureate Shuji Nakamura of the University of California, Santa Barbara will speak about the creation of the blue LED. Chemistry laureate W. E. Moerner of Stanford University will discuss the visualization of single molecules in biological systems.

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2014 PhysicsQuest Winners Announced

By Michael Lucibella

The APS outreach department announced the winners of this year’s PhysicsQuest competition for middle-school students. The first place winner is Wendy Goodwin and her students at the Discovery School in Huntersville, NC.

“PhysicsQuest is a program in which we create kits with everything you need to do four physics experiments and then we wrap everything in a story about our laser superhero ‘Spectra,’” said Becky Thompson, the head of APS Public Outreach. “It’s important because we want to make sure these kids have an exciting and fun experience with physics.”

The theme of the kits and the accompanying comic book this year was quantum mechanics, which featured the APS laser superhero squaring off against the nefarious Pauli Black of the Blackbody Repair Shop. The four experiments had students analyzing the color spectra of an LED shining through dyed water, detecting reflected ultraviolet light using a glow-in-the-dark panel, analyzing the topology of folded clothes, and deducing ways to connect power outlets to houses without crossing electrical lines in a donut shaped universe.

“It’s very difficult to teach middle schoolers about quantum mechanics specifically, so we talked about things like absorption spectrum, how different colors of light have different energies, and then expanded it to incorporate other, so-called modern physics concepts,” Thompson said.

Goodwin and her class have been participating in the program since it was started in 2005. Her class received a set of autographed comics, a prize pack, and a $500 gift certificate to the science education supply company Educational Innovations, and each student in her class will receive a new iPad. “I think the experiments are good,” Goodwin said. “I’ve done it they’re really excellent. They’re simple and they get the point across.”

She added that her students were excited to get the iPads and she hoped to integrate them with their curriculum. “We’re really excited that someone who has been with the program for so long and continues to participate got a chance to win this year,” Thompson said.

The second place winner is Christine Stewart’s Gamma Rays C from the Governor French Academy in Belleville, IL, whose class received a set of autographed comics, a $300 gift certificate to Educational Innovations, and a prize pack. Third place went to Caleb Rohler, a homeschooled from New Oxford, PA, who received an autographed comic, a $200 gift certificate and a prize pack.

Each year APS sends 13,000 kits to more than 3,500 teachers. This year kits went to every state in the US. The competition is open to any group who signs up, which includes neighborhood science clubs, Boy Scout and Girl Scout troops, and church youth groups. The PhysicsQuest kits were first distributed at the 2005 March Meeting, where the APS members and council voted unanimously to follow with the proposed Constitution & Bylaws and Articles of Incorporation to the members for comment. Having considered their responses, the Council voted on September 27 to place these documents before the membership for approval. Member voting started on October 6 and ended on November 10. In the membership vote, the APS corporate reform initiative passed overwhelmingly, 94% to 6%. Altogether, 8,101 people voted, or about 17% of the membership, roughly the same as an average APS general election. “The result of this vote is a stunning affirmation by the APS membership of the future of their Society,” said APS President Malcolm Beasley.

“The member vote was a critical part of this deliberative process, and getting to this point required the sustained hard work by our dedicated volunteer leaders and our wonderful APS staff,” said Kate Kirby, APS executive officer, who REFORM continued on page 4

Benefactor Jay Jones Funds New APS Medal

By Michael Lucibella

The newly-created APS Medal for Exceptional Achievement in Research will be the first Society-wide annual award to recognize achievement of researchers across all fields of physics. It is funded by a generous donation from Jay Jones, the founder and former president of Olympic Medical Corporation.

“This is the largest single-donor gift that APS has ever received,” said APS President Malcolm Beasley. “The donor is a person of remarkable personal character who wanted to do something that would make a difference. It is fitting therefore that he has enabled a new APS-wide medal that signifies an enduring belief in the importance of fundamental research across all fields of physics.”

Because of the broad scope of the prize, a special awards committee will be established by the Council to decide the winners. The Council gave its formal approval to the establishment of the prize on November 22. The first prize of $50,000 award will be presented in 2016.

Recognizing exceptional philanthropy: (L to R) Darlene Logan, APS director of Development; Jay Jones and his wife Mary Jayne Jones; Kate Kirby, APS executive officer; Malcolm Beasley, 2014 APS President.

“On behalf of the APS, I thank Jay Jones for his extraordinary generosity,” said Kate Kirby, APS’s executive officer. “Both his love of physics and his deep appreciation MEDAL continued on page 3
“Physics has enormously helped me in life—the logic and power of it. … Once you get a feel for the combination of calculus and Newton’s laws will do and the things you can work out, you get an awesome appreciation for the power of getting things in science right. It has collateral benefits for people. And I don’t think you get a feeling for the power of science—not with the same strength—anywhere else than you can.”

Charles Thomas Munger, Berkshire Hathaway, on his gift to the Kavli Institute for Theoretical Physics, University of California, Santa Barbara, Forbes, October 24, 2014.

“First and foremost it’s a victory for everyone who believes in strengthening the middle class.”


“When you approach a black hole, the black hole is so close that you are only thinking in space-time, you can do it in the space of a meter, or a couple of feet.”

Mark Hogan, SLAC, on a new technique to make plasma to accelerate particles, Los Angeles Times, November 11, 2014.

“When two weeks later my contact with the FBI, my world came crashing down around me, as Caltech started a merciless campaign ongoing to this day of retaliating for speaking to the FBI. … I’ve been humiliated, degraded, isolated, treated like a pariah on campus.”

Sandra Troncoso, Caltech, speaking about her lawsuit alleging that her university retaliated against her for speaking to the FBI, The Washington Post, November 13, 2014.

“Entanglement insults our intuitions about how the world might possibly work. Albert Einstein sneered that if the equations of quantum theory predicted such a thing, then the worse for quantum theory.”


“We have projections for one or two cases at the most during November, December. … We do not expect a large outbreak in the United States.”

Alessandro Vespignani, Northeastern University, on his computer model of the spread of Ebola, CBSNewsBtoston.com, November 17, 2014.

“I knew that someday I would leave Congress and wanted to do it under my own power and my own terms, and some more thought led me to think, this is the time. But it was in the expectation of doing something else worthwhile. And you don’t know how worthwhile as anything I can imagine.”

Rash Holt, U.S. House of Representatives, on his plans to lead the American Association for the Advancement of Science after retiring from Congress at the end of this year, The Washington Post, November 18, 2014.
A Brief History of Stephen Hawking

By Michael Lucibella

Love, fame, triumph, tragedy, and science collide in The Theory of Everything, the new film based on the life of renowned cosmologist Stephen Hawking. It’s a humanizing portrait of the physicist and his relationship with his first wife, Jane Wilde Hawking. Following the narrative of their memoirs, the film opens with Hawking and Wilde meeting for the first time at Cambridge University. The spark between them is undeniable, but soon Hawking learns that he has amyotrophic lateral sclerosis (ALS)—Lou Gehrig’s disease—and doctors give him only two years to live.

The story that unfolds veers far from the traditional Hollywood love story. Famously, Hawking beats the odds, living decades longer than anyone predicted, but losing nearly all muscle control in his body. Still, he becomes a best-selling author and one of the most respected physicists in the world. His is a well-known story, but less known are the personal struggles he faced through in their Cambridge home as his fame grew and the disease ravaged his body.

At the Washington, DC premiere, which was co-hosted by APS and the Smithsonian Institution, screenwriter Anthony McCarten described how he wanted to adapt Jane Hawking’s memoir, Traveling to Infinity: My Life with Hawking. He chronicled her marriage to the most famous physicist in the world. “I wanted to do justice to this extraordinary and one-of-a-kind memoir,” McCarten said.

It’s a complicated memoir to adapt because in real life, there’s no neat, happily-ever-after Hollywood ending. For years the love between Jane and Stephen Hawking was threatened against the encroaching disease and Hawking’s growing celebrity. But the couple still managed to have a child, Tim, born in 1989, when Hawking left his best and worst times. “One of the best things about my job I suppose is being able to jump between different worlds and immune [myself] in them,” Redmayne said at the premiere.

He spent a number of months working with people from different institutes of ALS to prepare for his role in the film. The effort paid off: Redmayne completely loses himself in the role and reproduces Hawking’s personality and mannerisms perfectly. Already there’s a tremendous amount of Oscar buzz around his performance.

Though the film’s central focus is the relationship between Hawking and his wife, his influential work developing groundbreaking theories in cosmology is the narrative backbone of the film. “We make no excuses. We did our homework on the science,” McCarten said.

The film does a good job striking the difficult balance between too much and too little science. The discussions of relativity and event horizons sometimes seem like awkward metaphors or unusual turns of phrase, but they rarely feel condescending or overly simplistic.

Yet time and again science has been assumed to emit nothing. But in his big eureka moment, Hawking looks into the burning embers of a fire and has a burst of inspiration. The scene cuts to a lecture he gives to an audience of distinguished physicists about the fundamentals of Hawking radiation. The movie made a little mention of the weeks of work he spent developing the theory. “I remember the day that stepping Hawking actually came up with that,” said David Kaiser of MIT who was also at the premiere. “It’s a two-hour film trying to cover a lot of territory.”

Eureka moments aside, it portrays the process of science much better than most other films about scientists. In another scene, Hawking postulates a theory about the nature of the Big Bang. His professor is intrigued, compliments his hypothesis, and then says simply, “Now do the math.” According to Kaiser, the scene “gives us a glimpse of the inherently collaborative and communal process” that is science.

The Theory of Everything, 123 min., produced by Working Title Films, distributed by Focus Features, released in theaters on November 7.

Black Holes, and Interstellar: Q&A with Kip Thorne

The new science fiction blockbuster film Interstellar is turning heads in the science community. Kip Thorne, one of the producers and scientific consultant for the film, joined physicist Jim Al-Khalili to discuss the science behind the movie. Thorne is the author of the best-selling book The Science of Interstellar and Interstellar: How We Learned to Travel Through the Stars. He is also a professor at the University of California, Santa Barbara.

Thorne and Al-Khalili discussed the science behind the film, the challenges of making a film about science, and the differences between scientific accuracy and dramatic impact. They also talked about the role of science in popular culture and the importance of communicating science to the public.

Thorne stressed the importance of collaboration between scientists and filmmakers to ensure accuracy and authenticity. He highlighted the role of the scientific consultant in a film like Interstellar, where the science is not only entertaining but also educational.

He also discussed the challenges of translating complex scientific ideas into a cinematic format and the importance of simplifying concepts without sacrificing realism.

Thorne emphasized the power of film in reaching a wide audience and the potential of popular culture to inspire a new generation of scientists. He encouraged scientists to engage with the public through media and to create content that is both engaging and accurate.

Finally, Thorne discussed the future of science communication and the role of technology in making science accessible to all. He concluded by encouraging scientists to embrace the opportunities provided by popular culture and to work with filmmakers to bring the excitement and wonder of science to the masses.
Science Collides with Politics

By Michael Lucibella

Tension between the House Committee on Science, Space, and Technology and the broader community is running at its highest level in years. A Republican-led effort to investigate nearly sixty National Science Foundation (NSF) grants has upset scientists and science advocacy organizations.

A Republican-led committee workers to inspect the documents at NSF headquarters, with the names and identifying information of the peer reviewers expunged. The ranking member on the committee, Rep. Eddie Bernice Johnson (D-TX), confirmed the plan’s requests, saying it was destructive to the peer review process.

Smith soon expanded the scope of his inquiry beyond the initial five grants he named in April. Altogether, the committee has asked for the documents of about sixty NSF grants that he calls “questionable.”

Thus far, physics research has largely escaped the scrutiny of the committee. But if they succeed in obtaining the documents of the NSF Directorate of Mathematical and Physical Sciences have been called into question. The vast majority that have been questioned come from the social, behavioral and economic sciences and the human resources directorates. The committee has asked for the paperwork on nine grants from the geosciences, engineering, and computer and information sciences directorates.

The NSF’s Directorate for Social, Behavioral, and Economic Sciences has been placed on the SEC watchlist. Smith is one of many Republican attempts to dramatically reduce or eliminate its budget.

On November 10, the Association of American Universities released a statement critical of Smith’s investigation. The association said that it was concerned that such investigations were damaging to academic freedom and would lead scientists to “pursue only safe research that doesn’t attract the money spent on grants by the NSF.” Researchers are free in our country to study any subject they like, but when taxpayers finance scientific endeavors, they are entitled—legally and morally—to know how their money is spent,” Smithsonian said.

The most recent grant to come under the Science Committee’s microscope was a proposal to move the University of Indiana called “Truly,” a reference to the term “truthiness” coined by the comedian Stephen Colbert. The research studies the way information flows through social media, particularly Twitter.

“Every year we see research projects criticized and ridiculed based on the reading of titles or on details taken out of context,” the team said in an email to APS News. “We must not forget that subject-matter experts have to be involved in these discussions before jumping to conclusions.”

One of the head researchers on the project, Alessandro Vespignani, a physicist at Northeastern University, has been at the forefront of modeling the potential spread of Ebola using similar methods. Two of the other co-principal investigators, Alessandro Flammini and Filippo Menczer of Indiana University, have received funding for similar research from a number of other federal agencies, including the Defense Advanced Research Projects Agency and the National Institutes of Health.

Controversy about the project ignited on October 17, when Ajit Pai, a Republican member of the Federal Communications Commission, penned an editorial in The Washington Post criticizing the research as an attempt to mold the political dialogue of the country. Smith followed up soon afterwards, criticizing Pai as well. “The government has no business using taxpayer dollars to support limiting free speech on Twitter and other social media,” Smith said in a statement. “While the Science Committee has recently looked into a number of other questionable NSF grants, this one appears to be worse than a simple misuse of public funds. The NSF is out of touch and out of control. The Science Committee is investigating how this grant came to be awarded taxpayer dollars.”

Members of the committee deny the accusations by Smith and Pai. “Truthy” is a set of research projects whose common thread is to correspond with LaserFest, the 50th anniversary of the invention of the laser. “In 2015 [Spectra] will again be battling Miss Alignment,” Thompson said. “This year, the contest will be a part of the 2015 International Year of Light, so we wanted to bring back Miss Alignment. All of the experiments will be about light.”

Outlook for Science after Congressional Changeover

By Michael Lucibella

In the recent midterm elections, Republicans gained a majority of the U.S. Senate seats, while holding onto their majority in the House of Representatives. Experts say that science funding is not likely to be a high priority for the new Republican majority, but science will almost certainly feel the pinch of shrinking federal budgets.

“Nothing is likely to change in Washington,” said Michael Lubell, director of Public Affairs for APS. “The gridlock is, I think, unlikely to continue.”

Despite some high-profile controversies, particularly about climate change and green energy technologies, the vast majority that have not been a fractious partisan issue, particularly for basic research in the physical sciences. The change in control of the Senate is unlikely to dramatically recouf the country’s emphasis on research.

“The historic reality is that science in general [has been] well-funded across the aisle, especially basic research,” said Roger Pielke, director of the Center for Science and Technology Policy Research at the University of Colorado Boulder. “The science budget has been a great constant in the relatively modest discretionary domestic budget.”

Across all the agencies, combined research and development generally makes up between 11 and 14 percent of the federal discretionary budget. Senator John Thune (R-SD) is currently the ranking member of the Senate Commerce, Science, and Transportation Committee, and he will likely take over as his chair in the next Congress. I think Thune is a pretty strong supporter of science,” Lubell said, adding that Thune has spurned several times about the importance of funding science research.

Similarly, Thad Cochran (R-MS) recently led the Republican charge to lead the Senate Appropriations Committee, one of the most powerful committees in the Senate because it oversees the federal budget.

The outcome of the new Congress is unclear, but one thing is certain: a new Republican majority will need to find ways to fund science effectively.

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Retiring Representative Rush Holt to Take Helm at AAAS

By Michael Lucibella

Colleagues and supporters spoke fondly of physicist No. Representative Rush Holt (D-NJ) at a congressional farewell party co-hosted by APS. The event was held in the rotunda of the Capitol soon after he announced he would make the job of Chief Executive Officer at the American Association for the Advancement of Science (AAAS).

Formerly a plasma physicist, Holt was a staunch defender of science and science funding in Congress. “We need scientists in Congress,” Holt said. “Until we reach that golden age where all citizens, all well-educated citizens, are comfortable dealing with science, we need actual trained scientists in the legislature. I am honored to have been able to fill that role for well over eight terms.”

APS executive officer Kate Kirby highlighted his work, including $22 billion in funding for research in the economic stimulus package of 2009. “He will be missed on Capitol Hill, only for having generally supported science, but also for the intelligent and articulate discourse in which he engaged during his entire political career,” Kirby said.

Holt said, “At a time when science is less bipartisan than it has historically been, Rush has vociferously called for evidence-based debate, particularly on hot-button issues like climate change.”

House minority leader Nancy Pelosi (D-CA) echoed Kirby’s comments, highlighting his support for both research budgets and legislation. “Science has been his better friend... because he has always been a relentless, persistent, dissatisfied advocate for science and science funding, and he knows of what he speaks,” Pelosi said.

Representative Bill Foster (D-IL), another physicist turned congressman, said that he would miss having Holt’s input on complex issues. “You can hardly name an issue that does not have a technological edge to it, and there is no substitute to having someone in the cloakroom and say ‘Hey, what’s the deal with this?’” Foster said.

Members of Congress in attendance also commented on the changing political discourse regarding science, and Holt’s steadfast defense of research. “I’m HOLT continued on page 7

At his congressional farewell party, Representative Rush Holt (center right) and his wife Margaret Lancefield, talk with Sen. Ed Markey (far left), Alan Leshner, CEO of AAAS, and Kate Kirby, Executive Officer of APS (far right).

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introduced in 2005 to coincide with the World Year of Physics, celebrating the 100th anniversary of Albert Einstein’s “miracle year.” The 2009 kit was the first to feature a comic, which told the story of Nicola Tesla and the electrification of the 1893 Chicago World’s Fair. The competition, whose theme Miss Alignment made their debut in the 2010 kits about lasers and optics, monochromaticity, included the science budget. Every indication that I’ve seen and his track record [shows] that he’s a big supporter of science. Whether that translates to budget increases is a matter of the overall Republican priorities.”

Though the proportion of federal money devoted to research and development may be unlikely to change dramatically, the size of the total pot it pulls from is likely to continue to decrease. The economic downturn and automonous relations between the two parties in Congress have kept the total federal budget at roughly the same levels since 2009, a net loss when adjusted for inflation.

“Overall, we’re looking at at least a constrained budget if not a shrinking budget,” Lubell said. “It means that there is going to be less money presumably to be spent on discretionary budgets.”

Pelkie agrees that some science agencies that have seen their budgets increase at a healthy pace in previous years may struggle to maintain those gains in the current political environment.

For more information go to www.APS.org/about/reform/
PRX Takes on a New Role

By Gene Sprouse

The American Physical Society (APS) launched Physical Review X (PRX) three years ago, as a new platform for scientific publishing. What is its role in the family? To answer this question, it may be instructive to look briefly at how the APS journal family is currently organized and how the current make-up, serves the needs and interests of the physics community. This sequence will offer a variety of venues for their articles. Researchers can choose between Physical Review Letters (PRL), a broadly-scope, letter-format journal that is the most cited in physics, and the other Physical Review journals that publish new and significant results in different fields of physics. True to the APS mission to advance physics and serve the global physics community, our journals belong, not to a for-profit corporation, but to physicists all over the world who work hard for the journals as authors, reviewers, and editorial board members. The decision of which articles to publish is based on their scientific merit, rather than on what is “newsworthy” or “hot,” and on their sound scholarly presentation rather than “hype.” In recent years, however, we have seen a strong need of some researchers to have their best scientific contributions published in highly selective and small journals that can disseminate those contributions broadly and offer them high visibility. We have also clearly heard a desire expressed by many in the global physics community that such a journal be published in the nonprofit and science-first APS publishing tradition. Now, with PRX, APS can offer such a venue to the community.

Recently, an external committee, consisting of a diverse group of physicists, postdocs and senior scientists from many different fields and from different regions of the world, reviewed PRX. The committee lauded PRX for its careful review process and adherence to high scientific standards, and for the reputation that it had already built as a journal of high visibility and broad dissemination. They recommended that PRX continue on its upward trajectory and take on the new role by staying small, about 250 papers/year, and becoming much more

PRX continued on page 6

In a world of global science and increasing research mobility, participation in international collaborations and exchanges—long a mainstay in physics—is increasingly necessary to a successful scientific career and the advancement of scientific knowledge in many fields. The new geography of global science poses significant challenges to the United States, which, for good historical reasons, has had a unique approach to international collaboration. US researchers traditionally have been far more mobile than their international counterparts, and many are still apt to see foreign experience as an impediment, rather than as a boost, to a successful career. And while many US universities are embracing internationalization with fervor, few provide incentives for global engagement in faculty tenure and promotion criteria. Instead, the US has relied on what might aptly be called a strategy of “brain capture”: attract the best talent and hang onto it in perpetuity. It has been a successful approach, thanks to many decades of significant investment in science and the excellence of US research universities. The US global edge of course is not going to disappear overnight. Looking forward, we can expect that global universities will face increasing competition from countries and regions that are investing in science and research to enhance the competitiveness of their universities and economies.

In contrast, Germany has been giving thought to the new global geography of science and its implications for knowledge economies. Taking the long view, the German government has launched a number of strategic initiatives, including the “Exzellenz Initiative,” aimed at elevating German universities, and a high-tech strategy that gives funding priority to cutting-edge research in fields that are critical to the German economy and society. Far from pursuing a policy of “brain capture,” Germany has long embraced the benefits of “brain circulation,” providing sustained federal funding to support student and faculty research exchanges between German and foreign universities.

Among the premier German institutions engaged in “brain circulation” is the Alexander von Humboldt Foundation (AvH). Since 1945, the AvH has supported the independent research of outstanding international scientists and scholars at German universities and research institutions. The Alexander von Humboldt Foundation (AFAvH) is the professional partner of the AvH in the United States, a U.S. 501(c)3 charitable organization. Our goals and activities include:

• Educating US scientists and scholars about the impact of international research experience more generally, as well as about the specific benefits of the fellowships and awards of the Alexander von Humboldt Foundation, among them: education and training opportunities, access to new ideas and resources; and expanded global networks.

• Encouraging and supporting continued collaboration among US alumni through their field of research.

• Raising Germany’s visibility as a center for research through promotions at scientific meetings, university visits and electronic networks.

One of the principal ways AFAvH reaches out to researchers is through collaboration with their scientific societies, including the American Physical Society. With the assistance of Professor Royce Zia, Virginia Commonwealth University, we were pleased to organize a reception for both US “Humboldttians” and prospective applicants attending the 2015 APS March Meeting in Denver. AFAvH will be hosting a booth and reception at the 2015 APS March Meeting in San Antonio, along with its partners from other German funding agencies, including...
recent years shouldn’t expect much continued growth. “I think the bud- get is going to be tight for science,” Lubell said. “There’s no way they’re going to see any dramatic expan- sion of federal funding for science. However, the continued gridlock in Congress is likely to prevent any dramatic reductions as well. “With a Democrat still in the White House, which promotes German-American professional Cooperation. (You may contact Natalia Wobst, Director of Communications, at natalia.wobst@avh.org for more information on programs.)

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The political winds in Washing- ton also seem to be blowing against any kind of large increases as well as cuts in the near future. Many of the newly-elected Republican members of Congress, and those in the wing of the party most focused on reducing the size of the federal budget.

“These are people who have all gone through their own mistakes and they want to cut government spending and shrink the role of the federal government,” Lubell said. “However, the continued gridlock in Congress is likely to prevent any dramatic reductions as well. “With a Democrat still in the White House, which promotes German-American professional Cooperation. (You may contact Natalia Wobst, Director of Communications, at natalia.wobst@avh.org for more information on programs.)

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study the diffusion of information in online social media,” the team said in an email to APS News. “We were not contracted by the federal government to build tools or web- sites to track political speech. We do, however, work with public data available from Twit- ter and vetted by an ethics board, so we don’t monitor users without their consent. Our analyses and tools do not intervene in online conversations, so the complaints about impinging on free speech are unfounded.”

One of the demonstrations featured on the Truthy website is its “BotOrNot” app. It uses the team’s analysis of the behavior of Twitter users to predict if a par- ticular account is operated by a human being or an algorithm. The team’s “Political Topics” section of their website, which has been subsequently taken down, ana- lyzed the most popular political

can choose to spend their research with both sufficient clarity and context to reach a gen- eral audience, and enough detail to serve as a resource for specialists. As an open-access, online journal, PRX provides broad dissemina- tion of highly significant research results to all evasive without a subscription barrier. This feature should be particularly beneficial to those communities of science, medicine, and industrial research as well as scientific communities in developing countries that may not have access to our other journals through subscriptions. We are excited to have PRX take its place as the flagship journal of our publishing program. At the same time APX will strongly support PRL so that it will continue to be the journal with the greatest impact in physics. We now have two journals for papers of the highest quality and trust authors to judiciously choose which they think is the most appropriate venue for their top work. Whether it is PRL (http://journals.aps.org/prl) that tracks the full archive of physics or PRX (http://journals.aps.org/prx) that selects a small number of articles across all areas where physicists are engaged in research, your choice will give support to the nonprofit and science-first principles of the APS journals, and ultimately benefit the global physics community and its research.

Gene Speros is Editor in Chief of the American Physical Society. This editorial was originally published on October 9, 2014 on the APS News website. (http://link.aps.org/10.1103/ PhysRevX.4.040001)
The American Physical Society is accepting applications for the Congressional Science Fellowship Program. Fellows serve one year on the staff of a senator, representative or congressional committee. They are afforded an opportunity to learn the legislative process and explore science policy issues from the lawmakers’ perspective. In turn, they have the opportunity to lend scientific and technical expertise to public policy issues.

Qualifications include a PhD or equivalent in physics or a closely related field, a strong interest in science and technology policy and, ideally, some experience in applying scientific knowledge toward the solution of societal problems. Fellows are required to be members of the APS.

Term of Appointment is one year, beginning in September of 2015 with participation in a two-week orientation sponsored by AAAS. Fellows have considerable choice in congressional assignments.

A stipend is offered in addition to allowances for relocation, in-service travel, and health insurance premiums.

Application should consist of a letter of intent and no more than two pages, a two-page resume with one additional page for publications, and three letters of reference.

All application materials must be submitted online by close of business on January 15, 2015 (5:00 PM EST).

We Want Your Nominations for APS Historic Sites

Each year APS recognizes a small number of historic physics sites in the US (and occasionally abroad). Nominations received before January 15, 2015 will be eligible for consideration in 2015.

More information, including sites selected to date and an online nomination form, can be found at www.aps.org/programs/outreach/history/historicsites/

http://www.aps.org/policy/fellowships/congresional.cfm

Registration is now open!

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Conference and workshop to be held at Marriott Seattle Waterfront, Seattle, Washington

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not a scientist, but I’m smart enough to know what I don’t know,” said Rep. Jim McGovern (D-MA). “It amazes me at the contempt that some have for science, and it’s important for us to elect people like Rush to Congress, who will actually speak out and defend the fact that it’s ok to be smart [and] it’s ok to rely on smart people to give you the best guidance on how to proceed on certain things.”

Holt expressed concern about the direction that debates about science seemed to be going, and promised as the future CEO of the AAAS he would continue to fight for science. “[Rep. McGovern] never thought, nor did I think, that we would have to defend the very idea of science on the floor,” Holt said, referring to that day’s fierce floor debate over a bill to limit the Environmental Protection Agency’s regulatory power. “I figured there would be arguments about misunderstandings of science…but the idea that empirically based, peer-reviewed work is the best path to reliable knowledge, shouldn’t be questioned. But it was even today.”

Rep. Jerry McNerney (D-CA) said that AAAS would do well with Holt at its helm. “The challenge is that we need to communicate what science is, its importance and how it affects our lives to the people of this country, and I’m afraid right now we’re not where we need to be,” McNerney said. “I think having Rush in this position with his dedication and his knowledge and his fine personality, it’s really going to make a difference.”

What kind of broader message about science does hope that the agenda will come away with?

A very optimistic message; the powers of science and what can be achieved if we work really hard at

it. I would hope that this film will help to awaken the public to the power of science, and the importance of human inquisitiveness, the quest to understand the universe, the quest to build the tools to deal with whatever nature does to us.
L
ike a lot of kids, I had a stamp collection for a while. I never collected anything particu-
larly notable, but going through old letters and boxes of stamps from relatives who had
collections was enjoyable in a quiet way. And putting the individual stamps together to make
a larger picture was fascinating. I remember an intimidat-
ingly large three-ring binder with spots for every US stamp
that had been issued to that point, and the satisfaction of comple-
ting a page. My hobby also gave a sense of history
outside the collection—for example, seeing all the stamps
of the 1893 Columbian Issue commemorating the 400th
anniversary of Christopher Columbus’ famous voyages
showed me there was a good deal more to the story than I
had heard in grade school.
Beyond the immediate pleasures of building a collec-
tion, though, the impulse to collect can be a starting point for
science. The most obvious product of collecting hobbies is
an array of physical objects, but collecting is also a mental
state. Serious collectors develop habits of mind particular
to their hobbies—a sort of constant low-level awareness of
possible sources of stamps, an ability to spot new specimens,
and close observation and knowledge of the fine gradua-
tions that separate valuable stamps from worthless bits of
colored paper. These habits of mind also serve well in science;
the simple act of collecting a diverse array of interesting
bits of observations also serves as the starting point for most sciences.
Rutherford’s famous gibe contains a small element of
truth, because the physics of his day was more fully devel-
oped than other sciences, in terms of successful unifying
theses like Newton’s laws of motion and Maxwell’s equa-
tions for electromagnetism. But that very development started
with the “stamp collecting” of lots of individual bits of data.
Newton would not have been able to formulate his laws
without decades of carefully recorded astronomical observa-
tions and experimental tests by previous generations of
scientists. Maxwell’s equations bring together the results
dozens of seemingly unconnected experiments on the behav-
or of charged particles and magnets. And the amassing
of examples continues to be critically important to this day—the
Standard Model of particle physics is arguably the most
comprehensive and successful scientific theory in human
history, but modern particle physics is the ultimate big-data
science, with the Large Hadron Collider (LHC) producing
everything. The first step to bringing your inner scientist to
the problem is to collect as much information as you can
about the problem—if you want to lose weight, you need
to track what you do through the day. The individual records may not mean
nothing in themselves, but taken all together, they may reveal useful
patterns and suggest solutions.
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1. By removing the need for any intelligence guiding the process, natural selec-
tion also presents a direct challenge to religious ideas of divinely-guided
creation, creating instant controversy from the day of its publication right down
to the present. Although the factor was generally uncomplimentary for Darwin,
many later helped correct his status as an icon of science.
2. Another pre-Darwinian evolutionary work, the sensational Voyages of the Natu-
ral History of Creation, published anonymously in 1844, comprised three
metaphysical “principles” with wild speculations that were implausible even
in Victorian times. It became a bestseller, but the following criticism it drew
from scientists may have helped push Darwin into more moderate answers.

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