

# CSWP & COM Gazette

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## Guest Editorial: Defensive Driving at Work

*Kathy Prestridge, Los Alamos National Laboratory and CSWP Member*

When you plan a road trip, you carefully plan your route, where you will stop, what you will see, and you ensure that your vehicle is ready for the trip. You may even load up your phone or gadget with music, books, and podcasts to help make the ride more enjoyable. Commuting to work each day, you know your route, and you watch the behavior of others carefully. If there is road work, you try to get around it, and you are prepared for detours. Even though these course changes are annoying, you take them in stride and are able to get to your destination. So why is it that when faced with an obstacle at work, we often get so discouraged that we give up or let it stop us from achieving our goals? Why would it seem silly to pull your car over and cry because of a roadblock, but seem perfectly reasonable to get extremely upset and frustrated by a similar obstacle at work?

I get angry when I'm driving and I see people talking on the phone, texting, not signaling, weaving, and doing other dangerous or illegal behaviors. I actually make it into a game with my kids, and we guess the distraction and try to confirm it as I am executing passing or other avoidance maneuvers. This serves to relieve my tension, to get us on our way safely, and is a lesson for the kids in their pre-driving years. At work, it is also reasonable to be angry or upset about a bad situation. However, it is not okay to let those legitimate feelings paralyze you so that you cannot take action to help yourself. Although you cannot always get around

the people exhibiting bad behaviors at work, you can make sure that you keep going. In an extreme case, your direct supervisor or close coworker will have a horrible, intolerable behavior. In the best case, your direct supervisor, all of your coworkers, and you, have implicit biases that don't allow people to realize their full potential (Moss-Racusin et al., "Science faculty's subtle gender biases favor male students," Proc. Natl. Acad. Sci., Sept. 17, 2012). A defensive driving metaphor can help: try to avoid the really bad situations and people by carefully choosing your route.

Despite your best efforts, sometimes your route will intersect with a black hole of awfulness. Let's figure out how to deal with the awfulness and achieve our work goals in the same way that we might take a road trip. We must be able to avoid the pitfalls and bad drivers so that we can get to our destination safely and empowered. What are the keys to success? 1) Set a destination; 2) Figure out your route and backup route; 3) Define some rules of the road.

### 1. Set a Destination

You should have both short-term and long-term career goals. Many of us in research have no problem planning out a project, but when it comes to our career goals, we don't take the time or maybe think that excellent research and publications will make everything else fall into place. I often remind my postdocs that

*continued on page 3*

## Physicists in Science Education & Outreach

*By Deanna Ratnikova, APS Women & Education Program Administrator*

In the recent Strategic Plan released by APS, the Society expressed its dedication to increasing public appreciation of and excitement about physics and its importance to society. The Society also addressed its commitment to increasing diversity within the physics community.

I believe science outreach is a way towards both of these goals. Science outreach plays a key role in the recruitment of future physicists and it can help excite and engage underrepresented members of the science community at an early age. Outreach can show that

physics is the most basic and fundamental science and that physics leads to great discoveries—discoveries that can change our lives!

This feature showcases five female and/or minority physicists who are striving towards the goals of both increasing appreciation of and excitement about physics and also serving as role models for underrepresented members of the physics community. Their dedication to science education and outreach is inspiring and motivational, and I hope that readers find their stories a source of hope for the bright future of physics.

*continued on page 4*

*The Editor for this issue:*  
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Theodore Hodapp  
Director, Education &  
Diversity

Leanne Poteet  
Graphic Designer

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## APS Receives \$3M NSF Grant to Help Minorities Pursue PhDs

*Bushraa Khatib, APS Bridge Program Coordinator*

In September 2012, the National Science Foundation awarded APS \$3 million in funding over the next five years to launch the APS Bridge Program (APS-BP), a national effort designed to increase the number of underrepresented minority students who receive doctoral degrees in physics. The program is now planning to select its first funded site and accept student applications for fall 2013.

Underrepresented minority (URM) students, including African Americans, Hispanic Americans, and Native Americans, earn about 10% of US physics bachelors degrees, yet they comprise only about 5% to 6% of US citizens who receive physics PhDs at American institutions. The main goal of the APS-BP is to roughly double the number of PhDs awarded to these students within the next ten years by developing sustainable “bridging” models to provide these students with research opportunities, advanced coursework, and mentoring, and to facilitate these students’ access to graduate programs. Also, the project will enable departments to enhance the culture of their physics graduate education so that all students have the best chance of success.

The program plans to select institutions to host bridging experiences through an NSF-style competitive proposal process, modeled on the one used by the Physics Teacher Education Coalition (PhysTEC), the APS flagship project that focuses on physics teacher education, run collaboratively with the American Association of Physics Teachers. The APS-BP issued a request for site proposals in October 2012.

The APS-BP is also partnering with doctoral granting institutions to provide transitional support as bridge students begin doctoral studies. “Ideally, we would like to support students through a network of mentors, advisors, and graduate student peer-mentors from the start of their bridge years until they earn their PhDs,” says Bridge Program Manager Peter Muhoro. “The program aims to strengthen mentoring and work with faculty to improve the graduate education environment.”

Other components of the new program include: conferences with topics on graduate mentoring, improving students’ graduate applications, and other topics relevant to students and faculty; building a national network of institutions committed to improving diversity in graduate education; and publicizing good practices in attracting and retaining



Learn more about the APS Bridge Program at  
[www.APSBridgeProgram.com](http://www.APSBridgeProgram.com)

underrepresented students in graduate programs. “APS is uniquely positioned to facilitate national conversations on improving diversity in graduate education and to connect institutions with others committed to the same goals,” said Theodore Hodapp, Director of APS Education and Diversity, and project director of the Bridge Program.

Program management spent several years visiting minority-serving and doctoral-granting institutions to build relationships and assess the best methods of increasing the number of minorities who receive PhDs. The APS-BP decided to base its efforts on existing bridge programs, including those at Fisk-Vanderbilt, Columbia University, MIT, and University of Michigan.

Cherry Murray—Dean of Engineering and Applied Science at Harvard University, chair of the Bridge Program’s National Advisory Board, and 2009 APS President—led discussions with APS and other leaders in STEM education that culminated in the successful NSF proposal. Murray says the program will create a network of institutions that can share best practices in mentoring URM students through the degree and beyond who may not have considered pursuing a PhD in physics.

“These best practices will raise the level of collegiality and mentoring of all students in these PhD programs, and the cadre of student recruits to this program will help to enhance our scientific workforce,” Murray said. ■

Becoming an APS-BP member institution is free! Apply at [www.apsbridgeprogram.com/institutions/member/](http://www.apsbridgeprogram.com/institutions/member/)

Follow @APSDiversity on Twitter  
and request to join the  
APS Minorities in Physics Facebook group at  
[www.facebook.com/groups/APSMinorities](http://www.facebook.com/groups/APSMinorities).

science is a very social endeavor—much to the dismay of the many introverts who go into research thinking that they can hide in their labs and then one day run into the streets yelling “Eureka!” Don’t expect anyone to pay attention if they don’t know you. If you neglect your own career aspirations, your research will suffer.

Set and prioritize both short- and long-term goals. Sometimes I get lost in the details of a short-term goal, and then three or six months have passed and I realize that I have not made progress on my long-term goal. But, hey, at least I had the long-term goal and realized that I wasn’t doing anything about it: One point for goal setting and one point for self-awareness. To avoid hopping from one short-term goal to the next (a common pitfall of the detail-oriented) set yourself some pit stops along the way to your long-term goal. How do you figure out the pit stops? Ask yourself some questions: What resources do I need to achieve my goal? Do I need allies, a mentor, lab space, invited talks? The answers will help you set the pit stops. If you need some allies, you can make sure that you meet with one person every month or quarter to discuss common interests. One of these meetings may result in a strong, effective alliance. If you need an invited talk, you can call up a colleague and perhaps trade seminars at your respective institutions.

## 2. Be open to an alternate route

While you are proceeding along your carefully-planned route, at one of your pit stops you may discover that you aren’t exactly in the right place. This could be due to external circumstances: the tectonic plates shifted and your destination is now an island, or due to internal circumstances, your navigation system had north and south reversed. In either case, you need to readjust your route. Make sure that your goal is still the same, and then correct for the problem.

In less abstract language, perhaps the strategy you thought would work is no longer working. The ally that you found has now left your institution. Or perhaps you failed to acquire that lab space that you needed for a project. What should you do? After you finish being irritated and the initial panic has passed, sit down and figure out why it happened. The Dean gave the lab space to collaborators starting a new high-profile institute, and that was a higher institutional priority. You need to find a solution that works for you and your institution so that you can still execute your high-visibility project. To learn more about how to effectively negotiate in such circumstances, attend the APS’s Professional Skills Development Workshop. You’ll pick up some valuable negotiation skills and path-changing tactics to help you achieve your professional goals. If you are adequately prepared for off-normal situations, they will be only minor blips instead of major obstacles. Being prepared in driving means having a full tank of gas, a phone, spare tire, etc. . . . Being prepared in career planning means that you have a good network, allies, and other resources you can count on in a pinch.

## 3. Defend the rules of the road

While I have talked about setting goals and adapting to change, and a bit about introspection, I have not mentioned any issues specific to women and underrepresented minorities. Yet, for many of us, there are at least some of these issues at work. We all have expectations about rules of the road when we are driving. The rules are basically well defined, but we see people violating them all of the time. We know how people should behave, but they often don’t. What can you do about it?

A good rule of the road is to address small issues as directly and promptly as possible. If I hear a colleague making an inappropriate comment, such as referring to an interviewee as a “girl,” I will immediately correct him. One issue that the CSWP observes in its site visits to Physics departments and other institutions is that the work environment is sometimes hostile and confrontational, and this makes women and men uncomfortable. We actually made some progress on this issue at Los Alamos by naming the problem. Now, when a colleague interrupts people during meetings, usually someone will say, “You interrupted. Why don’t you let him finish speaking?” Once people start doing this, it is relatively easy to continue and makes life more pleasant for everyone.

Big issues usually need to be fixed at an institutional level. Are hiring committees looking for diverse applicant pools, and are they down-selecting in a fair manner? The CSWP is working on guidelines for job search and nomination committees to help ensure that implicit bias does not adversely impact women and underrepresented minorities in fellowships, awards, and invited speaking opportunities. You can help at your own institution by volunteering for search, promotion and other committees, and being the voice that ensures fair treatment for all candidates.

## Happy Trails

Now that you have your long- and short-term goals, pit stops, and your flexible route picked out, don’t forget the music! Your inner monologue is one that will be with you on your journey, and you want it to be as entertaining as possible. If your inner voice seems like a dirge, change the channel. Keep a sense of humor, and use it to feed a positive attitude. If you are nodding off at the wheel, pull over and take a break. And if you end up not exactly where you wanted to go in the first place, maybe that is not so bad after all. Sometimes it’s the journey that matters.

*Dr. Kathy Prestridge is a research scientist at Los Alamos National Laboratory (LANL) and team leader of the Extreme Fluids Team in the Physics Division. She earned her Ph.D. at U.C. San Diego and her B.S. from Princeton University. She is an expert in applying high-resolution diagnostics to experimentally study fluid mixing problems in extreme conditions relevant to inertial confinement fusion and supernovae. Her work has won multiple DOE/NNSA Defense Program Awards of Excellence. She founded the Committee on Education and Career Outreach for the APS Division of Fluid Dynamics. ■*



*Kathy Prestridge*

**To learn more about how to effectively negotiate, attend the APS Professional Skills Development Workshop. You’ll pick up valuable negotiation skills and path-changing tactics to help you achieve professional goals.**

## Advancing Astronomy in Africa

*Hakeem Oluseyi*

**H**akeem Oluseyi, a professor in the Physics and Space Sciences Department at the Florida Institute of Technology, has had a very busy decade. In 2002, Dr. Oluseyi got his start in international science outreach through Cosmos Education, an international non-profit organization dedicated to improving science education in developing countries. He visited schools in South Africa, Swaziland and Botswana that year to inspire young students with science demonstrations and to teach students basic science principals as well as HIV awareness and sustainable development. Oluseyi returned in 2003 (to Zambia and Tanzania) and 2004 (to Kenya) for more tours and has since been continually forging ties to science in Africa.

In 2005 he began working with the South African Astronomical Observatory, and in 2006 he was the co-organizer of the 2006 Total Solar Eclipse Conference on Science and Culture. Also in 2006, he co-founded a thriving Hands-On Universe branch in Nairobi, Kenya. He then worked with other teams dedicated to improving science research in Africa including the 2007 International Heliophysical Year conference in Addis Ababa, Ethiopia and the First Middle-East Africa, Regional IAU Meeting in Cairo, Egypt in 2008.

Also in 2008 he began working with at-risk graduate students in the Extended Honors Program at the

University of Cape Town (UCT) in collaboration with the South African Astronomical Observatory (SAAO) and the National Society of Black Physicists. Dr. Oluseyi lectured physics and cosmology to UCT students in 2008 and 2009, and in 2010, he lectured and mentored students in the SAAO/UCT Astronomy Winter School.

In 2009 Oluseyi collaborated with the IAU Teaching Astronomy for Development program as an instructor. This workshop, held in Nairobi, Kenya, instructed East African scientists and aimed to stimulate astronomy development activities through empowering local lecturers and students to drive the process themselves. Dr. Oluseyi was also an invited

keynote speaker for South Africa's National Science Week—a project of SciFest Africa—in 2009 and 2011.

During 2010 and 2011, Oluseyi played a central role in establishing the African Astronomical Society (AfAS), the first continent-wide organization of African astronomy professionals. He was a participant in the IAU-sponsored meeting of the Interim Leadership Group for forming the AfAS, and subsequently served as the Interim President of the AfAS until its official launch in April 2011. Also in 2011, Dr. Oluseyi served as a U.S. State Department Speaker and Specialist conducting a 6-city tour of South Africa. He visited dozens of schools, museums and science centers, working with thousands of students, and a multitude of teachers, education administrators, and researchers.

In 2012, he was selected as a TED Global Fellow for his science outreach work. Oluseyi was awarded a grant from the U.S. State Department to fund a Hands-On Universe branch in Soweto, an urban area of Johannesburg, South Africa, in partnership with the University of Johannesburg.

The coming decade looks even busier for Dr. Oluseyi. He recently helped form the One Telescope Project, an initiative to supply each nation in the world with at least one research-grade telescope. In addition to this huge undertaking, he will be conducting a South African lecture tour visiting schools, science centers, and museums along with two colleagues who will work specifically with teachers.

**Oluseyi's advice to physicists seeking to get involved in international science outreach is to approach international partners with questions, not answers.**



*Dr. Hakeem Oluseyi with students at Glendale Secondary in the Mitchell's Plains area of Cape Town.*



*Dr. Hakeem Oluseyi meets with students in the Winter School at the South African Astronomical Observatory. The Winter School recruits post-baccalaureate students into the University of Cape Town graduate program.*

## Bringing the Fundamentals of Physics to the Public

### Heide Doss

If you asked Heide Doss what she does, you would not get a short answer—she develops science curricula, conducts workshops, teaches classes K-12 and university level, and writes articles on current research for a general audience. And with the receipt of an APS Physics Outreach Grant, Doss is now venturing into the world of entrepreneurship. Dr. Doss (who has a PhD in physics and an MEd in curriculum and instruction) explains that she does this all in an effort “to figure out and create ways to make science more understandable and accessible to students and the general public.”

One of the channels through which Doss does her work is grants. In 2010, she was awarded an APS outreach grant for the 50th anniversary of the laser ([www.laserfest.org](http://www.laserfest.org)). Dr. Doss visited K-12 schools and a local library to hold birthday parties for the laser and used this opportunity to introduce the fundamentals of the laser, ultimately reaching about 2,000 people. Doss also consulted with APS that year to develop, write, and pilot a high school curriculum about lasers. She has given a number of teacher workshops on the curriculum, providing nearly 400 teachers with the lessons and training.

More recently, however, Dr. Doss was a recipient of one of the APS Physics Outreach Grants.\* She is developing her own science outreach program called “Science on Cards” ([www.ScienceOnCards.com](http://www.ScienceOnCards.com)). The vision behind the grant is to begin with greeting cards designed and produced by Doss, and the end goal is to create a self-sustaining micro business, which designs and distributes items that disseminate scientific information to the general public.

Doss developed the idea for the science greeting cards by way of the APS PhysicsCentral website posters ([www.physicscentral.com/explore/posters.cfm](http://www.physicscentral.com/explore/posters.cfm)). The difference between the posters and Doss’s proposal is that the physics information will be right on the card (to learn more about the physics of the posters, you must visit [PhysicsCentral.com](http://PhysicsCentral.com)). Although it is a challenge to explain a concept in about 200 words, Doss is hopeful that these micro lessons will give the reader an awareness that there are some fundamental rules that govern our universe, and our technology, but these rules are not too hard to understand. Lessons may include why the sky is blue, what a flame is and why we see colors in it, or how a GPS system would not work without Einstein’s theories of special and general relativity.

So far Doss has produced six cards and bookmarks as a litmus test for her new business, and she is working on improving the graphics and photos to be more competitive in the greeting card market. The work does not stop there, however. Similar to a research physicist’s desire to learn more and achieve better results, science education and outreach consultants must continually find ways to increase students’ and the general public’s understanding and awareness of science.

One of the many ways Doss stays on top of her work is to “find out what is going on and network”. She notes that this is the best advice for those considering a career in this field and that having a strong network will help when looking for the next job opportunity.

Trying to get your foot in the door as a science education and outreach professional? Heide Doss provides several ideas for networking:

- Offer to give talks at schools or just lend a helping hand to a science teacher
- Go to a conference to find out what others are doing or share what you are doing
- Visit museums and check out what is available online

\* The APS Physics Outreach Grants are designed to foster innovative ideas and new approaches, particularly those that have potential to lead to sustained activities beyond the duration of the grant. Doss notes that applicants should truly believe in their project because the grants do not support salaries. The annual deadline for the grants is in early January. More information can be found at [www.aps.org/programs/outreach/](http://www.aps.org/programs/outreach/).



*Dr. Heide Doss (standing at right) oversees participants while conducting a workshop on optics.*

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**Doss’s networking advice for science education and outreach professionals:**

- Offer to give talks at schools or just lend a helping hand to a science teacher
  - Go to a conference to find out what others are doing or share what you are doing
  - Visit museums and check out what is available online
-

## Reaching Urban Communities One Rocket at a Time

### Cydale Smith



Cydale Smith

Before the school year even started, students in the Calvary Hill community of Huntsville, Alabama were already studying science. Under the supervision of Dr. Cydale Smith, these students created rockets and learned how to optimize their flight. *How much paint should I use? How does the paint affect the rocket's aerodynamics? How can I make the rocket fly differently?* The students loved learning and soaked in the information like sponges.

When he is not working with the children at Calvary Hill, Cydale Smith conducts thermoelectric materials research at the Center for Irradiation of Materials in the Physics Department at Alabama A&M University. Prior to this position, he was employed with NASA at the Marshall Space Flight Center for 16 years.

Having been in the Huntsville area for such a long time, he is familiar with the plights of certain urban communities where socioeconomic disparity prevails, and about four years ago, he approached Mary Hall, director of the Calvary Hill Community Center, about starting a science program for young adults.

Dr. Smith's idea began with a desire to bring scientists to children in urban areas of Huntsville and engage and excite them about science. He also aimed to provide children with more hands-on science that they may not receive in school. The response from the students has been overwhelming and the program continues to thrive today.

Hall attributes the success of the program to Smith's dedication and consistency. Many volunteers tend to visit the community center a few times and then drop off the radar. Dr. Smith, however, has come every week since making his commitment and has even spent his own funds on starting the science program. Hall notes that "Cydale has done a magnificent job with the kids and getting them excited about science... When the kids see him coming, they run towards him—they have that much interest in science!"

In addition to rocket science and other activities, Smith introduces the Calvary Hill youth to local scientists and science students from area universities. These volunteers talk to the children about their life in science, from going to college to traveling to conferences where they present their research. It is not always about the science, however; it is often about providing a role model, establishing rapport, and showing the students that studying science and having a scientific career is an attainable goal.

Despite the time and effort it takes to run the program, Smith has no plans to stop. Sparking the curiosity of the students and seeing them learn motivates him. It is also a source of inspiration. When he is having a difficult time in the lab, bogged down by paperwork, or working on funding, Smith notes that he occasionally forgets why he became a scientist, but the children at Calvary Hill Community Center remind him.

The next step for Dr. Smith is to set up more labs in other low-income communities. He would also like to create a robotics team at each community center and have a competition between the communities. His ultimate goal, however, is to change the high school graduation rate in Huntsville. Smith believes science is a step in that direction because "science helps you think critically and solve problems that are useful in all fields." Teaching a middle school student critical thinking skills will help them gain confidence that they can finish high school and potentially even go on to college.

**Smith is dedicated to science outreach because it "helps you think critically and solve problems that are useful in all fields."**

*Help us recognize and support outstanding minority physics researchers!*

### The Edward A. Bouchet Lectureship Award

The award recognizes distinguished minority physicists who have made significant contributions to physics research. Recipients are invited to visit and lecture at institutions where the impact on minority students is significant.

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**For the next 6 months, all donations will be matched one-to-one by APS Minority Speaker Program funds!**

**[www.aps.org/programs/honors/awards/bouchet.cfm](http://www.aps.org/programs/honors/awards/bouchet.cfm)**

## Helping High School Students Develop Transferable Skills

*Tesia Albarado*

Science educators often tout the importance of studying physics as it helps us understand the world around us, the world inside us, and the world beyond us. It challenges our imaginations and teaches us problem-solving and critical thinking skills that make physicists competitive for a wide range of professions.

Transferable skills—skills which can be applied in a variety of different roles and help one transition into and excel in each new role—however, are often not learned in the classroom. This is where Tesia Albarado steps in.

Tesia Albarado is a scientist with Baker Hughes’ Engineering/Intelligent Production Systems and works in environmental testing. Albarado holds a B.S. in Mathematics and an M.S. in Physics both from the University of Louisiana at Lafayette.

Through the Junior Achievement Series, she brings real-life business experience and guidance into the high school classroom. She regularly leads “Success Skills” sessions with high school students based on Sean Covey’s “Seven Habits of Highly Effective Teens.” There are seven sessions in the entire Success Skills course covering topics such as work-readiness skills, effective workplace communication, conflict resolution, and resume preparation.

Albarado helps the students develop transferable skills to prepare them for whatever they may encounter in life. She notes that certain skills are useful in all careers and developing such skills will help you have options when life changes.

In addition to facilitating the leadership series, Albarado volunteers as a guest speaker with the Independent Petroleum Association of America’s Guest Speaker Career Series educating young adults on the petroleum industry. The goal of the series is to provide students with the ability to make more informed career choices in math, science and the emerging technology concepts in the petroleum industry.

Albarado speaks at the Young Women’s College Preparatory Academy and other high schools in Houston, TX. Although the focus of her talk is usually an introduction to petroleum, geology and the value chain, students often want to know about her career and life. She notes that both male and female students ask how engaged she is with research, how much time she has to spend in the lab, how much time is spent at a desk, and how she maintains a work-life balance.

Whether in her speaking engagements or through the Success Skills class, Albarado always finds a way to show how science is a critical subject to study and learn. Using examples from everyday life such as how to move a large dresser through a small bedroom door without taking it apart, Albarado explains to students that “physics is a way to apply the math [she has] learned...physics is the basis of everything in life.”

Albarado always makes time to do outreach because she wants to be a positive role model, not only for the students she works with, but also for her family. She notes that her employer is supportive of her outreach and that they practice workplace flexibility which allows her to conduct her outreach during the day when students are in school.

“It works well when your company has the same values that you have,” Albarado said. “You want to be able to discover your passion and what you want to do the rest of your life. You have to be passionate about your career. If not, you won’t truly be happy. You need to find what you are passionate about and pursue that.”

**Education and outreach is our future. We need not only to continue our education efforts, but broaden them...”**  
—Former APS President Robert Byer in the CCST Spotlight

*Tesia Albarado*  
CREDIT: PETER SCHREIBER



## Envisioning & Implementing Effective Educational Programs

### Stephanie Chasteen



Stephanie Chasteen

Specialization is useful in many careers, but in Stephanie Chasteen's case, diversification has played a key role. Dr. Chasteen works as a consultant and contractor on various projects aimed at improving science education through research, evaluation, writing, and creating educational activities.

While a physics graduate student at the University of California – Santa Cruz, Chasteen started considering a career in science journalism and was awarded a prestigious fellowship with the AAAS Mass Media Science & Engineering Fellows program. She was placed at the science desk at National Public Radio in Washington, DC, and here, Dr. Chasteen notes she “learned the high standards of excellence of national science reporting and developed a deep love for audio production.”

Upon graduation, Chasteen diversified her portfolio even more and took a departure from traditional science journalism by joining the Exploratorium Museum of Science, Art, and Human Perception as a post-doctoral fellow. She created hands-on activities and workshops for K-12 teachers, and the opportunity helped her discover her passion for science education. Her experience in writing was not in vain, however, as she notes “writing is one of the tools I carry in my kit toward creating effective education programs.”

Dr. Chasteen then joined the Science Education Initiative ([colorado.edu/sei](http://colorado.edu/sei)) at the University of Colorado at Boulder to work on transforming undergraduate science classes using research available on effective science education. Chasteen brought her experience in journalism to the physics education research group creating videos and podcasts for teachers about effective educational techniques, and in return, she received training in the methods and literature of science education.

Today, Dr. Chasteen still works with the Science Education Initiative as their outreach director, helping to spread the word through videos and workshops about research-based teaching techniques. She has also started her own consulting business ([www.sciencegeekgirl.com](http://www.sciencegeekgirl.com)). Through her business, she works on a variety of projects including directing videos to highlight the best use of the PhET Interactive Simulations ([phet.colorado.edu/](http://phet.colorado.edu/)), reviewing K-12 student activity booklets, serving as an external evaluator for educational programs, and writing press releases about physics education research results to promote the field in the popular media.

She notes that her networking and volunteer work helped get her to this point, and for those interested in getting involved in science education and outreach, she advises them to approach networking “with a sense of genuine curiosity and interest in people.” Opportunities such as presenting at a science book club, auditing a writing course, and judging science fairs have led to job opportunities and helped shaped Chasteen's career path.

Chasteen also credits her interest in diverse areas with leading her to create the specialization that she is now known for within the physics education research community. She notes that she was never sure of where her interests would lead her, but she just continued to follow what sparked her passion. “I think it's so important to explore the things that we find fascinating, because that exploration can lead to great things.” ■

**APS Physics Outreach Grants are designed to foster innovative ideas and new approaches, particularly those that have potential to lead to sustained activities.**

**The deadline for applying is in early January.**

**[www.aps.org/programs/outreach/](http://www.aps.org/programs/outreach/)**

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[www.aps.org/programs/women/email-lists/](http://www.aps.org/programs/women/email-lists/)



## APS Awards Two Blewett Fellowships in 2012

Mike Lucibella, APS Staff Writer

This year's recipients of the M. Hildred Blewett Fellowship are Michelle Ntampaka of Carnegie Mellon University and Sujatha Sampath of the University of Wisconsin-Milwaukee. The recipients are chosen by the APS Committee on the Status of Women in Physics.

The Blewett Fellowship is dedicated to helping women who are returning to research careers that had been interrupted for family or other reasons. It is a one-year grant, which can be renewed, of up to \$45,000 for use towards a wide range of necessities, including equipment procurement, stipend, travel, tuition, and dependent care. This is the eighth year the Fellowship has been awarded.

### Michelle Ntampaka

Michelle Ntampaka says that she wants to be Neil deGrasse Tyson someday, and the Blewett Fellowship is helping her reach her goal of being a science communicator.

Ntampaka started out studying education and physics at Grove City College in western Pennsylvania. As part of her degree, she would help out at some of the local schools in the area.

"I knew I wanted to be a teacher and I happen to be good at physics," Ntampaka said.

After she graduated, she started working full time at one of the local schools, but then decided to return to school and get her master's degree. She wound up at Carnegie Mellon, and it turned out to be a perfect fit for her. She took one class a semester for about five years to finish her masters. To help put herself through the degree, she worked at the university as a laboratory demonstrator, the person in charge of the different experiments used in lectures.

"I was basically taking care of all the demonstrations for the entire faculty. It was a great way to learn because I was interacting with all of the faculty," Ntampaka said. At the same time it took a lot to find the right balance between work and classes. "It really was a juggling act."

In 2010, just a few months after she graduated with her masters, her son Joseph was born. She decided to take a year off before starting her PhD.

"I found the juggling act, plus having a child was just too much," Ntampaka said.

When she returned to Carnegie Mellon to start her PhD, she enrolled in an astrophysics course because it was the only one that fit in with her schedule. From there, she was hooked.

"I love looking at the questions of the big universe. I just loved [the class]," Ntampaka said. "It was very serendipitous in how I ended up in astrophysics."

She said also that her advisor, Hy Trac, has been very supportive to her.

"Dark matter halos are sort of these knots of dark matter. We can simulate them very easily. We can de-

tect them, but not directly. But we can detect galaxies," Ntampaka said. Her research compares astronomical observations of galaxies taken from the Sloan Digital Sky Survey with computer models of dark matter halos. "I will be doing simulations, and looking at data sets from astronomers and how to connect those two."

In addition to her research, she and her husband Bertin have been working to help train teachers in her husband's native Rwanda. They started out with a book drive and collected more than 5,000 textbooks for the country's disadvantaged school system.

They also traveled to Rwanda in 2011 at the request of the minister of education. There they trained teachers on how to do classroom demonstrations with few resources. She added they hope to continue working with students and teachers in Rwanda.

"I think we're going to work on developing a program if what we do at this one school works well," Ntampaka said. "We're going to take a step back and become a laser beam rather than a flood light."

For now, Ntampaka plans on using the Blewett Fellowship to go back to being a full time student so she can finish her research and PhD.

"The Blewett Fellowship was a game changer, it really was," Ntampaka said. "This has just given me the ability to put blinders on and focus on what I need to do."

### Sujatha Sampath

It was while she was in high school in India that the wonder of the natural world around her grabbed Sujatha Sampath's attention and never let go.

"I was studying the natural phenomena around me, why natural things happen... [and] it resonated with what I was interested in," Sampath said. "I think I was more interested in what are the natural phenomena that surrounded us rather than making stuff at that point."

She went on to major in physics with a minor in chemistry at the University of Madras in Chennai, and completed her masters at Rani Durgavati University in Jabalpur. For her PhD, she did her research at the University Grants Commission-Department of Atomic Energy Consortium for Scientific Research in Indore. There she started focusing on research into condensed matter physics.

"When I started there, the institute was only a few years old," Sampath said. Together with her advisor, she helped build the lab to study the thermal conductivity of materials near absolute zero. She also studied heavy fermions, and helped make probes for amorphous materials. She found herself drawn to research on glass and amorphous materials.

For her postdoc work, Sampath landed a spot using high intensity X-rays to study the atomic structures of different metal hydrides at Argonne National Lab,



Michelle Ntampaka



Sujatha Sampath

**Applications for the Blewett Fellowship are due in June. Learn more at [www.aps.org/programs/women/scholarships/blewett/](http://www.aps.org/programs/women/scholarships/blewett/)**

### **Blewett Fellowships** *continued from page 9*

just outside Chicago. She found the materials interesting, because several could be used for rocket fuel and energy storage. She helped look for ways to substitute other materials for hazardous beryllium.

“As a basic physical scientist, I am excited about how things work at the atomic and subatomic levels,” Sampath said. “I would definitely think that the next logical step in my mind is to use that information to apply it to some useful materials for society.”

She got married while employed as a postdoc, and her husband took a job with General Electric Healthcare, located two hours north in Milwaukee. For a while she stayed in Chicago, then moved to Wisconsin to join him, and drove down to her lab for the week.

“Being an experimental scientist I had to be in the lab,” Sampath said. Ultimately the hours spent in the car driving between the two cities took their toll. “The commute wore me out.”

After her grant finished up, she started looking for jobs in Milwaukee, but had a hard time finding a full-time spot. She started working at a series of temporary and part-time positions. Her background working with high intensity X-rays helped her get involved with different research projects at Argonne again. One was studying protein folding, and another was collaborat-

ing with researchers at the University of Wyoming who are trying to understand and replicate spider silk.

“Spider silk is an amazing biological material. For the same length and diameter, it’s stronger than steel and much more flexible than most manmade materials like Kevlar and nylon,” Sampath said. “It all comes down to how the nanostructure in the spider silk is arranged... and that is still something that is not well understood, and that is why they came to us.”

At the same time, she kept looking for a job in Milwaukee. Eventually in 2010 she was able to get a temporary position at the University of Wisconsin-Milwaukee working at their synchrotron for research using X-ray diffraction to study excess charge in layers of zinc oxide and magnesium oxide.

She still has a lot of leftover data from her work on spider silk, and she hopes that with the Fellowship, she can work to get some of that finished up.

“There is still a lot of work that needs to be analyzed and published,” Sampath said. “I am hoping to publish all my data acquired so far.”

She is also looking to keep expanding her skill set. The University of Wisconsin-Milwaukee is getting a new electron microscope soon, and Sampath is hoping to master another important piece of equipment. ■

## **APS Partners with New System to Create Unique Identifiers**

*Reprinted from the December 2012 APS News*

The APS journals are incorporating a new system which lets researchers and contributors clearly identify themselves in their research papers. ORCID, short for Open Researcher and Contributor ID, will give every researcher who signs up a unique user number that they or anyone else can use to track their body of work.

“ORCID is a nonprofit community effort to maintain a record of unique identifiers,” said Laurel Haak, the executive director of ORCID. “By providing that unique identifier, it provides that researcher with a handle to travel around the research world.”

Inspired in part by the CrossRef digital object identifiers which have become ubiquitous for identifying academic papers, the ORCID numbers will let researchers attach their own personal code to their papers. It should also make determining an author’s impact factor easier to calculate.

Making sure the right person is connected with the right paper has long been a tricky problem for publishers and institutions. In addition, anyone trying to track a researcher’s past works sometimes can get bogged down by authors with common names, variations on individual authors’ names, or by those who have changed their names or institutions.

“There’s always been this problem with author names... that really often the only thing we have to go by is the name,” said Arthur Smith, manager of the database group at APS. “The idea [of ORCID] is you can

actually generate a CV out of the information you’ve collected about yourself.”

ORCID isn’t aimed only at physics, or even just science, but all academic research. In addition, the organizers hope to expand the program to include grants, patents and any other work that participants create.

“We’re trying to create a switchboard that connects different datasets,” Haak said. “Right now we’re focusing on our very core mission, which is our registry.”

ORCID’s registry first went live in October, and about 8300 researchers signed up in its first two weeks. Authors of APS papers are now prompted to sign up and to include their ORCID numbers when they submit a new paper. Smith said that he hopes in the next year or two to provide the ability for authors to go back and claim past papers.

The system is voluntary, and free to register. It requires an email address to create a profile. “Once you’ve created an ID, you can use it anywhere that requests an ORCID ID identifier,” Haak said.

Other organizations have adopted the system. The academic publishers Nature and Copernicus have also adopted the identifiers and Elsevier has a system in place for researchers to input past work.

“There’s so much enthusiasm for ORCID throughout the research community. We haven’t had to work ultra hard to get people interested in the system,” Haak said. ■



**Start your ORCID registration at [publish.aps.org/edannounce/aps-orcid-launch-2012](http://publish.aps.org/edannounce/aps-orcid-launch-2012)**

## Women Named to Fellowship, Prizes and Awards

Each year, APS members are nominated by their peers to prizes and awards and to fellowship in the society. The nomination and selection procedure, involving APS-appointed selection committees, guarantees their high standards and prestige.

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**Prizes and Awards** *More than forty APS Prizes and Awards recognize outstanding achievements in research, education and public service. This year, eight women are among the recipients.*

### Debra Ann Callahan

#### Recipient of the John Dawson Award for Excellence in Plasma Physics Research (2012)

For predicting and demonstrating the technique of laser scatter on self-generated plasma-optics gratings that enables generation and redirection of high-energy laser beams important for indirect drive inertial confinement fusion and high-power laser-matter interactions.

### Yuliya Dovzhenko

#### Recipient of the LeRoy Apker Award (2012)

Coherent Control of a Semiconductor Charge Qubit.

### Margaret Geller

#### Julius Edgar Lilienfeld Prize (2013)

For her pioneering work leading to the discovery of the large-scale structure of the universe and for her extraordinary contributions to science education of diverse audiences around the world.

### Georgia Karagiorgi

#### Mitsuyoshi Tanaka Dissertation Award in Experimental Particle Physics (2012)

Searches for New Physics at MiniBooNE: Sterile Neutrinos and Mixing Freedom.

### Nergis Mavalvala

#### Recipient of the Joseph F. Keithley Award for Advances in Measurement Science (2013)

For seminal contributions to the development and

application of quantum metrological methods, in particular of squeezed light sources and optical springs, enabling sensitive measurements beyond the standard quantum limit.

### Sultana Nahar

#### Recipient of the John Wheatley Award (2013)

For efforts to promote physics research and teaching through collaboration, mentoring, and philanthropy in several third-world countries, and in particular for her promotion, as both an advocate and role model, of Muslim women scientists.

### Feryal Ozel

#### Recipient of Maria Goeppert Mayer Award (2013)

For contributions to neutron star astrophysics, including the theoretical interpretation of X-ray emission from magnetars and determination of accurate masses and radii that yield constraints on the equation of state; and for her outstanding contributions to the public understanding of science.

### Helen Quinn (Joint with Roberto Peccei)

#### Recipient of the J.J. Sakurai Prize for Theoretical Particle Physics (2013)

For their proposal of the elegant mechanism to resolve the famous problem of strong-CP violation which, in turn, led to the invention of axions, a subject of intense experimental and theoretical investigation for more than three decades.

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**Fellowships** *New Fellows of APS are elected after careful and competitive review and recommendation by a fellowship committee on the unit level, additional review by the APS Fellowship Committee and final approval by the full APS Council. Only 1/2 of 1% of the total APS membership is selected for Fellowship in the Society each year. This year, 33 women were named to Fellowship.*

### Aizenberg, Joanna

#### Harvard University

For research in biomineralization and the control of templated nucleation and growth of crystals. Nominated by: Division of Condensed Matter Physics

### Alamo, Rufina

#### Florida State University

For her use of well-characterized materials and performance of carefully designed experiments to address structure-property relationships in polyolefins. Nominated by: Division of Polymer Physics

### Allegrini, Maria

#### University of Pisa

For contributions to laser interactions with atoms and small molecules: energy pooling collisions, high resolution spectroscopy, laser cooling of diatomic molecules, and contributions to international physics through collaborations and professional service. Nominated by: Forum on International Physics

### Aschenauer, Elke-Caroline

#### Brookhaven National Laboratory

For her scientific and technical accomplishments in the study of the spin structure of the nucleon, and her demonstrated ability to lead large, international collaborations in design and execution of such experiments. Nominated by: Division of Nuclear Physics

**Barzi, Emanuela****Fermilab**

For her innovations in the development of advanced superconductors, her continuous efforts in promoting International scientific collaborations, and her unwavering mentoring of US and Italian students. Nominated by: Forum on International Physics

**Bilek, Marcela M.****University of Sydney**

For outstanding contributions to the physics of plasma processing, resulting in plasma sources, processes and materials with applications to industries ranging from information technology to biomedicine. Nominated by: Division of Plasma Physics

**Brambilla, Nora****Tech Univ Muenchen**

For contributions to the theory of heavy-quark-anti-quark systems, including the development of new effective field theories, and for contributions to the field of heavy-quarkonium physics through the founding and leadership of the Quarkonium Working Group. Nominated by: Topical Group on Hadronic Physics

**Cushman, Priscilla****University of Minnesota, Minneapolis**

For outstanding contributions in the design and execution of experiments probing beyond the Standard Model especially the Cryogenic Dark Matter Search and the precise measurement of the muon magnetic moment, and the development of photodetection and low radioactivity instrumentation to advance the capabilities of high energy physics experiments. Nominated by: Division of Particles and Fields

**Dutta, Mitra****University of Illinois, Chicago**

For research leadership and administration in government and academia, through which she has supported the applications of physics for society, outreach to the public, and enhancement of physics education. Nominated by: Forum on Physics and Society

**Felser, Claudia****Johannes Gutenberg University**

For creating and understanding new Heusler materials with spintronic and energy functionalities. Nominated by: Division of Condensed Matter Physics

**Frischknecht, Amalie****Sandia National Laboratories**

For outstanding contributions to the theory of ionomers and nanocomposites including the development and application of density functional theory to polymers. Nominated by: Division of Polymer Physics

**Goldman, Rachel****University of Michigan, Ann Arbor**

For contributions to the fundamental understanding of strain relaxation, alloy formation, and diffusion, and their applications to nanostructure processing. Nominated by: Forum on Industrial & Applied Physics

**Hau, Lene V.****Harvard University**

For slowing, stopping, and storing light pulses in Bose-Einstein condensates of laser cooled atoms and converting light into a matter imprint then resurrecting the light. Nominated by: Division of Condensed Matter Physics

**Hosoi, Anette E.****Massachusetts Institute of Technology**

For her innovative work in thin fluid films and in the study of nonlinear interactions between viscous fluids and deformable interfaces including shape, kinematic and rheological optimization in biological systems. Nominated by: Division of Fluid Dynamics

**Jin, Kui-juan**

For her significant contribution in the crossing area of optics and condensed matter physics, including Fano resonance applying in some semiconductor systems, laser MBE growing and novel property revealing for perovskite oxide heterostructures, and for her important role as a leading card for women in physics. Nominated by: Forum on International Physics

**Johannes, Michelle D.****Naval Research Laboratory**

For computational work that has made a strong impact in novel superconductivity, magnetism, charge density waves and battery electrode materials. Her calculations have contributed to understanding and explaining the underlying physics that governs the properties of widely diverse materials. Nominated by: Division of Computational Physics

**Khitrova, Galina****University of Arizona**

For fundamental studies of pump probe spectroscopy of atomic vapors and light-matter coupling of cavity fields with quantum wells and dots. In particular, for demonstrating the quantum regime of semiconductor cavity quantum electrodynamics via the vacuum Rabi splitting between a single quantum dot and the field in a photonic crystal nanocavity. Nominated by: Division of Laser Science

**Lin, Jingyu****Texas Tech University**

For her seminal contributions to our fundamental understanding of the electronic and optical properties of the group III-nitride semiconductors and her significant impact on the use of these materials for nanophotonic devices. Nominated by: Division of Materials Physics

**Loo, Lynn****Princeton University**

For elucidating the relationships between structure and function in conducting polymers and organic semiconductors, and for applying this understanding to enhance conductor, transistor, and photovoltaic device performance. Nominated by: Division of Polymer Physics

**McCartney, Martha R.****Arizona State University**

For outstanding contributions to the development of off-axis electron holography and applications to the quantification of nanoscale electrostatic and magnetic fields. Nominated by: Division of Materials Physics

**Newberg, Heidi Jo****Rensselaer Polytechnic Institute**

For her contributions to our understanding of the structure of the Milky Way galaxy and the universe and for the development of software and hardware infrastructure for measuring and extracting meaningful information from large astronomical survey data sets. Nominated by: Division of Astrophysics

**Popovic, Dragana****Florida State University**

For experimental studies of glassy behavior in strongly correlated systems near the metal-insulator transition. Nominated by: Division of Condensed Matter Physics

**Pregenzer, Arian****Sandia National Laboratories**

For her leadership in advancing arms control monitoring and verification technologies and for establishing and leading international scientific cooperation for arms control and international security. Nominated by: Forum on Physics and Society

**Redwing, Joan****Pennsylvania State University**

For key contributions to the mechanistic understanding of materials synthesis by vapor growth, including Si and SiGe nanowires, group-III nitrides and boride-based superconductors. Nominated by: Division of Materials Physics

**Rowan, Sheila****University of Glasgow**

For her pioneering research in the field of interferometric gravitational wave detection in the area of reducing the effects of thermal noise in optics and suspensions, and for her leadership within this field. Nominated by: Topical Group in Gravitation

**Sanbonmatsu, Karissa****Los Alamos National Laboratory**

For pioneering computer simulation of molecular machines and biomolecular complexes. Nominated by: Division of Biological Physics

**Shinn, Michelle****Jefferson Laboratory**

For contributions in the applications of lasers in society, particularly the development of high power optics technologies for rare earth solid state lasers and free-electron lasers. Nominated by: Forum on Industrial & Applied Physics

**Sinnott, Susan B.****University of Florida**

For significant contributions developing and applying atomistic methods to investigate the physical and chemical properties of nanomaterials, material surfaces, and interfaces. Nominated by: Division of Materials Physics

**Stemmer, Susanne****University of California, Santa Barbara**

For major contributions to molecular beam epitaxy of oxide thin films, the development of new dielectrics for compound semiconductors, and the advancement of transmission electron microscopy as a quantitative tool in materials science. Nominated by: Division of Materials Physics

**Wackerroth, Doreen****State University of New York, Buffalo**

For careful contributions to electroweak and Higgs physics, especially the computation and phenomenology of electroweak and QCD corrections to W, Z and Higgs boson production at hadron colliders, and for service to high energy physics especially co-organizing a decade of annual LoopFest Workshops. Nominated by: Division of Particles and Fields

**Wang, Yun****University of Oklahoma**

For her leadership in dark energy research, especially in developing a robust and consistent framework for analysing and interpreting cosmological data to place model-independent constraints on dark energy, and in optimizing the science return of planned space missions to probe dark energy. Nominated by: Division of Astrophysics

**Yoda, Minami****Georgia Institute of Technology**

For outstanding contributions to experimental fluid dynamics and optical diagnostics and, specifically, for innovative contributions to the development of evanescent-wave illumination techniques to study flows in near-wall regions. Nominated by: Division of Fluid Dynamics

**Zhuang, Xiaowei****Harvard University**

For her seminal contributions to the development of biophysical techniques involving super-resolution fluorescence microscopy and single molecule fluorescence resonance energy transfer, and her successful applications of these techniques to many critical biological problems. Nominated by: Division of Biological Physics

**Nominate Women and Minorities to APS Fellowship**

The Committee on the Status of Women in Physics encourages APS members to nominate a woman or minority for fellowship in the APS. The APS Fellowship Program was created to recognize members who may have made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology. They may also have made significant contributions to the teaching of physics or service and participation in the activities of the Society. All APS Members are eligible to nominate, and all APS members are eligible for nomination.

Further information on the fellowship nomination process can be found online at [www.aps.org/programs/honors/fellowships/](http://www.aps.org/programs/honors/fellowships/)

## Feryal Ozel is the 2013 Maria Goeppert Mayer Awardee

by Mike Lucibella, APS Science Staff Writer



Feryal Ozel

The recipient of this year's Maria Goeppert Mayer Award is Feryal Ozel, an assistant professor of astronomy and physics at the University of Arizona. Each year APS honors the work and achievements of a woman physicist early in her career. In addition to a certificate honoring her achievement, she will receive \$2,500 plus \$4,000 in travel allowances to be used towards speaking at up to four U.S. universities and an APS meeting.

Ozel's research delves into the extreme astrophysics of black holes and neutron stars. She said that it is the idea of solving the mysteries of the universe that draws her in.

"Astronomy is an observational science... we typically work with clues we're offered, so like detectives we try to put together the whole picture from the clues we can obtain," Ozel said. "I love the fact that we can address basic physics questions by looking at these particular types of objects."

These distant objects hold the key to answering questions about the fundamental nature of the universe under conditions that laboratories here on Earth can't hope to recreate. The pressure and density found at the hearts of these celestial bodies create exotic states of matter that are impossible to recreate in a laboratory.

"By measuring the macroscopic properties of neutron stars, what their masses are, what their radii are, we want to be able to get a handle of what makes up their interior," Ozel said. "Neutron stars and black holes are my specialty."

Ozel has always been fascinated to find out what makes something tick. As early as elementary school, she said she was always asking "What's inside stuff, why does it behave the way it does?"

Originally from Istanbul, she found herself drawn to the idea of traveling abroad for college while in high school. She worried that the curricula at the universities in Turkey would be too regimented and would leave little time to explore other subjects. Her high school teachers were instrumental in guiding her towards options in the United States.

She found the flexibility she was looking for at Columbia University in New York City. She tried out a couple of different areas of science before settling on a double major in physics and applied mathematics.

"I was certainly free to try other classes and it was a very enriching experience," Ozel said. "At that time I thought of going into particle physics, but it has been the golden era of astronomy with a lot of new data coming in from satellites and Earth-based telescopes... I could still do basic physics and address the questions that interest me, but the amount of data that has been coming in in astronomy has been very exciting."

After graduating from Columbia she received her

master's degree at the Niels Bohr Institute in Copenhagen and her PhD at Harvard University. She then received a NASA Hubble Fellowship at Princeton's Institute for Advanced Study.

"That was awesome," Ozel said. "I loved the environment at the Institute for Advanced Study... I thought it was a great place to be a post-doc."

From there she joined the faculty of the University of Arizona in 2005. Right now she is on sabbatical at Radcliff University at Harvard. She said it's given her a chance to work on a new range of projects.

Astronomers have been keeping tabs on a massive cloud of gas and dust approaching the super massive black hole at center of the galaxy. It should pass right between Earth and the black hole sometime in the middle of 2013, and Ozel has been working on figuring what astronomers should look for when it does.

"We basically are doing some theoretical calculations for what it is going to look like," Ozel said. "It's a very fun opportunity to watch something in real time."

She has also been helping develop the next generation of satellites that will peer into the hearts of neutron stars. NASA's Neutron Star Interior Composition Explorer, or NICER, is in development to look for the X-ray emissions coming from a neutron star's magnetic field. If selected by NASA, it should launch in the summer of 2016. A similar mission, the Large Observatory for X-ray Timing, or LOFT, is in development by the European Space Agency and slated to launch in 2022. Ozel is doing much of the theoretical work behind what these telescopes should look for.

"I am very excited about these missions," Ozel said. "There's also data coming in from other wavelengths."

When not unraveling the mysteries of the neutron stars and black holes, Ozel is an avid triathlete. She recently ran a half Iron Man in Phoenix, Arizona where she placed third in her age group, and a sprint triathlon in Tucson where she placed first. She's planning to run the Boston Marathon in the spring.

Though always involved with new and exciting projects, family is just as important to Ozel. She and her husband, who's also an astrophysicist, have made a big effort to be as involved as possible with their six and eight year old daughter's school and activities.

"It's not always easy," Ozel said. "Anyone will tell you it's a juggling act, and I completely agree with that."

She said that she felt honored to hear that she was selected for the Maria Goeppert Mayer award, and that she's always been driven by her love of research.

"The recognition is always nice and I hope that it motivates me even more to keep doing good work." ■

For information on nominating women and minorities for APS prizes and awards, please visit [www.aps.org/programs/honors/nomination.cfm](http://www.aps.org/programs/honors/nomination.cfm)

## Special Events Focusing on Women and Minorities in Physics

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### APS MARCH MEETING • BALTIMORE

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#### SUNDAY, MARCH 17

8:00am – 5:00pm

#### Professional Skills Development Workshop for Women Physicists

Workshop for developing communication and negotiation skills; for post docs and early-career women physicists (participants must be pre-registered). Reception for participants to follow.

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#### MONDAY, MARCH 18

11:30am – 2:00pm

#### CSWP/FIAP Networking Luncheon

Enjoy lunch while networking with colleagues! Cost: \$15; \$5 for physics students thanks to FIAP's generosity. All are welcome, both men and women. Pre-registration is strongly advised. Food served from 11:30am-1:00pm; speakers panel begins at 12:00pm. Speakers include: Kelly Knight, Bechtel National, Inc.; Ruth Nussinov, SAIC Frederick-NCI; Cha-Mei Tang, Creatv MicroTech, Inc.

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#### TUESDAY, MARCH 19

2:30pm

#### Fostering Collaborations with Minority-Serving Institutions

The Committee on Minorities invites all to join them for their invited session. Speakers include: Charles Weatherford, Mario Diaz, Quinton Williams, and John Harkless.

5:30pm – 7:00pm

#### LGBT+ Open Discussion Session

LGBT+ physicists and straight and cisgender allies are invited to an open discussion session on topics such as employment protections; best practices to eliminate discrimination based on sexual orientation, gender identity, or gender expression; the lack of demographic data on LGBT+ physicists; health benefits; networking resources; and the progress made by an ad hoc APS group addressing the needs of LGBT+ physicists. Location: Latrobe Room, Hilton Baltimore

7:00pm – 8:30pm

#### COM/CSWP Diversity Networking Reception

Learn about the work of the Committee on Minorities in Physics and the Committee on the Status of Women in Physics, network with colleagues, and unwind after a long day of sessions. All are welcome. Location: Peale A Room, Hilton Baltimore

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### APS APRIL MEETING • DENVER

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#### FRIDAY, APRIL 12

8:00am – 5:00pm

#### Professional Skills Development Workshop for Women Physicists

Workshop for developing communication, negotiation and leadership skills; for post docs and senior-level women physicists (participants must be pre-registered). Reception for participants to follow.

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#### SUNDAY, APRIL 14

8:30am

#### CSWP Invited Session on Communication Skills Development

See preview on page 17 for details.

12:00 noon – 2:30pm

#### CSWP/DPF Networking Luncheon

Enjoy lunch while networking with colleagues! Cost: \$15; \$5 for physics students thanks to DPF's generosity. All are welcome, both men and women. Pre-registration is strongly advised. Food served 12:00-1:30pm; speaker begins at 1:00pm. Speaker: Elizabeth Simmons, Michigan State University.

2:30pm

#### Doing Science, Improving Diversity: strategies from minority physicists

The Committee on Minorities invites all to join them for their invited session. Speakers include: William Evans, Marty Baylor, and Karl Van Bibber.

7:00pm – 8:30pm

#### COM/CSWP Diversity Networking Reception

Learn about the work of the Committee on Minorities in Physics and the Committee on the Status of Women in Physics, network with colleagues, and unwind after a long day of sessions. All are welcome.

*Please check dates and times of all events on the Meetings and hotel calendars, as they may change nearer the time!*

## Stephon Alexander Receives 2013 Bouchet Award

by Mike Lucibella, APS Science Staff Writer



Stephon Alexander

**How matter won out over antimatter, and what that has to do with quantum gravity is the central question behind much of Alexander's work.**

For Stephon Alexander, jazz and theoretical physics go together like peanut butter and jelly.

"I've gained a lot of inspiration from the art and practice of music," said Alexander, who is a jazz musician himself. "The idea is that you have sharply tuned tools... [and] you can use these tools to make new creations."

Whether these tools are quantum gravity or his saxophone, Alexander likes to use them to explore new ideas and concepts. To him a big part of the process is making mistakes whether they are arrangements that just don't work out, or calculations that ultimately don't add up.

"It's exactly those mistakes that tell you how close or far you are from the correct answer," Alexander said. He added that he uses intuition and free association to explore new ideas, "but at the end of the day if you're on to something, you can use tools to get the answer."

Stephon Alexander is an associate professor of Physics and Astronomy and the recipient of this year's Edward A. Bouchet award. Every year APS gives out the award to an underrepresented minority physicist who has made major contributions to physics research and brings physics to the general public. He will receive \$3,500, plus travel to an APS meeting to receive the award and deliver a presentation on his work, as well invitations to at least three academic institutions to talk about his research.

How matter won out over antimatter, and what that has to do with quantum gravity is the central question behind much of Alexander's work.

"I use cosmology as a window to probe fundamental physics such as theories of quantum gravity and theories beyond the standard model," Alexander said.

The path that brought him to study theoretical cosmology was anything but straightforward and was full of unexpected turns and career changes.

Alexander was born in Trinidad, and moved with his family to the Bronx when he was eight. He went through the public schools in New York and counted himself lucky to have had the science and math teachers he did. He remembers many of his high school teachers having advanced degrees so they could talk about everything from the fundamentals of physics, to what was cutting edge.

"I think growing up in a very diverse background in the Bronx really made a difference because in my field, it's so international," Alexander said.

After he finished high school, he went to Haverford College in Pennsylvania. Starting out he was unsure of what path to take.

"I had really no ambitions to become a physicist," Alexander said. "I knew I liked physics, and I knew it came a little bit easier than some of the humanities. But I didn't really think I was going to be a physicist."

Then during his freshman year, he met Lyle Roelofs a physics professor at the time. The two connect-

ed, and Roelofs became a role model for Alexander.

"He worked me very hard. He had very high expectations but at the same time he made it known to me that physics was available to me if I wanted to pursue it."

At around the same time, Alexander was introduced to Jim Gates at a National Society of Black Physicists meeting. Meeting the renowned physicist made a major impression on Alexander. It showed him that people of any ethnicity could be theoretical physicists.

Alexander delved into studying physics, and was involved with research for three of the four years he was at college. After receiving his Bachelors of Science, he went to Brown University initially with the intent to study experimental quantum optics.

Once he arrived though, his focus pivoted and started researching neuroscience with Nobel laureate Leon Cooper. Alexander got his first real taste of cosmology, when he decided to write his dissertation on neural networks applied to large scale structures in the universe.

Still he looked around at other possible paths. For his PhD, he started out studying biophysics at Harvard with Walter Gilbert, another Nobel laureate. After a while though, he found that his passion truly lay with cosmology.

He traveled to the Imperial College in London for his post-doc to help devise how cosmic inflation could arise from string theory. During the summers, he traveled to Columbia University to study string theory with Brian Greene. Together they explored the proposed ten dimensions of space-time and where the six hidden dimensions might be lurking.

After his tenure in London, Alexander traveled to SLAC to continue pursuing the connection between the origin of matter in the universe and inflation after the Big Bang. It was through this he started thinking about handedness in nature. Only one force, the weak force, has a preferred handedness. However Alexander postulated that gravity might be a sort of sister force to the weak force and might also have a preferred handedness in certain quantum regimes.

"It's going to be a new unified theory between gravity and the weak interaction," Alexander said.

It's a theory that experiments around the world are investigating. At the LHC, researchers are looking for any signs of handedness in collisions there. Once LIGO comes back online in 2014, they'll be on the lookout for a preference of certain kinds of gravity waves coming from binary star systems.

Alexander continued moving around, holding faculty positions at Penn State and his alma mater Haverford, before accepting the Ernest Everett Just 1907 Professor of Natural Sciences seat at Dartmouth.

When not unraveling the mysteries of quantum gravity, Alexander has also been delving into the mysteries of music. He's been working with mathematicians at Berkeley looking for geometric structures in

music or any organizing principles that might apply to music's harmonic structure.

"Why and how music works in terms of the principles of physics?" is the central question he's been looking at. "It's also a good teaching tool. It's a good way to get students interested in physics."

He's also been working on his own jazz album with a producer in New York.

He said that he was honored to receive the Bouchet award. "It came as a shock, I wasn't expect-

ing this kind of recognition from my colleges," Alexander said. "Looking at the past winners [they] are all people I've looked up to."

He added also that he plans on using the award to talk about his research at other institutions, and to get more young people involved with science.

"Now that I'm a professor, it's important that I pass on the torch and mentor other minorities in physics and in particular to identify and have some PhD students of my own from those backgrounds." ■

## CSWP April Session | Communication Skills Development

On Sunday, April 14, an exciting new communications skills workshop will be offered during the April Meeting session sponsored by the Committee on the Status of Women in Physics (CSWP). The first speaker, James Riordon, Director of APS Media Relations, will provide media training for participants preparing them to communicate their areas of research for formal publications such as newspapers and magazines. The second speaker, Becky Thompson, head of APS Public Outreach, will prepare participants for public speaking engagements ranging from K-12 school talks, discussions at science cafés, or museum

presentations. The session will conclude in an interactive/role-playing format led by Mike Lucibella, APS Science Staff Writer. During this interactive portion of the session, participants will get the opportunity to run and explain a science demonstration and be interviewed by journalists and reporters. The session leaders will provide on-the-spot feedback to participants following the interaction.

CSWP invites all—both men and women—to attend the session and develop your communication skills. Ideas for future sessions are also welcome; email your suggestions to [women@aps.org](mailto:women@aps.org). ■

### Please Update Your Address

The APS Roster of Women and Minorities is also used as the Gazette mailing list.

If your address has changed and you wish to continue receiving the Gazette, please visit [www.aps.org/programs/roster/enroll.cfm](http://www.aps.org/programs/roster/enroll.cfm) to re-register and select The Gazette Mailing List as your Roster group.

Questions? Contact Arlene Modeste Knowles at [roster@aps.org](mailto:roster@aps.org).

Keep reading the Gazette!

## Women Physicist of the Month Program Provides Recognition

The APS Committee on the Status of Women in Physics (CSWP) began a program to highlight exceptional female physicists in January 2012. Each month a new woman is the face of [www.WomenInPhysics.org](http://www.WomenInPhysics.org) and a short bio is featured on the website showcasing the amazing talents of female physicists.

The physicists rounding out the second half of 2012 are (in order of feature):

Ann Heinson, University of California, Riverside

Marianna Safronova, University of Delaware

Lynn Cominsky, Sonoma State University

Persis Drell, SLAC/Stanford University

Jolie Cizewski, Rutgers University

Jodi Cooley, Southern Methodist University

The CSWP Woman Physicist of the Month award recognizes female physicists who have positively impacted other individuals' lives and careers. The award is not restricted to just research physicists, but open to students, teachers or any woman doing physics-related work. Nominations are accepted on a rolling basis.

To nominate someone, the name, institution/facility/company, and email of both the nominee and nominator should be emailed to [women@aps.org](mailto:women@aps.org). The nominee's CV and a nomination statement up to three paragraphs should also be included in the email as attachments. ■

## APS Bridge Program Summer Meeting

**June 27-29, 2013**

**American Center for Physics  
College Park, Maryland**



The APS Bridge Program Summer Meeting will bring together experts to discuss efforts to increase the number of underrepresented minorities who receive PhDs in physics. Workshops, panel discussions, and presentations will address topics such as:

- cultivating faculty/administrative support
- building a sense of community for students
- mentoring
- bridge program logistics

This conference is designed for faculty, administrators, and students from prospective and existing bridge program sites, as well as interested graduate programs.



[www.APSBridgeProgram.org](http://www.APSBridgeProgram.org)

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### Women & Minority Speakers Lists

Need a speaker? Consider consulting the American Physical Society's women and minority speakers lists, online lists of women and minority physicists who are willing to give colloquium or seminar talks to various audiences. These lists serve as wonderful resources for colleges, universities, and general audiences. They have been especially useful for colloquium chairs and for those taking advantage of the Travel Grant Programs for Women and Minority Speakers. The online lists are searchable by state, fields of physics, or speakers' last names.

To find a woman speaker, go to: [www.aps.org/programs/women/speakers/](http://www.aps.org/programs/women/speakers/)

To find a minority speaker, go to: [www.aps.org/programs/minorities/speakers/](http://www.aps.org/programs/minorities/speakers/)

## American Physical Society Travel Grant Programs

**Travel Grants are available for Physics Departments at U.S. institutions to host Women and Minority Speakers!**

**The Women and Minorities Speakers Programs are intended to expand the opportunity for physics departments to invite women and minority colloquium/seminar speakers who can serve as role models for undergraduates, graduate students and faculty. The program also recognizes the scientific accomplishments and contributions of these physicists.**

**For more information and to complete an online application, please visit:**

**Women Speakers Program Travel Grants:**

[www.aps.org/programs/women/speakers/travel-grants.cfm](http://www.aps.org/programs/women/speakers/travel-grants.cfm)

**Minority Speakers Program Travel Grants:**

[www.aps.org/programs/minorities/speakers/travel-grants.cfm](http://www.aps.org/programs/minorities/speakers/travel-grants.cfm)

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**http://careers.aps.org**



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