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Guest Editorial: Mid-career Women Physicists Reach Back to Promote Young Women Physicists' Careers

Huey Wen Lin, Michigan State University

If you were at this year's April meeting in Salt Lake City, you may have stopped by a special session dedicated to four young female speakers, sponsored by the Division of Nuclear Physics (DNP) and Division of Computational Physics (DCOMP). This special session was inspired by a dedicated female physicist Xiaochao Zheng (Virginia) to promote young women physicists who are outstanding in their research field and searching for permanent positions.

There is a significant movement to try to recruit more women into STEM careers and physics in particular, but translating good intentions into concrete action can be a formidable challenge. Obviously this is a hard problem, and it involves integrating a variety of outreach activities aimed at girls of different ages to show them how fun STEM fields can be, and to bring opportunities to experience STEM activities even if they are not given these opportunities in their homes and schools. At the end of the pipeline, we must also offer women permanent positions in physics so that these efforts do not go to waste. This is a story of how two women in our field



have taken action to promote women in a tangible way. I believe we need to spread the word so that more people can join the effort, and hopefully, similar sections will take root at the future APS meetings.

In 2015 and early Jan. 2016, Xiaochao was on the APS Division of Nuclear Physics (DNP) Program Committee with Renee Fatemi (Kentucky),

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APS/IBM Research Internships for Undergraduate Women and Underrepresented Minorities

For the last 16 years APS has been co-sponsoring the APS/IBM Research Internships for Undergraduate Women and for Underrepresented Minorities, which was co-founded and is currently managed by Dr. Barbara Jones at IBM. Hundreds of students apply for these competitive internships that offer them a chance to work with talented scientists in industry on complex problems ranging from basic research to developing technologies. Below, two interns from the APS/IBM

Research Internships for Undergraduate Women give an account of their summer internship, and in one case, additional semester-long internship experiences. You will see how interested and excited they were about their scientific work, and how the mentoring they received from these research scientists impacted not only their internship experiences, but their future educational and career plans.

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Edward A. Bouchet Award

The Edward A. Bouchet Award was established in 1994 by the APS Committee on Minorities in physics to promote the participation of under-represented minorities in physics by identifying and recognizing a distinguished minority physicist who has made significant contributions to physics research.

The 2016 recipient of the Edward A. Bouchet Award was Professor Pablo Laguna from Georgia Tech who received this honor “For [his] contributions to numerical relativity and astrophysics; in particular, on the simulation of colliding black holes.”

Pablo Laguna received his degree in physics from the Universidad Autonoma Metropolitana at Iztapalapa in 1981 and his Ph.D. in physics from the University of Texas at Austin in 1987. In 1992, he joined the Department of Astronomy and Astrophysics at Pennsylvania State University. He was promoted to associate professor in 1998 and to professor in 2000. He was named associate director of both the Center for Gravitational Wave Physics and the Institute for Gravitational Physics and Geometry in 2001. Laguna was also a dedicated member

of the APS Committee on Minorities in physics (COM) from 2007–2009. In 2008, he became a professor in the Schools of Physics and of Computational Science and Engineering at the Georgia Institute of Technology. Laguna is a founding member and was the first director of the Center for Relativistic Astrophysics at Georgia Tech until 2013 when he became chair of the School of Physics. His research is in computational astrophysics, investigating astrophysical phenomena involving binary systems with black holes and/or neutron stars. Laguna was named fellow of the American Physical Society in 2008 and elected to the Mexican Academy of Science in 2007. ■



Pablo Laguna
Georgia Institute of
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Guest Editorial *continued from page 1*

Anne Sickles (UIUC) and Calem Hoffman (ANL), in charge of designing and organizing the invited sessions for the APS April meeting. Their task was to create joint invited sessions with another subfield for the broader audience of the APS meeting. During this task, Xiaochao proposed to have a session for outstanding young women in nuclear and particle physics, quickly convincing everyone to get on board with the idea. They put together a speaker list and contacted the session organizers of the APS Committee on Status of Women in Physics (CSWP) but all their invited session slots had already been taken. After searching for a while, they found the slots they needed with the Division of Computational Physics (DCOMP), and the session was on.

At the beginning of the session, Xiaochao, who chaired this session, shared her experience: “I gave my first APS invited talk in 2005, in a similar session for young women physicists. I received a lot of positive feedback, which I believe helped me land my faculty position at the University of Virginia. I hope this session will do the same for the speakers today.” In an interview for this article, Xiaochao stated that her philosophy can be traced back to her time as a middle school student in China on the Shu-Ping scholarship (叔苹) for which the motto was “得诸社会，还诸社会”. [As you receive from the community, you give back to the community.]

“If everyone kept this in mind, society would be much better,” she said. In her opinion, success comes 90% from hard work and 10% from good luck. Now that she is in a position to help other women, she decided to provide the luck needed to make sure other brilliant hard-working women would be visible at a big meeting like the APS April Meeting.

It’s too early to find out whether this section has been as beneficial for young women speakers in this session as Xiaochao. However, the feedback from the invited young women has been very positive. For example, Doga Gulhan, a graduate student from MIT, says “I was very honored to be recognized as a successful woman in my field, because I work with many brilliant women and competition is very high. I hope that one day I will have the opportunity to return the

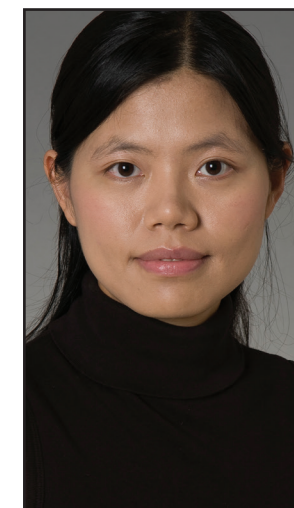
favor like Xiaochao did.” Another speaker, Hyo-In Park, currently a postdoc at Texas A&M University, says “As a young female physicist, I appreciated the platform of this invited session that created a supportive environment for me and others, and hope that I can help in [the] future to promote women and minorities in physics. Most of the women in physics mostly work side-by-side with men. It really helps to see so many outstanding women at the APS April meeting and others rooting for you to succeed.”

For those inspired by this effort and in a position to help more promising female and minority physicists to get exposure at big meetings, what can we learn from their experience?

“I think the lesson we learned was to try to start these joint sessions sooner so that we can really join up with the groups they best fit. I think it would be wonderful to have a session focused on a minority group at each APS meeting. For example instead of women we could have a session featuring Latino and African-American physicists,” Renee said.

Xiaochao emphasized that getting advertisements posted for these special sessions is important to attract more attendees. Getting co-sponsorship from CSWP or other groups would also help. “It would be great if we could work together to improve the general organization of this kind of special session and make it a tradition of CSWP.” One solution may be to increase the number of talk slots at the APS meeting for this type of effort.

I believe many of us would like to see more such sessions in future APS meetings, not only for women but also for minorities in physics. In the future, we can keep track of where these invited women progress in their careers to see how effective the exposure from these talks is toward giving women and minorities better chances at securing permanent positions. It is a very simple math problem. When you plant a flower seed in a field, soon there will be dozens of flowers; in a year, it can be thousands. The seed set by Xiaochao and the others is already taking root in these young women. We are looking forward to the blossoming of a future with a more balanced working and learning environment in physics. ■



Huey-Wen Lin

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Helena-Nikolai Fujishin

2015 APS/IBM Intern

Being a quirky, blue haired woman in physics isn't always easy. When people get past the tattoos and the excitable demeanor; underneath lies an artist, philosopher, activist and physicist. I can confidently say I've never met someone like me in any field of science, yet.

I was born on the east coast of the United States in North Carolina. I spent many of my childhood formative years in group homes across the states. Anyone who knows the state of governmental child care knows it isn't easy. Many times I would find myself studying in a closet just to find some peace in my little group home. I graduated high school, to many people's surprise, at 15 years old.

I never thought of physics as being a field at all, more like the class that everyone professed to hate. However, as a young adult I fell in love with mathematics and its beautiful equations that could make me both excited and fearful. I loved the logical language of math that, if done correctly, could tell me so much about the world. When I realized that I could apply mathematical models to fit the physical world, it blew my developing mind, and my love for physics was born.

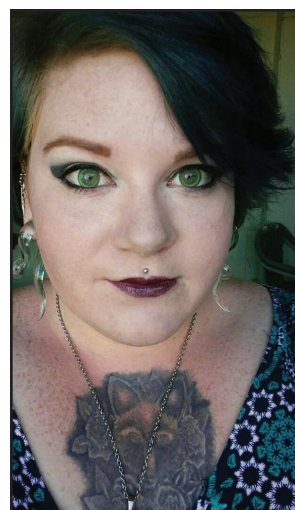
At 18, I moved to Idaho and applied to a community college as a philosophy major, but that beckoning urge to know the physical world in mathematical terms would always wander back. It wasn't until I read my first copy of *The American Physical Society* did I confirm that I wanted to study physics. As memory serves, there was an article on Compton Backscattering and generating high-energy photons and I wanted to know more. At the time I knew nothing of what someone studying physics did and an amazing advisor and mentor, Fran, helped me figure it out. From the very beginning I noticed that in almost every physics class I would be the only female in the room. That made me want to work harder until eventually I worked my way to the top of my classes.

I am now a senior at Boise State University looking forward to graduate school. I have done internships at both IBM and NASA, and even spent a week in Sweden learning about what it is like to work at CERN. I met many of my role models through my research experiences and they helped me work through the stigma of being young, female and alternative-looking in the field of physics.

My first role model was Dr. Barbara Jones at IBM. She's one of the most hard-working women I have ever met in the industry. I worked with Dr. Jones trying my hand at some modeling for IBM's Battery 500 Project, and she alerted me to the APS/IBM internship for undergraduate women. With the support of my department and some modeling knowledge I headed off to the IBM Almaden Research Center to work on polymeric computations.

My direct mentor in my APS/IBM Internship, Dr. Gavin Jones, was excellent at helping me learn the codes, the area, and the IBM workplace itself. Together we worked on modeling and characterizing Poly-hexahydrotriazine (PHT). PHT, a plastic with a high modulus, that was created in IBM's lab by Dr. Jeannette Garcia. I enjoyed working in the industry because of the teamwork aspect. Everyone on the team worked well with each other and the collective intellect was much better than the intellect of one alone. IBM is a great atmosphere due to the center's dedication to employees. As an intern I really felt like I was supported 100%. To this day I still talk with my mentors and am very grateful to IBM for helping me see the beauty of diversity in the research setting.

As far as my future goes, well, I plan on pursuing my PhD in applied physics researching aerogel batteries and working on better, more efficient energy storage systems. IBM shaped my future plans by providing me with a positive experience in industry. I also realized, through my mentors at IBM, that I can accomplish what I want if I work very, very hard at it. My suggestion to anyone wanting to pursue the sciences is to find amazing mentors and never give up because one day you could be the one shaping someone else's future, even if your blue hair catches everyone off guard.



Helena-Nikolai Fujishin,
2015 Intern,
Boise State University,
Physics

I fell in love with mathematics and its beautiful equations that could make me both excited and fearful.



Need a Speaker?

The American Physical Society maintains online lists of women and minority physicists who are willing to give colloquium or seminar talks to various audiences. These lists are wonderful resources for colleges, universities, and general audiences. The lists are searchable by state, fields of physics, or speakers' last names.

www.aps.org/programs/women/speakers/
www.aps.org/programs/minorities/speakers/

Loza Tadesse

2015 APS/IBM Intern

I am originally from Ethiopia, the birthplace of coffee. As a medical student in Ethiopia, I saw first-hand, the depth of problems experienced there, such as resource-poor clinical settings, and I decided to move to the US to do research on medical devices. In May of 2016, I finished my US undergraduate degree from Minnesota State University Moorhead in Chemistry with an emphasis in computation and physics. I chose to study physics as part of my undergraduate degree in order to understand the fundamentals behind medical devices so as to be well prepared for making them affordable and portable. I have been a student member of the APS since my freshman year in college and I learned of the APS/IBM Internship program from one of my colleagues, who was the selected for the internship during the summer of 2014. I then applied and was selected for the internship for the summer of 2015.

At IBM Almaden Research Center, I was part of the Advanced Energy Storage group and worked under Dr. Ho-Cheol Kim and Dr. Dahyun Oh. The goal of my IBM project was to synthesize cathodes with high battery capacity. I synthesized and tested two types of materials, multi-walled carbon nanotube (MWCNT) and transition metal oxides. For the latter, I was able to identify the metal oxide with the highest capacity. For the MWCNT cathodes, I analyzed the relationship between capacity and MWCNT loading, electrolyte volume and electrolyte type. Cathode porosity significantly improves the capacity of Li air batteries by increasing surface area for the electrochemical reaction but the MWCNT were not appreciably porous. Therefore, we used biological molecules to increase the porosity of the cathodes and the new material was novel, cost efficient and versatile for which a patent application

has been filed. Currently, we are polishing the protocol for the new cathode synthesis method. My IBM stay made me well-versed in electrochemistry, and provided a first-hand rigorous research experience. I was also able to extend my stay as a co-op intern until December of 2015.

My research experience at IBM was very enriching. The industrial lab setting was an ideal place for me to be acquainted with both the technical and commercial aspect of scientific research. All the great minds and experts from different fields were across the hall and they were always welcoming and excited to share their knowledge. Most importantly, I have learned how to grow as a researcher including asking the right questions, devising efficient approaches to find solutions, writing and editing publication manuscripts and becoming familiar with steps in filing patents. The breadth of expertise I have acquired significantly increased my creativity and critical thinking skills. It also has provided an opportunity to broaden my perspective enabling me to think of and apply novel solutions for problems in different subfields of science by lending ideas from medicine, biology, chemistry and physics.

Currently, I have been admitted to the Stanford PhD program in Bioengineering and will be starting in September 2016. My main goal is to work on low-cost, portable medical devices that can be utilized by resource-poor clinical settings. IBM greatly helped me in earning this opportunity through the diverse technical and teamwork skills I learned. I also was able to network with the Stanford professors and even consider collaborative research with IBM. My mentors at IBM were very supportive during my application process. I would like to pass my heartfelt gratitude to them and the APS IBM internship organizers for granting me this life changing opportunity. ■



Loza Tadesse
2015 Intern,
Minnesota State
University Moorhead
Chemistry Major with
Minor in Math and
Physics

My IBM stay made me well-versed in electrochemistry, and provided a first-hand rigorous research experience.

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Post your own opportunities, "like" the work of others, or start a discussion about what else you'd like to see in the women and minority physics communities!

Egypt's Loyalty to Science

Sultana N. Nahar, Astronomy, The Ohio State University

I have traveled to Egypt almost every year since attending the international conference on Modern Trends in Physics Research (MTPR) in Cairo in 2008. Despite media portrayal of protest and violence at Cairo University, the enthusiasm of scientific effort in Egypt has never diminished. To the credit of the scientists and educators, Egypt has kept its focus on the progress of education and research, and is still the most popular place for people from Arab and African countries to earn educational degrees. I've made good friends from Ghana, Ethiopia, Yemen, Sudan, and Iraq all doing their postgraduate studies in Cairo University on government scholarships. Each visit to Egypt has revealed knowledge that I was previously not aware of.

Top: Women participants gather for a picture in the Valley of Kings near Luxor. Bottom: Professor Mostafa El-Sayed of Georgia Tech giving a presentation on the Falandra boat.



Right: Computer workshop on atomic processes.



Fifth international conference

Delayed by over a year, the 5th international conference MTPR-014 was held with success at Cairo University and the ancient city of Luxor December 15-19, 2014. The chief organizer was physics professor Lotfia El Nadi from Cairo University. Along with many Egyptians, participants came from Czechoslovakia, India, Russia, Spain, and the United States. The conference began in Cairo on the Falandra boat where we heard keynote presentations in various areas of physics as we sailed on the Nile River. We then

traveled over 300 miles south along the Nile to Luxor where the rest of the conference was held. In Luxor, there were several invited and contributed oral and poster presentations. Keynote speakers were honored with the Shield of MTPR and the Medal of Cairo University Faculty of Science.

During the conference, we also visited a few places, including the Valley of Kings where many mummies of Pharaohs are buried deep inside the mountains in decorated chambers with writings, symbolic paintings, and jewelry (which is largely missing). Egyptians say the writings and paintings were done using liquids containing gold nanoparticles, which is the reason for their long lasting color and texture. The Valley of Kings is also close to the temple of Hatshepsut, the first known female ruler in history.

After MTPR-014, I stayed for some work in the physics departments at Cairo University and Al-Azhar University. The impact of the change of government in Egypt was visible in Al-Azhar University, where security was high and entrance was restricted. There had been violence and the loss of lives on campus. However, my strong desire to make some progress in my physics and astronomy recognition program at Al-Azhar University was fulfilled.

To promote excellence in physics and astronomy education and research, I introduced a recognition program in 2012, which needed considerable revisions to accommodate the three campuses: a separate male and female campus in Cairo, and one in Aswan. In appreciation of my work at Al-Azhar, the Deans of Faculty of Science gave me the Shield of Faculty of Science.

Back to Egypt

I went back to Egypt in early 2015 when 12 prizes in Physics and Astronomy were given - three to faculty members for research, three to faculty members for in-class teaching skills, three for the best PhD. thesis and three for the best Master's thesis. Four more winners were expected from the female campus which could not make the selections. I took part in the evaluations and was pleased to see the number of physics and astronomy publications over the past year.

I participated in two meetings in Cairo with Egyptian scientists celebrating 2015, the International Year of Light (IYL). At the IYL celebration during the annual convention of the Topical Society of Laser Sciences (TSLs), I presented my latest work on solar opacity and learned about the Arab scientist, Alhazen. IYL was commemorating 1,000 years of seven volumes of the Book of Optics written during 1011 - 1021 by Alhazen or Abu Ali al-Hasan ibn al-Hasan ibn al-Haytham (known as Ptolemy the Second after the Egyptian scientist Ptolemy and "The Physicist" in medieval Europe). He proved, through various experiments with lenses, mirrors, refraction, and reflection that light travels in straight lines, and explained that we observe objects because the light reflected from

them reaches our eyes. Alhazen wrote more than 200 books on astronomy, geometry, number theory, optics and natural philosophy, though only 50 have survived.

During my visit in Egypt in March and April of 2015, I delivered a condensed course on "Atomic Spectroscopy and Collisional Excitations in Plasmas" that included a computation workshop on atomic structure and process codes. The course was attended by researchers, faculty members, and post-graduate students from seven institutions - physics, astronomy and National Institute of Laser enhanced sciences (NILE) of Cairo University, Egyptian Atomic Energy Authority, German University in Cairo, Ministry of Environmental Research, National Research Centre (NRC), National Research Institute of Astronomy and Geophysics (NRIAG), and Zewail City of Science and Technology. At the end, participants took one final exam and received certificates.

I was honored to be invited to the graduation ceremony of Faculty of Science in March 2015. Following tradition, Cairo University chose physics professor Lotfia El Nadi as an inspiration for the graduates who paraded behind her to the Dome building for their graduation. I felt honored to be a part of the parade and hand over the certificates to graduates. For all my work at Cairo University, President Gaber Nasser gave me the Presidential Shield of Cairo University.

Science in Egypt

Regardless of the standard of research compared to developed countries, Egyptian scientists remain devoted to research almost throughout their entire lives, well beyond the retirement age. The income changes from salary to pension at age 60, but everything keeps on going, including research, grants, and teaching. I observed with admiration as Professor Lotfia El Nadi, 81 years old, was teaching laser physics to her post-graduate students.

Like my other visits to Egypt, I learned more new and interesting facts. The final exam for my course was held the day after Sham El-Naseem, the spring break for Egyptians and the origin of our present day spring break and Easter. It is a national holiday representing the festival of harvest and has been observed for over four thousand years. All Egyptians spend the day either outside with the family in a park, by the Red Sea, or in the countryside. Everyone was amazed to see one of my students, Dalia Osman, spending most of Sham El-Nassim studying for the next day's test. Her study paid off, and she scored the second highest on the exam.

I also learned about the Helwan Observatory and Kottamia Telescope. Two of my postgraduate students, Ola and Mona, were doing their research at the National Research Institute of Astronomy and Geophysics (NRIAG). Through them, I received an invitation from President Professor Amin Mohamed to visit and give a seminar at NRIAG in Helwan and visit their 74-inch mirror telescope in the Kottamia observatory. The history of NRIAG, which changed its name several times and is more commonly known as Helwan Observatory, goes back to 1939. It was here at Helwan where they saw Pluto for the first time and detected Halley's



Comet. Kottamia observatory now has a Center of Excellence where astronomy students, researchers and faculty members receive training on observations, data reduction, and analysis. During my visit, a group from the Astronomy Department of Al Azhar University was participating in training.

Finally, I visited Zewail City of Science and Technology founded by Nobel laureate Ahmed Zewail of Cal Tech and gave a seminar on X-rays on biomedical applications. Zewail City which is a center aimed at highest quality research and education in Arab countries has now opened its university for Ph.D. degrees. The current Vice Chair Dr. Salah Obayya is a professor of photonics who welcomed the STEM Faculty training program we have established at the Ohio State University under the Obama-Singh 21st Century Knowledge Initiative award. The City plans to send its postgraduate students to developed countries for a year or two for cutting edge research experience. ■

Winners of best teaching, research and thesis prizes in Physics and Astronomy at Al Azhar University.

Top: Astronomers at Helwan National Research Institute of Astronomy and Geophysics
Bottom: 74-inch Kottamia mirror telescope observatory.





Sultana Nahar with Shield of Cairo University from the President.

Sultana Nahar, an atomic astrophysicist at the Ohio State University, received her B.Sc.Hons in physics and M.Sc. in theoretical physics from Dhaka University, standing the first position in rank in both and holding the record for the first woman to achieve them. She received her M.A. in Quantum Optics and Ph.D. in atomic theory from Wayne State University. At Wayne State, she received the Knoller Fellowship in Physics, the Thomas Rumble University Graduate Fellowship, and the Daniel Gustafson Memorial Award for Excellence in Teaching by a Graduate Student. After a postdoctoral position at Georgia State University, she moved to the Ohio State University with a fellowship from the College of Physical and Mathematical Sciences.

Dr. Nahar's research focuses on atomic processes of photoionization, electron-ion recombination, photo-excitation, and collision. Her contributions include development of the unified method for total electron-ion

recombination, theoretical spectroscopy for the Breit-Pauli R-matrix method, and the resonant nano-plasma theranostics (RNPT) method for cancer treatment. She has published around 140 scientific articles and is the co-author of the textbook "Atomic Astrophysics and Spectroscopy". She also has an online database titled NORAD-Atomic-Data.

Dr. Nahar is a very effective research advisor to her group of students and postdocs, as well as researchers in developing and Arab countries. She was recognized by her university with the Outstanding Research Mentor Award. She is also involved in promoting physics research and education in several Asian and Arab countries and is the founder of International Society of Muslim Women in Science. She is an APS Fellow, recipient of the highest honour gold medal from the Topical Society of Laser Sciences, and recipient of the 2013 John Wheatley Award.

Book Review: *Academaze* by Sydney Phlox

Reviewed by Ashley DaSilva, CSWP Chair

A*cademaze* is a collection of essays about the ups and downs of being in academia written by a popular blogger who goes by the pseudonym Sydney Phlox. Sydney Phlox is a professor in a physical science field, and writes candidly about all aspects of academia, from the joys of teaching, to the frustration of working with difficult colleagues. Her writing style is conversational and pleasant to read. Each essay is a bite-sized nugget of information; perfect for reading one-at-a-time during 5 minute breaks from debugging code, or reading a few over a coffee while procrastinating on that journal article I have to review. Although I didn't agree with all her opinions, it was still interesting to hear a different point of view (Sydney Phlox is partial to traditional lecture courses, while I prefer interactive instructional styles). On the other hand, I found myself nodding along in agreement with many of her ideas on writing and communication. We even share a writing role model, Stephen King.

This book successfully accomplishes quite a bit, providing something for almost everyone. The most interesting chapters will depend on the reader's career stage and level of familiarity with academia. For the undergraduates who just can't relate to their professors, I suggest the first chapter on what a professor actually does as well as the chapter on teaching. For graduate students and postdocs, there's a lot of useful career development information, including why it's important to communicate effectively, tips on how to get better at writing, and advice on how to network at conferences. Readers at all career stages will enjoy the

chapters on work/life balance and women in STEM. Throughout the book, there are sketches and cartoons drawn by the author herself, which are cute and amusing, with just the right amount of scientific humor and puns mixed in.

I particularly liked the chapter on Women in STEM, which highlights some of the pitfalls that women go through during their careers in academia. I can relate to Sydney Phlox's story of moving from "honorary dude" status as a student to being a vocal advocate for young women in her field as she matured both as a person and a scientist. She speaks candidly about the unconscious bias she sees in her colleagues and sometimes even herself, telling anecdotes about bias in recommendation letters, hiring committees, and in the way women are treated at conferences. The cartoons in this chapter are particularly poignant. While not ignoring the negatives, Sydney Phlox is able to find the positive, and provides bits of advice for both men and women who support better representation of women in STEM.

To summarize, this book provides a nice anecdotal look at one person's path through academia, covering her views on teaching, mentoring, research, academic politics, and more. I enjoyed reading it, and recommend it to anyone wondering what being a professor at a research institution is all about or seeking advice on how to navigate academia themselves, and especially those who are wondering how this might look different for a woman than a man. ■

Recent APS Women Physicists of the Month

JULY 2016 APS WOMAN OF THE MONTH:

Kelly Nash

University of Texas at San Antonio

Dr. Kelly Nash is an Associate Professor of Physics at the University of Texas at San Antonio (UTSA). Her work focuses on synthesis and characterization nanomaterials and their fundamental interaction with biological systems from the molecular to cellular level. Her work includes understanding the combined effects of nanoparticles and electromagnetic fields for manipulation and control the biophysics of single cells. In 2015, she was awarded the Air Force Office of Scientific Research Young Investigator Program award for the research efforts in biophysics.

Dr. Nash is committed to recruiting minorities, women and first-generation college students into physics careers through providing them with research experiences in the laboratory. In addition to advising doctoral students, she has mentored students from high school through undergraduate levels. Since joining the faculty at UTSA she has served as advisor to the Society of Physics Student chapter; working to help students gain research experiences and helping them apply to REU programs. She also is an advocate for involving students in research at an early stage and often. Over the last 6 years she has consistently served as a research mentor to local high school students through programs such as the San Antonio Pre-Freshman Engineering Program (SA-PREP), American Chemical Society Project SEED, and community college students from the Alamo Colleges. For these efforts she has been recognized by her university and local community colleges. Dr. Nash has co-organized meetings which engage students; including the annual San Antonio Nanotechnology Forum (SANTF) conference at UTSA and the 2016 APS Conference for Undergraduate Women in Physics hosted at UTSA/Southwest Research Institute.

Dr. Nash received her Ph.D. in Physics from the University of Texas at San Antonio. She holds a B.Sc. in Physics from Dillard University and a M.Sc. in Applied Physics from University of Michigan, Ann Arbor.

AUGUST 2016 APS WOMAN OF THE MONTH:

Corinne Manogue

Oregon State University

Corinne Manogue obtained her Ph.D. in physics from the University of Texas at Austin in 1984. She studied black holes with Denis Sciama and field theory in curved spacetime with Bryce DeWitt, and joined the physics faculty at Oregon State University (OSU) in 1988 after postdoctoral positions at the Institute for Advanced Study at Princeton, the University of Durham in England, and as an Indo-American Fellow of the Comparative and International Education Society. Professor Manogue played a key role in the early work relating division algebras and supersymmetry. In her infinite free time, she continues explore how to use the octonions to describe the symmetries of high-energy particle physics.

Since its inception in 1996, Professor Manogue has been the driving force behind the Paradigms in Physics project at OSU, a complete redesign of the physics major. This redesign involved both a rearrangement of the content to better reflect the way professional physicists think about the field and also the use of a number of interactive pedagogies that place responsibility for learning more firmly in the hands of students.

Her curriculum development/research interests are in helping students make the difficult transition from lower-division to upper-division physics. Professor Manogue is the recipient of a number of teaching awards, among them the 2008 David Halliday and Robert Resnick Award for Excellence in Undergraduate Teaching from the American Association of Physics Teachers. She was voted a Fellow of the American Physical Society in 2005 and named a Fellow of the American Association of Physics Teachers in 2014. After more than three decades in her career, she continues to be amazed to find herself a physicist. ■



Kelly Nash



Corinne Manogue

Nominate the Next Woman Physicist of the Month!

Each month the APS Committee on the Status of Women in Physics (CSWP) chooses an exceptional female physicist to feature as the Woman Physicist of the Month on www.WomenInPhysics.org as well as other APS communications.

Nominations are accepted on a rolling basis for female physicists, including students, teachers, and any woman doing physics-related work, who have positively impacted the lives and careers of others.

Please email women@aps.org with the name, institution, email of both the nominee and the nominator, a statement of nomination, and the nominee's CV. For more information, visit www.WomenInPhysics.org.

The Passing of Two Prominent Women Physicists

Arlene Modeste Knowles

The physics community has lost two prominent women physicists in the last two months. Dr. Katharine Gebbie died on August 17 at the age of 84 after a long, exceptional career as a physicist and leader, and Dr. Deborah Jin passed away on September 15th at the age of 47 at the height of a shortened, but intensely successful research career.

Katharine Gebbie served on numerous APS task forces and committees including the APS Committee on Minorities in physics (2002-2004), and she was a close friend to the APS Committee on the Status of Women in Physics. Gebbie was deeply concerned about the inclusion of women and underrepresented minorities in physics and worked to help change the climate of physics for all. At the time of her death, she had been working with the University of Maryland on the first ever Conference for Undergraduate Under-

represented Minorities in Physics (CU2MIP), jointly hosted by the University of Maryland and NIST and to be held October 7-9, 2016.

Deborah Jin received the 2002 APS Maria Goeppert Mayer award, which is an award to recognize and enhance the outstanding achievement by a woman physicist in the early years of her career. In 2005, Deborah Jin was the first and only woman to win the APS I. I. Rabi Prize, which recognizes and encourages outstanding research in atomic, molecular and optical physics by investigators who have held a PhD for 10 years or less. Most recently, Jin was elected as chair-elect of the APS Nominating Committee in 2015, however she resigned, likely due to illness.

Both women were notable physicists and their loss will be felt within the APS community and the physics world.

Obituary: Katharine Blodgett Gebbie (1932-2016)

By Rachel Gaal, APS Staff Writer

Leader of NIST laboratories saw her researchers collect four Nobel prizes in less than two decades

Katharine Blodgett Gebbie passed away on Wednesday, August 17, at the age of 84. For over 20 years, she directed the National Institute of Standards and Technology's (NIST) Physical Laboratory (PL) and its successor, the Physical Measurement Laboratory (PML). From 1997 to 2012, her laboratory earned four Nobel Prizes in physics — an extraordinary accomplishment over the span of just 15 years.

"The wall of her office was filled with the posters that recognized the awards her people had received, and she gloried in their accomplishments," William Phillips, a Fellow of NIST's Joint Quantum Institute, wrote in an email. "Each of those Nobel Laureates credited Katharine with building the institutional environment in which the work of their groups could flourish."

Known for her exceptional kindness and wisdom, Gebbie's colleagues renamed NIST's precision measurement laboratory in Boulder, Colorado in her honor. "This renaming is our small way of saying thank you... for all [Katharine] has done for this organization over such a long period of time," said NIST Director Willie E. May in a tribute article covering the event in 2015.

An astrophysicist by training, Gebbie received her B.A. in Physics from Bryn Mawr College, subsequently earning a B.S. in Astronomy and Ph.D. in Physics from University College London.

She initially joined NIST in 1968 as a physicist in the Quantum Physics Division (QPD) of JILA, a coop-

erative enterprise between NIST and the University of Colorado in Boulder. Much of her research focused on the physics of planetary and stellar atmospheres. Moving up the ranks, she worked alongside NIST Director Ernest Ambler, as a program analyst, and was the first person from the JILA lab to work in the National Measurements Laboratory in 1983. She was then appointed chief of the QPD at JILA in 1985, also becoming acting Director of the new Center for Atomic, Molecular, and Optical Physics in Gaithersburg, MD, in 1989. She eventually accepted the director position at NIST PL in 1990; in 2011 when PML was founded, she took on the role of director of the laboratory's research.

Reporting to six different NIST directors during her 45 years at the institute, Gebbie pioneered the expansion and success of her laboratories, devoting her career to the advancement of her colleagues, researchers, and support staff.

This leadership earned her numerous awards. She received the highest honor of the United States Department of Commerce (DoC), earning the DoC Gold Medal for her leadership and professional excellence at NIST. She also received additional awards, including the Service to America Career Achievement Award, and Women in Science and Engineering Lifetime Achievement Award.

Gebbie played a crucial role in the creation of undergraduate opportunities, such as NIST's Summer Undergraduate Research Fellowship (SURF) program and was an advocate for women and minorities in science.

"The creative environment and spirit of discovery that she nurtured continues to enrich us today," wrote Phillips. "Her passing has left me, and many more, heartbroken and unable to imagine NIST and our own lives without her."



Katharine Blodgett Gebbie

Obituary: Deborah Jin (1968-2016)

By David Voss, APS Staff Writer

Atomic physicist loses battle with cancer at age 47

Deborah S. Jin, adjunct professor of physics at the University of Colorado Boulder, and a Fellow at JILA (a joint institute of the National Institute of Standards and Technology and the University of Colorado), died on September 15, 2016.

Considered by her colleagues to be a pioneer in ultracold atom and molecule research, Jin had received numerous awards, including a MacArthur Fellowship, the APS Maria Goeppert-Mayer Award, the APS I. I. Rabi Prize, and the Isaac Newton Medal of the Institute of Physics. She was a Fellow of the APS and a member of U.S. National Academy of Sciences.

"To those of us who have had the privilege to know Debbie Jin as an amazing and accomplished scientific colleague and friend, this news is absolutely

devastating," said APS CEO Kate Kirby. "Her passing leaves a gaping hole in our physics community and in our hearts."

Jin received her A.B. from Princeton in 1990 and her Ph.D. in physics from the University of Chicago in 1995. She was involved in the early work at JILA in ultracold atom research and Bose-Einstein condensates with Eric Cornell and Carl Wieman. She turned to the study of ultracold fermionic gases and in 2003 her group made the first fermionic condensate.

"Debbie, quite simply, changed cold atom physics in wonderful and lasting ways whose importance cannot be overstated," her NIST colleague and Nobel laureate William Phillips wrote in an email. "Her pioneering of degenerate Fermi gases, paired Fermi condensates, the observation of the BCS-BEC crossover, and so much more, enriched the field and all of us." ■



Deborah Jin

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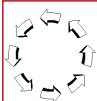
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