HONORS

2020 LeRoy Apker Award Winners Reflect on Undergrad Research and Pandemic Presentations

BY LEAH POFFENBERGER

EliseAnne C. Koskelo and Nicholas Poniatowski

Koskelo graduated from Pomona College with a BA in Physics and Math in May 2020 and is now pursuing a master’s degree at the University of Cambridge as a Churchill Scholarship recipient. Her senior thesis research, exploring stochastic techniques to enhance the resolution of thermoreflectance imaging, formed the basis of her Apker-winning presentation.

In May, instead of having a graduation ceremony, Koskelo was hard at work preparing the finishing touches on her thesis and a journal paper manuscript, which made their way into both her Apker application and formed the basis of her Apker-winning presentation.

In March, the same exciting, high quality physics career paths, collected and provided training on the next generation of physicists, we have found that mentoring works best on a smaller and more local scale. This idea led to the creation of the Career Mentoring (CM) Fellows program.

In Fall of 2019, applications were accepted, and an inaugural cohort of 24 CM Fellows was selected based on their mentoring experience, volunteer roles, interest in physics careers, and diversity, equity, and inclusion (DEI) statements.

The first major responsibility was to provide feedback on undergraduate student presentations at the APS March and April Meetings. To prepare the cohort for this important task, all mentors attended an implicit bias training session, which also covered best practices for giving constructive feedback. Due to the 2020 March Meeting cancellation, they were not able to attend the talks as planned. However, as APS staff worked hard to conduct the April Meeting online, two CM Fellows volunteered to provide feedback on the virtual talks and three more served on career panels during the Meeting.

Another major component of the program is that Fellows give a career talk at a physics department of their choice. APS Careers created and provided training on a slide deck containing data on physics career paths, collected and analyzed by the American Institute of Physics and NSF, as well as career guidance resources developed by APS.

Despite the pandemic, the Fellows gave 14 virtual talks to a total of more than 200 students. Survey results indicate that both undergraduate and graduate students gained a broader understanding of career paths available to them, and a majority agreed that they felt better about choosing physics as their field of study and saw the impact physics training have on the world.

Career Mentoring Fellows Program, I was excited to participate. As an undergraduate, I remember avidly seeking out every opportunity to learn about career paths, especially...
Uwe Täuber Selected as Lead Editor for Physical Review E

A PS has selected Uwe Täuber, Professor of Physics and a Director of the Center for Soft Matter and Biological Physics at Virginia Polytechnic and State University (Virginia Tech), as the new Lead Editor of Physical Review E. He started his tenure at the journal on January 1, taking over from the previous editor, Eli Ben-Naim (Los Alamos National Laboratory), who served in the position from 2012 to 2020.

I am looking forward to working with Uwe in his new role. His broad background and experience will be invaluable in guiding the journal in the future,” said APS Editor in Chief Michael Thoennessen.

“Uwe replaces Eli Ben-Naim who has served expertly in this role for more than eight years and I would like to thank him for his great commitment and dedication to the journal.”

Täuber, an APS Fellow, received his doctoral degree from the Technical University of Munich in 1992 with a dissertation entitled “Coexistence anomalies in the dynamics of isotropic systems.” After postdoctoral research at Harvard University and Oxford University, he joined the faculty of the physics department at Virginia Tech in 1998. Täuber was appointed Director of the Center for Soft Matter and Biological Physics in 2016. “I am honored and thrilled to assume the position of Lead Editor for Physical Review E during a time when scientific publishing is experiencing tremendous and challenging changes, with more unexpected developments likely in the wake of the COVID-19 pandemic,” said Täuber.

“Physical Review E is a truly interdisciplinary journal whose profile extends well beyond the traditional physics realm to a broad research community in science and engineering. I look forward to collaborating with the journal’s exceptional, dedicated staff and editorial board, as well as with the American Physical Society’s leadership to maintain the journal’s eminent quality and reputation.”

In 2020, Roger Penrose shared the Nobel Prize in Physics for “the discovery that Black hole formation is a robust prediction of the general theory of relativity.” That work is directly linked to the study of quasars—the brightest known objects in the universe—in the 1960s. It was a flash of inspiration by an astronomer named Maarten Schmidt that yielded an explanation for the incredibly powerful sources of radiation astronomers had been seeing in the galaxy: matter falling into massive black holes. Schmidt was born in 1929 in Groningen, Netherlands.

His father was a government official who would up being in charge of the national accountants at the Hague. When the Nazis occupied Holland during World War II, his father’s profession helped spare the family the worst of treatment suffered by many of their compatriots, although both Schmidt’s grandfather and brother were among those forced to dig ditches for the German occupation. A failed Allied advance in late summer 1944 resulted in the Nazis dismantling the country’s railroads, sending the iron to Germany. With the transport system destroyed, famine set in, claiming tens of thousands of lives.

Nonetheless, young Maarten fell in love with astronomy during that time. The enforced blackouts made it possible to see the night sky even in a big city, and Schmidt’s father would often take him on nighttime walks so long as there were no air raid alarms. In 1943, Schmidt was even able to visit his uncle, Dik Schmidt, in the city of Bussum, who was an amateur astronomer.

“I showed him the sky through his telescope on an upper floor of his pharmacy,” Schmidt later recalled. “I found a lens at my paternal grandfather’s workshop and soon put my first little telescope together.” Eventually, despite all the shortages of food and materials, he was able to polish mirrors for use in an improved telescope.

Schmidt was also able to visit the local observatory, where he met an astronomer named Adriaan Blaauw, who later became a choreographer in Amsterdam.

Canadian troops finally liberated the city of Groningen in April 1945. Schmidt recalled being caught between Canadian and German troops on the second day of battle, “in the firing line of the Germans. We spent much of the night on the kitchen floor in the back of the house—looking through the window we could see the sky, blood red at the center of a red moon.”

With the war finally over Schmidt was able to finish high school, and enrolled at Groningen University in 1946 to study physics, math, and astronomy.

After graduating, Schmidt served as an assistant to Jan Oort at Leiden Observatories. During his tenure there was briefly interrupted when he was called into military service. Fortunately, the conflict in the Dutch East Indies that had precipitated that call ended quickly, and he was offered a Carnegie Fellowship at Mount Wilson Observatory in Pasadena, California. He would eventually emigrate to America in 1959 to become a professor at the California Institute of Technology, and he was soon making observations with the Palomar 200-inch telescope, studying star formation, and how the abundance of heavy elements increased with cosmic time. His interest gradually shifted to radio sources in the centaurus galaxy.

It was the advent of radio astronomy that led to the detection of the first quasars, objects that release enormous amounts of radiation across many frequencies but without any obvious optical emission.
Jack Steinberger, a creative experimental physicist who tackled questions from super intense particle collisions to the strange to CF-going νμ → νe events — died December 12, at the age of 99.

He was best known, though, for research on neutrinos. In 1962, using a novel design called a beam of pure neutrinos, Steinberger and his colleagues observed that neutrinos came in not one, but two kinds, a finding that had monumental implications for particle physics and the subsequent development of the Standard Model. For the discovery, Steinberger shared the 1980 Nobel Prize in Physics with two colleagues, Melvin Schwartz and Leon Lederman. Steinberger was also a recipient of the National Medal of Science in 1997.

“He was a superb engineer as well as a superb physicist,” said Norman Gelfand, a student of Steinberger. “He loved music. He would spend time [with] and give credit [to] anybody. He was not an elitist by any stretch of the imagination. He was passionate about his opposition to nuclear weapons.’’

He was a CERN physicist who worked on developing a powerful way of producing the elusive particles. They fired 15,000 protons at a beryllium target, creating pions, which decayed into muons and neutrinos before slowing down at 44 feet of steel from the decommissioned battleship USS Missouri. Only the neutrinos made it through the steel, into a spark chamber. In a landmark paper in Physical Review Letters, Steinberger and his co-authors concluded that “The neutrinos we have used produce μ mesons but do not produce electrons, and hence are very likely different from the neutrinos involved in p–d decays.”

It was also a tumultuous time in his personal life—Steinberger and his first wife separated, and he married Cynthia Aileh, then a Columbia graduate student. They remained together for over a half century.

By the early 1960s, theory pointed toward the possibility that the recently observed neutrinos might come in multiple kinds. Steinberger, working with colleagues, developed a powerful way of producing the elusive particles. They fired 15,000 protons at a beryllium target, creating pions, which decayed into muons and neutrinos before slowing down at 44 feet of steel from the decommissioned battleship USS Missouri. Only the neutrinos made it through the steel, into a spark chamber. In a landmark paper in Physical Review Letters, Steinberger and his co-authors concluded that “The neutrinos we have used produce μ mesons but do not produce electrons, and hence are very likely different from the neutrinos involved in p–d decays.”

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By a 1964, a salubrious at CERN working with Carlo Rubbia on CP violation, Steinberger and Aileh—in part due to the Vietnam War—made the choice to move to Geneva, where he would spend much of his career. Steinberger’s last experiment was ALEPH, a particle detector on the LEP, which produced a number of critical results, including a fitting career capstone: the number of neutrino generations (2.990 ± 0.05) in 1995.

“He was somebody you could talk to,” said Monica Pepe-Altafini, a CERN physicist who worked on ALEPH. “But Jack could also be intimidating because he had these very piercing blue eyes and that was a very logical way of thinking.”

Outside of physics, Steinberger was animated by social issues like climate change and nuclear nonproliferation and education. A passionate outdoorsman, he enjoyed sailing and rock climbing, in which he found parallels to physics. Steinberger remained a fixture at CERN for years after retiring, showing up at his office to read papers, and attending talks which he would appear to sleep through, until the end, when he would ask perceptive, penetrating questions.

The author is a freelance science writer based in Bellport, New York.

Membership Units

The APS Forum on International Physics

By Abigail Dove

The APS Forum on International Physics (FIP) is passionate about advancing the international diffusion of physics knowledge, and helping strengthen science across the world.

FIP is a global community with significant participation of scientists abroad. Approximately 16% of APS members are based outside of the United States (compared to 23% of APS members overall, with members hailing from Canada, India, China, Japan, the United Kingdom, Germany, France, Switzerland, and Italy, to name a few). FIP is also open to membership with a broad remit for enabling engagement from young physicists. 42% of FIP’s members are undergraduate students or early career scientists (i.e. postdocs and junior professors). As Cifarelli pointed out, FIP is “the promoter of physics for development.” “I am convinced that FIP should increase and foster its engagement toward scientifically emerging countries,” she remarked.

Incoming chair Alan Hurd (Los Alamos National Lab) emphasized that a great deal of FIP’s early development work has been with a “critical group of emerging countries—including Jordan, Iran, and Pakistan—which already have excellent institutions and research facilities. The overall goal is to be more broadly and STEM as a whole. “A major issue is the perception about the role of physics in addressing global challenges, especially concerning women. This perception is even wider as it is much more of a perception than a real issue. Of course, this issue extends beyond FIP to physics more broadly and STEM as a whole.

Additionally, FIP sponsors a number of travel programs to support and empower scientists in developing countries. For example, FIP recently more than doubled its contribution to the APS International Travel Award Program (ITAP), which supports visiting conferences in developing countries, as Cifarelli pointed out, can be a “career-changing experience.” FIP also sponsors the biennial Wheeler Award, which among other things, allows participants to attend the APS March Meeting.

Looking to the future, the FIP executive committee’s goals are two-fold: Looking outward, to expand FIP’s influence internationally; looking inward, to increase diversity within FIP’s ranks.

On the former, Hurd described the actions of establishing APS sections and chapters in scientifically emerging countries and working to convey international leaders of the physics community, especially other national physics societies and APS’ European counterpart, the European Physical Society. To this end, FIP recently established an ad hoc Outreach & Communication Committee to improve FIP’s visibility, promote its activities, and recruit members from institutions and research centers around the world. Furthermore, FIP’s biannual newsletter was revamped in 2020 to facilitate online dissemination, which had many benefits.

On the latter, both Cifarelli and Hurd underscored the need for greater diversity in FIP, particularly when it comes to gender (currently the group is composed of only 17% women). Of course, this issue extends beyond FIP to physics more broadly and STEM as a whole.

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Overall, FIP stands out as an important bridge between APS and the global physics community, and it is at a time when international collaboration is more crucial than ever. More information can be found at the FIP website (engage.aps.org/ fip/home).

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Public and build trust for science.

The opportunity for physicists to hone their skills and know-how to ensure that the information they write is accurate and accessible. The APS Wiki Scientist Courses help attendees learn how to write their articles, but it maintains technical and procedural practices to ensure that the information is accurate and accessible. The APS Wiki Scientist Courses help attendees learn how to write their articles, but it maintains technical and procedural practices to ensure that the information is accurate and accessible.

The course is for working on editing main pages; for example, you can write a short article on a topic. In addition to in-depth Wikipedia editing, the course also includes participation in the "Securing Helium for Science Act" during the 117th Congress.

Julia Dshemuchadse, an assistant professor in Materials Science and Engineering at Cornell University, and an alumna of the APS wiki, started the course. She first got involved with Wikipedia editing through an edit-a-thon at the 2019 March Meeting in Boston.

"Attending the edit-a-thon, I learned that just a few hours aren't enough to do a lot of editing—if you're practiced, you can write a short article in just a few hours, but it's not enough if you're new," says Dshemuchadse. "I didn't fully dive into Wikipedia editing until APS did the [Wiki Scientist course] in 2020... It took the course and knew this was really something I wanted to keep doing." Since participating in the Wiki Scientist Course, Dshemuchadse has continued her Wikipedia editing, both in her own and in her courses while stuck at home during the pandemic, and in the classroom. In some classes, Dshemuchadse now includes Wikipedia editing assignments for her students to improve and expand Wikipedia.

The first Wiki Scientist Course, which took place last year, trained 14 editors who created 20 articles, made 890 edits on 109 articles, and added 567 references. The articles these editors created or updated have racked up over one million page views. The current course drew in around 120 participants who could attend the course during the 2020 APS March Meeting.

"[Wiki Education] is the gold standard of how to edit, and once you know how to edit other pages," says Villatoro, whereas "the editing course is for working on editing main pages; for example, you can write a short article in just a few hours. But it's not enough if you're new," says Dshemuchadse. "I didn't fully dive into Wikipedia editing until APS did the [Wiki Scientist course] in 2020... It took the course and knew this was really something I wanted to keep doing." Since participating in the Wiki Scientist Course, Dshemuchadse has continued her Wikipedia editing, both in her own and in her courses while stuck at home during the pandemic, and in the classroom. In some classes, Dshemuchadse now includes Wikipedia editing assignments for her students to improve and expand Wikipedia.

The government affairs section covers the activities related to scientific legislation and policy. It includes discussions on the impact of legislation on scientific research and how it can be improved. The section also highlights the roles of various organizations and individuals in advocating for scientific legislation and policy.

Signal Boost is a monthly email video newsletter alerting APS members to policy issues and identifying opportunities to get involved. Past issues are available at aps.org/joinournewslist. Visit the sign-up page at aps.org/2meg/lSP.

The next APS meeting is the PhysTec Conference, held virtually from March 5-6, 2021. The conference is an opportunity for physicists to engage with their peers and share their research. APS members can register for the conference at Phystec.org/conferences/2021.

The legislation section continues on page 7 of this issue.
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communication, and quantum quantum computing, quantum and its applications encompass how information is acquired, physical sciences. As described in companies like Google and quantum and academic, and professional soci -
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those outside of academia which were not as visible to me. I had the same questions I believe all students do: ‘What do I do with my physics?’ How do
groups, scientists, and social programs. The partnership also wants to help the quantum industry partnership. "It will be free to all schools, home and have a deeper conversation about the science," she says.

"There is a workforce shortage in the United States and globally, for quantum talent," says Corey

Stambaugh of the White House Office of Science and Technology Policy (OSTP), who has been deeply involved with the initiative since its inception.

By expanding the quantum curriculum to middle and high school students in the US, the initiative’s partners aim to train a new generation to work in the growing quantum industry. These school years are pivotal to a student’s academic trajectory. “There’s a lot of data out there that suggests that as early as middle school, students are turned away from STEM,” says Stambaugh.

In addition, college students choose their major based on their secondary school experiences, says Matsler. “Somewhere along the line, a teacher sparked that interest or asked the right questions, or provided some type of support,” she says.

OSTP and the National Science Foundation announced the National Q-12 Education Partnership on August 5, 2020. At a kick-off event on October 7, various partners discussed their goals for the 10-year initiative.

Q-12 itself does not fund educational programs, acting instead as a network for the various players in quantum technology. “The whole partnership is about building a community,” says Stambaugh.

APS is contributing outreach and education efforts to Q-12, for example, by highlighting individual careers, to help people understand what a quantum career can look like, says Crystal Bailey, APS’s Head of Career Programs. In addition, APS is producing an educational kit on quantum information science (QIS) for middle and high school science curriculum. The membership of Q-12 includes not only academic organizations, but others. “This is a call to arms for professional societies to companies like Google and quantum computing startup Rigetti.”

QIS is an interdisciplinary field at the intersection of physics, computer science, math, and other physical sciences. As described in a workshop that inspired the partnership’s creation, QIS “exploits quantum mechanics to transform how information is acquired, encoded, manipulated, and accessed,” the quantum information encompasses quantum computing, quantum communication, and quantum sensing.

"There is a workforce shortage in the United States and globally, for quantum talent," says Corey

K aren Jo Matsler wants more kids to learn quantum mechanics.

A former high school physics teacher, Matsler first learned about quantum technology through a workshop in 2012 at the Perimeter Institute in Canada. “I was blown away,” she remembers when taking a tour of the labs at the world-famous Institute of Quantum Computing. Matsler became convinced that students needed a better grasp on quantum concepts earlier in their lives. Since that workshop, Matsler, who trains future secondary school physics teachers as a professor at the University of Waterloo, has become an advocate for more quantum curriculum in secondary education.

In 2016, with funding from APS, Stambaugh connected with Texas for teachers to learn and practice teaching quantum mechanics. She has also facilitated conversations between policymakers and teachers to add quantum mechanics content to Texas high school curricula.

“Kids are fascinated by quantum science. They love it, and they want to learn it,” says Matsler, who has taken on the role of a quantum teacher mentor. “They’re already getting it, if you’re allowing them to get quantum through your teaching.”

To make quantum science more accessible, Matsler has joined the National Q-12 Education Partnership, a collaboration between government, industry, academia, and professional societies. The partnership will work to improve quantum education, starting with the how far you can go using algebra and matrix multiplication,” says Franklin. The partnership has their work cut out for them. While a handful of teachers have begun to experiment with quantum curricula, Q-12 is just getting started. “It is almost completely from scratch, with teachers’ practical classroom challenges in mind. “If you try to add new content to what teachers are doing, they’re going to balk, because they’ve already got enough on their plate,” says Matsler. To make it easier for teachers to get on board, she says the key is to weave quantum concepts into the existing curriculum structure. For example, teachers can explain Heisenberg’s uncertainty principle in their existing lessons about sound. They also must keep in mind that many middle and high school teachers are generalists, says Matsler. According to a 2011 U.S. Department of Education survey, only 47% of physics classes in high school are taught by a teacher with a degree in physics.

While the effort will take years, Edwards envisions a future of broader quantum literacy. “If quantum is introduced at an early age, then we can explore other topics, beyond what is a qubit, and have a deeper conversation about the science,” she says.

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The Effective Practices for Physics Programs (EP3) Project, led by the APS and the American Association of Physics Teachers (AAPT) and funded by a $2.3 million NSF award has just begun rolling out the EP3 Guide, which aims to help physics departments respond to opportunities and challenges in the ever-changing world of good departmental practices. Starting this month, the project will begin introducing sections of its website, offering a compelling, researched resource for anyone looking to improve or enrich their department.

The EP3 Guide is a collection of knowledge and experiences from experts in physics as well as STEM and physics education, designed to help leaders of physics departments create plans and practices to apply to their own institution’s specific situations and needs. Sections of the Guide will cover topics ranging from recruitment and retention, to curricula and pedagogy, and advising and career preparation. About a quarter of the guide will be rolled out in February, along with additional resources, such as a guide to departmental review, coming later this year.

The website is designed to be user-friendly and interactive, with users able to dive into areas of interest as well as explore the full breadth of the Guide. As new content becomes available, the Guide will be updated and the team at APS will continue to work with contributors to ensure the content is current and relevant.

The team behind the EP3 Guide has carefully curated a list of contributors from the physics community, including prominent physics faculty and department heads. These contributors will help keep the Guide current and relevant, ensuring that it remains a valuable resource for physics departments across the country.

The rollout of the EP3 Guide is just the beginning of a larger project, but as the Guide continues to grow and evolve, Task Force leaders hope to see physics emerge as a leader in promoting effective practices to other STEM fields.

As the team at APS continues to work on the EP3 Guide, they are encouraged by the positive reception of the Guide and the enthusiasm of the contributors. The team is excited to see how the Guide will be used and how it will continue to evolve and improve over time.

For more information on the EP3 Project, visit aps.org/april/ep3.
counting her experience leading up to the Apker selection meeting. “Before the talk, I tried to think about the message I was supposed to be asked. It helped me think broadly about my work: Where does this apply to other fields? I wanted to make sure the audience had a broad perspective on what I was doing.”

Koskelo came upon the problem in her earlier research, necessitating clever techniques to overcome noise for signal detection, but the idea that noise could be useful in certain types of situations was intriguing to her: “I was fascinated by the fact that noise could be useful—I got hooked on the problem from that point on.”

Koskelo’s research culminated in an experimentally-validated method for predicting photon’s path in theromoelectroantenna imaging systems, and she found that noise could help researchers identify CCD images by an order of magnitude or greater, overcoming limits of digital resolution. Now, in graduate school, she’s hoping to combine her expertise with a love of quantum mechanics in research into frustrated magnetic systems.

Fascination with quantum mechanics was, in fact, a driving force behind Koskelo’s attraction to a career in physics, a pivot from an earlier desire to pursue engineering. “I was very interested in architecture, but then I became interested in engineering because of my love of math,” says Koskelo. “When in college, I took a physics class, fell in love with quantum mechanics, and pursued it as a pastime.”

For other young physicists or would-be Apker winners, Koskelo offers some advice. “Don’t take failure too personally; research is a level playing field that random phenomena to produce something controlled and useful!” says Koskelo.

Poniatowski also pursued a PhD in physics at Harvard as a National Defense Science and Engineering Graduate (NDSEG) Fellow and an Apker committee with his research conducted during his undergraduate studies at the University of Maryland. His work focused on exploring a fundamental physics problem in materials science: determining state of copper-oxygen-based superconductors.

Poniatowski describes his Apker experience as a “stepping stone” despite meetings taking place over Zoom this year, and cited the interaction with the judges as one of his favorite aspects. “I found it exciting that the audience could have a wide range of interests across the spectrum of physics, says Poniatowski. “This is a problem I’m interested in a broad audience, and doing that in a somewhat successful way, was really fun to prepare. It was really gratifying actually to give the talk and interact with some really inspiring physicists.”

Poniatowski’s Apker-winning research comes from work he did as an undergrad, exploring the use of UMD, studying copper-oxyde-based, high temperature superconductors. However, Poniatowski’s research involved the non-superconducting state of these materials, hoping to further understand their behavior. “The behavior of these materials is an interesting fundamental physics problem because it defies expectations of what a material is and how it should behave,” says Poniatowski. “It’s also a practical problem. These materials are used in cryogenic applications. The material is a stepping stone to understanding high temperature superconductor behavior and could open the door to making even higher temperature superconductors.”

Now at Harvard, Poniatowski is continuing research in condensed matter physics with a focus on developing new ways to probe for superconductors.

Poniatowski describes his attraction to going into a scientific field “inevitable,” citing his mentor, who worked for NASA, as an inspiration. “I’m spending a lot of time going to laboratories and working with people in the community, so I like that in any situation that I’m in, I wanted to be an astronaut,” says Poniatowski. “By the time I was nine or ten, I was self-aware enough to realize I wanted to be an astronaut and inexplicably concluded that the next best career to become a physicist.”

Like Koskelo, Poniatowski credits much of his success in achieving his goals in physics to mentors and advisors throughout his undergraduate career. He names Greene, as well as Sankar Das Sarma, Johnpierre Paglione, and Tom Cohen, as influences on his approach to physics. For future Apker winners, Poniatowski joins Koskelo in advising others to dive into research as soon as possible. “It’s never too early to start,” he says. “I was very apprehensive about being a junior in graduate school and how I would do in research opportunities during my freshman year. Having no prior laboratory experience, I felt I had very little to offer. But you end up learning everything that you need to know in real time, so there’s no need to get started and dive in.”

Both Apker winners will be presenting talks at the 2021 APS March Meeting. The LeoK Apker Award recognizes outstanding achievements in physics by undergraduate students and provides encouragement to students who have demonstrated great potential for future scientific accomplishment.

The 2020 Selection Committee members were也有 Roger Falke (Chair), David Hertz (DysonicLab), Paul Araki-Hamed, Sujiit Dutta, James Ecker, Sun-Phil Kim, Shelly Lester, Jeffrey Lovsw, Paul Mah, Stephanie Moyerman, Tsuk. Rahman, and John Socol.

For more about the award or to find out how to apply, visit aps.org/programs/honors/prizes/apker-fm.

DOE’s applied energy offices and funding programs are recommending particularly large budget increases for carbon management R&D, advanced reactor technologies, and the Advanced Research Projects Agency—Energy. While this funding is contingent on legislation that will allow for commercial ventures in addition to continued support for R&D at universities and DOE’s national labs. For instance, it directs DOE to pursue six major carbon capture technology demonstration projects within five years and to create a fusion technology development program that reimburses participants only after they achieve specific project milestones. Passing the Energy Act was a high priority for Sen. Lisa Murkowski (R-AK) as she served her third and final term as Chair of the Senate Committee on Energy and Natural Resources. She has cast the legislation as a long-term investment in our nation’s energy independence and National Security Act of 2007. Committee Ranking Member Joe Manchin (D-WV) worked closely with her on the effort, and with Democrats now taking over the Senate, he will take her spot as Chair.

A number of congressional Democrats framed the act as a prelude to more aggressive steps. House Science Committee Chair Eddie Bernice Johnson (D-TX) called it a “down payment,” while incoming Senate Majority Leader Chuck Schumer (D-NY) welcomed it as a climate policy win in a “difficult political environment.” He argued, though, that the legislation is inadequate against the threats of climate change and said he plans to work with the scientific community to “deliver bold climate action in the Senate.”

The author is Director of FYI.

Industry Mentoring for Physicists (IMPact) connects students and early career physicists with industrial physicists for career guidance.

Registration for March Meeting 2021 is open now; meetings will be held virtually and in person, with NSBP meetings from 5:00 pm to 6:00 pm, and NSHP meeting from 6:00 pm to 7:00 pm. Elsaesser also offered thanks to the next generation another opportunity for students or other job seekers: Career coach and author Peter Fiske will provide additional guidance on physics job searching in the session Building Your Physics Career: How To Put Your Degree To Work, from 2:30 pm to 5:00 pm.

The author is Director of FYI.
Mentoring is the process of forming, cultivating, and maintaining relationships that help students develop as people and as students. Mentors can help mentees and others in mentoring roles who have a fixed mindset about their students’ ability, in that they believed that students that were twice as large, and underrepresented students that were more likely to negatively impact students belonging to those from the underrepresented groups—receive adequate guidance, support, recognition, and assurance to participate and excel in physics. Developing the mindset of an effective mentor requires us to be reflective and introspective and is crucial to ensuring that our students develop a growth mindset, embrace their struggles in physics, use effective approaches to overcome those struggles, and excel in physics.

Chandralekha Singh is a professor in the Department of Physics and Astronomy at the University of Pittsburgh. She is a former chair of the APS Forum on Education and is currently the Past President of the American Association of Physics Teachers.

References