Spring semester has been a challenging time at both the U and the Department of Physics & Astronomy due to the ongoing COVID-19 crisis. In mid-March, university leadership made the decision to shift all instruction and exams for students online for the remainder of the semester. Through online instruction, students are able to access recorded lectures, homework assignments, and engage in discussion sessions as well as consultations with their instructors. While the U has remained open and operational during this time, all students and most faculty, staff, researchers, as well as postdoctoral associates in our department were not on campus and moved to teleworking arrangements. Online instruction for students will continue throughout the summer semester. Most of the theoretical physics and astronomy, as well as observational astronomy research work, continued during spring semester; however, some of our laboratory-based physics research did see some temporary disruption during the university's research alert protocol Phase Red. There were a few exceptions—such as the studies of some of the physical behaviors of the coronavirus. These are being pursued by the department's biophysics research groups.

I have been impressed with the willingness and ability of our students, faculty, and staff to make the smooth transitions that were required due to the sudden crisis we experienced. Not surprisingly, many of the onsite activities we normally plan for the spring were canceled or moved into the online domain. These events included our Departmental Research Symposium, the prospective graduate student visits, the Student Awards Ceremony, the College of Science Convocation, and the University Commencement ceremony. While we were sorry we couldn’t celebrate these milestones with our students in person, the department created an online awards program to congratulate the Class of 2020 and to recognize students who received awards and scholarships. You can see the celebration at www.physics.utah.edu. We are so proud of our students!

One of the biggest unknowns about COVID-19 is how changing seasons will affect its spread. Two of our physicists, Michael Vershinin and Saveez Saffarian, received the university’s first COVID-19-related grant to tackle the question. The National Science Foundation (NSF) awarded them a Rapid Response Research (RAPID) grant to study the structure of SARS-CoV-2, the coronavirus strain at the center of the pandemic. Professors Vershinin and Saffarian have created individual synthetic coronavirus particles without a genome, making the virus incapable of infection or replication. They will test how the structure of the coronavirus withstands changes in humidity and temperature, and under what conditions the virus falls apart. You can read more about their exciting research in the newsletter.

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Our faculty members have continued to win awards and recognition from the U for their outstanding accomplishments. Honored faculty include: Tino Nyawebo, associate professor (lecturer), who was given the Community Engaged Teaching and Scholarship Award for 2020; Associate Professor Andrey Rogachev, who received the John R. Park Fellowship Award; and Pearl Sandick, associate dean of Faculty Affairs in the College of Science and associate professor of Physics & Astronomy, who was named a Distinguished Grad Student and Postdoc Mentor Award recipient. We are so fortunate to have their talent and dedication to the department.

As you know, I have been serving as interim chair of the department since 2019, after the previous chair, Peter Trapa, was named the new dean of the College of Science. Following this year and a national search, Dean Trapa announced that I have been named the new chair of the Department of Physics & Astronomy, effective July 1, 2020. I am pleased to have received this honor, and I appreciate the trust you have given me in guiding the department during the past year. I look forward to continuing to advance the department’s mission in the years to come.

In looking ahead, we will continue to see the challenges by the coronavirus crisis. At this time, we don’t yet know when students, faculty, and staff will be able to return to campus and how the details of this return will look. The university has moved to research alert protocol Phase Orange, which has allowed us to reopen all of our laboratory-based research operations, albeit under application of various safety procedures. The return of all students, faculty, and staff to campus will be a gradual process—telecommuting will continue for most employees, but undergraduate students will not return to campus for now. We are currently developing plans for a possible return of students at the beginning of the fall semester. The safety of our students, faculty, and staff are our primary concern.

In reviewing the efforts we have made and will continue to make in addressing the coronavirus crisis, I am convinced the University of Utah’s Physics & Astronomy community will successfully move past these challenges and persevere on its path towards continued excellence in teaching and research. In fact, I believe the department will emerge stronger and better prepared for the future!

As always, the accomplishments of the department would not be possible without the generous support of our donors and friends. Your support drives the department forward, allowing our faculty and students to make research discoveries and have exceptional educational opportunities and experiences. From all of us in the Department of Physics & Astronomy, thank you for all you do.

Sincerely,

Christoph Boehme
Professor and Interim Chair
Department of Physics & Astronomy

Continued from page 1

Continued on page 4
Our work involves Virus-Like Particles (VLPs). The grant is for one year, and it is a rapid response research grant. Since this interview, our professors have received the NSF funding for nearly $200,000. Funding for this research was provided by NSF under award number PHY-2026657.

**How did you decide to do this and how did you pull the information to apply for the NSF grant together so quickly?**

**Vershinin:** Like many folks around us, we were focused on the devastation brought on by the pandemic. We are scientists trained to identify trends in the data, and it was evident that this particular trend was very worrisome and scary. We discussed some of the questions that concerned us most and realized we could actually address at least one question with the equipment and knowledge we have. Pulling the information together is something we are trained to do, and the work was sped up by the urgency of the situation. We abandoned a lot of other things for a brief period and just put our focus on this problem.

**Did you do work on SARS-CoV-2 previously?**

**Vershinin:** No, neither of us had worked specifically on coronaviruses before; however, we have extensive experience working with enveloped RNA viruses.

**Did you have a sense in January how important this research would be?**

**Vershinin:** Yes, we were informed about this early on—it just so happens that we were presenting our HIV work at a conference in Barcelona entitled “New Concepts in Virology” at the end of January. There was a lot of speculation about SARS-CoV2 in that meeting; however, it took some time to conceptualize the research, which happened in early March, and the grant was written and then funded soon after.

**Are you working with other teams around the world?**

**Vershinin:** The NSF funding is managed by two PIs (principal investigators) and the work has a specific scope. However, we are looking at various collaborations very seriously. We potentially have a lot to contribute to the worldwide efforts.

**Do you have actual samples of COVID-19 by now? Or do you extrapolate from understanding its genome structure?**

**Vershinin:** Our work involves Virus-Like Particles (VLPs). These particles look like an actual virus in many ways because they have the same “packaging” as the real virus. But without the actual genome, these particles are non-infectious, and this is a great advantage for rapid research progress. It means that many measurements can be done on these VLPs, which could not be done with nearly the same throughput on the actual virus. We are not extrapolating from the genome structure. The availability of the genome for this virus has greatly advanced the field and enabled our work for sure, but we are doing or planning to do experiments on the actual VLPs.

**How do you feel personally about the opportunity to contribute to this worldwide effort?**

**Vershinin:** We would rather not have this virus around and not have this “opportunity.” But inasmuch as the virus is a reality, it does help us both sleep better at night knowing that we are doing something that can help the worldwide effort.

**Can you explain the connection with physics and biology—how does physics contribute?**

**Vershinin:** Physics is the science of understanding causal relationships quantitatively. So virtually all high-resolution measurements and all statistical data analyses done in modern biology are equally well described as physics or the language of physics—math. For viruses, which are made of a small number of molecules and where quantitative nanoscale understanding is critical to any progress, the line between biology and physics blurs so much that it is hard to tell where physics ends and biology begins.

**What is the timeframe for the research? When do you think you’ll have results?**

**Vershinin:** The grant is for one year, and it is a RAPID type of an award. NSF guidelines put it best: “RAPID funding mechanism is used for proposals having a severe urgency with regard to availability of, or access to, data, facilities, or specialized equipment, including quick-response research on natural and anthropogenic disasters and similar unanticipated events.” Although predicting the availability of results of scientific research is always difficult, we do most certainly feel the urgency associated with this particular global disaster.
One of Brad Jensen’s favorite memories at the U occurred in a physics class while he was giving a presentation on Ptolemy. “I was criticizing Ptolemy’s theory on the motion of the planets when suddenly the whole earth began to shake beneath my feet because we were having an earthquake,” said Jensen. “Without skipping a beat, my professor said, ‘I think you just made Ptolemy angry!’”

Jensen majored in physics and received a bachelor’s degree in 1975. He credits the training he received in physics for teaching him critical thinking and analytical skills that have served him throughout his life. He enjoyed a long and successful career in the airline industry where he specialized in strategic planning and technology and held executive positions at US Airways, Sabre Holdings, American Airlines, and Southern Airways. Today Jensen is a partner at Fortium Partners, a provider of technology leadership services.

Early Interest in Science
Jensen’s interest in science began as a child. He grew up with a basement “laboratory,” including a chemistry lab, an electronics lab, a biology section, a microscope, a telescope, a geology lab with a rock collection, and some fossils collected from Red Butte Canyon. Many summers he took youth classes in science at the U and built an amateur radio transmitter, using mostly parts removed from old televisions. “One time I nearly burned down the house when a pan of rocket fuel I was cooking exploded and fiery goo stuck to the wall,” he said. “Luckily, my father had the foresight to outfit my chemistry lab with a fire extinguisher!”

Physics at the U
Jensen was one of a handful of students enrolled in an honors program for physics majors. The group studied and socialized together all four years; their classes were challenging and small. Many of the faculty took an interest in the group and invited them on wilderness backpack trips, river rafting, and dinner parties at their homes. They treated the students like family.

At American Airlines and Sabre, Jensen’s teams built mathematical models to study customer behavior and model outcomes of decisions. They also built models to optimize airline schedules, crew schedules, maintenance planning, pricing, and seat availability. “Airlines build their connecting hubs with regular periodic waves of flights,” said Jensen, “so airplanes are like particles that are part of a wave, complete with interference patterns at the spoke cities. In order to sort out the best way to coordinate the waves of airplanes, we would plot everything on a giant ‘space-time’ diagram.”

“Professor Don Groom taught most of our physics honors classes,” said Jensen. “He loved teaching, and his extra lessons and tutoring went way beyond the official classroom time. He hired our gang of six one summer to construct a neutrino anisotropy detector inside an abandoned silver mine in Park City. We had a lot of fun doing that job!”

The late Professor Gale Dick helped students understand the importance of community service. Dick, a violinist, was a founder of the Chamber Music Society of Salt Lake City and a co-founder of Save Our Canyons. “Professor Dick approached physics as a philosophy and inspired us with his Socratic style of teaching,” said Jensen. “Not only did he teach physics, he teamed up with the humanities professors to create interdisciplinary study programs. What a great role model.”

Value of Physics Training
After graduating from the U, Jensen entered a post-graduate physics program at the University of Pennsylvania and worked on particle physics at the Fermi National Accelerator Laboratory. He then became interested in management science and earned a Master’s of Science degree in Operations Research from U Penn in 1977.

“My physics training served me well in business because physics really teaches you how to think critically and analytically, how to model the real world around you, and how to test your models with real data and separate the noise from the signal,” said Jensen.

At American Airlines and Sabre, Jensen’s teams built mathematical models to study customer behavior and model outcomes of decisions. They also built models to optimize airline schedules, crew schedules, maintenance planning, pricing, and seat availability. “Airlines build their connecting hubs with regular periodic waves of flights,” said Jensen, “so airplanes are like particles that are part of a wave, complete with interference patterns at the spoke cities. In order to sort out the best way to coordinate the waves of airplanes, we would plot everything on a giant ‘space-time’ diagram.”

Allegro Guitar Society
Jensen serves as the vice chair and director of finance for the Allegro Guitar Society, established in 1995 in Fort Worth and later expanded to Dallas. The Society presents five major concerts each season in both Dallas and Fort Worth, along with other musical events. The Society’s mission is to bring the world’s greatest classical guitarists to perform in North Texas and to further their community outreach program to foster appreciation of the classical guitar art form with students of all ages. Jensen has been playing classical guitar since college and still plays for his own enjoyment and among friends.

“Music is all about physics,” said Jensen. “In some sense the whole universe is just a bunch of vibrations at all scales. Music models that for us. It is no coincidence that many scientists and mathematicians are also musicians. I remember standing in front of hundreds of information technology employees one time and asking how many of them played musical instruments—about half the hands went up.”

Jensen lives in the Dallas-Fort Worth area with his wife, Vangie. “Her name is actually short for Evangelina, so we are Brad and Evangelina—the original ‘Bradgelina’ couple for the last 40 years,” joked Jensen. Their children are George, Andrew, Gregory and Alyssa, whose initials spell GAGA, as in Lady Gaga. “It seems like celebrities keep stealing our nicknames,” he said.

Advice for Students
Jensen’s advice for students is twofold: cultivate a love of learning that will last a lifetime and learn how to think critically. “Your career may be something entirely different from what you anticipated while in college,” he said. “So find out what you really love and learn all about it while the opportunity to do so is right in front of you.”
In November 2019, Lotfizadeh and Vikram Deshpande, assistant professor of physics, were featured in Physical Review Letters for studying the Wigner crystal, a crystal of electrons, in one dimension. Deshpande and Lotfizadeh measured the energy required to add an electron to the nanotube. They created a Wigner crystal by adding electrons one-by-one to a carbon nanotube suspended between two supports and cooled to 1.5 K. By measuring the energy required to add each electron, they calculated the resulting Wigner crystal’s electronic compressibility, a parameter that characterizes the ordering of electrons in the lattice. Comparing their results to predictions, the team observed the expected decrease in compressibility as electron density increased.

Lotfizadeh first became interested in physics in middle school and studied it in high school. “I was lucky to have a fantastic physics teacher in high school. She taught us that physics is really about thinking and creativity. I love the feeling of struggling with a problem and looking for ways to solve it and the feeling of achieving something—it’s like being in a maze and finding your way out,” she said.

Academics in Iran

Acceptance to a university in Iran is extremely competitive. Students take a rigorous national entrance exam to qualify each time before applying to an undergraduate, master’s, or Ph.D. program. Students are required to choose a major after receiving their scores on the national exam and aren’t allowed to change their major unless they take the exam again. Lotfizadeh did well on her exams, and her father and brother wanted her to study computer science, sometimes considered a more solid career than physics in Iran. Lotfizadeh, however, wanted to study physics, a decision her mother supported. She took astronomy, particle physics, and solid-state courses. Lotfizadeh fell in love with solid state and joined a computational solid-state group while studying for her master’s degree. After acceptance to a Ph.D. program, she joined another Density Functional Theory research group but had difficulty accessing the density functional theory codes because of the sanctions imposed on Iran. Her advisor, who was a fellow postdoctoral researcher from the University of California, Santa Barbara, encouraged her to apply to a doctoral program in the U.S. With the encouragement of her family, Lotfizadeh decided to come to the University of Utah.

During her graduate studies, she was involved in both WomPa (Women in Physics and Astronomy) and the Physics & Astronomy Department’s Graduate Student Advisory Committee (GSAC), serving as a WomPa coordinator for two years and as an officer of GSAC for a similar period of time. Both groups provided Lotfizadeh with valuable support during graduate school.

When she isn’t working with carbon nanotubes, Lotfizadeh paints and jogs. “Both activities help my research,” she said. “When I’m stuck on a problem and can’t come up with an answer, I jog or start painting or drawing. Later, I go back to the problem with a fresh mind.”

She defended her thesis this semester and is looking for a postdoc position. She hopes to continue doing research and hasn’t decided if she will stay in academia or move into industry.
Graduate student Ipsita Saha likes physics because it explains the small details of daily life—the science behind how a car works or the mechanics of opening a window. She also likes that physics allows scientists to visualize mathematical equations.

Saha received a bachelor’s degree from St. Xavier’s College, Kolkata, India, and obtained a master’s degree from the Indian Institute of Technology in Bombay. During her studies, she harbored a secret desire to become an astronomer but eventually realized she was more interested in the ability of physics to answer intricate biological questions. When she came to the U for graduate studies, she joined a biophysics lab.

HIV Research

Today she studies the Human Immunodeficiency Virus (HIV). “Viruses are entities that are unable to replicate on their own,” said Saha, “so they hijack the cellular machinery to replicate, turning the cell against itself.” Budding is the process when the virus assembles on the cell membrane (with its necessary proteins and genome that have been synthesized within the host cell) and is then released. The released virus is immature and isn’t yet ready to infect other cells. The virus has to undergo maturation to become fully ready to infect other cells.

Saha’s work is trying to find the mechanism that leads to the maturation of HIV. Gag, the major structural protein, forms the spherical lattice of the HIV. When Gag is synthesized within the host cell, a ribosomal slippage or biological phenomenon occurs that results in the production of multiple, unique proteins from a single mRNA, called GagPol. In HIV there are about 2,000 Gag and 120 GagPol. One of the enzymes embedded in GagPol is protease, which plays the key role in the maturation process. Protease is embedded as half the molecule in a GagPol and has to become dimerized (the process when two molecules of the same compound react with each other) to become active and trigger the maturation process. This maturation encloses the viral genome within the capsid. Saha, along with her supervisor, have hypothesized that the HIV lattice is not a stuck structure—but instead it probably diffuses on the viral membrane so the enzymes can actually find each other to become dimerized.

All of this is difficult to show because the virus is 140-180 nm in diameter, so Saha has used super-resolution microscopy to reconstruct the lattice of the HIV in high resolution. While still a work in progress, Saha is confident her research will provide meaningful insights into the behavior of HIV to help find inhibitors to block maturation of the virus.

Saha’s research is under the supervision of Dr. Saveez Saffarian, associate professor of Physics & Astronomy and adjunct assistant professor, School of Biological Sciences. “Saveez is very supportive and has provided me with a lot of opportunities to explore a variety of things in my research, even when it didn’t align exactly with his interests,” said Saha. “He also has taught me to ignore useless things that divert my attention from my work. I hope to continue with his support as I move forward in my career.”

Movement of Molecules in Real Time

Last December Saha and Saffarian’s research was featured in a study published in the journal PLOS ONE. The study focused on a way to visualize how different molecules interact and behave within human cells in real time.

The new method uses interferometry to capture extremely high-resolution visualizations of millions of molecules moving across viscous gels or a plasma membrane. Saha, the lead author of the study, developed a correlation analysis that theoretically explained how the interferometry microscope could distinguish between two types of movement—flow and diffusion—and she and Saffarian verified it experimentally. The method brings scientists one step closer to visualizing how molecules interact in an actual living cell. The development of this technique led the University of Utah to file a provisional patent, and they are moving forward to file a full international patent.

Saha loves to read and watch movies, web series, talk shows, and interviews. “I also read Bengali and English novels,” she said. The films she sees are mostly in Bengali, Hindi, and English. She also enjoys traveling. She has learned the importance of avoiding negative people and situations. “I try hard not to behave badly even if others do. That attitude really keeps me calm so I can feel good at the end of the day,” she said.

She expects to complete her Ph.D. in 2021 and plans to do postdoctoral research.
Christoph Boehme Named Chair of Physics & Astronomy Department

Dean Peter Trapa announced that Professor Christoph Boehme has accepted an offer to serve as chair of the Department of Physics & Astronomy, effective July 1, 2020.

“Professor Boehme is deeply knowledgeable and committed to the research and educational missions of the department and has served with distinction as Interim Chair this year,” Trapa said. “Christoph has my full and unwavering confidence and support, as well as that of SVPAA Dan Reed, in leading the department forward.”

Previously, Boehme served as associate chair of the department from 2010-2015. His research is focused on the exploration of spin-dependent electronic processes in condensed matter. The goal of his work is to develop sensitive coherent spin-motion detection schemes for small spin ensembles that are needed for quantum computing and general materials research.

A child of the 1970s, Christoph was born and raised in Oppenau, a small town in southwest Germany, 30 miles east of the French city of Strasbourg. After obtaining an undergraduate degree in electrical engineering, and committing to 15 months of civil service caring for disabled people (chosen in lieu of the military draft), he moved to Heidelberg, Germany, in 1994 to study physics at the University of Heidelberg.

In 1997, Boehme won a Fulbright Student Scholarship, which brought him to the United States for the first time, where he studied at North Carolina State University and met his wife, Kristie. In 2000, they moved to Berlin, Germany, where they lived for five years while Boehme worked for the Hahn-Meitner Institut, a national laboratory. He finished his dissertation work as a graduate student of the University of Marburg in 2002 and spent an additional three years working as a postdoctoral researcher.

Boehme moved to Utah in 2006 to join the Department of Physics & Astronomy as an assistant professor. He was promoted to associate professor, awarded tenure in 2010, and promoted to professor in 2013. Boehme received the U’s Distinguished Scholarly and Creative Research Award in 2018 for his contributions and scientific breakthroughs in electron spin physics and for his leadership in the field of spintronics.

Daniel Wik and the 20th Anniversary of the XMM-Newton Mission

Daniel Wik, assistant professor of Physics & Astronomy, is featured in the 20th anniversary video about the XMM-Newton mission, which is helping to solve cosmic mysteries, from black holes to the origins of the Universe. Watch Dr. Wik at: https://www.youtube.com/watch?v=aqxumKohck.

The video explores the scientific impact of ESA’s (the European Space Agency) XMM-Newton observatory for its 20th anniversary in space, as told by Ph.D. scientists whose work the mission enabled. XMM-Newton carries three X-ray telescopes with an unprecedentedly large collecting area, and an optical monitor—the first flown on an X-ray observatory. XMM-Newton’s telescopes and its ability to make long uninterrupted exposures provide highly sensitive observations of many targets, including active galaxies powered by supermassive black holes, star formation in galaxies, and X-ray flares from stars in our own Milky Way galaxy.
The University Teaching Committee has selected Tino Nyawelo, associate professor (lecturer) in Physics & Astronomy, to receive the Community Engaged Teaching and Scholarship Award (CES) for 2020. Last year, Nyawelo received the College of Science Award for Fostering Undergraduate Research Excellence.

“I want to give my sincere thanks for the award,” said Nyawelo. “Receiving this is a great honor, and I appreciate everything the U has done to help me in my professional growth. I’m also fortunate because the U supports a work environment that allows me to be creative and productive.”

The CES Award recognizes and rewards a University of Utah faculty member of any rank for high-quality work that integrates teaching, research, and community engagement. Faculty teaching and research are carried out through long-term, collaborative community-engaged partnerships that address a community-identified need or priority.

Originally, from South Sudan, Nyawelo obtained a Ph.D. in theoretical particle physics and did postdoctoral work in Europe. He had been traveling back and forth to Utah to visit his wife (whose family had resettled in the state after fleeing the violence in South Sudan) when the U hired him to join the faculty in the Physics Department.

More than a decade ago, Nyawelo and others in the South Sudanese community became aware of refugee kids dropping out of school. With others, Nyawelo started an after-school program to help refugee kids with homework, expose them to math and science, and help them attend college. Today, in addition to his teaching duties, Nyawelo is the director of the Refugees Exploring the Foundations of Undergraduate Education in Science (REFUGE) program and director of diversity and recruitment at the Center for Science and Mathematics Education.

Andrey Rogachev, associate professor of physics and astronomy, has received the University of Utah’s John R. Park Fellowship, awarded by the University Teaching Committee. Rogachev will use the fellowship to work on his project, “Quantum Computing for Science and Engineering Students.”

“I’m honored to receive this award, and I appreciate the support of the U in allowing me to pursue my interest in quantum computing,” said Rogachev. “My project is an introductory, interdisciplinary course that will attract students from physics, math, engineering, and computer science.”

The Park Fellowship supports faculty who choose to study for a semester outside Utah to enrich and enlarge their teaching role.

Quantum computing (QC) is a booming field of research and an emerging new technology, which promises to revolutionize computing. A quantum processor can solve some math tasks in a fraction of the time it would take a state-of-the-art classical supercomputer.

Rogachev leads a research group in the Physics & Astronomy Department that studies quantum transport in nano-meter scale structures made of superconducting, normal, and magnetic materials. The group uses tools such as e-beam and optical lithography to fabricate devices with characteristic sizes as small as 10 nm. These devices are processed using the facilities in the lab and at the University of Utah Nanofab. Physical properties of the devices are studied using low-temperature transport measurements, high frequency, and optical techniques. Rogachev’s research group also studies energy-relevant materials and devices, such as solar cells, light-emitting diodes, and transistors.

He joined the department in 2006. Before that, he was a postdoctoral fellow at the University of Illinois in Urbana-Champaign. Rogachev obtained his Ph.D. in 2000 from Nagoya University in Japan and his undergraduate degree from Novosibirsk State University, Russia.
University Honors Professor Pearl Sandick with Distinguished Mentor Award

Mentoring by faculty advisors is critical to the professional success of the department’s students and postdoctoral scholars. Every year, the University of Utah honors truly outstanding faculty mentors with the Graduate Student and Postdoctoral Scholar Distinguished Mentor Award. This year, the university has recognized Dr. Pearl Sandick, associate dean of Faculty Affairs in the College of Science and associate professor of Physics & Astronomy, for her excellence as a mentor, not only for her own research advisees, but for many others in our community.

Sandick is a theoretical physicist who works at the intersection of particle physics, astrophysics and cosmology. She is expert in models of dark matter, a substance known only through its gravitational influence on stars, galaxies, and the largest structures in the universe. Professor Sandick earned her Ph.D. at the University of Minnesota and held a postdoctoral appointment in Nobel Laureate Steven Weinberg’s group at the University of Texas, Austin, before joining the U in 2011.

She has been advising undergraduates, graduate students, and postdoctoral scholars since her arrival at Utah. She instills in her advisees a drive for research excellence and the ability to communicate science; both are essential qualities to launching a successful scientific career. Sandick also ensures that her advisees are supported in their professional development by preparing them for their next steps. Her former students have continued on academic trajectories or found fulfilling permanent positions in the private sector; her former postdocs are now faculty.

The university’s award recognizes that Sandick goes far beyond excellence in mentoring those in her research group. She works to build student communities and to ensure that students have access to training and resources for professional development. In her leadership roles in the department and the college, Sandick has promoted inclusive, active, and responsible mentorship of all students, postdocs, and faculty. She has inspired colleagues to view advising and mentoring excellence as a responsibility for the entire college.

Overview of Physics & Astronomy Graduates

Students who obtained a Ph.D. in 2019-20 are:

Megha Agarwhal
Philip Beltracchi
Kevin Davenport
Flo Doval
Nada Loffizadeh
Nolan Matthew
Shiyu Nie
Renuka Pechetti
Ye Tian

College of Science Distinctions

Joseph T. Crockett M.D. Memorial Scholarship
Brecken Larsen
Anna Stephens
Crocker Science House Scholars
Brian Hassard
Vivek Vankayalapati
Nash Ward

Department of Physics & Astronomy Distinctions

UNIVERSITY FACULTY AWARDS
Tino Nyawelo—Community Engaged Teaching Award
Andrey Rogachev—John R. Park Fellowship Award
Pearl Sandick—Distinguished Graduate Student and Postdoc Mentor Award

Physics & Astronomy Student Awards in 2020

UNDERGRADUATE AWARDS
Department Scholarships
Katerina Excell
Logan Gibb
Patrick Robinson
Anna Stevens
Paul Gilbert Outstanding Research in Astronomy & Astrophysics
Anna Christopherson
Outstanding Undergraduate Research
Brian Hassard
Thomas J. Parmley Scholarship for outstanding students in physics and astronomy
Vivek Vankayalapati
Walter W. Wada Endowed Scholarship for physics majors
Long Nguyen
Preston J. and Phyllis R. Taylor Undergraduate Award for Overcoming Obstacles on the Way to Strong Academic Achievements
Megan Ade
Tyler Sobelberg Memorial Award for exceptional performance in science coursework and creative ventures
Tommy Primo
Diversity Scholarship for women and underrepresented groups
Tommy Primo
Anna Stevens
Outstanding Undergraduate Teaching Assistant
Jared Coles
David and Karen Imig Undergraduate Scholarship for Women
No award given this year
Outstanding Senior
Cole Kelso-Parker
Outstanding Junior
Joshua Miraglia
Outstanding Sophomore
Tessa Elizabeth Mcnamee

GRADUATE AWARDS
University Graduate Research Fellowship
Ipsita Saha
J. Irvin and Norma K. Swigart Endowed Graduate Scholarship
Antoine Dumont
Henna Popli
Outstanding Graduate Students in coursework and research
Ben Gibson
Qingji Zeng
Outstanding Teaching Assistants
Jaspal Singh Bola
Diversity Scholarship for women and underrepresented groups
Jason May
Outstanding Postdoc Research
Jianhui Lian
Crimson Laureate Society
Join the Crimson Laureate Society at the College of Science! Society members advocate for science, gain exclusive benefits, and drive the future of research and education at the University of Utah. Your annual membership will start today with any gift of $100 or more to any department or program in the College. For more information, contact the College of Science at 801-581-6958, or visit www.science.utah.edu/giving.