



Hee-Jong Seo



Zach Meisel

## Two Physics and Astronomy Faculty EACH Receive Prestigious DOE Early Career Award

Two Ohio University Physics and Astronomy faculty members have each received a prestigious U.S. Department of Energy Early Career Research Program award, the DOE announced on June 21, 2018. DOE Early Career Awards support the development of individual research programs and stimulate research careers in the disciplines supported by the DOE Office of Science. University grants provide \$150,000 a year for five years in support of summer salary and research expenses. **Zach Meisel** and **Hee-Jong Seo**, both assistant professors at OHIO, are among 84 scientists from 47 U.S. universities and 13 national laboratories to receive significant funding for research. The awards are for untenured assistant and associate professors within 10 years after earning a Ph.D.

Meisel's research in the field of nuclear physics involves "Constraining Neutron Star Structure with Indirect Nuclear Reaction Studies."

Seo's research is in high-energy physics, particularly "Optimal and robust reconstruction

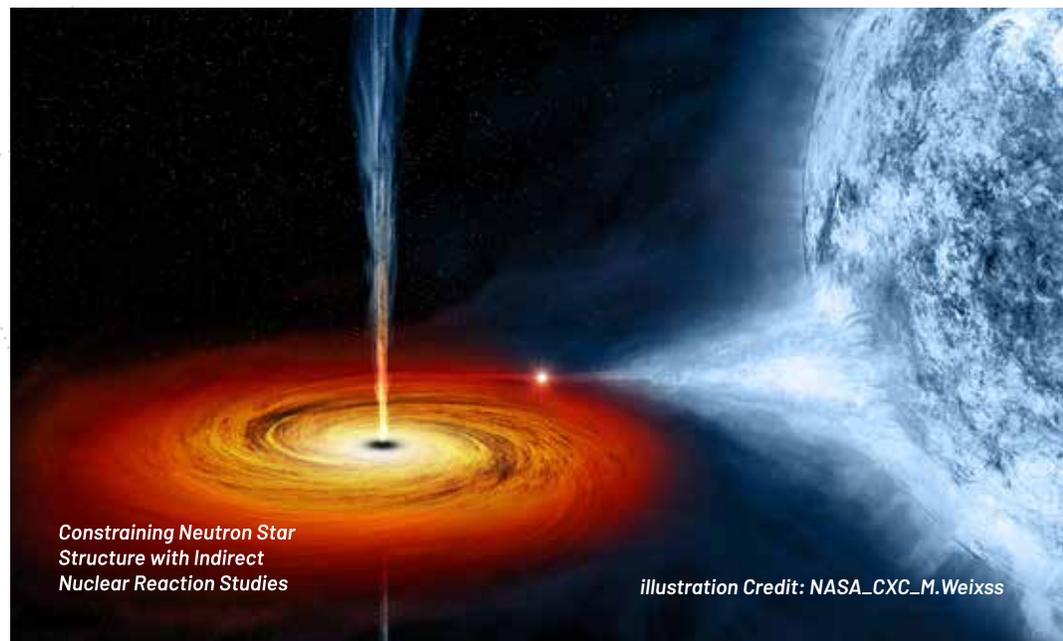
of BAO, redshift-space distortions and the Alcock-Paczynski effect."

"Early Career Awards not only help researchers establish their labs by providing summer and graduate student funding, they also increase undergraduate student research opportunities," said **Joseph Shields**, Interim Dean of the College of Arts and Sciences. "The partnership of world-class faculty working with students to address forefront science questions is central to Ohio University's mission."

### Understanding Dark Energy, General Relativity

"I am very excited about this news. Astrophysicists are working hard to explain the mysterious dark energy which has been accelerating the expansion of the universe against gravity," Seo said. "One of the key methods to investigate dark energy is to observe the distribution of galaxies across the universe over a long range of cosmic

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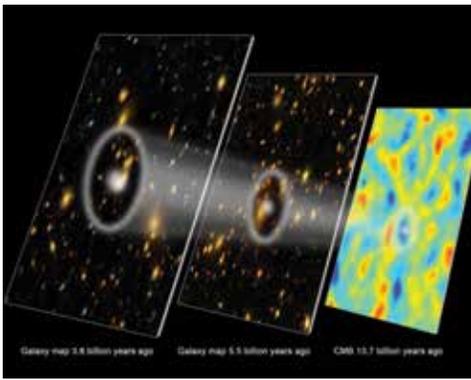


Constraining Neutron Star Structure with Indirect Nuclear Reaction Studies

Illustration Credit: NASA\_CXC\_M.Weixss



**OHIO**  
UNIVERSITY



Optimal and robust reconstruction of BAO, redshift-space distortions and the Alcock-Paczynski effect  
*Courtesy of Berkeley Lab*

look-back time and measure its effect on this distribution. With this funding, my group plans to develop a method to pull out more pristine cosmological information from galaxy distribution data. Our research will help improve the understanding of dark energy as well as improve a test of General Relativity and a constraint on the total mass of neutrinos."



*Hee-Jong Seo and Zach Meisel*

"My research funded by the DOE Early Career Award will improve our understanding of how matter behaves at the highest densities seen in nature," Meisel said. "This will be accomplished by constraining processes occurring in the outer layers of neutron stars, ultra-dense remnants of stellar explosions, by removing some of the most important nuclear physics uncertainties for models of these processes." The funds from this award will enable Meisel to fund graduate and undergraduate research assistantships, as well as to hire a postdoctoral research associate.

*Edited from an article in Ohio University's Compass*

**Greetings Alumni and Friends,**



I welcome our new editor **Marty Kordesch** who picks up the reins of the Newsletter from **Ken Hicks**. Ken has been elected as secretary-treasurer of the American Physical Society Division of Nuclear Physics. We congratulate Ken on being elected to this position, it reflects well on our national standing in APS. I also thank him for the great work he did as editor. To help smooth the transition we have Special Projects Assistant and department photographer **Jean Andrews** who helps with preparation of the newsletter and is the person who writes the stories and announcements you see on our department's social media sites and in the College of Arts and Sciences online newsletter.

Since the last newsletter was published we have had three faculty promoted to Full Professor: **Nancy Sandler, Julie Roche, and Doug Clowe**. Congratulations to them and thanks for all their hard work that went into their promotion. Congratulations also go to **Daniel Phillips** who was one of five 2017 Ohio University Presidential Research Scholars for excellence in the areas of physical sciences and engineering, and social and behavioral sciences.

The Clippinger refurbishment project continues with a groundbreaking ceremony August 30, 2018 for the additional space to be built in the Clippinger parking lot. This will enable space to be created in Clippinger as Chemistry moves some of its labs and offices out into this new space in summer of 2020. We begin the detailed planning of the refurbishment of the existing Clippinger building this year with work planned to proceed in two phases starting Fall 2020 and being complete three or four years later. This is a long term project.

With the change in leadership at the university we now have both a president and a provost with a scholarly background in Arts and Sciences and particularly in natural science. President **Duane Nellis** is a geographer with an international reputation in physical geography. He has appointed as Provost **Chaden Djalali** who is a nuclear physicist still active in the CLASS collaboration with Ken Hicks. He was also the postdoc mentor of **Mark Lucas** when he was at South Carolina. We also have a change in leadership in Arts and Sciences as **Joe Shields** has stepped in to the role of Interim Dean.

I want to thank all the alumni who keep in touch with us through their advisers or through LinkedIn. We love to hear from you and follow your careers. If possible, our current students would appreciate you coming back to Athens to meet with them. They really do appreciate hearing how other students have established their careers. Consider this an open invitation to return and see us.

**David Ingram, Chair**



*Joe Shields welcomes Chaden Djalali*



# FACULTY NEWS



Ohio University astrophysicist **Ryan Chornock** is part of a large international team of scientists, called the Dark Energy Survey Team, who reported a major new discovery about the cosmos on Oct. 16, 2017. Chornock is the lead author on a paper published in the *Astrophysical Journal Letters*—The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. IV. Detection of Near-infrared Signatures of r-process Nucleosynthesis with Gemini-South—that reports signatures of those elements from the neutron star merger. The near-infrared spectral data gathered from neighboring Gemini South telescopes in Chile during the recent cosmic event confirm theoretical models.

In addition, the observation answered another long-standing scientific question: What is the origin of very heavy elements such as gold, platinum or uranium? The Big Bang created hydrogen and helium, and generations of stars produced elements as heavy as iron, Chornock said, but the formation of the heaviest elements has remained unknown. Researchers have theorized that these elements could have been generated by either a neutron star collision or a supernova explosion.

*Edited from an article in Ohio University's Compass*

**Ken Hicks** was elected Treasurer of the American Physical Society Division of Nuclear Physics.



**Alexander Govorov** and his work on plasmonic generation of hot electrons were featured in a report on NANOPLAS2018 in *Nature Photonics* (August 2018, by Rachel Won). Govorov gave a plenary talk on the quantum theory of the generation of hot electrons using special designs of a nanostructure with hot spots. His findings provided a way to enhance the generation of hot electrons and to explain theoretically the recent observations of his group of ultrafast plasmonic signals in metastructures attributed to the hot-electron-generation effect. He also discussed the theory for plasmonic nanocrystals in a solution that have strong hot spots, such as nano-stars, which showed strong enhancements in photochemical reactions.



**Daniel Phillips** was recognized as a Presidential Research Scholar by M. Duane Nellis (President of Ohio University), David Descutner (Interim Executive VP and Provost), and **Joseph Shields** (VP for Research and Creative Activity and Dean of the Graduate College).

**Julie Roche** and **Paul King** have contributed to a 12-year collaborative effort of more than 100 scientists, in an experiment termed 'Q-weak', to provide a precision test of the weak force, one of four fundamental forces in nature. The group's breakthrough paper, 'Precision measurement of the weak charge of the proton' recently published in



the scientific journal, *Nature*, provides a means to constrain possibilities for new particles and forces beyond our present knowledge.

**Nancy Sandler** is a member of a multi-college collaboration led by the Patton College of Education that includes College of Arts and Sciences faculty from Physics and Astronomy (Nancy Sandler) and Geology, together with the Russ College of Engineering and Technology. The group received the prestigious Track 2 NSF NOYCE Teaching Fellowship for their joint proposal: RALLY (Rural Appalachian Leaders and Local Youth) for STEM. The program targets individuals with undergraduate degrees in STEM that are interested in pursuing teaching careers. The award will fund 24 NOYCE fellows during training and induction as middle and secondary mathematics and science teachers. RALLY for STEM consists of a one-year Master's program that integrates multiple STEM disciplines, as well as mentoring during a four-year period after induction. In addition, fellows will participate in community educational events, create a portfolio of activities and develop cultural competence for teaching in rural Appalachian Ohio.



# INSTITUTES UPDATES

## Institute for Nuclear and Particle Physics

Recent faculty hire **Zach Meisel** was awarded a Department of Energy Early Career Award, titled "Constraining Neutron Star Structure with Indirect Nuclear Reaction Studies". In addition, Zach led a successful proposal to the National Science Foundation, titled "MRI: Acquisition of a Helium Ion Source Upgrade for the Edwards Accelerator Laboratory at Ohio University," which will help upgrade a key piece of our research infrastructure. This summer has been particularly busy with outside users in the accelerator lab, with the Air Force Institute of Technology and Lawrence Livermore National Laboratory contributing over three weeks of running.

**Julie Roche** was a co-organizer of the Gordon Conference "From Quarks to Nuclei in Photonuclear Reactions," held in Holderness, NH in August 2018. **Carl Brune** will be filling in as INPP director while **Daniel Phillips** is away on sabbatical as a GSI-EMMI Visiting Professor at TU Darmstadt.

## NQPI and CMSS to be a unified institute

In the Fall of 2017, under the suggestion by the interim Provost and the Vice President for Research and Creative Activity, a proposal was submitted to the President outlining a broad University level investment which would consolidate our existing Condensed Matter and Surface Sciences (CMSS) program and Nanoscale and Quantum Phenomena Institute (NQPI), enhancing the overall visibility and success of our members' activity in these topical areas.

The submitted proposal outlined a combined vision and structure for both programs in the form of a new entity that would retain the core missions of CMSS and NQPI, open new opportunities for strategic investments and streamline administrative procedures. The proposal requested a base budget of 75% of the combined CMSS and NQPI base budgets, reflecting an administrative cost savings and moderation in certain initiatives. Additionally, the oversight of CMSS and NQPI would be transferred from the College of Arts and Sciences to the Division of Research and Creative Activity, effective July 1, 2018, reflecting the truly multi-disciplinary composition of the re-organization.

This proposal was approved by President Nellis in February 2018, demonstrating a strong vote of confidence and commitment by the University to support successful research activities. The members of CMSS and NQPI deeply value the support from the President, Provost, and Vice-President for Research, as well as the Deans of Arts and Sciences and the Russ College of Engineering and Technology for this new venture.

We look forward to building a strong unified institute focused on advancing the successful educational and research missions of CMSS and NQPI which are recognized by peer institutions around the world.

## Astrophysics Institute

The 10-inch Fecker telescope that used to be installed on top of the R-Tech building was taken down in 2005 due to the roof deterioration. We have reinstalled it in a new dome on top of the Ridges, with a grand re-opening in May 2017. The telescope is now in regular use by the ASTR 1400 night-time observing course. It is also open for viewing by the general public 1 weekend every month. We had 400 guests attending the re-opening ceremony and have had more than 1,500 guests visit during the public weekends in the 16 months since we re-opened. We are also participants in the John Glenn Astronomy Park, located in the Hocking Hills state park near Logan that opened in June 2018 and offers a range of telescopes every weekend for night-time observing by the public.

On the research side, **Ryan Chornock** was in the national news in the fall of 2017 for his part in the discovery of the first merging neutron stars. The merger was detected by the LIGO gravitational wave observatory and Ryan was the first person in the world to find the optical image of the kilo-nova that occurred after the merger. We are also celebrating **Hee-Jong Seo's** early career grant from the Department of Energy, enabling Hee-Jong's preparation to use the upcoming DESI spectroscopic survey to improve our measurements of cosmological parameters using Baryon Acoustic Oscillations.

## Sabbatical/Fellowship Leave

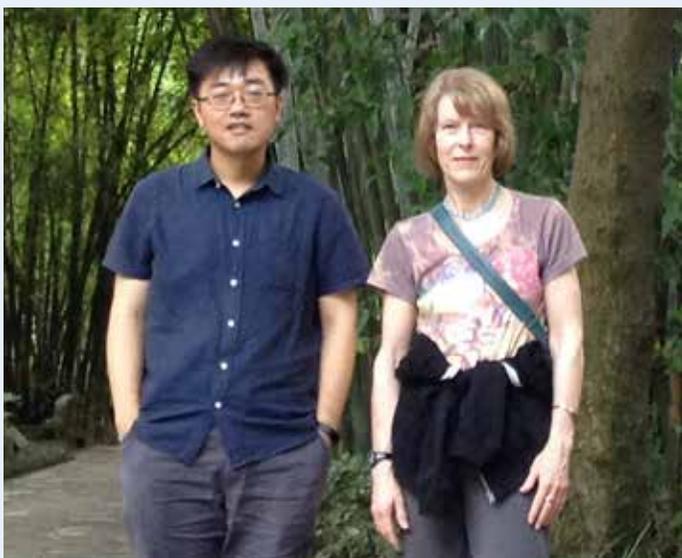
**David Drabold** was at Trinity College, Cambridge from 1 March - 1 June, 2018. This was his third sabbatical in Cambridge. He began collaborations with scientists in Chemistry and the Engineering Department on interatomic potentials developed using Machine Learning techniques, novel computations of electronic conduction in materials, and determining the structure of low-density amorphous carbon (which, for certain densities and growth methods, we proved are warped and wrapped sheets of amorphous graphene). The carbon problem was first suggested by Emeritus Professor **Ronald Cappelletti**.



Venki Ramakrishnan (center left) and David Drabold (center right) with Drabold's sons Will (left) and Ed (right). Drabold spent last spring at Trinity College during his sabbatical. (Photo courtesy of David Drabold)

Drabold spent some time with our (most famous?) alumnus, **Venki Ramakrishnan** (Ph.D., 1976, with Tomo Tanaka, and Nobel laureate in Chemistry, 2009). Most generously, Ramakrishnan gave the Drabold family of four a tour of the Royal Society, of which Ramakrishnan is the current President.

For the month of June, Drabold gave talks at Queens University, Belfast, the Technical University of Aachen, the Institute for Materials Science in Strasbourg, and the University of Montpellier. The tour concluded with a week of vacation in Rome.



During Spring 2018, **Charlotte Elster** traveled to south-central China where she presented her research at a workshop on Theory of Rare Nuclear Decays. The event took place in Chengdu, the capital of Sichuan Province, and was co-sponsored by the China-U.S. Theory Institute for Physics with Exotic Nuclei (CUSTIPEN) and Sichuan University.

Also attending the workshop was OHIO physics alumnus **Chen Ji** (Ph.D. '12). Ji is a Chinese national and professor at Central China Normal University in Wuhan, the capital city of central China's Hubei province. While a doctoral student at OHIO, Ji studied nuclear physics under the direction of Daniel Phillips.

Elster presented the progress she and her collaborators have made in deuteron-nucleus scattering, while Ji highlighted his work on effective field theory studies of halo nuclei.

**Carl Brune** was on sabbatical for the 2017-18 academic year. During this time, he made extended research visits to Los Alamos National Laboratory, the University of Notre Dame, and TRIUMF (Canada's National Laboratory for nuclear and particle physics). He also hosted experimental visitors at the accelerator laboratory from Notre Dame, Ohio State, Penn State, and Lawrence Livermore National Laboratory. He was a co-organizer of the workshop "Nuclear Processes in Dense Plasmas" held July

30 - August 1 in Livermore, CA. He also attended conferences or workshops in Rockville, MD; Darmstadt, Germany; Columbus, OH; and Michigan State University and presented a seminar at the University of Rochester.



**Arthur Smith** was on sabbatical for the 2017-18 academic year. Normally during sabbatical, professors like to "get away" and Art did that by going to Japan and then Nashville as well. Art really did relocate during the entire year away from his regular office by moving to the Clippinger Annex across the street where his 2nd laboratory is located. He spent the whole period of leave in his Clippinger Annex lab where he was able to focus on his research, which is currently funded by the Department of Energy, Office of Science. Smith travelled to Japan, where he presented an invited talk and his doctoral student **Yingqiao Ma** also gave a talk at this small and highly focused meeting (Spin-Polarized Scanning Tunneling Microscopy 6).

Later the same week, Smith visited a campus of the University of Tokyo where he has a friend and colleague and where he presented a research seminar to a small but interested group of Japanese students and faculty. Later in November, he attended another conference along with Ma, this time a much larger conference held in Nashville, Tennessee (the annual International Symposium of the American Vacuum Society). There Smith presented another invited talk, and Ma also presented a regular talk. Both conferences would have been difficult to attend had he not had the opportunity of the sabbatical/fellowship leave.



## Pre-2000



**Zainuriah Hassan** (Ph.D. 1998, Kordesch) writes that she is currently the Director of Institute of Nano Optoelectronics Research and Technology (INOR) at Universiti Sains Malaysia. Previously known as Nano Optoelectronics Research and Technology (NOR) Laboratory which was officially launched in 2004, it was approved by the university as a Center of Excellence (Research and Innovation) on May 29, 2014. INOR offers research, services, and academic programs in the field of optoelectronics and nanotechnology. Our current focus is on the “GaN on GaN” project which is funded by Malaysian government for 5 years through Economic Planning Unit for a total funding of RM 75 million. This project is a technology transfer program from University of California Santa Barbara to Malaysia with the goal to produce high efficiency and high lumen Malaysian made white LEDs which involves scientific collaboration with academia and industry in Malaysia.

**Steve Mellema** (Ph.D. 1983, Finlay) and **Chuck Niederriter** (Ph.D. 1985, Capelletti) are colleagues in the Physics Department at Gustavus Adolphus College in St. Peter, Minnesota. They have been there together for some 33 years.

**Eric Montei** (Ph.D. 1996, Kordesch) and his wife **Anita Kumar** (Ph.D. 1994, Onley) report that their daughter, Uma, is starting her second year at Tulane this fall. Their son, Matt is in 10th grade. He and Anita are “doing fine”; both busy with jobs. Eric works on HAMR at Seagate.

**Derek Beck**, HTC Physics 1999, is now a lieutenant colonel in the US Air Force Reserve, and was recently assigned to the Air Force Central Command where he



contributed to wartime operations in Afghanistan and Syria/Iraq. He is presently on long term active duty status at the US Army War College in Pennsylvania. In recent years, Derek had two books professionally published, which cover the start of the American Revolution (“Igniting the American Revolution: 1773-1775” and “The War Before Independence: 1775-1776”). He is working on a third revolutionary war project with aspirations of bringing it to television. When not serving the US Military, he resides at his home in the Los Angeles area.

## 2000-2010

**Bassem Sabra** (Ph.D. 2000, Shields) is a faculty member at Notre Dame University-Louaize, in Lebanon, where he was recently promoted to Full Professor.

**Flori Perjeru** (Ph.D. 2001, Kordesch) is still employed with Intel; “17 good years and I hope many more to come. I am still an Engineering Manager, but I moved to the Intel Mask Operations organization in 2013 and I love what I am doing. We are still living in Portland, OR; we have two wonderful kids, twins, they are nine, and going into fourth grade. Boy and Girl.”

**Jebreel Khoshman** (Ph.D. 2005, Kordesch) spent one year in the Institute für Festkörperphysik, Technische Universität Berlin, Berlin, Germany as a visiting researcher, and two years at the Department of Basic Science and Humanities, College of Engineering, (Imam Abdulrahman bin Faisal University), Dammam, Saudi Arabia. Currently he is a professor at the Department of Physics, Al-Hussein Bin Talal University, Ma’an, Jordan.



**Ghanim Ullah** (Ph.D. 2006, Jung) was a postdoc at Penn State University in the Department of Bioengineering, and a postdoc at Los Alamos National Labs. He took a position as Assistant Professor at the Physics Department at University of Southern Florida. He was awarded early tenure at USF in 2018.

## Aurangzeb Khan

(Ph.D. 2006, Kordesch) is working as Dean, Faculty of Physical and Numerical Sciences at Abdul Wali Khan University Mardan, KP, Pakistan, a public sector university established in 2009, with more than 13,000 students, and 500 Faculty. The faculty has five departments now and around 70 Faculty members, with 3,200 students, most of them undergraduates. Khan is Full Professor and also a Chair of the Department of Physics, with 800 students, 400 B.S. students, 200 M.S. students, and 200 graduate students doing M.S. and M.Ph., few of them qualify for Ph.D. program.



**Kyle Uckert** (HTC 2010) received his Ph.D. in Astronomy from New Mexico State University in December, 2016. He has been working as a Caltech postdoctoral scholar at the NASA Jet Propulsion Laboratory since January, 2017. He is developing and integrating an astrobiology science payload with the JPL LEMUR rock-climbing robot to investigate biomats in lava tube caves. He is also participating in the integration and testing of the SHERLOC Raman spectrometer to fly on the Mars 2020 rover. Kyle’s wife Kate recently gave birth to their son Isaac Wolfgang Uckert on July 29, 2018.

**Joel Vaughn** (Ph.D. 2010, Kordesch). Joel reports the birth of his son Martin in October, 2016. Joel visited the department in February, 2017, to participate in a College of Arts & Sciences Alumni & Student Networking reception. He was the invited speaker at our department’s weekly colloquium where he shared tips about how to approach physics challenges and collaborate with non-scientists when working in industry. Joel is President of Wolfram Labs, a Columbus-area R&D company, which offers a range of science and engineering expertise, equipment design, and manufacturing product development.



## 2011-2020

**Rami Amro** (Ph.D. 2015, Neiman) In September 2016, Rami joined Palestine Technical University in Tulkarm as an assistant professor of Physics. During these past two years in teaching, he has taught few different level courses in physics, such as introductory physics, mathematical physics, modern physics, medical physics, in addition to other undergraduate labs. The plan for next year is to teach an additional two courses in biophysics, and medical imaging for physicists.



**Helen Cothrel** (HTC 2015) Helen defended her M.S. in physics education entitled "Expectations and Experiences in a Modern Physics Laboratory Course" at Eastern Michigan University. She is now a full-time lecturer specializing in teaching labs at Kettering University in Flint, MI.



**Andrada-Oana Mandru** (Ph.D. 2016, Smith) Since graduating and after a short Postdoc position in Prof. Smith's lab, Andrada has been working as a postdoctoral researcher at Empa, located in Switzerland in the Zürich area. She is continuing her research in the area of magnetism, but with an emphasis on rare-earth-based systems studied by (quantitative) magnetic force microscopy mainly. Next steps are not fully planned, she will most likely work in Switzerland for another couple of years, after which she will pursue a career in industry. On a more personal level, her husband Sean (Sean McGraw Ph.D. 2016, Shields) and Andrada are "enjoying living in Switzerland; it is a beautiful country and we are traveling around as much as possible, but also attempting to learn German." (Editor's note: Sean works for UBS Bank in Zurich.)

**Mayur Sundararajan** (Ph.D. 2017, Smith) reports that he is working remotely as VP business development with an Indian company Versa Drives PVT LTD located in India since April 2018. The position is not directly related to science, it is more

of engineering and business. He and his family are moving to India at the end of 2018. And there is a recent addition to the family, their 2nd child, a girl.



**Sneha Pandya** (Ph.D. 2016, Kordesch) is enjoying the outdoor activities in the Pacific North West – running, rock climbing, mountaineering, kayaking, rafting, snow shoeing, cross country skiing, and more. She is also a volunteer at a local NGO that uses outdoor recreational activities as therapy for people with different levels and types of disabilities. As an aspiring mountaineer, Sneha has climbed Mt. Whitney, CA. At 14,505 feet in elevation, it is highest summit in the contiguous U.S. Sneha is a Senior Process Engineer for Intel's next-gen semiconductor chip process. She is a team leader working in chemical mechanical planarization department and a Module representative for Intel's integrated process development. She has won several awards for excellence at Intel, most recently from the Logic Development Division and the Technology and Manufacturing group.



**Daniel Sayre** (Ph.D. 2011, Brune) Dan visited Carl Brune during the summer while in Athens. Dan is a researcher at Lawrence Livermore Lab where he is working on the stellar and Big Bang nucleosynthesis experimental team. They are studying reactions in conditions that are applicable to the interior of stars.

**Andrew Foley** (IPP 2017, Smith) Andrew has been living in Austin, TX, for the past year, working as a scientist at a small research company called Nanohmics,

Inc. His work there focuses mainly on magnetic materials research and MEMS development.



**Ari and Zak Blumer** (HTC 2018, Kordesch) In May, Zak and Ari enrolled in Ph.D. programs in Materials Science and Engineering at The Ohio State University. Zak is being co-advised by Dr. Tyler Grassman (Materials Science and Engineering, and Electrical and Computer Engineering) and Dr. David McComb (Materials Science and Engineering). Zak spent his summer getting up to speed with the research being done in his group, getting trained on equipment, and just learning as much as possible. For his Ph.D. research, he will focus on Microscopy of Defects in Semiconducting Materials, specifically those used in photovoltaics. Current research being done is focused on  $\text{CuIn}_{1-x}\text{Ga}_x\text{Se}_2$  (CIGS), a complex photovoltaic absorber material.

**Keith Hawkins** (HTC 2013), now an assistant professor of astronomy at the University of Texas at Austin, was quoted in an article in the May 9 issue of Scientific American (by Shannon Hall): "Keith Hawkins, an astronomer at Columbia University who studies hypervelocity stars but did not take part in the research, agrees there is further work to be done. The first step, he says, will be to double-check the data supporting the wild find by Shen's team. "Whenever you're looking at an outlier—in this case these things are moving at incredibly high velocities, so they're outliers—you have to be very careful about whether or not there's something wrong with the data," he says. Two of the white dwarfs, for example, only appeared to move across the plane of the sky, with no motion whatsoever toward or away from us—a curious alignment with Gaia's line of sight that most celestial objects would be unlikely to possess.

# RECENT GRADUATES



## Undergraduate Degrees

Alicia Gooding (B.S., 2016) Applied Physics,  
College of Arts and Sciences

Zachary Bernens (B.S., 2017) Physics,  
College of Arts and Sciences

Ryan Goetz (B.S., 2017) Physics

Astrophysics, College of Arts and Sciences

Taylor Grueser (B.S., 2017) Astrophysics,  
Honors Tutorial College

Jamison Lahman (B.S., 2017) Applied

Physics, College of Arts and Sciences

Miles Lindquist (B.S., 2017) Physics, Honors  
Tutorial College

Gregory Miller (B.S., 2017) Physics

Astrophysics, College of Arts and Sciences

Joseph Pincura (B.S., 2017) Physics

Astrophysics, College of Arts and  
Sciences

Gabriel Reineck (B.S., 2017) Physics

Astrophysics, College of Arts and Sciences

Sara Sand (B.S., 2017) Engineering Physics,  
Honors Tutorial College

Jacob Williamson (B.S., 2017) Physics

Astrophysics, College of Arts and Sciences

Daniel Morgan (B.A., 2017) Physics, College  
of Arts and Sciences

Jeffrey DeLong (B.A., 2017) Physics,

College of Arts and Sciences

Colton Feathers (B.S., 2017) Physics

Astrophysics, College of Arts and Sciences

Kenneth Richley (B.S., 2017) Physics

Astrophysics, College of Arts and Sciences

Ari Blumer (B.S., 2018) Engineering

Physics, Honors Tutorial College

Zak Blumer (B.S., 2018) Engineering

Physics, Honors Tutorial College

Arlo Calvin (B.S., 2018) Physics, College of

Arts and Sciences

Brandon Coleman (B.S., 2018) Physics

Astrophysics, College of Arts and Sciences

Taylor Gardner (B.S., 2018) Physics, Honors

Tutorial College

Samuel Hanson (B.S., 2018) Applied

Physics, College of Arts and Sciences

Benjamin Hirt (B.S., 2018) Physics, Honors

Tutorial College

Michael Jaramillo (B.S., 2018) Physics

Astrophysics, College of Arts and Sciences

Hunter Lawson (B.S., 2018) Engineering

Physics, Honors Tutorial College

William McWhorter (B.S., 2018) Physics,

College of Arts and Sciences

Charles Seacrist (B.S., 2018) Physics

Astrophysics, College of Arts and Sciences

Nicholas Spencer (B.S., 2018) Physics,

College of Arts and Sciences

Samuel Telepak (B.A., 2018), College of

Arts and Sciences

Shawn Webster (B.S., 2018) Physics,

College of Arts and Sciences

Yonry Zhu (B.S., 2018) Engineering

Physics, Honors Tutorial College

Justin Warren (B.S., 2018) Physics, College

of Arts and Sciences

## Master's Degrees

Sunday Arome Agbo, M.A.

Kirtankumar Dixit, M.A.

Mahmudul Hasan Anik, M.S.

## Ph.D. Degrees

**Shamim Akhtar, Ph.D., 2016**

Advisor: Carl Brune

Dissertation: 'Study of the

$^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$

Reaction via the alpha-

Transfer Reactions

$^{12}\text{C}(^6\text{Li}, d)^{16}\text{O}$  and

$^{12}\text{C}(^7\text{Li}, t)^{16}\text{O}'$

My thesis research work is

related to the study

of helium burning reaction  $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$

in stars which is very important to

understand in nuclear astrophysics.

We performed an indirect study of the

$^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$  reaction via the

alpha-Transfer Reactions  $^{12}\text{C}(^6\text{Li}, d)^{16}\text{O}$  and

$^{12}\text{C}(^7\text{Li}, t)^{16}\text{O}'$ .

Present position: Visiting Assistant Professor  
of Physics, Colorado State University, Pueblo

**Khan Alam, Ph.D., 2016**

Advisor: Arthur Smith

Dissertation: 'Growth,

Structural, Electronic, and

Magnetic Characterization

of GaN, CrN, Fe islands on

CrN, and Fe/CrN Bilayer

Thin Films'

I studied growing GaN, CrN, Fe

islands on CrN, and Fe/CrN Bilayer thin films

using molecular beam epitaxy and studying

their structural, electronic, and magnetic

properties using various in-situ and ex-situ

characterization techniques.

Present position: Assistant Professor, King  
Fahd University, Saudi Arabia

**Nadyah Alanazi, Ph.D., 2018**

Advisor: Alexander Voinov

Dissertation: 'Studying the Fusion

Evaporation Reaction ( $\alpha, n$ ) with  $^{54}\text{Fe}$ ,

$^{56}\text{Fe}$ ,  $^{57}\text{Fe}$ , and  $^{58}\text{Fe}'$

My research focused on studying the spin

distribution of  $^{57}\text{Ni}$ ,  $^{59}\text{Ni}$ ,  $^{60}\text{Ni}$ ,  $^{61}\text{Ni}$  nuclei at

excitation energies higher than known discrete

levels. The experimental measurements

of neutron spectra and neutron angular

distributions from  $^{54}\text{Fe}$ ,  $^{56}\text{Fe}$ ,  $^{57}\text{Fe}$ , and  $^{58}\text{Fe}$

( $\alpha, n$ )  $^{57}\text{Ni}$ ,  $^{59}\text{Ni}$ ,  $^{60}\text{Ni}$ ,  $^{61}\text{Ni}$  reactions were

performed to study the spin cutoff parameter.

Present position: Assistant Professor, King  
Saud University, Riyadh, Saudi Arabia

**Shrouq Aleithan, Ph.D., 2018**

Advisor: Eric Stinaff

Dissertation: 'Mono-to-

Few Layer Transition Metal

Dichalcogenides, Exciton

Dynamics, and Versatile

Growth Method for Naturally

Contacted Devices'



I was working in two-dimensional materials. I  
used different methods to prepare the samples  
mainly CVD growth. I characterized and studied  
those 2D materials optically and electrically.

Present position: Assistant Professor, King  
Faisal University, Al-Ahsa, Saudi Arabia

**Zakia Alhashem, Ph.D., 2018**

Advisor: Arthur Smith

Dissertation: 'Extraordinary Phenomena

Found in Special Phases of Nitride and

Spintronic Material'

My primary research was on molecular beam

epitaxy (MBE) growth of nitride and spintronic

materials including GaN, MnGa on GaN and

MnN thin films. I monitored the crystalline

growth of the materials using reflection high

energy electron diffraction, and I studied the

plasmonic properties of the materials using

reflection high-energy electron energy loss

spectroscopy. I also investigated electronic

and magnetic properties of the materials using

spin-polarized scanning tunneling microscopy

(SP-STM).

Present position: Assistant Professor, King  
Faisal University, Al-Ahsa, Saudi Arabia

### **Abdulrman Alsharari, Ph.D., 2018**

Advisor: Sergio E. Ulloa  
Dissertation: 'Tailoring Physical Properties of Graphene by Proximity Effects'



We studied the effect resulted on graphene electronic properties due to proximity to different materials. Our goal is to enhance its properties which can be used for various technological applications such as spintronics. We also aimed to understand the fundamental intriguing physical properties that this 2D material possesses.

Present position: Assistant Professor, University of Tabuk, Tabuk, Saudi Arabia

### **Nicholas Compton, Ph.D., 2017**

Advisor: Kenneth Hicks  
Dissertation: 'The Differential Cross Section and Lambda Recoil Polarization from gamma + d -> K0 Lambda (p)'



My primary research was investigating medium energy nuclear physics. Specifically, I investigated the differential cross section and  $\Lambda$  recoil of  $\gamma d \rightarrow K^0 \Lambda(p)$ . Investigating these observables could eventually impact theoretical models describing quantum chromodynamics.

Present position: Mathematician, King Show Games, Minnetonka, MN

### **Joseph Perry Corbett, Ph.D., 2018**

Advisor: Arthur Smith  
Dissertation: 'Spin Structures of the L10-MnGa(001) and  $\alpha$ -Cr(001) Surfaces'



My research was the MBE growth of MnGa and Cr films investigated with Spin-Polarized Scanning Tunneling Microscopy. I will continue my research in SP-STM investigating Skyrmion materials at OSU

Present position: Post-Doctoral Researcher, Ohio State University, Columbus, Ohio

### **Sushil Dhakal, Ph.D., 2016**

Advisor: Carl Brune  
Dissertation: 'Study of DD Neutrons and their Transmission'



My primary research was to study the interactions of neutrons in natural iron. The goal was to test the neutron scattering cross section for iron in the Evaluated Nuclear Data File.

Present position: Lab Technician, Barry University, Miami, Florida

### **Mongi Dlamini, Ph.D., 2018**

Advisor: Julie Roche  
Dissertation: 'Measurement of hard electroproduction of neutral pion cross section in Hall A of Jlab with CEBAF at 12 GeV'



My research was on studying the fundamental structure of the proton using an electron beam at the Jefferson Lab in Virginia. We conduct electron-proton collision experiments and analyze data in a framework that will give us a 3 Dimensional tomographic picture of the interior of the proton in terms of its fundamental degrees of freedom: quarks and gluons.

Present position: Lecturer, University of Eswatini, Eswatini (formerly Swaziland)

### **Andrew Foley, Ph.D., 2017**

Advisor: Arthur Smith  
Dissertation: 'Magnetic and Interfacial Properties of the Metal-Rich Phases and Reconstructions of MnxNy and GaN Thin Films'



My dissertation focused on controlling the properties of two different types of nitride thin films; namely, Mn-rich manganese nitride and Ga-rich gallium nitride. The combination of these materials is of interest for key applications in the developing field of spintronics (technology utilizing spin). For the purpose of satisfying this interest, methods for tailoring two crucial aspects (interface and magnetism) involved in wedding MnxNy and GaN into a functional spintronics device are investigated.

Present position: Scientist, Nanohmics, Inc., Austin, TX

### **Pratheesh Jakkala, Ph.D., 2017**

Advisor: Martin Kordesch  
Dissertation: 'Fabrication of Si/InGaN Heterojunction Solar Cells by the RF Sputtering method. Improved Electrical and Optical Properties of InGaN Thin Film'



This dissertation presents a study on the fabrication of Indium Gallium Nitride (InGaN), based heterojunction solar cells using the RF magnetron sputtering method. The goal of the study includes improving the electrical, optical and structural properties of InGaN thin films and examining their potential for photovoltaic applications and to reduce the parasitic resistive losses in solar cells.

Present position: Assistant Professor, Illinois College, Jacksonville, IL

### **Sudiksha Khadka, Ph.D., 2018**

Advisor: Eric Stinaff  
Dissertation: 'Growth Techniques and Optoelectric Studies of 2D Semiconductors'



My research focused on the Chemical Vapor Deposition Method to grow 2D semiconductors, growth, characterization and device application of those materials.

Present Position: Postdoctoral Research Assistant, Ginzton Laboratory, Stanford University, CA

### **Mahvand Khamesian, Ph.D., 2018**

Advisor: Alexander Neiman  
Dissertation: 'Mechanisms of High Sensitivity and Active Amplification in Sensory Hair Cells'



We studied non-linear dynamics of sensory hair cells in the inner ear of vertebrates using computational modeling. We studied dynamics of both single hair bundle and coupled hair bundles in response to mechanical and electrical stimuli.

Present position: Physics Lecturer, Saginaw Valley State University, Saginaw, MI

**Larousse Khosravi Khorashad, Ph.D., 2017**

Advisor: Alexander Govorov  
Dissertation: 'Theoretical and Computational Study of Optical Properties of Complex Plasmonic Structures'



My primary research was theoretically and computationally studying and investigating optical properties of different nanostructures. My work was to use theory of nanostructures and work with different software programs to simulate light scattering from nano organizations of matter. I also developed some original computer codes for my research.

Present Position: Postdoctoral Scholar,  
University of California, San Diego

**Yang Li, Ph.D., 2018**

Advisor: Saw-Wai Hla  
Dissertation: 'Single Molecule Spintronics and Friction'



I developed developed processes to synthesize vertically stacked heterostructures made by magnetic molecules, arm chair graphene nanoribbons (AGNR), and Au(111) substrate. Using a scanning tunneling microscope and an atomic force microscope, I systematically investigated electronic, spintronic and mechanical properties of such heterostructures. As a result, I discovered an anomalous Kondo resonance in the heterostructure, and a superlubricity effect which decreases the friction force between molecule and AGNR by more than two orders.

Present position: Data Scientist, Uptake Technologies, Chicago, IL

**Anup Pandey, Ph.D., 2017**

Advisor: David Drabold  
Dissertation: 'Modeling and Simulation of Amorphous Materials'



My primary research was on developing a new method in modeling amorphous materials. The method is called Force-Enhanced Atomic Refinement (FEAR).

Present position: Postdoctoral Researcher,  
Oak Ridge National Laboratory, TN

**Cody Parker, Ph.D., 2016**

Advisor: Carl Brune  
Dissertation: 'The  $3H(d,\gamma)$  Reaction and the  $3H(d,\gamma)/3H(d,n)$  Branching Ratio for  $E_{c.m.} \leq 300$  keV'



Mainly I worked on  $3H(d,\gamma)$  and  $3H(d,n)$  for my own work. However, I spent a lot of time working in the Edwards Accelerator Lab to help outside users, local faculty and students complete their experiments. There were a lot of midnight shifts, but I really enjoyed the hands-on experience.

Present position: Postdoctoral Research Associate, Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, MA

**Kiran Prasai, Ph.D., 2017**

Advisor: David Drabold  
Dissertation: 'Gap Engineering and Simulation of Advanced Materials'



I investigated ways of accurately and efficiently modeling amorphous materials. I also studied electron localization and transport in amorphous systems.

Present position: Postdoctoral Scholar,  
Stanford University, CA

**Sai Teja Pusuluri, Ph.D., 2017**

Advisor: Horacio Castillo  
Dissertation: 'Exploring Neural Network Models with Hierarchical Memories and Their Use in Modeling Biological Systems'



I used neural network models using spin glass physics to model the cellular interconversion process. I also proposed methods to engineer energy landscapes using the neural network models.

Present position: Data Scientist-Associate Vice President, JP Morgan Chase, Columbus, OH

**Andrea Richard, Ph.D., 2018**

Advisor: Heather Crawford  
Dissertation: 'Spectroscopy of the  $A=33$  Isobars in the Island of Inversion'



My research is primarily focused on spectroscopy of neutron-rich magnesium isotopes around the magic number  $N = 20$ . The nuclei in this region are deformed (non-spherical in shape) and we studied the properties of  $^{33}Mg$  using beta-decay and in-beam gamma-ray spectroscopy. We observed a rotational band for the first time and confirmed that  $^{33}Mg$  is a deformed nucleus.

Present position: Research Associate, National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI

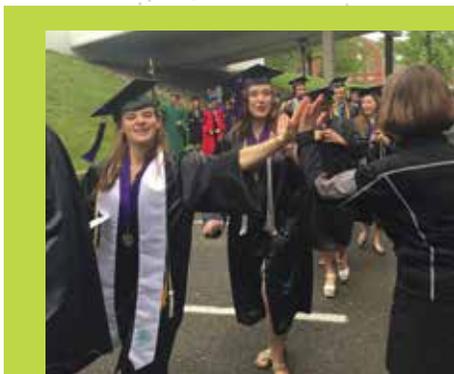
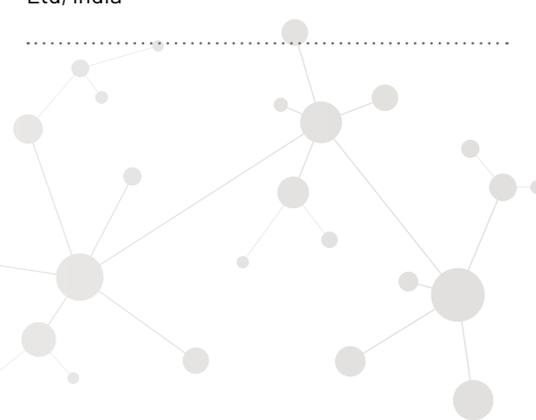
**Mayur Sundararajan, Ph.D., 2017**

Advisor: Gang Chen  
Dissertation: 'Amorphous Semiconductors from Photocatalyst to Computer Memory'



My research was on amorphous semiconductors. I studied applications in photocatalyst and computer memory. I developed models to explain the working mechanism in these applications, and also new methods to enhance their efficiency.

Present position: Engineer, Versa Drives PVT, Ltd, India



# AWARDS



## Undergraduate Awards

### Undergraduate Awards - 2017

Zak Blumer - Society of Physics Students  
Research Conference Best Presentation  
Miles Lundquist - Society of Physics Students  
Research Conference Honorable Mention  
Brandon Coleman - Outstanding Undergraduate  
Teaching Assistant  
Yonry Zhu - EXPO Research and Creative  
Activity Fair 1st Place Winner  
Jack Bruno - EXPO Research and Creative  
Activity Fair 1st Place Winner  
Elloria Shaw and Mackenzie Gibson - EXPO  
Research and Creative Activity Fair  
2nd Place Winners



Julie Roche presents Zak Blumer with a certificate for best presentation. Blumer worked with Dr. Martin Kordesch on the project, "The Electrospinning and Investigation of Titanium Nitride Particles in High-Temperature Polymer Fibers".



Miles Lindquist (second from left) received 'Honorable Mention' and is congratulated by the faculty judges including Roche and Zach Meisel, and Douglas Clowe. Lindquist's project is titled, "Optimization of a growth process for as-grown 2D materials-based devices".

### Sigma Pi Sigma - 2017

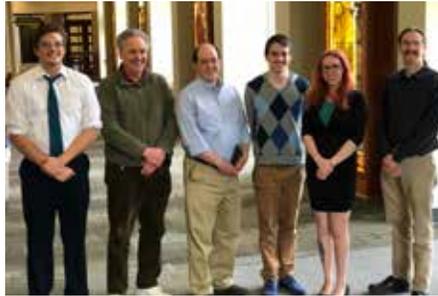
Zachary Bernens, Ari Blumer, Zach Blumer, Brandon Coleman, Taylor Gardner, Joseph Pincura, Sara Sand, Justin Warren

### Undergraduate Awards 2018

Michael Jaramillo - Society of Physics Students  
Research Conference Best Presentation  
Anika Friedman - Society of Physics Students  
Research Conference Honorable Mention  
Samuel Hanson - Society of Physics Students  
Research Conference Honorable Mention  
Brandon Coleman - Outstanding Undergraduate  
Teaching Assistant  
Ari Blumer - EXPO Research and Creative  
Activity Fair 1st Place Winner  
Esther Grossman - EXPO Research and  
Creative Activity 1st Place Fair Winner



2018 Society of Physics Students Research Conference first-place winner Michael Jaramillo presented a fifteen-minute talk, 'Using Weak Gravitational Lensing to Probe Dark Matter Distributions in Galaxy Clusters'. Jaramillo conducted summer research under the direction of Douglas Clowe.



Samuel Hanson (left) and Anika Friedman received Honorable Mention recognition from Physics and Astronomy Chair David Ingram, and judges David Tees and Paul King.

### Sigma Pi Sigma 2018



Katelynn Nichols, Brandon Niese, Alexandra Semposki, (Gang Chen) Ryan Tumbleson, Ana Bucki-Lopez, (not pictured) Grant Merz

### Phi Beta Kappa 2018

Alexandra Semposki

## Undergraduate Scholarships

### 2017-18 Recipients

Distinguished Professor Scholarships (full tuition)  
Daniel Ivory  
Charles Seacrist  
Thomas Warnock  
Samuel Hanson  
Jerry and Karen Adams Scholarship Fund  
Graham Tupper  
Thomas Warnock  
John E. Edwards Ohio University Fellowship Endowment  
John Auker  
Ian Billig

### Undergraduate Scholarships continued

Ari Blumer  
Zak Blumer  
Jack Bruno  
Brandon Coleman  
Taylor Gardner  
Esther Grossman  
Katelyn Nichols  
Brandon Niese  
Benjamin Hurt  
Ana Bucki-Lopez  
Daniel Ivory  
Lela A. Ewers Science Scholarship Fund  
Graham Tupper  
Robert P. Gecsy Scholarship Fund  
Sophia Medvid  
Daniel Ivory  
Mark H. Grimes Memorial Fund  
Graham Tupper  
Thomas Warnock  
Darrell Otto Huwe Scholarship Fund  
Grant Merz  
James T. Shipman Physics Scholarship Fund  
Eric Fawcett  
Kari Lynn Kraus  
Andrew Duluard  
Kaelyn Riley Reed  
Kevin Ward  
Thomas Warnock  
Abhishek Singh Scholarship Fund  
Charles Seacrist  
C. Paul and Beth K. Stocker Scholarship Fund  
Claire Schrantz  
Alexandra Semposki  
Ryan Tumbleson

### 2018-19 Recipients

Distinguished Professor Scholarships (full tuition)  
Daniel Ivory  
Brittney Kenady  
Thomas Connor Warnock  
Alexandra Semposki  
John E. Edwards Ohio University Fellowship Endowment  
Ana Bucki-Lopez  
Brittney Kenady  
Harshil Kothari  
Sophia Medvid  
Grant Merz  
Katelyn Nichols  
Brandon Niese  
Michael Riel  
Alexandra Semposki  
Claire Schrantz  
Ryan Tumbleson  
Thomas Conner Warnock  
Robert P. Gecsy Scholarship Fund  
Harshil Kothari  
Grant Merz  
Darrell Otto Huwe Scholarship Fund  
Daniel Ivory  
Mark H. Grimes Memorial Fund  
Brittney Kenady  
James T. Shipman Physics Scholarship Fund  
Alexander Blackston  
Anthony D'Alessandro  
Michael Ickes  
Zane Michael  
Mary Prather  
Nicholas Paul Sanders  
Emma Rice  
Jackson Wallace  
Abhishek Singh Scholarship Fund  
Esther Grossman  
C. Paul and Beth K. Stocker Scholarship Fund  
Hannah Wynne  
Jack Bruno  
Matthew Connel  
Anika Friedman

# STUDENT NEWS



## SUMMER INTERNSHIPS

### 2017 Summer Research Interns

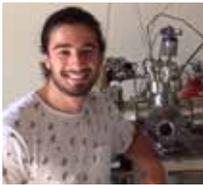
**John Auker** (with Nancy Sandler) *Development of database for outreach and educational demonstrations of physical phenomena*

**Ian Billig** (with Daniel Phillips) *The Study of Bayesian Methods for Data Analysis*

**Ari Blumer** (with Martin Kordesch) *Molybdenum Disulfide- carbon nanodot supercapacitors*



**Zak Blumer** (with Martin Kordesch) *Titanium nitride thin films for plasmonic enhancement of solar water heaters*



**Matt Brooks** (with Zach Meisel) *Development of "Andiamo!" a graphical interface for statistical nuclear reaction calculations*



**Jack Bruno** (Student Enhancement Award) *Studying the drift of pollution over Lake Michigan*

**Rush Deeter** (with Eric Stinaff) *Exfoliated 2D Materials for Quantum Optics - year 1*

**Kim Fisher** (with David Ingram) *Substrates for diamond electronics*

**Anika Friedman** (with Peter Jung) *OpenACC in Computational Neuroscience*

**Taylor Gardner** (with Srdjan Nestic) *Dynamic Water Wetting Study in a Small Scale Apparatus*



**Esther Grossman** (with Gerardine Botte) *Comparing B3LYP and its dispersion-corrected form to B97D3 for studying adsorption and vibrational spectra in nitrogen reduction*

**Samuel Hanson** (with Justin Frantz) *Exploration of Photon Response and Study of Clustering Algorithms for Design of the sPHENIX Experiment*

**Daniel Ivory** (with Ryan Chornock) *Directly Calculating Nickel Production in Low Mass Type II Supernovae*

**Michael Jaramillo** (with Doug Clowe) *Using Weak Gravitational Lensing to Probe Dark Matter Distributions in Galaxy Clusters*

**Hunter Lawson** (with Martin Kordesch) *Faceting in tungsten spheres modified by scandium*

**Brandon Niese** (National Cancer Institute) *CSBC/PS-ON Summer Undergraduate Research Program*



**Katelynn Nichols** (with Mark Lucas) *Development of Online Catalog of Physics Demonstrations*

**Riley Reedy** (with Carl Brune) *Neutron Detection using Boron*

**Kenneth Richley** (with Hee-Jong Seo) *Predicting Cosmological Information from Cosmic Microwave Background Missions*

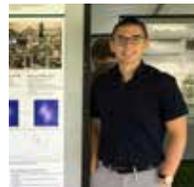
**Claire Schrantz** (with Daniel Phillips) *The Study of Bayesian Methods for Data Analysis*

**Charles Seacrist** (with Hee-Jong Seo) *Analyzing Simulated Universes*

**Alexandra Semposki** (with Arthur Smith) *Developing a Pulsed Laser Deposition System*

**Cole Spencer** (with Eric Stinaff) *Modeling of two dimensional (2D) materials based devices*

**Ryan Tumbleson** (with Saw-Wai Hla at Argonne National Lab) *Advanced scanning probe studies of single molecules and nanostructures*



**Justin Warren** (with Carl Brune) *Characterization of a CLYC Neutron Detector*

### 2018 Summer Research Interns

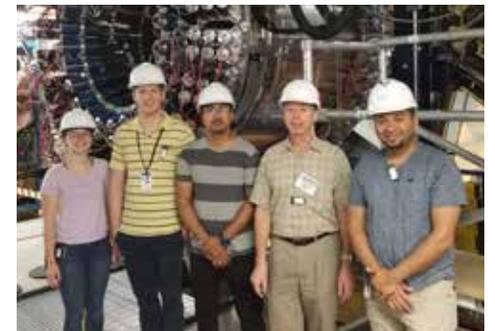
**Ian Billig** (with Daniel Phillips) *Bayesian analysis of systematic errors in theoretical models*



**Kevin Boyd** (with Julie Roche) *Selection of DIS events for experiment E12-06-114 at Jefferson Lab*

**Jack Bruno** (with Dr. Brad Pierce, NOAA, U of Wisconsin-Madison) *Lake Breeze Model and Remote Sensing Analysis from the Lake Michigan Ozone Study*

**Ana Bucki-Lopez** (with Hee-Jong Seo) *A deep learning for galaxy surveys*



**Miranda Carver** (with Ken Hicks and INFN in Genova, Italy) *Investigating the Decay of the  $f_1(1285)$  Meson using the CLAS Detector*

**Matthew Connell** (with Zach Meisel) *Detector simulations for nuclear astrophysics studies*

**Rush Deeter** (with Eric Stinaff) *Exfoliated 2D Materials for Quantum Optics - year 2*

**William Eshbaugh** (with Julie Roche) *Testing HV dividers for experiment E12-13-010 at Jefferson Lab*



**Anika Friedman** (with Peter Jung) *Postnatal radial growth of neuronal axons during development and neurofilament slowing*

**Esther Grossman** (DAAD Rise Internship, Germany) *Modal Analysis of Long Period Fiber Gratings*



**Daniel Ivory** (with Ryan Chornock) *A Python Pipeline for MDM Images*

**Brittney Kenady** (with Carl Brune) *Studying the efficiency of a Cs<sub>2</sub>LiYCl<sub>6</sub>:Ce (CLYC) Neutron Detector*

**Grant Merz** (with Zach Meisel) *Simulating nuclear explosions on neutron stars*

**Katelynn Nichols** (with Martin Kordesch) *High Temperature Raman Spectroscopy of Thermionic Cathode Materials*

**Brandon Niese** (with David Tees) *Fabrication and methodological development of microfluidic devices for measuring cell mechanical properties*

**Alexandra Semposki** (with Arthur Smith) *Epitaxial Growth and Analysis of Magnetic Bilayers for Spintronics*

**Ryan Tumbleson** (with Saw-Wai Hla) *Argonne National Lab Operating Single Molecule Machines*



**Graham Tupper** (with Gang Chen) *Electrical Measurement of Conductive Bridging Random Access Memory (CBRAM) Devices*

**Kelsey Turner** (with Arthur Smith) *Atomic Force and Magnetic Force Microscopy Investigations of Magnetic Materials*



**Michael Vallee** (with Paul King) *Analysis software development for the JLab MOLLER experiment*

**Kevin Ward** (Orsay Nuclear Physics Institute and University of Orsay, France) *Characterization of Soft Magnetic Materials for Beam Current Transformers*

**Justin Warren** (with Carl Brune) *Studying the Efficiency of a Cs<sub>2</sub>LiYCl<sub>6</sub>:Ce (CLYC) Neutron Detector*

# GRAD AWARDS



## Graduate Awards 2017

- Andrea Richard – EXPO Research and Creative Activity Fair 1st Place Winner
- Kristyn Brandenburg – EXPO Research and Creative Activity Fair 2nd Place Winner
- Douglas Soltesz – EXPO Research and Creative Activity Fair 1st Place Winner
- Reza Katebi – EXPO Research and Creative Activity Fair Winner
- Oscar Avalos – EXPO Research and Creative Activity Fair 1st Place Winner
- Nilaj Charkrabarty – EXPO Research and Creative Activity Fair Winner
- Greg Rosen – College of Arts and Sciences Outstanding Teaching Assistant
- Sudiksha Khadka – Vishwa S. Shukla Memorial Scholarship



## Graduate Student Awards 2018

- Oscar Avalos – EXPO Student Research and Creative Activity 1st Place Fair Winner
- Rekam Giri – EXPO Student Research and Creative Activity 1st Place Fair Winner
- Dawi Zhai – EXPO Student Research and Creative Activity 2nd Place Fair Winner
- Thushan Wickramasinghe – EXPO Student Research and Creative Activity 2nd Place Fair Winner
- Laura Herzog – College of Arts and Sciences Outstanding Teaching Assistant
- Bishal Bhattarai – Vishwa S. Shukla Memorial Scholarship

## Staff Awards 2017

- Doug Shafer – Special Recognition for refurbishing the Fecker telescope
- Mike Myers – Special Recognition for refurbishing the Fecker telescope
- Wayne Chiasson – Outstanding Staff Member

## Staff Awards 2018

- Donna Welch – Outstanding Staff Member
- Wayne Chiasson – College of Arts and Sciences Outstanding Staff Award



Wayne Chiasson

Doug Shafer and Mike Myers



Donna Welch



Let the  
Bobcat star gazing  
commence ...



OHIO  
UNIVERSITY

May 6, 2017

# THE OHIO UNIVERSITY OBSERVATORY OPENING





Ohio University re-opened our campus observatory for undergraduate teaching and public outreach on May 6, 2017. The 10-inch Fecker telescope previously installed on top of the R-Tech building was taken down in 2005 due to roof deterioration. We reinstalled it in a new dome on top of The Ridges. Four hundred guests attended the ceremony and more than 1,500 visitors have attended our scheduled events to date, including 'Public Telescope Nights'.

These events are sponsored by our Astrophysical Institute faculty members. Drop-in hours are scheduled throughout the year and are hosted by our astronomy faculty and students.

For a list of public telescope nights visit <https://www.ohio.edu/cas/physastro/research/observatory/>

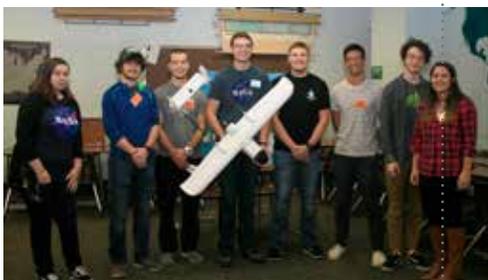
# OPEN HOUSE 2017

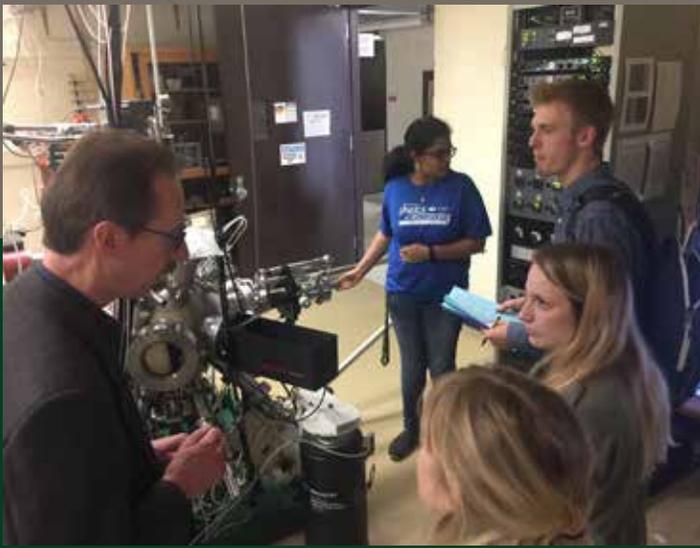
In November 2017 we hosted our seventh Biennial Department of Physics and Astronomy Open House. The goal of the Open House is to give community members of all ages a chance to experience and explore a wide range of physical phenomena. In the process we hope they understand better what it is like to see the world through the eyes of a physicist.

Over a thousand visitors participated in a wide range of activities, shows, tours and talks. Enthusiastic students and faculty from Physics and Astronomy helped staff the Open House as well as future science teachers from the College of Education and students from the College of Engineering and Technology. Our amazing volunteers are the key to interacting

with participants at a wide range of levels. Wide-eyed 2nd graders experiencing a ping-pong cannon or the marvels of a hovercraft for the first time or older kids and adults interested in the technical details of superconductivity or lasers could engage our volunteers and learn more about the world around them.

Details of the Open House as well as several videos from 2017 can be found at <https://www.ohio.edu/cas/physics-openhouse>





## Gifts to Ohio University

Please consider designating Physics and Astronomy when you give your gift to Ohio University. The department allocates money for scholarships, books, travel funds for students, recruitment of students, and paying the expenses of visiting speakers. In this list, the greatest need is for undergraduate major scholarships. Since the level of state funding does not allow us to address these needs adequately, your support helps us to provide added excellence. For this support, we are very appreciative.

Our major endowment funds include:

**Breitenberger/Wright Graduate Endowment Fund**—This fund was initiated by Emeritus Professors Ernst Breitenberger and Louis Wright to assist graduate students with unusual expenses, travel expenses, special appointments, awards, etc.

**John Edwards Scholarship Fund**—Distinguished Professor John Edwards left a bequest of approximately \$300,000 to endow this scholarship fund. The Scholarships are given to majors who have financial need and have demonstrated some initial success at Ohio University (that is, rising sophomores, juniors and seniors).

**Robert Gecky Scholarship Fund**—Endowed by Jeanette Grasselli-Brown in memory of her brother who was a physics student.

**Darrell Huwe Scholarship Fund**—Endowed by family and friends in memory of Professor Darrell Huwe, the scholarship is preferentially given to students from a rural background with financial need.

**James Shipman Scholarship Fund**—This fund was initiated by the late Jim Shipman and Will Konneker (M.S. 1947) in the 1970s and was supplemented for many years by Jim Shipman using money generated from his very successful physical science textbook, *An Introduction to Physical Science* by Shipman, Todd and Wilson, which is currently in its 14th edition. It provides our primary support for incoming freshman majors.

**Abhishek Singh Scholarship Endowment**—This endowment was launched with gifts from faculty, staff and students of the department along with contributions from friends of Abhishek to honor his memory.

**Mark Grimes Memorial Fund**—Created to honor Mark Grimes and his interest in the undergraduate physics program, the purpose of this fund is to provide enrichment of the undergraduate experience of physics majors.

**Edward R. Sanford Astronomy Fund**—Created to honor the late Professor Sanford, the income from this endowment fund is used in support of the astronomy program in the department.

**Department of Physics and Astronomy Endowment Fund**—A general endowed fund with major contributions from Professors Emeriti Wright and Rollins, funds generated can be used at the discretion of the department Chair for support of the educational programs of the department.

To make a gift, please visit [ohio.edu/give](http://ohio.edu/give). If you prefer to send your gift by postal mail, please send your check, payable to The Ohio University Foundation (be sure to write the designation in the “notes” section), to: The Ohio University Foundation, P.O. Box 869, Athens, OH 45701. Do you have questions about making a contribution? Please contact the Office of Annual Giving at 800.592.3863, or email: [giving@ohio.edu](mailto:giving@ohio.edu).

# giving@ohio.edu

## DEPARTMENT DONORS

### 2017

Robert D. Ackley  
Jean Andrews  
John E. Bowdle  
Ernst Breitenberger  
Carl Brune  
Donald Edward Carter  
Horacio Castillo  
Gang Chen  
Wayne Chiasson  
Ryan Chornock  
Carolus M. Cobb, III  
Bruce R. Danner  
Nicholas and Lillian Dinos  
Estate of Ileane Ackley  
Thomas A. Fox  
Gosling Family Charitable Fund  
Alexander Govorov  
Steven Grimes



DONORS CONT.

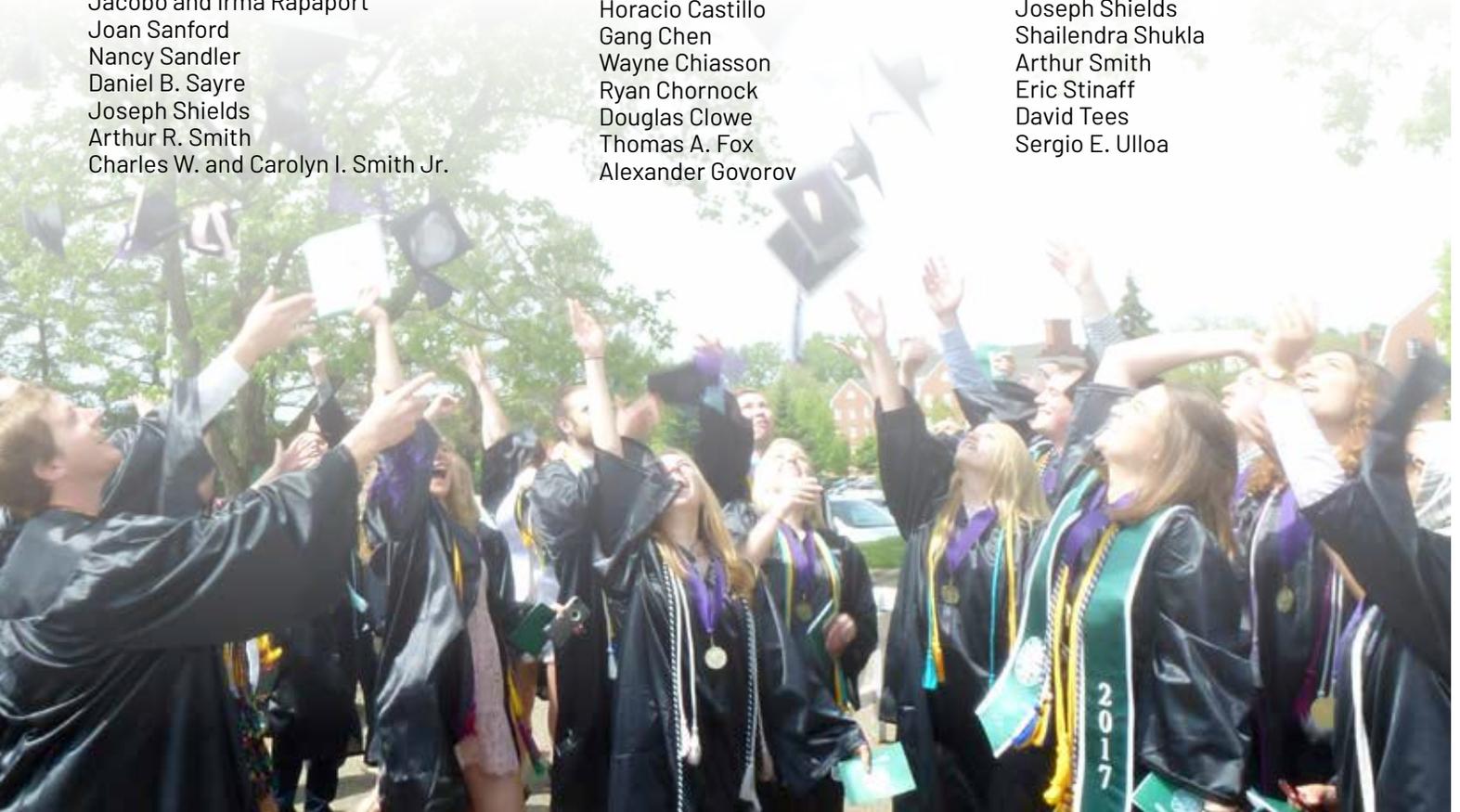
Peter and Elizabeth Hoffmann-Pinther  
Douglas L. Humphrey  
Marie K. Huwe  
David Ingram  
Peter Jung  
Martin Kordesch  
Lawrence Livermore National Laboratory  
Robert and JoAnn Mueller  
Alexander Neiman  
Jay Oana  
Brent K. Park  
Daniel Phillips  
Jacobo and Irma Rapaport  
Joan Sanford  
Nancy Sandler  
Daniel B. Sayre  
Joseph Shields  
Arthur R. Smith  
Charles W. and Carolyn I. Smith Jr.

Rex N. Sprague  
Eric Stinaff  
Folden B. Stumpf  
David Tees  
Sergio E. Ulloa  
Glenn D Westin

**2018**

Jean Andrews  
John E. Bowdle  
Carl Brune  
Dr. and Mrs. Lowell D. Carpenter  
Horacio Castillo  
Gang Chen  
Wayne Chiasson  
Ryan Chornock  
Douglas Clowe  
Thomas A. Fox  
Alexander Govorov

Steven Grimes  
Douglas L. Humphrey  
David Ingram  
Peter Jung  
Martin Kordesch  
Megan Krejny  
Robert and JoAnn Mueller  
Alexander Neiman  
Daniel Phillips  
Joan Sanford  
Nancy Sandler  
Daniel B. Sayre  
Joseph Shields  
Shailendra Shukla  
Arthur Smith  
Eric Stinaff  
David Tees  
Sergio E. Ulloa



**MESSAGE FROM THE EDITOR**

Thank you to all who have submitted items for the Newsletter, and to those of you who have kept in touch with faculty, students and friends of the Department of Physics and Astronomy. We invite you to send us updates and news items on professional and personal developments throughout the year. Photos are always welcome. And visit us on Facebook, Twitter, Instagram, and view the stories we share on our YouTube channel (OhioUPhysics).

Send your news to Newsletter Editor Marty Kordesch at [kordesch@ohio.edu](mailto:kordesch@ohio.edu).





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**OHIO**  
UNIVERSITY

**Department of Physics and Astronomy**  
Clippinger Laboratories 251B  
1 Ohio University Drive  
Athens, OH 45701-2979

**To learn more, contact us:**

**740.593.1718**  
[physics@ohio.edu](mailto:physics@ohio.edu)  
[www.ohio.edu/cas/physastro](http://www.ohio.edu/cas/physastro)

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