Physics & Astronomy at UGA



A MESSAGE FROM THE HEAD...



Hello to everyone in the UGA Physics and Astronomy community as we embark on a new academic year. We hope it will prove to be exciting, but with a lot less drama and disruption. This newsletter that you are viewing on your device of choice gives a brief update on the activities of our department over the past year. You will read in its pages about the amazing work of our undergraduate students, graduate students, staff, and faculty who are award winners, inspiring teachers, creative researchers, and dedicated workers actively engaged in our local community and beyond. In particular, we are sad to announce that Mr. Thomas Barnello, a fixture in the department for 26 years, retired from UGA service this summer. Tom, our laboratory coordinator and building manager, was the

glue that kept everything together ensuring the instructional labs ran on time, keeping the building safe and sound, and performing just about anything needed to ensure we could meet our mission each and every day. He will be sorely missed, but we know he will enjoy his retirement.

Over the past year, the Department also saw significant changes in staff and faculty. Franklin College completed its Franklin Works (FW) project to transition business and IT services to a centralized delivery model. As a consequence, Ginger Williams (Grant Specialist) and Rosalina Mirandilla (Senior Accountant) are now part of FW. Brittany Johnson (Business Manager) and Jessica Hudgins (Administrative Assistant) moved to other departments, while Mike Caplinger (Systems Administration Specialist) and Jeff Deroshia (Systems Administration Associate) have joined the Franklin Office of IT. Traci McKinney (CSP Administrator) also resigned her position. We are however grateful to be able to continue to work with Ginger, Jeff, Mike, and Rosalina through their positions in FW. A new staff member, Mrs. Netra Phadke (Administrative Assistant), joined us in late 2021. Updates on new staff members will be given in the next newsletter.

Dr. Nandana Weliweriya, who served as a Limited-Term Assistant Professor in our department from Fall 2019 through Summer 2022, has accepted the position of Lecturer in the department effective Fall 2022. Dr. J.P. Caillault has stepped down as the Faculty Laboratory Coordinator and Undergraduate Astrophysics Coordinator/Advisor after 16 years of service, while Dr. B.J. Cooley served as the Undergraduate Physics Coordinator/Advisor for the past 4 years. Their duties were taken-up this summer by Dr. Henning Meyer (Laboratory Coordinator), Dr. Michael Geller (Physics Advisor), and Dr. Loris Magnani (Astrophysics Advisor). The Department is grateful for the dedicated and outstanding service provided by JP and BJ over the years.

Finally, as we start the new academic year, I want to thank our alumni for their continuing support of the Department. Your interest helps us grow our program. As always, feel free to reach out to me and/or stop by Athens for a visit.

Take care, Phillip Stancil



Photo Courtesy of Dr. Shelton

ASTRONOMY CLUB VIEWS JUPITER, SATURN, AND THE MOON

The Astronomy Club viewed the moons of Jupiter, rings of Saturn, and craters on the Moon through our 14-inch Meade telescope in late October. Staff members Tom Barnello and Dan Boyd, with help from Astronomy Club President Jennifer Teissler, set up the telescope and facilitated observation with club members and passerby. The Astronomy Club plans to host more viewings in the upcoming Fall semester.

2022 CHHABRA-LANDAU LECTURE

Columbia University Professor Andrew Millis gave a talk called "Meeting Dirac's Challenge: Quantum Manybody Physics in the 21st Century" to an in-person and virtual audience on April 7 as



Andrew Millis

a part of the Chhabra-Landau Lecture series. Dr. Millis discussed the quantum many-body problem as "essentially a big data problem" and highlighted a "multi messenger approach with consistency between different methods." Read more about Millis's work here.

DEPARTMENT HOSTS SPRING PICNIC

"The Department held its spring picnic on Sunday 8th May at Sandy Creek Park, a beautiful 700 acre park set around a 200 acre lake in Athens Clarke-County. The weather was perfect, cool under the pavilion and warm in the Sun.

Those who attended enjoyed a feast of freshly



Department of Physics and Astronomy Fronklin College of Arts and Sciences UNIVERSITY OF GEORGIA

Department of Physics and Astronomy University of Georgia Athens, GA 30602-2451

> EDITOR Sahana Parker

WEBSITE physast.uga.edu

STAFF PHONE (706) 542-2485

FACULTY PHONE Yiping Zhao: (706) 542-7792

Contributions Made By: Cassandra Hall, Nandana Weliweriya Liyange, Netra Phadke, Phillip Stancil, and Yiping Zhao

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The University of Georgia is committed to principles of equal opportunity and affirmative action. made burgers, hot dogs and vegetarian options cooked on the charcoal grill, along with snacks, sides, and baked goods brought along by our culinarily talented graduate students.

A variety of card and board games were played, including hits such as "Exploding Kittens" and "Throw Throw Burrito." The picnic is a biannual event organized by the committee for Equity, Diversity and Inclusivity and everyone in the department is welcome. We particularly encourage our undergraduate students to come along!

The next picnic will be during the autumn term, and we are looking forward to seeing you there."

- Cass Hall

35TH ANNUAL CSP WORKSHOP HELD VIRTUALLY

The 35th annual Center for Simulational Physics (CSP) workshop was held virtually this year on February 21–24, 2022. The workshop, "Recent Developments in Computer Simulation Studies in Condensed Matter Physics," highlights advances in applications, algorithms, and parallel implementations of computer simulation methods for the study of condensed matter systems with speakers from around the world. Read more about speakers and presentations *here*.

INTRO PHYSICS LABS & SMART IPL



A demonstration of rotation from SmartIPL YouTube

As a result of the COVID-19 pandemic, much of academic instruction has transitioned to an online format. For some disciplines, adapting to new rules presented somewhat less difficulty, but for the majority of STEM-based courses—especially the introductory ones for which labs are essential—the impact was truly devastating. Unfortunately, various ad hoc solutions, such as the use of sim-

-ulations and/or hurriedly taped videos, while temporarily solving the urgent needs of individual instructors, cannot give students same "truly experimental experience" that real labs can provide. Professors Yiping Zhao, Henning Meyer, Dr. Andrei Galiautdinov, and graduate student Mr. Nima Karimitari worked together with a group of undergraduate students in Summer 2021 to introduce the concept of Smartphone-Based Introductory Physics labs (SmartIPL) as more effective labs for online physics teaching. The overall goal was to ensure that even within the limitations of the online instruction environment, students would still be able to obtain "truly experimental experience."



A demonstration of free fall motion. More lab videos can be found on their YouTube channel <u>here</u>.

The basic lab instruction manual and design idea of SmartIPL is the following:

- (1) the student will use house hold items to set up the labs based on the detailed instruction videos and manuals
- (2) the student will use the smartphone to collect the data (movies)
- (3) the student will use "Tracker" (or the app developed by the SmartIPL team) to obtain and analyze the data with detailed instruction from the manual; and
- (4) the student will prepare a lab report summarizing the method and results.

The team has developed 8 labs for Physics I Mechanics. Each contains corresponding instruction videos, lab manuals and worksheets for student completion. All of these instruction videos can be found in their YouTube channel: "UGA SmartPhone Intro Physics Lab."

UNDERGRADUATE RESEARCH SPOTLIGHTS

Many undergraduates currently participate in undergraduate research in the Physics & Astro-

nomy Department. These students come from both within the department and from outside disciplines. Dr. Nandana Weliweriya Liyange supervises three of these undergraduates: Chaudhry Nicolas Gibran Rasool, Cora Romic, and Aditya Vurukula.

Aditya Vurukula

is investigating students' experiences in transitioning from a virtual format during the Covid-19 pandemic to in-person in introductory STEM classrooms. The article "Personas of STEM students completing online instructions during the Covid-19 pandemic" was submitted to The Physics Teacher journal.

Cora Romic

is investigating how STEM students are handling the transition from the Covid-19 pandemic and how teachers can improve this situation for students.

Chaudhry Nicolas Gibran Rasool

is investigating students' connections with representations (diagrams, mathematics, etc.) and how these are used for problem-solving. The article "Semiotic resources and their relationship in physics and broadly in STEM problem-solving" was submitted to Physics Education Research Conference 2022.

SMALL SATELLITE LAB HOSTS ANTENNA BUILDING WORKSHOP





Photos Courtesy of Sydney Whilden

The Small Satellite Research Lab (SSRL) held an Antenna-Building workshop on May 6 in Memorial Hall. Using an antenna design called parasitic Lindenblad, 25 attendees from a range of backgrounds collaborated to successfully build eight antennas. They then used them to listen to satellites over frequencies in the UHF range, and SSRL member Whit Watts presented on how attendees could continue to listen in from home.

DISCOVERIES & RESEARCH NEWS

ASTRONOMY & ASTROPHYSICS



Cass Hall

Dr. Cassandra Hall published work with collaborators introducing machine learning model DPNNet-2.0, designed to better detect hidden planets from simulated images of protoplanetary disc gaps. (Published Oct. 2021 in The Astrophysical Journal, vol.920, is.1, id.3, pp.12.) Dr. Hall additionally published work with graduate student Jason Terry using numerical simulations that demonstrated a relationship between her previous discovery, the "GI Wiggle," and disc-to-star mass ratios in protoplanetary accretion disks. (Published Feb. 2022 in Monthly Notices of the Royal Astronomical Society, vol.510, is.2, pp.1671-1679.) Dr. Hall also gave outreach talks to 611 Squadron ATC, based at Royal Air Force Woodvale and Skeptics in the Pub Online, a mostly UK-based online community dedicated to discussing advances in science and rationality.

Dr. Robin Shelton and collaborators performed a case study on the Pegasus-Pisces Arch Intermediated Velocity Cloud, using hydrodynamic simulations in part to account for its two unusually long and streamlined tails. (Published Feb. 2022 in The Astrophysical Journal, vol.925, is.2, id.190.) Dr. Shelton and former undergraduate student M. Elliot Williams also finished a project originating six years ago, when then-freshman Elliot wondered if the drafting experienced by bicycle racers also occurred in the Universe. Using FLASH simulations to model the hydrodynamic effects of nearby clouds, he and Dr. Shelton found that some clouds are indeed accelerated by drafting just like bicyclists, with clustered clouds accreting material more efficiently than single clouds. (Published February 2022 in The Astrophysical Journal, vol.926, is.1, pp.36.) Dr. Shelton was also the community partner for a day at Dowell Elementary School in Marietta, GA, where she demonstrated the Moon's motion and appearance.



Robin Shelton



Inseok Song

Dr. Inseok Song and former graduate student Dr. Jinhee Lee discovered over 2,000 new members to low-mass nearby young stellar moving groups in GaiaEDR3, increasing the size of membership to nearly 100%. (Published in Feb. 2022 to Monthly Notice of Royal Astronomical Society, vol.511, is.4, pp.6179-6192.) Additionally, Dr. Song and graduate student Lauren Sgro discovered several dozen new debris disks around the lowest mass (M-type) stars, where previously only a handful of such stars were known. (Published 2021 in Monthly Notices of Royal Astronomical Society, vol.508, pp.3084.)

EDUCATION

Dr. Nandana Liyange Weliweriya, former undergraduate Emma Zipperer, and collaborators conducted a survey-based study on the impacts of Covid-19-related instructional challenges on student's study habits, motivation, and group work in STEM SCALE-UP classrooms. Their study allowed better understanding of student experiences in the transition from face-to-face to online learning, analyzed the strengths and weaknesses of online learning strategies, and offered recommendations for the success of online learning techniques in future crises. (Published in July 2021 in the PERC proceedings.) Additionally, Dr. Weliweriya participated in a virtual panel discussion at Kansas State University and gave research talks at the University System of Georgia Teaching & Learning Conference 2022, the 2022 Scholarship of Teaching and Learning Colloquium, the University of Kelaniya in Sri Lanka.



DISCOVERIES & RESEARCH NEWS

MATERIALS & DEVICES



Tho Nguyen

Dr. Nguyen and collaborators discovered large chirality in nonchiral 2D Ruddlesden-Popper perovskites that originated from strong Rashba-Dresselhaus effect inside the materials. (Published October 2021 in Advanced Optical Materials). Dr. Nguyen and collaborators additionally developed a class of lightweight optical hydrogen sensors, which fulfills the increasing requirements of a safe hydrogen fuel sensing system with no risk of sparking. Their sensor may have great impact on the widespread deployment of H_2 fuel. (Published 2021 in Nature Communications, vol.2, no.2414).

Dr. Yiping Zhao and collaborators tested nanotechnology-based optical sensors designed for COVID-19 detection, finding that the AgNT array optical sensor could serve as a potential rapid point-of-care COVID-19 diagnostic system. The swab-based rapid test developed by Dr. Zhao's team uses a UV spectrometer for spike protein detection, for both current and future COVID-19 variants, and shows a detection time of less than 20 min. (Published March 2022 in Sensors and Actuators B: Chemical) The team hopes to reduce test time to less than 10 minutes and is currently working on a smartphone app to deliver results.



Yiping Zhao

QUANTUM COMPUTING



Dr. Michael Geller developed and demonstrated a measurement error mitigation technique to rigorously correct state-preparation and measurement errors in gate-based quantum computers. The technique can be used for high-precision measurements and quantum foundations experiments. (Published August 2021 in Physical Review Letters, 127, 090502)

Michael Geller

SAYING FAREWELL: TOM BARNELLO







Photos Courtesy of Physics & Astronomy Department

"The department held a cake party celebrating the retirement of beloved staff member Tom Barnello. Tom retired on June 30 after 26 years of service dedicated to the department as a Laboratory Coordinator. Tom plans to devote time to furthering his hobbies of woodworking, music, stargazing, and digging his toes into the sand at the beach. We thank him for his many years of service and wish him all the best in his retirement."

ALUMNI NEWS & STAFF UPDATES

DR. WHITNEY INGRAM NAMED ONE OF GEORGIA'S "40 UNDER 40"



Dr. Whitney Ingram was honored by the University of Georgia as one of the "40 under 40," a distinction given to 40 previous graduates under 40 years of age who are thought to be leaders in their communities and fields. Dr. Ingram graduated from UGA with a BS in Physics in 2011 and a PhD in Physics in 2016, notably becoming the first African-American female to graduate from UGA with a degree in physics. Currently, Dr. Ingram works as a senior R&D engineer at Sandia National Laboratories, a government research facility specializing in advanced defense and intelligence technology. Read more about her accomplishments and UGA involvement here.



Photo Courtesy of Mississippi State

DR. KUN WANG RECEIVES EARLY CAREER SCIENTIST RESEARCH AWARD

Dr. Kun Wang received a \$750,000 award from the Department of Energy Office of Science Early Career Research Program in June 2021 for his project "Probing and Understanding the Spatial and Energy Distributions of Plasmonic Hot Carriers via Single-Molecule Transport." Wang is an assistant professor with joint appointments in Mississippi Department of Physics & Astronomy and of Chemistry programs. Department graduated with a PhD in physics from UGA in 2016. According to the MSU newsroom, Dr. Wang hopes his research will "transform the way we harvest solar energy, drive chemical reactions, detect light." Read more on development and his work here.

WELCOMING NEW MEMBERS!

The department welcomes two new members to the team: lecturer Dr. Nandana Weliweriya Liyange and Administrative Assistant Netra Phadke.

A WORD FROM DR. WELIWERIYA



"I am having an excellent three years at UGA physics. Most importantly, I am delighted about the support I received from the department and my achievements during my current position. This led me to accept this new position to continue contributing to the UGA's teaching and research mission. As a physics education researcher, I am excited to bring my expertise to improve how we teach scale-up physics courses to make every class an enjoyable experience for our students. I plan to continue on my research where problem-solving projects study processes among introductory-level physics students. My research investigates how students construct and coordinate (use) representations (diagrams, mathematics, gestures) while solving physics problems. As a result of the collaboration with the college of engineering, use eye trackingenabled Virtual Reality (VR) headsets and graphics tablets that allow individuals or groups of students to enhance the immersive virtual reality platform with shared whiteboards. The project's primary goal is to understand students' problem-solving processes to help researchers build models of student construction and use multiple representations in physics and, more broadly, STEM."



"I joined UGA Physics & Astronomy in December 2021 as Administrative Assistant. I am thankful

for all the wonderful support and guidance provided by the department. In past 6 months, I have gotten the opportunity to serve many students, faculty members, staff members and visitors. My job responsibilities include serving as the main administrative contact for the Department, assisting students, faculty, and visitors, maintaining staff and faculty records, answering phones and serving as Office Manager & Assistant to Department Head. This has been a learning experience for me. I am very happy to be a part of Physics & Astronomy department."

EXTERNAL/INTERNAL GRANTS

PRESIDENTIAL INTERDISCIPLINARY SEED GRANTS AWARDED



Dr. Nguyen, Dr. Ullrich, and Dr. Zhao

Three faculty members (*Dr. Tho Nguyen*, *Dr. Susanne Ullrich*, *and Dr. Yiping Zhao*) in the Department of Physics and Astronomy lead two Presidential Interdisciplinary Seed Grants. Eleven grants totaling \$1.5 million were allocated in Nov. 2021 in the third round of Presidential Interdisciplinary Seed Grants. These grants allocate funding to research proposals targeting significant challenges at the local, national, or global level that align with the goals in UGA's 2025 Strategic Plan.

Professor of Physics Susanne Ullrich (primary investigator) leads the project "Evaluating the Agrivoltaic Potential of Emerging Perovskite-Based Solar Cells for Greenhouse Applications." Associate Professor Tho Nguyen is on her team along with faculty from the College of Engineering, Terry College of Business, and College of Agricultural and Environmental Science on this sustainable agriculture research project.

Distinguished Research Professor of Physics Yiping Zhao (primary investigator) leads the project "Nanotechnology- and Machine Learning-Based Rapid Infectious Disease Diagnostics." With faculty from the College of Veterinary Medicine, Franklin College of Arts and Sciences, and external collaborators, the team aims to combine nano-optics and machine-learning techniques to develop a rapid, portable and cost-effective point-of-care method to detect viruses,

such as SARS-CoV-2 and bacterial infections, in patients.

DR. STANCIL LEADS UGA SPACE AND PLANETARY SCIENCE AND ENGINEERING PROGARM (SPSEP)

The UGA Space and Planetary Science and Engineering Program (SPSEP), led by professor and department head Dr. Phillip Stancil, was one of 12 interdisciplinary research teams awarded early-stage funding from the Teaming for Interdisciplinary Research (TIR) Pre-Seed Program, which aims to stimulate the formation of new interdisciplinary research teams. The SPSEP, which involves faculty across several departments, initially aims to develop ideas for team proposals in a host of space and planetary science and engineering areas through group meetings, small workshops, visits to potential collaborators and funding sources, with team members having developed a wide array of initial research areas to pursue. The pre-seed funding will be used to build and maintain a team website, contribute to team meeting and workshop expenses, cover travel to relevant collaborator and funder sites, and possibly for salaries for part-time students to engage in group literature search and research.

DR. WELIWERIYA RECEIVES TWO TEACHING GRANTS



Dr. Weliweriya received the Learning Technologies Grant FY22 from the Center for Teaching and Learning in June 2021. Dr. Weliweriya is the primary investigator on the pro-

ject "Re-engineering and measuring the impact of Introductory Studio Physics for Engineers I laboratory activity improvements, while Supporting Education Research in STEM Problem-Solving." The grant aims to help the development of pre-lecture videos for physics 1 courses, re-engineering physics 2 courses, revamping the lab section in physics 1, and inte-

grating virtual reality into student experiences. Dr. Weliweriya also received the Affordable Learning Georgia Materials Grant, approved in March 2022. This \$5,000 grant supports instructors in the transition from costly learning materials to educational resources that are free or \$40 for students.

EXTERNAL/INTERNAL AWARDS

FACULTY AWARDS



David Landau, Chair of U.S. Liaison Committee

Professor David Landau, Distinguished Research Professor in Physics, was appointed Chair of the U.S. Liaison Committee between the National Academy of Sciences and International Union of Pure and Applied Physics (IUPAP). The Committee aims to promote the aims of the IUPAP and foster international collaboration in physics research. Dr. Landau's term will last three years.



Steven Lewis, Meigs Teaching Professor

Associate Professor Steven P. Lewis was named a Meigs Distinguished Teaching Professor. Awarded to professors at the undergraduate and graduate levels, this distinction is UGA's highest recognition for excellence in teaching. Dr. Lewis is one of five UGA faculty members selected for this honor.



Susanne Ullrich, Creative Research Medal

Professor Susanne Ullrich received the 2022 Creative Research Medal for her work on time-resolved ultrafast laser spectroscopy. This medal honors mid-career faculty members for distinct and exceptional research projects considered to have extraordinary impact and significance for their field of study. Dr. Ullrich is one of five faculty members recognized this year.

Nandana Weliweriya, M.G. Michael Award



Assistant Professor Nandana Weliweriya Liyanage received the M.G. Michael Award. Bestowed to Franklin College Faculty, this research grant highlights excellence in research and gives awards for new/somewhat adventurous research proposals discipline. Dr. Weliweriya was also recently selected to participate in the 2022/2023 Teaching Academy Early Career Fellows program, a program intended to promote excellence in classroom instruction to early-career faculty through instruction and mentoring.

Craig Wiegert, Sandy Beaver Excellence in Research Award



Professor Craig C. Wiegert, Associate Professor and Associate Head, received the Franklin College Sandy Beaver Excellence in Teaching Award. These awards annually honor outstanding faculty in Franklin College who show sustained commitment to excellent instruction, particularly those who teach undergraduates.

GRADUATE STUDENT AWARDS

Hoang Luong, Graduate Student Excellence-in-Research Award



EXTERNAL/INTERNAL AWARDS

Hoang Luong, who completed his PhD in 2021, received the *Graduate-Student-Excellence-in-Research Award*. These awards recognize significant and quality graduate-student scholarship. At UGA, now Dr. Luong researched metallurgical coating and thin film. He explored fabricating nanostructures of composite noble metals and magnetic materials as magneto-plasmonic systems, investigated the design and apprehension of active chiral metamaterials, and made a breakthrough in hydrogen sensor applications using a similar approach. He contributed as the first or co-author for more than 20 published research papers over nearly five years at UGA, some with high-impact factor journals in cutting-edge research topics. He is now a postdoctoral fellow at the University of California, Santa Barbara.

Jason Terry, James L. Carmon Scholarship Award

Jason Terry received the James L. Carmon Scholarship Award for his excellent academic record and outstanding dissertation research. This \$4000 scholarship award is presented to UGA students who use computers in innovative ways. Terry works with Dr. Hall on computational astrophysics research, focusing on using machine learning to locate planets in protoplanetary disks.





Mona Asadi Namin, Summer Research Grant

Mona Asadi Namin received a Summer Research Grant for Doctoral Students. These competitive awards fund graduate students doing research related to their dissertation, intending to help with operating materials costs and research activities. Asadi Namin plans to use this grant to equip her project "Investigation of Charge Dynamics Processes in TiO2/CuO Heterostructure" with necessary materials and analysis tools.

Garrett Floyd, Kedkanok Sitarachu, Outstanding Teaching Assistants

Garrett Floyd and Kedkanok Sitarachu received 2022 Outstanding Teaching Assistant Awards. The Center for Teaching and Learning administers these awards to recognize teaching assistants who demonstrate superior instructional skills while serving in the classroom or laboratory.





Additionally, four departmental awards were given to five graduate students for exemplary research and teaching at the 2022 Graduate Student Awards in April.

GRADUATE STUDENT AWARDS CEREMONY



Nima Karimitari, Bill Cummings Award

Nima Karimitari received the Bill Cummings Award, a \$1,000 award given to the graduate student considered to best exemplify excellence as a student and as a teacher of undergraduates.

Jason Terry, Sean M. Kickpatrick Award

Jason Terry received the Sean M. Kickpatrick Award, a \$1,000 stipend in recognition of his outstanding research abilities in pursuit of his dissertation. The award also serves to encourage the development of creative problem-solving, communication skills, technical and analytic skills, and/or theoretical insight.



EXTERNAL/INTERNAL AWARDS

Garrett Floyd & Kedkanok Sitarachu, Robert M. Wood Teaching Awards

Garrett Floyd and Kedkanok Sitarachu also both received the Robert M. Wood Teaching Award in honor of their outstanding instructional capabilities in the classroom and lab.







Ishfaque Ahmed, Anderson-Pioletti Award

Ishfaque Ahmed received the Anderson-Pioletti Award, a \$200 award that recognizes a first or second year graduate student demonstrating exceptional promise in the department.

UNDERGRADUATE STUDENT AWARDS

Yoong Sheng Phang, Alan J. Jawarski Physical Science Award, Presidential Award of Excellence, Charles H. Wheatley Award

Fourth-year Yoong Sheng (Terry) Phang received two awards from the Honors Program: the Alan J. Jawarski Physical Science Award, recognizing his outstanding academic record and commitment to excellence, and the Presidential Award of Excellence, an award selected by the dean awarding undergrads in their final year of study who have demonstrated outstanding academic achievement, strong extracurricular involvement, and/or service. Phang also received the Charles H. Wheatley award, a \$200 award recognizing physics at the senior level. Phang, also a Goldwater Scholar, plans to attend graduate school for physics at Harvard University in the fall. There he plans to specialize in experimental condensed matter physics.

Tyler Haymans, Undergraduate Research Award

Tyler Haymans received the Undergraduate Research Award, a \$1,000 grant for undergraduates in physics who may not otherwise have the means to participate in research. Haymans plans to use this award to continue working with Dr. Zhao on his project "Portable LSPR sensor for Covid-19 detection."

Joseph Saltarelli & Catherine Schilling, Astrophysics Awards

Joseph Saltarelli and Catherine Schilling received the Astrophysics Award. This \$200 award honors undergraduates for outstanding accomplishments in the Astrophysics major.

Tyler Heydinger & Cal Hughes, Linville L. Hendren Memorial Scholarships

Tyler Heydinger and *Cal Hughes* received the Linville L. Hendren Memorial Scholarship, a \$500 award presented for outstanding proficiency in physics.



Left to right: Terry Phang, Tyler Haymans, Joseph Saltarelli, Catherine Schilling, Cal Hughes, Tyler Heydinger

HONORING OUR GRADUATES

GRADUATE STUDENTS

The following students graduated with a PhD or Masters from the Department of Physics & Astronomy between Summer 2021-Summer 2022. Their research titles and current occupations are indicated below.

SUMMER 2021

Hoang Luong

- "Magneto-optical Plasmonic Nanostructures and Devices Using Composite Materials"
- · Advisors: Tho Nguyen & Yiping Zhao
- Research Associate, University of California, Santa Barbara

Erin Dailey

- "Methylidyne in the Interstellar Medium"
- · Advisor: Loris Magnani
- Night telescope operator for the Subaru Telescope on Mauna Kea, Hawaii, The National Astronomical Observatory of Japan

Learnmore Tanka Shenje

- "Femtosecond Time Resolved Excited State Spectroscopy of Photocatalytic and Biologically Relevant Systems"
- Advisor: Susanne Ullrich
- · Photonics Industries International, Inc.

Layne Bradley

- "Principles and Applications of Plasmonic Nanostructures"
- · Advisor: Yiping Zhao
- Advanced Missile Signature Center Analyst, Axient LLC

FALL 2021

Matthew Wilson

- "Protein Folding and Peptide Aggregation Simulations on the Face-Centered Cubic Lattice via the Replica-Exchange Wang-Landau Algorithm"
- Advisor: David Landau
- Postdoc at Los Alamos National Lab

Dermont Heneghan

- "Investigation of Plasmon-Polaritons and Phonon-Polaritons in Hexagonal Boron Nitride / Metal Nanopattern Layered Devices"
- · Advisor: William Dennis

SPRING 2022

Kedkanok Sitarachu

- "Microcanonical Inflection-point Analysis of Phase Transitions in Ising Systems"
- Advisor: Michael Bachmann

Eric Suter

- "Ab Initio Investigations of Dopant-defect Complexes in KNbO3"
- Advisors: Steven Lewis & William Dennis
- UGA Temporary Lecturer

Alireza Fali

- "Nano-Spectroscopy and Near-Field Imaging of Phonon Polaritons and Layered Materials"
- · Advisor: Yohannes Abate
- Bruker Microscopy Company, Santa Barbara,
 CA

Neda Alsadat Aghamiri

- "Doped Correlated Oxides and Semiconductors Studies Using Near-Field Spectroscopy and Nano-imaging at Mid-Infrared and Terahertz Frequencies"
- Advisor: Yohannes Abate

Lauren Sgro

- "The Infrared Excess Emission of Gaia DR2 M Dwarfs"
- Advisor: Inseok Song
- SETI Institute citizen science researcher

MASTERS STUDENTS

Marquez Howard

- Advisor: Yohannes Abate
- BioNano Genomics, San Diego, CA

Ramesh Basnet

- · Advisor: Yohannes Abate
- Laser Service Engineer Position at Menlo Systems, Washington DC

Xingyang Li

· Advisor: Kanzo Nakayama

Michael Leary

- · Advisor: Kanzo Nakayama
- Cosmic Frontier (CF) division, Department of Energy (DOE) office of High Energy Physics

HONORING OUR GRADUATES

BACHELORS STUDENTS

The following students graduated with a BS in either Astrophysics or Physics in Spring 2022.

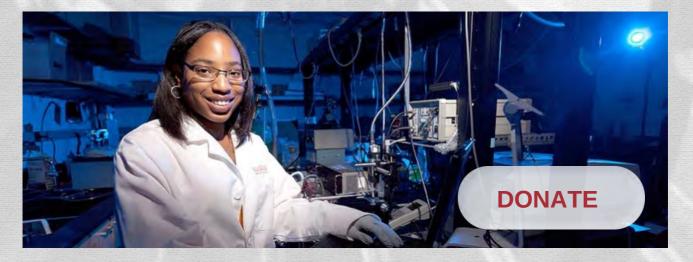
Blais, John R.
Browne, Henry T.
Bull, Robert F.
Carlton, Isabella C.
Courtney, Joshua M.
Desena, Daniel R.
Drury, Ian A.
Fischer, Rachel M.
Haverstick, James G.
Kellar, Douglas J.

Kruegler, Nicholas S.
Lacina, Benjamin C.
McCarthy, Jackson P.
Norton, Toni E.
Phang, Yoong S.
Shefler, Lior
Teissler, Jennifer M.
Tule, Remie J.
Villamor, Enid S.

SUPPORT US

MAKE A DONATION

Your commitment to the Physics & Astronomy Department allows us to provide boundless opportunities for life-changing learning, career preparation and exceptional teaching. Your gift is important to us and helps support critical opportunities for students and faculty alike, including lectures, travel support, research, and any number of educational events that augment the classroom experience. Now is your chance to contribute with the certainty that every amount fully benefits the Department.



RECENT AND OLDER ALUMNI: SHARE YOUR STORIES

We would love to feature what you are up to in the next edition of the newsletter. Send us your updates on new jobs, awards, lectures, marriages, children, retirements or special trips to Netra Phadke at nphadke@uga.edu, or call 706-542-2485. We are especially interested in receiving your email addresses, so that we can send out reminders about upcoming events and continue to connect the UGA Physics & Astronomy Department both on and off-campus.

Hire a physics grad

Share your stories

Update alumni profile