RESONANCES

NEWS OF INTEREST TO FLORIDA STATE UNIVERSITY PHYSICS ALUMNI

2023

A Message from the Chair ...

Greetings once again from the Physics Main Office!

PAUL EUGENIO

FSU PHYSICS DEPARTMENT CHAIR

Paul Eugenio

Dear Friends and colleagues of the FSU Physics Department,

This is the second issue of our revived biennial newsletter, and I hope this newsletter finds you in good health and high spirits. As we stand on the cusp of a new academic year, it is with great pleasure that I extend a warm welcome to every student, staff, and faculty member joining our Department. Whether you are returning to our esteemed institution or joining us for the first time, your presence enriches our Physics Department and contributes to the vibrant academic environment we have nurtured here at Florida State University.

I am pleased to again have the opportunity to update all of you as to some of the happenings within the Department. The beginning of the academic year marks a time of new and fresh opportunities. Our Department has always been a beacon of innovation, curiosity, and excellence, and this year is no exception. With a legacy of groundbreaking research, dedicated teaching, and collaborative spirit, we have consistently upheld our commitment to advancing the frontiers of physics and nurturing the minds of future leaders in the field. We remain committed to fostering a collaborative and innovative environment that empowers students, supports faculty research endeavors, and encourages staff to excel in their roles.

At the start of the 2022-2023 academic year, the Department consists of 52 faculty: 32 professors, 12 associate professors, and 8 assistant professors. We have 142 undergraduate Physics majors, 136 graduate students in our PhD program, and 2 graduate students in the FSU Physics Masters-to-PhD Bridge Program for underrepresented minority students.

To our new and returning undergraduate students, your journey here is not just about acquiring knowledge, but about developing critical thinking, problem-solving skills, and a passion for inquiry that will serve you well throughout your lives.

To our graduate students, you are the heart of our research endeavors. Your contributions to cutting-edge projects, your pursuit of innovative ideas, and your dedication to expanding human knowledge are what drive us forward. Your time here will shape the landscape of physics for years to come, and we eagerly anticipate the breakthroughs you will achieve.

In this newsletter, you will read about recent happenings in the Department including new faculty, retirements, and event highlights. I want to draw your attention to the memorial pieces for emeritus professors Neil Fletcher and Don Robson and for vital staff member and long time friend to all Joe Ryan. Their impacts to Physics and to our Department will be long remembered.

As we embark on this new academic year, let us remember that each one of us plays a crucial role in the fabric of our department. Let us continue to foster an atmosphere of respect, intellectual curiosity, and cooperation that empowers us all to reach greater heights.

Once again, welcome to the new academic year!

Go Seminoles!

FSU physicist Greene named to Biden's science council

Dr. Laura Greene (fifth from right facing the camera), at a White House ceremony in 2021. Appointed by President Joe Biden, Greene is a member of the President's Council of Advisors on Science and Technology.

Dr. Laura H. Greene, the Marie Krafft professor of physics at FSU and Chief Scientist at the National MagLab joined us in 2015. On September 22, 2021, U.S. President Joe Biden appointed Laura to his President's Council of Advisors on Science and Technology (PCAST).

"I am humbled and honored to be selected to advise the president on science, technology, and innovation policy," Greene said. "I feel like this is my opportunity to serve my country in a way where I can make a real contribution and help ensure that America remains a global leader in fundamental and applied research."

Greene is a widely respected researcher in experimental condensed matter physics investigating quantum materials. She focuses on strongly correlated states utilizing planar tunneling and point contact electron spectroscopies of heavy fermions, topological materials, unconventional superconductors, and other quantum materials. She also works to develop methods of predictive design of new families of superconducting materials. Greene is a member of the National Academy of Sciences, a member of the American Academy of Arts and Sciences and holds fellowships in the American Association for the Advancement of Science, the Institute of Physics (U.K.), and the American Physical Society (APS). She has been a Guggenheim Fellow and received numerous awards including the E.O. Lawrence Award for Materials Research from the U.S. Department of Energy, the APS Maria Goeppert-Mayer Award, and the Bellcore Award of Excellence. She has co-authored over 200 publications and presented about 700 invited talks.

Laura Greene

Greene plays an active leadership role in numerous science organizations. She was the 2017 president of the American Physical Society where her theme was science diplomacy on national and international scales and its application to human rights. Greene was a co-chair on the 2019 Decadal Survey for Materials Research for the National Academy of Sciences and served on the Board of Directors for the American Association for the Advancement of Science. She is the Vice President of Ethics and Outreach for the International Union of Pure and Applied Physics, serves in their U.S. International Liaison Committee, and chaired their Commission on the Structure and Dynamic of Condensed Matter Physics (C10).

"Laura brings not just an expertise in materials research, but a deep understanding of scientific organizations around the world and the impacts that science has on peoples' lives—key perspectives that will bring great value to her role within this group of advisors," said Greg Boebinger, director of the National MagLab.

Greene holds a bachelor's and master's degree from Ohio State University and a master's degree and doctoral degree in physics from Cornell University. She also holds an appointment at the University of Florida. "This is the latest in a long string of remarkable recognitions for Laura Greene," said FSU President Richard McCullough. "She is a great representation of the high-quality faculty we are proud to have here at Florida State University." ⚛

Mayly Sanchez joins FSU Physics

Todd Adams
WRITER

In 2022, Mayly Sanchez joined the FSU physics department as the first Wyatt-Green Endowed Chair of Physics when she moved from Iowa State University (ISU) to Tallahassee. At FSU, she has expanded our research program by creating a new thrust studying neutrino physics, one of the hottest topics in particle physics. The department has set the goal of creating a world-class neutrino physics group and Mayly is the first hire and founder of this effort.

Mayly did her undergraduate studies at Universidad de Los Andes (ULA) in Mérida, Venezuela and followed it with a postgraduate scholarship at the International Centre for Theoretical Physics in Trieste, Italy. She earned her Master's and Ph.D. degrees from Tufts University in Boston, Massachusetts. She was a post-doc at Harvard University until hired as an Assistant Physicist at Argonne Laboratory outside of Chicago. In 2009, she began a joint appointment between Argonne and Iowa State University. At ISU, Mayly rose from Assistant Professor to the LAS Dean's Professor. She won an NSF CAREER award to support her early work at ISU, which led to her being honored with a Presidential Early Career Award for Scientists and Engineers in 2011. She is a Fellow of the American Physical Society (2020).

Neutrinos are the most elusive of the known particles, despite being the second most-abundant (behind photons). Studying neutrinos generally depends on large fluxes of neutrinos, large detectors, or both. The 2015 Nobel Prize was awarded for work that provided the experimental evidence that neutrinos oscillate from one type to another as they travel, and consequently, that they must have mass. Most of the current work in the field is concentrated on determining masses (or at least the mass differences) and mixing parameters of the three neutrino types.

Mayly is a leader on the most important U.S.-based neutrino experiments of the 21st century including MINOS, NOvA, ANNIE, and DUNE. All of these are based at Fermilab, where FSU physicists have been collaborating since the founding of the laboratory. Her current program focuses on the latter three experiments of which FSU is now a collaborating institution. Within MINOS and NOvA, Mayly (and members of her group) have led some of the most important measurements of neutrino oscillations. Mayly leads the ANNIE collaboration, which is developing new detectors for future neutrino experiments. DUNE is the largest neutrino experiment in the world and the future of the U.S. neutrino program. It is in the development and early construction stage with a planned start date of 2029. FSU is now well-positioned to play important roles in the early results from DUNE.

Mayly has a strong interest in developing new detector technologies and is setting up a laboratory on the sixth floor of the Keen Building. She is exploring synergies with Profs. Rachel Yohay and Ted Kolberg, who also work on detector development (currently related to the LHC). We anticipate a fruitful future that positions FSU as a leader in detector R&D for particle physics.

Mayly Sanchez

Mayly is also a leader within the broader high energy physics program. Most notably, she was selected as a member of the U.S. DOE HEPAP Particle Physics Project Prioritization Panel, which will produce recommendations for the DOE and NSF to guide the priorities of the field for the next decade—a critical and important role. She has also served on the Fermilab Users Executive Committee, the APS DPF Program Committee, and the APS DPF Executive Committee. ⚛

Cyprian Lewandowski joins FSU's CMMP Group

Dr. Cyprian Lewandowski joined the FSU Physics faculty as an assistant professor in August 2022. Dr. Lewandowski completed his undergraduate education in the United Kingdom at Imperial College London in 2015. He then moved to the United States to start his doctoral studies in the group of Professor Leonid Levitov at the Massachusetts Institute of Technology. From 2020-2022 Dr. Lewandowski was a Moore post-doctoral fellow at the California Institute of Technology.

Dr. Lewandowski works in condensed matter physics. What captivates Dr. Lewandowski is the ability of interactions in condensed matter systems to completely alter that system's behavior. More specifically, Dr. Lewandowski studies emergent electronic phenomena, which can be as fundamental as plasmons or as profound as superconductivity, to explore the underlying physics and to identify their potential technological applications. A common theme throughout his work is the close connection between theory and experiments, both in developing an understanding of interaction effects and shaping the questions Dr. Lewandowski asks as a theorist.

For a short video introduction of Dr. Lewandowski organized by the FSU's Office of Faculty Development and Advancement, go to **https://youtu.be/uom9FKOyq3o**. ⚛

Cyprian Lewandowski

New Astrophysics faculty: Massimo Marengo (in his own words)

I grew up in Torino, a northern Italian city known for its car industry (Fiat) and its soccer rivalry (Juventus and Torino FC). Realizing since an early age that soccer and building cars were not my forte, I pursued my real passions for physics and astronomy, first at the University of Torino, and then at the "International School for Advanced Studies" (SISSA/ISAS) for my Ph.D. in Astrophysics. In 1997, I received a Predoctoral Fellowship from the Smithsonian Institution and relocated to the Harvard-Smithsonian Center for Astrophysics (CfA, in Cambridge, Massachusetts) to complete my doctoral studies, which I finished in 2000. For the following 9 years, I worked at CfA first as a Postdoctoral Fellow and then as a staff Astronomer, in the team that designed and launched the Infrared Array Camera (IRAC) onboard NASA's Spitzer Space telescope. I never made cars for Fiat, but I did help building a telescope in space.

My academic journey has taken me across different regions of the United States. After the Spitzer nominal mission came to an end in 2009, I moved from New England to Ames, Iowa. There, I became a faculty member of the Physics and Astronomy department at Iowa State University for 12 years. Since the Summer of 2022, I have been living in Tallahassee and working as a professor in the Physics department, here at Florida State.

Since my early days as a student in Torino, I have been fascinated by the lives of stars. Even in this golden age of astronomy, when we can use the sky as a laboratory to investigate deep questions such as the origins of the universe and of the life on Earth, stellar astrophysics still remains a crucial ingredient to understand the cosmos. Indeed, the root word for both Astronomy and Astrophysics, "ἄστρον" ("astron"), means "star." This is appropriate since stars are one of

Massimo Marengo

the fundamental engines for the evolution of the universe. Consider, for example, the variety of elements that populate the periodic table. With the exception of hydrogen, helium, and traces of lithium, all other elements were produced in the alchemic furnaces of stars. Some of these transmutations happen in violent explosions involving the death of massive stars or the catastrophic re-ignition of nuclear reactions in exotic stellar remnants. Most nucleosynthesis, however, takes place during the relentless nuclear burning that supports all stars throughout their lives. The newly produced elements are then ejected at the end of the star's life, and made available to form the next generation of stars and planets, and the life-forms that may evolve on them. This is why, by studying stars, we can understand the evolution of the elements in the universe.

As an observational astronomer, I study stars in the Milky Way galaxy and other nearby galaxies that are part of what we call the "Local Group." I use both ground- and space-based telescopes (including the Hubble Space Telescope and the newly operational JWST) to analyze the optical and infrared starlight coming from these galaxies, which are close enough so that their stars can be individually observed. The goal of my research is to understand galactic ecosystems, the cycle through which stars contribute to the evolution of galaxies. By studying stellar populations in Local Group galaxies, we can determine when and where these galaxies formed new stars, shedding light on the processes that regulate the formation and evolution of galaxies.

Not all stars, however, are created equal for the purposes of these investigations. My work focuses on the study of radially pulsating stars. These stars find themselves in just the right conditions to periodically expand and contract, appearing to change their brightness in the process. The physics of these pulsations is determined by how quickly sound waves propagate through the star, which is in turn constrained by the star's internal structure, energy production, and composition. As a result, the observable quantities of pulsating stars (e.g., their brightness, pulsation mode, and period) are related to their fundamental parameters (e.g., their intrinsic luminosity, temperature, mass, and elemental abundance) by precise relations. This is what makes pulsating stars such excellent probes: in my research I use powerful telescopes to observe these stars in distant galaxies, and then derive the physical parameters of the stellar populations they belong to.

At Florida State University I joined a vibrant group that complements my research in many aspects of stellar astrophysics, including the origin of the elements, the birth and death of stars, and the evolution of the universe from ancient cosmological eras. I look forward to teaching astronomy to FSU students, to transmit my excitement for the marvels of the sky and to inspire a next generation of scientifically-trained Florida citizens of all backgrounds, colors and orientations. ⚛

FSU physicist elected APS Fellow

McKenzie Harris
SPECIAL TO RESONANCES

A Florida State University physicist and researcher at the FSU-headquartered National High Magnetic Field Laboratory has been elected a Fellow of the American Physical Society.

Professor of Physics Oskar Vafek was recognized by APS for his work in correlated electron physics, which explores how a collection of particles, or a material system such as graphene, is more than a sum of its individual parts and can exhibit complex, novel behavior because of interactions within the system.

"I was honored when I found out I had been elected a fellow, just absolutely honored," Vafek said. "I'm a theorist, which means I determine mathematical models and theoretical explanations of the experimental observations and data collected by my experimental physicist colleagues."

The APS Fellowship Program, created in 1921, recognizes physicists who have contributed to advances in physics through original research, innovative applications, teaching and leadership. Each year, no more than one half of one percent of APS members are nominated by peers for election to the status of fellow. FSU is home to nearly 50 APS fellows, including Vafek, attesting to the quality of research conducted by the Department of Physics.

"It is a pleasure to congratulate Oskar on his election as a fellow to the American Physical Society," said College of Arts and Sciences Dean Sam Huckaba. "He has contributed mightily to our overall academic and research missions and now joins a select group of scholars."

Vafek earned a doctorate at Johns Hopkins University and conducted postdoctoral research at Stanford University's Institute for Theoretical Physics before joining FSU's faculty in 2006. He serves as director of the theoretical condensed matter division at the National MagLab. This is the largest and highest-powered magnet laboratory in the world, funded by the National Science Foundation and State of Florida to provide researchers access to powerful magnets to answer fundamental questions about materials, new technologies, energy, health and the environment.

Oskar Vafek

"Oskar's election to the APS is well-deserved and reflective of the importance of the theoretical underpinnings that explain so much of the phenomena we research," said Greg Boebinger, MagLab director and professor of physics. "His investigations into graphene material systems continue to push the field forward, paving the way for exciting new applications in society."

Over the past five years, Vafek's research has focused on graphene, an ultrathin yet strong and flexible material that conducts electricity. Layered sheets of graphene placed at precise angles facilitate superconductivity under the right conditions, and are part of a carbon-based two-dimensional superconductor known as twisted bilayer graphene.

"The phenomenon called 'magic angle twisted bilayer graphene' has quickly grown into a big field, and we're currently investigating the behavior of electrons within this structure to determine why it becomes superconductive and how it behaves in the external magnetic field," Vafek said.

Though this research is conducted on layers that are only two single atoms thick, the applications can be massive. Once scientists understand the fundamentals behind this phenomenon, steps can be taken to engineer these properties into superconducting structures used for improved information processing, data storage and more.

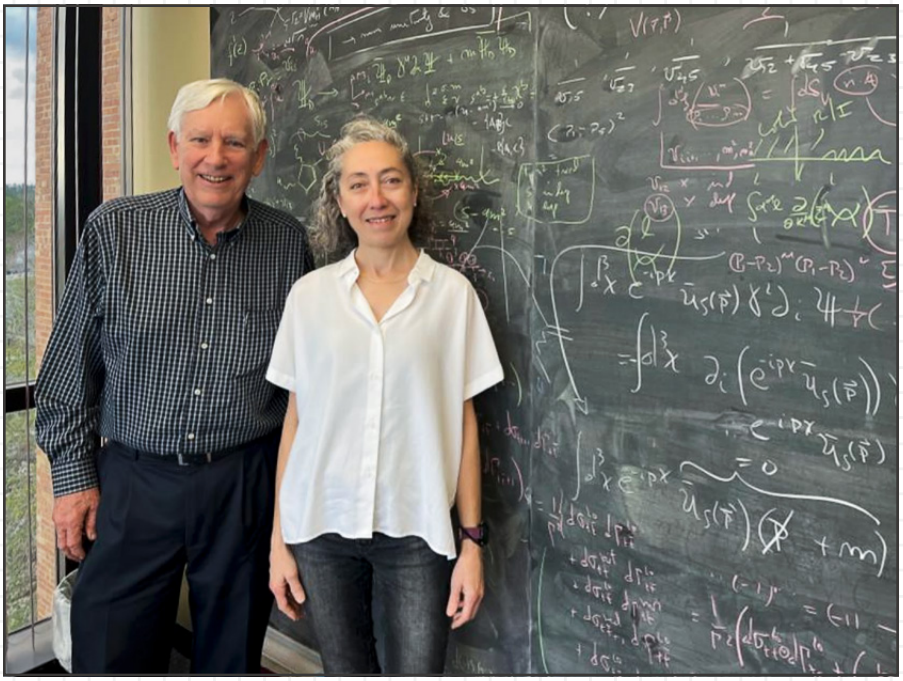
In addition to his research, Vafek also teaches graduate classes on condensed matter physics and is working with a second-year graduate research assistant on externally funded projects.

"Working with students on research projects is a great opportunity to train the next generation of physicists by tackling open-ended, real-world problems," he said.

Founded in 1899, the American Physical Society is a nonprofit, international organization composed of more than 50,000 members working to advance and diffuse knowledge of physics through outstanding research journals, scientific meetings, education, outreach, advocacy and international activities. APS members are physicists with careers in academia, national laboratories and industries across the U.S. and around the globe. ⚛

Owens Professorship launched; Reina first honoree

Joseph Owens
EMERITUS PROFESSOR



Joseph Owens and Laura Reina

In 2021 I completed the funding of the Joseph F. Owens Professorship in the Department of Physics. I have been asked to write a description of how and why I created this Professorship. In order to do this it is best to start with a brief overview of my career at FSU.

I came to FSU in August 1976 as a post-doc with the High Energy Group. I had received my Ph. D. from Tufts University in 1973 and followed that with three years as a post-doc at Case Western Reserve University in Cleveland, Ohio. Four years after arriving at FSU I was fortunate to join the faculty as an Assistant Professor. The rules for early promotion were somewhat different back then and I became a tenured Full Professor in 1985. Shortly thereafter, I had a conversation with Kirby Kemper, during which he said I should become Associate Chair of the Department. When I asked why, he said that he was going to nominate me as Department Chair following the term of Don Robson and that I had better learn the ropes before then! As it turned out I did serve as Associate Chair from 1988-1991 and then Chair from 1991-1997. Sometime after that I served as an Associate Dean of the College of Arts and Sciences (2003-2009) and I also was a member of the Council on Research and Creativity from 2001-2017, serving as its Chair from 2005-2010. I mention this brief history in order to emphasize that I have looked for ways to serve the Department, College, and University that went beyond my roles in teaching and research.

I retired in 2017 after forty-one years at FSU and became an Emeritus Professor. However, I still was thinking of ways I could serve the interests of the department and of FSU. It was then that I decided that one way to do this was to fund a Professorship in the department. For those not familiar with this program, a Professorship is funded through contributions made to the University Foundation. The interest on the principle is then made available to the holder of the Professorship for use in funding research. An attractive feature of this is that the restrictions often put in place by funding agencies do not apply to this money. Furthermore, it is not limited to a specific fiscal year or grant period. As an example, if one wanted to buy a laptop using Department of Energy funds, then that laptop must be used only for research and not teaching activities, personal email, etc. However, if purchased with funds from the Professorship then no such restrictions apply. This funding also provides additional flexibility regarding travel, student support, etc.

During the majority of my time in the High Energy Group my research was centered on calculations using perturbative Quantum Chromodynamics. Prior to my QCD research, I worked on topics in what is now called Hadronic Physics, doing modeling and amplitude analyses. It seemed appropriate then to stipulate that the professorship be awarded to someone working in QCD or some element of the Standard Model. If no eligible faculty member was working in those areas, then the specification was broadened to include someone working in Hadronic Physics.

I started the funding process in 2019 and completed it in the fall of 2021. The principle was allowed to accumulate until the fall of 2022 at which point the Department was given clearance to choose a recipient. I am pleased to announce that the first recipient of the Joseph F. Owens Professorship is Professor Laura Reina. Her record of achievements in perturbative QCD calculations along with her extensive service to the physics community through serving on panels, contributing to planning studies, and more means that she has exceeded all the stipulations that I set for this award. Congratulations Laura!

The name I chose for this professorship does not include the suffix "III." That was by design, as I intended this professorship to be named not only for me, but also my father and grandfather. It was through their guidance and support that my early interest in science was formed. Furthermore, as I developed an interest in physics this support and encouragement continued. I would not have had the career that I have had without the guidance, support, and encouragement of my parents and grandparents. ⚛

2023 Dirac Lectures return to FSU campus

In February, the 2023 Dirac Lectures returned to an in-person format. Since 2007, the department has been organizing a longstanding lecture series celebrating the memory of the late Nobel Laureate Paul Dirac and inviting leading physicists to deliver talks.

The 2023 Dirac Lectures focused on effective field theories and the impact these have on a variety of areas, including nuclear, particle, and gravitational physics. EFTs (Effective Field Theories) are theoretical approaches to the study of physical phenomena at a given length or energy scale, allowing the description and calculation of all phenomena at that scale, without knowing their underlying physics at shorter distances or higher energies. Only underlying symmetries and degrees of freedom should be identified. Furthermore, EFTs enable systematic approximations of known short-distance physics and understanding of long-distance phenomena, such as the blue sky and superconductivity.

Lecture delivered by David B. Kaplan.

The 2023 Dirac Lectures guests included:

- **Zvi Bern**, director of Bhaumik Institute for Theoretical Physics and professor of theoretical elementary particle physics, University of California Los Angeles.
- **Yuval Grossman**, professor of physics, Cornell University.
- **David B. Kaplan**, professor of physics and senior fellow of the Institute for Nuclear Theory, University of Washington Seattle.

Prof. Kaplan introduced the general concepts of EFTs, basic methods, and diverse applications. Prof. Grossman engaged in quark and lepton flavor physics, discussing symmetries and new physics beyond the Standard Model. Prof. Bern gave lectures on pioneering work applying gauge theory to gravity theory and demonstrated an explicit calculation in the post-Newtonian regime.

Given that the previous two Dirac lectures were held online, the significance of bringing leading figures to Tallahassee for in-person lectures cannot be overstated, as it provides an invaluable opportunity to learn about state-of-the-art research directly from renowned experts. "Interactions with the Dirac Lectures speakers build important contacts for the students, and it enhances the visibility of both the Department of Physics and FSU as a whole," Laura Reina, the chair of the organizational committee, said. The lectures were posted on YouTube, and the links can be found on the Physics Department's website at https://physics.fsu.edu/2023-dirac-lectures. ⚛

RESONANCES

A PUBLICATION OF
The Florida State University
Department of Physics

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For the latest on what's happening in the Physics Department, join us online at **https://physics.fsu.edu/**

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Physics Department Awards 2022

UNDERGRADUATE STUDENT AWARDS 2022

Günter Schwarz Memorial Scholarship
- **Shelby Arrigo** *"For demonstrating excellence in Physics and participaing in band and the Marching Chiefs during her tenure at FSU."*
- **Christina Schiffert** *"For demonstrating excellence in Physics and participaing in band and the Marching Chiefs during her tenure at FSU."*
- **James Sullivan** *"For demonstrating excellence in Physics and participaing in band and the Marching Chiefs during his tenure at FSU."*

Anna Jane Hendren Runyan Undergraduate Award
- **Peter McGoron** *"For outstanding academic success."*
- **Kevin Ligouri** *"For outstanding academic success."*
- **Ethan Todd** *"For outstanding academic success."*

Clara Kibler Davis Undergraduate Scholarship
- **Rebecca Van Gelder** "*For outstanding academic success in coursework and undergraduate research."*
- **Lexington Mandachi** *"For hard work and persistence leading to academic success in upper-division physics courses."*

Joseph Lannutti Award for Undergraduate Research
- **Diya Choudhury** *"Measurement of the Half-lives of Exotic Nuclei ^{42}P, ^{45}Cl, ^{43}S, ^{44}S."*
- **Ty Wilson** *"Analysis of Stoichiometry and Valence in $LaVO_3$ Thin Films"*
- **Rebecca Van Gelder** *"Finding Millimeter Transients using Planck"*

John D. Fox Award (undergraduate)
- **Graham O'Donnell** *"For his exceptional academic record and for outstanding research on the implementation of machine learning methods to advance nuclear physics calculations."*

SPS: Sigma Pi Sigma, the Physics Honor Society
- **Shelby Arrigo, Jackson Barber, Darian Reece DiScenza, Ryan Goodrich, Ashlyn Langford, Peter McGoron, James Sullivan, Ethan Todd, Lucas Paul Wilson**

GRADUATE STUDENT AWARDS

Dirac Fellowship
- **Angelica Goncalves Dos Santos** *"For instrumental contributions to the global fitting of new physics models in the Standard Model Effective Field Theory (SMEFT) approach.*

Hellmann-Dirac Award
- **Vazha Loladze** *"For outstanding work in theoretical particle physics to explore new physics beyond the Standard Model."*

Hagopian Family Endowment Award in High Energy Physics
- **De-lin Xiong** *"For outstanding work on track multiplicity in monophoton events."*
- **Ryan Kim** *"For work on the CMS experiment and winning a LPC Graduate Scholar Award."*

John D. Fox Award (graduate)
- **Eilens Lopez-Saavedra** *"For her outstanding work on experimental nuclear physics and for her work ethic and dedication to the experimental program at the John D. Fox laboratory."*

J.W. Nelson Award
- **Edmundo Barriga** *"For outstanding work in developing and extending analysis techniques for analyzing complicated reaction channels and for performing critical data taking operations during challenging times resulting in successful GlueX data taking accelerator runs."*

'Physics Awards 2022'

— continued from previous page

- **Yuwaraj Adhikari** *"For excellent work on novel spin transport effects in hybrid nanostructures of chiral molecules on semiconductors."*
- **Mariam Gogilashvili** *"For developing an innovative analytic explosion condition that provides insight into why some stars explode and why some stars collapse to black holes."*

Yung Li Wang Award

- **Alex Moon** *"For his dedication in learning and effectively fabricating heterostructures of 2D compounds under inert conditions, that reveal novel behavior."*
- **Zihan Zhang** *"For his exceptional initiative, creativity and independence in research."*
- **Bal K. Pokharel** *"For his experimental contributions to the understanding of superconductivity and charge orders."*

John E. & Melissa D. Gray Novotny Award

- **Sangsoo Kim** *"For his outstanding work on researching magneto-elastic coupling in spinel vanadates."*

Anna Jane Hendren Runyan Graduate Award

- **Tyco Brahe Mera Evans** *"For outstanding work on the role of SNIa in 511 keV positron annihilation in our galaxy."*

Clara Kibler Davis Graduate Scholarship

- **Aikaterina Flessa** *"For her work in synthesizing and characterizing novel Dirac-like metallic systems."*
- **Ashton Morelock** *"For outstanding work in developing a statistical method for extraction of neutron energies in the field of experimental nuclear physics."*
- **Meutia Wulansatiti Nursanto** *"For the development of a new CMS analysis searching for a timid composite pseudoscalar particle and her role in setting up the FSU High Granularity Calorimeter silicon sensor testing lab."*
- **Yuting Tan** *"For theoretical contributions to the understanding of the colossal dielectric response and direct mapping of the phase coexistence region of Mott organic materials and a class of transition-metal dichalcogenide moire bilayer materials."*

Major Michael J. Mills Scholarship in Astrophysics

- **Melissa Shahbandeh** *"For leading a prolific near-infrared observing program and advances in the understanding of stripped-envelope supernovae."*

■ ■ ■ FACULTY & STAFF AWARDS and RECOGNITION ■ ■ ■

PAI Award for Excellence in Teaching

- Todd Adams
- Mark Spieker

Physics ATOM Award

- Tennessley Harris

Staff Service Recognition

- Powell Barber — *30 years*
- Randall Smith — *25 years*
- Chris Bradley — *15 years*
- Mark Roberts — *10 years*
- Laticia Shaw-Hall — *5 years*

Physics Department Awards 2023

■ ■ ■ UNDERGRADUATE STUDENT AWARDS 2023 ■ ■ ■

■ Günter Schwarz Memorial Scholarship

- **Jack Lyons** *"For his excellent academic performance as a physics major and award-winning trumpet playing."*

■ Anna Jane Hendren Runyan Undergraduate Award

- **Michael Fredock** *"For outstanding merit in the study of undergraduate physics"*
- **Lexington Mandachi** *"For outstanding merit in the study of undergraduate physics."*
- **Moises Medina Restrepo** *"For outstanding merit in the study of undergraduate physics."*
- **Justin Sculley** *"For outstanding merit in the study of undergraduate physics."*

■ Clara Kibler Davis Undergraduate Scholarship

- **Sophia Korte** *"For merit and success in the study of physics."*
- **Diya Choudary** *"For merit and success in the study of physics."*
- **Wonmin Song** *"For merit and success in the study of physics."*

■ Joseph Lannutti Award for Undergraduate Research

- **Wonmin Song** *"Gamma decay of ^{69}Ga"*
- **Bajron Zenelaj** *"Fusion Reaction Measurements with the ENCORE Active Target Detector"*
- **Ethan Todd** *"Process Quality Control for HGCAL at Florida State University"*

■ Phi Beta Kappa Academic Honor Society Recognition

- **Sarah Eschrich, Jack Folwell, Shaheed Perez, Ethan Todd, Holly Zeyl**

■ SPS: Sigma Pi Sigma, the Physics Honor Society

- **Adam Agonoy, Sophia Amidi, Scott Baker, Richard Martin Brunner, Corey Downs, Michael Fredock, Francisco Gallo, Ian Cameron Smith Hay, Alex Judge, Sophia Korte, Robert Laughlin, Kevin M. Liguori, Jack Lyons, Lexington Mandachi, Dillon Michael McClure, Moises Medina Restrepo, Adam Mooers, Drew Smith, Ethan Walling Todd, Abigail Willis, Lucas Paul Wilson**

■ John D. Fox Award

- **Alex Conley** *"For his essential contributions to the commissioning of the CeBrA demonstrator for particle-gamma coincidence experiments at the FSU Super-Enge Split-Pole Spectrograph and for automating significant steps of the data analysis."*

■ John D. Fox Award *(continued)*

- **Bryan Kelly** *"For his essential contributions to start an experimental program studying the Pygmy Dipole Resonance at the FSU Super-Enge Split-Pole Spectrograph via (d,p) reactions and successfully running two experiments."*
- **Scott Baker** *"For developing a Geant4-based simulation of the CeBrA gamma-ray detectors to characterize their energy resolution and full-energy detection efficiency."*

■ J.W. Nelson Award

- **Samuel Ajayi** *"For his incessant search for new gamma rays to expand level schemes to high spin and excitation energy."*
- **Gustavo Figueiredo** *"For the development of computational techniques for the study of the analytic properties of Feynman integrals involving massive particles."*

■ Yung Li Wang Award

- **Arijit Gupta** *"For his outstanding experimental and theoretical work in probing the superconducting proximity effect in a Topological Kondo insulator."*
- **Zhenqi Hua** *"For his initiative and accomplishments in laboratory creative research, particularly his work on electrical transport properties of 1D metal-halide hybrid chiral crystals."*
- **Olatunde Oladehin** *"For experimental studies of novel electronic and magnetic states in topological metals and*

'Physics Awards 2023'

— continued from previous page

Weyl semimetals involving design, synthesis, and bulk properties measurements."

John E. & Melissa D. Gray Novotny Award

- **Wai-Ga Ho** *"For his productive research efforts on Mott insulators and high-entropy alloys."*

Clara Kibler Davis Graduate Scholarship

- **Keke Feng** *"For excellent work studying magnetically frustrated states in intermetallic crystalline materials."*
- **Irene Roman** *"For developments of the numerical unitarity method for the calculation of three-loop corrections to scattering amplitudes in quantum field theories."*
- **Shameran Mahmud** *"For her excellent work on Higgs effective field theory, specifically for her findings in connecting the geometric interpretation of the theory with unexplored experimental signatures at high-energy hadron colliders."*

Lynn Shannon Proctor Award

- **Tyler Jones** *"For his creativity, diligence, commitment, and success in physics research."*

Major Michael J. Mills Scholarship in Astrophysics

- **Mariam Gogilashvili** *"For contributions to our understanding of how massive stars die — deriving an analytic expression that predicts which stars will explode — and for pushing the frontier of core-collapse supernova simulations."*

FACULTY & STAFF AWARDS and RECOGNITION

PAI Award for Excellence in Teaching

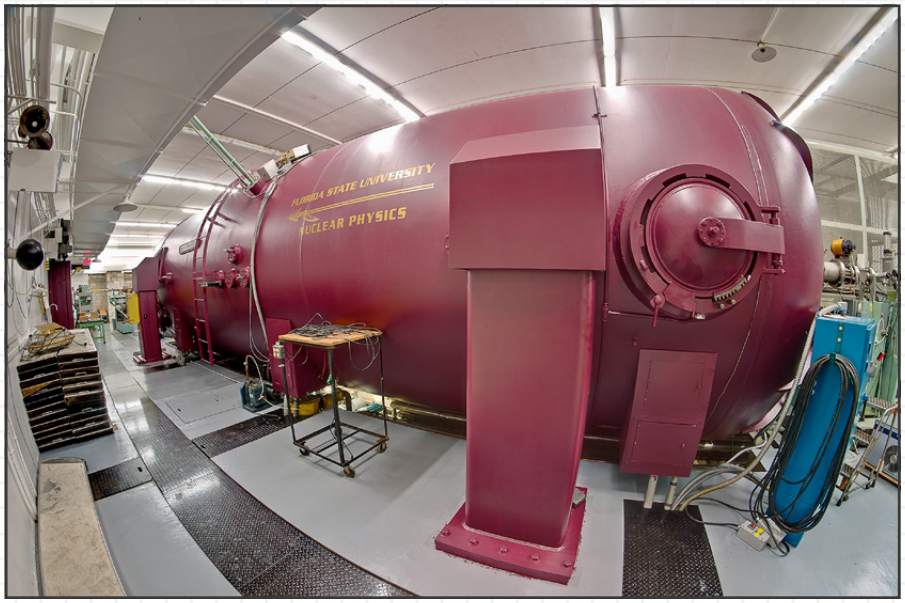
- Hitesch Changlani
- Fernando Febres Cordero

Physics ATOM Award

- Christopher Bradley

Physics Noble ATOM Award

- Randall Smith



The 9-MV Super-FN Tandem van-de-Graaff accelerator in FSU's John Fox Laboratory.

Flying High at the Circus of Physics!

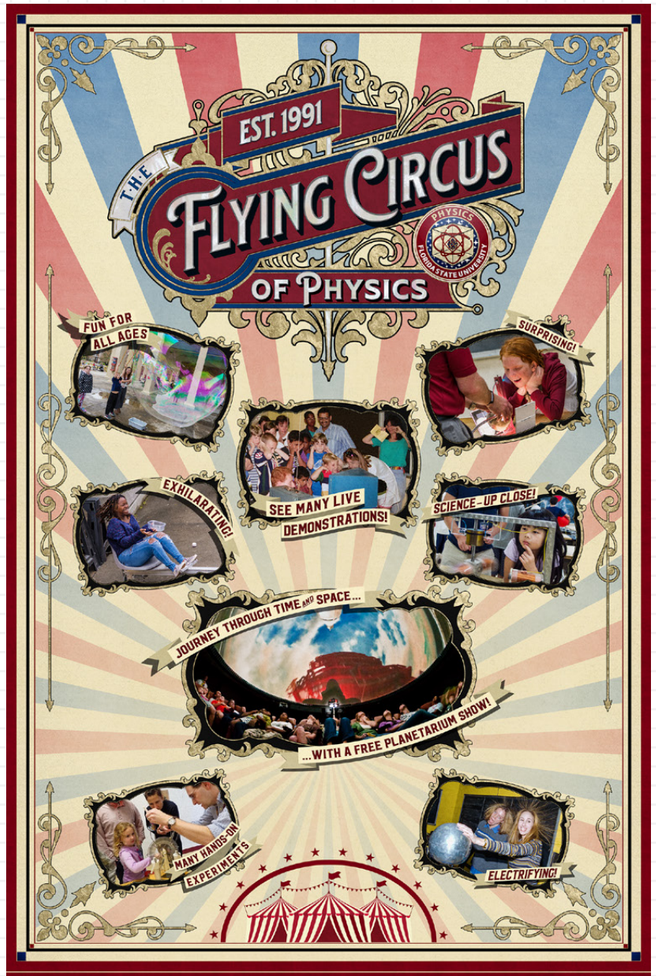
After a hiatus of several years, physics fun for the whole family returned with the 2023 edition of the Circus of Physics! Held Saturday, March 25, it drew families and other fans of physics from around the Tallahassee area to experience exciting activities and demonstrations, and to see some of our state-of-the-art facilities. An estimated total of 1,100 visitors came to experience the wonders of science.

A highlight was the physical demonstrations used by faculty and students to inform and entertain the attendees. Classical rooms such as Modern Physics, Mechanics, Electricity and Magnetism, and Sound and Waves were organized. A new room called The Exploration Room, containing demonstrations which had surprising or counterintuitive effects, was a great hit. Hourly shows in the UPL101 lecture hall included Harrison Prosper speaking on particle physics at the high energy frontier, Massimo Marengo discussing the latest exciting images from the James Webb Telescope, Laura Greene showcasing the effects of superconductivity, and Jeremiah Murphy on the mysteries of black holes. Bridget DePrince from the Chemistry Department also joined us to show some colorful — and explosive — demonstrations.

The event also featured shows at the Pat Thomas Planetarium, rides on the Space Warp Machine, and tours of the John D. Fox Laboratory and the FSU Condensed Matter Laboratory, as well as contributions from outside of the department. Catherine Hancock from the Geophysical Fluid Dynamics Institute contributed several popular demonstrations on phenomena such as turbulence. Hannah Hiester of Science on the Move ran an interactive lever chair demonstration to illustrate the power of simple machines, and the Tallahassee Astronomical Society were on hand with an informative display and several telescopes. Other activities included a photobooth with various physics-related props, paper airplane contests run by Vlad Dobrosavljevic, and some demonstrations using Moiré patterns run by Cyprian Lewandowski.

The ringleaders of the event were Sergio Almaraz-Calderon, Mark Cartagine, Fernando Febres Cordero, Sean Dobbs, Kevin Fossez, Eric Hsiao, and Kohsaku Tobioka.

All who attended and participated in the event seemed to have a great time and were sad to see the Circus close up and roll out of town, but will look forward to the day it returns! ⚛



FSU hosts 2021 SESAPS meeting

Group photo of SESAPS21 attendees and participants outside Doak Campbell Stadium.

The 88th annual meeting of the American Physical Society Southeastern Section was held November 18–20, 2021, in the University Center Club at Florida State University. **(http://sesaps21.physics.fsu.edu).** One of the first large U.S. conferences to be held in-person after the pandemic, the unique venue overlooks FSU's Doak Campbell Stadium.

More than 280 participants from the southeastern region of the United States—including Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia, Puerto Rico, and the US Virgin Islands—came to Tallahassee to participate in an exciting meeting covering a broad range of physics topics including: Atomic Molecular and Optical Physics, Precision Test of the Standard Model, Applied Physics, Biophysics, Multi-messenger Astrophysics and Cataclysmic Events, Cosmology, Exoplanets, Condense Matter (Frustrated Magnetism, 2D materials, Thermoelectrics and superconductivity), Quantum information and Computing, Experimental and Theoretical advances in Nuclear structure and nuclear astrophysics, Experimental and theoretical advances in Medium Energy Nuclear Physics, Medium and High Energy Physics, LHC Results and Techniques, Dark Matter and Physics Beyond the Standard model, and Neutrino Physics.

The full program of the meeting can be found at: **https://meetings.aps.org/Meeting/SES21/APS_epitome**

SESAPS21 included plenary and parallel sessions, special events such as a Student Poster Session, a Graduate Program Fair, and the presentation of the SESAPS awards in teaching, research, and service.

FSU Physics Professor and MagLab Chief Scientist Laura H. Greene was the keynote speaker during the SESAPS21 banquet, where she talked about The Dark Energy of Quantum Materials.

The 2021 winners of SESAPS awards were presented during the banquet:

■ **The Francis Slack Award to honor Excellence in Service to Physics in the Southeast:**

Prof. Nadia Fomin, University of Tennessee Knoxville

■ **The George B. Pegram Award to honor Excellence in Teaching of Physics in the Southeast:**

Dr. Chris Vuille, Embry-Riddle Aeronautical University

■ **The Jesse W. Beams Award to honor Excellence in Research in Physics in the Southeast:**

Dr. Latifa Elouadrhiri, Jefferson Lab

Citations of the awards can be found at: https://engage.aps.org/sesaps/honors/prizes-awards.

The SESAPS21 meeting was organized at FSU by Sergio Almaraz-Calderon, Christianne Beekman, Eric Hsiao, Jorge Piekarewicz, and Rachel Yohay. The organizing committee recognizes the members of the FSU Physics Department (undergraduate and graduate students, staff, and faculty) for their help and support before, during, and after the conference. Thanks also to the FSU College of Arts and Sciences, the FSU Office of Research, the National High Magnetic Field Laboratory, the Triangle Universities Nuclear Laboratory (TUNL), Jefferson Lab, and Brookhaven National Laboratory for their help in making SESAPS21 a success.

Dennis Duke retires from FSU after 40-plus years

Dennis Duke came to the FSU Physics Department in 1979 as an Assistant Professor; his research was in the area of High Energy Theory and Phenomenology, and in particular, the role of higher order corrections and other issues of the perturbative QCD. One of his papers on the issue with Jeff Owens on two-loop corrections is one of the most cited papers in this research area.

Later, in the mid-'80s, he became interested in non-perturbative QCD, which led him to Lattice QCD and to realizing the need to establish a supercomputer center at FSU. He assisted Joe Lannutti in establishing the well-known Supercomputer Computations Research Institute (SCRI) at FSU in 1985. SCRI and its resources (the most powerful supercomputers at the time, such as the ETA10 and the Connection Machine made by Thinking Machines, etc.) attracted well-known physicists in the area of Lattice QCD and, more generally, in computational physics.

Dennis became the director of SCRI after Joe Lannutti died, and he served in that position from 1993 to 1998. He served on a number of National Committees where his deep knowledge of scientific computation was used.

During the last several years before his retirement, Dennis worked on aspects of Ancient Astronomy using his physics background to interpret ancient scripture, in particular, on the subject of ancient astronomy tools. ⚛

Dennis Duke

Physics Department adds new staff members

Our department could not thrive without the hard work and enthusiasm of our support staff.

Since our last issue, there have been several personnel changes.

Robin Ryan has taken over as business manager. She replaces Jenny Zhou, who moved to a new position within the university. Other new appointees are Kelsie Beckman, John Bell, Jiaojiao Chen, Devon Cimini, Jonah Gibons, Arzu Hacisalihoglu, and Antonio Valencia. Welcome to you all!

Kelsie Beckman
ACCOUNTING & PURCHASING REP

John Bell
ENGINEERING TECHNICIAN

Jiaojiao Chen
GRANTS COMPLIANCE ASSOCIATE

Devon Cimini
GRANTS COMPLIANCE ANALYST

Jonah Gibbons
ELECTRONICS ENGINEERING TECHNICAL/RESEARCH DESIGNER

Arzu Hacisalihoglu
TRAVEL ASSOCIATE

Robin Ryan
BUSINESS MANAGER

Antonio Valencia
UNDERGRADUATE COORDINATOR

IN MEMORIAM

Neil Fletcher — October 12, 1933–October 22, 2022

Kirby Kemper
EMERITUS PROFESSOR

Neil Fletcher

Our colleague Neil R. Fletcher passed away on October 22, 2022, ten days after his 89th birthday.

After completing his BS in physics in 1956 at what was then Michigan State College, he went on to complete his Ph.D. in experimental nuclear physics at Duke University in 1961. He then joined the very new tandem accelerator laboratory at Florida State as a postdoc. In 1963, he joined our physics faculty as an assistant professor and rose to full professor in 1974.

A major breakthrough in the production of accelerator beams in 1962 was to show that it was possible to make negative helium ions which are needed for the tandem to accelerate them to energies that could produce nuclear reactions. Neil then had the idea that it might be possible to produce negative beams of the rare helium isotope ^{3}He to be used in nuclear reactions. He had attracted two excellent graduate students and with them began the first studies of ^{3}He-induced scattering and reactions at a tandem accelerator lab.

Neil was an innovator in the design of various devices for nuclear physics experiments, often inspired by his love of the topic of optics, which he taught to our undergraduates along with beginning physics for many of his years on the faculty. As the tandem lab moved into the era of heavy-ion induced reactions, it was recognized that some type of filter was needed to be able to select the reaction products of interest from all the debris produced during an interaction. He used his love of optics to design as quadrupole spectrometer that provided the product separation that allowed for very small reaction processes to be measured. He also designed a magnet system that became known as a microprobe, for analyzing environmental samples with beams as small as a micron to probe various parts of samples. He also designed the various beam-handling systems during the addition of the superconducting linear accelerator "after burner." This was added to the tandem to give the higher beam energies needed to overcome the higher Coulomb barriers encountered when using heavy ions to induce nuclear reactions. Along with a colleague in high energy physics, he developed and then team taught a senior level undergraduate course that linked the structure of nuclei to the structure of the proton and its various underlying constituents.

In the 1960s and 1970s the Southeast Section of the American Physical Society was very active as these meetings brought together faculty from the many four-year colleges that exist in the Southeast, for talks on teaching innovations and various research topics. Several of Neil's fellow graduate students at Duke had taken faculty positions at these colleges and through talks Neil came up with the idea of using NSF grant funds from the tandem lab to bring students from four-year colleges to the accelerator lab to conduct undergraduate research projects. The success of this program in the late 1970s encouraged Neil to put together a proposal to the NSF to its newly established Research for Undergraduate (REU) program which was funded, and in the 1980s, included all areas of the physics departments research. During this period, Neil served the department as its Director of Undergraduate Studies. Neil mentored 12 students to the Ph.D and several postdocs before retiring from FSU in June 2001. After retirement, he came to coffee every Tuesday morning to catch up on the latest nuclear physics news. During his years in Tallahassee, Neil was one of the founding members of the Leon Association for Retarded Citizens with this involvement continuing until his move to Michigan in late 2021. After his retirement, Neil pursued painting, and displayed his work at many venues in Tallahassee.

IN MEMORIAM

Don Robson — March 19, 1937–December 18, 2022

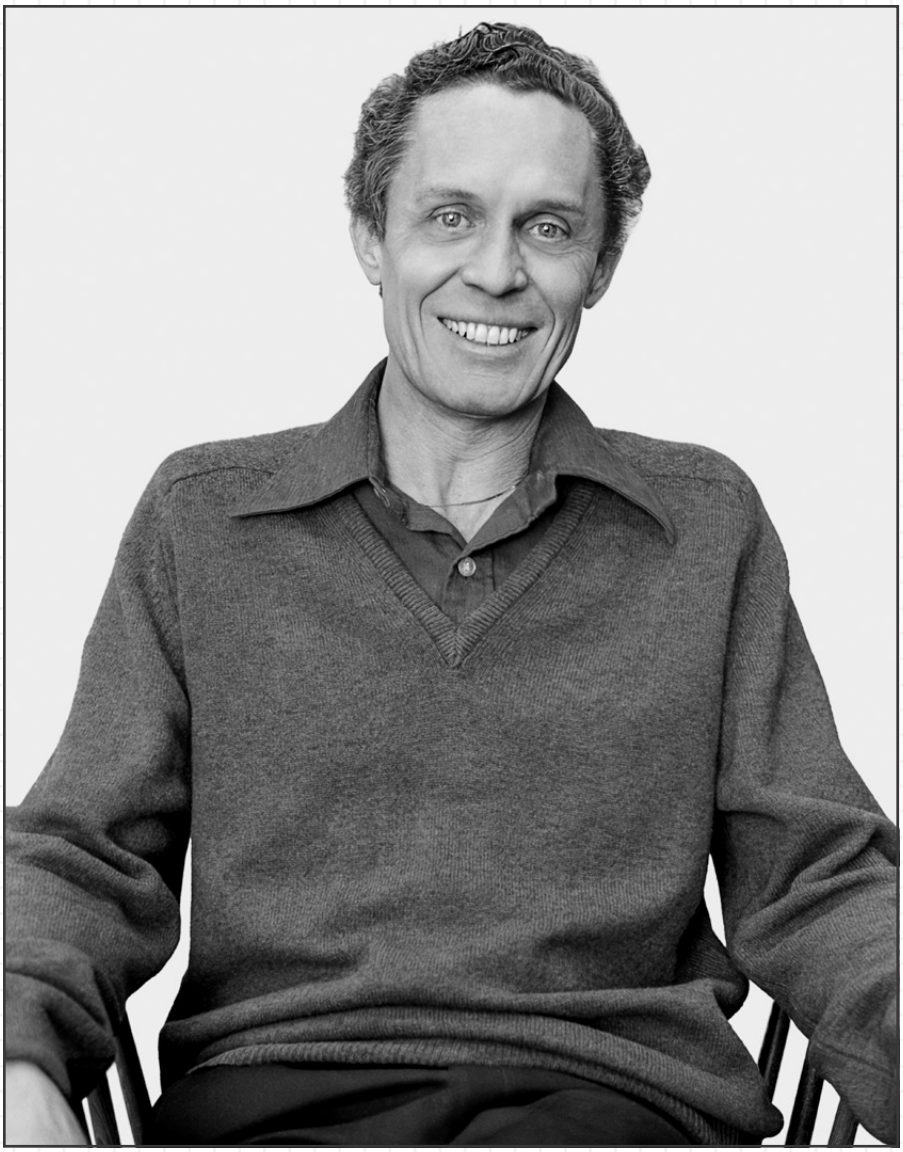
Kirby Kemper
EMERITUS PROFESSOR

Our colleague Don Robson passed away December 18, 2022 after suffering a severe stroke in September 2022.

Don was born March 19, 1937 in Leeds, England. He and his family immigrated to Melbourne, Australia in December, 1949. As a teenager, Don took up chess and in 1954 became the Australian Junior Chess Champion. He also loved playing rugby and like all young Australian men went through Army basic training. He received his BSc in 1959, MSc in 1961, and PhD in 1963 from the University of Melbourne, Melbourne (state Victoria). His MSc worked out the formalism for nuclear transfer reactions and for his Ph.D. he developed one of the first computer codes to carry out these calculations.

He obtained a Fulbright Fellowship in 1963 which he used to come to Florida State University. He gave up a very promising career in professional chess to come to FSU, but continued to play throughout his life here in Tallahassee as well as continuing to play golf, which he had taken up before migrating to Australia. In Tallahassee, he took up daily running and did this into his 70s.

Upon coming to FSU, he was shown data on resonance reactions that John Fox and his students had taken that exploited the extremely precise beam characteristics of the newly commissioned Tandem Van de Graaff accelerator. It was suggested that these sharp resonances might be a result of populating isobaric analog states whose structure could be related to the single particle nature of nuclear states. Don proposed and immediately worked out a theory that showed that these sharp resonances might be observable in proton scattering from a medium mass nucleus and when John and students took the data these single particle structures were indeed observed. However, referees recommended rejecting the paper because it was well known that the proton scattering would be structureless and so the FSU group had made some mistake! No group had really exploited the precise beam capabilities of a tandem accelerator and no data had ever been taken of the type as was done at FSU.



Don Robson, circa 1989

Within a few months, after feverish experimental work, and with Don developing the theory, they gave a talk on their work at a meeting of the American Physical Society. This resulted in a group at Argonne, led by John Schiffer, confirming the FSU result. Upon submitting the work for publication and having the paper accepted by the journal *Physics Letters*, John Schiffer called John Fox and Don Robson to ask why he hadn't seen their paper and they explained that they were having trouble getting it published. Schiffer then said he would request that the Argonne paper not appear until after the FSU work.

The publication of the FSU paper by Fox, Moore (graduate student) and Robson was followed by a detailed theory work-out by Robson, both of which led to a huge effort around the world to exploit this new tool for

'Don Robson'

— continued from previous page

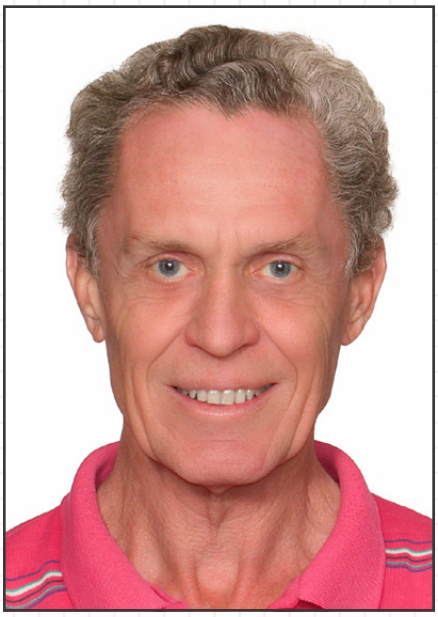
probing the single particle structure of nuclei.

As a result of Don's very original theory development, he was asked to join the FSU physics faculty in 1964. While a requirement of the Fulbright Fellowship was that the holder would return to their home country, negotiations between FSU and the Fulbright Foundation allowed Don to stay in the US. After one year (1964-1965) as an Assistant Professor, Don was promoted to Associate Professor (1965-1967) and then Full Professor with tenure in 1967.

FSU organized an international conference in Tallahassee from March 17-19, 1966 that attracted more than 150 nuclear physicists from around the world and resulted in the publication by Academic Press of a compendium of works as edited by Fox and Robson, showing the power of this resonance technique for understanding the basics of the strong nuclear force. While it is hard to estimate the impact of this conference on the research profile of Florida State, it was one of the events that resulted in FSU receiving an NSF Center of Excellence Grant in 1967, the stated purpose of which was to build strength on strength. This funding allowed the purchase of a new tandem Van de Graaff that could go to much higher energies, and which is still in use today.

As a result of his work on the theory of Isobaric Analogue States, Don was invited to many places around the world to both lecture and do collaborative research. Among these are: 1965 Visiting Scientist, Theoretical Physics Division, Atomic Energy Research Establishment, Harwell, England; 1967 Visiting Lecturer, University of Melbourne; 1968 Visiting Lecturer, Indian Academy of Sciences; 1970 Visiting Scientist, Brookhaven National Laboratory; 1971–1972 Visiting Professor, Princeton University; 1972 Visiting Professor, University of Frankfurt; 1976 Visiting Senior Scientist, Oxford University; 1976–1977 Visiting Professor, Physics Section, University of Munich.

In 1972 Don was elected a Fellow of the American Physical Society, a rare honor for such a young physicist. In the late 1960s and early 1970s there were very few national physics prizes in the United States, so it was an extreme honor when Don won the 1972 American Physical Society's Bonner Nuclear Physics Prize for his theoretical work, along with J. D. Anderson of Livermore, who had pursued a type of reaction experimentally that led to the John Fox resonance discovery. Their Bonner citation reads: "For their contributions to the discovery and understanding of analog states in complex nuclei. This work has greatly extended the applicability of the concept of isospin symmetry, offered new insights into nuclear dynamics, and provided a new conceptual tool for the analysis of the structure of nuclear states."



Don Robson

Don's subsequent contributions to nuclear theory were manifold, including developing a technique for computing heavy-ion induced nucleon transfer reaction probabilities, explaining the very anomalous features found in the scattering between closed shell nuclei, and looking at the possibility of developing nuclear structure based on the underlying quark components of protons and neutrons. A running joke during the development of the theory to understand heavy ion reactions was Don saying "It is all worked out in my MSc thesis," upon which he would be asked, what was left for him to do to get a Ph.D.? His deep understanding of physics resulted in the community seeking his input into its future direction through his service from 1972–1975 as a Member of the Executive Committee, Division of Nuclear Physics, American Physical Society.

In the late 1970s, it became obvious to the federal research-funding agencies that it was not possible to fund all of the proposed experimental facilities the community wanted and so they formed the United States Nuclear Science Advisory Committee (NSAC), with Don serving on it from 1978–1982. NSAC proposed the construction of a multi-GeV electron accelerator for probing the quark structure of nuclei, and, as is normal, the management of a facility such as this is bid-out. A group known as the Southeastern Universities Research Association provided the winning bid, and Don served on its board from 1990–2003, and was its chair from 1996-1998. This facility, now known as Jefferson Laboratory, continues to produce world-leading science, with FSU having a major group doing experiments there. At FSU, Don served on many university committees, especially those that developed local super-computing capabilities, as well as the use of super mini-computers for theoretical calculations. He served as Chair of the Department of Physics from 1985-1991, a time when the faculty grew from 28 to 39. In 1990, he was named a Robert O. Lawton Distinguished Professor, an honor that is given to only one FSU professor per year. He retired from the active faculty in 2008, but continued to provide research guidance to new generations of graduate students and faculty during coffee sessions in the Nuclear Research Building until his passing. ⚛

IN MEMORIAM

Joseph Thomas Ryan, Jr. — March 9, 1963 – June 19, 2023

Peng Xiong
PROFESSOR OF PHYSICS

Joe Ryan, circa 1995 and again in 2021.

Joe Ryan, a longtime staff member and the Systems Administration Manager of the department, died on Monday, June 19, 2023 in Tallahassee. Joe passed away after a valiant battle with illness, and after spending Father's Day surrounded by his family.

Born March 9, 1963 in Los Angeles, Joe moved around the world with his family growing up, successively residing in North Carolina, Hawaii, South Korea, Michigan, Germany, and Texas. He moved with his future wife, Dawn, to Tallahassee in 1991, where they were married and settled. In Tallahassee, Joe enrolled at FSU and earned a bachelor's degree in Classics, with minors in Physics, Mathematics, and Computer Science.

Joe began his career at FSU as a computer technician in the Department of Biological Science in 1994. While still a student, he had worked as an OPS employee in Physics; in March 1996, he joined the department as a computer engineer in the Center for Materials Research and Technology (MARTECH). After the dissolution of MARTECH in 2009, Joe became a Computer Research Specialist in Physics, and officially began serving the entire department. In 2017, Joe became the department's Systems Administration Manager as part of the IT reorganization in Physics, and had served as the supervisor of the entire group since then.

Joe came to us at a time when IT, especially networking, was beginning to be a critical element of the department's research and, later, its teaching infrastructure. The rapid expansion and frequent generational changes of the IT hardware and software posed constant challenges. Joe always took on these challenges with his signature can-do attitude. With perpetual open-mindedness and curiosity, he continually searched for and adopted cutting-edge new technologies. The happiness he had finding a new solution or learning a new trick was no less than that of a graduate student discovering something new in the lab. His effort had kept Physics at the forefront in the constantly-evolving IT landscape.

Throughout his almost 30 years with us, Joe poured his heart and soul into serving the department and FSU. With other IT staff, Joe was responsible for the procurement, installation, maintenance, and repair of the vast IT infrastructures critical to the department's education and research missions. These included hundreds of computers of various types, ranging from highly specialized research clusters to desktops versatile and rugged enough for undergraduate physics labs, along with the plethora of software and networking that made them run. Joe's critical importance to the department was all the more evident during the pandemic; he was one of the few technical personnel who was deemed mission-critical for the department's operation, and therefore worked on-campus throughout the pandemic. In March 2020, he was instrumental in the department's rapid and successful transition to Zoom teaching, and in getting faculty and graduate students to successfully connect and continue research from home.

Beyond his vital role in maintaining and updating the departmental IT infrastructure, Joe was also frequently called upon to help with developing new instrument control and computing capabilities by the department's imaginative faculty. He was a rare talent who was fluent in both Unix and networking. Joe was indispensable in setting up the computer control and data acquisition for key instruments in shared facilities and individual labs alike in MARTECH and later in CMMP. He was practically considered a colleague in the Astrophysics group, having contributed significantly to building its computing and data infrastructure, which has served as a bridge to super-computing centers for generations of students, postdocs, and faculty.

Beyond all his technical contributions, Joe will be remembered first and foremost for his passion for helping people and genuine empathy for every single member of the department. This was best exemplified by how he went way above and beyond his responsibilities to help a financially-challenged undergraduate with his IT needs during the pandemic; without Joe's help, this student probably would not have graduated. Joe was usually the first person any new student, faculty or staff would go to in order to have their email and computer set up, but it was not uncommon to see Joe moving furniture, even painting a room, to get them physically situated. To many students, especially from foreign countries, Joe was like a loving uncle. Many fondly remember casual conversations in the hallway, engaging discussions of current events in the office, his commentary and advice about work and life, and his distinctively delicious banana bread. His bright smile, caring heart, and intelligent mind will be missed by us all. ⚛

Physics faculty as of August 2023

Todd Adams
HIGH ENERGY EXPERIMENT
PROFESSOR

Sergio Almaraz-Calderon
NUCLEAR EXPERIMENT
ASSOCIATE PROFESSOR

Andrew Askew
HIGH ENERGY EXPERIMENT
PROFESSOR

Luis Balicas
CONDENSED MATTER EXPERIMENT
RESEARCH PROFESSOR

Christianne Beekman
CONDENSED MATTER EXPERIMENT
ASSOCIATE PROFESSOR

Susan Blessing
HIGH ENERGY EXPERIMENT
PROFESSOR

Gregory Boebinger
CONDENSED MATTER EXPERIMENT
PROFESSOR, DIRECTOR OF NHMFL

Nicholas Bonesteel
CONDENSED MATTER THEORY
PROFESSOR

Jianming Cao
CONDENSED MATTER EXPERIMENT
PROFESSOR

Simon Capstick
HADRONIC PHYSICS
PROFESSOR

Hitesh Changlani
CONDENSED MATTER THEORY
ASSISTANT PROFESSOR

Irinel Chioroscu
CONDENSED MATTER EXPERIMENT
PROFESSOR

Paul Cottle
NUCLEAR EXPERIMENT
PROFESSOR & ASSOCIATE CHAIR

Volker Crede
HADRONIC PHYSICS
PROFESSOR

Sean Dobbs
HADRONIC PHYSICS
ASSISTANT PROFESSOR

David Collins
ASTROPHYSICS
ASSOCIATE PROFESSOR

Vladimir Dobrosavljevic
CONDENSED MATTER THEORY
PROFESSOR

Paul Eugenio
HADRONIC PHYSICS
PROFESSOR AND CHAIR

Fernando Febres Cordero
HIGH ENERGY THEORY
ASSOCIATE PROFESSOR

Kevin Fossez
NUCLEAR THEORY
ASSISTANT PROFESSOR

Anthony Frawley
RELATIVISTIC HEAVY ION COLLISIONS
RESEARCH PROFESSOR

Hanwei Gao
CONDENSED MATTER EXPERIMENT
ASSOCIATE PROFESSOR

Laura Greene
CONDENSED MATTER EXPERIMENT
PROFESSOR

Stephen Hill
CONDENSED MATTER EXPERIMENT
PROFESSOR

Peter Hoeflich
ASTROPHYSICS
PROFESSOR

Eric Hsiao
ASTROPHYSICS
ASSOCIATE PROFESSOR

Kevin Huffenberger
ASTROPHYSICS
PROFESSOR

Ted Kolberg
HIGH ENERGY EXPERIMENT
ASSOCIATE PROFESSOR

Cyprian Lewandowski
CONDENSED MATTER THEORY
ASSISTANT PROFESSOR

David Lind
CONDENSED MATTER EXPERIMENT
ASSOCIATE PROFESSOR

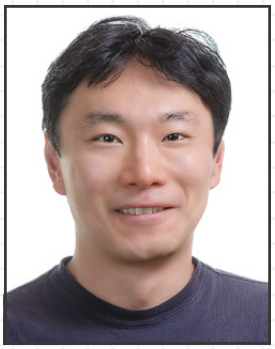
Efstratios Manousakis
CONDENSED MATTER THEORY
PROFESSOR

Massimo Marengo
ASTROPHYSICS
PROFESSOR

Jeremiah Murphy
ASTROPHYSICS
ASSOCIATE PROFESSOR

Edmund Myers
ATOMIC PHYSICS
RESEARCH PROFESSOR

Guangxin Ni
CONDENSED MATTER EXPERIMENT
ASSISTANT PROFESSOR

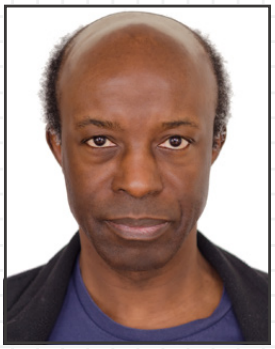


Takemichi Okui
HIGH ENERGY THEORY
PROFESSOR

Daniel Pershey
NEUTRINO PHYSICS
ASSISTANT PROFESSOR

Jorge Piekarewicz
NUCLEAR THEORY
PROFESSOR

Dragana Popovic
CONDENSED MATTER EXPERIMENT
RESEARCH PROFESSOR



Harrison Prosper
HIGH ENERGY EXPERIMENT
PROFESSOR

Laura Reina
HIGH ENERGY THEORY
PROFESSOR

Mark Riley
NUCLEAR EXPERIMENT
PROFESSOR, DEAN OF THE GRADUATE SCHOOL

Winston Roberts
NUCLEAR THEORY
PROFESSOR

Mayly Sanchez
NEUTRINO PHYSICS
PROFESSOR, WYATT-GREEN CHAIR

Mark Spieker
NUCLEAR EXPERIMENT
ASSISTANT PROFESSOR

Nao Suzuki
ASTROPHYSICS
ASSOCIATE PROFESSOR

Samuel Tabor
NUCLEAR EXPERIMENT
PROFESSOR

Kohsaku Tobioka
HIGH ENERGY THEORY
ASSISTANT PROFESSOR

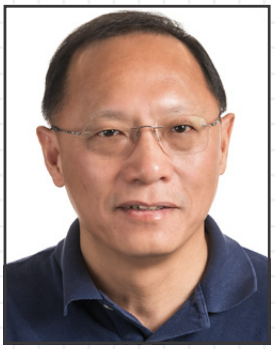
Vandana Tripathi
NUCLEAR EXPERIMENT
ASSISTANT PROFESSOR

Oskar Vafek
CONDENSED MATTER THEORY
PROFESSOR

David Van Winkle
BIOPHYSICS
CONDENSED MATTER EXPERIMENT
PROFESSOR

Alexander Volya
NUCLEAR THEORY
PROFESSOR

Ingo Wiedenhoever
NUCLEAR EXPERIMENT
PROFESSOR



Peng Xiong
CONDENSED MATTER EXPERIMENT
PROFESSOR

Kun Yang
CONDENSED MATTER THEORY
PROFESSOR

Rachel Yohay
HIGH ENERGY EXPERIMENT
ASSOCIATE PROFESSOR

EMERITUS PROFESSORS

- Bernd Berg
- Dennis Duke
- Vasken Hagopian
- Kirby Kemper
- Joseph Owens
- Per Arne Rikvold
- Pedro Schlottmann
- Horst Wahl

RESEARCH FACULTY

- Lagy Baby
- Kurtis Johnson
- German Martinez
- Alexander Ostrovidov
- Ryan Tang

RESEARCH ASSOCIATE FACULTY

- Eric Lochner
- Brian Schmidt
- David Spingler

TEACHING & INSTRUCTIONAL FACULTY

- Yuko Hori
- Barbara Reyes

Top: The Keen Building, home of the FSU Physics Department administration. Bottom: The National High Magnetic Field Laboratory (MagLab) glows at night under a star-studded Tallahassee sky (photo courtesy NHMFL).