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UNIVERSITY OF KENTUCKY · COLLEGE OF ARTS & SCIENCES

Department of Physics & Astronomy



Greetings from the Department

Dear Alumni and Friends,

Welcome to the 2023-2024 academic year! The past year was one of excitement and growth for our department, and I am writing to share our successes and good news with you.

First, we would like to honor and wish all our best to Professor Keh-Fei Liu, who retired this spring after serving for 43 years on our faculty. Professor Liu was the recipient of numerous honors and awards over the course of his distinguished career here at UK. He received the **Alexander von Humboldt Award** for Senior Scientists in 1990, was named a University Research Professor in 1992, was named a Fellow of the **American Physical Society** in 1997 and was awarded the **Albert D. and Elizabeth H. Kirwan Memorial Prize**, the highest award for research here at UK, in 2018. Also, in recognition of his humanitarian work, Professor Liu was named an Unsung Hero of Lexington in 2006. Professor Liu has now relocated to the Bay Area, where he continues his research.

We are excited to share **alumni updates** as well. I invite you to learn more about the paths of two alumnae, Dr. Emily Bittle (M.S. Physics '10, Ph.D. Physics '13) and Dr. Bipasha Chakraborty (M.S. Physics '11). Dr. David Hume (B.S. Physics '02) returned to campus and met for a **student-alum Q&A** with physics seniors and Society of Physics Student officers Anthony Kelly and Gabija Ziemyte.

Our faculty continue to garner awards and recognition for their research and work. **Professor Gary Ferland** was named a fellow of the **American Association for the Advancement of Science (AAAS)** in recognition of his distinguished contributions to theoretical and computational astrophysics, and in particular for development of the spectral simulation code **Cloudy**. **Professor Renee Fatemi** was named a fellow of the **American Physical Society (APS)** for her research on the spin and momentum structure of quarks and gluons in the proton through jet reconstruction tools in polarized proton-proton collisions. **Professor Susan Gardner** was appointed by **Dean Ana Franco-Watkins** to a College of Arts and Sciences Endowed Professorship for the years of 2023-2027. Articles from Drs. Ferland and Gardner are linked in the **Faculty News** section below.

We celebrated a promotion and welcomed new faculty. **Professor Richard Hill**, a theoretical nuclear and particle physicist, was promoted to full professor effective July 1, 2023. We welcomed **Professor Chunli Huang**, an assistant professor in theoretical condensed matter physics, on January 1, 2023. Professor Huang is an expert in quantum materials, including topology, magnetism, and superconductivity in Moiré materials. We then welcomed **Professor Ryan Sanders**, an assistant professor in observational astronomy, on August 1, 2023. Professor Sanders is an expert in galaxy formation and evolution and utilizes, among other facilities, the **James Webb Space Telescope**.

The past year and a half have been a banner year for our graduate program. Nineteen graduate students were awarded their Ph.D. in 2022, and, as of this writing, seven graduate students have been awarded their Ph.D. in 2023. We are proud of these new Ph.D.'s, who have gone on to outstanding positions in academia and industry. We are thankful for their unique contributions to our department's research, teaching, and outreach missions, and wish them all the best for their futures.

Our undergraduate physics majors continue their impressive achievements. Nine undergraduates were awarded their B.S. in physics this past spring. Nearly all our physics majors graduate with significant research experience, with many presenting talks and posters at national and local conferences. We honored our undergraduate students at the Recognition and Spring Celebration Day in late-April.

I hope you enjoy this newsletter, and I look forward to hearing from you. We would be pleased to welcome you for a visit of the renovated **Chemistry-Physics Building**.

With best wishes,

Brad Plaster

Chair and Professor, Department of Physics and Astronomy

Alumna Profile: Dr. Emily Bittle

Receiving her M.S. in 2010 and her Ph.D. in 2013, Physics and Astronomy alumna **[Dr. Emily Bittle](#)** shares her journey from graduate student studying electrical

conduction through organic molecular materials to physicist in the Nanoscale Device Characterization Division at the [National Institute of Standards and Technology](#). [Read More](#)



Dr. Emily Bittle

Alumna Profile: Dr. Bipasha Chakraborty

UK's Department of Physics and Astronomy shaped alumna [Dr. Bipasha Chakraborty's](#) academic career and professional pathways as a theoretical particle physicist. From UK to the UK, Dr. Chakraborty received her doctorate degree from Glasgow University and continued her journey as a postdoctoral researcher at Cambridge University and then as a lecturer and assistant professor at [University of Southampton](#). [Read More](#)



Dr. Bipasha Chakraborty

Student-Alum Q&A with Dr. David Hume

[David Hume](#) is an alumnus who graduated from UK with a B.S. in Physics in 2002. After a post-doc appointment at the [University of Heidelberg](#), he returned to [National Institute of Standards and Technology](#) to continue his research on high precision measurements of trapped ions, in particular the use of aluminum ions as atomic clocks.

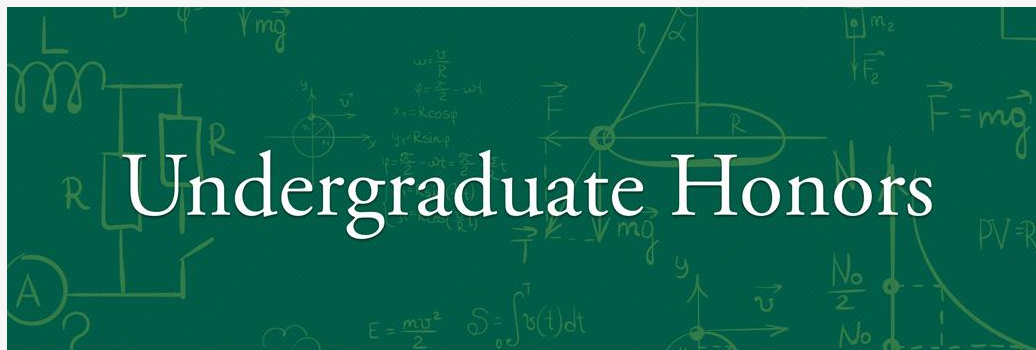


Anthony Kelly, Dr. David Hume, and Gabija Ziemyte

Physics seniors and Society of Physics Student officers Anthony Kelly and Gabija Ziemyte had the opportunity to meet and ask Dr. David Hume a few questions when he visited UK on November 18, 2022 to give a departmental colloquium. [Read more](#)

PHYSICS STUDENTS AND FACULTY CONTRIBUTE TO GROUNDBREAKING FERMILAB EXPERIMENT

Department of Physics and Astronomy faculty, postdoctoral scholars, and students contributed to an important new development in the ongoing Muon $g-2$ experiment at the U.S. Department of Energy's **Fermi National Accelerator Laboratory** (Fermilab). [Read more](#)



Gabija Ziemyte '23 was selected as an **Undergraduate Research Ambassador** by the **Office of Undergraduate Research**. Ambassadors must demonstrate academic excellence, leadership potential and be involved in mentored research. A Lewis Honors student and **Chellgren Student Fellow**, Gabija majored in both physics and mathematics with an English minor. [Read more](#)

Event Spotlight: Festiva del Espacio

The Department of Physics and Astronomy held its third Festival del Espacio on May 19, an outreach event to the Hispanic community, funded by the National Science Foundation. The event brought in over 60 children from around Fayette County. [Read More.](#)



Festiva del Espacio 2023

Faculty Honors

Dr. Susan Gardner was awarded the University's **Albert D. and Elizabeth H. Kirwan Memorial Prize**. The prize is bestowed each year to a faculty member in recognition of their outstanding contributions to original research or scholarship, with an emphasis on work produced four years prior to the award. [Read more](#) about Professor Gardner's recent research.

Dr. Renee Fatemi named fellow of the American Physical Society. [Read More](#)

Dr. Gary Ferland, already a fellow of the American Astronomical Society, was named a **fellow of the American Association for the Advancement of Science**, the first member of our faculty to receive this honor. AAAS cited his development of the synthesis code Cloudy, which is used to simulate spectra of astronomical objects. [Read Dr. Ferland's retrospective](#) about astronomy at UK and the role of Cloudy.

Congratulations to Our Students Who Earned Ph.D. Degrees in the 2022-2023 Academic Year

The Department of Physics and Astronomy is pleased to welcome its newest doctoral degree graduates. [Read More](#)

THE PHYSICS & ASTRONOMY DEVELOPMENT FUND

Your gift to the **Physics and Astronomy Development Fund** will provide critical resources to respond to student need, attract world-class faculty, and provide innovative opportunities to enable our students to compete in the global marketplace.

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For questions please contact **Debra Gold** at debra.gold@uky.edu or 859-257-8124.



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