

## Annual Newsletter 2023

### Department of Physics

### Baylor University

*Our vision is to*

- *develop an admiration of God's creation by discovering and understanding the physical laws that govern the universe;*
- *serve the world by applying this knowledge for the betterment of society;*
- *engage students and the general public with an appreciation of physics; and*
- *create a supportive physics community in which all individuals can reach their full potential.*

### Greetings from the Chair

Dear Physics Friends:

For academics, fall is the time of new beginnings. In addition to the new school year and new students, we have several new faculty members. Drs. Alan Farhan and Benjamin Rose have joined the department as Assistant Professors. We are also very happy to have Dr. Garritt Tucker join us as the John and Eula Mae Baugh Professor of Physics. You can read about the exciting research that they are conducting in the articles below. We also congratulate Dr. Kenichi Hatakeyama, who has been promoted to Professor and Dr. Barbara Castanheira-Endl, who has a new appointment as Assistant Professor.



Though enrollment in physics is declining nationwide, the enrollment in our department has grown. We currently have 55 graduate students enrolled in our department. At the undergraduate level, we have 51 students with majors in physics, astronomy, and astrophysics. Students with physics concentrations in interdisciplinary majors such as University Scholars, Baylor Research Fellows, and Baylor Business Fellows bring us to 85 undergraduate students in our department. Last year, we had a record class of eleven seniors who graduated. Undergraduate students are actively involved in research, and several of them received awards for their work [\[link\]](#). Third-year graduate student Jonathan Samudio was recently awarded an NSF Fellowship [\[link\]](#), a great honor.

We always hope to see you at the joint **Math and Physics Homecoming Reception** (see details in this newsletter). This year we are excited to invite you to join us on campus to view the **Eclipse Over Texas on April 8, 2024**. Baylor is partnering with Lowell Observatory, Discovery, and the City of Waco to provide a full day of activities celebrating this historic natural occurrence. See the article in this newsletter for more details. Whether you are here or viewing the eclipse somewhere else along the path of totality, you can show your Baylor Spirit when you don your “Live from Waco – Eclipse Over Texas” solar glasses. If you send a donation to any of the scholarships or initiatives in the Department of Physics, we will send you a set of eclipse glasses for you and your family. Please drop an e-mail to let us know so that we know how many to send and the correct address.

Best, Lorin Matthews

## New Faculty Arrivals

As noted above, we are excited to have a few new faculty members.



Garritt Tucker  
Inaugural Eula Mae and John  
Baugh Chair of Physics



Alan Farhan  
Assistant Professor



Ben Rose  
Assistant Professor

**Professor Tucker** joined Baylor University starting in the fall of 2023 as the inaugural recipient of the Eula Mae and John Baugh Endowed Chair of Physics. He also serves as the Associate Director of the Point-Of-Need Innovations Center, and is active in the new materials science program. Before coming to Baylor, he spent six years (2017-2023) in the Department of Mechanical Engineering at the Colorado School of Mines (Golden, CO), serving as the Director of Graduate Studies and as an Associate Professor. Professor Tucker's research ambitions in the field of Materials Science are aimed at integrating high-performance computing and theory to discover the fundamental structure-property relationships of materials that will enable the predictive design of advanced materials with tunable properties. See this news article about Dr. Tucker [\[here\]](#).

**Professor Farhan** joined Baylor University as an Assistant Professor in the spring of 2023. He was previously a postdoctoral fellow Aalto University, Finland. His main research interest is to combine state-of-the-art sample fabrication techniques with characterization methods at large-scale facilities to shed light into the physics of magnetic nanostructures, oxide thin films, frustrated systems, emergent phenomena and synchrotron-based spectromicroscopy.

**Professor Rose** joined Baylor University as an Assistant Professor starting in Fall, 2023. Before coming to Baylor, he was at Duke University as a research scientist with Dan Scolnic's observational cosmology group. There he was involved in the Nancy Grace Roman Telescope mission but also became involved in the Dark Energy Survey, the Vera C. Rubin Observatory, Pantheon+, and several low-z supernova surveys. His current research interest include: Type Ia supernovae, observational cosmology, absolute and relative calibration of telescopes, space telescope missions, empirical and statistical models, large computational analysis infrastructure, and open-source software. He will serve as one of four project leaders for a research team which recently received \$11 million in NASA funding to investigate infrastructure solutions for the Nancy Grace Roman Telescope. See this news article about Dr. Rose [\[here\]](#).

### Faculty Milestones

We are also glad to recognize that Drs. Dittmann (left), Wang (center), and Ward (right) have been members of our department for 20 years! And, it means that next year will mark our 20<sup>th</sup> year since we moved to the current Baylor Science Building!



### Promotions

We congratulate Dr. Hatakeyama (left), who has been promoted to Professor and Dr. Endl (right), who has a new appointment as Assistant Professor!

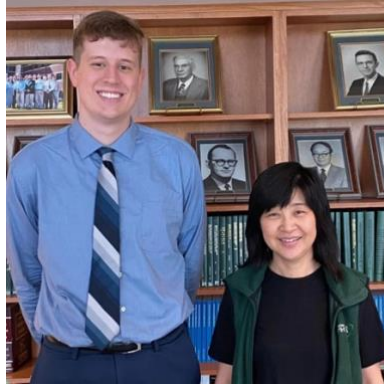


## Awards and Other Achievements

Many of our department members were recognized this past year for their achievements through awards and fellowships.



Dr. Zhang received the 2022-2023 outstanding faculty award for her scholarly work [\[link\]](#)



Nolan Craft (now at Rice Univ.) received the 2022 F. Ray Wilson Award for Best Thesis in the Physical and Life Sciences in the Honors Program of Baylor University.



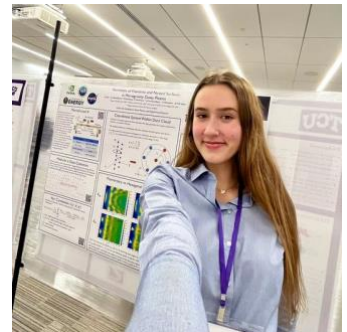
Jonathan Samudio (3<sup>rd</sup> year grad student) received a 2023 National Science Foundation (NSF) Graduate Research Fellowship in Physics and Astronomy - Particle Physics.



Dr. Wilson (center) (in the HEP group) received the 2023 Fermilab LHC Physics Center Distinguished Researcher Award.



Aman Patel (now at Cornell Univ.) received the Robert S. Hyer Research Award from the Texas Section American Physical Society. He also received the Best Material Science Poster Award at the Texas Society for Microscopy Conference.



Emerson Gehr (now at U. Arkansas, Fayetteville) won the Outstanding Poster Presentation Award at APS Conferences for Undergraduate Women in Physics ([CUWiP](#)) 2023.



Every year, our undergraduate students make an excellent showing during Baylor's Undergraduate Research and Scholarly Achievement week. This year, five students presented their research work, and Aman Patel won the undergraduate outstanding platform presentation award and Jorge Martínez-Ortiz (now at Michigan State) won the outstanding poster presentation award.



### Graduates

From Fall 2022 to Summer 2023, eleven undergraduate students, 6 masters students, seven PhD students graduated. Congratulations!

- Summer 2023: MS Physics: Beau Ashton Brooks, MA Physics: Sudip Shiwakoti, PhD Physics: Ankush Reddy Kanuganti, Paul Ryan Lashomb, Bowen Li, Kai Yang.
- Spring 2023: BS Astrophysics: Alyssa J. Binzley, Emerson Violet Gehr, Alexander Birchard Newton, Stephen C. Stec, BS Physics: Haniel Kim, Jorge Augusto Martínez Ortiz, Sophia Elise Mendez, Aman Devendra Patel, Timothy Darayash Tata, MA Physics: Ramesh Radhakrishnan, PhD Physics: Wencong Gan
- Fall 2022: BS Astrophysics: Cooper Clarke Pich, BS Physics: Sara Anne Rothrock, MA Physics: Olawale Lukman Ayode, Rohil Kayastha, Rudhresh Manoharan, PhD Physics: Mudi Chen, Katrina Lynn Vermillion



## SPS News

In 2022-2023, SPS Baylor chapter (President Emerson Gehr) actively recruited students to get involved in various activities from promoting fellowship among students to sharing the excitement and importance of physics to the public. Among the activities, SPS students held bowling nights and potluck gatherings as well as met regularly on Friday mornings for donuts, coffee and good conversations. Also on October 21, 2022, SPS visited a local elementary school and had a blast, performing physics demonstrations and explaining the physics concepts behind the experiments to the kids (see photos below).



## Eclipse 2024

On April 8<sup>th</sup>, 2024, there will be a total solar eclipse and Waco is very close to the middle of the path of totality. Our department at Baylor University in partnership with Lowell Observatory, the City of Waco, and the Discovery Channel has been helping with the organization of an eclipse viewing event in Touchdown Alley at McLane Stadium. In preparation for the eclipse, we are organizing a teacher's workshop on January 13<sup>th</sup>, 2024, to provide the tools needed to safely observe this event, promoting outreach in our community. Our department has ordered 2000 eclipse glasses, which will be distributed soon! We are looking for volunteers to help out during the event (telescope operators, STEAM zone, ...). Looking forward to seeing everyone there!

Eclipse event web page: <https://eclipseovertexas2024.com/>



## Astronomy club and Topics in Astronomy Class

We have an active astronomy club led by Dr. Endl. Their activities include multiple stargazing per semester, movie and trivia nights. Established in Fall 2022, the astronomy club has already more than 100 members!





### Highlights from classes – Topics in Astronomy

In Spring, Dr. Endl took the students from PHY 3350 to McDonald Observatory to conduct astronomical observations for the class. This is the fourth time that astrophysics majors have been able to make use of professional telescopes for the class activities.



### Habitat for Humanity

Dr. Wilcox has been organizing the Department of Physics Habitat workday every spring and fall. This past spring, we had a workday on March 25. It was a beautiful day to get outside and swing a hammer. Many thanks to Waco Habitat, the eight student participants, and the faculty organizer Dr. Wilcox.





### Physics Department Scholarships

Early this summer, the Physics Department was able to award over \$25,000 in scholarships to 20 undergraduate students pursuing Physics and Astrophysics. The faculty, staff, and students are deeply grateful to the generous donors who have made these scholarships possible. For further information about donating to Baylor Physics, please visit <http://www.baylor.edu/physics/giving>.

### Math and Physics Homecoming Reception

Baylor Homecoming is Oct 26-28. We hope you will stop by to see us at the joint Math and Physics Homecoming reception during or after the parade on October 28, from 9:00 – 10:30 am in the lobby of Sid Richardson Science Building. Sic 'Em Bears!

