

# Physics & Astronomy

June 2023



## ***Letter from the Head of the Department:***

### **Greetings Alumni, Friends, Students, Faculty and Staffs!**



As summer is slowly but surely crawling toward us, let's celebrate another great year! A great year indeed. Let me share some of the good news here and in this newsletter.

In August 2022, we welcomed Dr. Max Moe as the department's newest astronomy faculty member. Max's specialty is stars and stellar physics. Noah Cowper is our new Lab Coordinator. He started in January. We also welcomed Heather Montgomery last August as an Office Associate. Tricia Olson is our newest Office Associate, who joined us just last month. Spencer Hurt is our new WIRO engineer who joined us in March.

I am also very glad to share with you the news that two experimental condensed matter physicists, Drs. Alex Petrovic and Yu-Tsung Tsai, and a computational astrophysicist, Dr. Meredith Joyce, will join the faculty in the coming year. Dr. Joyce holds a joint position between P&A and the newly established School of Computing while the two incoming condensed matter physicists will add strength to our effort in quantum computing and quantum materials research and education.

Several our faculty received new federal grants that have always been very important to our research and teaching missions. You will find out the details of these grants in this newsletter. But I wish to briefly mention one of the grants here. Professor Jifa Tian and his colleagues received a major NSF grant entitled "ExpandQISE: Track 2: Developing Research and Education Programs in Quantum Information Science and Engineering with Research on Locally Tunable 2D Topological Superconductors". This is a 5-year award to expend quantum information science and engineering effort at UW for a total of \$5M, of which \$1.5M goes to collaborators at Purdue University. The Co-PIs of the project are: TeYu Chien, Suresh Muknahallipatna (Computer Science), Yuri Dahnovsky and Jinke Tang. We continue to receive gifts and donations from our generous donors, big and small.

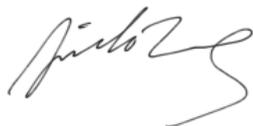
We continue to receive gifts and donations from our generous donors, big and small. Let me mention a few. **Patrick and Nora Ivers** were the major driving force for a match behind the Giving Day success. **Michael Schick and Katherine Hanson** made a major donation in honor of **Lee Schick**, a former faculty member and department head. The funds will be used to support student travels to conferences. **J.Wayne Needy** contributed additional funds to support research scholarship in the department. Oh, by the way, we will start in fall the *Rebka, Hafele Einstein Distinguished, Lecture Series*, a platform where we will invite nationally renowned physics/astronomer to give lectures at UW, which is supported by a gift from Patrick & Nora Ivers. Stay tuned.

Student awards! Tera Swaby was accepted to attend the APS CUWiP conference held in Iowa in January. Kiana Henny was selected as a member of the 2023-2024 LAMP Class. Evan Cook received a Chambliss Student Achievement Award Medal from the American Astronomical Society for his poster at the winter AAS meeting. Brock Parker was awarded the College of Arts & Sciences Outstanding Graduate Award for the 2023 academic graduation year. We were also extremely happy to learn that our former PhD students Josh Heiner and Subash Kattel and former postdoc Joe Murphy were awarded with a NSF SBIR grant. Their company, SLD Photonics, is located right here in Laramie and is already hosting student interns from UW.

A number of our faculty and staff received awards as well. Please check out the Newsletter below to see the names of these deserving staff and faculty.

Please let us know about your career path ([physics@uwyo.edu](mailto:physics@uwyo.edu)). We post these updates on our alumni page <http://physics.uwyo.edu/Alumni/alumni.html>. Also, please send us your email if you are interested in receiving an electronic copy of these newsletters.

Have a great summer and I wish you a wonderful year ahead!



Jinke Tang

Department Head



UW

College of Engineering  
and Physical Sciences

Physics and Astronomy

## GRADUATE AND UNDERGRADUATE STUDENT HIGHLIGHTS

**Kiana Henny** was selected as a **member of the 2023-2024 LAMP Class**.

**Evan Cook** received the **Chambliss Student Achievement Award Medal** from the American Astronomical Society for his poster at the winter AAS meeting (He also received a Chambliss honorable mention at the Summer 2022 meeting!). Evan also received a Space Grant Graduate Fellowship

**Spring 2023 Undergraduates receiving fellowships:** Caleb Eastlund, Aidan Ferguson, Gabrielle Graham, Alexander Larsen, Liam Royle-Grimes, and Bonnie Rose Yinger.

**A&S Society, Sigma Pi Sigma, inducted by invitation to the following students:** Brock Parker, Reese Gardea, Aidan Ferguson, Tim Shrode, Michael Lindman (class of '22), Jarred Grant (class of '22), Zia Macdermid (class of '22).

### **Students honored at the End of the Year Celebration:**

Graduating Senior Awards: Tim Shrode and Brock Parker received the Feynman's Lecture Series and Certificates.

**Carl A Cinnamon Awardees:** Gabby Graham and Tera Swaby

L-R Gabby Graham and Tera Swaby



**Outstanding TA Award** was presented to Jarred Grant

**J Wayne Needy Outstanding Research Award for Graduate Students** went to:  
Lucas Napolitano, Cristilyn Gardner, Zhuangen Zu, and Andrei Zadorozhnyi



**Brock Parker:** physics and astronomy double major with minors in honors and math, Brock is originally from the small town of Gering, Nebraska. Encouraged and supported by his parents, Brock's love for science and astronomy drove him to the university of Wyoming, where he now takes advantage of the vast resources available to him. Graduating summa cum laude, with honors, and as an Arts & Sciences outstanding graduate, he has stayed true to his promise to excel in college. A Wyoming Research Scholars Program awardee, Brock conducts astronomy research daily, from fixing Red Buttes Observatory to confirming exoplanets to probing interstellar dust. While he is not busy with homework, research, or life, he likes to spend his time outdoors, mountain biking and hiking. Brock plans to further his education at the University of Arizona, where he will be pursuing his Ph.D. in astronomy. Brock would also like to acknowledge and express his gratitude towards both his parents, Doug and Laurie, and his advisor, Dr. Chip Kobulnicky, without whom none of this would have been possible.



**Timothy Shrode:** physics and astronomy double major graduating summa cum laude. Tim is in the US Air Force and plans to become a pilot. Tim made the honor roll for non-resident students 2018,2019,2020, 2021,2022 The President's Honor Roll consists of regularly enrolled undergraduates who earned a 4.0 ("A") grade-point average for the semester. To be eligible, students must have been enrolled for a minimum of 12 credit hours taken for letter grades.

## DEPARTMENT NEWS

**Megan Candelaria** received an award at the sixth annual Own It! Awards ceremony on Feb. 21st. Own It! strives to recognize women in science, technology, engineering and mathematics at UW.

**Kathy Webb** received the CEPS Outstanding Staff Award.

**TeYu Chien** received a Graduate Council's 2022-23 Mid-Career Graduate Faculty Mentor Award.

**Chip Kobulnicky** received a Graduate Council's 2022-23 Distinguished Graduate Faculty Mentor Award.

**Erin Stoesz's** Teaching and Research Grant proposal has been approved for the full amount of \$3,000 by UW American Heritage Center.

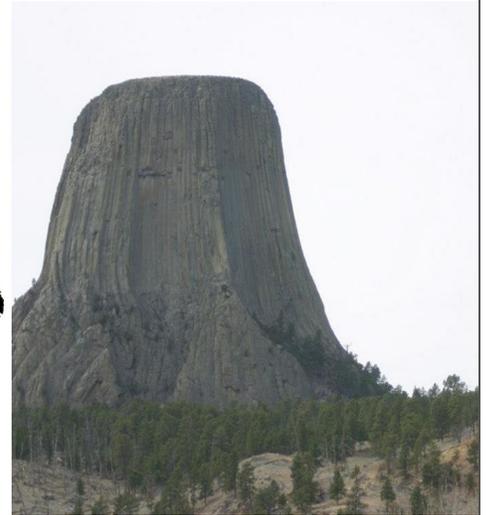
**Congratulations to all!**

In 2023-24 we will see new faces in our department:

10 incoming Graduate Students!

3 new faculty members arriving, more to come in the next Newsletter

Dr. Jesse Feddersen will be leaving and moving to take a position at the University of Oregon.



Grace Zhou, one of our science fair students, did well in another competition this month (see link below). Three Wyoming science fair students (Padmalakshmi Ramesh of Laramie, WY; Tyler Searfoss of Greybull, WY; Grace Zhou of Laramie, WY) submitted their work to this Sigma Xi competition and we are proud of all of them for taking that opportunity!

<https://www.sigmaxi.org/news/article/2023/05/16/winners-announced-for-2023-sigma-xi-student-research-showcase>

Big congratulations to Riley Thomas (of Greybull, WY) and Grace Zhou (of Laramie, WY) for representing Wyoming at the Regeneron International Science & Engineering Fair (ISEF) in Dallas, TX May 13-19, 2023. The Regeneron ISEF is the world's largest pre-college STEM competition. Both young ladies competed well at the Wyoming State Science Fair at UW in March and did excellent science research. Read about their research at the virtual showcase (<https://projectboard.world/isef/>).

Riley Thomas (EAEV003) - Reducing Coal Fly Ash Contamination from Water  
Grace Zhou (TMED031) - Non-Invasive Multi-Cancer Detection Using miRNA

Riley Thomas received some generous help from both Janet Dewy in the UW Department of Geology & Geophysics, and Jessica Kern in the UW Biogeochemistry Laboratory. Thank you also to Janet and Jessica for their wonderful mentoring!

<https://projectboard.world/isef/>

## FACULTY HIGHLIGHTS



**CHIP Kobulnicky** The University of Wyoming's College of Engineering and Physical Sciences and the Wyoming Alpha chapter of Tau Beta Pi, the national engineering honor society, have announced award recipients for 2023 and awarded Chip Kobulnicky the Sam D. Hakes Outstanding Graduate Research and Teaching award. Chip was presented his award at the annual Tau Beta Pi Awards Banquet April 29 in the Marian H. Rochelle Gateway Center.

Dr. Kobulnicky also received another 3-year \$311K NASA grant: Lifting the LID on the Nature of Extraplanar Galactic Dust Using Line-of-sight Incremental Dereddening and as Co-PI with Dr. Dale another NSF REU Grant-\$322K.

<https://www.uwyo.edu/physics/faculty-directory/files/docs/chip-bio.html>

**Daniel Dale** received another \$175K raised from the Windy Ridge Foundation, which includes \$100k for the Vaughan Professorship, \$50k for Astro Camp 2023 and \$25k for the Native American Summer Institute. Together, Danny has raised ~\$3M from them going back to 2013.

He also landed a \$15k School of Computing award! The funds will be used to support graduate student Kiana Henny this semester in learning how to apply for and utilize time on UW's computing cluster and supercomputer. Dr. Dale also achieved as the PI along with Dr. Kobulnicky-Co-PI received another NSF REU grant - \$322k

<http://physics.uwyo.edu/~ddale/research/misc/cv.dean.pdf>

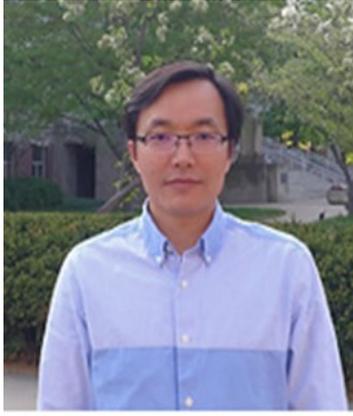


**Aysenur Bicer** was an awardee for the PIE award. This award recognizes and honors instructors who inspire excitement, inquiry, and autonomy in first-year courses.

**TeYu Chien** proposal to NSF has been recommended for funding. The project will study the microscopic oxidation mechanisms of multi-principal element alloys, also known as high entropy alloys, through the combinations of atomic resolution, elemental sensitive characterization techniques, DFT modeling, and machine learning. TeYu is the lead PI and Prof. Wei Chen at Northwestern U. is another PI for the collaborative project. Prof. Ganesh Balasubramanian at Lehigh is also on the team through a sub-award from UW. The total project budget is \$636,005, of which about \$400K comes to UW.

<http://physics.uwyo.edu/~teyu/>



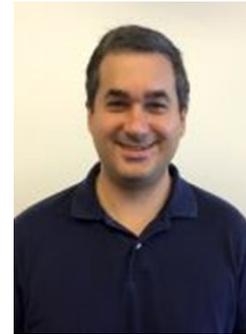


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[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2228841&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2228841&HistoricalAwards=false)

**Max Moe** grew up in Fort Collins, earned a triple major at the University of Colorado, and obtained his Ph.D. in astrophysics at Harvard University. He subsequently won an Einstein Postdoctoral Fellowship, which he took to the University of Arizona where we continued on as a postdoctoral scholar before joining our department this past fall. Max studies the formation and evolution of binary stars, including Tatoonine-like planets in binaries. Most of the bright stars visible in the night sky are actually binaries / multiples! In his research, Max combines large public astronomical surveys with observations from the 3.5m Apache Point Observatory and 2.3m-class telescopes. He is currently advising four Wyoming students (one undergrad, one Masters, and two Ph.D. candidates) on their research projects/theses: the statistics of the youngest binaries, spin-orbit alignment of binary stars, progenitors of Type Ia supernovae, and peculiar eclipsing binaries in our satellite galaxy the Large Magellanic Cloud.



## SPRING 2023 GRADUATES

### PhD

Dinesh Baral  
Robert Nielsen  
William 'Buck' Scougale

### MS

Arun Kumay  
Jacob McLane  
Theodor Zastrocky



### BA

Dane Christoffersen  
Mason Schultz  
Britney Thompson

### BS

Shannon Boland  
Silba Dowell  
Ashlyn Ewen  
Aidan Ferguson  
Reese Gardea  
Stacy Kirkland  
Scott Orr

### Summa Cum Laude

Brock Parker  
Timothy Shrode



## STAFF NEWS

### A warm welcome to our new staff members



I am **Heather Montgomery**, and I am currently serving as the Office Associate, Senior for the Physics, Astronomy, and Chemistry departments. This role has allowed me to use my organizational skills in a completely new way, and I'm loving every minute of it. Before moving to Wyoming in 2021, I managed a Quarter Horse ranch in Iowa. I've always had a deep love for horses, and I still enjoy riding whenever I get the chance. When I'm not at work, you can find me outside enjoying nature. I'm an avid landscape and wild horse photographer, and I love capturing the natural beauty of our world through my lens. I also enjoy pyrography, which is the art of burning designs into wood. I'm not afraid to get my hands dirty, either. I love riding motorcycles and feeling the wind in my hair. Education has always been important to me, and I've pursued it throughout my career. I've studied at Ellsworth Community College, Des Moines Area Community College, and William Penn University.



**Tricia Olson** and her family moved to Laramie this summer. They relocated from Rock Springs where Tricia spent twenty years as an office manager for a towing company and an administrative assistant for a non-profit. They came to town to pursue the amazing educational opportunities available. She and her husband, Ryan, will be celebrating their twentieth wedding anniversary this year. They also brought along a son (Gus), two cats (Pan & Nyx), and a goldfish (Pigeon). Tricia loves cooking, reading, and ANY horror movie, even the awful ones



**Spencer Hurt:** Originally from Fruita, CO, I recently graduated from the University of Colorado Boulder, where I earned my degree in Astrophysical and Planetary Sciences. During this time, I conducted research on the detection and characterization of exoplanets and circumstellar debris disks. After a short stint studying volcanology at the University of Oregon, I came to Laramie to work as a **WIRO Engineer**. I am incredibly excited to be a member of the UW community and am proud to support astronomical research in Wyoming. Outside of work, you can find me hiking and backpacking, gardening, and dabbling in astrophotography!



**Noah Cowper** was awarded his UW BS in Physics and a minor in Mathematics Spring 2018. He did four years of his PhD when he took the position of lab coordinator for the Physics and Astronomy Department while completing his UW PhD program.

## Welcome to our Team!!

## DONOR CORNER

Dennis Hollenbeck  
William Roberts  
Dave and Jennifer Barnaby  
Michael Schick and Katherine Hanson  
Terrence and Margaret Flower  
Harry Lawroski  
John A. Hefti  
W.F. and Janet C Klawiter Jr.  
Terry Scott and Jean Meyer-Scott  
Ray C. Sarver  
Samuel R. Schrinar Jr.



*Spring Donors!*

**Patrick and Nora Ivers** have donated \$10K as matching grant to the Giving Day campaign that is held Oct. 19 – 20. Thank you!

**Wayne Needy** has given us \$10,000 as Physics Scholarship as part of UW Foundation's Legacy Match program. The money is to be used for scholarships in the next two academic years.

P&A has received both URDM and WGE graduate assistantship awards again this year. Let us congratulate and thank **Chip Kobulnicky!**



TRIPS MADE POSSIBLE DUE TO DONOR CONTRIBUTIONS



Dr. Rudi Michalak was able to take students in October 6-8th to the 100 Years of Momentum \_2022 PhysCon in Washington DC.

Physics & Astronomy undergraduates had a wonderful, packed schedule, ones in a lifetime experience attending the conference. We couldn't have done this without our generous donors. We hope to be able to take additional students this year if the budget is available.

**Plenary speakers:**

Julianne Pollard-Larkin, Section chief for Thoracic Radiation Physics at MD Anderson Cancer Center

K. Renee Horton, Space Launch System (SLS) Quality Engineer at NASA

Rush Holt Jr., Scientist, Politician, and former CEO of American Association for the Advancement of Science (AAAS)

Sarah Hörst, Associate Professor of Planetary Sciences at Johns Hopkins University

**Special Centennial Speakers:**

Dame Jocelyn Bell Burnell

John Mather

Jim Gates



<https://www.youtube.com/watch?>

UW Physics & Astronomy undergraduates take a break to do sight-seeing

L-R: Ethan Cotter, Brock Parker, Agnesh Pandey, Liam Royle-Grimes.

University of Wyoming  
Physics & Astronomy undergraduates with Dr. Rudi Michalak and Dr. Jim Gates:



Agnesh Pandey and Dame Jocelyn Bell Burnell



**L-R: Liam Royle-Grimes, Agnesh Pandey, Dr. Sarah Hörst, Gabby Graham and Tim Shrode**



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American Physics Society meeting in Las Vegas.

March 5-10, 2023

The conference is of interest to all majors, but especially for students, who are juniors or seniors and who want to shop graduate schools or network for internships and career paths.

It was the largest physics meeting in the world, with some 12,000 attendees. There were lots of cool and interesting things to do!

Dr. Rudi Michalak took 4 Physics & Astronomy students to Las Vegas, Xander Larsen, Kayleigh Galbraith, Bonnie Yinger, and Caleb Eastlund.

*Have a great Summer!*