

PHYSICS DEPARTMENT NEWSLETTER : LETTER FROM THE CHAIR

Dear CWU Physics Alumni,

The past academic year has been an exciting time as the easing of the pandemic has allowed a return to in-person classes, student research opportunities, and public scientific outreach that make our department a thriving learning community.

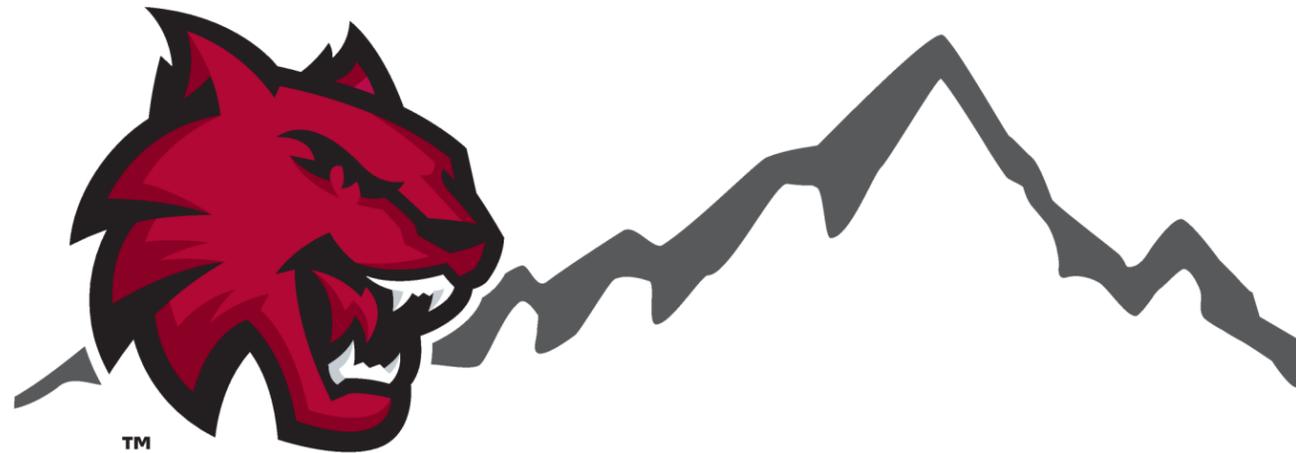


Front: Ben White, Nathan Kuwada, Darci Snowden, Andy Piacsek, Deanna Marshall, Bruce Palmquist

Back: Peter Zencak, Rachel Foss, Michael Braunstein, Cassandra Fallscheer, Erin Craig, Addison Wenger

We'd love to hear from you! Please send your updated contact information to physics@cwu.edu.

Want to learn more about us? Visit www.cwu.edu/physics



PHYSICS

CENTRAL WASHINGTON UNIVERSITY

CWU Physics students made great bounds in their faculty-mentored research projects, with several students co-

authoring peer reviewed journal articles and many students presenting their research at regional and national conferences. This newsletter highlights a recent CWU Physics graduate Nick Puentes, whose undergraduate research in Dr. Benjamin White's Condensed Matter Physics research group focused on the fundamental physics of multiferroic materials. Our students have shown tremendous leadership of several highly active student clubs in the department. This fall, the Society of Physics Students (SPS) and the Astronomy Club co-hosted the 4th Annual Pumpkin Drop, with CWU students and Ellensburg community members coming together to enjoy an afternoon of science. Watch the pumpkin drop at <http://www.youtube.com/watch?v=6FLNccEBpHg>. The CWU Rocket Club participated in the 2023 NASA Student Launch Challenge this spring, competing with student teams across the nation to design, build, test, and fly a high-powered amateur rockets. Our Biophysics Club organized and led a group visit to the Allen Institute in Seattle to learn about careers in biotechnology.

We are grateful to the many alumni who have kept in touch with the department, stopped by to visit, and connected with physics students about career opportunities. You are an important part of the CWU Physics community, and we love to hear about how you are doing! We are also deeply appreciative of the alumni donations that have been made to the Physics Department Foundation fund. Your generosity supports opportunities for Physics majors to achieve their goals through participation in undergraduate research, student clubs, and other career opportunities.

Wishing all of you the best in the coming year!

Erin Craig

Erin M. Craig

SOCIETY OF PHYSICS STUDENTS CONFERENCE: PHYSCON 2022

Last October, 15 CWU physics students descended upon Washington, D.C. to join hundreds of others at the largest gathering of undergraduate physics students in the country for an event called PhysCon 2022. The CWU group presented four research posters, with most of the students presenting for the first time at a national conference. Physics major and McNair Scholar, Isaac Smith, got important feedback on his presentation. Smith noted, “The conference really builds a space conducive to growth of undergraduate students, which is often not the case for most conferences.” But the conference wasn’t “all work and no play”. PhysCon organized a friendly competition between student clubs centered around uploading creative photographs to the PhysCon social media page. CWU students won this competition by uploading the most “liked” picture. Students returned to CWU with a deeper excitement for physics and a better understanding for what they can do with a physics degree.



ALUMNI HIGHLIGHT: NICK PUENTES (PHYSICS B.S AND MATHEMATICAL MINOR, 2023)

Nick Puentes didn’t waste time getting his hands dirty at the beginning of his CWU career. He began conducting research with Dr. Michael Braunstein during his freshman year on the Hanle Effect, and he was awarded the Washington State Opportunity Scholarship (WSOS) for his work on this project. But he didn’t stop there. Next, he began computational research investigating the phase diagram of calcium cobalt hexoxide ($\text{Ca}_3\text{Co}_2\text{O}_6$) with Dr. Benjamin White. Nick was recently awarded the highly selective NSF Graduate Research Fellowship for his proposal, “Computational Modeling of Multiferroic Composites”, in which he proposes to continue his research in multiferroic materials as a graduate student. “What would be really awesome is if, through computational modeling, I can discover a new multiferroic material that could lead to further technological advancements,” he said. “My proposal is essentially to study these materials, which show great promise in that regard.” Nick will begin Ph.D. studies in Physics next at the University of Oregon in fall 2023. To learn more about Nick’s research, check out the recent CWU News feature: <https://www.cwu.edu/news/campus-and-community/cwu-physics-senior-awarded-nsf-graduate-research-fellowship>

ALUMNI SEMINARS, 2022-2023:

Fall quarter seminar: Julia Raible (Physics B.S., 2018) shared about her career as an Optical Engineer at Lockheed Martin in Bothell, WA.

Winter quarter seminar: Austin Lott (Physics/Engineering Dual Degree B.S., 2022) presented about his journey from being a CWU student to his current career as a Mechanical Design Engineer.

Spring quarter seminar: Marilyn Wirth (Physics B.S./Astro minor, 2008) shared about her career in the field of health physics and her current role as a radiological engineer at Pacific Northwest National Laboratory (PNNL) in Richland, WA.

We’d love to hear from you! Send an email to physics@cwu.edu if you’d like to visit, give a seminar, or connect over zoom.

FACULTY HIGHLIGHT: PROFESSOR MICHAEL BRAUNSTEIN (PH.D., UNIVERSITY OF COLORADO, 1990) NUCLEAR AND EXPERIMENTAL PHYSICS

How to build a successful physics department: hire a faculty member who can develop innovative introductory courses that make students think, hire another faculty member to challenge students in high level physics theory, hire a third faculty member to help students to apply the theory in a lab, and hire a fourth to mentor students in a variety of undergraduate research projects.

Or just hire Dr. Michael Braunstein.

Fortunately, CWU followed plan B and students have benefited ever since. After getting his PhD in Nuclear Physics from the University of Colorado, and after a short stay in New Mexico, Dr. B started teaching at CWU in 1993. He was promoted to associate professor in 1999 and to full professor in 2020. During his entire time at CWU, Dr. B is best known for the time he puts into helping every student succeed, his challenging yet achievable goals, and his encyclopedic knowledge of all areas of physics. And his love of bicycling.

Some professors only want to work with students with 4.0 GPAs. Not Dr. B. Erin Sheppard, 2005 BS, struggled with math in high school. Once she reached a certain level of college math, the CWU tutors couldn’t help her anymore. One quarter, she spent two days a week in Dr. B’s office getting help with calculus and differential equations so she had the mathematical background to understand the physics content in his course. She noted that “what has stuck with me most about Dr Braunstein over the years is how patient and kind he was, and [he] never judged me for any



of the questions I asked him.” Oh, by the way, Erin Sheppard is now Dr. Erin Sheppard, EdD, a physics and math teacher for the Clark County (NV) Public Schools. She credited Dr. B with helping her learn how to take on large projects and how to conduct meaningful research.

Dr. B challenges the 4.0 students, as well. Andy Lawler, 2012 BS, Applications Engineer for ITW EAE, said that Dr. B has an amazing way of asking questions that make you think, ready or not. Whether Lawler was struggling with Mathematica or packing as many E&M equations as could theoretically be fit onto a single piece of paper for Dr. B’s homework and tests, he looked forward to asking him a really big question. That’s when Lawler would hear the “cheeky squeaky sing-song, ‘now isn’t that interesting!’.”

In 2012, to pick an arbitrary year, Dr. B was a mentor for six different SOURCE projects, including engineering, astronomy, optics, and quantum mechanics. This is a typical year for him, a consistent output that was recognized in 2006 when he was named the CWU Outstanding Faculty Mentor of Undergraduate Student Research.

When he is not in the lab or in the classroom, he is on his bicycle. One of the most avid members of the CWU Love to Ride Washington bicycling group, Dr. B raced in the 2022 RBC GranFondo, a 122 km race from Vancouver BC to Whistler BC. He finished the up-hill ride in 6:42:53.