



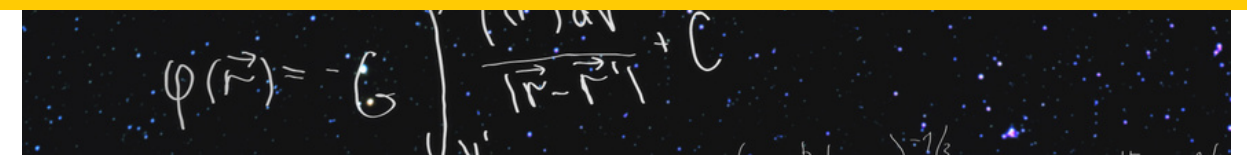
2022 - 2023



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California State University Long Beach
Department of Physics and Astronomy
1250 Bellflower Boulevard
Long Beach, CA 90840-9401

California State University Long Beach
Department of Physics & Astronomy
Newsletter #38



CSULB PHYSICS AND ASTRONOMY

OUR ANNUAL NEWSLETTER FOR
ALUMNI AND FRIENDS OF THE
DEPARTMENT.

Edited by:

Dr. Prashanth Jaikumar

Email:

prashanth.jaikumar@csulb.edu

Design by: Ciara Barnes

Contributors

Dr. Michael Peterson
Dr. Claudia Ojeda-Aristizabal

Dr. Andreas Bill
Dr. Thomas Gredig

Dr. Jiyeong Gu
Mr. Justin Fournier (PhysTEC)

Ms. Lindsay Aymar (Cover Photograph)

Dean Bennett
College of Natural Sciences and Mathematics

Society of Physics Students (SPS)
Women in Physics (WiP)
Astronomy Club

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The Year 2022-23 in review:

Dr. Prashanth Jaikumar

Chair, Department of Physics and Astronomy



Dear Readers, Colleagues, and Friends,

I am pleased to introduce the 2022-23 annual newsletter of the Department. Reflecting on the past year's achievements, changes and challenges, I want to extend my gratitude to all of you for your continued support and efforts that make us a thriving community of Physicists and Astronomers.

The past year ushered in some transitions as a normal course of events. After serving his full tenure as the Department Chair, Dr. Andreas Bill took a year's sabbatical to develop new research opportunities in France and Germany. During his consecutive terms as Chair, the Department gained national prominence in graduation outcomes for our students, hired three new faculty, revised major elements of our lower division Physics laboratory sequence, formalized the computational option for our Master's program and undertook an extensive self-study of the past 6 years of academic progress, among other achievements. The challenges of the COVID-19 pandemic affected but did not derail us from our core mission. Important lessons were learned from the disruption and we remain focused on educating all students for success in their future career. More details can be found in the accompanying newsletter edited by Andreas Bill, covering the period from 2019-2022.

In 2022-23, we received generous additional assistantships from the Keung Luke Family to support our students for their studies, enhanced our support for student fellowships from Google LLC, purchased new experimental equipment for research and teaching laboratories, hired new staff, graduated 17 Masters & 29 Bachelors in Physics students and welcomed new faculty Dr. Joel Zinn, an Astronomer. Dr. Thomas Gredig and Dr. Alex Klotz were recognized with University and College awards respectively. Two of our faculty, Dr. Zoltan Papp and Dr. Thomas Klaehn were awarded sabbatical leave, while Dr. Ojeda-Aristizabal secured the University nomination for the Wang Family Excellence award in the category of research. As usual, our faculty's innovative spirit and our dedicated staff have been instrumental in these achievements.

Our students and graduates continue to make us proud! From prestigious PhD programs to internships and jobs at leading companies, they are applying their growing expertise and talent in new directions in fundamental research and new technology, while contributing plentifully to student activities, campus clubs and community engagement. Their hard work, resilience and training are the driving force behind their success. We applaud their accomplishments and wish them all the best. You can read more about our student activities and achievements in this issue.

While stepping forward with assurance, we also look back and recount the contributions of former faculty members Dr. Chi-Yu (Sue) Hu and Dr. Kuanwen Chuang, whose enthusiasm for Physics research and teaching left a profound mark on the life of the department. I invite you to delve deeper into the pages of this annual newsletter where you will find more detailed information on our department's highlights, student success and social events. I want to thank everyone for their contributions to making our Department a great community, and wish you all a joyful holiday

season
Happy readings!



Top: 2023 Commencement ceremony at the The Stadium at Anaheim;
Bottom: Mobile planetarium for outreach activities of the department.

Foreword: Dr. Curtis Bennett

Richard D. Green Dean, College of Natural Sciences and Mathematics



Our Physics and Astronomy department has always set the standard of “small but mighty”, and this year was certainly no exception! Regularly hosting events, symposiums, and a weekly trip to the roof for Nights at the Observatory has kept the department thriving.

The department recently hosted a day-long symposium led by PREM grant PI Dr. Michael Peterson and Co-PIs Dr. Jiyeong Gu and Dr. Ryan Blair. The day included research presentations from our own students and students from The Ohio State University (OSU). That kind of collaboration is exactly what the College of Natural Sciences and Mathematics is all about: making connections to serve the students. In that same vein, the Astronomy club’s recent eclipse viewing with new faculty Dr. Joel Zinn was an unprecedented success with people from within and outside of our CSULB community coming out to see the “Ring of Fire” (through proper glasses, of course!). I’m pleased to welcome Joel to the College, and in the short time he has been here has made huge contributions to the department’s community engagement efforts.

Our Physics and Astronomy students are among some of the best and brightest and seeing their work never fails to impress me. One of the real benefits of the Physics and Astronomy Department is the individualized attention they consistently give our students. Getting our students engaged and excited about our work creates wonderful results – and this department proves that every day.

Below: The annular solar eclipse watch of Oct 14, 2023 organized by the Astronomy Club drew around 200 visitors from the campus community and the public.



Right: (Top) A career panel was one of many events during the PREM symposium, which brought together researchers from CSULB and OSU for a productive round of talks, posters and social gatherings.

(Middle) Retired faculty members Dr. Chuhee Kwon (Physics and Astronomy) and Dr. Laura Henriques (Science Education) volunteer their time and experience at the DemoDay as part of the PhysTEC program now led by Justin Fournier. Physics undergraduates Adrean Alva and Samra Tekle advertise the department's Astronomy Club.

(Bottom) Physics students Benjamin Estabrooks and Armando Reynoso at the CNSM student research symposium. Graduate student Shanel Deal (now a PhD student at OSU) in front of the LIGO observatory entrance at Hanford, WA.



Our New (and continuing) Staff



Joey Grant
Department Coordinator

Hello, I am Joey Grant. I started working for CSULB in 2018 as a Fiscal/Operations coordinator in the CAPS (Counseling and Psychological Services) and came to the Physics and Astronomy department as a Department Coordinator in May 2023. I have all kinds of hobbies but the ones I enjoy the most is cooking, gardening, watercolor painting (still learning) and spending time with my family. I have two adorable grandchildren who live on the east coast who I get to Facetime all the time. I feel very lucky to be able to work here on campus and I really like working with all the students and faculty in this department.

Greetings, I am Amber Robertson. I graduated from California State University, Long Beach in 2018 with my BA in Political Science. My concentration was in Law, Politics, and Public Policy because I was fascinated in how the government operates. One of my favorite hobbies is detailing my Mustang when I have downtime because I find it therapeutic. I previously worked as a secretary at Berkshire Hathaway HomeServices in Downey. I enjoyed my time there but felt the need for change where I could make a bigger difference. I love being back on campus. I originally started out in the Dean's Office for CNSM, but later transferred into the Physics and Astronomy Department. I look forward to making new memories as I start off my first year working on campus.



Amber Robertson
Administrative Assistant

Its a team effort!

The University is a place of change. Rules and policies can, and do change often, and we are deeply grateful for our efficient and student-friendly staff that make our administrative and instructional tasks easier. Students and faculty rely very much on the team effort of our staff to effectively manage the daily operations of the department. A special Thank You to all of our current and former staff members pictured on this page!



Catherine Durham served as our Interim Administrative Coordinator from July 2022 to September 2022. She came out of retirement to help the Department during a time of transition while we conducted a search for a full-time Coordinator. Her wealth of experience at the University and as Coordinator for Biological Sciences for several years made it possible to begin the Fall 2022 semester on an even keel. Thank you, Catherine!



Mark McLaughlin
Instructional Technician

My name is Mark McLaughlin. I enrolled in the CSULB Graduate Physics Program in 1999, and I began working at CSULB in 2001. Before enrolling at CSULB, I worked briefly as a Civil Engineer. I earned my Masters in Physics at CSULB in 2005. Over the years, I have enjoyed working on many different projects to improve the instructional labs. In my spare time, I enjoy playing basketball, hiking, fishing, and traveling in my minivan that I converted into a camper.



Jay Conlon
Instructional Technician

My name is Jay Conlon. I began working at CSULB in October of 2017. My grandfather helped me use physics to win the Pinewood Derby as a boy scout and I've loved it ever since. I went to UC Merced for my undergrad, and did my Graduate studies here at CSULB. When I'm off the clock, I'm an avid gamer and all-around nerd, who's grateful to being employed doing something I love.



Ciara Barnes
Work Study Student

Hi, I am Ciara Barnes. I am currently a second year student at California State University, Long Beach. I am pursuing my BS in nursing and minoring in International Studies. I have worked in the Physics and Astronomy department as a federal work study student assistant since Fall 2022 and have loved every minute here. In my free time, I love to paint, draw, be outdoors, and spend time with my two dogs, Nike and Hershey. I was born and raised in the Bay Area, so I moved to SoCal for a different scenery. Working in this department has helped me have a positive and excelling first year.



John (Blake) Shaw served as our Administrative Coordinator from September 2022 to March 2023. His energy and organizational skills were instrumental in keeping the department operations functioning smoothly at a time when the office was short-handed. We were sad to see him go, but he helped with several improvements in the office and administrative tasks. Thank you, John!



Sergio Mendoza joined the Department as Administrative Assistant in January 2022, and continued in this role until April 2023. With his ready wit and warm personality, he made the office a lively and welcoming space, earning him a "Best of the Beach" staff award from the University. Sergio has since moved on to another position at the University. Thank you, Sergio!



Bianca Lopez Mendez, fiscal coordinator for the College of Natural Science and Mathematics, served as Interim Department Coordinator from April 2023 to June 2023, where her diligence and hard work helped us close out the busy academic year on a successful note. She has since returned to her role with the College. Thank you, Bianca!

Faculty Focus:

Dr. Claudia Ojeda-Aristizabal



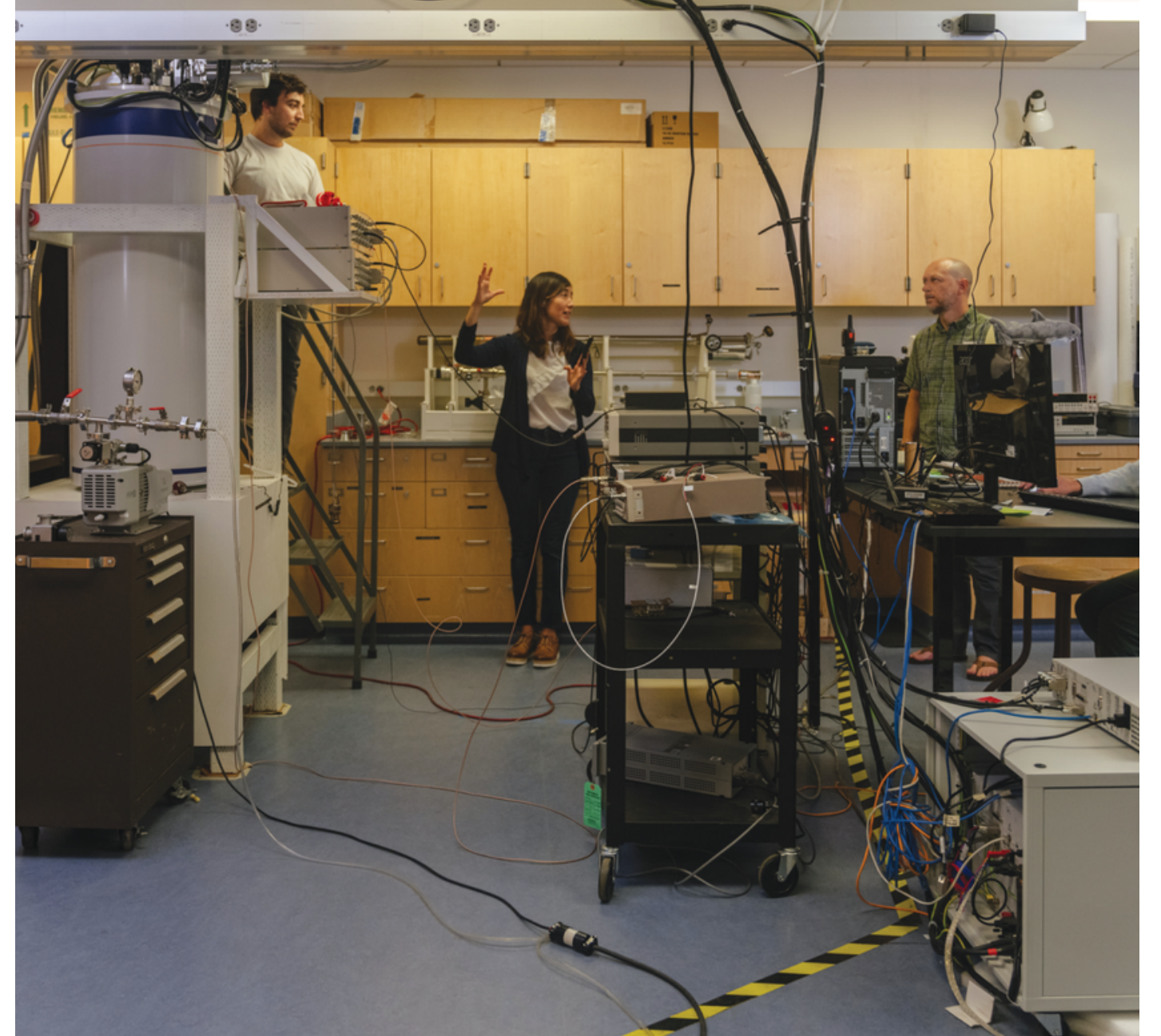
Associate Professor Dr. Claudia Ojeda-Aristizabal is an experimental condensed matter physicist whose Nanoelectronics Group investigates the behaviors of electrons in single-layer materials—the closest approximation to two-dimensional solid-state matter.

Dr. Ojeda is fascinated by the intrinsic inclination of nature to minimize energy, highlighting certain crystals where the lowest-energy configuration exists in two-dimensional layers. While aiming for comprehensive control over these materials in the future, her experiments help to understand the potential of 2D materials for advancements in quantum computing, solar energy, and flexible electronics.

Dr. Ojeda-Aristizabal and her students employ two primary research techniques. The first involves electron transport at extremely low temperatures, conducted on the CSULB campus. The second technique, angle-resolved photoemission spectroscopy (ARPES), takes place at the Lawrence Berkeley National Laboratory, utilizing synchrotron light to excite photoelectrons from the materials. Dr. Ojeda-Aristizabal writes proposals for access to this facility, allowing her students to conduct experiments and engage with scientists at least twice each semester.

Dr. Ojeda-Aristizabal praises the motivation and adaptability of her students, noting their unconventional paths to science and the resilience they gain as a result. She proudly emphasizes that the impact of her work extends beyond publications. She says that while the tangible applications of laboratory experiments may unfold over decades, the meaningful changes experienced by students actively engaged in these experiments are occurring in the present.

Since 2017, Dr. Ojeda-Aristizabal's experiments have received continuous funding from the U.S. Department of Energy, totaling \$765,000. This grant facilitates the exploration of various low-dimensional materials, offering training to both graduate and undergraduate students at CSULB. Additionally, the Nanoelectronics Group benefits from an \$800,000 Partnership for Research and Education in Materials (PREM) grant from the National Science Foundation, secured by Dr. Michael Peterson in 2022. She was featured this past year in QUEST magazine, a publication of the Office of Research and Economic Development (ORED) and also the YouVisit segment of the College of Natural Sciences & Mathematics. Adding to her profile, she secured the Wang Family award nomination from CSULB in the category of scholarly activity, a recognition that places her among the top researchers in the entire CSU system! We are fortunate to count her amongst our faculty.



Above: Dr. Ojeda-Aristizabal (seated; right) with students in her research group and her 2 daughters
Below: A snapshot of the Nanoelectronics lab for low temperature transport measurements.

ACADEMIC PROGRAMS

Undergraduate Advisor Dr. Thomas Gredig



Our undergraduate program serves an active and diverse community of students to realize their potential in various ways. This year we strengthened our emphasis on research experiences for undergraduate students. Indeed, the official AY 22/23 undergraduate student enrollment of the Physics Colloquium PHYS 495 (10 students) was about five times larger than the historical average (Note: the Physics colloquium takes place every Monday morning during the semester). Similarly, the enrollment in PHYS 496 (Special Problems) reached a peak of 15 students in AY 22/23. Students worked on diverse projects related to gravitational waves, biophysics, curved magnetic surfaces, 2D materials and Pd nanoparticles. Students got trained in atomic force microscopy, low-temperature measurements, and applying mathematical tools to solving problems.

Several students were able to participate in REU programs (Research Experience for Undergraduates) around the country. All these exciting opportunities prepared them for their next steps. In the 2022-2023 academic year we had 118 physics majors active (~70% B.S and ~30% B.A.). Twenty-nine (29) students graduated with B.S. and B.A. degrees and were welcomed as new members of our distinguished alumni group. The junior-level Mechanics course PHYS 310 is being offered both in the fall semester (31 students) and in the spring (11 students) to provide more flexibility for incoming transfer students to graduate up to 1 year faster.

Our faculty are continuing with innovative experiments in the upper-division laboratory courses. For example, PHYS 445 (Materials Science) was revamped by Dr. Gredig to incorporate the new Park XE7 atomic force microscopy and included the popular Arduino-based Bot race in the Fall semester. While in the Spring semester, Dr. Klotz trained students in experimental techniques used in soft materials physics such as shear rheometry and particle tracking in the newly developed course PHYS 448 (Soft Condensed Matter). Students also carried out original research investigating the evaporation of liquid crystal droplets by observing and recording them with polarized microscopy.

All these exciting educational experiences and research opportunities prepare our students well for the next steps in their promising careers.

Graduate Advisor Dr. Jiyeong Gu



Our Graduate Program, already one of the top Master's programs in the Nation, continues to work well. Students complete coursework in fundamental Physics subjects and are trained in applied, theoretical and computational research, leading to a master's thesis or project. Highlights of our program the year 2022-23 include graduation of 17 students with Master's degrees, 40% of whom entered top PhD programs around the nation, such as Stanford University, The Ohio State University and USC. We were very happy to see quite a few 2020 cohort graduated this summer after struggling to make research progress due to COVID restrictions in their first and second years of our program. Their hard work and resilience paid off. Congratulations to all our graduates! The Master's program is a true value addition, as data from the American Institute of Physics shows.

In Fall 22 and Spring 23, we welcomed a cohort of 14 new graduate students who have since joined the research groups of our faculty. In Spring 2023 we had one of our own alumni, Dr. Sam Hedges, as our colloquium speaker. He obtained his MS from CSULB in the Gu group in 2015, his PhD at Duke University in 2021, and is now a postdoctoral researcher at Lawrence Livermore National Laboratory. 2012 MS graduate, Dr. Thomas Baker (Bill group) obtained the Canada Research Chair position in Quantum Computing and is now faculty at the University of Victoria. It is nice to see our own alumni succeed and come back to visit us. We also had a big reunion at the APS March meeting in March 2023 where quite a few alumni from our MS program, now working as PhD students or post docs, attended and mixed with our current students.

This was my first year as graduate advisor and I learned a lot. Following the mission of the former graduate advisors in our department, I try to advise each student as best as I can based on his/her career ambitions, life situations and personality, all of which can evolve during their time here! I really appreciate our outstanding administrative staff including former staff in the past year, Korin Coombs, Lisa Dignadice, John Shaw, Sergio Mendoza, Bianca Lopez Mendez, and current staffs, Joey Grant and Amber Robertson. Their care and concern for the well-being of our graduate students is an invaluable asset to the Department and to the graduate program.

Student Club Activities

The Society of Physics Students (SPS) promotes and encourages interest of and success in physics for all students. They tutor and mentor each other in coursework, graduate school preparation, research projects and industry skills.

SPS began the 2022-23 school year by organizing an event to welcome physics transfer students to the university. They hosted a zoom presentation on Research Opportunity for Undergraduate (REU) programs with the Ohio State University MRSEC REU program coordinator, Michelle Richard. This presentation helped educate students about and provide guidance on how to secure such opportunities. They also arranged a scholarship information and writing session to provide members with personalized opportunities to get help with applying for scholarships and improving their essays for graduate school.

SPS is excited to welcome a new SPS board for the 2023-24 school year while giving thanks to the outgoing board : President Michelle McKenzie, Vice President Jandrie Rodriguez, Treasurers Imad Atik & Nathan Kim, Secretary Mathew Maldonado and Publicist Emiliano Benitez. SPS actively participated in the university's BEACH day event by volunteering their assistance. During the event, the SPS took the opportunity to communicate the club's goals and objectives to incoming students.

The Women in Physics (WiP) chapter at CSULB has been very active this year, organizing social events, application sessions and brainstorming ideas for highlighting research in the department to new undergraduate students.

Our WiP chapter was represented at the Conference for Women in Undergraduate Physics (CUWiP) at UC Merced this past year. They also participated in the Week of Welcome for freshmen, BEACH Day and other outreach events to new students.

WiP Club leader Jandrie Rodriguez, faculty mentor Dr. Jiyeong Gu and other members are expanding their activities to include student wellness and fundraising.

- Society of Physics Students (SPS)
- Women in Physics (WiP)
- Astronomy Club

The Astronomy Club led by Adrean Alva and Samra Tekle organized several star watch parties on the rooftop of the Hall of Science, which is a big draw for students and general members of the public alike. Every Tuesday night during the semester (weather permitting), students are invited to view the heavens through our telescopes and learn more about Astronomy and the Universe.

The club also offers the opportunity to gather together to watch celestial events like solar eclipses, meteor showers, and livestreams of major mission events, such as the DART mission. Our Astronomy activities continue to grow with the arrival of our new faculty Dr. Joel Zinn, an Astronomer (page 8 in this issue).

We are also thankful to retired faculty Dr. Paul Hintzen, Jessica Asbell, Johnae Eleby and our student assistants who help with organizing and coordinating Astronomy events. 2023-24 promises to be an exciting period for observations with 2 eclipses, supermoons etc.

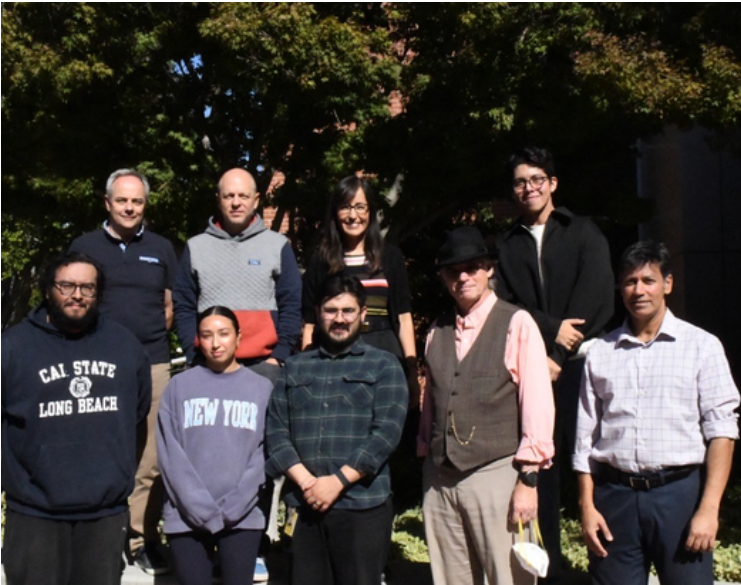
New Physics students are encouraged to join any or all of these clubs and spread the excitement of student communities.

See our giving page if you would like to make a contribution to support the activities our intrepid student clubs. We would very much appreciate your support!



REU workshop organized by the Society of Physics Students (SPS)

Special Programs



APS Bridge

Andreas Bill, Galen Pickett

The purpose of the APS Bridge Program, established in the Department since 2014, and currently led by Prof. Andreas Bill and Prof. Galen Pickett is to welcome, train, and successfully send off students to do a Ph.D. in physics. These students are fully integrated into our Master's cohort and receive one-to-one mentorship and involvement in research topics that may lead to publications in peer-reviewed journals. Since 2019, Google Inc. has partnered with the Department to offer two full two-years Google Bridge Fellowships as part of the IGEN APS Bridge program! Google also supports each year four summer research assistantships for students to do research with faculty members of the department.

In AY 2022/23, two Google supported Bridge Fellows, Raul Martinez and Deanna Diaz joined the department. Prior Fellow Maya Martinez started her PhD studies in Physics at Stanford University. We were also fortunate to receive increased funding from Google for the Bridge Fellows to partially offset rising costs of living and tuition. Many of our faculty are committed to the success of the Bridge program, and volunteer their time and effort freely.

Our special programs run by faculty and funded by federal or private sources serve students and the community, foster diversity , enhance the teaching of Physics in high schools and provide growth opportunities in Industry.



PhysTEC

Justin Fournier

The PhysTEC program, aimed at connecting the community of Physics teachers at high schools through Demo Days and classes on pedagogy, continued this past year on a smaller scale. Justin Fournier, a self-professed product of the program, taught the core classes of the program PHYS 390 – Exploring Physics Teaching and PHYS 491 – Physics Pedagogy, and also organized many successful and fun Demo Days, taking over from Dr. Pickett and Dr. Kwon.

Dr. Laura Henriques, recently retired from the Department of Science Education, shared the news that CSULB is at the top, by far, in the “5+ Club” (schools credentialing more than 5 Physics teachers), with 23 Physics teachers! We also thank Tamara Araya, Heather Stirewalt, Kevin Dwyer, David Eisenberg and Rod Ziolkowski for their valuable contributions to the PhysTEC program.

CLUBS AND PROGRAMS

A few of our alumni

Where are they now?



Antonio Garcia
M S Physics 2020

Antonio Garcia graduated in 2020 with an MS in Physics, working on computational methods and the Feshbach-Villars equation for which he won the outstanding thesis award (supervised by Dr. Zoltan Papp). He is currently pursuing his PhD in quantum field theory at New Mexico State University. He says “The Physics master’s program at Cal State Long Beach gave me a platform to prepare and apply for Ph.D. programs. Thanks to the program, graduate education in physics has become more welcoming and accessible to minorities and has brought tremendous change to the lives of many of the alumni including me.”



Nina Miller
MS Physics 2019

Nina Miller graduated in 2019 with her MS in Physics, and chose to pursue a PhD in Geology at the University of Reno, Nevada. She published a paper on the Baghold sand dunes on Mars while working on a research project with a JPL scientist. She also did research in hot Jupiters (exoplanets). She says “In my experience the Physics Department at CSULB has been a safe, vibrant, supportive, and inspiring place to learn and develop the skills I needed to pursue my Ph.D”



Zack Hall
MS Physics 2017

Zack Hall, a student in the APS Bridge Program, graduated in 2017 with his MS in Physics and joined the PhD program in Physics at the University of North Carolina, Chapel Hill. He has been working on lattice QCD and recently secured a fellowship to complete his thesis writing from the U.S. Department of Energy (DOE). He says “A strength of the program is the access to the community of professors which allowed for developing various learning opportunities outside of the classroom. The usual modes of instruction were infused with lots of research. This is further bolstered by the overall support in the department for student success.”

Introducing Dr. Joel Zinn

New faculty
Assistant Professor

Dr. Joel Zinn graduated magna cum laude in Astrophysical Sciences from Princeton University and completed his PhD at Ohio State University, where he began work on two of the most exciting datasets in stellar astronomy: asteroseismology from NASA's Kepler and K2 missions, and stellar distances from ESA's Gaia mission. He continued his work on these data as a postdoc at the University of New South Wales and later as an NSF Astronomy and Astrophysics Postdoctoral Fellow at the American Museum of Natural History.



New faculty Dr. Joel Zinn (left) with Dr. Prashanth Jaikumar outside Brotman Hall

Trained as an asteroseismologist, Dr. Zinn measures variations in stellar brightness to illuminate stellar properties like mass and age. Using asteroseismic ages to transform tens of thousands of stars into so many time capsules, he has demonstrated how chemical evolution of the nearby Galaxy proceeds, revealing novel heavy element production mechanisms.

His work has pushed the boundaries of what these asteroseismic stellar masses and ages and Gaia stellar distances can tell us about stellar interiors and the Galaxy as a whole: Dr. Zinn has placed the strongest constraints on the accuracy of asteroseismology to date, and has identified the failure points of asteroseismology for luminous stars and for old stars. His current work attempts to improve asteroseismology for these two regimes, which will enable a reconstruction of the assembly history of the most distant reaches of the Milky Way.

Motivated also by questions of stellar interiors, his research attempts to place constraints on the thermal and magnetic physics in the interiors of Sun-like stars. He will take advantage of ongoing and upcoming NASA missions like TESS and the Roman Space Telescope to further these lines of inquiry alongside CSULB undergraduate and graduate students.

In addition to his research interests, Dr. Zinn looks forward to bringing his experience in planetarium education to CSULB with a newly-purchased mobile planetarium (picture on page 2 of this issue). As the mobile planetarium program develops, we will be presenting shows on stellar and galactic physics aligned with Next Generation Science Standards to local high school students. Dr. Zinn will also be continuing the Department’s public-facing Nights at the Observatory series, and he invites you to bring friends and family along on Tuesday nights to the roof of the Hall of Science for stargazing through our telescopes. (See the Department website for details!)

Dr. Zinn is an erstwhile professional actor, and enjoys performing nowadays to audiences in the planetarium and classroom. He developed curricula at the intersection of arts and astronomy while at the American Museum of Natural History, and hopes to continue to explore those intersections at CSULB.

PREM - Partnership for Research and Education in Materials

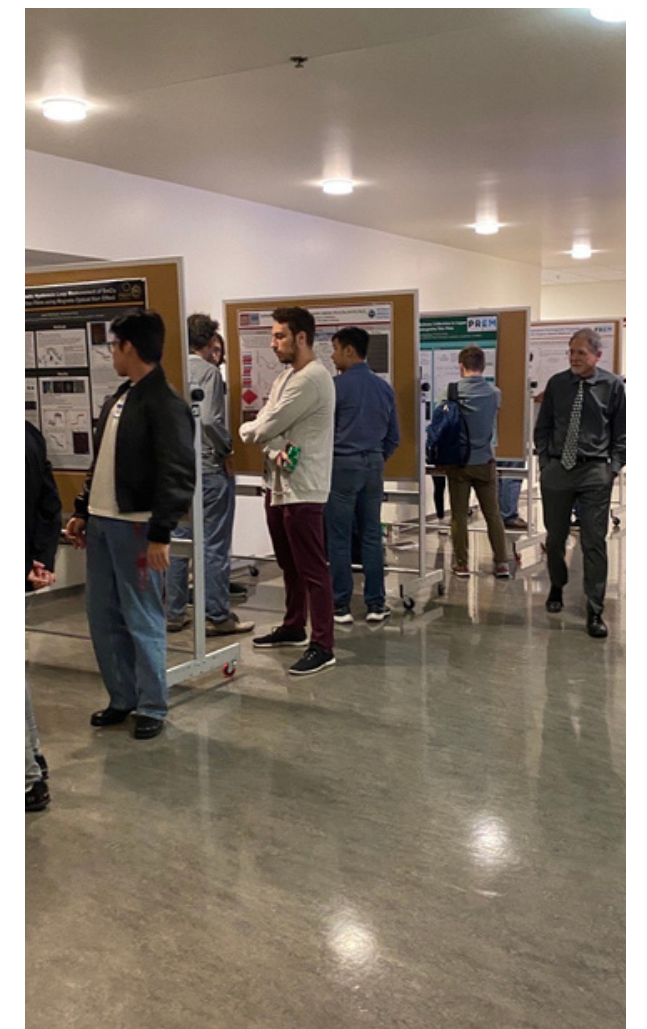
The mission of the PREM is to increase diversity in materials research by identifying students interested in pursuing interdisciplinary research as a career and by providing high-quality research opportunities and extensive mentorship for these students. All activities are in close partnership with the Center for Emergent Materials at The Ohio State University (OSU). The PREM will provide participants with cutting-edge research opportunities in materials science and prepare them to be competitive for entering graduate programs and careers in industry.

PREM is a National Science Foundation funded partnership between California State University, Long Beach, led by Dr. Michael Peterson (Physics), Dr. Jiyeong Gu (Physics), and Dr. Ryan Blair (Mathematics) and The Ohio State University's Materials Research Science and Engineering Center (MRSEC), the Center for Emergent Materials.

The PREM provides mentoring, guidance, and training for undergraduate and master's students for careers in Material Science via cutting edge research and educational opportunities. Students participate in highly interdisciplinary materials research projects incorporating physics, chemistry, mathematics, and mechanical engineering with faculty at CSULB (Dr. Andreas Bill, Dr. Claudia Ojeda-Aristizabal, Dr. Alex Klotz, Dr. Jiyeong Gu and Dr. Thomas Gredig, all from Physics, Dr. Ryan Blair from Mathematics and Dr. Shahab Derakhshan from Chemistry) and faculty at Ohio State University (Dr. Jay Gupta, Dr. Chris Hammel, Dr. Ezekiel Johnston-Halperin, Dr. Roland Kawakami - all Physics, Dr. Josh Goldberger from Chemistry, and Dr. Lisa Hall from Chemical and Biochemical Engineering).

The PREM is currently a seed grant of \$800K over three years. Since the start we have recruited over a dozen CSULB graduate students and nearly a dozen undergraduate students into the PREM program. So far, four undergraduates and six master's students have graduated. Four of these graduates have already started or will begin PhD programs in the fall: Maya Martinez at Stanford University, Fanuel Mendez at Indiana University Bloomington, Derek Bergner at the University of Southern California, and Kenta Kodama at Ecole Normale Supérieure (Paris). Three other graduates have entered the work force in STEM companies such as Northrup Grumman.

PREM has already produced 37 presentations, 30 of which had student as co-authors. In particular, our students presented three talks at the American Physical Society's Far West Meeting in Hawaii in October and five talks at the APS March Meeting in Las Vegas. These talks were in addition to over a dozen poster presentations at the APS March Meeting. Finally, the PREM had its first publication from the Ojeda-Aristizabal group published in Applied Physics Letters on electronic transport mechanisms in a thin crystal of the Kitaev candidate α -RuCl₃ probed through guarded high impedance measurements.



Above: Attendees of the very first PREM CSULB-OSU Symposium (PI Dr. Peterson is seated 2nd from right)
Below: (Left) Dinner at Huntington Beach organized as part of the PREM symposium;
(Right) Student poster presentation in the hallway of the Physics Department.

Faculty Awards & Recognitions



Dr. Thomas Gredig speaks at the annual department luncheon at the Earl Burns Miller Japanese Garden

President's Award for Outstanding Faculty Achievement:

Dr. Thomas Gredig was recognized with the annual award for Outstanding Faculty Achievement at the University, one among a handful of faculty members, for his demonstrated outstanding and sustained academic achievement in teaching, service, research, scholarly, and creative activity, administration, and success initiatives. Dr. Gredig was lauded for his innovative teaching and data-based approach to implementing pedagogical improvements leading to increased student success. In addition, his research in organic thin films, semiconductors and photovoltaics supports our society's drive towards clean energy. This award is also a recognition for the alignment of Dr. Gredig's accomplishments at the University with our Beach 2030 priorities, which aims to chart a new path in higher education. Congratulations to Dr. Gredig!

Faculty Award for Excellence: The College of Natural Sciences & Mathematics (CNSM) chose Dr. Alexander Klotz of the Physics and Astronomy Department for one of its annual Faculty awards for Excellence. Also known in local parlance as the "Pretty Darn Good Professor" award, this award is judged by faculty peers in CNSM and recognizes overall excellence in the academic pillars of teaching, research and service. Dr. Klotz has been teaching PHYS 320 (Thermodynamics) and PHYS 448/548 (Experimental Soft Matter Physics) and recently won the Mayfield teaching award from students in CNSM. His research in experimental and computational Biophysics has secured federal and state grant funding and he is an active mentor and advocate for the well-being of our students. Congratulations to Dr. Klotz!

Wang Family Nominee for Outstanding Faculty Scholarship:

Dr. Claudia Ojeda-Aristizabal earned the distinction of being the nominee from CSULB for the Wang Family Excellence Award in the area of Outstanding Faculty Scholarship, reflecting her extraordinary commitment and exemplary achievements in research. Nominees for this highly competitive award rank among the top faculty in their chosen sphere of activity in the entire CSU system! Dr. Ojeda-Aristizabal embodies the California State University's mission to enable student success by leading them to new heights in their research and career prospects. In the past year, her student Ms. Maya Martinez won the outstanding thesis award and began her PhD studies at Stanford University. She is an outstanding mentor and cares deeply for her students. Her Nanoelectronics laboratory was just awarded renewed funding from the Department of Energy (DOE) for another 3 years. Congratulations to Dr. Ojeda-Aristizabal!



Dr. Claudia Ojeda-Aristizabal presents a talk at The Ohio State University

Retirements

Prof. Chuhee Kwon, who joined the department faculty in August 1999, announced her retirement at the end of December 2021. Dr Kwon is an accomplished researcher, who published more than 100 papers in her long career, garnering over 5000 citations. Beginning with her undergraduate degree at Seoul National University in Korea and her PhD studies at the University of Maryland, she went on to make important contributions in the fields of high T_c superconductivity, superconducting wires, and magnetic oxides. She championed the use of advanced experimental tools such as Atomic Force Microscopy (AFM) and Magnetic Force Microscopy (MFM) for both research and teaching in the department. As graduate advisor from 2007-11, she set the current trend of nation-leading graduation rates of our Master's program. Taking over as Department chair from Pat Kenealy in 2011, Chuhee played a leading role in bringing the PhysTEC program and the APS Bridge Program to the Department - these are initiatives that the department was able to get behind and continue to this day.

Chuhee has received many accolades for her research, teaching and service over the course of her career. She was recognized as the Woman Physicist of the Month by the American Physical Society in December 2016. She was also awarded the President's award for outstanding faculty achievement in 2017.

Many members of the department and college faculty, staff and Physics alumni turned up for the retirement part of Dr. Kwon (pictured above). Several students recalled how inspiring and supportive she had been during their studies at CSULB, and many junior faculty benefited from her mentorship. Department staff appreciated her organization capabilities and generous heart for students. Chuhee was presented with a compilation of all her research articles and other memorable gifts by Dr. Ojeda-Aristizabal. Post-retirement, Chuhee has embarked on new journeys, while continuing to be actively involved in the Department's regular features such as Demo Day and the Colloquium.



Rod Ziolkowski came to our Department as its first ever Teacher-in-Residence (TIR) in 2009 and returned 9 years later in the same role, transitioning to a lecturer faculty before eventually retiring from his position at the end of AY 2022/23. Besides his stellar career as a Physics teacher at Whitney High School, Rod has given much of his enormous reserves of talent, enthusiasm and energy to this Department and also CSU Fullerton before that. Besides leading the various tasks of the PhysTEC program, he co-taught pedagogical courses PHYS 490D and PHYS 390, encouraging many students to explore Physics Teaching as a career. Working closely with Dr. Laura Henriques of the Science education department, he redesigned the activities of the Physical Science 112 Lab and developed the manual that is currently in use. Rod has been a wonderful mentor and lent a friendly ear to many of our students and young lecturers. From his encouragement to student speakers at research presentations to advocating for the well-being of our teachers and staff, Rod has played a critical role in the development of our students and has always been a man of purpose and vision. We wish him all the best as he tackles the next challenge!



Dr. Chuhee Kwon speaks at her retirement party organized by Dr. Ojeda-Aristizabal in Fall 2022.

Commencement Awards

RICHARD D. GREEN DEAN'S
OUTSTANDING BACCALAUREATE
Caleb Anderson

GRADUATE DEAN'S LIST OF UNIVERSITY
SCHOLARS AND ARTISTS
Vinh Tran

CNSM OUTSTANDING THESIS AWARD
Maya Martinez (Advisor: Dr. Ojeda-Aristizabal)

DEPARTMENT UNDERGRADUATE HONORS

Epifanio Garcia
Michelle McKenzie
Kenta Kodama

DEPARTMENT GRADUATE HONORS

Angie Brulc
Ryan Mizukami
Laura Tandy

Department Awards

OUTSTANDING TEACHING ASSOCIATE (TA) AWARD
Changgyoo (Luke) Park

OUTSTANDING SERVICE AWARD (Undergraduate)
Adrean Alva

OUTSTANDING SERVICE AWARD (Graduate)
Alejandro Zafra

***Congratulations to
the awardees!***

Scholarships

John E. Fredrickson Endowed Scholarship
Ivan Pelayo

Irene Howard and Keung Luke Endowed Scholarship
Henry Sundland

Keung Luke, Charles Roberts and Richard Whiteley
Endowed Scholarship
Anise Mansour

Kevin Kwok Chan, HK Alumni, Keung Luke,
Endowed Scholarship
Raymond Ly

John and Terry Milligan Scholarship in Physics
Sonianne Pham-Ngo

Richard and Florence Scalettar Scholarship
Christian Castruita, Matthew Maldonado

Olaf and Mary Jane Anfinson Endowed Scholarship
Anthony Acebal, Prit Ahir, Joshua Perez, DeQuan Gillebeau
Kedar Yadav, Tomas Virgen, Nicholas Franco

Physics and Astronomy Department Scholarship
Joseph Kessler, Movindu Dissanayake, Victor Corona,
Shanel Deal, Brian Wilcox, Daniel Torres

Assistantships

Google Summer Assistantship
Mahfuzun Nabi, Armando Reynoso, Adam Bowen

Margaret Heeb Student Research Assistantship
Erin Henkhaus

John Turner Assistantship
Carlos Lima

Lai Kai Gunn, Ng So-Ning and Keung Luke Assistantship
Nicholas Cuomo

Kristina T.L. Wong, L. Desmond Wong, Nancy F. Wong,
Pamela T. M. Wong Rennick and Keung Luke Assistantship
Mariangela Misceo

Giesela and Wilfried Eckhardt Endowment
Jandrie Rodriguez, Giovanni Rosales, Derek Wingard

Simon George and Keung Luke Assistantship
Mariannah Meadors

Daniel and Grace Lim and Keung Luke Assistantship
Benjamin Estabrooks

IN MEMORIAM

Dr. Chi-Yu (Sue) Hu

Dr. Chi-Yu (Sue) Hu joined the faculty of the department of Physics and Astronomy in 1963, retiring in 2006 but only from teaching, as she continued her passion for research until the very end. She obtained her BS degree at the National Taiwan University in 1955 and earned her PhD at MIT in 1962 under the supervision of Dr. Felix Villars. As a woman scientist in the mid 20th century, Sue was a pioneer in the physics community. It was always in Sue's heart to help mankind solve its energy problem. This led her to study the possibility of muon-catalyzed fusion where she made significant contributions, along with pioneering calculations of atomic three-body problems. Sue was funded through grants from NSF and DOE since the early 1970's up to her last few years at CSULB, obtaining access to the top supercomputers of the country. She numerically found the theoretically predicted resonances in three-body Coulomb systems lying right above reaction thresholds that resulted in a significant increase of reaction cross sections in a narrow energy interval. This phenomenon kept her attention until her last days. Her professionalism in organizing research and her everlasting enthusiasm drove her to carry out a number of successful international collaborations with scientists from the USA, Eastern Europe and Russia.

Sue was a devoted teacher. She taught classes at all levels and graduated a legion of students. Her career has been remarkable in that in spite of a heavy teaching load, she pursued outstanding research that involved students, funded by grants, with long-lasting national and international collaborations. She will be remembered as a kind, good hearted and strong scientist with unlimited enthusiasm for physics. A full obituary was published by her colleague Dr. Zoltan Papp and others in Few-Body Syst 64, 10 (2023).

Dr. Kuanwen Chuang

Dr. Kuanwen Chuang, lecturer faculty in the department, passed away in February 2023 shortly after his retirement. He got his M.S. in Physics from UCLA in 1982 and his PhD from UC Riverside in 1990 working on the topic of gamma-ray bursts. He taught several of our introductory Physics courses and upper division courses such as Thermal Physics and Electrodynamics. He was a hit with his students and was known for an encouraging, positive attitude and keeping a good sense of humor.

Following his passing, several students and colleagues recalled Kuanwen's warm-heartedness and genuine care for his students. Even while teaching very challenging concepts, it was his passion, banter, and rigorous ways of pedagogy that created a healthy environment to learn the material. Professors like Dr. Chuang are unique, and he encouraged young students to gain confidence in the difficult field of physics.

Above all, he was a jovial and good-natured person, always ready with a wave or cheerful greeting as he went about his busy schedule teaching Physics to many students. He would always encourage students to come to his office hours, where he promised hot water for coffee or tea. "Come to my office, we'll talk about physics" he would often say. He truly had a heart for students and their learning. He will be missed, but never forgotten.



GIVING

"We make a living by what we get, but we make a life by what we give" - Winston Churchill

The Department relies solely on private contributions to fund essential student enrichment activities.

These include:

Faculty-mentored Research Experiences
Weekly Colloquia featuring Visiting Scientists
Training on state-of-the-art Instrumentation
Rooftop Astronomy Nights & Outreach
Mobile Planetarium Trips & Maintenance
Scholarships and Assistantships
Student Clubs (SPS, Women in Physics, Astronomy Club)

Your generous contributions directly impact the quality of the educational experience we can offer our students. They play a crucial role in ensuring that diligent students receive the necessary financial support to stay on course and graduate with minimal or no debt.

GIVE ONLINE at <https://giveto.csulb.edu/>



Our annual scholarship and assistantship dinner was attended by over 50 benefactors and students.

Left to Right: Physics MS students Adam Bowen and Gio Rosales, along with Physics undergraduates DeQuan Gillebeau and Christian Castruita at the dinner event.



Physics MS student Raymond Ly (center), recipient of the Kevin Kwok Chan (2nd from right), Hong Kong Alumni, and Keung Lai Luke Scholarship for the year 2022-23. Raymond is finishing his thesis on gravitational wave data science and plans to pursue a career in Industry.



Maryanne Horton, Senior Director of Development for the College, retired recently in June 2023. Maryanne's support of Physics programs and relationships with our faculty and alumni are greatly valued. Thank you, Maryanne!

We offer heartfelt thanks to our generous donors, named and anonymous, for their invaluable support. Your contributions towards enhancing educational experiences for our students is truly making a lasting impact. Thank you for championing the causes of Physics at CSULB, and acting as catalysts for change in our students' lives.



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