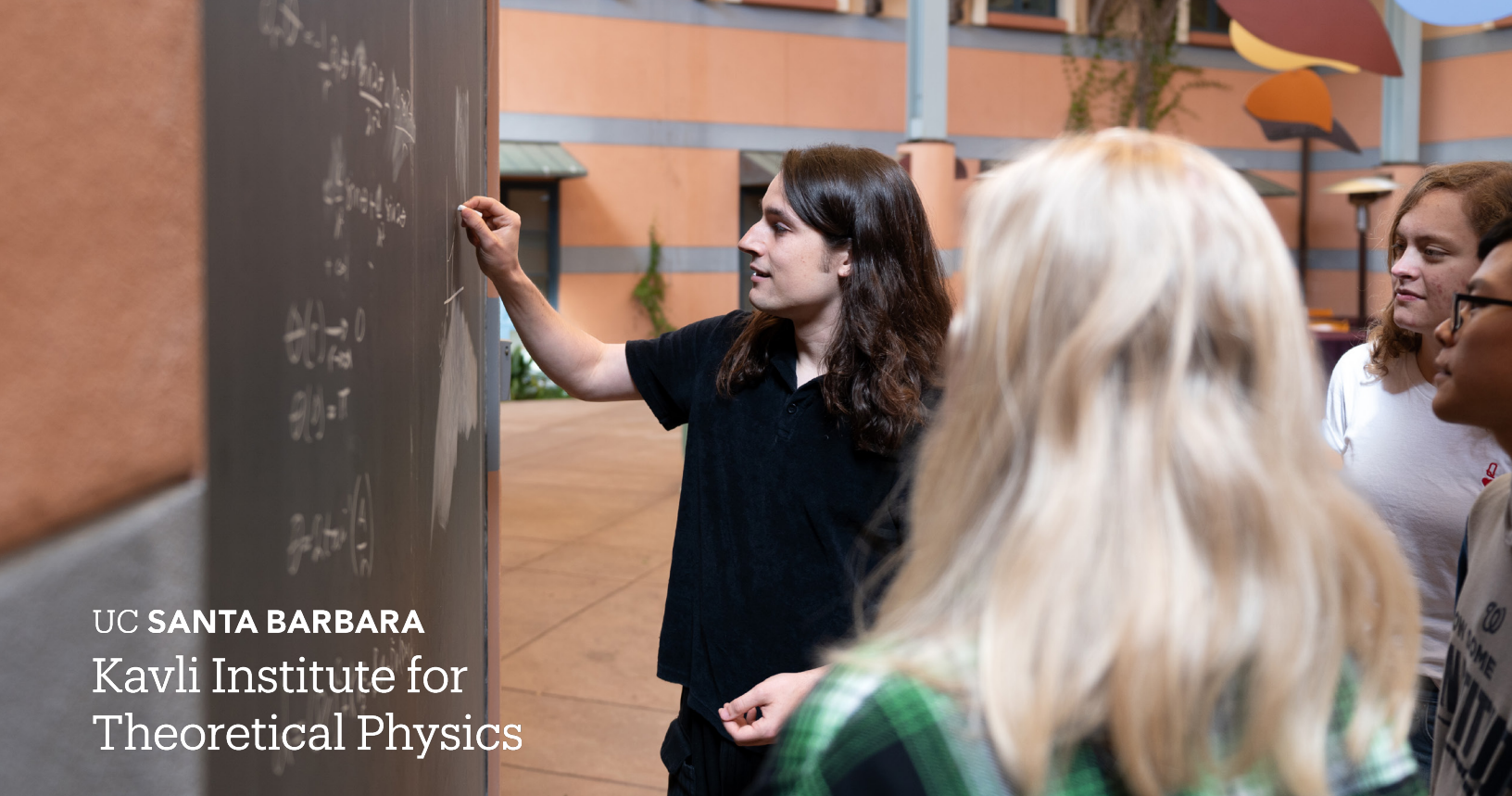




UC SANTA BARBARA
Kavli Institute for
Theoretical Physics

KITP Graduate Fellows Annual Report 2024

Launching the next generation of physicists

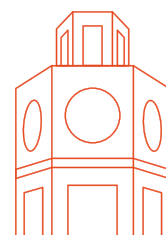
Each year, KITP offers a unique opportunity for up to sixteen outstanding graduate students to spend six months at the institute participating in research programs and broadening their understanding of physics. KITP Graduate Fellows are exposed to more ideas and scientists than at any other institution, providing abundant opportunities to develop broad perspectives, build networks, and engage in independent research during the formative years of their careers.

Under the mentorship of KITP Postdocs and faculty, each fellow gives a talk about their research to the local academic community, offering invaluable experience and exposure.

KITP's selection process is based on academic rigor, career readiness, and independence. Nominations and applications are solicited from the entire physics community for candidates across the world. Chosen from a highly competitive applicant pool, each cohort benefits from KITP's commitment to hosting a diverse group of scientists from a variety of sub-fields and backgrounds.

KITP plays an important role in empowering future generations of scientific leaders. Over half of former fellows now serve in esteemed faculty positions around the globe, and the rest are in important roles at national labs and in industry.

We are grateful to the Heising-Simons Foundation and the Simons Foundation for their generous support of this program, and to those who have already made a commitment to KITP's Graduate Fellowship endowment.





From Our Recent Graduate Fellows



“Coming from a small university, it was eye-opening to be at such a large and active research institution. Attending programs helped me get a survey of my field and I gained a better appreciation of my role within the community, what makes sense for me to work on, and the status of various parts of my field. I also started many discussions with visitors that will likely lead to future collaborations.”

Muldrow Etheredge • Spring 2024

“Being at KITP provided invaluable opportunities to connect with numerous program visitors who are leaders or emerging talents in our field. I gained significant insights not only into their research but also into their perspectives on research methodologies and current unsolved problems. Moreover, I initiated several collaborations, finding that many difficult problems became more approachable within KITP’s active discussion environment.”

Taige Wang • Spring 2024



“During my time as a KITP Graduate Fellow, engaging with colleagues in my field helped me identify interesting problems to tackle, as well as new techniques to use in my current work. I also attended talks and participated in discussions about research somewhat removed from my own. I believe this will make me more effective at interacting with physicists in other fields, and I may even explore some of these topics in the future.”

Vladimir Calvera • Fall 2024

“My participation at KITP has been transformative for my scientific career. With my mentor, I explored topics outside my area of expertise that broadened my skill set and opened new avenues for future research. Engaging with experts introduced me to different focuses, which sparked ideas for potential collaborations. The program’s collaborative environment was invaluable in expanding my professional network and refining my research interests.”

Hanjue Zhu • Fall 2024





Science Highlights

Nisarga Paul investigated magnetic Weyl semimetals in collaboration with Takamori Park (UCSB), Jung Hoon Han (Sungkyunkwan University), and Leon Balents (KITP). While it has been known that Weyl semimetals, a three-dimensional analog of graphene, can host an array of unexpected electronic properties, some of these properties remain hard to observe. This work predicted a strong effect, the gyrotropic magnetic effect, when Weyl semimetals are combined with magnetism.

Kanaya Malakar worked with Boris Shraiman's (KITP) research group to better understand the physical process of tissue development. The cells in tissues might experience different forces from their neighbors, but if they do not move, all those forces must balance each other perfectly. Kanaya learned a method the group developed based on this concept called 'tension inference,' which she used to measure forces on cell-cell contacts to study stress patterns in developing fruit fly wings.

KITP Graduate Fellows Roster

Spring 2024

Kasia Budzik
Perimeter Institute

Muldrow Etheredge
University of
Massachusetts, Amherst

Ziaoyang Huang
University of Colorado,
Boulder

Marius Kongsore
New York University

Nisarga Paul
Massachusetts Institute
of Technology

Julia Speicher
Georgia Institute of
Technology

Taige Wang
UC Berkeley

Cynthia Yan
Stanford University

Fall 2024

Vladimir Calvera
Stanford University

Junkai Dong
Harvard University

Kanaya Malakar
Brandeis University

Chintan Patel
Tata Institute of
Fundamental Research

Aidan Reddy
Massachusetts Institute
of Technology

Hanjue Zhu
University of Chicago

Looking Ahead

KITP believes that broadly educated physicists are necessary in a rapidly changing scientific world. We are committed to playing a significant role in this effort through the KITP Graduate Fellows Program, which expands early-career scientists' scope and exposure in order to diversify the future of physics.

KITP Graduate Fellows leave the institute with new skills, deeper connections, and unprecedented independence that launch them into the next steps of their careers. Many move on to prestigious postdoctoral or industry positions, or earn awards for their research. Even after completing their fellowship with us, they often continue to stimulate intellectual life at KITP by returning to attend or organize programs.

If you share in our passion for mentoring and launching emerging scientists who go on to make essential contributions to physics, please consider investing in the KITP Graduate Fellowship endowed fund. We have reached \$4.4M in commitments towards a total funding goal of \$5M for this impactful program.

With your support, we'll continue expanding new frontiers.

Former Graduate Fellow Highlight

Ruben Verresen came to KITP from the Max Planck Institute for the Physics of Complex Systems in Germany to study a variety of topics in condensed matter physics. Verresen was the 2025 recipient of the APS George E. Valley Jr. Prize "for pioneering contributions to the quantum dynamics and topology of strongly coupled systems, enabling the creation of highly entangled states, including the first non-Abelian phase in quantum platforms."

"My time as a KITP Graduate Fellow was a formative period in my career—something of a "mini postdoc" during my PhD that gave me a taste of academic independence. Coming from Europe, it was an ideal first introduction to academia in the US, and these early connections to the US research community helped shape my postdoctoral opportunities. During the pandemic, KITP once again confirmed its role as a leader in the physics community by offering junior researchers like myself the opportunity to co-organize virtual conferences. Since then, I've had the pleasure of returning to KITP multiple times for workshops, and I am already looking forward to my next visit in August 2025. KITP remains one of the most inspiring places I know for doing physics. The extended format, the culture of open exchange—whether over the 3pm cookie platters or at the blackboards in the Munger Residence—and the beautiful surroundings all foster the kind of deep, unhurried thinking that theoretical physics thrives on. I am grateful that our physics community has KITP, and it would be hard to imagine it any other way!"



Ruben Verresen · KITP Graduate Fellow, Fall 2018
Assistant Professor, University of Chicago

To learn more, please contact:

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