

Department Welcome

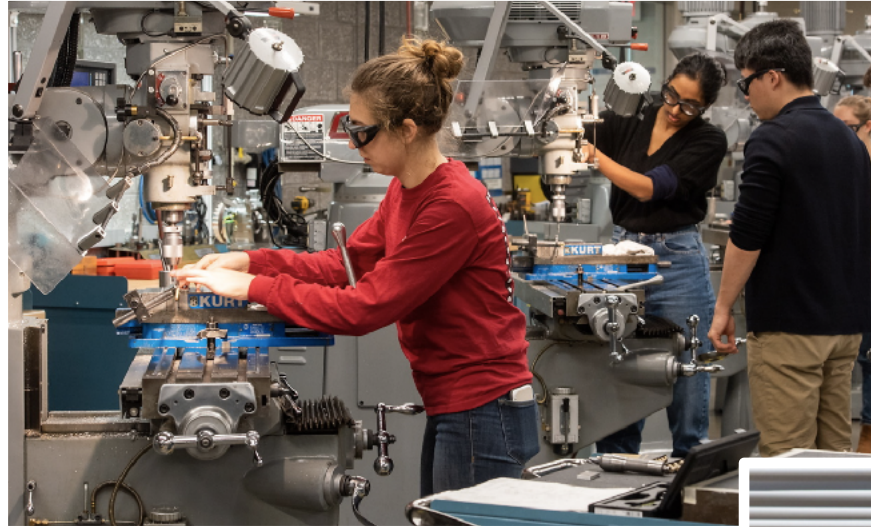
*Reconnecting,
rebuilding community*

First Physics Club
Academic Year 2022-2023

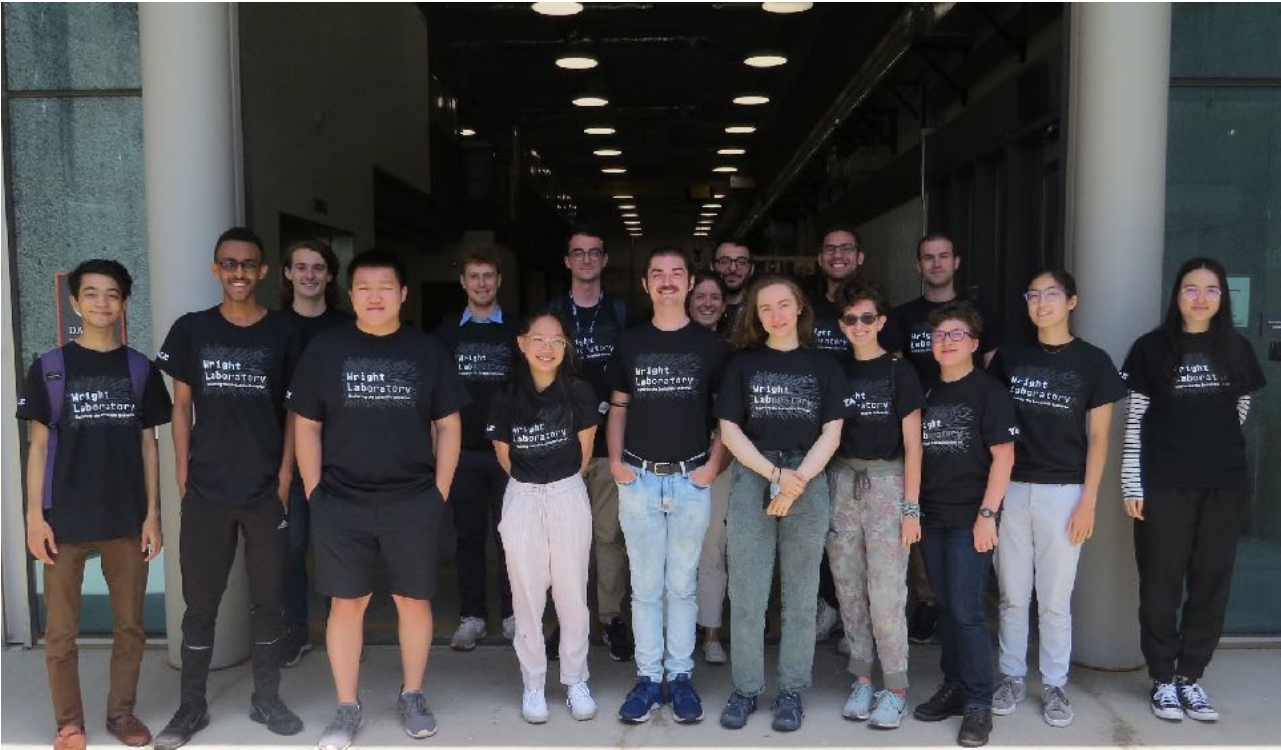
Karsten Heeger, Chair



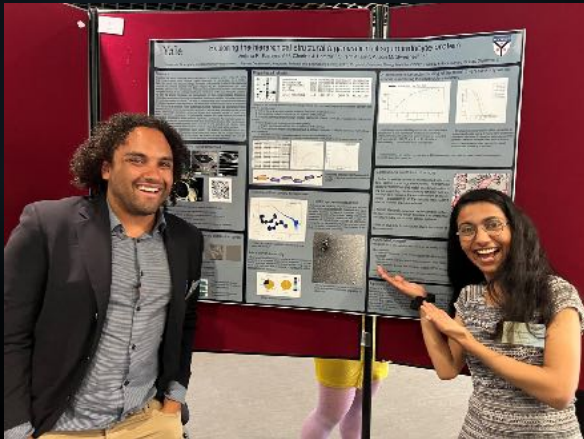
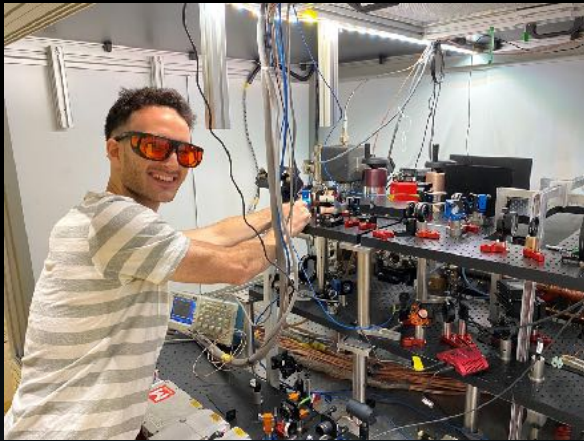
Reconnecting and Rebuilding our Community



2022 Summer Undergraduate Research at Wright Lab



Highest Engagement Posts – Instagram (July 1, 2022-September 8, 2022)



- Includes posts that had the highest reactions (likes, shares).
- Posts that featured and introduced women students have been performing the highest.

Highest Engagement Tweets – Twitter

(July 1, 2022-September 8, 2022)



- Includes posts that had the highest engagements overall (number of times a person interacted with a tweet - retweets, hashtag views)

Building for the Future 2021-2022



May 2021



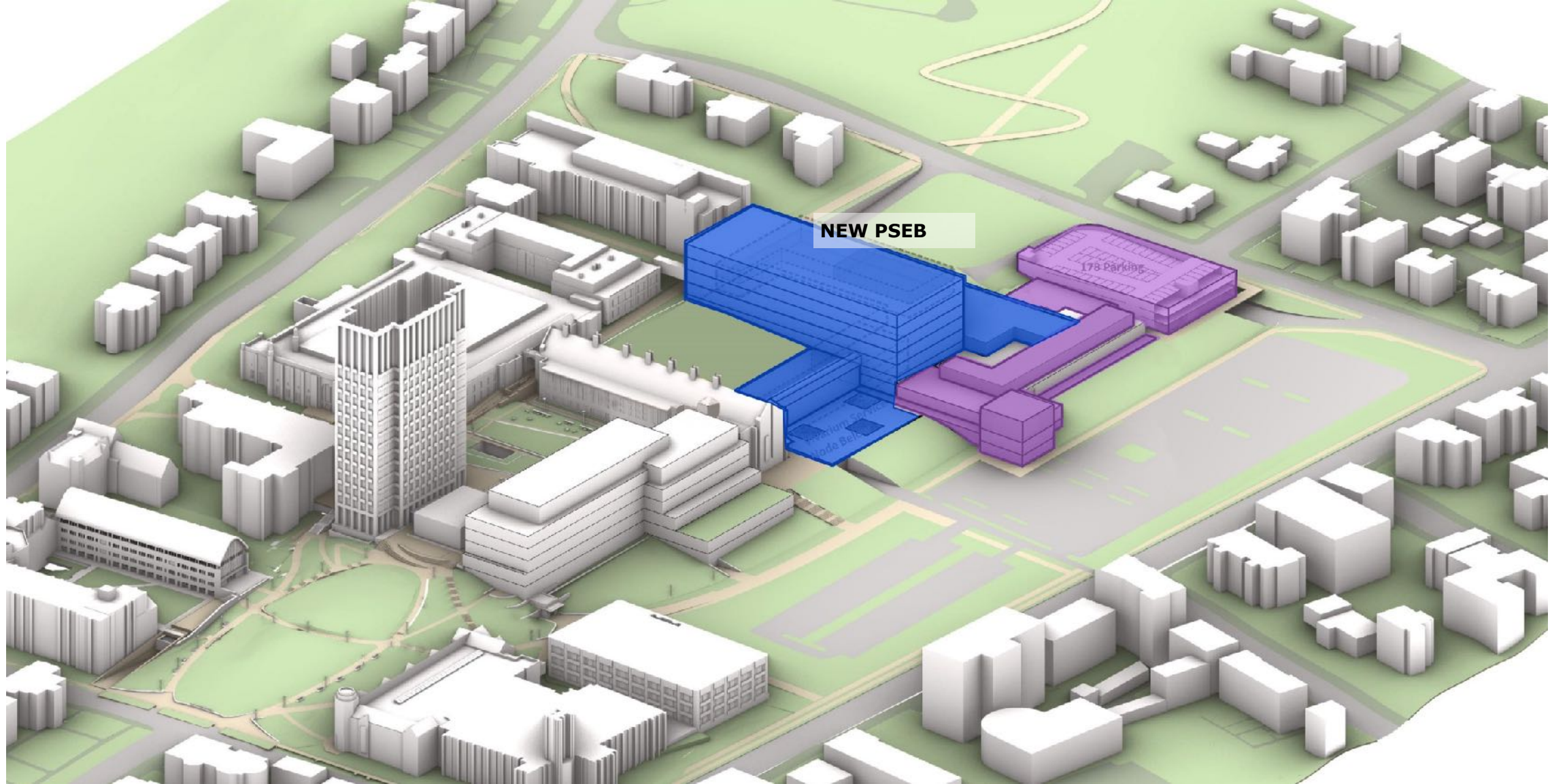
Summer 2023 - move into KT



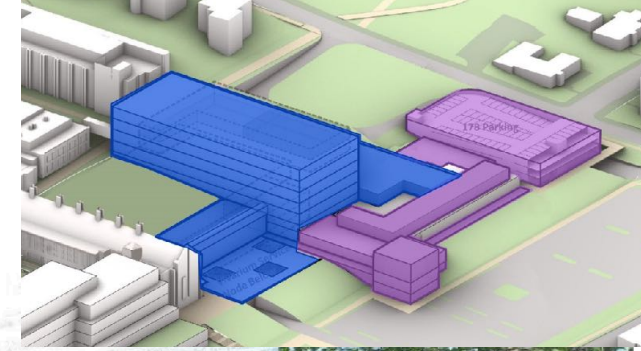




New Physical Sciences & Engineering Building



New Physical Sciences & Engineering Building



Welcome to 2022 Mossman Fellow



Murat Kologlu

Ph.D. in Physics, 2019 (Caltech)

Background:

- postdoctoral associate at the University of Oxford
- specializes in theoretical high-energy physics and string theory, conformal field theories and their applications to various systems spanning quantum gravity, high-energy physics, and condensed matter.

At Yale

- works with Prof. Ian Moulton and David Poland

<https://physics.yale.edu/yale-mossman>

Welcome to New Staff

Chair's Assistant



Stacey Bonet

Chair's Office



Kirstin Franzman



Welcome to our 2022 Graduate Students

Graduate & Undergraduate Program Teams

Graduate Program



Stacey Watts
Graduate Registrar



Rona Ramos
Graduate Program
Coordinator



Daisuke Nagai
DGS

Undergraduate Program



Daphne Klemme
Undergraduate Registrar



Sarah Demers
DUS

Yale Physics Graduate Program

People

faculty (primary)	35
faculty (secondary)	24
grad students (physics only)	135

Median time to graduation 6.2 yrs

Diverse interests/ interdisciplinary opportunities

applied physics
astronomy/astrophysics
biological physics/systems biology
materials science

Recent Alumni



<https://physics.yale.edu/people/alumni>

Yale *Physics*

Research Areas

broad research portfolio in experiment and theory

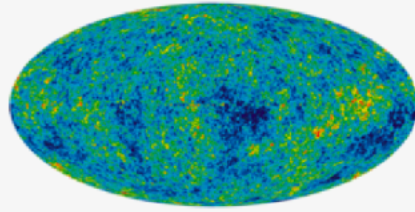
new science initiatives on campus

- quantum science
- data science
- instrumentation

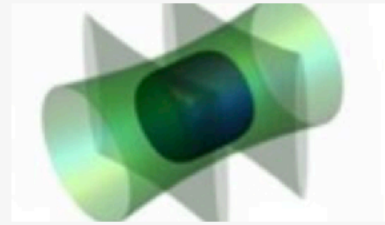
Other priorities

- DEI
- Connections BNL

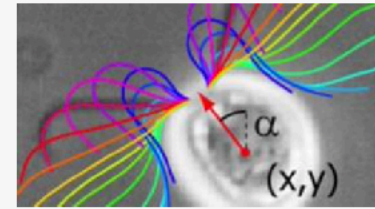
<https://physics.yale.edu/research>



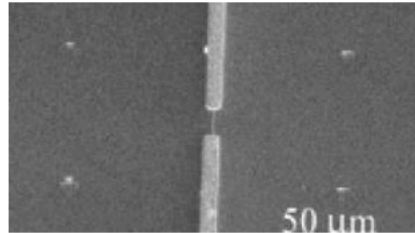
[Astrophysics and Cosmology](#)



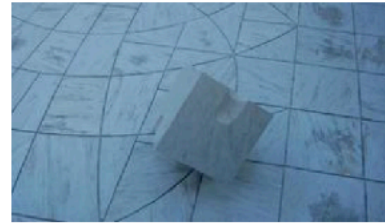
[Atomic, Molecular, and Optical Physics](#)



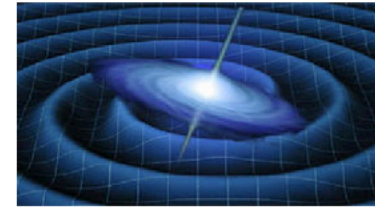
[Biophysics](#)



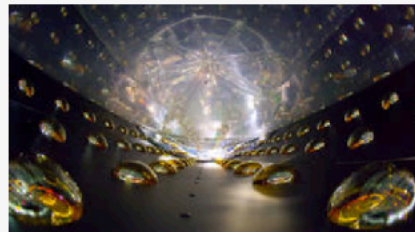
[Condensed Matter Physics Experimental](#)



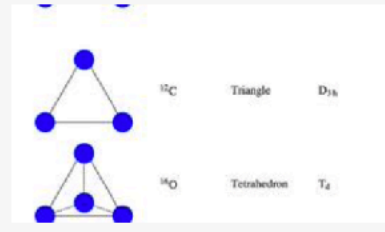
[Condensed Matter Physics Theory](#)



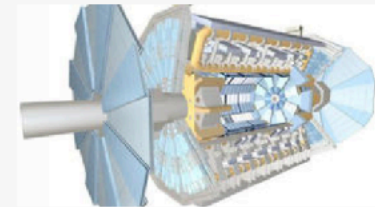
[Gravitational Physics](#)



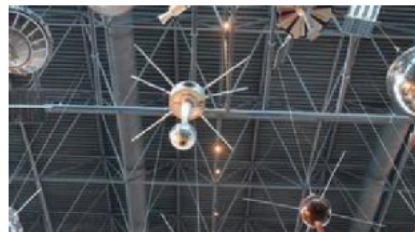
[Nuclear Physics Experimental](#)



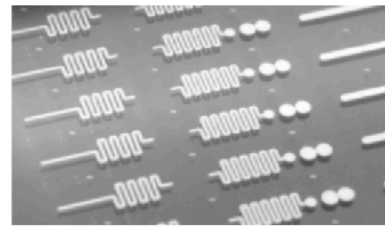
[Nuclear Physics Theory](#)



[Particle Physics Experimental](#)



[Particle Physics Theory](#)



[Quantum Physics](#)

Faculty Searches

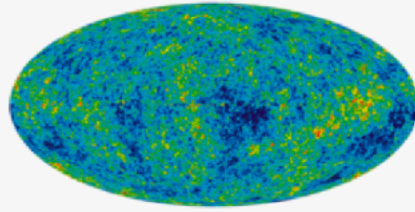
new searches

- Astrophysics/
cosmology
- Biological physics/
Qbio
- Exp nuclear physics

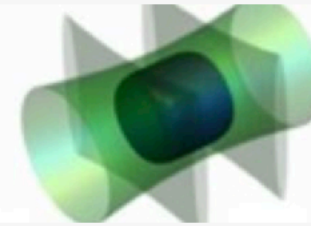
continuing searches

- quantum science
- AMO

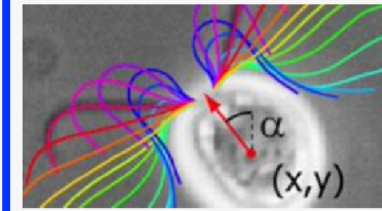
**Come to the talks,
provide feedback!**



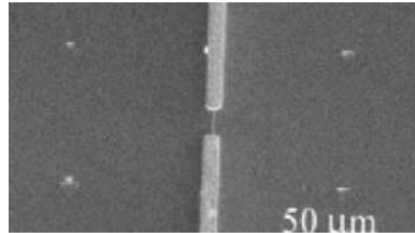
[Astrophysics and Cosmology](#)



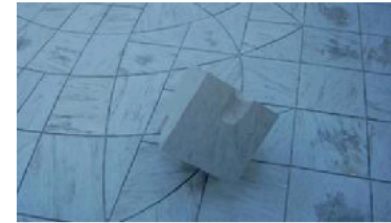
[Atomic, Molecular, and
Optical Physics](#)



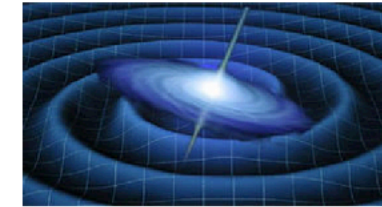
[Biophysics](#)



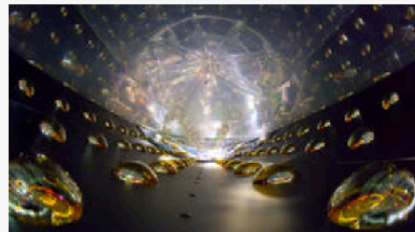
[Condensed Matter Physics
Experimental](#)



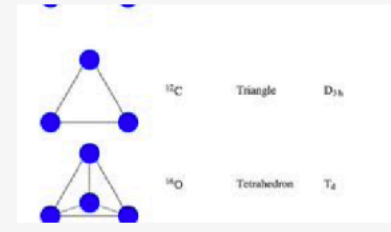
[Condensed Matter Physics
Theory](#)



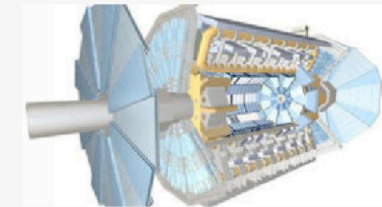
[Gravitational Physics](#)



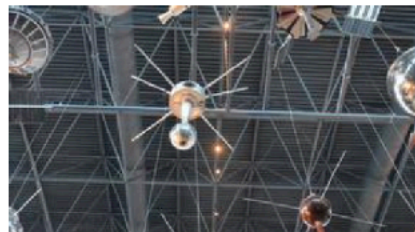
[Nuclear Physics Experimental](#)



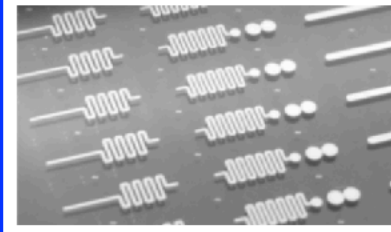
[Nuclear Physics Theory](#)



[Particle Physics
Experimental](#)



[Particle Physics Theory](#)



[Quantum Physics](#)

Looking towards the Future

We are preparing for a new Strategic Plan in Physics



- What do we aspire to be?
- What is our vision for Yale Physics?
- Where do you see Yale Physics 5-10 year from now?
- How does Yale Physics fit into the scientific landscape at Yale in terms of teaching and research and broader university impact?

Diversity, Equity, and Inclusion

Statement of Principles

Respect

We continually strive to make our department a place that respects people with **diverse** backgrounds and values each others' **creativity**.

Well-being

We commit to actively engage in creating a **supportive** and **safe environment**. Criticism and praise are professional and constructive.

Integrity

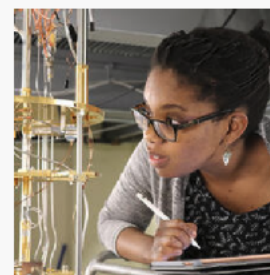
We carry out our work with **honesty** and with the **highest standards**. We shall not commit scientific or academic misconduct, defined as plagiarism, fabrication, or falsification.

Community

Our community actively **includes all**, enhancing **collaboration** and promoting our common mission to advance the frontiers of knowledge.

Developed by Climate and Diversity Committee and Department

<https://physics.yale.edu/statement-principles>



[Research & Discovery](#)



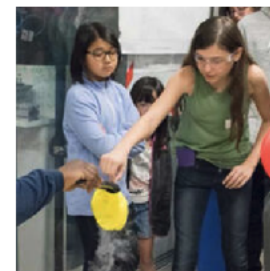
[Community & Belonging](#)



[News & Honors](#)



[Education](#)



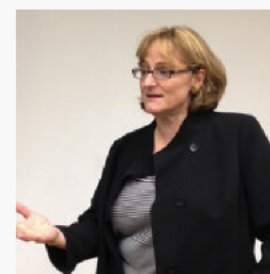
[Outreach](#)



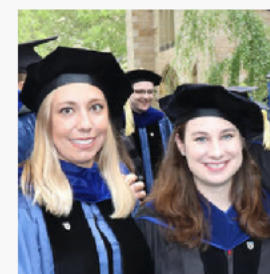
[Get Involved](#)



[Shared Leadership](#)



[Advocacy](#)



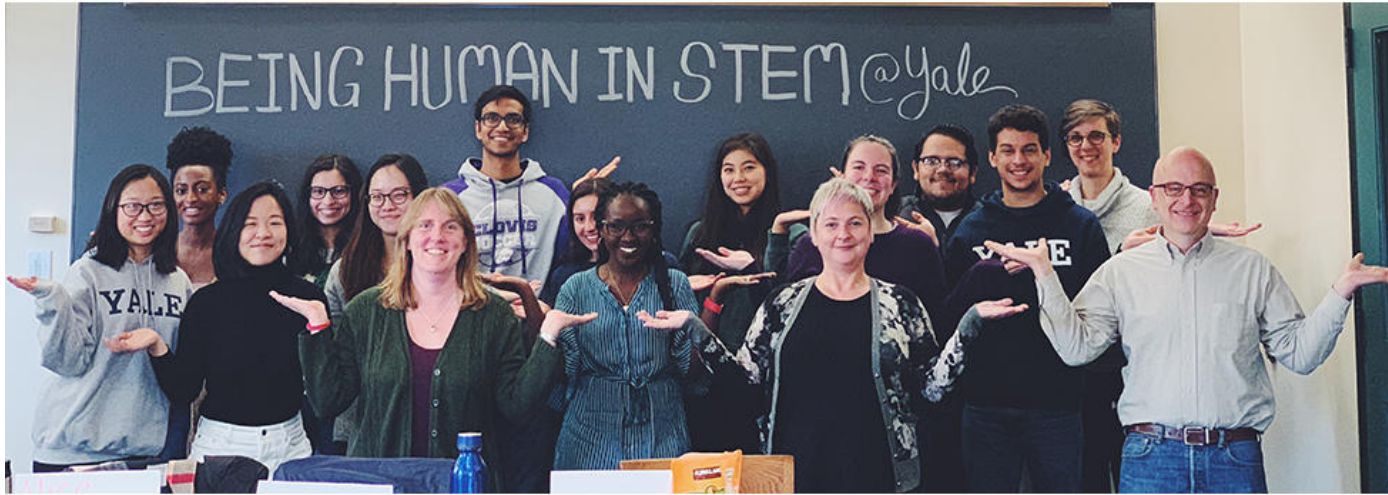
[Legacy](#)

<https://physics.yale.edu/diversity-equity-and-inclusion>

Be a good citizen

Yale *Physics*

Climate and Diversity Committee



chair: Dr. Rona Ramos

Mission

To support the Department's goals to provide a safe, supportive, and inclusive environment for every member of our community. We are committed to creating a work place whose core principles are based on diversity, equity, and inclusion for every staff member, student and faculty as we strive to obtain our goals of excellence in research, teaching, and mentoring.

Balancing shared leadership and task force

> Will set up committee of representatives

Yale Physics APS-IDEA Network



Yale Physics, is now part of the [American Physical Society Inclusion, Diversity, and Equity Alliance \(APS-IDEA\)](#), Its mission is to empower and support physics departments, laboratories, and other organizations to identify and enact strategies for improving equity, diversity, and inclusion (EDI). It will do so by establishing a community of transformation.

Team consists of [Faculty](#), [Postdocs](#), [Graduate Students](#), [Undergraduate Students](#) and [Staff](#)

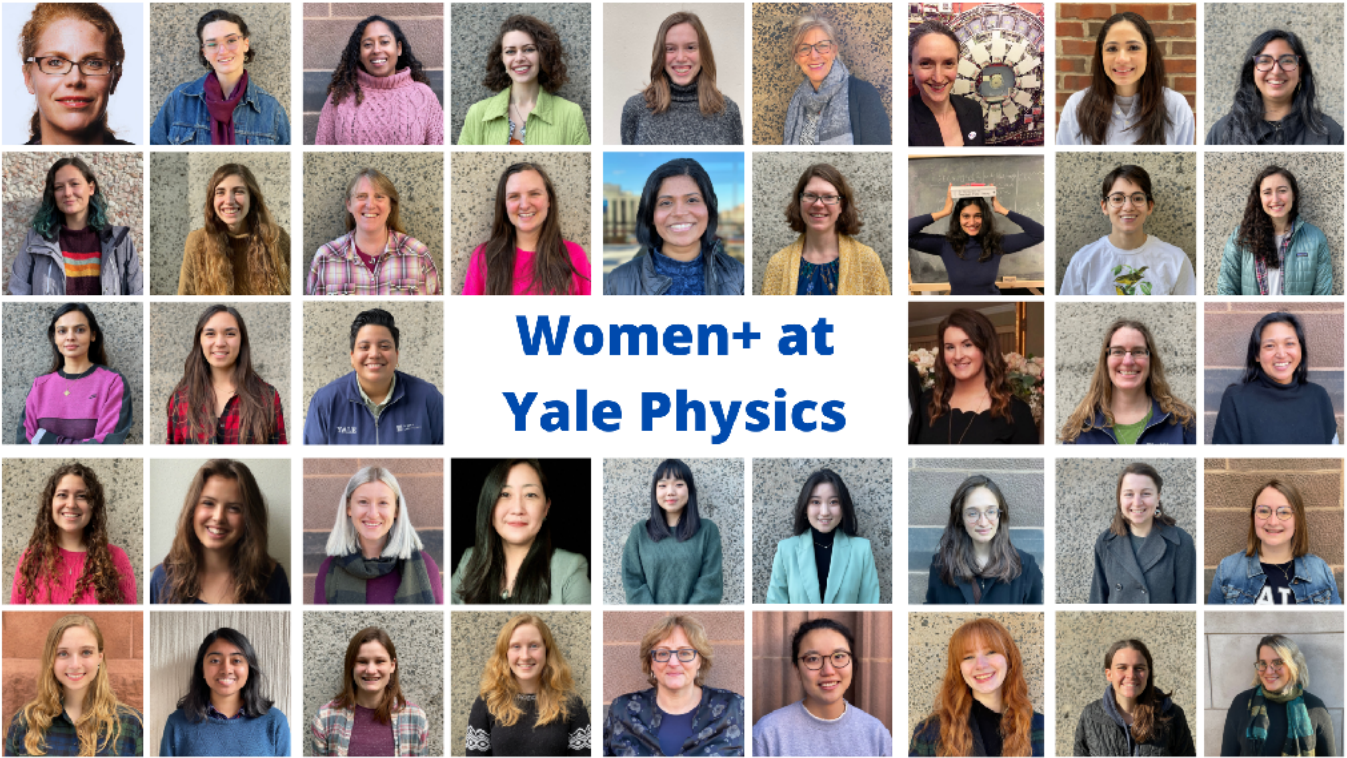
APS IDEA is a national community, external resource for CDC

Diversity Fellowship 2021-2022



Iris Ponce

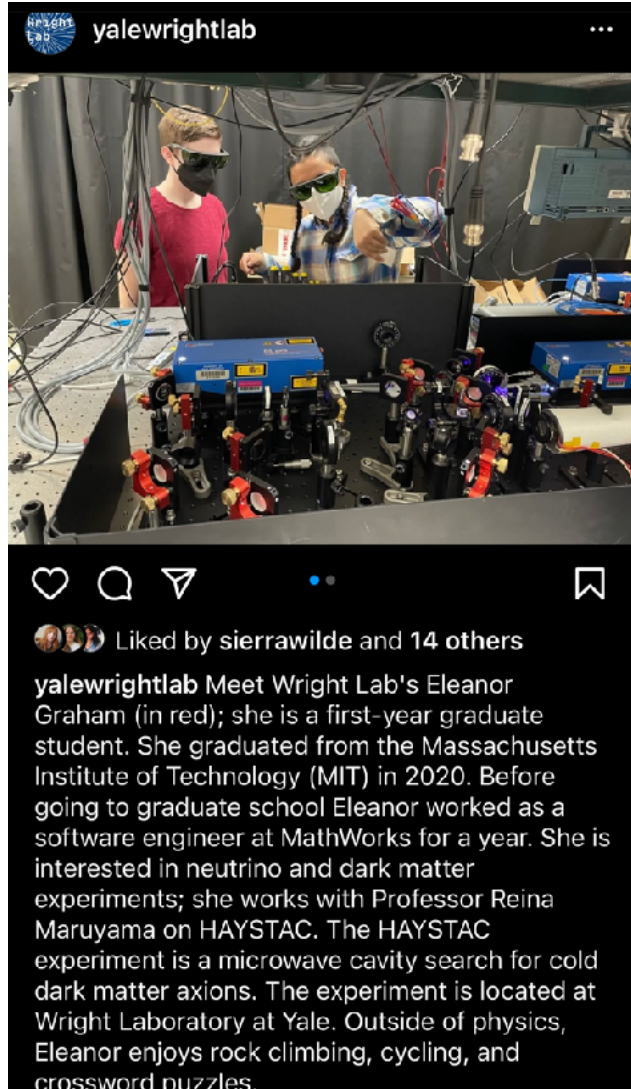
- In 2021 we welcomed the first-ever majority-female Ph.D class!
- wanted to celebrate this and highlight the gender minorities in the Physics Department throughout March.



Diversity Fellowship 2021-2022



Iris Ponce



- Took pictures of graduate and post-bac students (from Applied Physics, Physics, and Astronomy) doing the work (research or homework).
- Posted pictures on departmental and WiP+ social media!

A Climate Survey for Yale Physics?

Why now?

Sanah Bhimani



- Previous climate survey conducted 6-8 years ago
- In the last 2 years: significant increase in underrepresented minority students in Yale's incoming grad cohort
- Providing a clear, structured, anonymized platform will:
 - Increase the feeling of inclusion among incoming/younger grad students
 - Provide constructive feedback to the department that can be addressed during 1st/2nd years' graduate careers, enriching their PhD experience.
 - Retention is key

Deploying a Professional Climate Survey

Sanah Bhimani



- A professional climate survey hires social scientist experts to collect quality data, determine good data quality metrics, and make third-party assessments of the climate as a whole
 - This will reduce bias that non-social scientists may introduce for in-house climate surveys
- Two Proposed Avenues:
 - Chicago Survey Lab—University of Chicago
 - Site Visit by the Committee on the Status of Women in Physics and the Committee on Minorities in Physics with APS

Currently exploring which is the best option, and determining source of funding

Yale Physics Activities

Department of Physics

Home About Research Academics People Media Events Out

Diversity

<https://physics.yale.edu/calendar>

Upcoming Events

All Even

SEPTEMBER 12, 2022

4:00pm

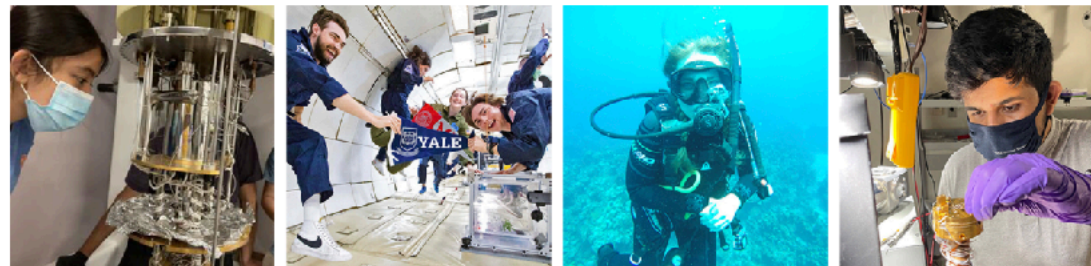
[Physics Club: Karsten Heeger, Yale University, "Department Welcome 2022"](#)

SEPTEMBER 13, 2022

10:30am

[EHS Orientation for Wright Lab Shop Users - Fall 2022](#)

Yale Physics



Friday, September 9, 2022

Events

Monday, September 12

- 4:00 pm **Physics Club:** *Department Welcome 2022*, Karsten Heeger, Yale University, Sloane Physics Lab 57. Host: Laura Newburgh. Coffee and cookies available before the talk outside the lecture hall.
- 4:00 pm **Department of Chemistry - Inorganic Chemistry Seminar:** *Metalloprotein Modules in Systems for Artificial Photosynthesis*, Kara Bren, University of Rochester, Sterling Chemistry Lab 110.

Tuesday, September 13

- 3:00 pm **WIDG Seminar:** *Investigating the role of the underlying event in the charm-baryon enhancement*, Zoltan Varga, Wigner Research Centre for Physics, Wright Lab 216. Host: Sierra Weyhmler.

Wednesday, September 14

- 11:00 am **Condensed Matter Theory Seminar:** *Fractons, dualities and Berezinskii-Kosterlitz-Thouless transitions*, Piotr Surowka, Warsaw University of Science and Technology, Sloane Physics Lab 63. Host: Meng Cheng
- 4:00 pm **Molecular, Cellular and Developmental Biology Seminar:** *Piecing together Argonaute protein function in the mammalian nucleus*, Jesse Zamudio, UCLA, O.C. Marsh Lecture Hall, 260 Whitney Avenue. Host: Nadya Dimitrova
- 4:00 pm **The Franke Program in Science and the Humanities:** *Film Screening of Unconformity and Moderated Conversation with Writer and Director Jonathan DiMaio '09*, Jonathan DiMaio, Writer and Director, Humanities Quadrangle L02.

Come to events! Get involved!

Physics Club - Rosenthal Lecture



Francesca Ferlaino

University of Innsbruck

September 19, 2022 at 4:00 p.m. in SPL 59

Supersolidity in dipolar quantum gases: when atoms behave as crystal and superfluid at the same time

Physics Club is an essential element of the department's intellectual/scientific life.

For students, postdocs, scientists, and faculty

Yale *Physics*



Leitner Family Observatory
& Planetarium
355 Prospect St.

<https://tinyurl.com/PicnicPhysics>

RSVP by 9/15

PHYSICS WELCOME PICNIC
WEDNESDAY, SEPT. 21, 6-8 PM

Pizza
GAMES
REFRESHMENTS



Yale Physics

PHYSICS +



friends

Social gathering on the last Friday of every month!

Free food, snacks, drinks, and games within COVID regulations

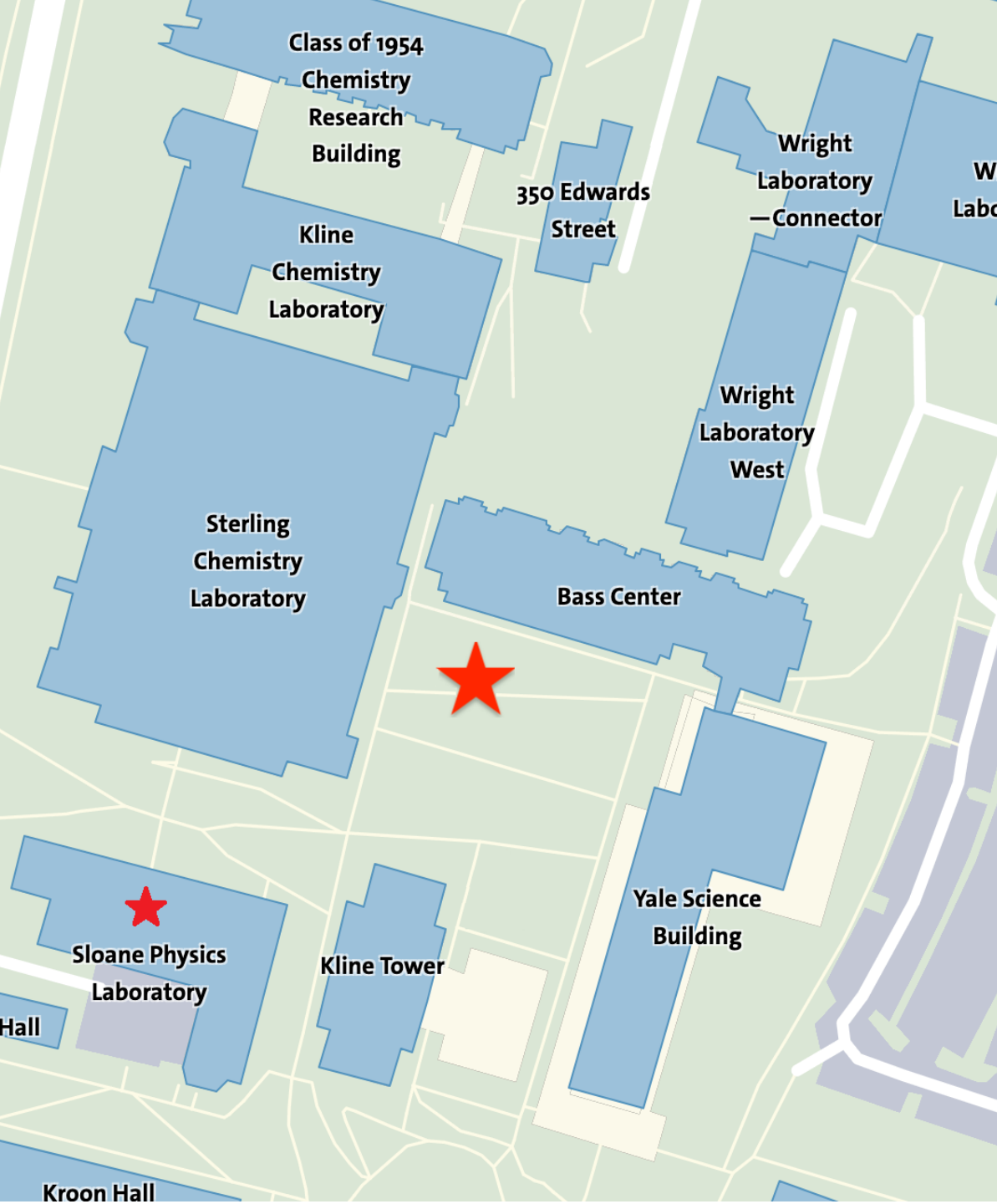
Current Happy Hour Crew

Ally Culbert allison.culbert@yale.edu

Braedyn Au braedyn.au@yale.edu



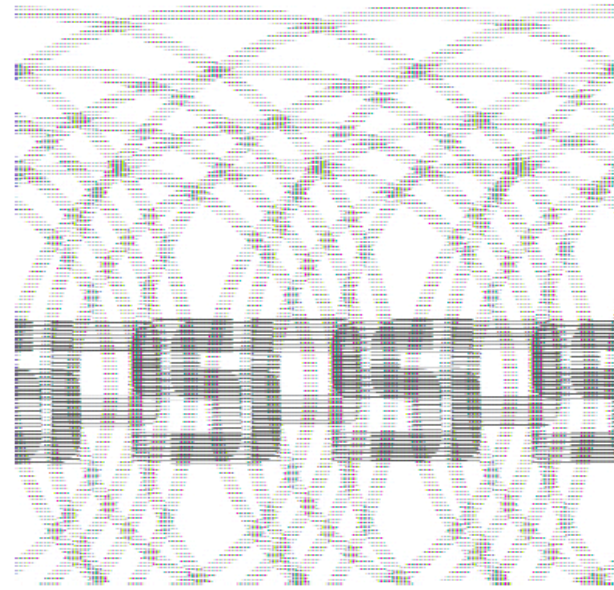
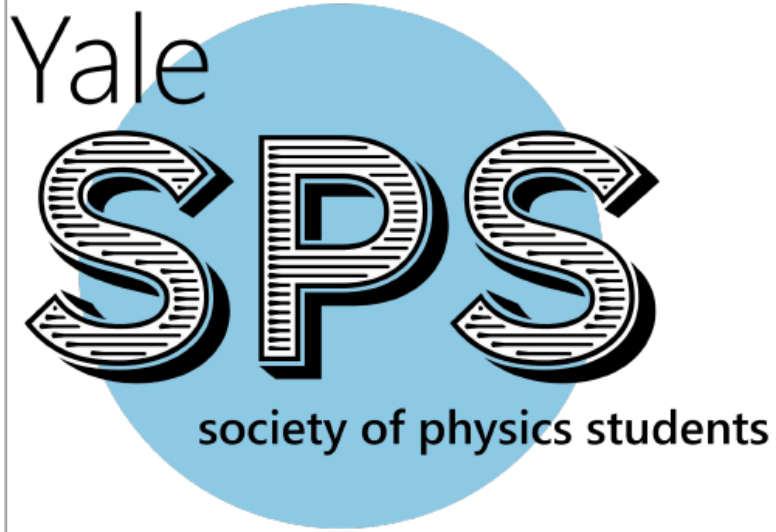
*let us know about any dietary restrictions!



Locations

- 1) Science Hill Courtyard
- 2) SPL 3rd Floor Lounge

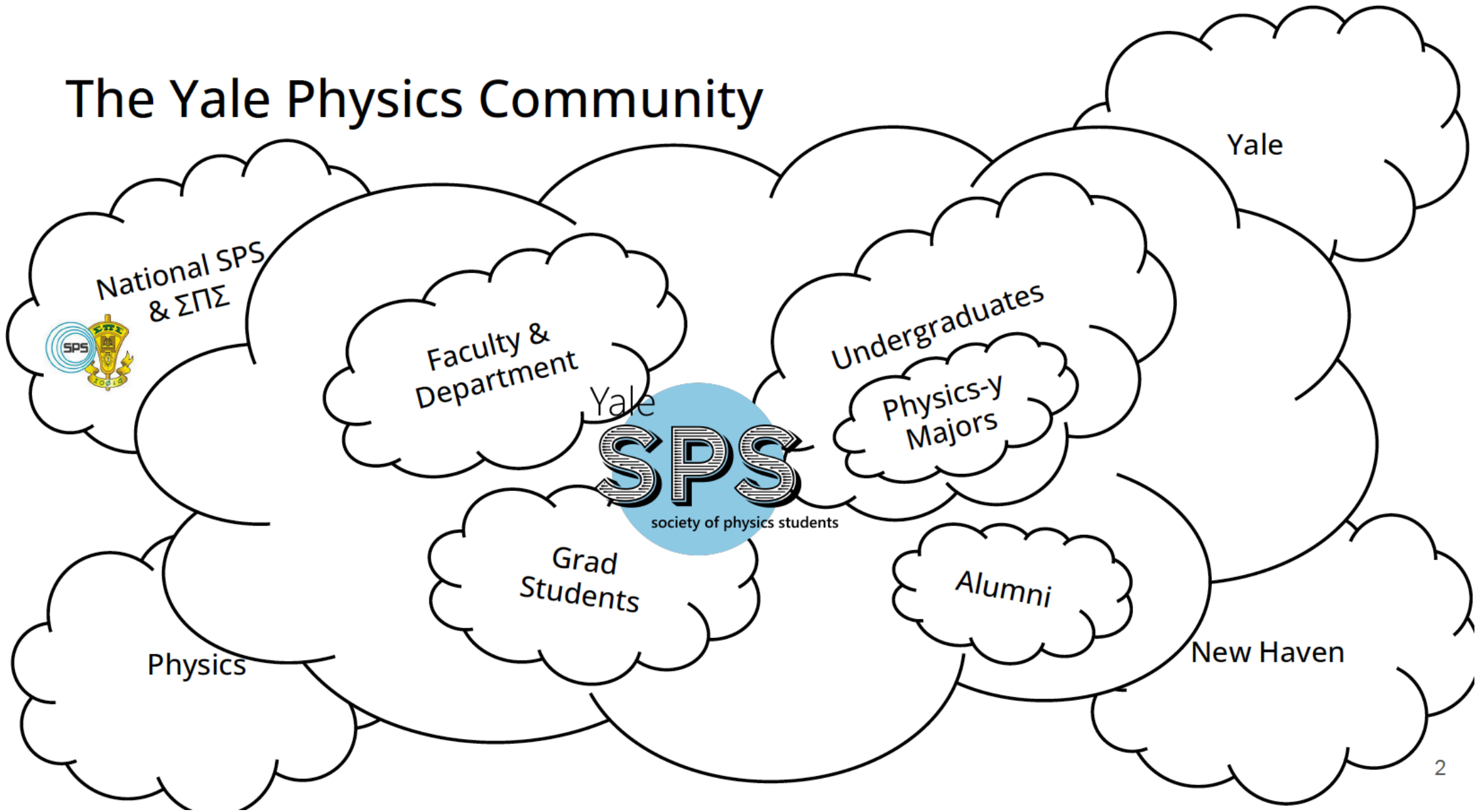
Special holiday event in
December!

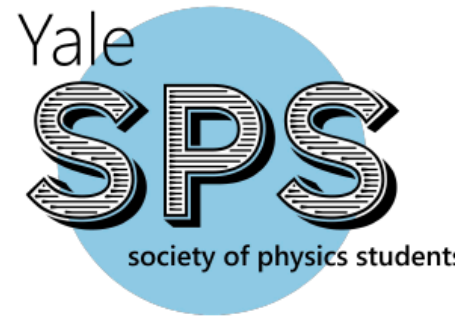


What is SPS?

And reasons to get involved!

The Yale Physics Community





Broad SPS Initiatives

- Cohesiveness as a physics community
- Outreach
- Interacting with other SPS Chapters and Nat'l SPS
- Connecting with the professional community at large
- Diversity, Equity, and Inclusion [DEI]
- Sigma Pi Sigma

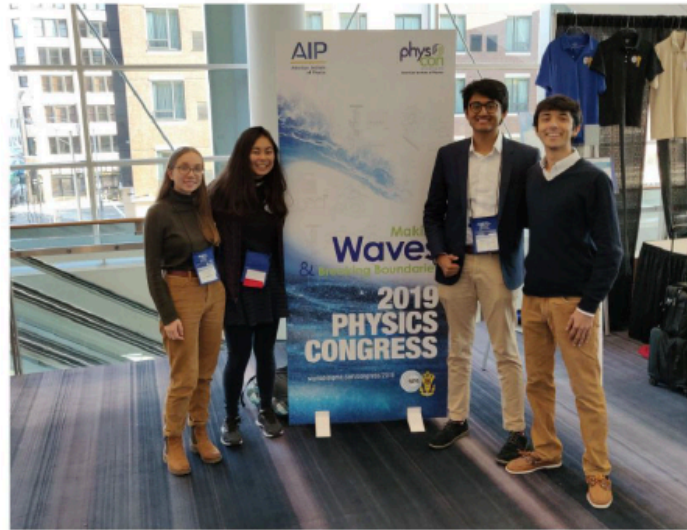
Events During the Year (in no particular order)

- Extracurricular Bazaar for recruitment (~September)
- Tinsley & Schultz Prize Lectures
- Spring Picnic
- SPS Day of Talks (new! As of Spring 2022)
- SPS Zone 1 Meeting
- ΣΠΣ Induction (and events)
- Weekly Study Sessions
- Misc. Social Events (movie, game nights)
- Professor Dinners
- Semesterly Blue-booking
- Outreach series
- Grad School Panel
- Skills Workshops
- And more!



New for '22!

- Expanding Astro inclusivity per the constitutional change
- Continued DEI efforts
- PhysCon 2022

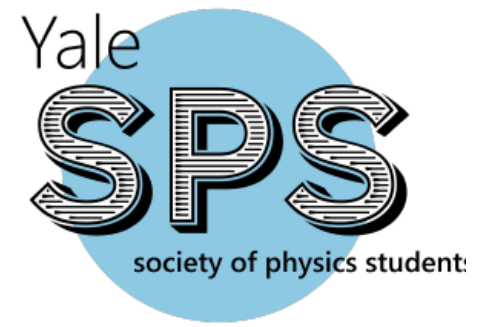


Representatives from Yale SPS on the last day of PhysCon! Later that evening we met Jocelyn Bell-Burnell!

Thank You!!

Subscribe to our mailing list:

<https://mailman.yale.edu/mailman/listinfo/sps>



Yale Women in Physics

Contact: yalewomeninphysics@gmail.com

2022-2023 Executive Board:

Co-presidents: Katerina Kargioti and Melanie King

Treasurer: Olivia Aspegren

Assistant treasurer: Sofia Fausone

Community Liaison: Anavi Uppal

Projects Chair: Julia Levy

Outreach Chair: Sally Jiang

Mentorship Chair: Juliana Karp

Study Hall Chair: Elsa Durcan



What is WiP?

We're an undergraduate organization that seeks to promote gender equality in STEM, especially in the physical sciences.

What do we do?

We host weekly study halls, offer social events, organize research panels, and collaborate with other STEM-oriented groups on campus to support a safe and welcoming environment for students of any major/gender/background/etc.

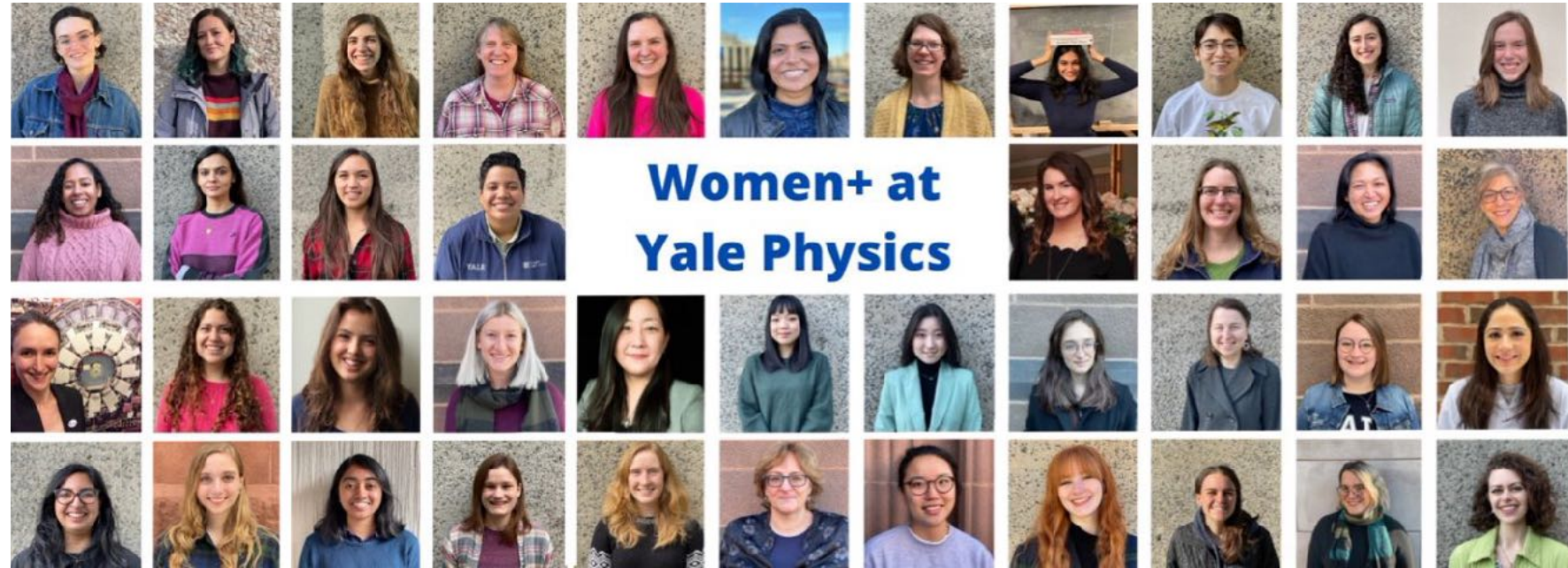
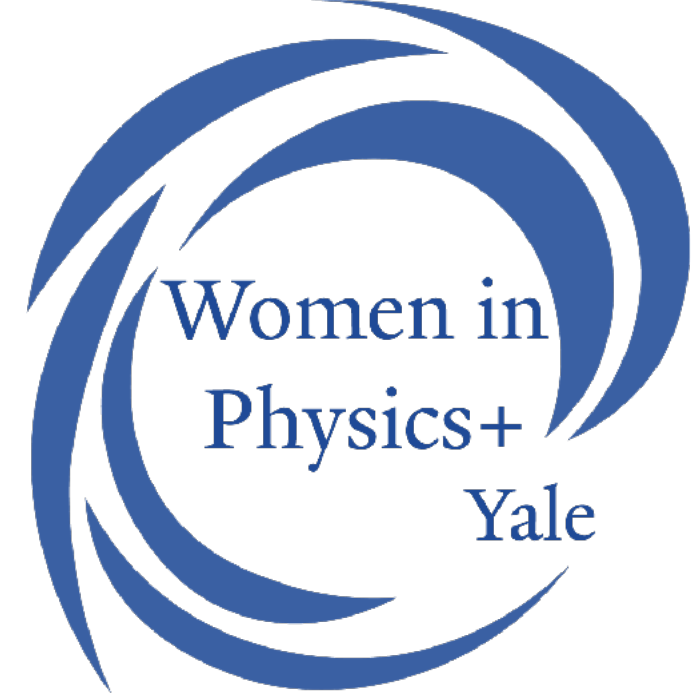
Who can join?

Membership is open to any undergrad at Yale, regardless of major or gender. Interested students can reach out to this year's board members to be added to our email list (to which we send out information about upcoming events in the STEM community at Yale), or they can simply show up to any event that interests them.



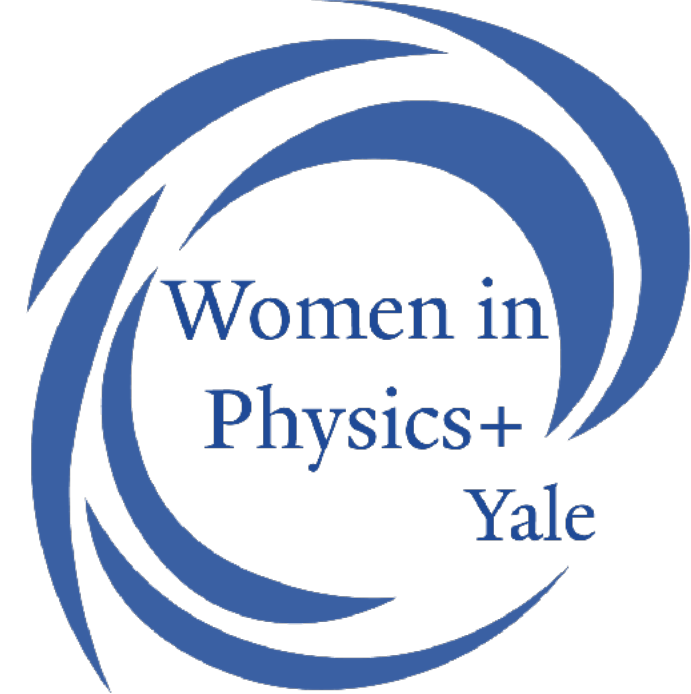
Plans for the Year:

- Weekly study halls in which students can speak to graduate students for homework help, academic advice, or general guidance
- Bi-weekly social events/study breaks (movie nights, observatory trips, etc.)
- Monthly “educational” social events (coding workshops, etc.)
- 1-2 community brunches at a Professor’s house
- Collaboration with other STEM groups on campus (SPS, YUQC, etc.)
- Sending club members to the National Conference for Undergraduate Women in Physics



Who are we?

WIP+ is focused on **fostering a supportive environment for underrepresented genders** in the Physics, Applied Physics, and Astronomy departments. We **coordinate mentoring and social events** for graduate students, post-docs, research scientists, and faculty. The group and many events are open to all allies in the department, from whom we welcome support for our initiatives.



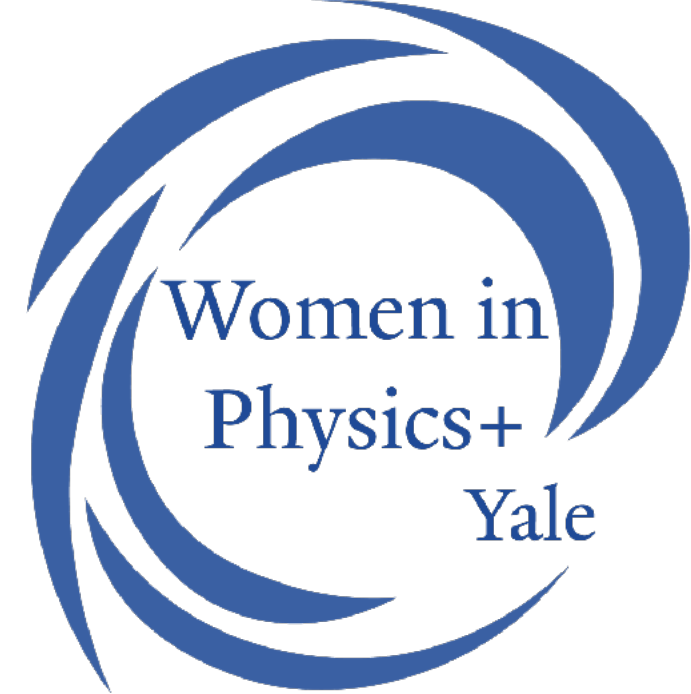
What do we do?

- *Monthly Bagel Chats*
- *Recurring Lunches with the Allies*
- *Special Events: Apple Picking, Ice Cream, Brunch, Graduating Student Farewell*
- *Advocacy: Initiatives within the department, Women in Physics Families with the Undergrad WIP group*
- *Celebrate Women and Gender Minorities: Alumni speaker series*

Other plans

- Gender diversity training with QuARK
- Community event to focus on improving the experiences of women and gender minorities pursuing graduate degrees in the Yale physics department.
- Continue to host 1 speaker per year





How to get involved

- Link tree to sign up to the WiP+ or ally list via QR code
- Email WiP+ co-chairs Caitlin Gish and Sierra Wilde
- caitlin.gish@yale.edu
- sw979@yale.edu



WiP+: physics-wip@mailman.yale.edu

WiP+ Allies: physics-wip-allies@mailman.yale.edu



QUeer-Affiliated
fRiends of
physiKs

QuArk

We eat bagels and chat. Please come.

QuArk stats



- Started in February 2020
- Originally 6 members
 - 2 leadership positions
- Now we have 34 members
 - 8 leadership positions!
- Members from the Physics, Applied Physics, Astronomy, and Mathematics departments
 - A majority of our members are Physics students
- Began by having biweekly bagel brunches
- Over the pandemic had biweekly lunch hours, with a few lunches paid for by the department
- Last year we had a few lunch events
- Over this past summer we went on hikes, had lunches together, and did a movie night!

Plans for this year



Completed events:

- Welcome Lunch - last Thursday
- Tie dying activity - last Saturday

Future events:

- Biweekly bagel breakfasts - regular meetings throughout the academic year
- Trivia night - Mid Fall 2022 Semester
- Fall lunch - End of Fall 2022 Semester
- Planting Activity - Beginning of Spring 2023 Semester
- Cheese-tasting night - Mid Spring 2023 Semester
- Spring lunch - End of Spring 2023 Semester

Graduate Student Advisory Committee (GSAC)

Advocate departmental changes based on student experiences and present graduate student's interests to the physics administration

This year focusing on:

- Pursuing progress with the DEI action plan
- Bettering Postdoc and graduate student collaboration
- Navigating transitions in these not-quite-post pandemic times

Please feel free to reach out to your representatives to share your opinions!

Year 6



Sumita
Ghosh

Year 5



Hannah
Bossi



Aniket
Maiti

Year 4



Samantha
Pagan



Joe
Shomar



Ben Siegel

Year 3



Iris
Ponce



Caitlin
Gish



Sophia
Hollick

Year 2



Xiaowei
Ou

Graduate Student Advisory Committee (GSAC)

Previously, GSAC was involved in:

- Writing the DEI action plan
- [Developing physics specific advising guidelines](#) with the graduate program team
- Reviewing the qualifying exam and course requirements
- Implementing graduate student liaison on the admissions committee

Physics Specific Advising Guidelines

May 19th, 2021

Physics specific advising guidelines, described here, start from the department's learning objectives and milestones and lay out expectations and suggestions for students and faculty to ensure successful advising and mentorship. These guidelines are for all physics students and their Advisers, both those that hold primary and secondary appointments in Physics.

Physics Ph.D. students' learning objectives:

1. Students will acquire a general foundational knowledge of physics at the graduate level and the necessary accompanying methodological aspects of mathematics, computing, and instrumentation.
2. Students will learn to identify and solve problems at the frontier of physics knowledge, uphold standards of scientific integrity, and disseminate their research.
3. Students will become educators and communicators with the ability to promote an understanding and appreciation of physics across the university and in society.

Inaugural Postdoctoral Advisory Committee (PDAC)

Appointed every academic year

Serves as a **point of communication** between the postdocs and associate research scientists (ARSs) and the administration of the department

Advises the Chair, the Director of Postdoctoral Affairs, and other faculty on matters related to postdocs and ARSs

Advocates on behalf of postdocs and ARSs with the Chair and the Director of Postdoctoral Affairs

Organizes events for Postdocs and ASRs ranging from professional development sessions to social coffee and happy hours

Current committee members:

Isabella Graf, Laura Havener, and Yogesh Patil

Thanks to Meg Urry (Director of Postdoc Affairs) and Karsten Heeger (Chair) for the idea and support to form this committee!



Planned Events for 2022-23

Professional Development Lunch Series

Lunches with panel of physics faculty: discuss academic jobs and being a postdoc in general

Session I: Preparing faculty job application (Meg Urry, Karsten Heeger, Ben Machta) Friday, Sept. 9th

Session II: Faculty interviews (Helen Caines, Ian Moulton, Alison Sweeney) **Monday, Nov. 7th 9:00 AM**

Future sessions: Navigating the Postdoc, starting a research group, etc.

Plans to collaborate with YPPDO on preparing for jobs outside of academia

Monthly Coffee Hours for socializing and exchanging ideas

First event on Tuesday, Aug. 30th in Wright Lab

Next event: Early October, date TBD

Happy Hour once per semester

Mid-October, date TBD

Postdoc and ARS retreat in spring 2023

Huge thanks to Daphne Klemme, Postdoctoral Appointments Coordinator, for all the help organizing events!

Open to ideas and suggestions! Please contact us at

isabella.graf@yale.edu, laura.havener@yale.edu, or yogesh.patil@yale.edu



The Kimball Smith Series



Website: kimballsmithseries.yale.edu

Instagram: [@kimballsmithseries](https://www.instagram.com/kimballsmithseries)

- The Kimball Smith Series tackles issues at the intersection of **technology, ethics, and global affairs.**
- Last year's events focused on **nuclear weapons, artificial intelligence, and quantum computing.**
- Each event features:
 - A **speaker panel**, with experts in scientific *and* political aspects of the topic;
 - Multidisciplinary, **small-group discussions among attendees.**

Sponsor: *Physics Department*

Partners: – *Political Science Department*
– *International Security Studies at Jackson*
– *Bulletin of the Atomic Scientists*



The Kimball Smith Series



Website: kimballsmithseries.yale.edu

Instagram: [@kimballsmithseries](https://www.instagram.com/kimballsmithseries)

Topics for upcoming programs include:

- **Climate change** and international negotiations
- **Outer space** and global security
- **Genetic engineering**—ethics and security

To hear about Kimball Smith events:

- Go to our website (kimballsmithseries.yale.edu) and **sign up for the mailing list**, there!
- Follow [@kimballsmithseries](https://www.instagram.com/kimballsmithseries) on Instagram

Reach out to Talia Weiss (talia.weiss@yale.edu) and Lihao Yan (lihao.yan@yale.edu) with questions or suggestions.



***Alice Kimball Smith (PhD '36):
Historian of the post-WWII
Scientists' Movement.***

History and Foundations of Physics

Reading Group

- Explore and discuss topics in the philosophy and history of physics, and of science more broadly. From foundational texts to contemporary guest speakers.
- 4 meetings each semester, advanced readings will be distributed.
- Refreshments served
- This is an interdisciplinary group of students and faculty from science and humanities departments here at Yale

History and Foundations of Physics

MEETING 1.1 SEP 29, 2022

Scientific knowledge and progress: Popper and Kuhn

Time: Week of Sep. 25

Location: TBA

Refreshments will be served

Details and readings can be found at tinyurl.com/yalehofop

Yale

*Department of
Physics*

*Franke Program in Science and
the Humanities*

First meeting in two weeks!

**More info and readings:
tinyurl.com/yalehofop**

**Contact/join mailing list:
Yarone Tokayer
yarone.tokayer@yale.edu**

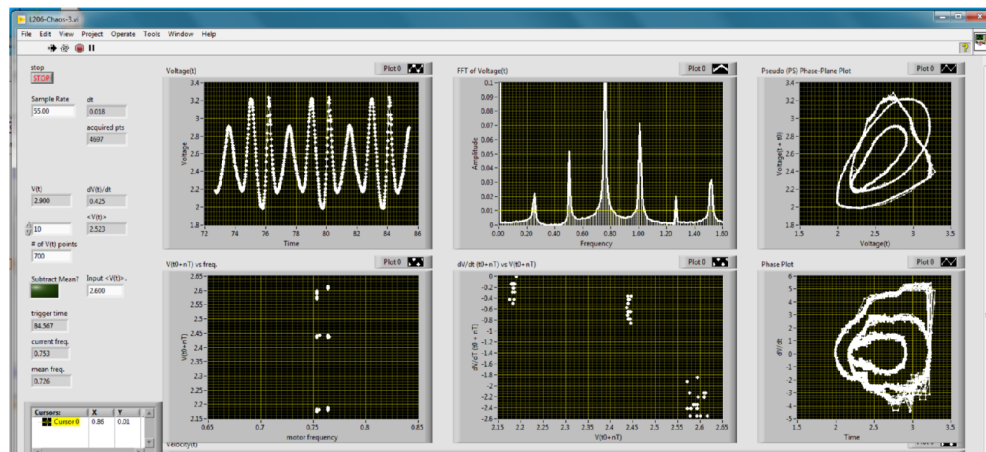
Instructional Labs, Demonstrations & Outreach

- New labs
- New apparatus
- New demonstrations
- Material updates
- The return of outreach
- Crafts and puzzles



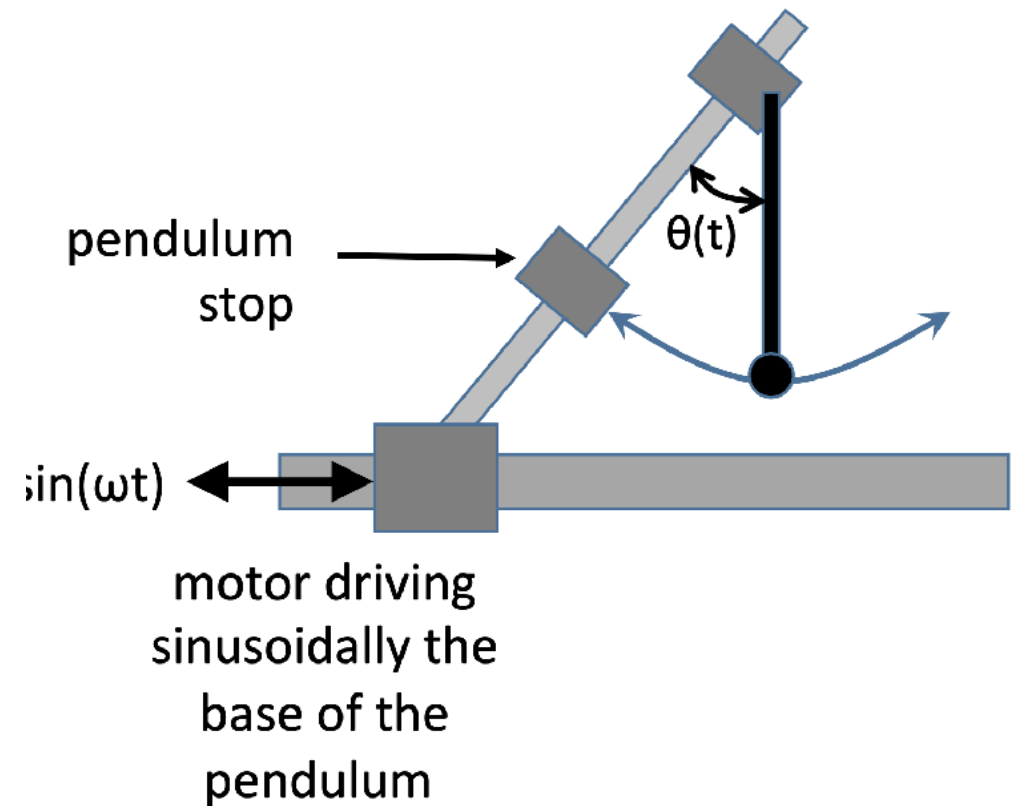


(2) DATA ACQUISITION (LabView) – Screenshot of the DAQ at a period tripling point



Legend: from top left, counterclockwise:

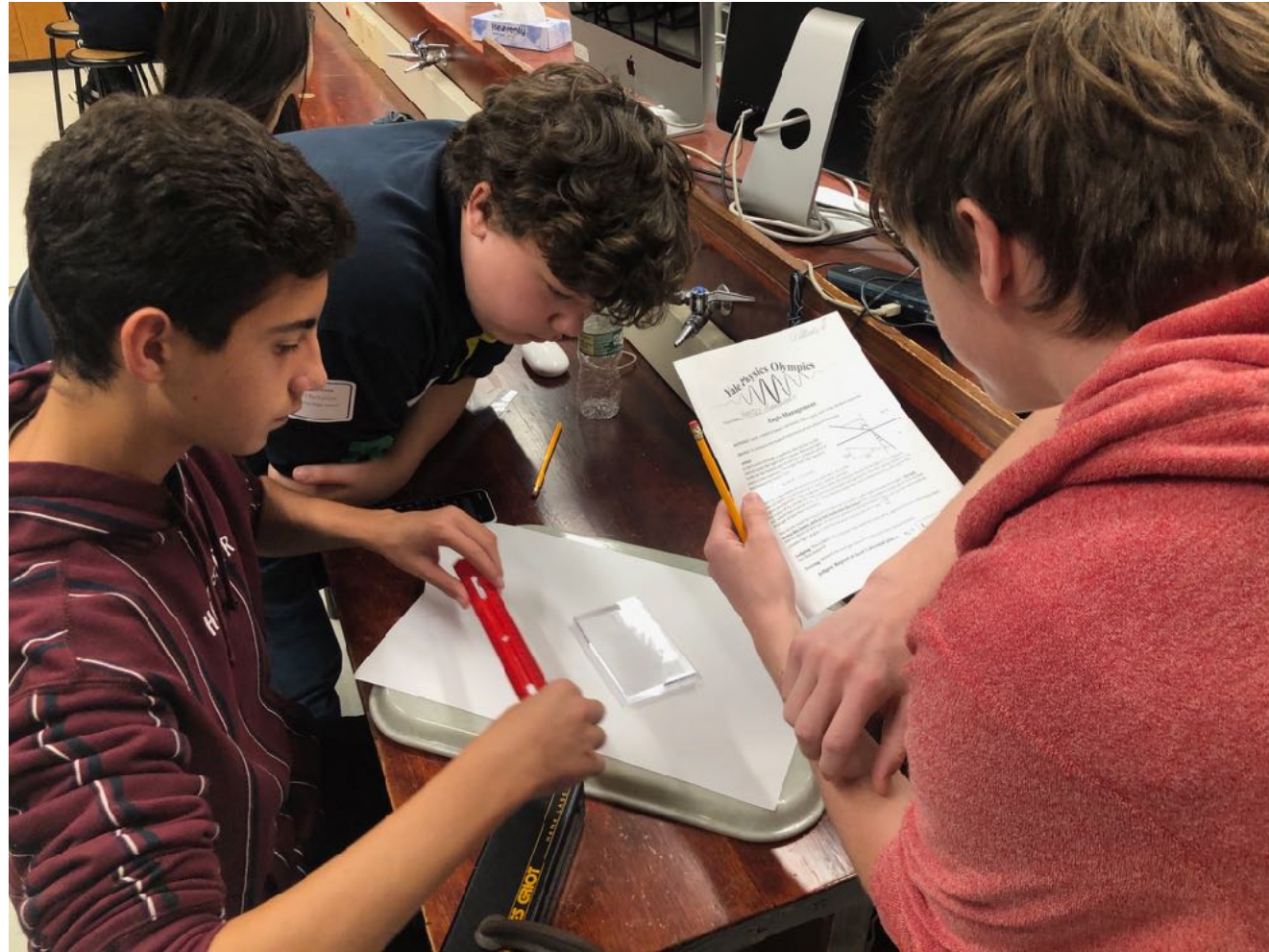
- (1) $\theta(t)$ – pendulum angle as a function of time;
- (2) Fourier Transform of $\theta(t)$;
- (3) and (4) phase-space and pseudo phase-space plots relating $d\theta/dt$ and $\theta(t)$
- (5) and (6) maps of the angle measured at a certain phase of the drive motion



Demonstrations and Outreach

- Continue building and providing demonstrations
- Plan public physics demonstration lecture (Marsh Hall, perhaps)
- Continue to support Girls Science Investigations (GSI) as an in-person event

- Redesign and relaunch the Yale Physics Olympics (YPO) as a spring semester event

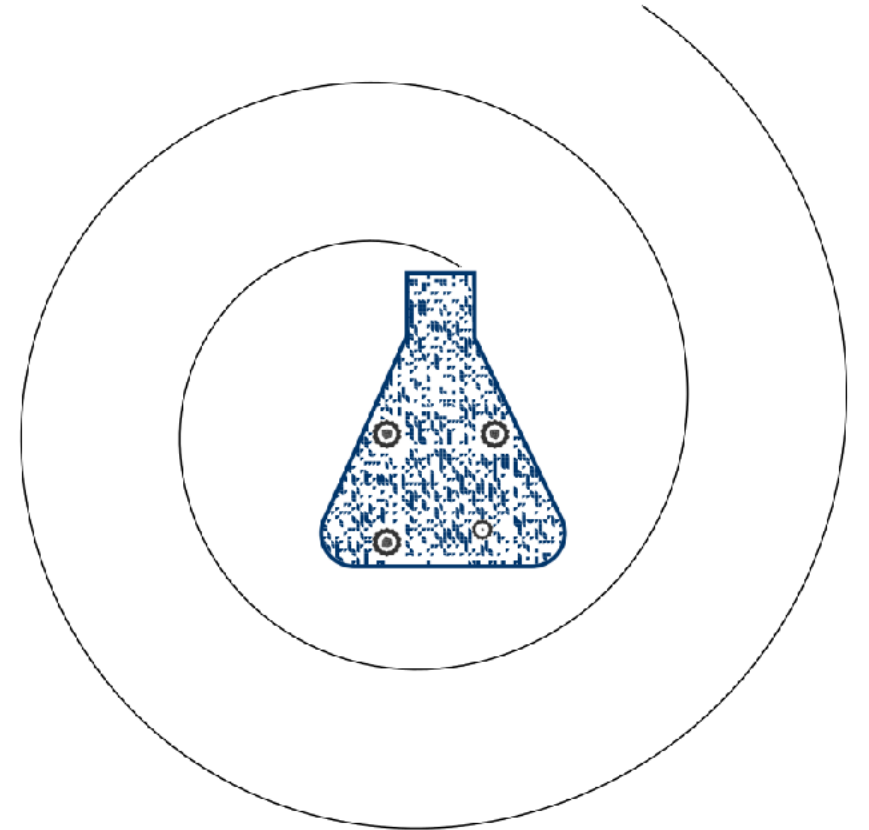


Department Activities

- Physics Makers Craft and Social Gatherings
 - Next up: Pottery!
- Physics Challenge
 - Aperiodic, Semi-monthly cryptographic challenge. Currently unsolved.



Yale Physics Challenge



Email the solution to physics.demos@yale.edu

First correct solution wins a **PRIZE**

Email questions/clarifications to the email above.



Puzzle 4

Goals for 2022-2023



Reconnect! Rebuild community!

Have fun with science!

Have a great and productive year!