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)
Welcome back!

First Physics Club

Academic Year 2021-2022

Karsten Heeger, Chair

Summer 2023 - move into KT
Welcome back!

First Physics Club
Academic Year 2021-2022
Karsten Heeger, Chair
New Physical Sciences & Engineering Building
• Build new Physical Sciences & Engineering Building and new service area (including chemical safety facility).
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 Moult 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

https://physics.yale.edu/about/committees-officers
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
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
Faculty Searches

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

continuing searches
- quantum science
- AMO

Come to the talks, provide feedback!
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

Be a good citizen
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
In 2021 we welcomed the first-ever majority-female Ph.D class! We wanted to celebrate this and highlight the gender minorities in the Physics Department through out March.
• 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?

● 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

- 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

Come to events! Get involved!

https://physics.yale.edu/calendar

<table>
<thead>
<tr>
<th>Upcoming Events</th>
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<tbody>
<tr>
<td><strong>SEPTEMBER 12, 2022</strong></td>
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<tr>
<td>4:00pm</td>
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<tr>
<td><strong>SEPTEMBER 13, 2022</strong></td>
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<tr>
<td>10:30am</td>
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### 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.

**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 Weyhmiller.

**Wednesday, September 14**

- **11:00 am**  

- **4:00 pm**  

- **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.
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
PHYSICS WELCOME PICNIC

Pizza Games

Leitner Family Observatory
& Planetarium
355 Prospect St.

Wednesday, Sept. 21, 6-8 PM

Yale Physics

https://tinyurl.com/PicnicPhysics

RSVP by 9/15
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

- National SPS & ΣΠΣ
- Faculty & Department
- Grad Students
- Undergraduates
- Physics-y Majors
- Alumni
- New Haven

Yale SPS (Society of Physics Students)
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
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
- Samantha Pagan

Year 4
- 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 liaisons on the admissions committee
Inaugural Postdoctoral Advisory Committee (PDAC)

Appointed every academic year

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

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

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

Organizes events for Postdocs and ARs 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 Moul, 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

- 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

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](http://kimballsmithseries.yale.edu)) and **sign up for the mailing list**, there!
- Follow [@kimballsmithseries](https://twitter.com/kimballsmithseries) on Instagram

Reach out to Talia Weiss ([talia.weiss@yale.edu](mailto:talia.weiss@yale.edu)) and Lihao Yan ([lihao.yan@yale.edu](mailto:lihao.yan@yale.edu)) with questions or suggestions.
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
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
Legend: from top left, counterclock-wise:
(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 $\theta$/$\theta$; and $\theta(t)$
(5) and (6) maps of the angle measured at a certain phase of the drive motion

---

pendulum stop

$\sin(\omega t)$

motor driving sinusoidally the base of the pendulum

$\theta(t)$
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

Yale Physics Challenge

Email the solution to physics.demos@yale.edu
First correct solution wins a PRIZE
Email questions/clarifications to the email above.
Goals for 2022-2023

Reconnect! Rebuild community!
Have fun with science!

Have a great and productive year!