

# Welcome to Yale Physics



Graduate Program Orientation 2021

Yale *Physics*

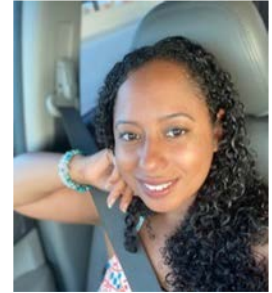
# Yale Physics Graduate Program Team



Prof. Bonnie Fleming  
*Director of Graduate Studies*



Dr. Rona Ramos  
*Graduate Program Coordinator  
Lecturer*



Stacey Watts  
*Graduate Registrar*



Prof. Karsten Heeger  
*Chair, Department of Physics  
Director Wright Laboratory*

# 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

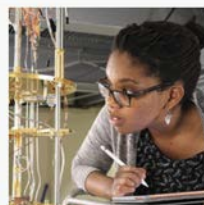
We commit to actively engage in creating a **supportive** and **safe environment**. Criticism and praise are professional and constructive.

### 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.



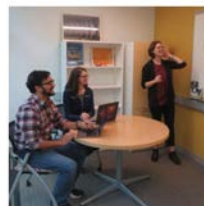
Research & Discovery



Community & Belonging



News & Honors



Education



Outreach



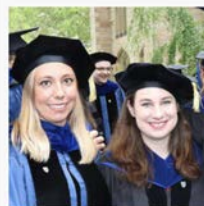
Get Involved



Shared Leadership



Advocacy



Legacy

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

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

# Yale Physics Graduate Program

## People

faculty (primary)	35
faculty (secondary)	24
grad students (physics only)	132

**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*



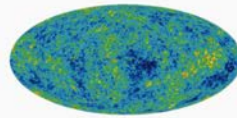
# Research Areas

**broad research portfolio in  
experiment and theory**

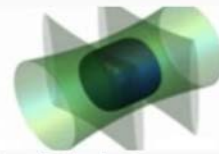
**new science initiatives  
on campus**

- quantum science
- data science
- instrumentation

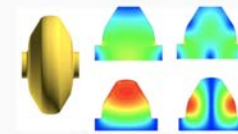
<https://physics.yale.edu/research>



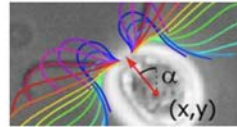
[Astrophysics](#)



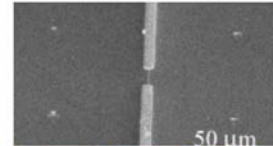
[Atomic Physics](#)



[Beam Physics](#)



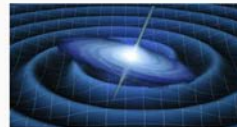
[Biophysics](#)



[Condensed Matter Physics  
Experimental](#)



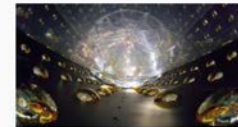
[Condensed Matter  
Physics Theory](#)



[Gravitational Physics](#)



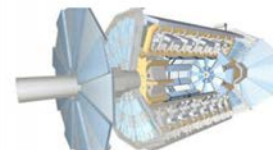
[Instrumentation](#)



[Nuclear Physics  
Experimental](#)



[Nuclear Physics Theory](#)



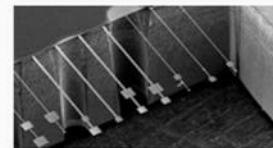
[Particle Physics Experimental](#)



[Particle Physics Theory](#)



[Quantum Information  
Physics](#)



[Quantum Optics](#)

# Yale Physics in Research Centers & Institutes



**YCAA** Yale Center for Astronomy and Astrophysics



Systems Biology Institute

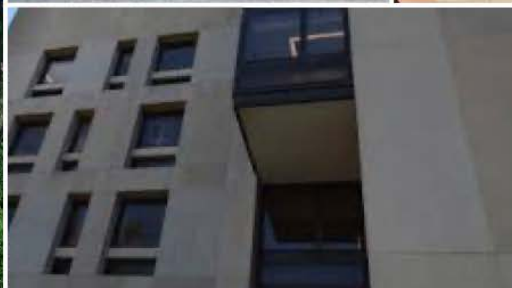


**ESI** Energy Science Institute

Quantitative Biology Institute [QBio]

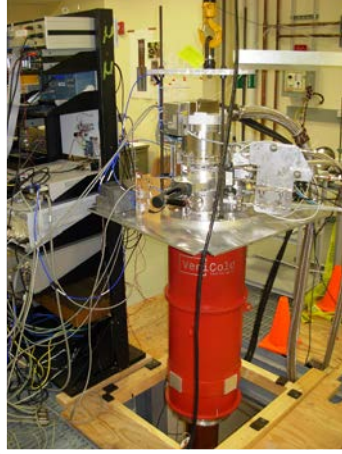
**Yale** *Physics*

# Yale Physics on Science Hill (and West Campus)



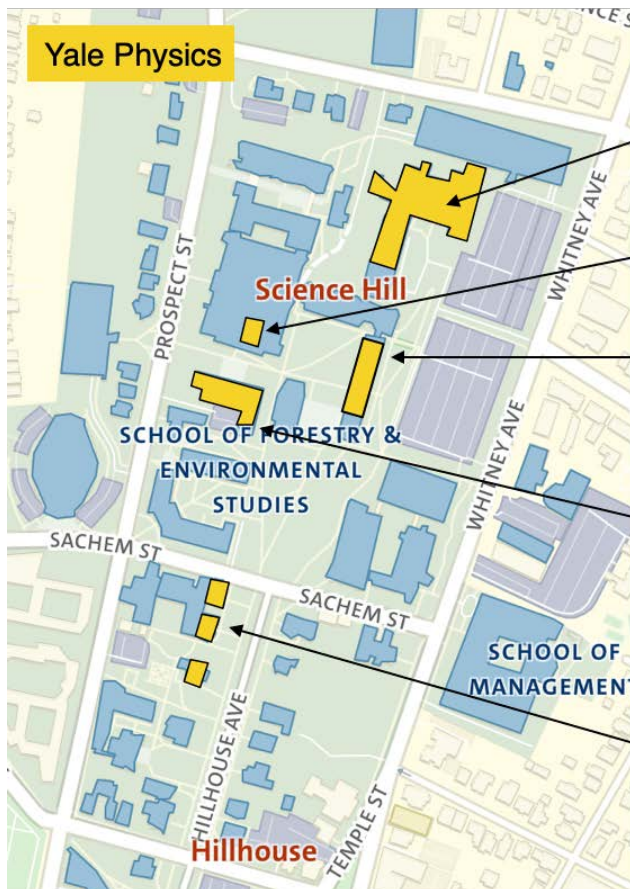


# State-of-the Art Facilities





# Yale Physics on Science Hill



## Wright Laboratory (WL)

- experimental laboratories and facilities
- nuclear, particle, astrophysics

## Teaching Laboratories (SCL)

## Yale Science Building (YSB)

- biological physics

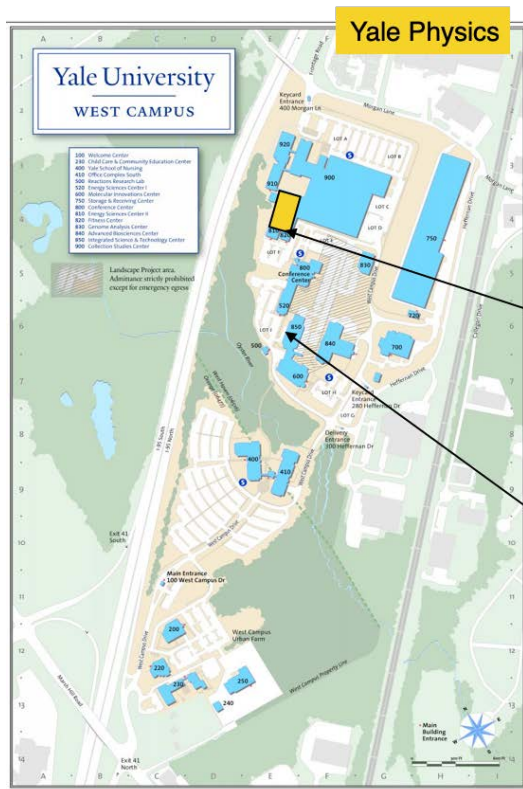
## Sloan Physics Building (SPL)

- lectures
- central office
- AMO, bio, condensed matter
- theory

## Hill House (HH)

- particle physics
- astrophysics
- astronomy

# Yale Physics on West Campus



**Energy Sciences Institute (ESI)**  
Eduardo da Silva Neto  
Steve Konezny

**Systems Biology Institute**  
Ben Machta

© 2018. For use while the West Campus landscape improvement project is under way.  
Note: parking lot identifiers A-H and J and shuttle stops

# Physics Graduate Program Learning Objectives

- Students will acquire a general foundational knowledge of physics at the graduate level and the necessary accompanying methodological aspects of mathematics, computing, and instrumentation.
- Students will learn to identify and solve problems at the frontier of physics knowledge, uphold standards of scientific integrity, and disseminate their research.
- Students will become educators and communicators with the ability to promote an understanding and appreciation of physics across the university and in society.
- Department members and students will work together to develop and realize, in the department and in the community, progress and success in diversity, equity, and inclusion in all aspects of the scientific enterprise.

# Getting to know each other...

Go around the room

- name
- where you are from
- research interests
- something about yourself (hobby?)



# The first two years...

## Requirements

- Academic Coursework
  - 6 core courses, SI, 515, 590, one elective
  - HP average, two H
- Teaching during academic year
- Trying out Research groups and finding and advisor
  - Research during the academic semesters
  - Phys 990 (SI)
  - Summer research
- Qualifying Events
  - Research QE: At the end of Phys 990
  - Written QE: at the beginning of 2nd year

## Teaching/Classes → Research

Spring and Fall semesters of 1st and 2nd year

- Supported on University Fellowship  
→ Teaching, taking classes

Summer after 1st and 2nd year

- Supported by a Research Group  
→ Research experience(s)

### Goals:

- **Complete required coursework**
- **Complete Qualifying Events**
- **Find a research group (ideally by the beginning of your 2nd year summer)**

## Balancing Coursework and Research

- Time on University Fellowship → time to complete required coursework
  - Spread out required coursework and move into research, requirements permitting
  - Or, complete coursework more quickly and move into full time research, requirements permitting

## Finding and Advisor

- Learn about research programs in Phys 515
- Attend seminars, colloquia (Physics and other departments)
- Talk to faculty! And their students/PDs
- See resources “Finding and Advisor” in Graduate Handbook and in Advising Guidelines
- Many students have Advisors outside of Physics!
- Talk to Graduate Program Team

## Graduate Studies

Learning Objectives

First Year Students 2021-22

Program Details

Graduate Student Honors

Graduate Student Advisory  
Committee (GSAC)

Campus & Career Resources

Life in New Haven

Prospective Students

Alumni

Undergraduate Studies

Student Organizations

Physics Department  
Teaching

External Fellowship  
Opportunities

University Fellowships  
& Prizes



# Physics Program Details

## Graduate School of Arts & Science Official Policies

- [Yale Physics Official Program, Faculty, and Courses](#)
- [Yale University Graduate School of Arts and Sciences Academic Policies](#)
- [Graduate School Academic Calendar](#)

## Physics Graduate Policies and Guidelines

- [Physics Graduate Handbook 2021 - pdf version](#)
- [Physics Graduate Handbook 2020 - pdf version](#)
- [Physics Specific Advising Guidelines](#)
- [2021 Qualifying Exam and Curriculum Committee Report](#)

## Forms

- [Research Qualifying Event Feedback Form](#)
- [Thesis Progress Report form](#)
- [Graduation Check List](#)
- [Course Change form](#)
- [Change of Status form](#)
- [Degree Petition](#)
- [Notification of Leave/Graduation](#)
- [Individual Study Course Information](#)
- [Phys 990 Cover Page](#)
- [Other Registrar Forms](#)

Link to communication  
tools to come:  
Slack  
Discord  
Email lists  
etc.

# Academic Life and Campus Resources

## Physics Colloquia and Seminars

### Department of Physics

Home About News Research People Academics Outreach Calendar

HOME » CALENDAR

Physics Seminar  
Calendar

Upcoming Month Week Day Year All Events

External Seminars of  
Interest

Upcoming Events

NOVEMBER 21, 2019

Physics Club

3:00pm [Mossman Seminar: Andreas Helset, NBI \[via Skype\], "Heavy Particle Effective Theories"](#)

Prize Lectures

## Graduate Student Leadership

Student organizations

Graduate Student Advisory Committee (GSAC)

Graduate Student Assembly (GSA)

Town halls

Regular meetings with department leadership

Yale *Poorvu Center for Teaching and Learning*

FACULTY ▾ POSTDOCS ▾ GRADUATE STUDENTS ▾ UNDERGRADUATES ▾

Home > Initiatives > STEM Education and Evaluation > Yale Scientific Teaching Course

## Yale Scientific Teaching Course



teaching fellows  
teaching certificates

## Yale Science Diplomats



outreach  
advocacy



# Yale Campus Resources

Yale GRADUATE SCHOOL  
OF ARTS AND SCIENCES

Faculty & Staff Alumni Forms Contact Calendar New Students

Search this site

## Resources for Students



Admissions Academic Requirements Resources for Students Diversity Dean's Office

### RESOURCES FOR STUDENTS

- Finances & Fellowships +
- Advising & Mentoring +
- Teaching Support & Development
- Writing & Communication Skills
- Career Support & Development
- Conduct, Professional Ethics & Reporting Misconduct +
- Exchange Programs +
- Student Life & Community +
- Life Skills & Personal Development
- Health & Wellness
- Student Governance +
- Student Organizations
- Housing & Life in New Haven +

### RESOURCES FOR STUDENTS

At Yale, you will find an extraordinary range of resources to fuel your intellectual and academic passions, and the community and support to help sustain you as you work toward your academic goals. Libraries and labs, working groups, funding sources, mentors and advisers, health and wellness resources, and more - you will weave all of these together in ways that best fit your own needs and interests during your time as a student here.

The biggest challenge? Because Yale is a large and complex organization, many of our resources are hidden in plain sight. It may take some work and initiative to find exactly what you are looking for, but in all likelihood, it's here and you'll find it.

Below are a few resources other graduate students have found useful. We provide this as a guide, but it is far from comprehensive. Yale is constantly evolving, and every student who comes here is different. You will follow your own unique path, one that takes you where you want to go. Let's get you started.

#### Finances & Fellowships

Fellowships, stipends, conference travel funding, funding for working groups and symposia, and more: The Office of Financial Aid can answer many of your questions about funding and finances.

#### DON'T GET DISCOURAGED!

Still can't find what you're looking for? Be sure to ask people in your program, both students and staff. The [Director of Graduate Studies](#) or [program registrar](#) has worked with many graduate students and can help you find what you need. And please feel free to contact [a member of our staff](#).



McDougal Graduate Student Center

Yale GRADUATE SCHOOL  
OF ARTS AND SCIENCES

Faculty & Staff Alumni Forms Contact Calendar New Students

Search this site

## Diversity



Admissions Academic Requirements Resources for Students Diversity Dean's Office

### DIVERSITY

Office for Graduate Student Development & Diversity

- Staff & Fellows
- Edward A. Bouchet Conference +
- OGSDD Galleries +
- For Current Students +
- For Prospective Students +

→ OGSDD Fellows Application

## OFFICE FOR GRADUATE STUDENT DEVELOPMENT & DIVERSITY (OGSDD)

If you are:

- interested in applying to the Graduate School, but need more information because you aren't sure that Yale is a good fit for you
- a current student, seeking advice and support

We can help. We are committed to maintaining a supportive and inclusive academic community at the Yale Graduate School of Arts and Sciences, where students from diverse backgrounds and experiences can thrive and achieve their personal and professional goals. We look forward to meeting with you.

The Office for Graduate Student Development and Diversity (OGSDD) supports a nurturing and caring community of scholars that will welcome you, no matter who you are.

### RESOURCES

- [Afro American Cultural Center \(AfAm House\)](#) @
- [Asian American Cultural Center](#) @
- [Chaplain's Office](#) @
- [Graduate and Professional Student Senate \(GPSS\)](#) @
- [Graduate Student Assembly \(GSA\)](#) @
- [La Casa Cultural: Latino Cultural Center](#) @
- [McDougal Graduate Student Life Office](#)
- [Mental Health & Counseling at Yale Health](#) @
- [Native American Cultural Center \(NACC\)](#) @
- [Office of Career Strategy](#) @
- [Office of Financial Aid](#)
- [Office of International Student & Scholars](#) @

<https://gsas.yale.edu/>

<https://gsas.yale.edu/diversity>

Yale *Physics*

## Graduate Studies

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Learning Objectives

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Committee (GSAC)

Campus & Career Resources

Life in New Haven

Prospective Students

Alumni

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## Undergraduate Studies

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## Student Organizations

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## Physics Department Teaching

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## External Fellowship Opportunities

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## University Fellowships & Prizes

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# Campus & Career Resources

## Academics, Teaching, & Beyond

Academic Calendar

<https://gsas.yale.edu/academic-events>

Graduate School of Arts & Sciences

1 Hillhouse Avenue; (203) 432-2770

<https://gsas.yale.edu/>

Graduate School of Arts & Sciences - Complete list of student resources

<https://gsas.yale.edu/resources-students>

Graduate School of Arts & Sciences Dean's Office

1 Hillhouse Avenue; (203) 432-2733

<http://gsas.yale.edu/office-directory>

Poorvu Center for Teaching and Learning

301 York Street; (203) 432-4765

<https://poorvucenter.yale.edu/GraduateStudents>

Graduate Teaching Opportunities (Years 4+)

<https://yaleteachingopps.org/>

Office of Career Strategy

55 Whitney Ave. 3rd Floor; (203) 432-0800

# Student Groups

## Climate and Diversity Committee

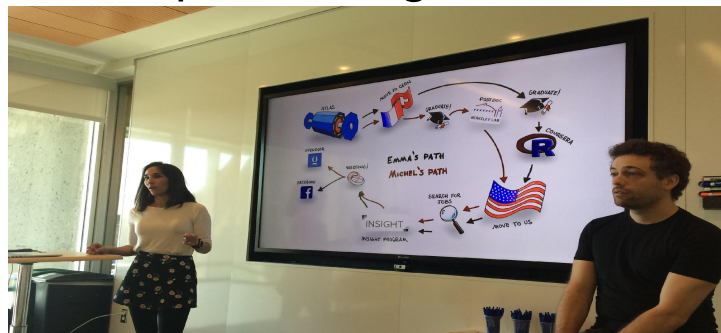


## Women in Physics (+Allies)



**Women in  
Physics +**

## Yale Physics Professional Development Organization



## Graduate Student Assembly

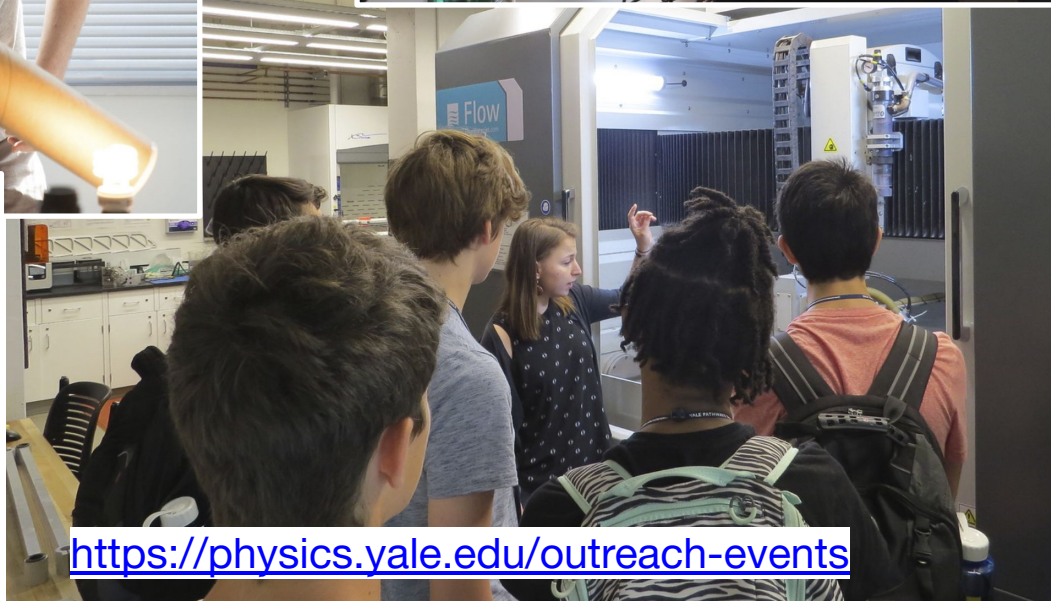


Department Social/Happy Hour  
Physics LGBTQ+

**Yale** *Physics*



# Outreach Opportunities



<https://physics.yale.edu/outreach-events>



# Student Groups, Activities, and Committees

Yale Physics Orientation 2021

# Student Groups, Activities, and Committees

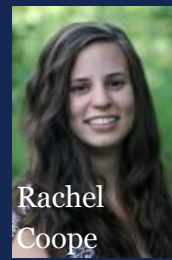
- **GSA**- Graduate Student Assembly
- **GSAC**-Graduate Student Advisory Committee
- **APS-IDEA**-American Physical Society Inclusion, Diversity, and Equity Alliance
- **CDC**- Climate and Diversity Committee
- **GSI**- Girls Science Investigation
- **YPPDO**-Yale Physics Professional Development Organization
- **QuARK**-Q<sup>U</sup>eer-Affiliated fRiends of physIKs
- **Women+** in Physics
- **WIQI**: Women in Quantum Information
- **Department Happy Hour**



graduate student assembly  
*gsa.yale.edu*

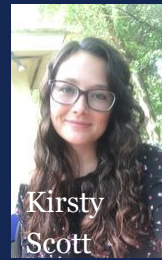


Iris Ponce



Rachel  
Cooper

r



Kirsty  
Scott

### ***Representation***

We are democratically elected Physics graduate students that represent your interests in the GSAS student government and give you a direct line of communication to university leadership.

### ***Advocacy***

We regularly meet with GSAS Deans, the Provost's Office, and the University President to advocate on behalf of all graduate students.

### ***Support***

We provide services for all graduate students such as *Tax Facts*, *Ask-a-Lawyer*, and *The Compass: A Guidebook to Life as a Graduate Student at Yale* (now VIRTUAL! [gsa.yale.edu/compass](https://gsa.yale.edu/compass)).

### ***Get Involved!***

Reach out to us if you're interested in university administration or advocacy! GSA General Assembly Meetings are open to the public (first meeting is Sept 7, 6pm on zoom) and elections are held in March/April.

# Physics Graduate Student Advisory Committee (GSAC)

## ***Representation***

The composition of the committee includes at least one representative from each cohort, with a primary goal of representing inclusive and diverse sets of interests.

## ***Year 2 (and 1)***

Iris Ponce

***Year 3*** – Arina Telles, Joseph Shomar, Samantha Pagan

***Year 4*** – Caitie Beattie, Hannah Bossi, Aniket Maiti

***Year 6+-*** Sumita Ghosh, Emily Kuhn, Sohan Vartak

Interested?

**NOMINATIONS IN JANUARY**

## **Meetings, Minutes, and Information:**

<https://physics.yale.edu/academic/graduate-studies/GSAC>

***Physics-GSAC@mailman.yale.edu***

## ***Point of Communication:***

Serves as a point of communication between graduate students and the administration of the department.

## ***Advocacy***

GSAC meets with the Chair and DGS at least once a month to advise them and advocate on behalf of graduate students within the department.

## ***Events***

GSAC members help organize annually scheduled department events, such as Open House.

## ***Leadership***

If you have any questions or concerns about the department, do not hesitate to reach out to one of us (via Slack, email, etc.)!

# APS Inclusion, Diversity, and Equity Alliance (APS IDEA)



Shared effort across universities and national labs

**Next conference Oct 1st** - Registrations open!

New members orientation: Sept 17th

Contact: Rona Ramos ([rona.ramos@yale.edu](mailto:rona.ramos@yale.edu))

Emily Kuhn ([emily.kuhn@yale.edu](mailto:emily.kuhn@yale.edu))

Aniket Maiti ([aniket.maiti@yale.edu](mailto:aniket.maiti@yale.edu))



# Climate and Diversity Committee (CDC)

<https://physics.yale.edu/about/climate-and-diversity-committee>

# Girls' Science Investigations

*Empowering and inspiring girls to pursue careers in science and engineering*



GSI invites middle school girls to explore science through fun projects. The projects are themed around concepts in physics, chemistry, and engineering.

The program relies on volunteers, primarily from Yale and local high schools. Anyone can volunteer if they want to make a better environment for women and girls in STEM!

Contact: [lauren.saunders@yale.edu](mailto:lauren.saunders@yale.edu)

Visit <https://gsi.yale.edu>

# Yale Physics Professional Development Organization

## Our goal

Expose physics PhD students and postdocs to a wide range of **career opportunities**, mostly **non-academic**, and provide **professionalization resources**.

For more information visit <https://yppdo.yale.edu/>



### Transitioning to Data Science Panel

January 31, 2019 at 12:00 p.m. in WL-216

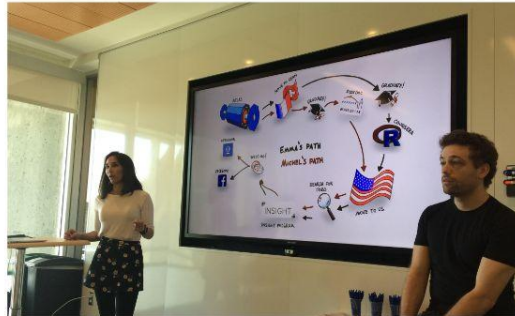
Join the YPPDO and OCS for a panel discussion with **Kyungseon Lim** (NBCUniversal Media, Physics postdoc '17), **Danti Chen** (Weber Standvick, Applied Physics '16) and **Patrick Young** (YNIHH, Geology & Geophysics '16) on their transition into the world of data science. Data scientists take on a large variety of roles across different industries, using the data to make decisions. Come learn more about the field and get some great tips on how to get prepared to transition into it.

Lunch is served starting at 12:00 noon. RSVP requested.

Sponsored by the Yale Wright Laboratory, the Yale Physics Department and the Yale Office of Career Strategy

## What we do

- Host speakers, mostly physics PhDs, to talk about their career paths after physics
- Organize workshops on academic and non-academic professionalization topics
- Provide information on the resources already offered by Yale, such as events organized by Office of Career Strategy and other student organizations



YPPDO



**QuArk**

**Q**Ueer-Affiliated  
**f**Riends of  
**p**hysi**K**s

We're here,

We might be queer,

**Come and have some bagels.**

To join the mailing list, email [sumita.ghosh@yale.edu](mailto:sumita.ghosh@yale.edu) or [caitie.beatie@yale.edu](mailto:caitie.beatie@yale.edu)

# 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 Coffee Chats*
- *Monthly 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*



**WIP+ Board:** Feel free to reach out to any of us!

**Twitter:** @yale\_wip

**Chairs:** Samantha Pagan, Hannah Bossi, Ava Polzin, Rachel Cooper, Caitlin Gish, Iris Ponce

**Faculty Advisor:** Simon Mochrie

## **Mailing Lists**

WiP+: [physics-wip@mailman.yale.edu](mailto:physics-wip@mailman.yale.edu)

WiP+ Allies: [physics-wip-allies@mailman.yale.edu](mailto:physics-wip-allies@mailman.yale.edu)

More info contact: [samantha.pagan@yale.edu](mailto:samantha.pagan@yale.edu) or [hannah.bossi@yale.edu](mailto:hannah.bossi@yale.edu)





# Women in Quantum Information



Contact:

[florian.carle@yale.edu](mailto:florian.carle@yale.edu)

[racquel.miller@yale.edu](mailto:racquel.miller@yale.edu)

[jaya.venkat@yale.edu](mailto:jaya.venkat@yale.edu)

Group objectives:

- Advocate for an increased representation of women in condensed matter/quantum-information groups at Yale
- Create a opportunity for self-identified women in QI to discuss research and present challenges navigated in climbing the academic ladder
- Voice requests for more women invited speakers in Yale quantum information colloquia

Activities in the past year:

- Monthly lunches open to self-identifying women students, postdocs, faculty in quantum information, condensed matter
- Lab tours open to all students led by WIQI members
- Title IX Workshops open to all members of YQI/Becton
- Research discussions and presentations among WIQI members

# Physics Happy Hour

- Social gathering on the ?last? Friday of every month.
- Within current COVID regulations, we plan to have in person gathering with free snacks and drinks.

## Current Happy Hour Crew

Charles Lomba [charles.lomba@yale.edu](mailto:charles.lomba@yale.edu)

Kirsty Scott [kirsty.scott@yale.edu](mailto:kirsty.scott@yale.edu)

Andrew Ton [andrew.ton@yale.edu](mailto:andrew.ton@yale.edu)



# Other Groups and Activities

## Informal Groups

- Running group
- Book clubs
- Anti-racist reading group
- Gaming groups (DND)
- Ask around!

Clubs and Groups throughout the graduate school and university!