

# Department of Applied Physics Yale University



## Graduate Studies Program

Department of Applied Physics  
Yale School of Engineering & Applied Science  
15 Prospect Street  
New Haven, CT 06511 U.S.A.  
<https://appliedphysics.yale.edu/>

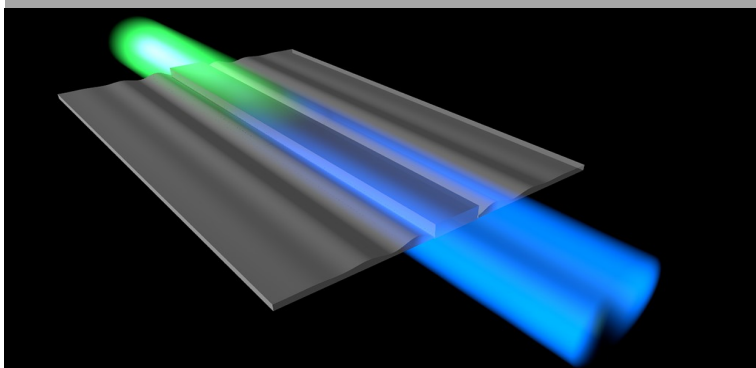
**Yale**

# Applied Physics at Yale

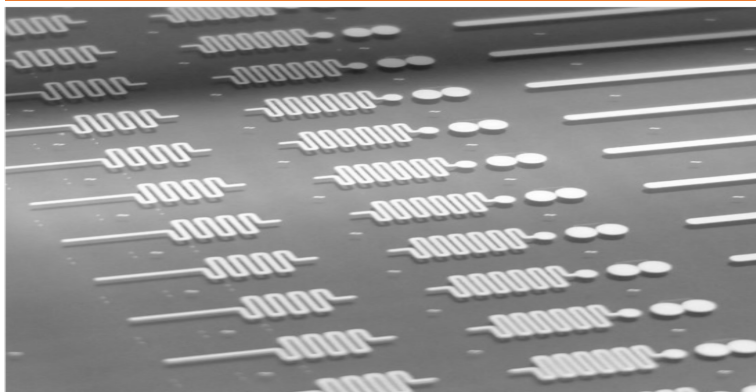
Contemporary science and engineering are becoming increasingly interdisciplinary.

Traditional boundaries between fields have blurred, and new areas, such as nanotechnology and artificially structured materials, are constantly emerging. Applied Physics combines understanding the laws of nature at a fundamental level with a focus on technological applications to provide solutions to important societal problems. As such, it provides an essential link between physics and engineering. The range of phenomena, materials, devices and systems benefiting from research in applied physics is unmatched in its scope and importance.

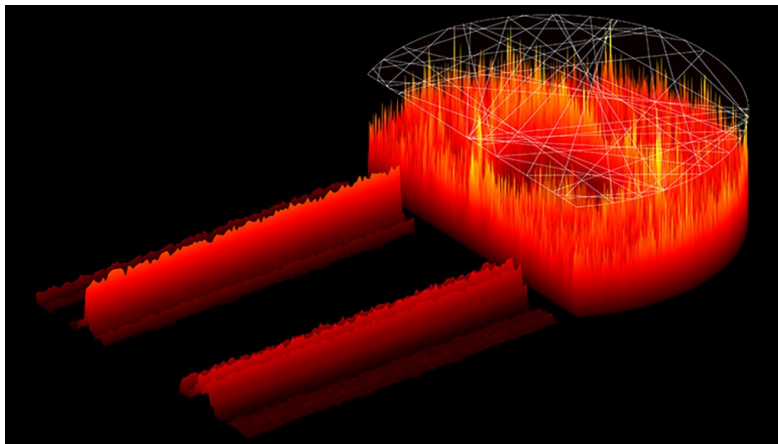
Research in Applied Physics spans three broad areas of interest: novel materials, optical and nanophotonic physics, and quantum information processing, emphasizing both fundamental issues and the practical application of these concepts and techniques to technology. Graduate students develop their own course of study and research with the guidance and advice of faculty members in the areas of their research interests. The balance between fundamental science and application makes our program highly interdisciplinary, having strong collaborations with Physics and Chemistry, as well as Electrical, Mechanical, Chemical, and Biomedical Engineering. Our graduates have become leaders in a wide variety of fields spanning academia, industry, and government service.



Cooling sound waves with light involves converting acoustic energy into optical energy, which blueshifts the light.  
(Image credit: Eric Kittlaus, Ph. D. and Nils Otterstrom — Rakich Group)



Array of transmons and resonators by Chris Axline, Ph. D., from Schoelkopf Group



Stable emission from a D-Shaped semiconductor laser - Hui Cao Group

The Applied Physics faculty are engaged in a broad range of research programs, including topics such as quantum information and quantum computing, optical physics and nanophotonics, and complex materials.

Applied Physics faculty are also central to the Yale Quantum Institute (YQI), which facilitates research and teaching of quantum science on campus and hosts seminars, workshops and visitors from around the world, making Yale an intellectual hub of the quantum information revolution. Our faculty also play a central role in the Yale Institute for Nanoscience and Quantum Engineering (YINQE), that brings together researchers in the physical sciences and engineering with those in the medical and biological research communities through nanoscale research and applications.

Additionally, we have faculty appointed in the Energy Sciences Institute, a Yale West Campus institute focusing on the emerging challenges facing the environment and energy sectors, through new materials for energy production and storage as well as innovations in solar energy and alternative fuels.

## Recent department highlights:

- Shruti Puri receives the Arthur Greer Memorial Prize
- Knots in the resonator: elegant math in humble physics
- Here at Yale: Sounds from another realm
- Owen Miller Receives 2022 Graduate Mentor Award
- “Frustrated” nanomagnets order themselves through disorder
- Quantum Week at Yale geared toward novices and experts alike
- “Shedding Light” on Lasers Power: Hui Cao keeps finding new ways for lasers to improve our world.
- Michel Devoret is a co-recipient of the Micius Quantum Prize for his groundbreaking work in quantum physics
- Yale to make landmark investments in engineering and applied science

Read more at <http://appliedphysics.yale.edu/news>



# PH.D. REQUIREMENTS AND HIGHLIGHTS

**Course requirements:** At least 9 course units are required, including two terms of “Special Investigation” research during the first year. Graduate students in Applied Physics are normally required to take certain core courses, as described in the Degree Guidelines. There is no general qualifying examination and no foreign language requirement.

**First year fellowships:** All first year Ph.D. students are financially supported by the department.

**Teaching:** Teaching experience is regarded as an integral part of the graduate training program at Yale University. All Applied Physics students are required to serve as a Teaching Fellow (TF) for two semesters, typically during year two, and have opportunities for further teaching if desired.

**Area Examination:** By the third academic year, students must pass an Area Examination whose purpose is to ensure that the student has achieved both the breadth and depth of knowledge appropriate to a Yale Ph.D.

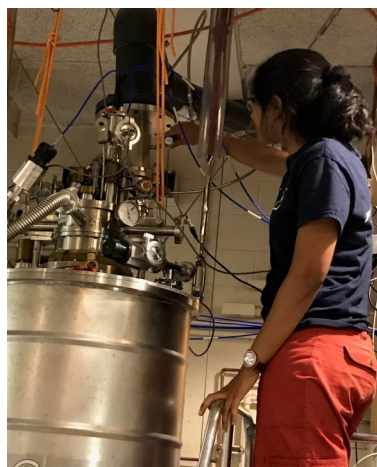
For more details of the requirements, please go to,

<https://appliedphysics.yale.edu/academics/graduate-studies>

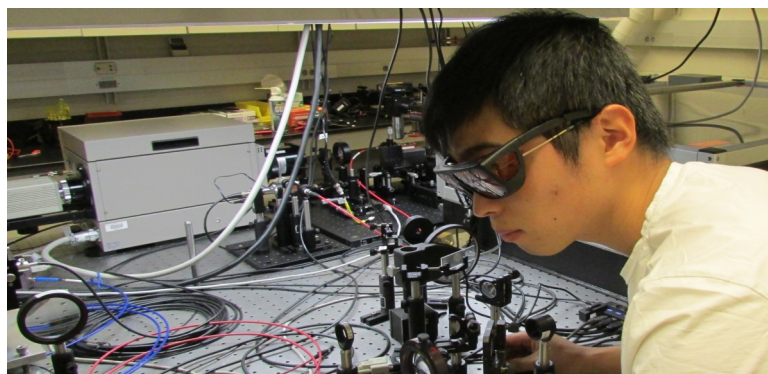
For more information contact:

## Graduate Studies

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15 Prospect Street, Becton Center 401  
New Haven, CT 06511  
t: 203 432-2210  
f: 203 432-4283  
email [applied.physics@yale.edu](mailto:applied.physics@yale.edu)



Ph.D. students have access to extensive cleanroom facilities and characterization tools.



## NOTABLE ALUMNI



### Irfan Siddiqi

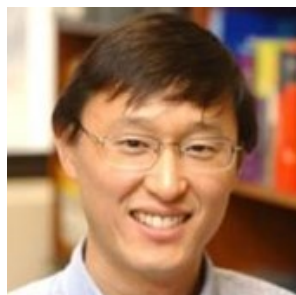
Professor of Physics at the Quantum Nanoscience Laboratory and the Department of Physics at the University of California Berkeley. He is also the director of the Advanced Quantum Testbed at LBNL.

Professor Siddiqi earned his Ph.D. in Applied Physics from Yale University. His doctoral advisor was Professor Daniel Prober.





# APPLIED PHYSICS FACULTY



**Charles Ahn**

John C. Malone Professor of  
Applied Physics and Professor of  
Mechanical Engineering and  
Materials Science and of Physics



**Hui Cao**

John C. Malone Professor  
of Applied Physics and  
Professor of Electrical Engineering  
and of Physics



**Michel Devoret**

Frederick W. Beinecke  
Professor of Applied Physics and  
Professor of Physics



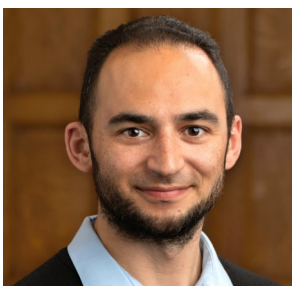
**Yu He**

Assistant Professor of  
Applied Physics and of Physics  
**Director of Graduate Admissions**



**Sohrab Ismail-Beigi**

Professor of Applied Physics  
and of Mechanical Engineering  
and Materials Science and  
of Physics



**Owen Miller**

Assistant Professor of  
Applied Physics and of Physics



**Simon G. Mochrie**

Professor of Physics and of  
Applied Physics



**Vidvuds Ozolins**

Tom Steyer and Kat Taylor  
Professor of Clean Energy Solutions  
and Professor of Applied Physics  
**Department Chair**



**Daniel E. Prober**

Professor of Applied Physics and  
of Electrical Engineering and  
of Physics  
**Director of Undergraduate Studies**



**Shruti Puri**

Assistant Professor of  
Applied Physics and of Physics



**Peter T. Rakich**

Associate Professor of  
Applied Physics and of Physics



**Nicholas Read**

Henry Ford II Professor of  
Physics and Professor of Applied  
Physics and of Mathematics



**Peter Schiffer**

Frederick W. Beinecke Professor  
of Applied Physics and  
Professor of Physics  
**Director of Graduate Studies**



**Robert J. Schoelkopf**

Sterling Professor of  
Applied Physics and  
Professor of Physics



**A. Douglas Stone**

Carl A. Morse Professor of  
Applied Physics and  
Professor of Physics



**Logan Wright**

Assistant Professor  
Starting July 2023