Department of Applied Physics

15 tenure track faculty + 4 senior scientists
67 AP graduate students + 19 postdocs/ARS
6.3 years on average to completion
3 major areas + interdisciplinary research
Topical Interests

- Why is Tc so high?
- Make random medium lase!
- Can $F = e^2/r^2$ be manipulated?
- Make wafer-scale 2D quantum materials
- How to best functionalize surfaces and interfaces
- Are there bounds to light-matter interactions?
- Physical neural networks? Quantum neural networks?
- Seeing through an opaque medium
- Continuous monitoring of superconducting spin qubit
- Entangle qubits "on-demand"!
- Robust quantum error correction
- Opto-mechanical tuning and application in Quantum Info
# Research

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<th>Condensed Matter / Solid State Physics</th>
<th>Quantum Information</th>
<th>Optics / Photonics</th>
<th>Biophysics</th>
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<tr>
<td>Charles Ahn</td>
<td>Michel Devoret</td>
<td>Hui Cao</td>
<td>Simon Mochrie (joint)</td>
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<td>Yu He</td>
<td>Dan Prober</td>
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<td>Sohrab Ismail-Beigi</td>
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<td>Aleksander Kubica</td>
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+ Tight collaborations with Physics, ESI, MEMS, ChemE, CS
  (Jack Harris, Diana Qiu, Eduardo da Silva Neto, Peijun Guo, Hong Tang, Fengnian Xia…)

Yale University
Why Yale AP?

Faculty awards: 5 Packard fellows, NAS, AAAS, FRS

Research productivity: Top 5 natural sciences yield AY22-23

Infrastructure: YQI, YINQE, Yale Cleanroom, Yale MCC

Big science:
  - Quantum Information Science Centers (1+1 out of 5)
  - NSF QLCI center for Robust Quantum Simulation
  - Partner User Agreement with Brookhaven National Lab

New investments:
  - Physical Sciences and Engineering Building on Science Hill
  - University spending on science and engineering (~$2B)

Affordability: Stipend-to-cost-of-living ratio 1.3 - 2.5x peer institutes
Ph. D. Requirements and Highlights

First year fellowships: all first-year Ph.D. students are financially supported by the department. During the year 1, a student typically will take “Special Investigation”.

Teaching experience is an integral part of graduate training; all students serve as Teaching Fellows for one year after year 1.

Area examination in year 3: students showcase breadth and depth of knowledge, chaired by advisor + 2-3 committee members.

Course requirements: At least 9 course units (including 2 SI), with strong encouragement of core courses in Quantum Mechanics, Electrodynamics, and Condensed Matter Physics. Require the Intro to AP seminar (AP576) in the fall semester of year 1.
GRE: Optional

TOFEL: required if English is not the primary language in college

Deadline: Dec 15, 2023

Fee: $105 (waiver info on Yale GSAS site)

Admitted students from previous years:
- multidisciplinary academic training
- clear objectives in statements
- diverse academic trajectories
- research experience is a plus but not required
- contact faculty encouraged but not required
#1 tip for admission

Please **DO** reach out to faculty members AND students to discuss research opportunities!

Concerns/questions on:

General admission: [graduate.admissions@yale.edu](mailto:graduate.admissions@yale.edu)

AP admission: [alexander.bozzi@yale.edu](mailto:alexander.bozzi@yale.edu), [yu.he@yale.edu](mailto:yu.he@yale.edu)

Research opening: email individual faculty member (**important!**)

If you don’t hear back from our faculty members, our apologies - a second email reminder always helps!
Contact Info

Peter Rakich  
*Director of Graduate Studies*

Vidvuds Ozolins  
*Chair*

Yu He  
*Director of Graduate Admissions, Applied Physics*

Alexander Bozzi  
*Graduate Program Registrar, Applied Physics*
END