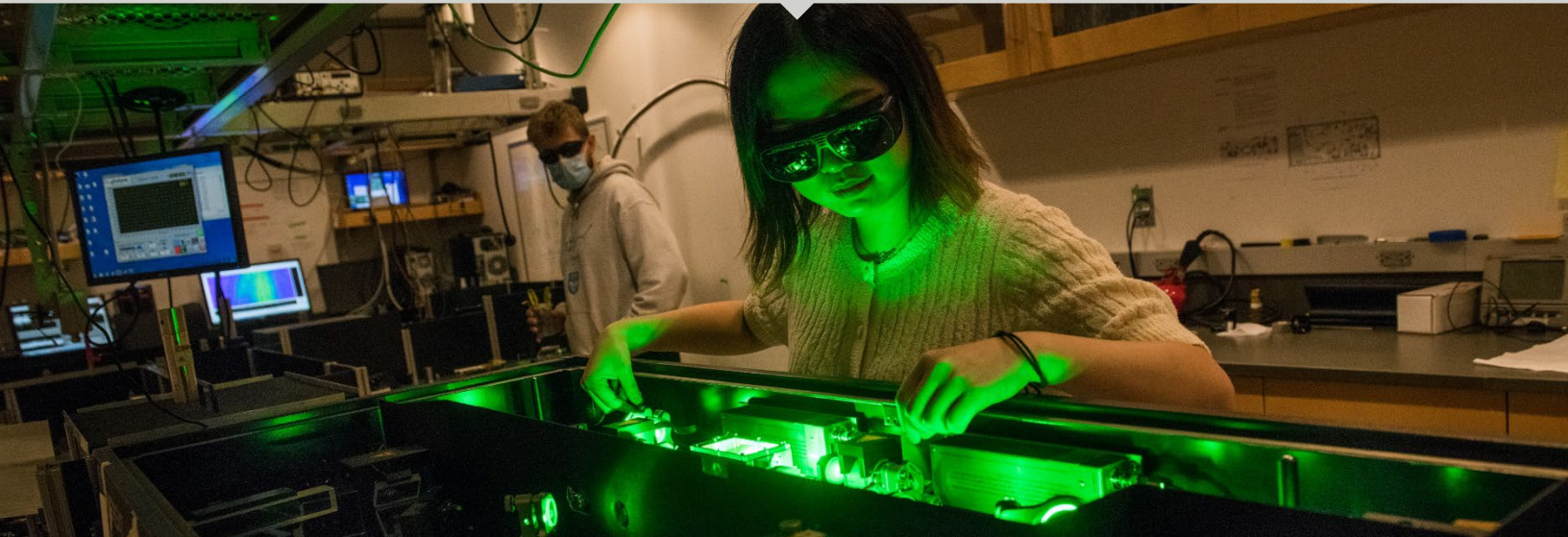


# Ushering in the Quantum Revolution



Quantum science and engineering has the potential to transform industry, the economy, and many other aspects of society. From ultra-sensitive quantum sensors that diagnose diseases at their earliest stages to virtually “unhackable” quantum cryptology, this field promises to have a radical and far-reaching impact on humanity.

The University of Chicago sits at the forefront of this groundbreaking discipline. The Pritzker School of Molecular Engineering (PME), with a core focus on quantum engineering, continues to push the boundaries of the technology, attract new talent, and educate the quantum workforce of tomorrow. UChicago faculty from other schools, divisions, institutes, and departments drive impactful quantum research, including computer science, physics, chemistry, and the James Franck Institute (JFI).



## Research Spotlight

Prof. Fred Chong, a pioneer in quantum software, has led or co-led over \$81 million in research awards and is the principal investigator for the National Science Foundation's EPIQC Expedition in Computing.

## A Research Powerhouse

UChicago has assembled one of the most powerful academic quantum research groups in the nation. Our researchers translate the latest quantum information science into practical technologies across computing and security. They tackle some of the most pressing challenges facing the field, including the development of new materials and hardware capable of handling the unique needs of quantum systems and designing software and algorithms that enable efficient quantum computing.

## QUANTUM ADVANTAGE

- Home to the Chicago Quantum Exchange, the largest-scale university-based quantum effort in the world
- Founder, through the Polsky Center for Entrepreneurship and Innovation, of Duality, the nation's first quantum startup accelerator, which has successfully incubated 15 new quantum startups
- Recipient of one of five \$25 million NSF Quantum Leap Challenge Institute awards and a \$10 million NSF Expedition in Computing award
- Member of Q-NEXT, led by Argonne National Laboratory, one of five National Quantum Information Science Research Centers
- A partner in the development of the Illinois Quantum and Microelectronics Park on Chicago's South Side, the future home for cutting-edge quantum labs and startups
- Future physical headquarters for the Midwest's quantum efforts, supported by \$200M in funding from the State of Illinois
- Collaborator on a 124-mile quantum network, one of the largest in the country and one of the first quantum testbeds in the country

## Premier Education and Training

The University of Chicago has launched many of the first initiatives to train the next generation of quantum scientists and engineers at the graduate and undergraduate level, including one of the first quantum engineering PhD programs in the world. Our integrated model of quantum education exposes students at all levels to career pathways in academia, national labs, and industry, with a focus on building an inclusive field. We have also developed programs that introduce K-12 students to the fundamentals of quantum science and engineering, as well as providing professional training for executives and leaders to enable their transition to careers in quantum engineering and technology.

## Partnership Spotlight

UChicago and the University of Tokyo received \$100 million from IBM to develop blueprints for building a quantum-centric supercomputer powered by 100,000 qubits. The institutions also secured \$50 million from Google to develop a fault-tolerant quantum computer and to help train the quantum workforce.



## A Regional and Global Leader in Quantum

The Midwest is one of the major hubs of quantum innovation in the United States, with the U.S. Economic Development Administration (EDA) designating the Chicago region as a U.S. Regional and Innovation Technology Hub for quantum technologies. UChicago is a partner of the Illinois Quantum and Microelectronics Park (IQMP), a first-of-its-kind park for quantum scale-up and related quantum and advanced microelectronics research and development.

UChicago, IBM, the State of Illinois, and IQMP are partnering on a new National Quantum Algorithm Center located in Chicago. The partnership will leverage IBM's new Quantum System Two to accelerate the use of quantum computing in industries across the state. These collaborations are facilitated by the University's long-standing partnerships with Argonne National Laboratory and Fermi National Accelerator Laboratory, enhancing not only each institute's quantum efforts but also the region's standing as a national center for quantum science and engineering.

The Chicago Quantum Exchange (CQE), based at UChicago and anchored by two national labs and four partner universities, has helped launch the largest-scale university-based quantum science and engineering effort in the world. The CQE augments the capabilities of member and partner institutions and furthers the Chicagoland region's ambition to become the nation's epicenter for quantum research. The CQE is a rapidly expanding network of universities, national labs, industry, and nonprofits who are advancing scientific and technological efforts in the field. The CQE is home to the nation's first quantum startup accelerator – Duality – and helped attract funding from the State of Illinois to build the region's physical epicenter for quantum science and economic development on the UChicago campus.

## PARTNER WITH US

[Corporate Engagement](#)  
[PME Corporate Affiliates Program](#)  
[Duality Quantum Accelerator](#)  
[CQE Corporate Partners](#)

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## QUANTUM AT-A-GLANCE

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Interdisciplinary  
Faculty

# 1st

Quantum Ph.D  
program in the nation

# 2

National Quantum  
Information Science  
Research Centers  
(of 5 nationwide)

# 2

Quantum Leap  
Challenge Institutes  
(of 5 nationwide)

# 40+

CQE Partners