STEVENS
INSTITUTE OF TECHNOLOGY
1870

INSPIRED BY **HUMANITY**,
POWERED BY **TECHNOLOGY**™

INTERDISCIPLINARY RESEARCH POWERHOUSE • SPRING 2026

The Quantum Advantage

Stevens researchers turn quantum physics into breakthrough technologies — from graviton detectors to unbreakable encryption

For decades, quantum mechanics existed primarily in the realm of theory and thought experiments. Today, Stevens Institute of Technology is at the forefront of a quantum revolution — translating strange sub-atomic phenomena into practical technologies that will transform computing, communications, medicine and national security. Under the leadership of its Center for Quantum Science and Engineering (CQSE), Stevens has assembled an interdisciplinary research powerhouse that's turning quantum science into real-world advantage.

REAL-WORLD IMPACT

- **Quantum Computing:** Solving in moments what takes conventional computers billions of years
- **Unbreakable Security:** Enabling unhackable communications using entangled photons
- **Medical Diagnostics:** Distinguishing healthy from cancerous tissue at the cellular level
- **Autonomous Systems:** Seeing around corners and through fog
- **Energy-Efficient AI:** Powering next-generation machine learning applications

STEVENS QUANTUM BY THE NUMBERS

1ST campus-based quantum network in the nation (2018)

$44.5M in federal research funding since July 1, 2020

5X enrollment growth in quantum optics this year

2017 Center for Quantum Science and Engineering established

> "We're reaching beyond what nature can do, learning to manipulate the quantum properties of materials and even light itself."
>
> — **Svetlana Malinovskaya,** Professor of Physics

LEADING THE QUANTUM REVOLUTION

YUPING HUANG

CQSE Founder | Viola W. and Elbert C. Brinning Endowed Professor

Huang founded Stevens' CQSE in 2017, bringing together researchers across disciplines to accelerate quantum innovation. His Stevens startup was acquired by a a publicly traded company, developing room-temperature quantum systems. Huang's interdisciplinary approach has established Stevens as a leader in accessible quantum technology. "We're at a tipping point where we're turning technology into products," Huang says. "Quantum could spark the next Industrial Revolution."

SVETLANA MALINOVSKAYA

Professor of Physics

Malinovskaya's work demonstrates how quantum control systems revolutionize medical diagnostics and overcome key obstacles to quantum computing. She creates quantum sensors that detect minute differences between healthy and cancerous cells and builds quantum gates with 99.9% stability — a crucial step toward practical quantum computing. "Quantum is everywhere," Malinovskaya says. "But it's only now, using current technologies, that we can can reveal this microscopic world and start putting it to work for humanity."

IGOR PIKOVSKI

CQSE Director | Geoffrey S. Inman '51 Assistant Professor

Pikovski is building the world's first graviton detector — an achievement long thought impossible. With $1.3 million from the W. M. Keck Foundation, his team uses ultra-sensitive quantum sensors to detect gravitational waves from colliding black holes, revealing gravity's quantum nature. "We're bringing quantum mechanics into human-scale experiments and seeing possibilities that were inconceivable 20 years ago," he says.

Stevens' quantum research exemplifies the university's unique approach: interdisciplinary collaboration driving practical innovation. **"Theoretical research and applied research are intimately coupled, and we need to be able to do both,"** says Vice Provost for Research and Innovation Edmund Synakowski. **"Application drives discovery, and discovery drives application."**

Learn more stevens.edu/quantum

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