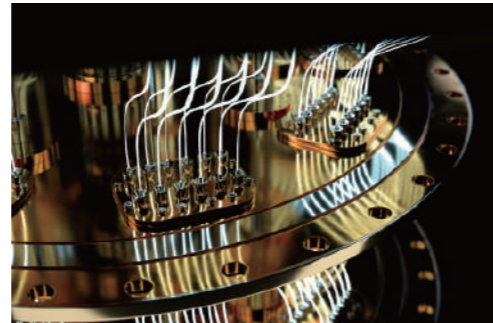




Spatial Light Modulators Help Quantum Computer Research

What is a quantum computer?

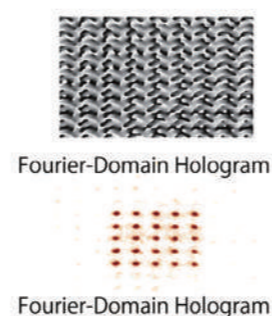
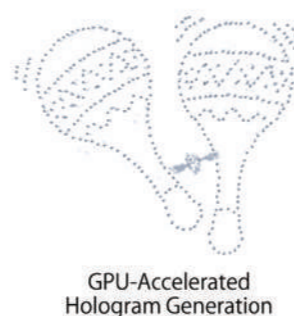
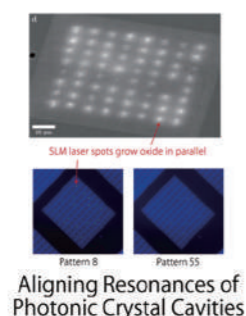
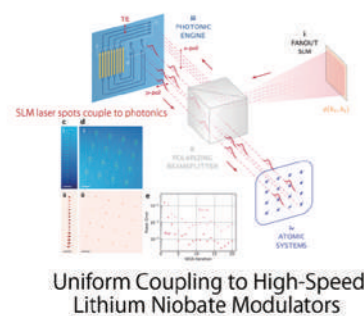
A quantum computer can create huge steps forward in processing power that drives some of the phenomena of quantum mechanics, such as superposition, interference, and entanglement. It is a next-generation computer that is expected to solve problems that would take an enormous amount of time with a conventional computer. MIT has ongoing developments focused on the next foundations of computing, communications, and sensing. They are working on new materials and superconducting devices for theories related to quantum computing.



Spatial light modulators help quantum computer research

Spatial light modulators are key components for realizing quantum computers. They are used to form optical wavefronts, generate hundreds of individually focused optical tweezers beams, and study new amplitude and phase modulation algorithms.

(SLM Application Research Examples courtesy of Ian Christen, MIT.)



Santec's spatial light modulator in action at MIT

We visited Prof. Englund's lab at MIT in May 2022. Seven of Santec's SLM-200s, one SLM-300, and one SLM-210 were being used for the quantum computing research. When we asked them why they chose Santec's products among the other spatial light modulators, they replied, "Reliability and phase stability. At CLEO 2022 (the Conference on Lasers and Electro-Optics), six of MIT researchers presented papers on quantum computers using Santec's spatial light modulators. MIT plans to use more spatial light modulators in the future.



Santec's spatial light modulator featured in CLEO 2022,2023 paper

Many papers at CLEO 2022,2023 mentioned Santec's SLM with their application which might be your interest. Please check out below.

CLEO 2022

Large Scale Frequency-Encoded RF-Photonic Neural Networks

Scalable Multi-Channel Optical Waveform Generation With Lithium Niobate

Electric-Field Programmable Spin Arrays for Scalable Quantum Repeaters

CLEO 2023

*Fast Phase Retrieval: Unique and Stable Complex Object Recovery in $O(N \log N)$ Time (AW4I.5)

*Fast and Coherent Optical Control With 256 Visible-Wavelength Channels (SF1E.3)

Lithium Niobate on Silicon High Speed Spatial Light Modulator (SF1E.4)

