

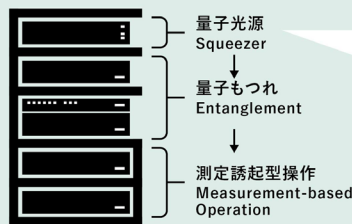
Enabling ultrafast large-scale optical quantum computing using our PPLN waveguide module Device technology for optical quantum computing

Background and Technical Challenges

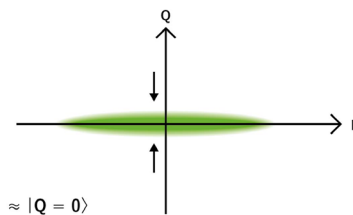
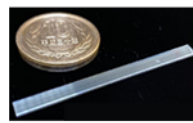
Generating high-quality quantum light, detecting its states, and handling it with low loss are key challenges in optical quantum computing. Achieving this requires high-precision photonic devices, enabled using advanced microfabrication technologies.

ラック型光量子コンピューター向け光デバイス

Optical Device for Rack-Type Optical Quantum Computers

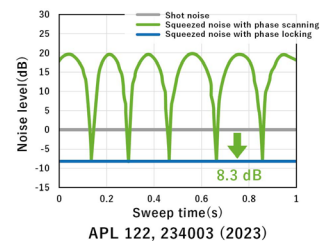


量子コンピューターの心臓部 = PPLN導波路
PPLN Waveguide Devices



量子ノイズ圧縮率 = 性能指標
Squeezing Level = Indicators

導波路型スクイザーの世界最高値
(~8.3 dB)
World Records in
Waveguide-type Squeezer (~8.3 dB)



R&D Goals and Outcomes

Leveraging NTT's expertise in high-precision optical device fabrication, we achieve broadband, high-precision quantum-light generation and detection.

Key Technologies

01 Core Technologies

- High-efficiency, low-loss broadband photonic devices fabricated using NTT's unique fabrication methods.
- High-speed quantum detection combining NTT's optical communication expertise.

02 Key Differentiators

NTT's device achieves over 85% quantum noise reduction and sets the global benchmark for broadband waveguide devices. Combining optical communication technology enables record a 63GHz- quantum entanglement generation and detection.

Use Cases Multi-Industry

R&D phase Research

Technology Schedule FY30

Commercialization Schedule FY30

【Exhibitors】

NTT Device Technology Laboratories

【Co-exhibitors】

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【Contact】

Materials and Devices Laboratory

【Related Links】

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