

Unit Name

Experimental Quantum Information Physics
Assistant Professor Hiroki Takahashi

Students Supervised:

- Shingo Ishimori (PhD Student)
- Steven Jeffrey Marz (PhD Student)
- Soon Teh (PhD Student)
- Mathieu Couillard (PhD Student)
- Tatsuki Hamamoto (PhD Student)
- Jesus Gabriel Riestra Castillo (PhD Student)
- Morihiro Ohta (PhD Student)
- Savelii Dudoladov (PhD Student)
- Shuma Oya (PhD Student)
- Zhenghan Yuan (PhD Student)
- Breno Calderoni (Rotation Student)
- Debdip Guchait (Research Intern)
- Apostolos Banoutsos (Research Intern)
- David-Michael Orion Peterson (Research Intern)
- Suraj Lokesh (Research Intern)
- Witchayoot Nakasoon (Research Intern)
- Abhijit Kundu (Research Intern)
- Aastha Jayeshbhai Tripathi (Research Intern)
- Mihoko Uehara (Research Intern)
- Kotaro Yabe (Research Intern)
- Hikaru Yokomori (Research Intern)
- Kristina Galstian (Research Intern)
- Natakala Saimurali Dakshesh (Research Intern)
- Shingo Ishimori (Visiting Research Student)
- Bin Huang (Visiting Research Student)
- Rishabh Pal (Visiting Research Student)

Scholarly Contributions and Creative Productions (by Faculty)

Journal Article

1. Shaobo Gao, Vishnu Kavungal, Shuma Oya, Daichi Okuno, Ezra Kassa, William J. Hughes, Peter Horak, and Hiroki Takahashi
Profile control of fiber-based micro-mirrors using adaptive laser shooting with in situ imaging. *Optics Express* 2025, 33, 390009.
2. Tatsuki Hamamoto, Amit Bhunia, Hiroki Takahashi, and Yuimaru Kubo
Stabilizing an Optical Cavity Containing a Bulk Diamond Crystal at Millikelvin Temperatures in a Cryogen-Free Dilution Refrigerator. *Review of Scientific Instruments* 2025, 96 085201.
3. Ezra Kassa, Shaobo Gao, Soon Teh, Dyon van Dinter, and Hiroki Takahashi
How to Integrate a Miniature Optical Cavity in a Linear Ion Trap: Shielding Dielectrics and Trap Symmetry. *Physical Review Applied* 2025, 23, 024038.

Presentation at Conference

1. Takahashi, H.
スケーラブルな機能集積型イオントラップと多重光接続で実現する誤り耐性量子コンピュータ. ムーンショット目標6 公開シンポジウム 2026.
2. Takahashi, H.
スケーラブルな機能集積型イオントラップと多重光接続で実現する誤り耐性量子コンピュータ. 第73回応用物理学会春季学術講演会 2026.
3. Takahashi, H.
Integrating an Optical Micro-Cavity in a Linear Ion Trap for Quantum Photonic Interconnects. PIERS2025 2025.
4. Takahashi, H.
Integrating an Optical Micro-Cavity in a Monolithic Linear Ion Trap for Quantum Photonic Interconnects. OPTIQ 2025 2025.
5. Takahashi, H.
Fault-Tolerant Quantum Computing with Photonically Interconnected Ion Traps. *Quantum Innovation* 2025 2025.
6. Takahashi, H.
Integration of Micro Optical Cavities in Ion Traps. Chip trap workshop at Infineon Villach 2025.

Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Steven Marz	Poster Presentation at Conference	Tunable microcavities for ion-photon quantum networks	Moonshot Goal 6 Symposium2025-Internal General Meeting	Japan Science and Technology Agency	2025
Tomoya Irimatsugawa	Poster Presentation at Conference	Development of MEMS Optical Cavities Towards the Large-scale Ion-trap Quantum Computer	Quantum Innovation 2025	Quantum Technology Innovation Hubs	2025
Savelii Dudoladov	Poster Presentation at Conference	Towards Cavity QED with Trapped Barium Ions Coupled to a Miniature Optical Cavity	Quantum Innovation 2025	Quantum Technology Innovation Hubs	2025

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Ezra Kassa	Poster Presentation at Conference	Path to integrating a microcavity with a linear ion trap	ECTI 2025	Electrical Engineering-Electronics, Computer, Telecommunications and Information Technology Association of Thailand	2025
Zhengan Yuan	Poster Presentation at Conference	Efficient single photon generation from a single ion coupled to a fibre cavity in a linear trap	Moonshot Goal 6 Symposium2025-Internal General Meeting	Japan Science and Technology Agency	2025
Savelii Dudoladov	Poster Presentation at Conference	Progress Towards Cavity QED with Trapped Barium Ions Coupled to a Miniature Optical Cavity	Moonshot Goal 6 Symposium2025-Internal General Meeting	Japan Science and Technology Agency	2025
Savelii Dudoladov	Poster Presentation at Conference	Towards Cavity QED with Trapped Barium Ions Coupled to a Miniature Optical Cavity	ICEQT 2025	University of Science and Technology of China	2025
Vishnu Kavungal	Poster Presentation at Conference	Precision Shaping of Fiber Mirror Profiles via Feedback-Controlled Laser Ablation	OPTIQ 2025	International School of PhotonicsCochin University of Science and Technology	2025
Seigen Nakasone	Presentation at Conference	Implementing an FPGA-based Digital Servo by Upgrading an Open-Source Product to the Newest FPGA Board: Challenges and Considerations	SICE2025	The Society of Instrument and Control Engineers	2025
Shaobo Gao	Presentation at Conference	Ion trap quantum computer: the vision, the challenges and the solutions	ICEQT 2025	University of Science and Technology of China	2025
Ezra Kassa	Presentation at Conference	Ion-Photon quantum interfaces	SIP3 Development and implementation of educational programs (Industry-academic collaborative educational programs)	OIST	2025
Ezra Kassa	Presentation at Conference	Ion Traps at OIST	Saga Prefecture Chienkan outreach event	OIST	2025
Ezra Kassa	Presentation at Conference	Integrating Optical Micro-Cavities with Ion Traps: Fabrication and Characterization of Fibre-based Fabry-Perot Cavity and Conductive Mirrors	NANOP 2025	PremC	2025
Ezra Kassa	Presentation at Conference	Ion traps and cavities for quantum networks	Project Showcase POC	OIST	2025

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Ezra Kassa	Presentation at Conference	Ion trap quantum computer: the vision, the challenges and the solution	KIT Seminar	KIT	2025
Ezra Kassa	Presentation at Conference	Consideration for ion-trap and cavity integration	LMI-QT unit summer retreat 2025	OIST	2025
Ezra Kassa	Presentation at Conference	How to integrate microcavities in Linear ion trap	University of Oxford Seminar	University of Oxford	2025
Ezra Kassa	Presentation at Conference	Distributed architecture at Qubitcore	Quantum Delegation to Japan; Quantum bridges: Connecting Ecosystems, Empowering Bridge	Japan External Trade Organization (JETRO)	2026