

Postdoctoral Researcher / Staff Scientist in Theoretical Quantum Physics

The Quantum Systems Unit (QSU), headed by Prof. Thomas Busch, at the Okinawa Institute of Science and Technology (OIST) Graduate University invites applications for a **Postdoctoral Researcher or Staff Scientist** position in theoretical quantum physics.

The successful candidate will join an internationally recognised research group investigating the dynamics of quantum matter at the interface of quantum many-body physics, quantum thermodynamics, quantum optics, and quantum information science. Our research combines analytical and numerical approaches to understand strongly interacting quantum systems, non-equilibrium dynamics, atom-light interactions, engineered dissipation, and emergent quantum phenomena, with applications ranging from fundamental physics to future quantum technologies.

We welcome applicants whose interests complement one or more of the Unit's current research directions, including

- Ultracold atomic Bose-Einstein condensates and degenerate Fermi gases
- Non-equilibrium quantum many-body dynamics
- Quantum thermodynamics, quantum engines and quantum batteries
- Quantum optics, nanophotonics, atom-light interactions and programmable matter
- Open quantum systems and engineered dissipation
- Quantum transport and quantum simulation

The successful candidate will have considerable freedom to develop independent research directions aligned with the Unit's activities and will be encouraged to establish new collaborations across OIST's highly interdisciplinary research environment.

Candidate profile

Applicants should possess

- a Ph.D. in theoretical physics or a closely related discipline;
- an excellent publication record commensurate with career stage;
- demonstrated creativity, scientific independence, and strong analytical skills;
- excellent communication skills and the ability to work in an international English-speaking research environment;
- applicants for Staff Scientist need to be more than 5 years post PhD.

Experience in one or more of the following areas would be advantageous:

- ultracold quantum gases;
- strongly correlated quantum systems;
- numerical many-body methods (DMRG, tensor networks, advanced exact diagonalization, Monte Carlo, etc.);
- quantum thermodynamics;
- open quantum systems;
- quantum optics and atom-light interactions;
- nanophotonics;
- quantum information science;
- scientific programming (Python, Julia, C/C++, MATLAB or similar).

Experience with high-performance computing or GPU-based numerical methods would also be beneficial but is not essential.

Research environment

The Quantum Systems Unit maintains a broad international network of collaborators and works closely with several experimental and theoretical groups at OIST. The successful candidate will have excellent opportunities to initiate interdisciplinary collaborations in areas including quantum optics, ultracold atoms, nanophotonics, nonlinear dynamics, condensed matter physics, and quantum technologies.

OIST provides outstanding computational facilities, modern laboratory infrastructure, and a highly collaborative research environment that encourages the pursuit of ambitious and innovative research.

Compensation and benefits

OIST offers a competitive salary together with an excellent benefits package, including

- housing allowance;
- relocation support;
- commuting allowance;
- Private School Mutual Aid benefits;
- generous annual leave and summer holidays;
- access to modern research facilities and computational resources.

Appointment

The appointment is initially for two years, with the possibility of renewal for an additional year subject to satisfactory performance.

Preferred starting date: December 2026 (flexible)

Application

Applications will be reviewed as they are received and should include

- curriculum vitae;
- a brief statement of research interests (maximum two pages);
- publication list;
- contact details for at least **two referees**.

Applications should be sent electronically to

Prof. Thomas Busch: thomas.busch@oist.jp

Application deadline: 15 September 2026

About OIST

The Okinawa Institute of Science and Technology (OIST) Graduate University is an international graduate university dedicated to excellence in research and education. With no academic departments, OIST promotes interdisciplinary collaboration across the physical, biological, mathematical, computational, and environmental sciences. Faculty, students, and researchers from more than 60 countries work together in a modern English-speaking environment on a beautiful campus overlooking the East China Sea.

OIST is committed to fostering creativity, scientific excellence, and diversity, providing researchers with the freedom and resources to pursue ambitious, curiosity-driven research while addressing some of the most important scientific challenges of our time.

OIST is an equal opportunity employer and strongly encourages applications from women and other underrepresented groups.