

# Postdoctoral Research Fellow - Quantum Technology Theory

- Postdoctoral research fellow role within Swinburne University
- Full time, 2-year position at Swinburne University
- Academic Level A salary (A\$94,580+ 17% super = A\$110,659 p.a)

## About the Role

A Postdoctoral Research Fellow is being sought to join a project funded by the Australian Research Council, working alongside Prof. Xia-Ji Liu at the Centre for Quantum Technology Theory (CQTT, email: [xiajiliu@swin.edu.au](mailto:xiajiliu@swin.edu.au)). The successful candidate will possess strong theoretical skills and a solid background in ultracold quantum gases and condensed matter physics. This full-time position will be available for up to two years.

The primary responsibility of the incumbent will be to develop innovative and more accurate methods for characterizing strongly correlated polaritons. Polaritons, described as quantum fluids of light, exhibit unique quantum behavior such as superfluidity, showcasing frictionless, zero-energy-cost flows. The project aims to advance our understanding of polaritons in the strongly interacting regime, particularly far from equilibrium, with the ultimate goal of realizing a superfluid of light at room temperature.

This groundbreaking research is expected to bridge the knowledge gap in the field and pave the way for the development of energy-efficient laser and all-optical transistor technologies. By contributing to this project, the successful candidate will play a crucial role in establishing Australia as a global leader in the commercialization of innovative photonic technologies.

In addition to conducting independent research activities with limited supervision, the Postdoctoral Research Fellow will also be involved in supervising students, preparing research results for publication, and presenting findings at conferences.

Further information about this role can be found in the attached position description.

## About You

**To be suitable for this role you will need to have experience in the below key accountabilities:**

- Solid theoretical background in ultracold quantum gases and condensed matter physics
- Demonstrated publication track record in peer-reviewed journals
- Early Career Researcher (i.e., awarded a PhD within five years)
- Demonstrated experience in superfluidity and/or superconductivity
- Demonstrated experience in large-scale numerical simulations

## Qualifications

- An earned doctoral qualification in Theoretical Condensed Matter Physics or Quantum Physics

## To Apply

Please submit your CV and cover letter addressing your suitability for this position.

For further information about this position, contact Prof. Hui Hu - [hhu@swin.edu.au](mailto:hhu@swin.edu.au) and Prof. Xia-Ji Liu - [xiajiliu@swin.edu.au](mailto:xiajiliu@swin.edu.au)

**Applications Close: Sunday 15th September 2024, 11pm**