A COLLABORATIVE PARTNERSHIP BETWEEN

THE UNIVERSITY of ADELAIDE | UNSW

DEFENCE TRAILBLAZER
CONCEPT TO SOVEREIGN CAPABILITY

Modelling of Silicon CMOS multi-qubit systems

Up for a challenge?

Join us to work on a Defence-led research project with Diraq.

Who can apply?
- Australian Permanent Residents & Citizens
- New Zealand Citizens
- Citizens of countries within the Five Eyes Alliance (FVEY)

Start date
- Plan for a start no later than 12/02/2024

Total annual stipend amount
- A base scholarship of $40,000pa plus $10,000 top-up scholarship

Industry partner and funding body
- Diraq
- Defence Trailblazer

Program of study available
- Doctor of Philosophy (PhD) at UNSW Sydney

About the project

Silicon CMOS quantum dots are one of the most promising candidate technologies for realising the large scale quantum computers needed for fault-tolerant quantum information processing. At Diraq we are looking for enthusiastic and talented students to tackle new engineering challenges and accelerate the development of CMOS qubits

This project involves advancing understanding of CMOS multi-qubit systems through building theoretical models composed of interacting electrons, including a complete description of spin-spin coupling through advanced electronic structure methods. This will be completed through using existing and developing new bespoke code utilising a variety of theoretical and statistical analysis techniques. The candidate will be working closely with both theory and experimental teams to validate their findings against measurement data.

Eligibility criteria

- Australian citizens, citizens of countries within the Five Eyes Alliance (FVEY) and defence industry professionals are encouraged to apply.
- Excellent students who hold a Bachelor of Electrical Engineering or a double degree with Computer Science and Engineering, Physics or equivalent would be especially suitable and encouraged to apply.
- Applicants with well-developed written and verbal communication skills will be considered favourably.
- Be willing to provide your personal details by way of a Student Deed Poll.

Benefits

- Work closely with experts on defence industry led projects
- $50,000 p.a. tax-free* stipend (pro-rated for eligible part-time students)
- No tuition fees apply
- Acquire a unique set of skills and expertise
- Enhance your employability skills sought after by industry; graduates are highly regarded by employers
- Opportunities for local and international travel
- Work alongside world-leading researchers
- Gain industry experience and grow your networks
- Solve real life problems through industry engaged projects
- Publish your contributions
- Become an expert and make a real impact

* Conditions apply

How to apply

- Complete an expression of interest
- The primary supervisor will assess your eligibility, and if successful, will prompt your application for admission via UNSW.

More about Defence Trailblazer

The Defence Trailblazer for Concept to Sovereign Capability is a once in a generation opportunity to strengthen the collaboration between defence, academia and industry whilst accelerating research and commercialisation.

In partnership with the University of Adelaide (UoA), the University of New South Wales (UNSW), industry partners and supported by the Australian Government, the initiative will skill the workforce of the future, support defence-focussed innovation, and play a leading role in accelerating the delivery of sovereign capabilities for the nation's security and prosperity...at-speed and at-scale.

Learn more: https://dtb.solutions/

Industry Research Program

All students supported under the Defence Trailblazer initiative will participate in the Industry Research Program (IRP).

Candidates are located on-site at university and industry offices for at least 60 FTE days (pro-rated for eligible Masters candidates), to enable real-life professional development opportunities in an industry setting.

Defence Research Capability

Academics participating in Defence Trailblazer are leaders in their fields.

UNSW adds a critical dimension to preparing defence forces across areas as diverse as Autonomous Systems, Hypersonics, Sensors and Space. The UNSW Defence Capability Portfolio showcases UNSW's excellence in defence research and technology and highlights work across academia, government and industry, as well as with global policy makers, to create a hub of defence-related knowledge. The vision is to translate this knowledge into impact which can transform Australian and global societies.

There's no greater reassurance for our community than knowing we're well prepared to prevent or avert threats to our security. UofA researchers support this in every domain: on land and online; in space, the air and at sea, working extensively with the Department of Defence and defence-related organisations in a variety of ways—as an advisor, research partner and producer of high-quality, career-ready graduates equipped to make our world a better and more secure place.

Find out more about defence research, and defence capability portfolios at UNSW

Further information

For a confidential discussion contact:

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Defence Trailblazer, together with UoA and UNSW, are actively working to support equity groups. We strongly encourage applications from people with a disability, veterans and women interested in working in non-traditional work settings

UNSW CRICOS Number 00098G