Title: Theoretical Physicist - Quantum Devices
Salary: $100,000 – 120,000 p.a. plus super contribution of 10%

Department: Quantum Technology

Location: Sydney, Australia
Type: Full Time

Summary

Quantum device theory position that requires a post PhD with a strong background in the theoretical description and modelling of quantum logic devices, particularly the control and read-out of spin-based qubit systems. Full-time and based in the Sydney CBD.

About Us

Archer Materials Limited is an ASX listed technology company that builds advanced semiconductor devices, including processor chips relevant to quantum computing.

We create disruptive deep tech to address complex global challenges.

Archer is developing a novel quantum computing processor chip for practical applications in mobile technology. As a member of the IBM Quantum Network, Archer is one of only a few companies globally commercialising quantum computing processor hardware.

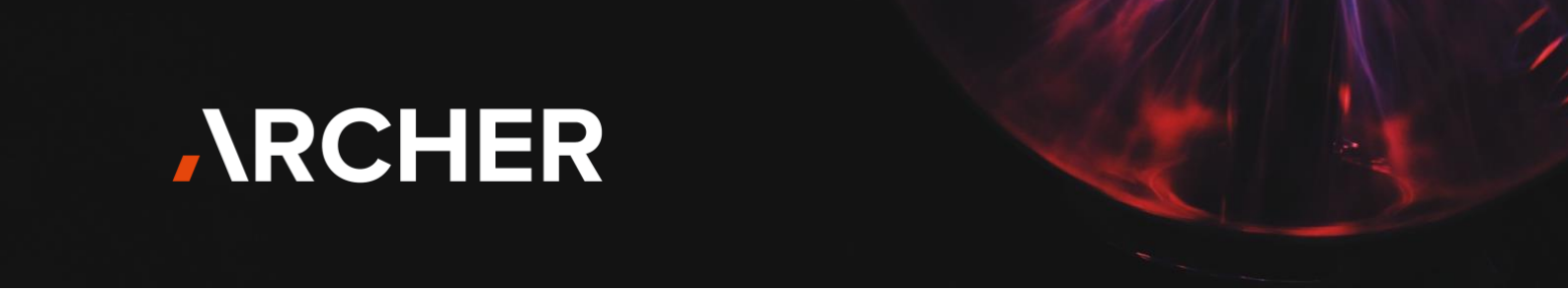
The Role

As part of Archer's growing quantum technology team, you will be working alongside experimental physicists developing an electron spin-based qubit in a carbon nanomaterial. Your work will focus on providing the theoretical framework and addressing challenges relevant to the continuing development of the material into a viable qubit architecture.

Working directly with inventors of innovative technology your work will focus on quantum information read-out and control in spin-ensemble solid-state devices using electronic/non-optical methods. You will bring a strong technical background in quantum physics, and a proven track record in delivering world-class outcomes in solid-state qubit architecture development and/or the modelling and calculation of properties of spin-based quantum devices.

Responsibilities

- Design of nanoelectronic spin readout and spin control devices as part of the implementation of Archer's commercialisation plans.
- Work closely with Archer team members and key external stakeholders in the collaborative development of quantum hardware.
- Independently identify and address challenges relevant to the realisation of quantum devices in line with the development roadmap.
- Participate in the development of intellectual property in-line with agreed strategy and policies.
- Communicate technology development outcomes through several publication channels including scientific reporting and publication in high-impact journals and patent applications.
- Grow Archer's strategic network in the field of quantum computing technology.
- Contribute to applications for relevant project funding.
- Report, document, and assess completed technology development milestones.



Required Skills, Experience & Qualifications

- PhD in theoretical quantum physics or similar.
- Knowledge and expertise in modelling of spin-based quantum devices, including spin read-out/spin control and decoherence theory.
- Track record in ab-initio modelling of nanostructures or materials.
- Experience with electron spin resonance (ESR) and/or nuclear magnetic resonance (NMR) measurements and devices.
- Familiarity with quantum control theory and pulse design.
- Record of producing high-quality research outcomes in an academic or industrial setting.
- Keen interest in building quantum devices for real-world applications.
- Familiarity with quantum computing hardware or architecture design, quantum simulators, or quantum sensors.

Desired skills and experience

- Experience in modelling of microwave resonators or circuit QED devices.
- Supervisory and/or leadership experience in scientific R&D settings.
- Use of quantum simulation software e.g. QuTiP, Qiskit.
- Keen interest in developing hardware solutions for coherent quantum control in solid-state devices.

END OF ROLE DESCRIPTION