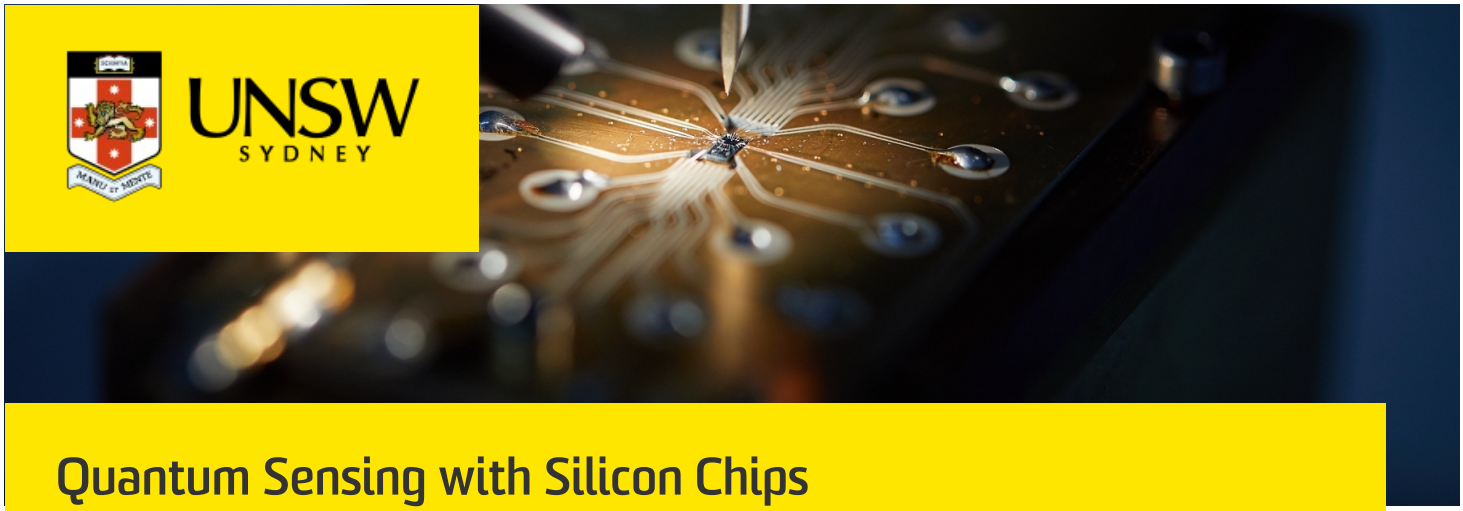

Quantum Sensing with Silicon Chips

Exploiting the inherent fragility of quantum systems to develop advanced sensors for weak electric and magnetic fields.

Competitive advantage

- First in the world to demonstrate a quantum bit in silicon, using the spin of a single atom, introduced in the chip via an industry-standard technology
- Record-holder for quantum memory time, which translates into a record sensitivity to perturbing electromagnetic fields
- International collaboration to develop novel methods for extracting the maximum information on the environment of the atom
- Extension of world-leading silicon-based quantum computer technology to demonstrate quantum sensors integrated within a silicon nanoelectronic device

Impact

- Substantial improvements in the sensitivity of sensors for defence systems
- Quantum sensors within silicon chips to facilitate integration with other functionalities

More Information

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Capabilities and facilities

- Leading silicon nanofabrication facilities via the UNSW node of Australian National Fabrication Facility (ANFF) and unmatched in-house expertise
- Extensive platforms for quantum measurements in ultra-low temperature, high-frequency, low-noise environment
- International network of collaborators with access to state-of-the-art theoretical and computational facilities.