



Te Whai Ao — Dodd-Walls Centre for Photonic and Quantum Technologies Newsletter



From the Director

Welcome to our newsletter on the latest in photonic and quantum technologies in New Zealand. I'm pleased to let you know that our Minister of Science, Innovation and Technology, Dr Shane Reti has [announced](#) Government funding for a six-month period of discovery into how a photonic and quantum research and commercialisation platform can thrive in NZ.

The Government is spending \$1.35 million dollars to examine our quantum and photonic research strengths and niche capabilities as a country, to determine what lines of research can be commercialised and what will set NZ up for success in

decades to come. This information will form the basis of a photonic and quantum technologies platform in the Government's Institute for Advanced Technology. We're also delighted to share that our board member, Professor Cather Simpson has been appointed to the inaugural board of the Institute.

November and December 2025 were full of conferences in New Zealand. We went straight from the Te Whai Ao — Dodd-Walls Symposium in Wellington into the student-led KOALA (Conference on optics, atoms and laser applications) which around 80 students attended in Auckland. This was then followed by the Australia NZ Conference on Optics and Photonics run by the Australian and NZ Optical Society. Read on to learn about the celebration of the work of Professor John Harvey. The season wrapped up with a highly enjoyable "COMBS" summer school in Auckland run jointly by Professor Stéphane Coen of Te Whai Ao and Professor Martijn de Sterke of COMBS Australia.

As we prepare for the year ahead it's worth reflecting on our achievements in 2025. Start-ups Luminoma and Probentis are moving into clinical trial stage for their skin cancer diagnostic tool and prostate cancer device, respectively. While founder and Chief Science Officer at Luminoma, Dr Michél Nieuwoudt, wasn't the recipient of the KiwiNet Researcher Entrepreneur Award, we shared in her success at being shortlisted. Other researchers and affiliate members were well-represented among the successful Marsden Fund project recipients, either leading teams or playing an important part in them. Some \$80.3 million was invested.

We've got a number of exciting projects ready to kick off this year. Read on to find out more about our first Māori-led or partnered projects, three studies we're undertaking with the Republic of Korea and who's been successful in the Quantum Technologies Aotearoa Main Tranche.

Our Centre thrives on collaboration, both domestically and internationally. If you're reading this and know of an international partner who might like to hear our news, please share this with them and invite them to [subscribe](#). As always, we would love to hear your news. Let us know your thoughts at dwc@otago.ac.nz

Ngā mihi nui,

*Te Whai Ao – Dodd-Walls Director,
Professor Frédérique Vanholsbeeck*

Quantum Technologies Aotearoa (QTA) Main Tranche Projects

Now in the third year of a five-year funded programme, new Main Tranche projects have been announced by QTA. The programme aims to foster international collaboration and to accelerate domestic capability.

Seven projects were selected:

- Building the quantum internet: microwave to optical transduction in an electro-optic platform (Nick Lambert, Harald Schwefel, Florian Sedlmeir, Mallika Suresh);
- Magnetic thin film materials for rare-earth dopant based quantum technologies (Jevon Longdell, Mike Reid, Luke Trainor);
- Advancing sea-floor cable-based sensing in the South Pacific: a pathway to real-time hazard monitoring (Johan Grand);
- Quantum-enhanced probabilistic computing in symmetry-broken resonators (Stéphane Coen, Miro Erkintalo, Stuart Murdoch, Liam Quinn);
- Quantum-enabled Rydberg atomic polarimetry of radio-frequency fields, a new paradigm for antennae characterization (Niels Kjaergaard, Matthew Chilcott);
- Magnetic field sensing with individual dysprosium atoms (Mikkel Andersen, Liam Domett-Potts).
- Rare-earth nitride π -Josephson junctions as elements in superconducting quantum logic circuits (Simon Granville, Ben Ruck)

[Read more](#) and discover our international collaborators.

Collaboration with Republic of Korea

The Catalyst Strategic NZ–Korea Joint Research Partnerships programme has funded three joint projects in 2025, each for up to NZ\$450,000 over three years. They focus on quantum communication - a rapidly advancing field with transformative potential for secure data and future technologies. Researchers Jevon Longdell, Harald Schwefel and Stuart Murdoch are working in collaboration with Korean partners at Kyung Hee University and the Korea Advanced Institute of Science and Technology.

[Read more](#)



Kyung Hee University



Māori-led or partnered projects

These are co-developed Māori-led or partnered projects which seek to deepen partnerships with Māori enterprises and collectives through focused science and innovation activities. Vision Mātauranga aims to unlock the potential of Māori knowledge, people and resources for the benefit of New Zealand. It has four themes: Indigenous Innovation (Contributing to economic growth); Taiao (Achieving environmental sustainability); Hauora/Oranga (Improving health and social wellbeing) Mātauranga (Exploring indigenous knowledge).

Following a rigorous process led by the Deputy Director Māori, Katharina Ruckstuhl, two applications were successful: that of Dr Nathaniel Davis for his project: Harnessing Te Rā: Photon Splitting Solar Cells; and another by Professor Blair Blakie: Quantum Weaving: Connecting Quantum Fluids with Mātauranga Māori(traditional knowledge). [Read more](#)



Grant successes

Some 107 Marsden Fund projects have been announced by the Royal Society Te Apārangi. Well done to Joachim Brand, Ulrich Zülicke, and Michele Governale; Stuart Murdoch, Stéphane Coen and Miro Erkinato; Talia Xu; Keith Gordon; Nicholas Rattenbury and Simon Granville.

This year, two major interdisciplinary projects each received a \$3m Marsden Fund Council Award and our Centre is proud to be playing a part in both of them. Keith Gordon is in the group led by Phil Novis at the New Zealand Institute for Bioeconomy Science Limited which is studying the archaeological preservation of Māori rock art. And Nicholas Rattenbury is among the team led by Renate Meyer at the University of Auckland exploring currently unseen components of the universe.

A study of the behaviour of atoms at extreme temperatures has received an award of \$941k over 3 years. The work is being led by Joachim Brand, with Ulrich Zülicke and Michele Governale. They're collaborating with a wider team of researchers including those from Yale, the Max Planck Institute for Solid State Research and the Karlsruhe Institute of Technology.

A project on visible laser combs (highly specialised measurement devices) led by Stuart Murdoch with Stéphane Coen and Miro Erkinato received \$941k over 3 years. In what is a terrific effort from a newly appointed Associate Investigator, Talia Xu and team were successful Fast Start award recipients of \$360k over the same period to work on harnessing ambient light: a low-power solution for environmental sensor communication.

Finally, Affiliate Member Simon Granville, is collaborating with a team led by Dr John V Kennedy at Earth Sciences New Zealand to explore ways to recover and reuse waste heat energy from geothermal processes. The project won a standard award of \$941k over 3 years and there's considerable excitement about its potential.

Awards and Recognition

Professor John Harvey has been made a life member of the Australian and New Zealand Optical Society. The award followed a celebration of his career and his 80th birthday at the Australian and New Zealand Conference on Optics and Photonics in Auckland. It was fitting to have received the award from ANZOS, given it was John himself who convinced the Australian Optical Society (AOS) to incorporate NZ in 2020 for the purpose of advancing optics in both countries. John is considered a pioneer of optics and photonics in New Zealand. He is known for his drive and entrepreneurship in establishing Southern Photonics in 2001. [Read more](#) about his career and his considerable legacy.



Professor John Harvey life member, Australian and New Zealand Optical Society.

Selected Events

17–22 January, San Francisco, California, United States - Photonics West
Optics, photonics, lasers, and optoelectronic devices. It features a large exhibition and numerous technical sessions.

<https://spie.org/conferences-and-exhibitions/photonics-west/program/conferences>

28-30 April, Adelaide, Australia - Quantum Australia Building on the 2025 theme, The Translation of Quantum, the 2026 conference showcases how quantum is already delivering measurable productivity and efficiency gains, unlocking economic

growth, strengthening sovereign capability, and creating investable opportunities across critical sectors. <https://www.qac2026.com/quantum-australia-2026/>

16-17 June, Glasgow, Scotland - Optica 2026 Quantum Industry Summit This summit serves as a confluence for quantum companies and their prospective supply chain partners, designed explicitly to address the industry's demands and substantial challenges on the horizon.

https://www.optica.org/events/industry_events/2026/optica_2026_quantum_industry_summit/

7-11 December, Sydney, Australia - AIP congress co-located with ANZCOP. The AIP runs biennial congresses to bring the Australian Physics community together. It's informed by the Institutes' topical groups. In 2026 Sydney University will host the event <https://www.aip.org.au/Congress>



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