

Inaugural Symposium of the Dodd-Walls Centre for Photonics and Ultra Cold Atoms

Saturday, December 9

9:30am–10:35am ■ Public session

Prof. John D. Harvey, University of Auckland, Presider

9:30am **Welcome**

*Tom H. Barnes. Deputy Vice Chancellor (Research), University of Auckland.
Geoff White. Deputy Vice Chancellor (Research), University of Otago.*

9:45am **TBA**

Crispin W. Gardiner. University of Otago.

10:10am **TBA**

Charles W. Clark. National Institute of Standards and Technology, Gaithersburg (MD), USA.

Coffee break, Poster session, and Lunch (10:35am–1:00pm, Foyer area)

■ Posters

P1 — Experimental demonstration of similariton pulse compression in a comblike dispersion decreasing fiber amplifier

SungHoon Im, David Méchin, Vladimir I. Kruglov, and John D. Harvey. University of Auckland.

P3 — Use of microstructured polymer optical fibres (MPOF) in short-range communications systems

*Laura Harvey, Rainer Leonhardt, David Hirst, John D. Harvey, and M. Large[†]. University of Auckland.
[†] OSTC, University of Sydney, Australia.*

P5 — Direct measurement of fast high-contrast intensity noise of a cascaded Raman fibre laser

*Jochen Schröder, Frédérique Vanholsbeeck, Miguel González-Herráez[†], and Stéphane Coen. University of Auckland.
[†] CSIC, Spain.*

P7 — Laser phase and amplitude response to FM

Terry G. McRae, B. J. Field, and P. J. Manson. University of Otago.

P9 — Analytical and numerical design of lenses for Terahertz imaging

Sam Lo, Stuart G. Murdoch, and Rainer Leonhardt. University of Auckland.

P2 — Bragg scattering in optical fibres

Richard Provo, David Méchin, and John D. Harvey. University of Auckland.

P4 — Widely-tunable fibre optical parametric oscillator

*Gordon K. L. Wong, , Virgile Marie[†], Stuart G. Murdoch, Rainer Leonhardt, and John D. Harvey. University of Auckland.
[†] INSA de Rennes, France.*

P6 — Ultrafast Raman fibre laser

*Jochen Schröder, Stéphane Coen, Frédérique Vanholsbeeck, and Thibaut Sylvestre[†]. University of Auckland.
[†] Université de Franche-Comté, France.*

P8 — Resonance enhanced two photon absorption in CdSe/ZnS core/shell quantum dot films

*Regan Watts, Li Wang[†], Weiliang Chen[†], Ravi Jain[†], and John D. Harvey. University of Auckland.
[†] University of New Mexico, USA.*

P10 — Multi-functional fluorescence fibre probe

*Andy Y. H. Chen, Frédérique Vanholsbeeck, John D. Harvey, Bruce H. Smaill, Gaetan Van Simaey[†], and Dean C.-S. Tai. University of Auckland.
[†] Université Libre de Bruxelles, Belgium.*

P11 — Structural imaging of heart cells using optical coherence tomography

Sairam Iyer, Andy Y. H. Chen, Frédérique Vanholsbeeck, Stéphane Coen, and John D. Harvey. University of Auckland.

P13 — High finesse optical cavities in single atom detection

Jian Wei Tay and Murray Barrett. University of Otago.

P15 — Photon correlations in two-mode cavity QED

Matthias Kronenwett, A. Scott Parkins, and Howard J. Carmichael. University of Auckland.

P17 — Quantum stability in the midst of chaos

Mark Sadgrove, Sandro Wimberger[†], Terry Mullins, Andrew Hilliard, Scott Parkins, and Rainer Leonhardt. University of Auckland. [†] Politecnico di Torino, Italy.

P19 — Investigation of the stability of vortices in dilute Bose Einstein condensates using Hartree-Fock-Bogoliubov mean field theory

Bryan G. Wild and David A. W. Hutchinson. University of Otago.

P21 — Correlations between ultra-cold bosons in an optical lattice

Emese Toth and P. Blair Blakie. University of Otago.

P23 — Quantum scattering of distinguishable bosons using an ultracold atom collider

A. S. Mellish, N. Kjærgaard, P. S. Julienne, Stephan Wildermuth, Ina B. Kinski, Ana Rakonjac, Alex J. Barker, and Andrew C. Wilson. University of Otago.

P25 — Coherent manipulation of Bose-Einstein condensates on an atom chip

Paul A. Young and Robert J. Ballagh. University of Otago.

P27 — Heating of a BEC by mechanical perturbation

Tod M. Wright, Robert J. Ballagh, Crispin W. Gardiner, and Ashton S. Bradley[†]. University of Otago.

[†] University of Queensland, Australia.

P12 — Demonstration of strong coupling between single atoms and a high-Q microresonator

E. Wilcut, T. Aoki, B. Dayan, Warwick P. Bowen, A. Scott Parkins[†], H. J. Kimble, T. J. Kippenberg, and K. J. Vahala. University of Otago. [†] University of Auckland.

P14 — Quantum teleportation of resonance fluorescence: Analytical results for spectra and photon correlations

Chang-Suk Noh, Levente Horvath, and Howard J. Carmichael. University of Auckland.

P16 — The Dicke phase transition with an external electric field

Malkhaz Meladze, Matthew J. Collett, and Howard J. Carmichael. University of Auckland.

P18 — Path integral Monte Carlo approach to phase transitions in a two-dimensional trapped Bose gas

Daniel Schumayer and David A. W. Hutchinson. University of Otago.

P20 — Classical field theory for an ultra-cold Bose gas in an optical lattice

Wynton Moore and P. Blair Blakie. University of Otago.

P22 — Ultra cold atom collider

Ana Rakonjac and Andrew C. Wilson. University of Otago.

P24 — Towards experiments with ultracold bosonic, fermionic, and hetero-nuclear systems

Alex J. Barker, Ana Rakonjac, Ina B. Kinski, Stephan Wildermuth, and Andrew C. Wilson. University of Otago.

P26 — Effect of impurities on a 1D ultracold Bose gas

Wen-Xin Wang and David A. W. Hutchinson. University of Otago.

1:00pm–2:40pm ■ Australian Centres of Excellence & Ultracold Atoms I
Prof. Crispin W. Gardiner, University of Otago, Presider

- 1:00pm** **Frontiers in photonics — CUDOS, An Australian research council centre of excellence**
Ben J. Eggleton. CUDOS Director, University of Sydney, Australia.
- 1:20pm** **TBA**
Peter D. Drummond. University of Queensland, Australia.
- 1:40pm** **Atom optics theory at Otago**
Robert J. Ballagh. University of Otago.
- 2:00pm** **TBA**
Andrew C. Wilson. University of Otago.
- 2:20pm** **Solitons in Bose-Einstein condensates**
Joachim Brand. Massey University.

Afternoon tea (2:40pm–3:10pm, Foyer area)

3:10pm–5:00pm ■ Photonics
Prof. Andrew C. Wilson, University of Otago, Presider

- 3:10pm** **Photonics and biophotonics research in Auckland**
John D. Harvey. University of Auckland.
- 3:40pm** **Terahertz spectroscopy**
Rainer Leonhardt. University of Auckland.
- 4:00pm** **Applications of nonlinear fiber optics**
Stuart G. Murdoch. University of Auckland.
- 4:20pm** **The Canterbury ring-laser project**
Jon-Paul Wells. University of Canterbury.
- 4:40pm** **The interface between quantum optics and photonics**
Warwick P. Bowen. University of Otago.

Symposium dinner (6:30pm, Portside — 132 Hasley Street, Viaduct West)

Sunday, December 10

9:30am–10:50am ■ Quantum Optics *Prof. Robert Ballagh, University of Otago, Presider*

- 9:30am **Quantum stochastic processes for composite systems**
Howard J. Carmichael. University of Auckland.
- 9:50am **A dipole trap for quantum information applications**
Maarten D. Hoogerland. University of Auckland.
- 10:10am **Investigations in cavity QED**
Scott Parkins. University of Auckland.
- 10:30am **Quantum statistical measurements of an atom laser beam**
Murray K. Olsen^a, Ashton S. Bradley^a, Simon A. Haine^b, and Joseph J. Hope^b.
^a *University of Queensland, Australia.* ^b *The Australian National University, Australia.*

Coffee break (10:50pm–11:20pm, Foyer area)

11:20am–1:00pm ■ Ultra Cold Atoms II *Prof. Howard J. Carmichael, University of Auckland, Presider*

- 11:20am **Novel phases in two-dimensional ultracold gases**
David A. W. Hutchinson. University of Otago.
- 11:40am **Ultracold bosons — Correlations and optical lattices**
P. Blair Blakie. University of Otago.
- 12:00pm **Many-body physics with ultra-cold gases**
Matthew J. Davis. University of Queensland, Australia.
- 12:20pm **TBA**
Matthew J. Collett. University of Auckland.
- 12:40pm **An analog model for an expanding universe in a BEC**
Piyush Jain. University of Otago.

Lunch (1:00pm, Foyer area)
