
Conference programme

A word cloud of scientific and technical terms related to waves and acoustics. The words are arranged in a roughly circular pattern, with varying sizes and orientations. The largest words are 'Water', 'waves', 'Mathematical', 'modelling', 'Numerical methods', and 'Metamaterials'. Other prominent words include 'Acoustic waves', 'Elastic waves', 'Nonlinear waves', 'Forward scattering', 'Inverse scattering', 'Industrial applications', 'Gravitational waves', 'Electromagnetic waves', 'Experimental modelling', 'Homogenisation', 'Acoustic coatings', 'Cloaking', 'Wave energy converters', 'Soliton methods', 'Seismic waves', and 'Sea ice'. The colors range from light blue to dark blue.

General relativity Inverse scattering Acoustic coatings
Industrial applications Forward scattering
Mathematical Nonlinear waves Cloaking
Water Elastic waves Gravitational waves
modelling Homogenisation
waves
Experimental modelling
Electromagnetic waves Wave energy converters
Numerical methods
Metamaterials
Acoustic waves Soliton methods
Seismic waves
Sea ice

Wednesday, 31st January

- 08:45-09:00** Welcome
- 09:00-10:40** Session 1: Acoustic wave scattering (chair: Fabien Montiel)
- 09:00** **Invited Speaker:** David Abrahams (University of Cambridge, UK)
Analytical approaches to the design of acoustic metamaterials and metasurfaces
- 09:50** Afnan Aldosri (University of Newcastle, OZ)
Solving wave scattering problem in waveguides
- 10:15** Alex McIntosh (University of New South Wales, OZ)
Sound scattering by monopolar and dipolar type resonators in a soft coating
- 10:40-11:10** Morning tea
- 11:10-12:50** Session 2: Water wave/structure interactions (chair: Thomas Adcock)
- 11:10** Hugh Wolgamot (University of Western Australia, OZ)
Generalised phase manipulation for water wave-structure interaction
- 11:35** Alex Skvortsov (Defence Science and Technology Group, OZ)
Surface water waves generated by a moving piercing cylinder
- 12:00** Aidan Archer (University Of Western Australia, OZ)
Reductions in jacket drag loads and enhancements in tidal turbine power: a new actuator disc model for water wave and current loads in a channel
- 12:25** Mathieu Sellier (University of Canterbury, NZ)
Identification of rheological parameters for shallow water flows of viscoplastic fluids using elevation hydrographs
- 12:50-13:50** Lunch
- 13:50-15:30** Session 3: Earth and space science (chair: Chris Stevens)
- 13:50** **Invited Speaker:** Jen Andrews (GNS Science, NZ)
Earthquake early warning and rapid characterisation: a few years spent chasing seconds
- 14:40** Romain Meyrand (University of Otago, NZ)
Stochastic echoes in collisionless plasmas
- 15:05** Jonathan Squire (University of Otago, NZ)
Switchbacks: nonlinear magnetic waves in the solar wind
- 15:30-16:00** Afternoon tea
- 16:00-17:40** Session 4: Wave/ice interactions (chair: Sophie Thery)
- 16:00** Alberto Alberello (University of East Anglia, UK)
Wave directionality in sea ice
- 16:25** Martin Forbes (University of Otago, NZ)
Evaluating sea ice models in WAVEWATCH III®
- 16:50** Rafa Santana (NIWA, NZ)
Modelling Antarctic sea ice variability using a brittle rheology
- 17:15** Luke Bennetts (University of Adelaide, OZ)
A thin plate approximation for ocean wave interactions with an ice shelf
- 17:40** End of day 1

Thursday, 1st February

- 08:55-09:00** Housekeeping
- 09:00-10:40** Session 5: Wave energy (chair: Ben Wilks)
- 09:00** **Invited Speaker:** Nataliia Sergiienko (University of Adelaide, OZ)
Using wave energy converters to protect coasts and offshore structures
- 09:50** Amy-Rose Westcott (University of Adelaide, OZ)
Broadband energy capture by an array of heaving buoys
- 10:15** Vladislav Sorokin (University of Auckland, NZ)
A point absorber Wave Energy Converter for supplying energy to aquafarms
- 10:40-11:10** Morning tea
- 11:10-12:50** Session 6: Metamaterials (chair: Kei Matsushima)
- 11:10** Sophie Thery (University of Canterbury, NZ)
Cloaking in water waves by thin floating plates
- 11:35** Ali Adham (University of Auckland, NZ)
Broadband attenuation regions in finite structures with graded resonators
- 12:00** Frances Fulton (University of Auckland, NZ)
Nonlinear Periodically Attached Absorbers for Vibration Transmission Mitigation in Linear Structures
- 12:25** Ann Roberts (University of Melbourne, OZ)
Beyond traditional optics: metasurfaces in image processing
- 12:50-13:50** Lunch
- 13:50-15:30** Session 7: Physical Oceanography (chair: Hugh Wolgamot)
- 13:50** **Invited Speaker:** Ton van den Bremer (TU Delft, Netherland)
The role of surface gravity waves in transporting floating marine pollution
- 14:40** Thomas Adcock (University of Oxford, UK)
Predicting tidal waves: a recasting of Munk & Cartwright's response method facilitated by machine learning
- 15:05** Christo Rautenbach (NIWA, NZ)
Wave set-up in constricted estuaries
- 15:30-16:00** Afternoon tea
- 16:00-17:15** Session 8: Gravitational waves and general relativity (chair: Jonathan Squire)
- 16:00** Jörg Frauendiener (University of Otago, NZ)
Gravitational waves: a conceptual introduction
- 16:25** Chris Stevens (University of Canterbury, NZ)
Gravitational waves: a numerical exploration of the global scattering problem
- 16:50** Joerg Hennig (University of Otago, NZ)
Soliton methods and the black hole balance problem
- 17:15** End of day 2
- 18:30-22:30** Conference dinner at Larnach Castle

Friday, 2nd February

- 08:55-09:00** Housekeeping
- 09:00-10:40** Session 9: Numerical methods in wave propagation (chair: Marie Graff)
- 09:00** **Invited Speaker:** Marcus Grote (University of Basel, Switzerland)
Explicit local time-stepping methods for wave propagation
- 09:50** Ben Wilks (University of Otago, NZ)
Canonical time-domain scattering in one dimension using the generalised eigenfunction expansion method
- 10:15** Stuart Hawkins (Macquarie University, OZ)
A numerically stable T-matrix algorithm
- 10:40-11:10** Morning tea
- 11:10-12:50** Session 10: Forward/inverse scattering (chair: Stuart Hawkins)
- 11:10** Marie Graff (University of Auckland, NZ)
Recent advances on the Adaptive Eigenspace Inversion method
- 11:35** Matthew Fernandes (Macquarie University, OZ)
An efficient surrogate model for acoustic multiple scattering
- 12:00** Kei Matsushima (University of Tokyo, Japan)
On Rayleigh-Bloch waves swapping between physical and unphysical Riemann sheets
- 12:25** Malte Peter (Universität Augsburg, Germany)
Identification of microstructural information from macroscopic boundary measurements in linear elasticity
- 12:50-13:50** Lunch
- 13:50-15:30** Session 11: Photonics and metamaterials (chair: Ann Roberts)
- 13:50** **Invited Speaker:** Teri Odom (Northwestern University, USA)
Moiré Nanophotonics
- 14:40** Tristan Lawrie (University Of Nottingham, UK)
A Quantum Graph Approach to Metamaterial Design
- 15:05** John Lekner (Victoria University of Wellington, NZ)
Theory of electromagnetic pulses
- 15:30-16:00** Afternoon tea
- 16:00-16:50** Session 12: Low-frequency ocean waves (chair: Rafa Santana)
- 16:00** Rehab Aljabri (University of Newcastle, OZ)
Time-Dependent vibrations of an ice shelf
- 16:25** Mike Meylan (University of Newcastle, OZ)
Simulation of three-dimensional tsunami waves including static compression.
- 16:50-17:00** Conference wrap-up