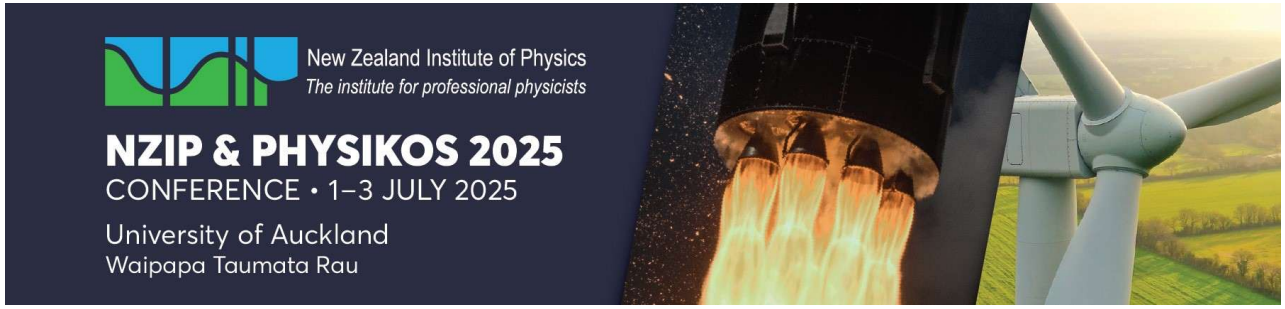

Draft Programme v4 June 2025

DAY 1 – Tuesday 1 July			
08:00	**Check in open**		
08:45	**Conference Opening: Mihi whakatau & Welcome**		
09:15	**Keynote: Nicole Bell**		
10:00	**Morning Tea + Exhibition open**		
10:45 - 12:15	**Session 1A: General**	**Session 1B: Education**	**Session 1C: Education**
10:45	Ocean monitoring using optical interferometry in subsea cables **Annette Koo**	A critical examination of generative AI technology **Benny Pan**	Why is thinking in Physics so difficult for many students? What are the issues? How can we help students learn to take the risks required? **Sue Napier**
11:00			
11:15	Why your battery meter tells lies and it's hard to fix: Effect of pauses in cycling on sub-millihertz battery impedance **Marcus Wilson**		Learning How to Learn through Self-Assessment: A Study Skills Survey Tool for Secondary School Students **Yuanyuan Hu**
11:30	Measuring human vision – history of the photopic response curve **Ellie Molloy**		
11:45	Development of Microfluidic Ion Pipette Aspiration (IPA) for Single-Particle Mechanical Characterization **Chi Minh Truong**	The Visible Spectrum of Physics Students: Promoting Diversity in Physics Classrooms **Thalia Rutherfurd**	First-Year Physics and High School Outreach at Otago **Blair Blakie**
12:00	Analysis and Segmentation of AI-Denoised Propagation-Based X-ray Phase-Contrast CT Images of the Breast **Amritha Ramchandar**		

12:15	**Lunch in the Exhibition Area**		
13:15-14:45	**Session 2A: General**	**Session 2B: Education**	**Session 2C: Education**
13:15	What is driving recent changes in Antarctic sea ice? **Inga Smith**	AI in the Classroom: Enhancing Teaching and Guiding Responsible Use **Kate Jackson**	Physics courses in NZ High schools; different pathways in a selection of schools **Jeffery Yang**
13:30			
13:45	An MSci physics student co-created Northern Lights simulator, building, testing, and impact **Ian Whittaker**	Lighting Up Physics: Hands-On Electricity and Electromagnetism for Secondary School Students **Dulsha Kularatna-Abeywardana & Rajith Abeywardana**	Practicals: Why do we do practicals **Chris Currie & Mark Standley**
14:00	Big Bang Matter and Neutron Stars **Arno Tripolt**		
14:15	Modelling and Analysis of Semiconductor Lasers Subject to Fiber Bragg Grating Feedback **Joe Steele**		
14:30	Temperature-dependent photoluminescence in rare-earth-doped $NaMgF_3$ **Shen Chong**		
14:45	**Afternoon Tea in the Exhibition Area**		
15:15-16:45	**Session 3A: General**	**Session 3B: Education**	**Session 3C: Education**
15:15	Galactic Archaeology in the Southern Sky **Clair Worley**	Teaching L2 mechanics and electricity with a potpourri of experiments, demonstrations, applets and videos etc. **Sue Napier & Brenda MacKechnie**	Rheostats, Eclipses, Planks, Surprises and Non-Sequiturs. A collection of small things that are useful and fun for teachers and students **Haggis Henderson**
15:30			
15:45	An analogy between chemical and magnetic nozzles from the perspective of numerical simulations **Sashin Leuke Bandara Karunaratne**		
16:00	Controlling the activity of intrinsic and extrinsic defects in doped SnO2 by ion implantation and annealing **Abubakar Sadiq Yusuf**	NCEA External Assessment – an NZQA perspective **Ian Phillips**	
16:15	The Effects of Non-hydrostatic Pressure and Shear on Silicon Carbide **Samuel Case**		
16:30	Bound Excited States of Fröhlich Polarons in One Dimension **Jamie Taylor**	An update - Curriculum, NCEA and NEX **Dave Thrasher & David Housden**	
16:45	Odd-frequency superfluidity from a particle-number-conserving perspective **Joachim Brand**		

17:00	**Poster Networking Session in the Exhibition Area**
19:00	**PUBLIC LECTURE – Panel Discussion "*Quantum Centuries*"** **MC Kim Hill** PLT1 Lecture Theatre, University of Auckland, Science Centre Building 303 (23 Symonds Street)

DAY 2 – Wednesday 2 July

08:30	**Registration desk & Exhibition Open**			
09:00	**Day 2 Welcome**			
09:15	**Keynote: Professor Manjula Sharma "*Rigour, relevance and reflection in physics education*"**			
10:00	**Morning Tea in the Exhibition Area**			
10:30-12:00	**Session 4A: Quantum Technologies Aotearoa**	**Session 4B: General**	**Session 4C: Education**	**Session 4D: Education**
10:30	Search for Chaos in the Quantum Three-Body Problem **Alex Kerin**	Materials for magnonics - optimised spin-wave propagation in magnetic Heusler alloys Co2MnGa1-xGex **Simon Granville**	Harnessing AI to Revolutionize Physics Education: Planning, Teaching, and Assessment **Kris Bhatt**	Folk Music Physics. Songs that boost retention of key ideas **Haggis Henderson**
10:45				
11:00	How to make a p-wave superfluid with ultracold molecules? **Satyanand Kuwar**	Should we be teaching science communication skills - who should be the audience and what do we need to cover? **Ian Whittaker**		From the takoto to the qubit – the story of measurement in New Zealand **Ellie Molloy & Annette Koo**
11:15	Pulsed Squeezed Driving of a Two-Level Atom as a Source of Wigner Negative Light **Rory Robertson**	Dynamics of Brownian Janus Spheres **Stephen Chung**		
11:30	Multimode photon correlations from a single atom **Alex Elliott**	AC voltage standard **Vladimir Bubanja**		
11:45	Lattice Bose polarons near a quantum phase transition **Matija Cufar**			Physics Scholarship Workshop **Matt McGovern**
12:00	**Lunch in the Exhibition Area**			
13:00	**Keynote: Andrew Doherty**			

14:00 - 15:00	Session 5A: Quantum Technologies Aotearoa	Session 5B: Education	Session 5C: Education
14:00	Entangled photon-pair emission in waveguide circuit QED from a Cooper pair splitter **Michele Governale**	Rural Physics-Contexts for reaching students from rural backgrounds **Haggis Henderson**	Quantum – What is the Hype? **Brenda MacKechnie**
14:15			
14:30	Inserting magnetic semiconductors into superconducting Josephson junctions **Ben Ruck**	Simple Harmonic Motion guided teaching with simulations, quizzes and graphing programs **Jeffery Yang**	
14:45			What I learned from doing Master's research in physics education **Matt McGovern**
15:00	**Afternoon Tea in the Exhibition Area**		

15:30 – 17:00	Session 6A: Quantum Technologies Aotearoa	Session 6B: General	Session 6C: Education	Session 6D: Education
15:30	Interfacing cold atoms with an optical nanofiber **Wayne Crump**	TBC **Richard Easther**	Testing Student-Focused STEM Workshops with Teachers: A Hands-On Electronics and Computing Experience **Wesley Key & Neha Desu**	Dark Matter and Gravitational Wave Detection: From the Lab to the Classroom **Jackie Bondell & Laura Burn**
15:45				
16:00	Progress towards coherent transduction in a monolitihic triple resonant electro-optic device **Nicholas Lambert**			
16:15	Maximum likelihood estimations for analysing photon counts in few atom experiments **Marvin Weyland**	Melting of noble gas systems under extreme conditions **Diana Yu**	DC Circuits L2 **Chris Currie & Mark Standley**	Names of colleagues, students, places and concepts in Te Reo. A revisit from 2021 PLUS Mātauranga Māori and Physics: Some examples and contexts **Haggis Henderson &** **Mat Synge**
16:30	Long optical coherence times in a rare-earth-doped antiferromagnet **Masaya Hiraishi**	First Principles Study of Square Tin-Oxide Nanotubes and Surface Modified Derivatives **Alex Barnes**		
16:45	Quantum properties of parametrically driven cavity solitons in a bichromatically driven Kerr resonator **Sophie Shamailov**	TBC		
	Break			
18:30 - late	**Conference Dinner @ Maritime Room**			

DAY 3 – Thursday 3 July			
08:30	**Registration desk & Exhibition Open**		
08.55	**Day 3 Welcome**		
09:00	**Physics in the real world** 9.00am: Space Weather risk to New Zealand: Collaborative response by the Solar Tsunami research team and Industry – Daniel Mac Manus 9.30am: Physics and Physicists at Rocket Lab - Hamish McDonald 10.00am: OpenStar Technologies: Exploring the Levitated Dipole as a Commercial Fusion Reactor - Craig Chisholm		
10:30	**Morning Tea in the Exhibition Area**		
11:00 - 12:30	**Session 7A: Quantum Technologies Aotearoa**	**Session 7B: Education**	**Session 7C: Education**
11:00 11:15	A shorter introduction to Quantum-computing Aided Composition (QAC) **Omar Costa Hamido**	Reflection in linear videos **Manjula Sharma**	NCEA Internal Assessment – an NZQA perspective **Raymond Neal**
11:30 11:45	Rare-Earth ions in CaF_2 nanoparticles for scalable quantum technologies **Michael Moull**		Showcasing our Smart Carts: Co-design an outreach activity with us! **Ashleigh Fox & Jenny Nguyen**
12:00	Three, Four and More Body Spinor Interactions via Nanofibre Cavity QED **Thomas Clarkson**		
12:15	Nonlinear Dynamics of Coupled Light-Matter Systems **Ofri Adiv**		
12:30	**Lunch in the Exhibition Area**		
13:30-15:00	**Session 8A: Quantum Technologies Aotearoa**	**Session 8C: Education**	**Session 8D: Education**
13:30 13:45	Progress towards simplified measurement schemes for optomechanical quantum-correlation thermometers **Ana Rakonjac**	NCEA Internal Assessment – an NZQA perspective (repeat) **Raymond Neal**	Python notebook for illustrating electrodynamics concepts like AC current/voltage, phasors and resonances (year 13 NCEA content) **Elke Pahl & Tristan O'Hanlon**
14:00	Analysis of frequency-dependent coupling for Josephson parametric devices **Waltraut Wustmann**		
14:15 14:30	Storing single photons in a rare-earth doped crystal **Luke Trainor**	Astronomy – Stars & Exoplanets **Chris Currie & Mark Standley**	

14:45	Trapping Dysprosium in a Magnetic Optical Trap Directly from a Thermal Beam **Liam Domett-Potts**		
15:00-15:30	**Closing Session & student awards**		

POSTER PRESENTATIONS Poster Session: Tuesday 1 July 2025, 17:00 – 19:00 Location: Exhibition Area		
P.01	Measuring 6Li(n,3H)4He Reaction Cross-Sections in the 1970's for Today's Requirements	Murray Bartle
P.02	Odd-frequency superfluidity from a particle-number-conserving perspective	Joachim Brand
P.03	Tracking a Space Mission: Engaging Classrooms with the Hēki Mission Aboard the International Space Station	Tane Butler
P.04	An in-depth Study of Phase-Shifted EPR-Bell States	J.J. Joshua Davis
P.05	Dynamics of Multiple Fields in Ultra-Light Dark Matter Models	Leon Ge
P.06	Microwave to Optical Frequency Conversion in Rare Earth Ions	Gavin King
P.07	Sea ice GPS trackers confirm the existence of the Victoria Land Coastal Current	Inga Smith
P.08	Can we have Newtonian Solitons in the Early Universe?	Chiara Testini
P.09	Engaging Foundation year students with the personal tutorial system	Ian Whittaker

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