

8:00 AM	Monday, 06 December		Tuesday, 07 December							Wednesday, 08 December							Thursday, 09 December						
8:30 AM			Conference Open							Plenary							Plenary						
9:00 AM			Plenary							Plenary							Plenary						
9:30 AM			Coffee							Coffee							Coffee						
10:00 AM			Session I.1 CMP 1	Session I.2 QST 1	Session I.3 AMO 1	Session I.4 NP 1	Session I.5 Education 1	Session I.6 Astro 1		Session IV.1 CMP 4	Session IV.2 QST 4	Session IV.3 AMO 4	Session IV.4 NP 3	Session IV.5 TP 1	Session IV.6 Astro 3	Education Workshop I	Session VII.1 CMP 7	Session VII.2 QST 8	Session VII.3 AMO 7	Session VII.4 NP 5	Session VII.5 TP 3	Session VII.6 Biophysics 1	
10:30 AM			Lunch							Lunch							Lunch						
11:00 AM			Session II.1 CMP 2	Session II.2 QST 2	Session II.3 AMO 2	Session II.4 (FS) Dark Matter Particle Physics	Session II.5 (FS) Topological States of Matter	Session II.6 (FS) Quantum Biotechnology	Quantum Technology Workshop 2021	Session V.1 CMP 5	Session V.2 QST 5	Session V.3 AMO 5	Session V.4 (FS) Precision Particle Physics and Anomalies	Session V.5 (FS) Scanning Probe Microscopy of Condensed Matter Systems	Session V.6 (FS) Electronic and Magnetic Properties of MOF	ECA Pitch Session	Session VIII.1 CMP 8	Session VIII.2 QST 9	Session VIII.3 (FS) Nanophotonics and Quantum Meta-Optics	Session VIII.4 Medical	Session VIII.5 (FS) Molecular Switches	Session VIII.6 Biophysics 2	Quantum Next Generation Pitchfest 2021
11:30 AM			Coffee							Coffee							Coffee						
12:00 PM			Session III.1 CMP 3	Session III.2 QST 3	Session III.3 AMO 3	Session III.4 NP 2	Session III.5 Education 2	Session III.6 Astro 2		Session VI.1 CMP 6	Session VI.2 QST 6	Session VI.3 AMO 6	Session VI.4 NP 4	Session VI.5 TP 2	Session VI.6 Astro 4	Education Workshop II		Session IX.2 QST 10	Session IX.3 AMO 8	Session IX.4 Bragg and TH Laby Medal Session		Session IX.6 Biophysics 3	
12:30 PM			Lunch							Lunch							Lunch						
1:00 PM	Registration S Block, Level 12	Pitchmasters! The Foundry, B Block Level 2	Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
1:30 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
2:00 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
2:30 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
3:00 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
3:30 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
4:00 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
4:30 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
5:00 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
5:30 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						
6:00 PM			Poster Session (Virtual)							Poster Session (In-Person)							Poster Session (Virtual)						

Tuesday, 07 December													
8:30 AM		9:00 AM		Opening Address (GP-Z-401)									
9:00 AM		10:00 AM		Plenary Lecture The Physics of Respiratory Particle Generation, Fate in the Air, and Inhalation Distinguished Professor Lidia Morawska, Queensland University of Technology GP-Z-401									
10:00 AM		10:30 AM		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)									
Room: GP-Z-401		Room: GP-Z-406		Room: GP-S-403		Room: GP-S-410		Room: GP-S-301		Room: GP-S-314			
Session I.1: Condensed Matter & Materials Physics (I) Chair: Iolanda Di Bernardo		Session I.2: Quantum Science & Technology (I) Chair: Behnam Tonekaboni		Session I.3: Atomic, Molecular, Optical Physics (I) Chair: Jacinda Ginges		Session I.4: Nuclear Physics (I) Chair: Ray Volkas		Session I.5: Education (I) Chair: Margaret Wegener		Session I.6: Astrophysics and Space Physics (I) Chair: Brad Carter			
10:30 AM	11:15 AM	10:30 AM	10:45 AM	10:30 AM	11:00 AM	10:30 AM	11:00 AM	10:30 AM	10:45 AM	10:30 AM	11:15 AM		
(Keynote) Growth modes of 2D graphene heterostructures: substrate effects vs applications Nunzio Motta, Queensland University of Technology		Uncovering the quantum nature of time: the search for a physical signature Joan Vaccaro, Griffith University		(Invited) Towards Undersea Operations of an Atomic Magnetometer for Magnetic Anomaly Detection Ben Sparkes, University of Adelaide		(Invited) The Capture of Dark Matter in Stars Nicole Bell, University of Melbourne		The amazing secrets of band six (and what you should know) Simon Crook, University of Sydney		(Keynote) A New Window on the Radio Sky Tessa Venstrom, CSIRO			
11:15 AM	11:30 AM	10:45 AM	11:00 AM	11:00 AM	11:15 AM	10:45 AM	11:00 AM	10:45 AM	11:00 AM	11:15 AM	11:30 AM		
Topological analysis of disordered 3D graphenes Jacob William Martin, Curtin University		A No-Go Theorem for Superpositions of Causal Orders Fabio Costa, University of Queensland		Witnessing quantum memory in non-Markovian processes Christina Giarmatazi, University of Technology Sydney		Isotopic shift spectroscopy and atomic structure calculations for forbidden transitions in Yb John McFerran, University of Western Australia		Improved Treatment of Dark Matter Capture in Neutron Stars Michael Virgato, University of Melbourne		A unique assessment to combat plagiarism in an online astronomy course Kate Jackson, University of New South Wales		Switching to online delivery: The affordances and constraints involved in the approaches adopted by three universities Srividya Durga Kota, University of Sydney	
11:30 AM	11:45 AM	11:15 AM	11:30 AM	11:15 AM	11:30 AM	11:15 AM	11:30 AM	11:15 AM	11:30 AM	11:15 AM	11:30 AM		
Desktop ultra-high temperature furnace Joss Fagg, Curtin University		Implications of Local Friendliness violation for quantum causality Eric Cavalcanti, Griffith University		Zeeman Sub-level Raman Sideband Cooling 171Yb+ Jordan Scarabel, Griffith University		Cosmological Primordial Black Holes as Dark Matter Zachary Picker, University of Sydney		Physics anywhere, anytime and quickly: Setup and Use of a Mini-Film-Studio for laboratory live-streaming, Physics outreach and rapid content creation Thomas Dixon, University of New South Wales		The Australian-led Keck Wide-Field Imager: The most powerful camera in the world and what it can do for you Jeff Cooke, Swinburne		Physical black holes and their properties Daniel Terno, Macquarie University	
11:45 AM	12:00 PM	11:30 AM	11:37 AM	11:30 AM	11:45 AM	11:45 AM	12:00 PM	11:45 AM	12:00 PM	11:45 AM	12:00 PM		
Go203 as a large area, passivation and protection layer on CVD Graphene Matthew Gebert, Monash University		Wigner and his Friend's Recursive Experiment Anibal Utreras-Alarcon, Griffith University		Power-law intensity distributions in emission spectra of complex atoms and nuclei Julian Berengut, University of New South Wales		Dark Matter, Black Holes and Phase Transitions Michael Baker, University of Melbourne		Radiation pattern in the Quark Nugget model of Dark Matter Igor Samsonov, University of New South Wales		Search for a variation of the fine-structure constant around the supermassive Black Hole in our Galactic Centre Benjamin Roberts, University of Queensland		Classical causal models cannot faithfully explain Bell nonlocality or Kochen-Specker contextuality in arbitrary scenarios Jason Pearl, Griffith University	
12:00 PM	1:00 PM	11:37 AM	11:45 AM	11:45 AM	12:00 PM	11:45 AM	12:00 PM	11:45 AM	12:00 PM	11:45 AM	12:00 PM		
Demonstrating Multiparty Steering from Stochastically Shared Entanglement Alex Pepper, Griffith University		"Why" the quantum: towards a semantics of counterfactuals in quantum causal models Ardra Kooderi Suresh, Griffith University		Lunch GP-S-1215 (Owen J. Wordsworth Room)		Lunch GP-S-1215 (Owen J. Wordsworth Room)		Lunch GP-S-1215 (Owen J. Wordsworth Room)		Lunch GP-S-1215 (Owen J. Wordsworth Room)		Lunch GP-S-1215 (Owen J. Wordsworth Room)	
Session II.1: Condensed Matter & Materials Physics (II) Chair: Benjamin Lowe		Session II.2: Quantum Science & Technology (II) Chair: Howard Wiseman		Session II.3: Atomic, Molecular, Optical Physics (II) Chair: Yuri Kivshar		Session II.4 (Focused): Dark Matter Particle Physics Chair: Cedric Simenel		Session II.5 (Focused): Topological States of Matter Chair: Semonti Bhattacharyya		Session II.6 (Focused): Quantum Biotechnology Chair: Liam Hall		Quantum Technology Workshop 2021 Chair: Marcus Doherty	
1:00 PM	1:30 PM	1:00 PM	1:45 PM	1:00 PM	1:45 PM	1:00 PM	1:20 PM	1:00 PM	1:22 PM	1:00 PM	1:22 PM	1:00 PM	3:00 PM
(Invited) Surface-Assisted Molecule-Molecule Hybridization: From Lifts of Energy Degeneracy to 2D Molecular Bands Jack Hellerstedt, Monash University		(Keynote) Rise of the Machines: Making better photons by getting rid of experimentalists Andrew White, University of Queensland		(Keynote) Nanoscale structural colour Ann Roberts, University of Melbourne		A southern Hemisphere Perspective on Dark Matter Elisabetta Barberio, University of Melbourne		Topology in Disordered Materials Julie Karel, Monash University		Beyond Phosphine on Venus: How do we know if we've found aliens Laura McKemmish, University of New South Wales		Deep-tissue sensing: Ultrafast photochemistry makes near-infrared nanothermometers brighter Blanca del Rosal, RMIT University	
1:30 PM	1:45 PM	1:45 PM	2:00 PM	1:45 PM	2:00 PM	1:40 PM	2:00 PM	1:24 PM	1:48 PM	1:48 PM	2:12 PM	1:48 PM	2:12 PM
Interaction-induced magnetism in 2D Kagome metal-organic frameworks on substrates Bernard Field, Monash University		The Heisenberg limit for laser coherence Travis Baker, Griffith University		Machine learning for distributed optical fibre temperature sensing Darcy Smith, University of Adelaide		Simulation and astrophysical insights into dark matter Alan Duffy, Swinburne University of Technology		Crossover from 2D ferromagnetic insulator to wide bandgap quantum anomalous Hall insulator in ultra-thin MnBi2Te4 Chi Xuan Trang, Monash University		Fluorescent nanodiamonds: creating reliable nanosensors for biology Philipp Reineck, RMIT University		Quantum Measurements of Ferritin-Bound-Iron: Magnetic Behaviour Correlates with Change in Core Morphology Erin Grant, University of Melbourne	
1:45 PM	2:00 PM	2:00 PM	2:15 PM	2:00 PM	2:15 PM	2:00 PM	2:20 PM	1:48 PM	2:12 PM	1:48 PM	2:12 PM	1:48 PM	2:12 PM
Stable crosslinked gate electrodes for OTFT sensors Joshua Arthur, Queensland University of Technology		Superabsorption in an organic microcavity: towards a quantum battery James Quach, University of Adelaide		Crosslinked interfacial layer for Ink-Jet Printed TADF Polymer OLEDs Cameron Cole, Queensland University of Technology		The ORGAN Experiment: Current Status, Future Plans, and Other Dark Matter Experiments at UWA Ben McAllister, University of Western Australia		Radioimpurity Measurements for Dark Matter Detection Zuzana Slavkova, Australian National University		Majorana zero modes in one- and two-dimensional magnet-superconductor hybrid systems Stephan Rachel, University of Melbourne		Improving the performance of quantum sensors using robust control Viktor Perunich, Q-Ctrl	
2:00 PM	2:15 PM	2:15 PM	2:30 PM	2:15 PM	2:30 PM	2:20 PM	2:40 PM	2:12 PM	2:36 PM	2:12 PM	2:36 PM	2:12 PM	2:36 PM
Towards High-Temperature Light-Induced Spin State Trapping: Insights From the Crystal Field Theory and Molecular Dynamics Muhammad Nadeem, University of Queensland		Limits of Quantum Key Distribution Protocols Sebastian Kish, Australian National University		Coupling a fiber to a chip waveguide via a graded index fiber Yongsop Hwang, University of South Australia		Recent GAMBIT results on dark matter Martin White, University of Adelaide		Understanding and improving robustness of topological phases in nanodevices S. N. Coppersmith, University of New South Wales		Quantum Measurements of Ferritin-Bound-Iron: Magnetic Behaviour Correlates with Change in Core Morphology Erin Grant, University of Melbourne		Improving the performance of quantum sensors using robust control Viktor Perunich, Q-Ctrl	
2:15 PM	2:30 PM	2:30 PM	2:37 PM	2:30 PM	2:45 PM	2:40 PM	3:00 PM	2:36 PM	3:00 PM	2:36 PM	3:00 PM	2:36 PM	3:00 PM
Computing energy band alignment at the hybrid organic-inorganic semiconductor interfaces Mykhailo Klymenko, RMIT University		Overcoming the repeaterless bound in continuous-variable quantum communication without quantum memories Matthew Scott Winnell, University of Queensland		Smart bed multimode optical fiber specklegram sensor array Stephen Warren-Smith, University of South Australia		Probing Dark Sectors with Evaporating Black Holes Michael Baker, University of Melbourne		Topological Spin Textures Beyond Skyrmions O.A. Tretiakov, University of New South Wales		Quantum Measurements of Ferritin-Bound-Iron: Magnetic Behaviour Correlates with Change in Core Morphology Erin Grant, University of Melbourne		Improving the performance of quantum sensors using robust control Viktor Perunich, Q-Ctrl	
2:30 PM	2:45 PM	2:45 PM	3:00 PM	2:45 PM	3:00 PM	2:45 PM	3:00 PM	2:36 PM	3:00 PM	2:36 PM	3:00 PM	2:36 PM	3:00 PM
Synthesis of Freestanding Covalent Organic Framework Membranes via Solvothermal Annealing using a Ternary Solvent System Nikka Turangan, Queensland University of Technology		The Mount Stromlo Optical Communication Ground Station Marcus Birch, Australian National University		Artificial Neural Network Decoding for the Surface Code Spiro Gicev, University of Melbourne		Aberration correction for printed microstructures Declan Armstrong, University of Queensland		On-surface flattening of C60 molecules utilizing atomic H Steven Best, Queensland University of Technology		A New Metric for Benchmarking Quantum Annealing Hardware Sophie Stearn, Australian National University		A Novel Approach to Cosmic Ray Transport through Supersonic Magnetised Turbulence Matt Sampson, Australian National University	
2:45 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM
Coffee Break GP-S-1215 (Owen J. Wordsworth Room)		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)		Coffee Break GP-S-1215 (Owen J. Wordsworth Room)	
Session III.1: Condensed Matter & Materials Physics (III) Chair: Bernard Field		Session III.2: Quantum Science & Technology (III) Chair: Christina Giarmatazi		Session III.3: Atomic, Molecular, Optical Physics (III) Chair: Ben Sparkes		Session III.4: Nuclear Physics (II) Chair: Chia-Ling Hsu		Session III.5: Education (II) Chair: Kate Jackson		Session III.6: Astrophysics and Space Physics (II) Chair: Alina Donea		Session III.6: Astrophysics and Space Physics (II) Chair: Alina Donea	
3:30 PM	4:15 PM	3:30 PM	4:00 PM	3:30 PM	4:00 PM	3:30 PM	4:00 PM	3:30 PM	4:15 PM	3:30 AM	4:15 PM	3:30 AM	4:15 PM
(Keynote) Resonant and valley contrasting photovoltaic effects Dimitrie Culcer, UNSW		(Invited) Unifying theory of quantum state estimation using past and future information Howard Wiseman, Griffith University		(Invited) Widefield magnetic field and nanoscale electric field imaging using NV centres in diamond Michael Barson, Monash University		(Invited) Axion-like Particles at Colliders Andrea Thamm, University of Melbourne		(Keynote) Increasing Engagement in Physics Elizabeth Angtmann, University of New South Wales		(Keynote) Modelling the Global Sun to Understand its Impacts on the Earth David Pontin, University of Newcastle		Characteristic length scales of magnetic fields in the fluctuation dynamo Neco Kriel, Australian National University	
4:15 PM	4:30 PM	4:00 PM	4:15 PM	4:00 PM	4:15 PM	4:15 PM	4:30 PM	4:15 PM	4:30 PM	4:15 PM	4:30 PM	4:15 PM	4:30 PM
Carrier and spin dynamics in emerging photovoltaics Lara Gillan, UNSW		Non-Markovian Quantum Process Tomography Gregory White, University of Melbourne		Towards a compact ytterbium magneto optical trap for use in precision timekeeping applications Ben White, University of Adelaide		Nuclear Structure Modelling for Dark Matter Direct Detection Navneet Krishnan, Australian National University		Exploring students' engagement in first year physics labs during COVID-19 Srividya Durga Kota, University of Sydney		A novel approach to cosmic ray transport through supersonic magnetised turbulence Matt Sampson, Australian National University		Ubiquitous magnetic field fluctuations in supersonic turbulence with applications for interstellar medium dynamics James Beattie, Australian National University	
4:30 PM	4:45 PM	4:15 PM	4:30 PM	4:15 PM	4:30 PM	4:30 PM	4:45 PM	4:15 PM	4:30 PM	4:15 PM	4:30 PM	4:15 PM	4:30 PM
Geometric Control of Universal Hydrodynamic Flow in a Two-Dimensional Electron Field Aydin Cem Keser, FLEET@UNSW		Broadening the gravitational wave detector sensitivity with quantum amplifier Carl Blair, University of Western Australia		Single Fission Spin Dynamics Measured by 2D Nutation ESR Spectroscopy Thomas MacDonald, University of New South Wales		ATLAS inner tracker strip module construction James Webb, University of Melbourne		Exploring the factors affecting undergraduate students' emotional engagement using Achievement Emotion Questionnaire-Physics Aesha Bhansali, University of Sydney		A novel approach to cosmic ray transport through supersonic magnetised turbulence Matt Sampson, Australian National University		Ubiquitous magnetic field fluctuations in supersonic turbulence with applications for interstellar medium dynamics James Beattie, Australian National University	
4:45 PM	5:00 PM	4:30 PM	4:45 PM	4:30 PM	4:45 PM	4:30 PM	4:45 PM	4:30 PM	4:45 PM	4:30 PM	4:45 PM	4:30 PM	4:45 PM
Phononic solitons Timothy Hirs, University of Queensland		Optimal mitigation of random-telegraph-noise dephasing by spectator-qubit sensing and control Behnam Tonekaboni, Griffith University		Many-body Performance Enhancement in a Quantum Heat Engine Built from Interacting Spins Lewis Williamson, University of Queensland		Cosmogenic backgrounds in NaI(Tl) crystal for the SABRE dark matter detector Yi Yi Zhong, Australian National University		Simulations and design of a compact injector linac based on high gradient X-band accelerating technology based at the University of Melbourne X-lab Scott Williams, University of Melbourne		A novel approach to cosmic ray transport through supersonic magnetised turbulence Matt Sampson, Australian National University		Ubiquitous magnetic field fluctuations in supersonic turbulence with applications for interstellar medium dynamics James Beattie, Australian National University	
5:00 PM	5:30 PM	4:45 PM	5:00 PM	4:45 PM	5:00 PM	4:45 PM	5:00 PM	4:45 PM	5:00 PM	4:45 PM	5:00 PM	4:45 PM	5:00 PM
Poster Session (Virtual) Gather		What Temperature is Schrödinger's Cat? Carolyn Wood, University of Queensland		Microscopic calculation of polariton scattering in semiconductor microcavities Jesper Levisen, Monash University		Experimental measures of critical dynamics in the Rabi model quantum phase transition Juan Pablo Dehollain, University of Technology Sydney		Poster Session (In-Person) P Block, The Cube		Poster Session (In-Person) P Block, The Cube		Poster Session (In-Person) P Block, The Cube	
5:30 PM	6:00 PM	5:00 PM	5:30 PM	5:00 PM	5:30 PM	5:00 PM	5:30 PM	5:00 PM	5:30 PM	5:00 PM	5:30 PM	5:00 PM	5:30 PM
6:00 PM		6:30 PM		6:00 PM		6:30 PM		6:00 PM		6:30 PM		6:00 PM	

Wednesday, 08 December																									
9:00 AM		10:00 AM		Plenary Lecture Topological Materials for Low-energy Electronics Professor Michael Fuhrer, Monash University GP-2-401																					
10:00 AM		10:30 AM		Coffee Break GP-5-1215 (Owen J. Wordsworth Room)																					
Room: GP-2-401 Session IV.1: Condensed Matter & Materials Physics (IV) Chair: Francesco Campaioli				Room: GP-2-406 Session IV.2: Quantum Science & Technology (IV) Chair: Andrew White				Room: GP-5-403 Session IV.3: Atomic, Molecular, Optical Physics (IV) Chair: James Sullivan				Room: GP-5-410 Session IV.4: Nuclear Physics (III) Chair: Andrea Thamm				Room: GP-5-301 Session IV.5: Theoretical Physics (I) Chair: Eric Cavalcanti				Room: GP-5-314 Session IV.6: Astrophysics and Space Physics (III) Chair: Benjamin Roberts				Education Workshop I (GP-2-302) Chair: Elizabeth Angstrom	
10:30 AM		11:15 AM		10:30 AM		10:45 AM		10:30 AM		10:45 AM		10:30 AM		11:15 AM		10:30 AM		11:15 AM		10:30 AM		12:00 PM			
		(Keynote) A brief history of low dimensional magnetism – how far we have come and what makes them so fascinating Kirilly Rule , ANSTO		Bounding neutrino induced T-violation from a nuclear reactor Erik Streed , Griffith University		(Invited) Ensemble density functional theory: generalising electronic structure theory to excitations and degenerate ground states Tim Gould , Griffith University		Shell effects in fission and quassifission Cedric Simenel , Australian National University		(Keynote) Relativistic quantum clocks – from testing quantum features of time and causality to nascent quantum sensors Magdalena Zych , University of Queensland		(Keynote) Galactic seismology – waves that cross the Milky Way Jonathan Bland-Hawthorn , University of Sydney		Comparing inelastic neutron scattering with theory to understand the complex magnetic interactions in a low-dimensional frustrated magnet Jackson Allen , University of Wollongong		Determining the Advantage of Quantum Lidar Ben Sparks , DSTG		Calculation of differential cross sections in proton collisions with atomic hydrogen Corey Ploewman , Curtin University		Characterisation of Photomultiplier Tubes for the SABRE South Experiment William Melbourne , University of Melbourne		Understanding star formation through an N-PDF analysis of the VMC-C Shannon Melrose , University of New South Wales		Facilitated by Elizabeth Angstrom University of New South Wales	
		Neutron polarization capabilities at the Australian Centre for Neutron Scattering Andrew Manning , ANSTO		Developing a Space-Based Quantum-Secure Time Transfer System Sabrina Slieman , University of Adelaide		Positron Bound States and Scattering Resonances Zoe Cheong , Australian National University		Mass-equilibration and Fluctuations in the Angular Momentum-Dependent Dynamics of Heavy Element Synthesis Reactions Takaki Tanaka , Australian National University		Unpredictable extensive thermodynamics of correlated systems at equilibrium Fatema Tanja , Griffith University		The Mystery of Orphan H II Regions: Where are the Ionising Star Clusters? Jia Wei The , Australian National University													
		Influence of device geometry and imperfections on the interpretation of transverse magnetic focusing experiments Yik Kheng Lee , RMIT University		Trapping Sound With Light Raymond Harrison , University of Queensland		A Fully Relativistic Approach to Photon Scattering and Photoionisation for the Alkali Atoms Adam Singer , Curtin University		Simulating directional detection using a gaseous time projection chamber: for the Cygnus experiment Ferdos Dasgiri , Australian National University		Relaxation of Multitime Statistics in Quantum Systems Neil Dowling , Monash University		Variational Molecular Spectroscopy for Sensitivity to a Variation in the Proton to Electron Mass Ratio Anna-Maree Syme , University of New South Wales													
12:00 PM		1:00 PM		Lunch GP-5-1215 (Owen J. Wordsworth Room)																					
Session V.1: Condensed Matter & Materials Physics (V) Chair: Nikka Turangan				Session V.2: Quantum Science & Technology (V) Chair: Arkady Fedorov				Session V.3: Atomic, Molecular, Optical Physics (V) Chair: Ann Roberts				Session V.4 (Focused): Precision Particle Physics and Anomalies Chair: James Zanotti				Session V.5 (Focused): Scanning Probe Microscopy of Condensed Matter Systems Chair: Jack Hellerstedt				Session V.6 (Focused): Electronic and Magnetic Properties of Metal-organic Frameworks Chair: Stephan Rachel				ECA Pitch Session GP-8-121 Chair: Joel Alroe	
1:00 PM		1:30 PM		1:00 PM		1:45 PM		1:00 PM		1:30 PM		1:00 PM		1:22 PM		1:00 PM		1:22 PM		1:00 PM		3:00 PM			
		(Invited) Hygroscopic Insulator Field Effect Transistors for Sensing Soniya Yambem , Queensland University of Technology		(Keynote) Sub-megahertz homogeneous linewidth for Er in Si via in situ single photon detection Sven Rogge , University of New South Wales		(Keynote) The rise of Mie-tronics Yuri Kivshar , Australian National University		Flavour anomalies at LHCb Ulrik Egede , Monash University		Exploring Atomic Force Microscopy for Nanoscale Mechanical Experiments Peggy Schoenher , University of New South Wales		Harnessing Electroactivity in Metal-Organic Frameworks Deanna D'Alessandro , University of Sydney													
		(Invited) A Closed-Form Quantum Description of Disordered Spin Baths Over Arbitrary Timescales Liam Hall , University of Melbourne		Testing a New Strong No-Go Theorem for the Wigner's Friend Scenario Geoff Pryde , Griffith University		Magnetic Field Effects in Photochemical Upconversion Roslyn Forecast , RMIT		Flavour anomalies at Belle II Chia-Ling Hsu , University of Sydney		Atomic-Scale Evidence of Surface-Catalyzed Gold-Carbon Covalent Bonding Ben Lowe , Monash University		Single-Crystal Electrical Measurements of the Mixed-Valence Semiconducting Metal-Organic Framework [Cu(BTDA)](MeOH) Adam Micolich , University of New South Wales													
		Accurate first principles simulation of liquid water using deep learning Timothy Dugman , University of Queensland		Experimental quantum channel correction via heralded amplification Slusarenko Sergej , Griffith University		High viscosity injector effects on the phase behaviour of lipid cubic phase Daniel Wells , La Trobe University		Time-reversal-violating electric dipole moments: overview and outlook Jacinda Ginges , University of Queensland		Deterministic Switching of Ferroelectric Bubble Nanodomains Peggy Zhang , University of New South Wales		Strangely Correlated Electrons in 2D Kagome Metal-Organic Frameworks Agustin Schiffrin , Monash University													
		Competition of first-order and second-order topology on the honeycomb lattice Matthew Bunn , University of Melbourne		Fast coherent control of an NV-spin ensemble using a KTaO3 dielectric resonator at cryogenic temperatures Hyma Vallabhapuram , University of New South Wales		Analytically modelling of closed aperture Z-Scan measurements of two photon absorption Esa Jaatinen , Queensland University of Technology		Near-Field Terahertz Nanoscopy of Coplanar Microwave Resonators Peter Jacobson , University of Queensland		Mechanomagnetics in elastic crystals: insights from [Cu(acac)] ₂ Elise Kenny , Queensland University of Technology															
		Versatile, Rapid, and Plasma-Assisted Synthesis of Cuprous Halide Composites at Room Temperature and Pressure Hugo Hartl , Queensland University of Technology		Ultrafast coherent excitation of an Ytterbium ion with single laser pulses Kenji Shimizu , Griffith University		Fourier Transform Holography with Extended Reference: a step toward the use of photons of higher energy Mihir Hong Dao , La Trobe University		Importance of interactions for the band structure of the topological Dirac semimetal Na3Bi Iolanda Di Bernardo , Monash University		Strangely correlated phenomena in the Hubbard model on a decorated lattice Henry Nourse , University of Queensland															
		Experimental Evidence of Reduced Symmetries of Superconductors and their Implications for Interpretation of Mechanisms and Design of New Materials Jose Alarco , Queensland University of Technology		Beating the Thermal limit of qubit initialization with a Bayesian Maxwell's demon Mark Johnson , University of New South Wales																					
3:00 PM		3:30 PM		Coffee Break GP-5-1215 (Owen J. Wordsworth Room)																					
Session VI.1: Condensed Matter & Materials Physics (VI) Chair: Iolanda Di Bernardo				Session VI.2: Quantum Science & Technology (VI) Chair: Geoff Pryde				Session VI.3: Atomic, Molecular, Optical Physics (VI) Chair: Tim Gould				Session VI.4: Nuclear Physics (IV) Chair: Zuzana Slavkovic				Session VI.5: Theoretical Physics (II) Chair: Murray Batchelor				Session VI.6: Astrophysics and Space Physics (IV) Chair: Tessa Vernstrom				Education Workshop II (GP-2-302) Chair: Kate Jackson	
3:30 PM		3:45 PM		3:30 PM		4:00 PM		3:30 PM		3:45 PM		3:30 PM		4:00 PM		3:30 PM		3:45 PM		3:30 PM		5:00 PM			
		Excited-state dynamics of emerging optoelectronic materials Christopher Bailey , University of New South Wales		(Invited) Quantum dissipative models for current biased Josephson junction based single photon counters Michael Tobias , University of Western Australia		(Invited) King Plot Non-linearity and the Search for New Light Bosons Amy Geddes , University of New South Wales		Pulse shape discrimination of low energy nuclear and electron recoils in NaI(Tl) for dark matter detection Nathan Spinks , Australian National University		(Invited) Discrete Time Crystals in Ultracold Quantum Gases Bryan Dalton , Swinburne University of Technology		The origin of the diffuse, isotropic γ-ray background and associated correlations Roth Matt , Australian National University													
		Fast Adiabatic Switching of Floquet-Bloch States in Monolayer WS₂ Reveals Coherent Dynamics Stuart East , Swinburne University of Technology		Josephson junctions: modelling their fabrication and electrical response at the atomic scale Jared Cole , RMIT University		Fitting structural features of the complex atomic fine structure spectra across the copper K-edge Paul Di Pasquale , La Trobe University		The SABRE South Liquid Scintillator Veto Detector Lachlan Milligan , University of Melbourne		Realization of a discrete time crystal on 57 qubits of a quantum computer Philip Frey , University of Melbourne		Galaxies evolution by way of SED analysis Ollie Pye , Queensland University of Technology													
		A multi-scale approach to energy and charge transport in amorphous polymers Francesco Campaioli , RMIT University		Mitigating quasiparticle poisoning in superconducting circuits using phononic filtering Arkady Fedorov , University of Queensland		Simultaneous reconstruction of the complex fine structure across the iron K-edge Tony Kirk , La Trobe University		The SABRE Muon Veto System Michael News , University of Melbourne		Many-Body Dynamics of Ultracold Polar Molecules in an Optical Lattice Timothy Harris , University of Queensland		Evolution of Dark Energy Sarah Bedecive , LaTrobe University													
		Direct Observation of Blochions in Monolayer WS₂ Mitchell Conway , Swinburne University of Technology		Model and analysis of 2D SQUID arrays at 77 K: Study of the magnetic field response and coupling radius Marc Gall Labadie , CSIRO		QED radiative corrections to E1 transition amplitudes in heavy atoms Carter Fairhall , University of Queensland		Development of CYGNUS-1: a prototype directional dark matter detector to search below the neutrino floor Lachlan McKie , Australian National University		Interplay between polarization and quantum correlations of confined polaritons Olivier Bleu , Monash University		The Role of Environment in the Evolution, Fate and AGN of Distant Galaxies Georgia Hartzberg , Queensland University of Technology													
		Exciton-polaron interactions in monolayer WS₂ Jack Muir , Swinburne University of Technology		Inductive detection and amplification of spin echoes using a superconducting parametric amplifier Wyatt Vine , University of New South Wales		Theoretical study of electronic structure of erbium (Er), fermium (Fm), and nobelium (No) Saleh Aliechabi , UNSW		Disentangling Quantum Chaos, Scrambling and Thermalisation Ryan Kidd , University of Queensland																	
		Generating Chiral Magnon Polaritons Jeremy Bourhill , University of Western Australia		Towards a Superfluid Mechanical Qubit Yasmine Sfendia , EQUUS																					
Online Only Session: Quantum Science & Technology (VII) Chair: Andrea Morello				(Invited) Quantum Algorithms for the NISQ Era Jingbo Wang , University of Western Australia				Deep learning for quantum and complex systems Aaron Tranter , Australian National University				A framework for optimal quantum spatial search using alternating phase-walks Samuel Manth , University of Western Australia				Quantum computed chemistry beyond the Hartree-Fock variational limit Michael Jones , University of Melbourne				Workshop: Active learning techniques for new physics educators Facilitated by Kate Jackson University of New South Wales					
		5:00 PM - 5:30 PM																							
		5:30 PM - 5:45 PM																							
		5:45 PM - 6:00 PM																							
		6:00 PM - 6:15 PM																							
		6:15 PM - 6:22 PM																							
		6:22 PM - 6:30 PM																							

Thursday, 09 December													
9:00 AM	10:00 AM	Plenary Lecture <i>From Show-Pony to Work Horse: Expanding Applications of Structured Light</i> Professor Halina Rubinsztein-Dunlop , University of Queensland GP-Z-401											
10:00 AM	10:30 AM	Coffee Break GP-S-1215 (Owen J. Wordsworth Room)											
Room: GP-Z-401 Session VII.1: Condensed Matter & Materials Physics (VII) Chair: Steven Best		Room: GP-Z-406 Session VII.2: Quantum Science & Technology (VIII) Chair: Erik Streed		Room: GP-S-403 Session VII.3: Atomic, Molecular, Optical Physics (VII) Chair: Lewis Williamson		Room: GP-S-410 Session VII.4: Nuclear Physics (V) Chair: Ross Young		Room: GP-S-301 Session VII.5: Theoretical Physics (III) Chair: Magdalena Zych		Room: GP-S-314 Session VII.6: Biophysics (I) Chair: Megan O'Mara			
10:30 AM	11:15 AM	10:30 AM	10:45 AM	10:30 AM	11:00 AM	10:30 AM	11:15 AM	10:30 AM	10:45 AM	10:30 AM	11:00 AM		
(Keynote) Thermoelectric Materials and Devices for power generations and refrigeration Zhigang Chen , USQ		<i>Measuring Rotation in a Bose-Einstein Condensate with Phason Interferometry</i> Charles Woffinden , University of Queensland		(Invited) Quantum anomaly in a quasi-2D Fermi superfluid Xia-Ji Liu, Swinburne University of Technology		(Keynote) Classification of neutrino mass models and their connections with experimental anomalies Ray Volkas , University of Melbourne		<i>Universal properties of the near-horizon geometry</i> Sebastian Murk , Macquarie University		(Invited) Dynamic and tunable properties of model primitive cell membranes Anna Wang , University of New South Wales			
<i>Effect of various surface conditions on Van der Waals epitaxy of MoS₂</i> Negar Zebardastan , Queensland University of Technology		<i>Superfluid Brillouin Optomechanics</i> Christopher Baker , University of Queensland		<i>Metasurfaces for Nonlinear Optics</i> Sergey Kruk , Australian National University		<i>Constraining modified gravity theories with physical black holes</i> Sebastian Murk , Macquarie University		<i>Quantum superpositions of topology and black hole metrics</i> Ioshua Foo , University of Queensland		<i>Imaging living activity in bio-samples</i> Nicolas Mauranyapin , University of Queensland			
<i>Effect of dielectric screening and interfacial scattering on the electrical properties of few layer PtSe₂</i> Paritosh Wadekar , National Sun Yat Sen University		<i>Searching for Signatures of Quantum Gravity with Ultracold Quantum Gases</i> Simon Haine , Australian National University		<i>Nanolasers governed by interference and topology</i> Aditya Tripathi , Australian National University		<i>GAMBIT</i> Csaba Balazs , Monash University		<i>New Weyl Multiplet of 4D, N = 2 Conformal Supergravity and Applications</i> William Kitchin , University of Queensland		<i>Optical tweezers in Neuroscience</i> Itia Favre-Bulle , Queensland Brain Institute			
<i>Microscopic Model of Rydberg Exciton-Polaritons in a Magnetic Field</i> Emma Laird , Monash University		<i>Observation of cross phase modulation in cold atom gradient echo memory</i> Anthony Leung , Australian National University		<i>Domain engineering with state-selective optical tweezers in multi-component BEC</i> Mark Baker , Defence Science and Technology Group		<i>Simplified Models of New Physics in GAMBIT</i> Christopher Chang , University of Queensland		<i>Using gravity to bound the number of fundamental quantum degrees of freedom</i> Harshit Verma , University of Queensland		<i>Rotational Optical Tweezers Probes within Living Macrophages</i> Mark Watson , University of Queensland			
<i>Experimental Observation of the Kelvin-Helmholtz Instability in a BEC Superfluid</i> Simeon Simjanovski , University of Queensland		<i>Dissipation-Engineered Optomechanical Accelerometer</i> Semertilli Leo , University of Queensland		<i>Universal dynamical scaling of a quenched two-dimensional Bose gas</i> Andrew Groszek , University of Queensland		<i>Emergent quantum double structure in spinor condensates</i> Emil Johansen , Swinburne University of Technology		<i>An Improved Coarse-Grained Model to Accurately Predict Red Blood Cell Morphologies during in vitro Storage</i> Nadeeshani Geekiyana , Queensland University of Technology					
<i>A hybrid chemical machine using a Bose condensed gas</i> Abhisawathi Muniraj Saraswathy , University of Queensland													
Lunch GP-S-1215 (Owen J. Wordsworth Room)													
Session VIII.1: Condensed Matter & Materials Physics (VIII) Chair: Stuart Earl		Session VIII.2: Quantum Science & Technology (IX) Chair: Sven Rogge		Session VIII.3 (Focused): Nanophotonics and Quantum Meta-Optics Chair: Igor Aharonovich		Session VIII.4: Medical Physics Chair: Jamie Trapp		Session VIII.5 (Focused): Molecular switches: from emergent behaviours to molecular scale memory Chair: Ben Powell		Session VIII.6: Biophysics (II) Chair: Gerd Schroeder-Turk		Quantum Next Generation Pitchfest 2021 (GP-S-310) Chair: Marcus Doherty	
1:00 PM	1:30 PM	1:00 PM	1:45 PM	1:00 PM	1:30 PM	1:00 PM	1:45 PM	1:00 PM	1:30 PM	1:00 PM	1:45 PM	1:00 PM	3:00 PM
(Invited) Spin-orbit and topology in 1D quantum wires Karina Hudson , UNSW		(Keynote) Precision tomography of a three-qubit electron-nuclear quantum processor in silicon Andrea Morello , University of New South Wales		<i>Nonlinear Dielectric Metasurfaces for applications in imaging and light sources</i> Dragomir Neshev , Australian National University		(Keynote) Building and clinically translating new technology for cancer imaging and targeted radiation therapy Paul Keall , University of Sydney		<i>Modelling the spin-orbit coupling in an Fe (II) spin-crossover complex</i> Xiuxun Zhou , University of Queensland		(Keynote) How do cryoprotective molecules interact with cell membranes and act synergistically to minimise damage? Ricardo Mancera , Curtin University			
<i>Experimental evidence of topological magnetotransport on porous Bi₂Te₃</i> Alexander Nguyen , Monash University		<i>Isotopic enrichment of silicon by high fluence 28Si⁻ ion implantation</i> Danielle Holmes , University of New South Wales		<i>Lithium Niobate on Insulator: A Versatile Toolbox for Complete Integrated Optical Systems on a Chip</i> Arnan Mitchell , RMIT University		<i>Fractionated radiotherapy and its effect on the tumour microenvironment: a small animal study</i> Rebecca D'Alonzo , University of Western Australia		<i>Spin-state ice in Elastically Frustrated Spin-Crossover Materials</i> Jace Cruddas , University of Queensland		<i>Host-derived lipids impact the membrane dynamics, antibiotic susceptibility, and efflux systems of Acinetobacter baumannii</i> Hugo MacDermott-Opeskin , Australian National University			
<i>Analysis of edge states of a one-dimensional interacting topological insulator</i> David Mikhail , University of Melbourne													
<i>Formation of a stable surface oxide in MnBi₂Te₄ thin films</i> Golrokh Akhgar , Monash University		<i>Single integrated T-centres: Bright, telecommunications-coupled silicon spins</i> Daniel Higginbottom , Simon Fraser University		<i>Hexagonal boron nitride for integrated quantum photonics</i> Sejeong Kim , University of Melbourne		<i>Clinical Applications of Radiofrequency Identification Systems</i> Shermyah Rienecker , Queensland Health		<i>Molecular switches: beyond traditional polar functional materials</i> Yun Liu , Australian National University		<i>Energy based modelling of bacterial signalling systems</i> Joshua Forrest , University of Melbourne			
<i>Ultrasensitive NO₂ Gas Sensors based on a-MoO₃ via vapour phase transport</i> Wei Li , Queensland University of Technology		<i>Coherent electrical control of an electron-nuclear flip-flop qubit in silicon</i> Tim Botzem , University of New South Wales				<i>Graphene based porous foams for capacitive pressure sensing</i> Lekshmi Kurup , Queensland University of Technology		<i>Emergent Spin-State Frustration in Molecular Kagome Frameworks</i> Luonan Xu , University of New South Wales		<i>Phenolic Compounds Alter the Permeability of Phospholipid Bilayers via Specific Lipid Interactions</i> Sheikh Imamul Hossain , University of Technology Sydney			
<i>Multidimensional Coherent Spectroscopy to Reveal Interactions in Strongly Correlated Materials</i> Rishabh Mishra , Swinburne University of Technology		<i>Quantum instance space analysis for the resupply optimisation problem</i> Floyd Creevey , Uni Melbourne		<i>Semimetal-based Metasurfaces for Zero-bias Mid-infrared Detectors</i> C.-W. Qiu , National University of Singapore		<i>Influence of indoor airflow on particle distribution: risk scenarios for COVID-19 quarantine facilities</i> Marc van Beest , Queensland University of Technology							
<i>Technique for transfer of epitaxial topological insulator films to arbitrary substrates</i> Semonti Bhattacharyya , Monash University		<i>Resource Theories of Multi-Time Processes Applied to Dynamical Decoupling</i> Graeme Berk , Monash University											
		<i>Tomography of universal two-qubit logic operations in exchange-coupled donor electron spin qubits</i> Holly Stemp , University of New South Wales											
Coffee Break GP-S-1215 (Owen J. Wordsworth Room)													
Session IX.2: Quantum Science & Technology (X) Chair: Tyler Neely		Session IX.3: Atomic, Molecular, Optical Physics (VIII) Chair: Xia-Ji Liu		Session IX.4: Bragg Gold and TH Laby Medal Session Chair: Joanna Turner				Session IX.6: Biophysics (III) Chair: Anna Wang					
3:30 PM	4:00 PM	3:30 PM	4:00 PM	3:30 PM	3:45 PM	3:30 PM	3:45 PM	3:30 PM	4:00 PM	3:30 PM	4:00 PM	3:30 PM	4:00 PM
(Invited) Nonmechanical logic: a path towards radiation-hard computing Glen Harris , University of Queensland		(Invited) Dynamical Mechanisms of Vortex Pinning in Superfluid Thin Films Matthew Reeves , University of Queensland		<i>Charge and Spin Dynamics in Multi-donor Systems</i> Samuel Gorman , University of New South Wales		<i>Strong field sub-femtosecond electronic processes</i> Alexander Bray , Australian National University		<i>Bicontinuous structures: inspiration from biology for nanoscale engineered materials</i> Gerd Schroeder-Turk , Murdoch University					
<i>Optimised entropic dynamic back action</i> Andreas Sawadsky , University of Queensland		<i>Discrete time crystals in Bose-Einstein Condensates and symmetry-breaking edge in a simple two-mode theory</i> Jia Wang , Swinburne University of Technology		<i>Pulsed Hydrogen Plasmas: Modelling and Experiment</i> Felicity Lee , Australian National University		<i>The Cosmological Electroweak Phase Transition in a Scale-Invariant Standard Model</i> Albert Zhou , Karlsruhe Institute for Technology		<i>Deep-learning-assisted Imaging Through Dynamic Scattering Media</i> Siddharth Rawat , University of New South Wales					
<i>Microwave Resonator-Integrated OLED for Magnetic Field Sensing</i> Rugang Geng , University of New South Wales		<i>What is a Quantum Shock Wave?</i> Steven Simmons , University of Queensland		<i>The Cosmological Electroweak Phase Transition in a Scale-Invariant Standard Model</i> Albert Zhou , Karlsruhe Institute for Technology		<i>Phanon broadening and spectral diffusion of hexagonal Boron Nitride single photon emitters</i> Simon White , University of Technology Sydney		<i>Dynamic polarizability of macromolecules for single-molecule optical biosensing</i> Larni Booth , University of Queensland					
<i>Optical-to-mechanical state transfer through feedback</i> Amy van der Hel , University of Queensland		<i>Microscopic pairing theory of Lee-Huang-Yang droplets</i> Hui Hu , Swinburne University of Technology		<i>Novel thermal dissipation in two-dimensional quantum turbulence</i> Zain Mehdi , Australian National University		<i>Controlling the demon condensate: feedback cooling of atomic Bose gases</i> Matthew Goh , Australian National University		<i>Heterodyne Brillouin microscopy for biomechanical imaging</i> Michael Taylor , University of Queensland					
<i>Photothermal effects in optical levitation</i> Chenyue Gu , Australian National University								<i>Targeted heating of a biocompatible thermoplastic using embedded superparamagnetic Fe₃O₄ nanoparticles</i> Md Rezoanur Rahman , University of Wollongong					
<i>An Integrated Platform for Superfluid Optomechanics</i> Walter Wasserman , University of Queensland		<i>Quantum measurement and control of mechanical motion</i> Chao Meng , University of Queensland											
Conference Close													
5:00 PM	5:30 PM												