

## AIP Summer Meeting - Full Program

### Sunday, 3 December 2017

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|-------------|---|
| 10:40-19:00 | <input checked="" type="checkbox"/> <b>Undergraduate Symposium</b> (Colombo A) <i>Session Chair: Jan Hamann, UNSW Sydney</i>      |
| 10:40-10:55 | <input checked="" type="checkbox"/> <b>Arrival, registration, morning tea</b> (Colombo A) <i>Session Chair: Jan Hamann</i>        |
| 10:55-11:00 | <input checked="" type="checkbox"/> <b>Head of School Welcome - Prof. Sven Rogge</b> (Colombo A) <i>Session Chair: Jan Hamann</i> |
| 11:00-12:30 | <input checked="" type="checkbox"/> <b>Topics in Physics</b> (Colombo A) <i>Session Chair: Jan Hamann</i>                         |
| 13:15-14:45 | <input checked="" type="checkbox"/> <b>Topics in Physics</b> (Colombo A) <i>Session Chair: Jan Hamann</i>                         |
| 15:10-15:30 | <input checked="" type="checkbox"/> <b>Scientific Presentations</b> (Colombo A) <i>Session Chair: Jan Hamann</i>                  |
| 15:30-16:10 | <input checked="" type="checkbox"/> <b>Panel Discussion - Current PhD Students</b> (Colombo A) <i>Session Chair: Jan Hamann</i>   |
| 16:10-16:50 | <input checked="" type="checkbox"/> <b>Panel Discussion - Physics Pathways</b> (Colombo A) <i>Session Chair: Jan Hamann</i>       |
| 16:50-17:30 | <input checked="" type="checkbox"/> <b>Poster Session and Refreshments</b> (Colombo A) <i>Session Chair: Jan Hamann</i>           |
| 17:30-19:00 | <input checked="" type="checkbox"/> <b>BBQ</b> (Colombo A) <i>Session Chair: Jan Hamann</i>                                       |
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## Monday, 4 December 2017

8:00  **Registration Desk Open** (Colombo Foyer)

9:00-10:40

	<b>Astro</b>	<b>Ed</b>	<b>NPP</b>	<b>Astro</b>
	<b>Colombo A</b>	<b>Colombo B</b>	<b>Colombo C</b>	<b>Colombo LG02</b>
	<input type="checkbox"/> <b>Astro - 1M</b> <i>Session Chair: Sarah Brough, UNSW</i>	<input type="checkbox"/> <b>Ed - 1M</b> <i>Session Chair: Jasmina Lazendic-Galloway, Monash University</i>	<input type="checkbox"/> <b>NPP - 1M</b> <i>Session Chair: Nicole Bell, The University of Melbourne</i>	<input type="checkbox"/> <b>Quantum - 1M</b> <i>Session Chair: Peter Drummond, Swinburne University of Technology</i>
9:00-9:20	<i>Invited: Congested And Contested: An SSA Program For Operating In Space 2.0</i> Laurie Brown; Andrew Lambert; Chris Capon; Philippe Lorrain; Craig Benson; Manuel Cegarra Polo; Sudantha Balage; Russell Boyce	<i>Conceptual Understanding Of Newtonian Physics</i> Ragbir Bhathal	<i>New Laboratory And Astrophysical Probes For Low-mass Dark Matter And Dark Bosons</i> Yevgeny Stadnik; Victor Flambaum; Vladimir Dzuba; Benjamin Roberts	<i>Invited: Quantum Algorithm Simulation With Matrix Product States</i> Charles Hill; Aidan Dang; Lloyd Hollenberg
9:20-9:40	<i>Status Update Of The Ground-based Adaptive Optics System For Tracking And Pushing Of Space Debris</i> Doris Grosse; Francis Bennet; Francois Rigaut; Ian Price; Craig Smith	<i>Effects Of Online Versus Three Different Assessment Approaches On Engineering Students' Exam Performance</i> Maria Parappilly; Mark Taylor	<i>Non-gravitational Effects Of Dark Matter In Atomic And Astrophysical Phenomena</i> Victor Flambaum; Yevgeny Stadnik	
9:40-10:00	<i>The Square Kilometre Array</i> Sarah Pearce	<i>Science In Your Pocket – A Comparison Of The Measurement Capabilities Of Laboratory Vs Smartphone Sensors.</i> Thomas Gordon; Cade Brennan; Lily McCubbin; Alison Campbell; Manjula Sharma	<i>New Australian Standards For Copper-64, Fluorine-18 And Technetium-99m</i> Siobhan Tobin; Winifred (Freda) van Wyngaardt; Samantha Lee; Michael Smith; Bonnie Howe; Tim Jackson; Mark Reinhard	<i>Robustness Of Quantum Fourier Transform Interferometry</i> Bogdan Opanchuk; Laura Rosales-Zarate; Peter Drummond
10:00-10:20	<i>The Australia Telescope National Facility</i> Jimi Green	<i>Mapping Work Integrated Learning Across Undergraduate Physics Courses</i>	<i>Nuclear Reaction Cross Sections For Hadron Therapy</i> Edward Simpson	

10:20-10:40	Jasmina Lazendic-Galloway; Istvan Laszlo  <i>Changing Patterns Of Gender Gaps On The Thermodynamics Concept Inventory</i> Umairia Malik; Elizabeth Angstmann; Kate Wilson	<i>Constraining Dark Matter With Old Light</i> Jan Hamann; Harry Poulter; Martin White; Anthony Williams	
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**Break**

**Summer Meeting Opening** (Colombo A) *Session Chair: Sven Rogge, UNSW Sydney*  
  
Sven Rogge, Andrew Peele, Dane McCamey

**Plenary** (Colombo A)  
  
This talk will look at the effective use of contexts in both tertiary and secondary settings to motivate student learning and consider this in context of the wider issue of what matters in physics education.  
  
*Plenary: Physics Education; What Matters?*  
Elizabeth Angstmann; Helen Georgiou

**LUNCH**

**Lunch Break**

13:20-15:20	AMO Colombo LG01	Astro Colombo A	Ed Colombo B	NPP Colombo C	AMO Colombo LG02
	<input type="checkbox"/> <b>AMO - 1A</b> <i>Session Chair: Chris Vale</i>	<input type="checkbox"/> <b>Astro - 1A</b> <i>Session Chair: Sarah Brough, UNSW</i>	<input type="checkbox"/> <b>Ed - 1A</b> <i>Session Chair: Andrew MacKinnon, University of Adelaide</i>	<input type="checkbox"/> <b>NPP - 1A</b> <i>Session Chair: Cedric Simenel, ANU</i>	<input type="checkbox"/> <b>Quantum - 1A</b> <i>Session Chair: Andre Carvalho, Griffith University</i>

13:20-13:40	<i>Invited: Resistive Transport In A Superfluid Circuit</i> Tyler W Neely; Guillaume Gauthier; Stuart Szigeti; Mark Baker; Matthew Davis; Halina Rubinsztein-Dunlop	<i>Invited: Fornax3d – Surveying The Fornax Galaxy Cluster With Muse</i> Richard McDermid	<i>Invited: Gender And Assessment In Physics</i> Kate Wilson	<i>Study Of Fission Dynamics In The Super Heavy Region <math>Z = 102</math> To <math>106</math></i> Kaushik Banerjee	<i>Invited: Finding The Quantum-classical Transition With Poor Measurements</i> Jason Ralph; Kurt Jacobs; Mark Everitt
13:40-14:00	<i>Manifestations Of Quantum Chaos In Atomic Phenomena</i> Victor Flambaum	<i>The Aao In The New Eso Era</i> Warrick Couch	<i>First Year Physics At Newcastle: The Final Chapter Of A Longitudinal Study</i> Michael Gladys; John Furst; Paul Dastoor; John Holdsworth	<i>What Can We Learn About Visible Matter From Nucleon Transfer Reactions?</i> AJ Mitchell	
14:00-14:20	<i>Transport Of Low Energy Electrons And Positrons Through Liquids</i> Daniel Cocks; Gregory Boyle; Robert McEachran; Peter Stokes; Ronald White	<i>Rfi Identification At Parkes Radio Telescope</i> Jordan Tuohy	<i>Measuring The Impact Of Radical Swings In Nsw Hsc Physics Syllabuses: 2001 And 2019</i> Manjula Sharma; Gabriel Nguyen; Helen Georgiou	<i>Self-consistent Dark Matter Simplified Models With An S-channel Scalar Mediator</i> Giorgio Busoni	<i>Invited: Rare-earth Doped Crystals For Quantum Communications</i> Matthew Sellars
14:20-14:40	<i>Hypersonic Flow In An Atom Laser</i> Bryce Henson; Xuguang Yue; Sean Hodgman; Dong Shin; Lev Smirnov; Elena Ostrovskaya; Xi-Wen Guan; Andrew Truscott	<i>The Sami Galaxy Survey: Overview And Recent Highlights</i> Nicholas Scott	<i>Misconceptions In The Teaching Of Special Relativity</i> Theo Hughes	<i>Solving The Dark Matter Problem With Gambit</i> Martin White	
14:40-15:00	<i>Squeezed Light Enhanced Cavity Optomechanical Magnetometry</i> Beibei Li; Jan Bilek; Ulrich Hoff; Ulrik Andersen; Warwick Bowen	<i>Tracing The Star Formation Histories Of Passive Galaxies Over The Past 8 Billion Years</i> Jacob Parnell; Taylah Beard; Inger Jørgensen; Richard McDermid	<i>Students' Engagement In Using A Spreadsheet: An Example Of Open Inquiry Investigation From School Science</i> Vidya Kota; Scott Cornish; Manjula Sharma	<i>Baryogenesis At Low Scale</i> Nicole Bell	<i>Invited: Quantum Trajectory And Its Statistics: Theory Prediction And Experimental Tests</i> Areeya Chantasri
15:00-15:20				<i>Dirac Phase Leptogenesis In The Extended Type-i Seesaw Model</i> Tomasz Dutka; Matthew Dolan; Raymond Volkas	

15:20-16:00

 **Break**

16:00-17:40

	<b>AMO</b>	<b>Astro</b>	<b>Ed</b>	<b>NPP</b>	<b>Quantum</b>
	<b>Colombo LG01</b>	<b>Colombo A</b>	<b>Colombo B</b>	<b>Colombo C</b>	<b>Colombo LG02</b>
	<input type="checkbox"/> <b>AMO - 1E</b> <i>Session Chair: Michael Bromley</i>	<input type="checkbox"/> <b>Astro - 1E</b> <i>Session Chair: Richard McDermid, Macquarie University</i>	<input type="checkbox"/> <b>Ed - 1E -Education Panel Discussion</b> <i>Session Chair: Elizabeth Angstmann, UNSW</i>	<input type="checkbox"/> <b>NPP- 1E</b> <i>Session Chair: Martin White, University of Adelaide</i>	<input type="checkbox"/> <b>Quantum - 1E</b> <i>Session Chair: Jason Ralph, University of Liverpool</i>
16:00-16:20	<i>Isotope Shift, King Plot Non-linearities And The Search For New Particles And The Nuclear Island Of Stability</i> Amy Geddes; Victor Flambaum; Anna Viatkina	<i>In Search Of Cool Flow Accretion Onto Galaxies – Where Does The Gas Disk End?</i> Joss Bland-Hawthorn; Philip Maloney	Manju Sharma (University of Sydney), Andrew MacKinnon (University of Adelaide), Maria Parappilly (Finders University) and Geoff Crisp (UNSW)	<i>Exploring Fundamental Physics With Gravitational Waves</i> Archil Kobakhidze	<i>Anisotropic Invariance And The Distribution Of Quantum Correlations</i> Shuming Cheng; Michael Hall
16:20-16:40	<i>Highly Sensitive Optical Magnetometer With Low-frequency Stabilisation</i> Nathanial Wilson; Christopher Perrella; Philip Light; Andre Luiten	<i>Galactic Archaeology And The Galah Survey</i> Gayandhi De Silva; Joss Bland-Hawthorn; Janez Kos		<i>Scalar Singlet Generated Gravitational Waves In The Reach Of Aligo</i> Csaba Balazs; Andrew Fowlie; Anupam Mazumdar; Graham White	
16:40-17:00	<i>Atomic Clocks Based On A Thorium Nuclear Transition</i> Marcin Piotrowski; Jordan Scarabel; Mirko Lobino; Erik Streed; Stephen Gensemer	<i>Streaming Motion Of Stars In The Milky Way With The Galah Survey</i> Shourya Khanna; Sanjib Sharma; Joss Bland-Hawthorn		<i>Probing Quantum Many-body Dynamics With Nuclei</i> Cedric Simenel	<i>Entanglement Of Two Optomechanical Oscillators And Furry's Hypothesis</i> Simon Kiesewetter; Run Teh; Peter Drummond ; Margaret Reid
17:00-17:20	<i>Uncovering New Physics With Precision Atomic Isotope-shift Spectroscopy</i> Julian Berengut	<i>Galactic Archaeology Using Asteroseismology And The K2-hermes Program</i> Sanjib Sharma		<i>Invited: Isovector Properties Of The Nucleon-nucleon Interaction From The Quark-meson Coupling Model</i> Ellen McRae; Cedric Simenel; Edward Simpson; Anthony Thomas	<i>Effects Of Inhomogeneity On The Decomposition Of The Linear Momentum For Electromagnetic Waves</i> Hyoun In Lee; Jinsik Mok
17:20-17:40		<i>Deep Mixing At The Extremes Of The Metallicity Distribution Function</i> Sarah Martell			

## Tuesday, 5 December 2017

8:00  **Registration Desk Open** (Colombo Foyer)

9:00-10:40	<b>AMO</b> Colombo LG01	<b>Astro</b> Colombo A	<b>Ed</b> Colombo B	<b>NPP</b> Colombo C	<b>Quantum</b> Colombo LG02
	<input type="checkbox"/> <b>AMO - 2M</b> <i>Session Chair: Julian Berengut</i>	<input type="checkbox"/> <b>Astro - 2M</b> <i>Session Chair: Sarah Martell, UNSW</i>	<input type="checkbox"/> <b>Ed - 2M</b> <i>Session Chair: Maria Parappilly, Flinders University</i>	<input type="checkbox"/> <b>NPP - 2M</b> <i>Session Chair: Nicole Bell, The University of Melbourne</i>	<input type="checkbox"/> <b>Quantum - 2M</b> <i>Session Chair: Ben Sparkes, University of Adelaide</i>
9:00-9:20	<i>Light Output Enhancement For A Plastic Scintillator Using Nano-fibers</i> Zhangkai Cheng; Tim Chisholm; Samuel Blake; Philip Vial; Zdenka Kuncic; Shaghik Atakaramians	<i>Exploring The Fossil Record Of Cluster Assembly: The Intra-cluster Light</i> Mireia Montes; Ignacio Trujillo; Sarah Brough	<i>Battle Of The Bands: Hsc Physics Bottom Of The Charts</i> Simon Crook; Rachel Wilson	<i>Search For B- -&gt; Mu- Numubar Decays At The Belle And Belle II Experiments</i> Alexei Sibidanov; Kevin Varvell	<i>Towards A Bell Test With Massive Particles Entangled In Momentum And Spin</i> Dongki Shin; Bryce Henson; Sean Hodgman; Tomasz Wasak; Jan Chwedenczuk; Andrew Truscott
9:20-9:40	<i>New Method Of Calculations For Complex Atoms: Nobelium Spectra And Hyperfine Structure</i> Vladimir Dzuba; Victor Flambaum	<i>Discovery Of A Relation Between Age And Intrinsic Shape Of Galaxies From Integral Field Spectroscopy</i> Jesse van de Sande; Nicholas Scott; Joss Bland-Hawthorn	<i>Science Inquiry In The Physics Laboratory- Student Expectations And Experiences</i> Gabriel Ha Nguyen; John O'Byrne; Manjula Sharma	<i>Reconstruction Methods For Semi-leptonic Decays With The Belle II Experiment</i> Nadia Toutounji	
9:40-10:00	<i>Weak Quadrupole Moment, Quadrupole Distribution Of Neutrons And Lorentz Invariance Violation In Deformed Nuclei</i> Bryce Lackenby; Victor Flambaum	<i>What Happened To The Horizontal Branch Of Eso280-sc06?</i> Jeffrey Simpson	<i>Problem-solve Like An Expert: The Lightboard Project</i> Jasmina Lazendic-Galloway; Lincoln Turner; Russell Anderson	<i>Low Temperature Electroweak Phase Transition In The Standard Model With Hidden Scale Invariance</i> Suntharan Arunasalam; Archil Kobakhidze; Cyril Lagger; Shelley Liang; Albert Zhou	<i>Damping Of Excitations In A Bc Using Measurement Feedback</i> Richard Taylor; Michael Hush; Stuart Szigeti; Joseph Hope
10:00-10:20	<i>One-dimensional Bose Gas Dynamics: Breather Fragmentation</i>	<i>Blue Stragglers In New Binary-star Parameter Space Opened Up By Kepler</i>	<i>Teaching For Conceptual Understanding - What We Can Learn From The</i>	<i>Electroweak Baryogenesis Via Vector-like Leptons</i>	

10:20-10:40	Bogdan Opanchuk; Peter Drummond  <i>Brightness Enhancement Of High Power Continuous Beams In Diamond</i> Zhenxu Bai; Robert Williams; Hadiya Jasbeer; Soumya Sarang; Ondrej Kitzler; Aaron McKay; Rich Mildren	Simon Murphy; Maxwell Moe; Tim Bedding  <i>A Golden Age Of Asteroseismology</i> Tim Bedding	<i>Modeling Instruction Movement.</i> Barbara McKinnon	Leon Friedrich; Nicole Bell; Matthew Dolan; Raymond Volkas; Michael Ramsey-Musolf  <i>To The Mssm And Beyond – Measuring Naturalness In Susy</i> Archil Kobakhidze; Matthew Talia	<i>Mesoscopic Einstein-podolsky-rosen-steerable States In A Bec Interferometer</i> Bogdan Opanchuk; Laura Rosales-Zarate; Brian Dalton; Peter Drummond; Andrei Sidorov; Margaret Reid
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**Break**

**Plenary (Colombo A)** *Plenary: The New Era Of Gravitational-wave Astronomy: Current Detections And Future Prospects* Paul Lasky

**Lunch Break**

	<b>AMO</b>	<b>Astro</b>	<b>CMP</b>	<b>Ed</b>	<b>NPP</b>	<b>Quantum</b>
	<b>Colombo LG01</b>	<b>Colombo A</b>		<b>Colombo B</b>	<b>Colombo C</b>	<b>Colombo LG02</b>
13:20-15:20	<input type="checkbox"/> <b>AMO - 2A</b> <i>Session Chair: Jacinda Ginges</i>	<input type="checkbox"/> <b>Astro - 2A</b> <i>Session Chair: Tim Bedding, University of Sydney</i>	<input type="checkbox"/> <b>CMP - 2A</b>	<input type="checkbox"/> <b>Ed - 2A</b> <i>Session Chair: Helen Georgiou, University of Wollongong</i>	<input type="checkbox"/> <b>NPP - 2A</b> <i>Session Chair: Cedric Simenel, ANU</i>	<input type="checkbox"/> <b>Quantum - 2A</b> <i>Session Chair: Ben Sparkes, University of Adelaide</i>
13:20-13:40	<i>Invited: Dynamics Of Impurities In Quantum Gases</i> Meera Parish; Jesper Levinsen; Rudolf Grimm	<i>Nuclear Physics From Thermonuclear X-ray Bursts On Neutron Stars</i> Duncan Galloway; Adelle Goodwin; Zac Johnston; Laurens	<i>Invited Talk</i> Maja Casidy	<i>Invited: How Do We Teach Science? The Use Of Evidence-based Teaching Practices In A Bachelor Of Science Program</i>	<i>Determination Of Precision Fusion Cross Sections Using A High Efficiency Superconducting Solenoidal Separator</i>	<i>Invited: Unconditional Shot Noise Limit Violation In Photonic Quantum Metrology</i> Sergei Slussarenko; Morgan Weston; Helen Chrzanowski; Lynden

13:40-14:00	<p><i>Real-time Accurate Optical Measurements Of Co2 Number Density</i> Sarah Scholten; Christopher Perrella; James Anstie; Richard White; Nicolas Hebert; Waddah Al-Ashwal; Jerome Genest; Andre Luiten</p>	<p>Keek; Hendrik Schatz; Alexander Heger</p> <p><i>Interlinked Neutron Vortex And Proton Flux Tube Arrays In A Neutron Star</i> Lisa Drummond; Andrew Melatos</p>	<p><i>Atomic-precision Spatial Metrology Of Single And Two Si:p Qubits</i> Usman Muhammad; Benoit Voisin; Joe Salfi; Juanita Bocquel; Archana Tankasala; Rajib Rahman; Michelle Simmons; Sven Rogge; Lloyd Hollenberg</p>	<p>Michael Drinkwater; Kelly Matthews</p> <p><i>Enhance High School Cambodian Students On The Projectile Using An Inquiry-based Learning Approach</i> Piten So; Suttida Rakkapao</p>	<p>Lauren Bezzina; Edward Simpson</p> <p><i>Atom Counting Of Zr-93 By Accelerator Mass Spectrometry For The Measurement Of Zr-92(n,g) Neutron Capture Cross Sections</i> Stefan Pavetich; Alexander Carey; Keith Fifield; Michaela Froehlich; Shlomi Halfon; Angelina Kinast; Martin Martschini; Dominic Nelson; Michael Paul; Asher Shor; Johannes Sterba; Moshe Tessler; Stephen Tims; Leo Weissmann; Anton Wallner</p>	<p>Shalm; Varun Verma; Sae Woo Nam; Geoff Pryde</p>
14:00-14:20	<p><i>Transit-time Effects In Vapour Spectroscopy On An Exposed-core Fibre</i> Hannes Griesser; Chris Perrella; Philip Light; Andre Luiten</p>	<p><i>Positronium Gas Clouds</i> Simon Ellis; Joss Bland-Hawthorn</p>	<p><i>Stark Effect And Strain Effect On A Single Erbium In A Silicon Nano-transistor</i> Guangchong Hu; QI Zhang; Gabriele G de Boo; Milos Rancic; Brett C. Johnson; Jeff C. McCallum; Jiangfeng Du; Matthew J. Sellars; Chunming Yin; Sven Rogge</p>	<p><i>Teaching Tips</i> Elizabeth Angstmann</p>	<p><i>KICalibration At Belle II Using Initial State Radiation</i> Lachlan Vaughan-Taylor</p>	<p><i>Invited: Machine Learning For Quantum Science Experiments</i> Michael Hush</p>
14:20-14:40	<p><i>Detection Of Axions Using Atomic Transitions Induced By Interference Between</i></p>	<p><i>Invited: Transport Of Salts On Planetary Surfaces: Implications</i></p>	<p><i>A Charge-insensitive Single-atom Spin-orbit Qubit In Si: Fully</i></p>	<p><i>Youtube Science Communication:</i></p>	<p><i>Laser Boron Fusion As Option Against Climate Change</i></p>	



14:40-15:00	<p><i>Electromagnetic And Axion Fields</i> Bao Tran; Victor Flambaum; Stadnik Yevgeny; Carlo Rizzo; Dmitry Budker</p> <p><i>For Planetary Processes And Exploration Of Our Solar System And Beyond</i> Penny King</p> <p><i>Characterising "hot Jupiters"</i> Graeme Melville; Lucyna Chudzer; Jeremy Bailey; George Zhou</p>	<p><i>Tunable Coherence And Control</i> Dimitrie Culcer; Jose Carlos Abadillo-Uriel; Joe Salfi; Sven Rogge; Xuedong Hu; Maria Jose Calderon</p>	<p><i>Reflections In Multimedia</i> Petr Lebedev; Manjula Sharma</p> <p><i>What Can Teacher Voices Tell Us About Their Experience In Professional Development Workshops?</i> Scott Cornish; Alexandra Yeung; Scott Kable; Manjula Sharma</p>	<p>Jiaxiang Wang; Paraskevas Lalousis; Heinrich Hora</p> <p><i>Invited: Adaptive Estimation Of A Time-varying Phase With Coherent States</i> Kiarn Laverick; Howard Wiseman; Hossein Dinani; Dominic Berry</p>
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15:20-16:00

**Break**

16:00-17:20

	<b>AMO</b>	<b>Astro</b>	<b>CMP</b>	<b>Quantum</b>
	<b>Colombo LG01</b>	<b>Colombo A</b>	<b>Colombo B</b>	<b>Colombo LG02</b>
	<input type="checkbox"/> <b>AMO - 2E</b> Session Chair: TBA	<input type="checkbox"/> <b>Astro - 2E</b> Session Chair: Paul Lasky, Monash University	<input type="checkbox"/> <b>CMP - 2E</b>	<input type="checkbox"/> <b>Quantum - 2E</b> Session Chair: Geoff Pryde, Griffith University
16:00-16:20	<p><i>Pulsed Positronium Beams</i> Josh Machacek; Steve Buckman; James Sullivan</p>	<p><i>Ligo And Virgo And The Detection Of A Binary Neutron Star Merger, Gw170817</i> Bram Slagmolen</p>	<p><i>Shapedpulsesimulator: A Computation Package For Designing And Simulating Shaped Pulses For Epr'</i> Joanna Guse; Dane McCamey</p>	<p><i>Optimal Transport Of A Quantum State With Machine Learning</i> Bryce Henson; Dong Shin; Kieran Thomas; Michael Hush; Sean Hodgman; Andrew Truscott</p>
16:20-16:40	<p><i>Electron Impact Excitation Of OH In The Atmosphere Of Jupiter</i> Laurence Campbell; Michael Brunger</p>	<p><i>Search For Continuous Gravitational Waves From Scorpius X-1 With A Hidden Markov Model</i> Ling Sun; Andrew Melatos; Sofia Suvorova; William Moran; Robin Evans</p>	<p><i>Single Ion Detectors For Deterministic Top-down Fabrication Of Donor-qubit-based Silicon Quantum Electronics</i> Simon Graeme Robson; Alexander Malwin Jakob; Vincent Mourik; Vivien</p>	

16:40-17:00	<p><i>High-performance Atomic Structure Calculations And The Search For New Physics</i> Emily Kahl; Julian Berengut</p>	<p><i>Effect Of Finite Photon Mass On Galaxy Rotation Curve Imitates Gravitational Pull Of Dark Matter</i> Victor Flambaum; Dmitry Ryutov; Dmitry Budker</p>	<p>Schmitt; Brett Cameron Johnson; Chris Tao-Kuan; Fay Hudson; Andrea Morello; Andrew Dzurak; David Norman Jamieson</p> <p><i>Determining The Site Symmetry Of Individual Erbium Ions Inside A Silicon Transistor</i> Gabriele de Boo; Chunming Yin; Milos Rancic; Brett Johnson; Jeffrey McCallum; Matthew Sellars; Sven Rogge</p>	<p><i>Nanoscale Quantum Sensing</i> Liam McGuinness</p>
17:00-17:20	<p><i>Investigation Of Quantum Electrodynamical Radiative Corrections To Electric Dipole Transition Amplitudes In Heavy Alkali Metals</i> Joel Brown; Jacinda Ginges</p>		<p><i>Studies Of The 0.7 Anomaly In Quantum Point Contacts With Strong Interactions And Spin Orbit Interaction</i> Karina Hudson; Ashwin Srinivasan; Olga Goulko; Jarrod Adam; Qingweng Wang; LaReine Yeoh; Oleh Klochan; Ian Farrer; David Ritchie; Jan von Delft; Alex Hamilton</p>	<p><i>Quantum Computing 2.0: Simulating The Next Generation!</i> Peter Drummond</p>
18:30-22:00	<input checked="" type="checkbox"/> <b>Physics in the Pub</b> (TBA)			

## Wednesday, 6 December 2017

8:00  **Registration Desk Open** (Colombo Foyer)

9:00-10:40

Astro	CMP	Quantum
Colombo A	Colombo B	Colombo C
<input type="checkbox"/> <b>Astro - 3M</b> <i>Session Chair: Yvonne Wong, UNSW</i>	<input type="checkbox"/> <b>CMP - 3M</b>	<input type="checkbox"/> <b>Quantum - 3M</b> <i>Session Chair: Margaret Reid, Swinburne University of Technology</i>
9:00-9:20 <a href="#">Enhanced Density Of Light Dark Matter Near Compact Astronomical Objects</a> Bao Tran; Victor Flambaum; Julian Berengut	9:00-9:20 <a href="#">Quantized Charge Transport In Chiral Majorana Edge Modes</a> Stephan Rachel	9:00-9:20 <a href="#">Invited: Operationally Characterising Quantum Processes With Memory</a> Felix Pollock; Kavan Modi
9:20-9:40 <a href="#">Cracks In Lcdm: Real Or Imagined?</a> Christian Reichardt	9:20-9:40 <a href="#">Strange Properties Of Spin-3/2 Holes In Semiconductor Nanostructures</a> Alex Hamilton	
9:40-10:00 <a href="#">Unveiling The Signatures Of An Evolving And Coupled Dark Sector</a> Eromanga Adermann; Pascal Elahi; Geraint Lewis	9:40-10:00 <a href="#">In-plane G-factor Anisotropy In P-type Quantum Point Contacts</a> Dmitry Miserev; Ashwin Srinivasan; Olga Tkachenko; Vitaly Tkachenko; Ian Farrer; David Ritchie; Alexander Hamilton; Oleg Sushkov	9:40-10:00 <a href="#">Fibre Based High-bandwidth Quantum Memory</a> Ben Sparkes; Jed Rowland; Philip Light; Andre Luiten; Chris Perrella
10:00-10:20 <a href="#">A Consistency Test Of The Lcdm Model With Planck Data</a> Jan Hamann	10:00-10:20 <a href="#">Interference Effects In Magnetic Focusing With Strong Spin-orbit Interactions</a> Samuel Bladwell; Oleg Sushkov	
10:20-10:40	10:20-10:40 <a href="#">Strong Influence Of Spin-orbit Coupling On Magneto Transport In Two-dimensional Hole Systems</a> Hong Liu; Elizabeth Marcellina; Alex Hamilton; Dimitrie Culcer	10:20-10:40 <a href="#">Weak Measurements And Tests Of Macro-realism For Noon States</a> Laura Rosales-Zarate; Bogdan Opanchuk; Run Yan Teh; Margaret Reid

10:40-11:00

**Break**

11:00-12:00  **TOWN HALL - Mid-term review of the AAS Physics Decadal Plan (Colombo A)** *Session Chair: Ian McArthur, University of Western Australia*

12:00-13:20  **Lunch Break**

13:20-15:20	<b>CMP</b> <b>Colombo B</b>	<b>Quantum</b> <b>Colombo C</b>
	<input type="checkbox"/> <b>CMP - 3A</b>	<input type="checkbox"/> <b>Quantum - 3A</b> <i>Session Chair: Dominic Berry, Macquarie University</i>
13:20-13:40	<i>Terahertz Spectroscopy Of Synthetic Pigments</i> Andrew Squires; Roger Lewis	<i>Invited: Scaling Up Single-atom Spin Qubits In Silicon</i> Andrea Morello
13:40-14:00	<i>Coherent Spin Spectroscopy Of Organic Photovoltaics</i> Lara Gillan; Amir Asadpoordarvish; Joanna Guse; Dane McCamey	
14:00-14:20	<i>Quantum Physics In One Dimension Using Nano-structured Josephson Junction Arrays</i> Timothy Duty	<i>Invited: Bright Entangled Photon Pairs From A Nanowire Quantum Dot</i> Sara Hosseini; Arash Ahmadi; Mohammad Zeeshan; Dan Dalacu; Philip Poole; Andreas Fognini; Klaus Jons ; Val Zwiller ; Michael. E Reimer
14:20-14:40	<i>Large Area Printed Organic Photovoltaics: Identifying And Removing Loss Mechanisms In A Novel Low Cost Ternary Blend Acceptor System</i> Mohammed Al-Mudhaffer; Krishna Feron; Xiaoiing Zhou; John L. Holdsworth; Warwick J. Belcher; Paul C. Dastoor; Matthiw J. Griffith	
14:40-15:00	<i>Spatial Variation And Correlation Of Spin And Magnetoluminescence Properties In Organic Light-emitting Diodes</i> William Pappas; Maya Buki; Amir Asadpoordarvish; Dane McCamey	<i>Invited: Scalable Trapped Ion Quantum Computing</i> Alexander Ratcliffe; Richard Taylor; Joseph Hope

15:20-16:00  **Equity and Diversity Session [WIP]** *Session Chair: Jodie Bradby, The Australian National University*

16:00-17:20

	<b>CMP</b>	<b>Quantum</b>
	<b>Colombo B</b>	<b>Colombo C</b>
	<input type="checkbox"/> <b>CMP - 3E</b>	<input type="checkbox"/> <b>Quantum - 3E</b> <i>Session Chair: Felix Pollock, Monash University</i>
16:00-16:20	<i>Developing Large 2d Sqif Arrays Using Ybco Step-edge Junctions</i> Wendy Purches; Kirsty Hannam; Jeina Lazar; Chris Lewis; Shane Keenan; Alex Grancea; Emma Mitchell	<i>Coupling Spin Qubits Via An Exchange Quantum Mediator</i> Frederico Martins
16:20-16:40	<i>Superconductivity In Intercalated Buckled Van Der Waals Two-dimensional Materials</i> Sherif Tawfik; Catherine Stampfl; Michael Ford	
16:40-17:00	<i>Hybrid Nanowire Ion-to-electron Transducers For Integrated Bioelectronic Circuitry</i> Damon Carrad; Bernard Mostert; Rifat Ullah; Adam Burke; Hannah Joyce; Hoe Tan; Chennupati Jagadish; Peter Krogstrup; Jesper Nygard; Paul Meredith; Adam Micolich	<i>Continuous Quantum Measurement Of A Levitated Optomechanical Sphere</i> Jason Ralph; Kurt Jacobs; Jonathon Coleman
17:00-17:20	<i>Using A Parylene Thin-film As An Organic Gate Insulator In Wrap-gated Nanowire Transistors</i> Jan G. Gluschke; Felix Richter; Damon J. Carrad; Jack Cochrane; Sebastian Lehmann; Lars Samuelson; Adam P. Micolich	
17:20-17:40	<i>Towards Quantum Device Studies Using P-gaas Nanowire Top-gate Transistors</i> Abu Rifat Ullah; J.G. Gluschke; D.J. Carrad; P. Krogstrup; C.B. Sorensen; J. Nygard; Adam Paul Micolich	<i>Quantifying Memory Effects In The Ibm Quantum Experience</i> Joshua Morris; Kavan Modi; Felix Pollock
17:00-19:00	<input checked="" type="checkbox"/> <b>Poster Session</b> <ol style="list-style-type: none"><li><i>Test Of Unification Theories And Search For Dark Matter Using Atomic Physics Methods</i> Victor Flambaum; Yevgeny Stadnik</li><li><i>Collisional-radiative Model For Diagnosis Purposes Of Laser Induced Breakdown Spectroscopy Plasmas</i> Zeyneb Bedrane</li><li><i>Thermal And Non-thermal Explosion In Metals Ablation By Femtosecond Laser Pulse: Classical Approach Of The Two Temperature Model</i> Ahmed Abdelmalek; Zeyneb Bedrane; El-Hachemi Amara</li><li><i>The Unification Equation - Derivation, Tests And Consequences</i></li></ol>	

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- Paul Smith
5. [\*Quantum Error Correction With Continuous Measurements\*](#)  
Leonardo de Castro
  6. [\*Enhancing Light-harvesting Efficiencies Using Controllable Coherence\*](#)  
Stefano Tomasi; Ivan Kassal
  7. [\*Adiabatic Pulses For Spin-resonance Based Magnetic-field Sensing With Organic Diodes\*](#)  
Tamader Alhazani; Joanna Guse; Amir Asadpoordarvish; Dane McCamey
  8. [\*The Effect Of Speed And Temperature On The Pressure Induced Phase Transformations In Si Nanowires\*](#)  
Larissa Huston; Bianca Haberl; Guoyin Shen; Alois Lugstein; David Cullen; Jim Williams; Jodie Bradby
  9. [\*Numerical Calculations Of Electronic Spectra And Isotope Shifts In Super-heavy Atoms\*](#)  
Daniel Czapski; Amy Geddes; Julian Berengut
  10. [\*Fabrication Of Electronic Structures On Diamond Using Uv Surface Etching\*](#)  
Mojtaba Moshkani; Christopher Baldwin; James E. Downes; Richard P. Mildren
  11. [\*Toward An Optical Lattice Momentum Microscope\*](#)  
Jacob Ross; Andrew Truscott; Sean Hodgman
  12. [\*Examining The Mechanical Response Of Arabidopsis Thaliana Using Nanoindentation And Finite Element Modelling\*](#)  
Toby Hendy; Jodie Bradby; Adrienne Hardham
  13. [\*Structure-property Relations Of Glassy Carbons\*](#)  
Thomas Shiell; Wenjie Yang; Chris Tanner; Sherman Wong; Brenton Cook; Bianca Haberl; Reinhard Boehler; Jim Williams; Rob Elliman; David McKenzie; Dougal McCulloch; Jodie Bradby
  14. [\*Magnetism Of Ba<sub>2</sub>MnSi<sub>2</sub>O<sub>7</sub> Melilite And Related Compositions\*](#)  
Matthew Sale
  15. [\*Hyperdoping Si With Deep Level Impurities By Ion Implantation And Pulsed Laser Melting\*](#)  
Shao Qi Lim; Quentin Hudspeth; Jeffrey Warrender; Enrico Napolitani; Jim Williams
  16. [\*Radio Galaxy Zoo: Is Environment The Cause Of Radio Jet Asymmetry?\*](#)  
Payton Rodman; Ross Turner; Stanislav Shabala
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## Thursday, 7 December 2017

8:00	<input checked="" type="checkbox"/> <b>Registration Desk Open</b> (Colombo Foyer)		
9:00-10:40	<b>CMP</b> <b>Colombo B</b>	<b>Colombo A</b>	<b>Quantum</b> <b>Colombo C</b>
	<input type="checkbox"/> <b>CMP - 4M</b>	<input type="checkbox"/> <b>Nano and Applied - 4M</b>	<input type="checkbox"/> <b>Quantum - 4M</b> <i>Session Chair: Andrea Morello, ARC Centre of Excellence for Quantum Computation and Communication Technology (CQC<sup>2</sup>T), UNSW</i>
9:00-9:20	<i>On Chiral Model Of Boron Nitride</i> Abdullahi Ahmed; Rybakov Yuri Pitrovic	<i>Towards Efficient Triplet Excitons Production By Intramolecular Singlet Fission</i> Amir Asadpoordarvish; Murad J. Y. Tayebjee; Samuel N. Sanders; Elango Kumarasamy; Andrew B. Pun; Matthew Y. Sfeir; Luis M. Campos; Dane R. McCamey	<i>Invited: Quantum Spin-heat Engine With Trapped Ions</i> Andre Carvalho; Erik Streed; Joan Vaccaro
9:20-9:40	<i>Deterministic Heavy Molecule-ion Implantation For Nano-engineered Silicon Quantum Devices</i> Danielle Holmes; Alexander Malwin Jakob; Simon Graeme Robson; David Norman Jamieson	<i>Ballistic Motion In Biologically Compatible Optical Tweezers</i> Muhammad Waleed; Lars Madsen; Warwick Bowen	
9:40-10:00	<i>Differences In The Adsorption On Alanine Enantiomers On A Chiral Metal Surface</i> Michael Gladys; Lars Thomsen; Anton Tadich; Therese Pedersen; Kane O'Donnell; Jeong Woo Han	<i>Accurate Dimensional Measurements At The Nanoscale</i> Bakir Babic; Christopher Freund; Victoria Coleman; Jan Herrmann	<i>Exploring Quantum Chaos Within A Single 123-sb Donor In Silicon</i> Serwan Asaad; Vincent Mourik; Hannes Firtgau; Mark Johnson; Arne Laucht; Mateusz Madzik; Fay Hudson; Jeffrey McCallum; Gerard Milburn; Catherine Holmes; Andrew Dzurak; Jarryd Pla; Andrea Morello
10:00-10:20	<i>Effect Of Sio2 Content On The Physical Properties Of Co2fega Nanoparticles</i> Priyanka Nehla; Rajendra S. Dhaka		
10:20-10:40	<i>Unconventional Charge Ordering In 3d Metallic Single Crystal Of Na2.7ru4o9</i> Arvind Yogi		<i>Tuning Quantum Measurements To Control Chaos</i> Jessica Eastman; Joseph Hope; Andre Carvalho

10:40-11:00

**Break**

11:00-12:00

**Plenary** (Colombo A) *Session Chair: Dane McCamey, The University of New South Wales*  
*Plenary: [Quantum Microscopy: Towards Native-state Observation Of The Machinery Of Life](#)*  
Nicolas Mauranyapin; Lars Madsen; Michael Taylor; Muhammad Waleed; Catxere Andrade Casacio; **Warwick Bowen**

12:00-12:20

**Conference Closing Discussion** (Colombo A)