Host Organisation

AUSTRALIAN INSTITUTE OF PHYSICS

The Australian Institute of Physics promotes the role of Physics in research, education, industry and the community by:

- Representing and promoting the physics community to government and other legislative or policy-making bodies
- Organising meetings and conferences on research and professional topics
- Promoting and supporting physics teaching and education in schools, colleges and universities
- Encouraging investment in government and industrial research
- Setting and supporting professional standards and qualifications in physics
- Identifying and supporting the needs of physicists in all sectors of employment
- Recognising distinguished contributions to physics.

Congress Organising Committee

Birgit Lohmann, Griffith University (Chair)
Robert Sang, Griffith University (Secretary)
Howard Wiseman, Griffith University (Treasurer)
Esa Jaatinen, Queensland University of Technology (Sponsorship and Exhibition)

Program Committee

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Ross McKenzie, Secretary
Susan Grantham, Administration Secretary
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John Dobson, Condensed Matter and Materials "Wagga" Meeting (CMM)
Michael Drinkwater, Astronomical Society of Australia (ASA) and Australasian Society for General Relativity and Gravitation (ASGRG)
Peter Drummond, Australian Optical Society (AOS)
Ian Gentle, Australian Synchrotron Research Program (ASRP)
Hans Gottlieb, Australian Acoustical Society (AAS)
Norman Heckenberg, Australian Optical Society (AOS)
David Hinde, Australian Institute of Nuclear Science and Engineering Nuclear & Particle Physics Group (AINSE - NUPP)
Jon Links, Complex Systems, Computational and Mathematical Physics
Birgit Lohmann, Atomic and Molecular Physics and Quantum Chemistry Group (AMPQC)
Paul Meredith, Australian Institute of Nuclear Science and Engineering Plasma Science and Technology Congress (AINSE - Plasma)
Lidia Morawaska, Environmental Physics
Jim Pope, Biomedical Physics
Geoff Prady, Australian Optical Society (AOS)
Robert Sang, Atomic and Molecular Physics and Quantum Chemistry Group (AMPQC)
Gary Tuck, Australian Society of Exploration Geophysicists (ASEG) and Specialist Group on Solid Earth Geophysics, Geological Society of Australia (GSA)
Margaret Wegener, Physics Education Group (PEG) and Women in Physics Group (WIP)
Howard Wiseman, Quantum Information, Concepts and Coherence Group (QUICC)

Participating Societies

The Congress appreciates the participation support of the following physics based societies:

- Australian Institute of Physics (AIP)
- Atomic and Molecular Physics and Quantum Chemistry Group (AMPQC)
- Australian Institute of Nuclear Science and Engineering Nuclear & Particle Physics Group (AINSE - NUPP)
- Physics Education Group (PEG)
- Solar-Terrestrial and Space Physics (STSP)
- Women in Physics Group (WIP)
- Astronomical Society of Australia (ASA)
- Australasian Society for General Relativity and Gravitation (ASGRG)
- Australian Acoustical Society (AAS)
- Australian Institute of Nuclear Science and Engineering (AINSE)
- Australian Meteorological and Oceanographic Society (AMOS)
- Australian Optical Society (AOS)
- Australian Society of Exploration Geophysicists (ASEG)
- Australian Synchrotron Research Program (ASRP)
- Condensed Matter and Materials "Wagga" Meeting (CMM)
- Specialist Group on Solid Earth Geophysics, Geological Society of Australia (GSA)
- Vacuum Society of Australia (VSA)

Underwriting Support

The Congress Organisers thank the following organisations for their underwriting support:

- Australian Institute of Physics
- Australian Optical Society
- Australian Society of Exploration Geophysicists

Congress Theme

The theme of this meeting is RiverPhys, celebrating presentations of contemporary physics research in Australia, on the banks of the beautiful Brisbane river. Appropriately, our logo represents the Brisbane River with the water "tunnelling" under the Goodwill Bridge, which is directly adjacent to the meeting venue.

Topic Areas

Please be aware that the topic area abbreviations will be used throughout the Program timetable.

The following topic areas will be covered in the Congress Program:

- Acoustics and Music (AAS)
- Astronomy (ASA)
- Atomic and Molecular Physics and Quantum Chemistry (AMPQC)
- Biophysics and Medical Physics (BMP)
- Complex Systems, Computational and Mathematical Physics (CSCMP)
- Condensed Matter and Materials and Surface Physics (CMMSP)
- Education (PEG)
- Environmental Physics (EP)
- GeoPhysics (GP)
- History of Physics (HOP)
- Meteorology and Climate Change and Oceanography (AMOS)
- Nuclear and Particle Physics (NUPP)
- Optics, Photonics, Laser Physics (AOS)
- Plasma Physics (PP)
- Relativity and Gravitation (ASGRG)
- Renewable Energy (RE)
- Solar-Terrestrial and Space Physics (STSP)
- Synchrotron Science (ASRP)
- Women in Physics (WIP)
### Sunday, 3 December 2006

**Program**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00-18:00</td>
<td>Registration Open</td>
</tr>
<tr>
<td>17:00-19:00</td>
<td>Welcome Reception</td>
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### Monday, 4 December 2006

**Great Hall 1&2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:15-10:00</td>
<td>Plenary Speaker: Confessions of a converted lecturer – 101</td>
</tr>
<tr>
<td></td>
<td>Professor Eric Mazur, Harvard College Professor, and Gordon McKay Professor of Applied Physics and Professor of Physics,</td>
</tr>
<tr>
<td></td>
<td>Division of Engineering and Applied Sciences, Department of Physics,</td>
</tr>
<tr>
<td></td>
<td>Harvard University, Cambridge, USA</td>
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**Great Hall 1&2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30-20:00</td>
<td>Exhibition Open</td>
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<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00-10:40</td>
<td>Morning Tea with Exhibitors</td>
</tr>
</tbody>
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### 10:40-12:20

<table>
<thead>
<tr>
<th>Room</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room P1</td>
<td>Chairperson: Dr. Kenneth O'Sullivan, Australian National University,</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
</tr>
<tr>
<td></td>
<td><strong>Session 1.01</strong></td>
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<tr>
<td></td>
<td><strong>Concurrent - 1.01</strong></td>
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<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
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<tr>
<td></td>
<td><strong>Sponsored by Manros Scientific</strong></td>
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<tr>
<td>Room P2</td>
<td>Chairperson: Margaret Wegener, Australia</td>
</tr>
<tr>
<td></td>
<td><strong>Concurrent - 1.02</strong></td>
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<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Sponsored by Griffith University Nanoscience Science and Technology Centre</strong></td>
</tr>
<tr>
<td>Room P3</td>
<td>Chairperson: Michael Dinkmeyer, Australia</td>
</tr>
<tr>
<td></td>
<td><strong>Concurrent - 1.03</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
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<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
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### 10:40-12:20

<table>
<thead>
<tr>
<th>Room</th>
<th>Event</th>
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<tbody>
<tr>
<td>Room P4</td>
<td>Chairperson: Brant J. Fraser, University of New South Wales, Australia</td>
</tr>
<tr>
<td></td>
<td><strong>Session 1.04</strong></td>
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<tr>
<td></td>
<td><strong>Concurrent - 1.04</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ASA / AGROG</strong></td>
</tr>
<tr>
<td>Room P5</td>
<td>Chairperson: Dr. Robert T. Sand, Griffith University, Australia</td>
</tr>
<tr>
<td></td>
<td><strong>Session 1.05</strong></td>
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<tr>
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<td><strong>Concurrent - 1.05</strong></td>
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<tr>
<td></td>
<td><strong>APPPC – Photon–Impact &amp; Fundamental Interactions</strong></td>
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### 11:20

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<tr>
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<tbody>
<tr>
<td>Room P1</td>
<td><strong>Dialogue 1.02</strong></td>
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<tr>
<td></td>
<td>Chairperson: Mark Fischetti, University of Arizona, United States</td>
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<tr>
<td></td>
<td><strong>Session 1.02</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
</tr>
<tr>
<td>Room P2</td>
<td>Chairperson: Laura Wei, Griffith University, Australia</td>
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<tr>
<td></td>
<td><strong>Concurrent - 1.02</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
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<tr>
<td>Room P3</td>
<td>Chairperson: Neil Turok, University of Toronto, Australia</td>
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<td><strong>Concurrent - 1.03</strong></td>
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<tr>
<td></td>
<td><strong>Preliminary Sessions</strong></td>
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<tr>
<td>Room P4</td>
<td>Chairperson: Brian J. Fraser, University of New South Wales, Australia</td>
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<tr>
<td></td>
<td><strong>Session 1.04</strong></td>
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<td><strong>ASA / AGROG</strong></td>
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<td>Chairperson: Dr. Robert T. Sand, Griffith University, Australia</td>
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<td></td>
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### 11:40

<table>
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<tr>
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<tbody>
<tr>
<td>Room P1</td>
<td><strong>Session 1.06</strong></td>
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<td>Room P2</td>
<td>Chairperson: John F. scramble, University of Queensland, Australia</td>
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<td></td>
<td><strong>Concurrent - 1.06</strong></td>
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<tr>
<td>Room P3</td>
<td><strong>Session 1.08</strong></td>
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<tr>
<td>Room P4</td>
<td>Screen: John F. scramble, University of Queensland, Australia</td>
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### 12:00

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<tbody>
<tr>
<td>Room P1</td>
<td>Lunch (own arrangements)</td>
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<td>Room P2</td>
<td><strong>Session 1.09</strong></td>
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<td>Room P3</td>
<td><strong>Session 1.10</strong></td>
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<td></td>
<td><strong>Concurrent - 1.10</strong></td>
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### 12:00

<table>
<thead>
<tr>
<th>Room</th>
<th>Event</th>
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<tbody>
<tr>
<td>Room P1</td>
<td>The chrysalis had emerged as a gorgeous butterfly: A history of the Australian Institute of Physics - 125</td>
</tr>
<tr>
<td>Room P2</td>
<td>Anna Birnie</td>
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<tr>
<td>Room P3</td>
<td><strong>Session 1.12</strong></td>
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<td>Room P4</td>
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<tr>
<td>Room P5</td>
<td><strong>Session 1.14</strong></td>
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### 13:00-14:00

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<tr>
<td>Room P1</td>
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<td>Room P2</td>
<td><strong>Session 1.16</strong></td>
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<td>Room P3</td>
<td><strong>Session 1.17</strong></td>
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<td>Room P4</td>
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<tr>
<td>Room P5</td>
<td><strong>Session 1.19</strong></td>
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<tr>
<td>14:00</td>
<td>Room P1</td>
</tr>
<tr>
<td>Chairperson: Omri K. Granot, Queensland University of Technology, Australia</td>
<td>Chairperson: A/Prof Jan R. Gerle, University of Queensland, Australia</td>
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<tr>
<td>14:00:00</td>
<td>Presentation - Dekel J. Pantler, California Institute of Technology, United States</td>
</tr>
<tr>
<td>14:40:00</td>
<td>Speckle-geophysical control of slow-light in nonlinear Bragg-grating waveguide arrays - 123 Paul C. Cashmore, Australian National University, Australia</td>
</tr>
<tr>
<td>15:00</td>
<td>Room P3</td>
</tr>
<tr>
<td>Chairperson: Dr Susan M. Scott, Australian National University, Australia</td>
<td>Chairperson: Prof. Peter JH Taylor, Flinders University, Australia</td>
</tr>
<tr>
<td>15:00:00</td>
<td>Precision microwave oscillators and interferometers to test Lorentz invariance in Electrodynamics - 138 Michael F. Talbot, University of Western Australia, Australia</td>
</tr>
<tr>
<td>15:00</td>
<td>Room P6</td>
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<tr>
<td>Chairperson: A/Prof Jan R. Gerle, University of Queensland, Australia</td>
<td>Chairperson: Marc D. Normand, University of Western Australia, Australia</td>
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<tr>
<td>15:40:00</td>
<td>Slow-light modes in Bragg-grating couplers - 128 Songwoo Ahn, Ritsumeikan University, Japan</td>
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<td>15:40</td>
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**Afternoon Tea with Exhibitors**
<table>
<thead>
<tr>
<th>Time</th>
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<th>Concurrent - 3.05</th>
<th>Concurrent - 3.06</th>
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<tbody>
<tr>
<td>16:20-18:20</td>
<td>Room P3</td>
<td>Room P4</td>
<td>Room P5</td>
</tr>
<tr>
<td>16:20</td>
<td>Chairperson: Michael F Tobey, University of Western Australia, Australia</td>
<td>Chairperson: Prof Hervé Claire, University of Sydney, Australia</td>
<td>Chairperson: Prof Annette T Dobromilov, Macquarie University, Australia</td>
</tr>
<tr>
<td>16:20</td>
<td>Absolute motion and gravitational wave experiment results - 165</td>
<td>Recent advances in remote sensing of earth from space - 170</td>
<td>Physics of Cold Antihydrogen - 174</td>
</tr>
<tr>
<td>16:20</td>
<td>Reginald C Dahl, Finsen University, Australia</td>
<td>Alex Held, CSIRO Office of Space Science and Applications, Australia</td>
<td>Michael Chariton, University of Wales Swansea, United Kingdom</td>
</tr>
<tr>
<td>16:40</td>
<td>Causal structure for the abstract boundary - 168</td>
<td>The relationship between isochronic irregularity and plasma connection velocities: New results using coherent and incoherent radars - 171</td>
<td>Probing Collisions in the Molecular Frame - 175</td>
</tr>
<tr>
<td>16:40</td>
<td>Jon E White, Australian National University, Australia</td>
<td>Ronan Mahonreth, La Trobe University, Australia</td>
<td>Julian Lownt, Centre for Antiferromagnetic Studies, RSPHYTE, Australian National University, Australia</td>
</tr>
<tr>
<td>16:00</td>
<td>Thermal noise of a reservoir Lorentzian resonators - 167</td>
<td>On the need for a solar wind trigger for magnetospheric substorms - 172</td>
<td>Propagating exterior complex scaling method for calculating three-body and four-body atomic collisions - 178</td>
</tr>
<tr>
<td>16:00</td>
<td>Colin M Mead, Australian National University, Australia</td>
<td>Steven A Morley, University of Newcastle, Australia</td>
<td>Philip J Bertrand, Monash University, Australia</td>
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<tr>
<td>16:00</td>
<td>The relationship between isochronic irregularity and plasma connection velocities: New results using coherent and incoherent radars - 171</td>
<td>On the need for a solar wind trigger for magnetospheric substorms - 172</td>
<td>Propagating exterior complex scaling method for calculating three-body and four-body atomic collisions - 178</td>
</tr>
<tr>
<td>16:00</td>
<td>Mark J Banda, Centre for Excellence for Quantum Atom Optics, Swinburne University, Australia</td>
<td>Colin M Mead, Australian National University, Australia</td>
<td>Philip J Bertrand, Monash University, Australia</td>
</tr>
<tr>
<td>17:40</td>
<td>Control of instabilities in high optical power cavities - 169</td>
<td>SuperDARN spectral width, Bolivar of isochronic irregularities and particulate precipitations - 173</td>
<td>The development of an electrostatic charged-particle orbit repeating system - 177</td>
</tr>
<tr>
<td>17:40</td>
<td>Dr C.J. School of Physics, The University of Western Australia, Australia</td>
<td>Bhuvanesh Kumar, Department of Physics, University of Newcastle, New South Wales, Australia</td>
<td>Dr R Hobbs, University of Western Australia, Australia</td>
</tr>
<tr>
<td>17:00</td>
<td>Residual amplitude modulation effects and cancellation in modulation transfer spectroscopy - 153</td>
<td>Reduced visualization in the Kern-Newman Geometry using the WInTank Software - 166</td>
<td>Steven A Morley, University of Newcastle, Australia</td>
</tr>
<tr>
<td>17:00</td>
<td>Dr E.A. Jochkh, Queensland University of Technology, Australia</td>
<td>Bhuvanesh Kumar, Department of Physics, University of Newcastle, New South Wales, Australia</td>
<td>Philip J Bertrand, Monash University, Australia</td>
</tr>
<tr>
<td>17:00</td>
<td>Do students and staff have the same perception of an exam question's difficulty? - 162</td>
<td>On the need for a solar wind trigger for magnetospheric substorms - 172</td>
<td>Propagating exterior complex scaling method for calculating three-body and four-body atomic collisions - 178</td>
</tr>
<tr>
<td>17:00</td>
<td>Dr Gilbert J Yellis, Biomedical Sciences, The University of Sydney, Australia</td>
<td>Steven A Morley, University of Newcastle, Australia</td>
<td>Philip J Bertrand, Monash University, Australia</td>
</tr>
<tr>
<td>16:00</td>
<td>Chairperson: Prof Annette T Dobromilov, Macquarie University, Australia</td>
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<tr>
<td>16:00</td>
<td>Chairperson: Prof Hervé Claire, University of Sydney, Australia</td>
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<tr>
<td>16:00</td>
<td>Chairperson: Michael F Tobey, University of Western Australia, Australia</td>
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Monday, 4 December 2006

18:00-20:00 Poster Sessions
Solar-Terrestrial and Space Physics (STSP)
Astronomy (ASA)
Synchrotron Science (ASPI)
Optics, Photonics, Laser Physics (OS)
Exhibition Area, Plaza Terrace Room
**Australian Institute of Physics (AIP) 17th National Congress 2006**

**Tuesday, 5 December 2006**

08:30-09:15 **Plenary Session**
- Opening Address: John Hall, President of AIP
- Plenary Speech: The Future of Fundamental Science
- Plenary Speech: The Future of Quantum Communication and Quantum Computation

09:15-10:30 **Session A**
- Chairperson: Peter Kennett, Swinburne University of Technology, Australia
- Paper 1: Quantum optical technology at the single-photons level and beyond - 201
- Alex L. Ga undo, University of Calgary, Canada
- Paper 2: Quantum memories and laser noise classicalisers using rare earth ion dopants - 202
- Dr. Denis J. Gauthier, Australian National University, Australia

10:30-11:00 **Coffee Break**

11:00-12:15 **Session B**
- Chairperson: Gerard J. Milburn, The University of Queensland, Australia
- Paper 1: Optical quantum memory and dispersive readout - 203
- Dr. Steven J. Bending, The University of Queensland, Australia
- Paper 2: Quantum memories and laser noise classicalisers using rare earth ion dopants - 202
- Dr. Denis J. Gauthier, Australian National University, Australia

12:15-14:00 **Lunch Break**

13:30-14:00 **Women in Physics Meeting**
- Chair: Lesley Cashmore

14:00-15:45 **Session C**
- Chairperson: Gregor Chraplyvy, Australian National University, Australia
- Paper 1: Quantum memories and laser noise classicalisers using rare earth ions - 202
- Dr. Denis J. Gauthier, Australian National University, Australia
- Paper 2: Quantum memories and laser noise classicalisers using rare earth ion dopants - 202
- Dr. Denis J. Gauthier, Australian National University, Australia

15:45-17:00 **Session D**
- Chairperson: Mike Reilly, Melbourne University, Australia
- Paper 1: Quantum memories and laser noise classicalisers using rare earth ions - 202
- Dr. Denis J. Gauthier, Australian National University, Australia
- Paper 2: Quantum memories and laser noise classicalisers using rare earth ion dopants - 202
- Dr. Denis J. Gauthier, Australian National University, Australia

17:00-18:00 **Poster Sessions**
- Poster 1: Quantum memories and laser noise classicalisers using rare earth ions - 202
- Dr. Denis J. Gauthier, Australian National University, Australia
- Poster 2: Quantum memories and laser noise classicalisers using rare earth ion dopants - 202
- Dr. Denis J. Gauthier, Australian National University, Australia

18:00-19:30 **Conference Dinner**
- Venue: The Grand Hotel, Brisbane, Australia

**Program - Tuesday**
### Wednesday, 6 December 2006

**Great Hall 182**

<table>
<thead>
<tr>
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<th>Concurrent - 7.06</th>
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<tbody>
<tr>
<td><strong>Chairpersons</strong></td>
<td><strong>Chairpersons</strong></td>
<td><strong>Chairpersons</strong></td>
</tr>
<tr>
<td>Andrew O'Troll, The Australian National University, Australia</td>
<td>Prof Robert I Dewar, The Australian National University, Australia</td>
<td>Murray L Pettersen, Department of Physics, Australia</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td><strong>Participants</strong></td>
<td><strong>Participants</strong></td>
</tr>
<tr>
<td>Emergence of order in gaseous Bose-Einstein condensates - 320</td>
<td>Exploiting the flexibility of the H-1 national facility to explore fusion plasma physics - 312</td>
<td>Quantum computation as geometry - 320</td>
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<td>Prof Masahide Ueda, Tokyo Institute of Technology, Japan</td>
<td>Ross D Blackwood, Plasma Research Laboratory, Australian National University, Australia</td>
<td>Prof Michael A Milton, University of Queensland, Australia</td>
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<td>Towards the fabrication of a single worked carbon nanotube 2D helix detector - 318</td>
<td>Electron-phonon collisions cross sections for fusion research - 313</td>
<td>Low energy neutral atom imaging in space - 324</td>
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<td>Dr Luca Thommen, School of Mathematical and Physical Sciences, University of Newcastle, Callaghan, NSW, Australia</td>
<td>Prof Greg Bryant, Munich University, Australia</td>
<td>Stephen F Esslinger, Lockheed Martin Advanced Technology Center Palo Alto, California, Australia</td>
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**Great Hall 182**

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<tr>
<td><strong>Chairpersons</strong></td>
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<tr>
<td>Prof A Profit and C L Hollenberg, University of Melbourne, Australia</td>
<td>Dr Craig M Sayers, ARC Centre of Excellence for Quantum-Atom Optics, Department of Physics, Australian National University, Australia</td>
<td>Anton Rajantie, Physics, Australia</td>
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<td>Quantum computation as geometry - 320</td>
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<td>Prof Michael A Milton, University of Queensland, Australia</td>
<td>Prof S J Mann, University of Oxford, UK</td>
<td>Prof S J Mann, University of Oxford, UK</td>
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<td>Using the isochoric method to teach general relativity - 325</td>
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<tr>
<td>Dr Samuel P Drake, Defence Science and Technology Organisation, Australia</td>
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**Adelaide protocols for operator measurement based entanglement and quantum computing - 321**  
Andrew O Greenpeace, University of Melbourne, Australia  
A high performance digital radar for extended space weather investigations - 320  
Mr James S Whittington, Australia  
Dr John C Devlin, Department of Electronic Engineering, La Trobe University, Bendonina, Victoria, Australia  
Using the isochoric method to teach general relativity - 325  
Dr Samuel P Drake, Defence Science and Technology Organisation, Australia  
Sara Whittleton, Australia  
Preliminary results from a new quantum mechanics conceptual survey - 320  
Sara Whittleton, Australia  
Towards an inaugural Australian decadal plan for space science - 325  
Prof Iver H Cairns, School of Physics, University of Sydney, Australia  
Assessing the development of students' understandings of introductory thermodynamic concepts - 321  
Shibay A Rea, Curtin University of Technology, Australia  
Prof Megan S Zadr, Curtin University of Technology, Australia

**Program - Wednesday**

- **10:30-10:40** Morning Tea with Exhibitors
- **12:40-14:00** Lunch (own arrangements)
### Wednesday, 6 December 2006

13:30-14:30 **Modal Whares: Presentations and Talks**

**Great Hall 1&2**

**14:30-15:15**

- **Plenary Speaker: Complexity - when the whole is different from the sum of its parts** - 332
  - Professor Sandy Chapman, Professor of Astrophysics and Director of the Centre for Fusion, Space and Astrophysics, University of Warwick, United Kingdom
  - **Great Hall 1&2**
  - Chairperson: Prof Ken J W Lyn, La Trobe University, Australia

**15:15-15:40**

- **Afternoon Tea with Exhibitors**

**15:40-17:20**

- **Concurrent - 8.01**
  - **QMCC - Quantum Fundamentals**
  - **Room P3**
  - Chairperson: Howard M Wiseman, Griffith University, Australia

  **15:40**
  - **Locality mechanics with an epistemic restriction** - 335
    - Stephen D. Bartlett, University of Sydney, Australia
  - **15:40**
    - **Quantum physics in Australia’s defence science and technology organisation** - 336
      - Robert Gardner-Garden, Signal Processing and Propagation Group, High-Frequency Radar Branch, Intelligence, Surveillance, Reconnaissance Division
  - **15:40**
    - **Aspects of numerical techniques for the design of musical structures** - 343
      - Katharine A. Legge, La Trobe University, Australia
  - **16:20**
    - **Sound on quantum correlations in Bell inequality experiments** - 335
      - Yen-Chung Chao, University of Queensland, Australia
    - **16:20**
      - **Characterisation of Narrowband HF Channels in the Mid and Low Latitude Ionosphere** - 339
        - Dr. Joe Keal, DSTO, Australia
    - **16:20**
      - **Design Considerations for a Sound Recognition System for Wildlife Identification** - 344
        - Neil J. Blauch, Commonwealth Australia
  - **16:20**
    - **Shearing, entanglement and Quantum nonlocality** - 335
      - Mr. Steven J. James, Centre for Quantum Computer Technology, Centre for Quantum Dynamics, School of Science, Griffith University, Australia
    - **16:40**
      - **Backscattered sounder observations of Scatter - E** - 340
        - Dr. Philip S. Withfield, Defence Science and Technology Organisation, Australia
    - **16:40**
      - **Quantum-Spherical resonators for physical philosophy** - 345
        - Eric F. Miy, University of Western Australia, Australia
  - **16:40**
    - **Panel Discussion - Should Australia Adopt the Nuclear Power Option?**
      - Chairperson: Dr. David S. Janse, University of Melbourne, Australia
      - **Panel Members:**
        - Dr. Ross G. Cameron (Australian Nuclear Science and Technology Organisation Chief of Operations)
        - Professor Alastair Byers (ANSTOC Nuclear Physicist and Head of the ANU Department of Physics)
        - Professor Dr. John Wood (Defence Science and Technology Organisation, Australia)
        - Professor Andrew Beale (Director - Centre for Sustainable Energy Systems and Photonics) and
        - Dr. John Green (Nuclear Energy Campaigner for Friends of the Earth and author of the report No Solution to Climate Change)
    - **17:00**
      - **Panel Discussion - Should Australia Adopt the Nuclear Power Option?**

**19:00-23:00**

- **Congress Dinner**
- **Plaza Ballroom**
Thursday, 7 December 2006

08:50-09:15
Banquet Speaker: First-principles calculations in catalysis, coatings and devices - 401
Professor Catherine Stankiew, Federation Fellow, School of Physics, The University of Sydney, Sydney, Australia

Great Hall 162
Chairperson: Prof Ross F McKenzie, University of Queensland, Australia

09:15-10:00
Paper Speaker
Professor Sir Chris Llewellyn Smith, Director, CEALET Fusion Program and the Joint European Torus (JET), Culham Science Centre, England

Great Hall 162
Chairperson: Prof Paul H LEverett, The Australian National University, Australia

09:20-10:00
Exhibition Open

10:20-10:40
Morning Tea with Exhibitors

10:45-12:20
Concurrent - 9.01

Great Hall 162
Room 1
Chairperson: Murray Hamilton, Australia

- 9.01
Theory and computation in experimental optics - 403
Dr Tim A McElvain, The University of Queensland, Australia

- 9.02
Concurrent - 9.02

Room P1
Chairperson: Bruce McEwen

\[ \text{Grayscale} \] and \text{in situ} \text{dynamxica} - 411
Prof Ray Brown, University of Melbourne, Australia

10:40
Towards atom laser feedback stabilization - 415
Stuart D Wilson, Australia

11:00
Methods for calculating the transverse beam profile of an un蕲ped atom laser - 418
Graham R Dennis, Australian National University, Australia

Chairperson: Stephen D Barrett, Australian National University, Australia

- 9.03
Concurrent - 9.03

Room P3
Chairperson: Bruce McEwen

Isotropy, K rotating effects in isomeric stables - 412
George D Bradevic, Australian National University, Australia

11:20
Vortices in hexagonal optical lattices - 417
Dr Thomas Symul, Australian National University, Australia

Chairperson: James M Popa, Queensland University of Technology, Australia

- 9.04
Optical force field mapping in microdevices - 405
Adrian S Matthews, University of Queensland, Australia

11:40
Embedded clustering and metastable magnetism in transition-metal doped SrTiO\(_3\) - 409
Dr Carl Col, School of Physics, University of Sydney, Australia

Chairperson: James M Popa, Queensland University of Technology, Australia

- 9.05
Concurrent - 9.05

Room P4
Chairperson: Nathan J Sandiford, School of Physical Sciences, The University of Queensland, Australia

- 9.06
Concurrent - 9.06

Room P5
Chairperson: Nathan J Sandiford, School of Physical Sciences, The University of Queensland, Australia

12:00
Lunch (own arrangement)
Thursday, 7 December 2006

14:00-15:40

Concurrent - 10.02

AOS - Optics 3

CMRSP - Surface Science 1

MUP

Chairperson: Prof.Tim A Meeneweer, The University of Queensland, Australia

Imaging and modelling semiconductor surface dynamics - 432
Professor David E. Jevons, School of Physics, Monash University, Australia

Measurements of the branching fraction and time-dependent BCS spectral parameters in B° → B° K° - 437
Jeremy P. Dalley, University of Melbourne, Australia

Measurement of the branching fraction and time-dependent BCS spectral parameters in B° → B° K° - 437
Jeremy P. Dalley, University of Melbourne, Australia

15:40-17:20

Concurrent - 10.05

AOS - Atom Counting & Quantum Fluctuations

CMRSP - Quantum Control

MUP

Chairperson: Prof. Peter D. Drummond, University of Queensland, Australia

Chairperson: Michael J. Hall, Australian National University, Australia

Chairperson: Skier J Thomas, Queensland University of Technology, Australia

15:40

Experiments with a metastable atom laser - 441
Beatu J. Stobrawa-Muhtic, Research School of Physical Sciences and Engineering, Australian National University, Australia

Applications of control theory to coherent spectroscopy and quantum information science - 446
Nanfu Khang, United States

Reconsidering rapid qubit purification by feedback - 447
Edward M. Wright, Australia

A comparison of the temperature rise from ultrasound exposure of soft tissue and soft tissue/bone boundaries - 453
Dr. Gilbert J. Raff, School of Biomedical Sciences, The University of Sydney, Australia

15:50

Closing limited to invited: centre-of-mass measurements - 445
Mr. Timothy D. Bangham, Australian Centre for Quantum Atom Optics, University of Queensland, Australia

Application of the Lattice Boltzmann Method to non-Avermotic flow in a coronary artery model - 453
Joshua Boyd, University of New England, Australia

15:40-17:20

Afternoon Tea with Exhibitors

15:40-10:00

Concurrent - 10.06

AOS - Atom Counting & Quantum Fluctuations

CMRSP - Quantum Control

MUP

Sponsored by QIT

Room P3

Room P4

Room P5

Modern medical imaging for better targeted cancer treatment in radiotherapy - 450
Dr. Konstantin Kolin, Peter MacCallum Cancer Centre, Australia

Modern quantum control applied to optical cavity cooling - 448
Prof. Matthew J. Jones, Department of Engineering, Faculty of Engineering and Information Technology, Australian National University, Australia

Moderne quantum control applied to optical cavity cooling - 448
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<th>Time</th>
<th>Session</th>
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<td><strong>Concurrent - 11.01</strong></td>
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<td>Great Hall 182</td>
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<td>Chairperson: Tanas Pletinikov, The University of Queensland, Australia</td>
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<tr>
<td>16:20</td>
<td>Fabricating Opals to control the flow of light - 464</td>
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<tr>
<td>L.A. Stierwalt, Macquarie University, Australia</td>
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<tr>
<td>16:20</td>
<td>Growth of diamond-like carbon and carbon nitride films using UH-UCNT - 458</td>
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<tr>
<td>Li-Mikayil Fyzlyshah, Centre for Built Environment and Engineering Research, Queensland University of Technology, Australia</td>
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<td>16:40</td>
<td>Quasi-two-dimensional nanostuctures synthesized via the neutral and ionized gas routes - 439</td>
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<td>J. Skilton, University of Sydney, Australia</td>
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<td>17:00</td>
<td>Nano-electronics and optical nanodevices - 405</td>
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<td>Tim J Davis, CSIRO MBT, Australia</td>
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<td>17:20</td>
<td>Nano-focusing using a sharp metal wedge on a dielectric substrate - 435</td>
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<td>Knöpfler J Henn, Queensland University of Technology, Australia</td>
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<td>17:40</td>
<td>Cross-polarization features produced in near-field scanning optical lithography of TPV - 437</td>
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<td>Donald V Cotton, University of Newcastle, Australia</td>
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<td>18:00</td>
<td>Explicit soliton formation in nonlinear Schrödinger equation on Si(001) - 432</td>
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<td>Samern R Schofield, The University of Newcastle, Australia</td>
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<td>18:10</td>
<td>Intramolar and intermolecular shifts in 1H NMR - 470</td>
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<td>Justin T Wijesuriya, Australian National University, Australia</td>
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<td>19:00-20:00</td>
<td>Public Lecture: Sleeping time - 485</td>
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<td></td>
<td>Professor Eric Mazoc, General Campus Professor, and Gordon McKay Professor of Applied Physics and Professor of Physics, Division of Engineering and Applied Sciences, Department of Physics, Harvard University, Cambridge, USA</td>
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<td>Great Hall 182</td>
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<td>Time</td>
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<tr>
<td>10:40-10:45</td>
<td>Morning Tea with Exhibitors</td>
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<tr>
<td>10:40-12:40</td>
<td>ADS - Fermions &amp; Molecular Condensates</td>
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<tr>
<td>Chairperson: Dr Chris J Kay, The University of Queensland, Australia</td>
<td>Chairperson: Prof Geoffrey Taylor, University of Melbourne, Australia</td>
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<tr>
<td>11:40-12:20</td>
<td>First-principles quantum simulations of dissociation of molecular condensates - 502</td>
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<td>Chairperson: Dr Craig Majetich, ARC Centre of Excellence for Quantum-Atom Optics, Department of Physics, Australian National University, Australia</td>
<td>Chairperson: Tony Suckling, Australia</td>
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<tr>
<td>11:20-11:40</td>
<td>Visualization of vortex bound states in polarized Fermi gases at unitarity - 504</td>
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<td>Chairperson: Prof Ross McKnight, School of Physics, University of Queensland, Australia</td>
<td>Chairperson: Tony Suckling, Australia</td>
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<td>12:00-12:40</td>
<td>Multi-scale quantum dynamics of an atomic-engine gas in an optical lattice - 419</td>
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<td>Chairperson: Dr Simon Lunn, CSIRO Industrial Physics, Australia</td>
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<td>12:00-12:40</td>
<td>Lunch (own arrangements)</td>
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<td>12:00-12:40</td>
<td>Simulation quantum many-body systems with phase-space methods - 518</td>
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<td>12:00-12:40</td>
<td>Pedestal developments in electronic range terahertz spectroscopy of interacting phosphorus donors in silicon - 522</td>
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<td>Chairperson: Tony Suckling, Australia</td>
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<tr>
<td>12:00-12:40</td>
<td>Optical spectroscopy of Eumelanin Mammalian and Dimers - 526</td>
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<td>Optical spectroscopy of Eumelanin Mammalian and Dimers - 526</td>
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Friday, 8 December 2006

14.00 - 15.40

Concurrent - 13.01

AUS - Quantum Optics Room P1

Chairperson: Professor J. F. Dynes, University of Queensland, Australia

Generation of atomic wavepackets for gravitational wave detectors - 126
Stefan Gheorghiu, Australian National University, Australia

Development of advanced magnesium diboride conductors for mini-aeolians - 533
S. X. Dou, Institute for Superconducting and Electronic Materials, University of Wollongong, Australia

14.00 - 15.40

Concurrent - 13.02

CMQIC - Superconductivity 2 Room P2

Chairperson: Professor B. Blackwell, Australian National University, Australia

14:00
The development of high-current pulsed cathodic arc systems at the University of Sydney - 557
Richard M. Farrell, The University of Sydney, Australia

14:20
New aspects for low cost energy by inverting fusion using Petawatt lasers - 533
Lennart Rors, University of New South Wales, Australia

14.40
Squeezing at Rubidium wavelength - 530
Mr Gabriel Hulet, Australian National University, Australia

A cryogenless SQKD-based metal detector with improved noise reduction and signal extraction - 534
Franz A. Gopferich, CSIRO Industrial Physics, Australia

14.40 - 15.40

Concurrent - 13.03

PAS - Superconductivity Room P3

Chairperson: Prof. S. W. Hughes, University of Melbourne, Australia

14:00
Dissipation and cooling in low temperature superconductors - 528
K. F. Gurevich, The Australian National University, Australia

14:20
Quantum mechanics of vortices in superconductors - 524
Dr M. J. Prior, CSIRO, Australia

14:40
Theoretical and experimental studies of Quantum Random Walks - 545
Kia Mousavi, The University of Western Australia, Australia

15.00
Influence of multilayering and doping on the thickness dependence of superconducting properties in YBa$_2$Cu$_3$O$_x$, YBCO - 535
L. J. Zhou, Australian National University, Australia

15.20
The influence of Feshbach resonance on pseudospin-pairing - 532
Ari Roberts, University of Melbourne, Australia

15.40 - 16.40

Concurrent - 13.04

CMQIC - Opt Prop & Overview Room P4

Chairperson: Professor J. Linakis, Australia

15:00
Solid-state fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

15:20
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

15:40
Solid effects on evaporation at a sub-tropical site - 522
J-Lle R. Huyghe, University of Southern Queensland, Australia

16.00
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

16.20
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

16.40
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

16.40 - 18.00

Concurrent - 13.05

EP - RE

Chairperson: Prof. S. W. Hughes, University of Melbourne, Australia

16:40
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

17.00
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

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Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
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Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
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Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
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Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

19.00
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

19.20
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia

19.40
Silicon-oxide fuel cells: A SADS study of the effects of solution concentration on particle size - 547
Mr Geoffrey A. Turner, The University of Sydney, Australia
Monday, 4 December 2006

18:00-20:00 Poster - PS01.1
Solar-Terrestrial and Space Physics (STSP)
Exhibition Area, Plaza Terrace Room

A new Fabry Perot Spectrometer for thermospheric airglow observations above Davis Station in Antarctica - 601
Prof Peter L. Dyson, La Trobe University, Australia

Energy deposition of ULF wave energy in the Magnetosphere-Ionosphere-Ground system - 602
Dr Colin L Waters, School of Mathematical and Physical Science, University of Newcastle, Australia., Australia

The use of Spherical Cap Harmonic analysis in predicting ground magnetic perturbations from ionospheric electric field and conductance models - 603
Dr Colin L Waters, Center for Space Physics Research, University of Newcastle, Callaghan, Australia

Towards a synthesis of substorm electrodynamics: HF radar and auroral observations - 604
Dr Murray L Parkinson, Department of Physica, La Trobe University, Victoria, Australia
Prof Peter L Dyson, La Trobe University, Australia

ULF wave fields measured in the low latitude ionosphere - 605
Dr Colin L Waters, The University of Newcastle, Australia

Cusp latitude field line resonances: Two-dimensional cross-phase gradients and diurnal azimuth angle variation - 606
Dr Sean T. Ables, University of Newcastl, Australia

Dynamics of coupled magnetosphere-ionosphere energy subsystems - 607
Dr Rowena Ball, The Australian National University, Australia

Space physics research at the University of Sydney - 608
Prof Ivar H Cairns, School of Physics, University of Sydney, Australia

Statistics and correlation functions of stochastically growing waves - 609
Prof Ivar H Cairns, School of Physics, University of Sydney, Australia

Amplitude and time distributions of ionospheric scatter - 610
David G Cole, IPS Radio and Space Service, Australia

Future data management at the WDC for Solar-Terrestrial Science - 611
Dr David G Cole, Department of Industry, Tourism and Resources, IPS Radio and Space Services, Australia

Jet planes and cosmic rays - 612
Marcus L Dulig, Australian Antarctoc Division, Department of the Environment and Heritage, Australia

High time-resolution observations of the 630nm airglow emission above Davis, Antarctica - 613
Prof Peter L Dyson, La Trobe University, Australia

Space physics research at La Trobe University - 614
Prof Peter L Dyson, La Trobe University, Australia

Research on solar-terrestrial and space physics at the University of Newcastle - 615
Brian J Fraser, School of Mathematical and Physical Sciences, University of Newcastle, Australia

Simultaneous observations of ULF waves in the magnetosphere, ionosphere and on the ground - 616
Brian J Fraser, School of Mathematical and Physical Sciences, University of Newcastle, Australia

Enhanced Beam steering capabilities for the TIGER SuperDARN radars - 617
Mr Ryan C Healey, Department of Physics, La Trobe University, Bundora, Victoria, Australia

Impact of Jan 10 1997 storm on night-time space weather investigated by TOPEX/ Poseidon radar altitude - 618
Ildiko Horvath, University of Queensl, Australia

TEC climatology of the daytime Weddell Sea Anomaly investigated by TOPEX/ Poseidon radar altimeter - 619
Ildiko Horvath, University of Queensland, Australia

An Auroral Westward Flow Channel (AWFC) and its relationship to field-aligned current, ring current, and plasmaopause location Determined Using the Cluster and Iridium Satellites - 620
Dr Murray L Parkinson, Department of Physics, La Trobe University, Victoria, Australia

Observations of a phase transition in the plasma turbulence across the HF radar spectral width boundary - 621
Dr Murray L Parkinson, Department of Physics, La Trobe University, Victoria, Australia

Real-time ionospheric mapping with cutlier samples - 622
Dr Mike D Turley, Australia

Plasma mass density during a magnetic storm in March 2004 - 623
Dr Colin L Waters, Department of Physics, University of Newcastle, New South Wales 2038, Australia

Space weather reports for Antarctica during the international polar year - 624
Dr Phil Wilkinson, IPS Radio and Space Services, Australia

Evidence of the De Vries, Gleissberg and Hale Cycles in the Sun’s Barycentric Motion - 625
Ian R Wilson, University of Southern Queensland, Australia

18:00-20:00 Poster - PS01.2
Education (PES)
Exhibition Area, Plaza Terrace Room

A preliminary study of the hard-easy effect using physics conceptual inventories - 626
Dr Manjula Sharma, University of Sydney, Australia

Anther theories: A physics fairytale re-told - 627
Dr Timo A Nieminen, The University of Queensland, Australia

Detection of quantum noise in laser light: A portable and educational system - 628
M Colla, The Australian National University, Australia

Connecting celestial and terrestrial physics - 629
Stephen W Hughes, Queensland University of Technology, Australia

Simple experiments to obtain resonance curves using resonance tubes - 630
Professor Bandara S Karunaratne, University of Peradeniya, Sri Lanka

3D link maps for learning: Consolidating fundamental concepts across topics in physics - 631
Ms Christine Lindström, Australia

Project-based assessment for graduate coursework - 632
Dr Timo A Nieminen, The University of Queensland, Australia

Our space-time universe in powers of 100 - 633
Dr Peter D Norman, Monash University, Peninsula campus, Australia

Surveying Sydney introductory physics students' understandings of heat and temperature - 634
Choksin Tanahoung, Australia

18:00-20:00 Poster - PS01.3
Relativity and Gravitation (ASRG)
Exhibition Area, Plaza Terrace Room

Spiral galaxy rotation curves determined from carmelian general relativity - 635
John G Hartnett, University of Western Australia, Australia

Nature of gravitation - 636
Boris Ltvak, Australia
Monday, 4 December 2006

18:00-20:00  Poster - PS01.4
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The Solar-Stellar connection - 637
Brad Carter, University of Southern Queensland, Australia

High-resolution observations of the galactic center - 638
Prof Peter L Tyson, La Trobe University, Australia

Browning of alkali doublets by helium perturbers in brown dwarf atmospheres - 639
Mr Stephen J Gibson, School of Mathematical and Physical Sciences, James Cook University, Townsville, Australia 4811, Australia

Variable stars and stellar properties - 640
Khadijeh Najafi, Zanjan University, Iran

Red giant stars and Bethe's C-N-O cycle - 641
Dr Peter D Norman, Monash University, Peninsula campus, Australia

18:00-20:00  Poster - PS01.5
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Real time fill pattern monitor at the Australian Synchrotron - 643
Mr David J Peake, University of Melbourne, Australia

Complete reconstruction of the coherence function for optical wavefields - 130
Samuel Flewett, School of Physics, University of Melbourne, Australia

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Exhibition Area, Plaza Terrace Room

Entangled-State Cycles of Atomic Collective-Spin States - 644
A Chia, University of Auckland, New Zealand

A UV Diode Laser System for Cooling Yb+ - 645
Geoff Genn, Centre for Quantum Dynamics, School of Science, Griffith University, Australia

Soliton production in unblazed self-defocusing Photorefractive Media - 646
Dr Esa A Jaatinen, Queensland University of Technology, Australia

Lagrangian approach for dissipative optical solitons - 647
Prof Nail N Akhmediev, Optical Sciences Group, Research School of Physical Sciences and Engineering, Australia

Nontrapping and the thermodynamics of optical tweezers - 648
Dr Timo A Nieminen, The University of Queensland, Australia

Studies of the coherent nature of high-order harmonics of femtosecond laser pulses - 649
Mr Sven Teichman, Swinburne University of Technology, Australia

Study of solidification process by tunable mid-infrared Laser Spectroscopy and Raman Spectroscopy - 650
K Monowar-Abedin, Tohoku University, Japan

Optically fabricated and driven micromachines - 651
Theodor Asavel, University of Queensland, Australia

Calculating correlation functions for 1D Bose gases - 652
Mr David W Barry, Australian Centre for Quantum-Atom Optics, University of Queensland, Australia

Quasi-stationary optical solitons with dual-power law nonlinearity - 653
Anjan Biswas, Delaware State University, United States

Microscopic characterization of a fibre Bragg grating - 654
Stephen F Collins, Victoria University, Australia

Progress towards coupled quantum dot/microcavities for cavity QED - 655
Dr Steven J Cooper, University of Queensland, Australia

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Mr Michael J Dailey, University of Queensland, Australia

The refractive index of damaged diamond by ion implantation - 657
Martin A Draganzki, RMIT University Melbourne, Australia

Near-Infrared Polymer/PCBM blend photovoltaic device response. - 658
Benjamin Duck, University of Newcastle, Australia

Electronic structures and optical properties of InGaAsN quantum wells - 659
Dr W J Fan, Singapore

Numerical modeling of optical traps using rigorous vectorial diffraction and FDTD method - 660
Xiaosong Gan, Swinburne University of Technology, Australia

Broadband diffraction management and self-collimation of light in photonic lattices - 661
Ivan L Garanovich, Nonlinear Physics Centre and CUDOS, Australian National University, Australia

Light localization at nonlinear lattice interfaces - 662
Ivan L Garanovich, Nonlinear Physics Centre and CUDOS, Australian National University, Australia

Optical characterisation and restoration of MPCVD processed Titanium-diffused LHB0, waveguides - 663
Dr Brant C Gibson, Quantum Communications Victoria, University of Melbourne, Australia

Tomographic reconstruction for complex-structured optical fibres - 664
Xiao Ming Goh, University of Melbourne, Australia

Coating-free mirrors for ultra-high precision interferometry - 665
Mr Conor Mow-Lowry, Australian National University, Australia

Harmonic entanglement from second-order nonlinearity - 666
Dr Thomas Synnul, Australian National University, Australia

Photonic statistics of single colour centres in diamond - 667
Joanne F Harrison, Australian National University, Australia

Sapphire cryogenic oscillators: Preparation for a new test of violation of Lorentz invariance using ultra-stable precision microwave oscillators - 668
John G Hartnett, University of Western Australia, Australia

Frequency stabilisation of a tunable diode laser: novel optical feedback schemes - 669
Dr Yabai He, Centre for Lasers and Applications, Macquarie University, Australia

Trace gas detection by rapidly swept cavity ringdown spectroscopy - 670
Dr Yabai He, Centre for Lasers and Applications, Macquarie University, Australia

Development of a Time-domain Analysis to study the High-Pressure Regime of modulation transfer spectroscopy - 671
Dr Esa A Jaatinen, OUT, Australia

David J Hoppe, QUT, Australia

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J Jancouse, Centre for Quantum-Atom Optics, The Australian National University and Department of Physics, Technical University of Denmark, Denmark

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Dr Yann Karaou, University of Western Australia, France

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Dr Daniel J Kitser, Victoria University, Australia
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Mr Martin L Kirit, Queensland University of Technology, Australia

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Mr Vincent L Y Loke, The University of Queensland, Australia

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Mr Sean R McConnell, Queensland University of technology, Australia
Dr Esa A Jaultien, Queensland University of Technology, Australia

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Timothy J McIntyre, The University of Queensland, Australia
Mas Kim M Hajeck, University of Queensland, Australia

Coupled Modeling Of Strained AlN/GaN Heterojunctions - 680
Prof Roderick Melnik, Wilfrid Laurier University, Waterloo, Canada

Localization of polychromatic light in nonlinear photonic lattices - 681
Dr Kristian Motzek, Nonlinear Physics Centre, RSPHYSE, ANU, Germany

Numerical simulation of spectral purity and dynamics in an injection-seeded pulsed optical parametric oscillator - 682
Brian J Orr, Macquarie University, Australia
Dr Hebi He, Centre for Lasers and Applications, Macquarie University, Sydney, Australia
Dr Kenneth G H Baldwin, Research School of Physical Sciences and Engineering, Australian National University, Australia

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Simon J W Parkin, The University of Queensland, Australia

Data storage in photorefractive phase masks in LiNbO$_3$:Fe - 684
Daniel M Sando, Queensland University of Technology, Australia

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Daniel M Sando, Queensland University of Technology, Australia

Imaging of the erbium ion distribution in fibres with Near Field Scanning Microscopy - 686
Fatice Sidiroglou, School of Physics, University of Melbourne, Australia

Phonon induced population inversion in driven quantum dots - 687
Tom Stace, University of Queensland, School of Physical Sciences, Australia

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Stephan Stiens, University of Newcastle, Australia

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Alexander B E Stilgoe, University of Queensland, Australia

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Alexander I Sukow, Moscow State University of Technology, Russia

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Alexander I Sukow, Moscow State University of Technology, Russia

Fabrication of silicon nanocrystals by nanosecond laser fragmentations of silicon micro-grains in colloidal suspensions - 692
Vladimir Svonik, Nanoarchitectonics Research Center, AIST, Higashi, Tsukuba, Ibaraki, Japan

Time domain simulation of plasmonics in metallic nanoparticles - 693
Brian J Thomas, School of Physical & Chemical Sciences, Queensland University of Technology, Australia

Techniques for pure frequency generation in the microwave spectrum - 694
Michael E Tobor, University of Western Australia, Australia

Influence of higher order dispersion on soliton dynamics - 695
Eduard N Tsyov, University of Sydney, Australia

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Kristy C Vernon, Queensland University of Technology, Australia

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Mr Michael W Vogel, Queensland University of Technology, Australia

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Professor Christianus Martinus Joppehus Wijers, National Chiao Tung University, Taiwan
Professor Oleksandr Voshchynnyk, National Chiao Tung University, Taiwan

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Mr Sul P Yuen, Victoria University, Australia

Thermal, optical and carrier transport properties of porous Silicon and Metal Silicide layers on silicon Substrate - 700
W Mahmood Mat Yusus, University Putra Malaysia, Malaysia

Characterization of InSb/lnSb alloys fabricated by ion implantation - 701
Prof D H Zhang, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore

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Prof D H Zhang, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore
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M. McConnell, Centre for Quantum Dynamics, School of Science, Griffith University, Australia

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Sumantra Saha, Centre for Molecular Simulation, Swinburne University of Technology, Australia

Adsorption of 5-fluorouracil with montmorillonite and saponite by IR and Raman Spectroscopy - 705
Prof Saimir Akraci, Istanbul University, Turkey

Iron nanodots created via metataseable lithography with a standing wave optical mask - 706
Mr. Joshua P. Bearden, Griffith University, Australia

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Jacinda Giniges, University of New South Wales, Australia

Experimental and Theoretical NMR Study of 4-Phenylpyridine - 708
Gazur Alves, Turkey

Vibrational spectroscopic study of two dimensional polymer compounds of Pyrazinamide - 709
Göndör Bazar, Istanbul University, Turkey

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Dr. Susan Bellon, Australian National University, Australia

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Dr. Benjamin G. Birdsey, University of Western Australia, United States

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Mr. William E. Gunian, Centre for Quantum Dynamics, Australia

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Alan N. Hayas, AMPL, Australia

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Darryl R. Jones, School of Chemistry, Physics & Earth Sciences, Flinders University, Australia

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Mr. Anthony J. Keaten, Centre for Quantum Dynamics, Griffith University, Australia

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Professor Robert P. McEwan, CAMS, RSPhysSE, Australian National University, Canberra, ACT, Australia

Near-Threshold Cross Sections for electronic excitation of atoms and molecules by electron impact - 717
Stan Newman, Centre for Antimatter-Matter Studies, RSPhysSE, Australian National University, Australia

Intermolecular interactions probed via electron momentum spectroscopy of van der Waals molecules - 718
Kate L. Nixon, Flinders University, Australia

Vibrational analysis and quantum chemical calculation of 2,2'-bispyridine Zn(II) Cu[0(Fe)] halide complexes - 719
Ayden E. Ozel, Istanbul University, Turkey

14 Yb Microwave Frequency Standard - 720
Dr. Sung Jong Park, National Measurement Institute, Australia

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Cemal Partak, Turkey

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Cemal Partak, Plant Drug and Scientific Research Center, ANADOJI UNIV., Turkey

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Manolo Per, RMIT University, Australia

Dynamics of bright solitons in one-dimensional Bose-Einstein condensates - 724
Mr. Masum Rab, The University of Melbourne, Australia

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Pareek A. Thorn, ARC Centre for Antimatter-Matter Studies, SoCPE, Flinders University, Australia

Miss Nicole Diakomichalis, ARC Centre for Antimatter-Matter Studies, SoCPE, Flinders University, Australia

18:00–20:00 Poster - P502.3 Condensed Matter and Materials; and Surface Physics (CMMSP)
Exhibition Area, Plaza Terrace Room

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Dr. Michael Wouters, National Measurement Institute, Australia

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Jun-Yi Zhang, School of Engineering and Logistics, Charles Darwin University, Australia

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M. Ogren, Mathematical Physics, Sweden

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Jaan Ottmaa, School of Physics, University of New South Wales, Australia

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Prof. Peter N. Johnston, RMIT University, Australia

Magnetic signals from proton implanted microstructures in graphite - 732
Peter N. Johnston, RMIT, Australia

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Roger A. Lewis, University of Wollongong, Australia

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Peter W. Vorderwisch, SIKA Project, Bragg Institute, ANSTO, Australia

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Trevor R Finlayson, Monash University, Australia

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Shuja Ahmed, COMSATS Institute of Information Technology, Islamabad, Pakistan

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Bahram M. Askerov, Baku State University, Azerbaijan

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Vicky Au, IP Australia, Australia

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Craig E Buckley, Department of Imaging and Applied Physics, Australia

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Muñkal Caglar, Anadolu University, Turkey

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Dr. Yasemin Caglar, Anadolu University, Turkey

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Sam Young Cho, University of Queensland, Australia

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Sergey A. Danikin, ANSTO, Australia

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Sergey A. Danikin, ANSTO, Australia
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Xiangmelt Duan, Australia

**Material issues in the micro-fabrication of sub micron layers single-crystal diamond** - 748

Barbara A Fairchild, University of Melbourne, Australia

**Stability and chemistry of Cerium Oxide surfaces: First-principles investigations** - 747

Marco Fronz, University of Tor Vergata of Rome, Italy and School of Physics, University of Sydney, Australia

**Stochastic eVaporation/degradation processes in complex structures with multiple bonds** - 748

Dmitri K Gramotnev, Queensland University of Technology, Australia

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Mr Xuimei Guo, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

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A/Prof Chris J Hamer, School of Physics, University of New South Wales, Australia

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W.A Hamilton, Bragg Institute, ANSTO, Menai, NSW, Australia

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Dr William A Hamilton, Oak Ridge National Laboratory, United States

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Mr Lap-hang Ho, School of Physics, University of New South Wales, Sydney NSW, Australia

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Toby Hopf, University of Melbourne, Australia

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Dr Salih Ilican, Anadolu University, Turkey

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Mr Anthony C Jacko, University of Queensland, Australia

**Quantum charge transport in counted-atom silicon devices** - 758

Lenneke Jong, Centre for Quantum Computer Technology, University of Melbourne, Australia

**Novel crack patterns and propagation modes in PECVD silica films** - 759

Mr Taehyun Kim, Australian National University, Australia

**Spin wave parametric instability in in-plane confined magnetic films** - 760

Dr Mikhail Kostylev, School of Physics, University of Western Australia, Australia

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Dr Klaus-Dieter Lies, Bragg Institute, ANSTO, Lucas Heights, Australia

**Energy spectrum of new density-quantum particles excited in the superfluid liquid Helium** - 762

Dr Vahan Minasyan, Armenia

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Dr Vahan Minasyan, Armenia

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Mr Jonathon Mitchell, The Australian National University, Australia

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Ali Hossein Mohammad Zaheri, Azad University of Arak, Iran

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Mr Albertus B Mostert, University of Queensland, Australia

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Kane M O'Donnell, University of Newcastle, Australia

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Mr Daniel J Pyke, MicroAnalytical Research Centre, University of Melbourne, Australia

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Dr M Shahid Rafique, University of Engineering and Technology, Pakistan

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Marlene N Read, University of New South Wales, Australia

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Toby Hopf, University of Melbourne, Australia

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Dr Said Saikoh, American University of Sharjah, United Arab Emirates

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Edan P Slevin, University of Queensland, Australia

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J R Seo, Institute of Physics and Applied Physics, Yonsei University, Korea

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Mr Elvis Shoko, University of Queensland, Australia

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Kathleen Sirois, The University of Newcastle, Australia

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Aloysius Soon, The University of Sydney, Australia

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Andrew P Stephenson, University of Queensland, Australia

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Mr Murad FY Tayebjee, Bragg Institute, ANSTO, Australia

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Dr Heiko Timmers, School of Physical, Environmental and Mathematical Sciences, University of New South Wales at ADFA, Australia

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Dr M Khaleel Ur-Rahman, University of Engineering and Technology, Pakistan
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Professor Rasoul Sadighi, Sharif University of Technology, Iran
Bahareh Safaei, Sharif University of Technology, Iran

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Will E Davey, University of Melbourne, Australia

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Vivian Lee, University of Melbourne, Australia

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Nikolai R Lobanov, Australian National University, Australia

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Clement J Ng, University of Melbourne, Australia

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Anna Phan, University of Melbourne, Australia

Posibility of laser-induced photo transmutation of hazardous nuclear waste of
126Sn into short-lived isotope of 125Sn - 790
Professor Rasoul Sadighi, Sharif University of Technology, Iran

Lepton flavour violating decays in the ATLAS detector - 791
Suzie Sheedy, University of Melbourne, Australia

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A R Veidani Neghreeyana, Physics Department, School of Sciences, Ferdowsi
University of Mashhad, Iran

18:00-20:00  Poster - PS02.5
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Exhibition Area, Plaza Terrace Room

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Prof Dmitri V Alexandrov, Ural State University, Russia

Type II polar stratospheric cloud detection over east Antarctica using satellite
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Mr Alexander D Fraser, University of Tasmania/Australian Antarctic Division,
Australia
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Tim J Davis, CSIRO MIT, Australia

Investigate the open kinematic model for tennis swing using networked sensors - 806
Amin Ahmadi, Centre for Wireless Monitoring Applications, Griffith University, Australia

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Jacques P Bothma, University of Queensland, Australia

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Andrew W Busch, Griffith University, Australia

Comparing variations in the UV facial exposure received by school children in South-East Queensland - 809
Mr Nathan J Downs, University of Southern Queensland, Australia

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Mr Joel B Gilmore, University of Queensland, Australia

Compact continuum models of brain dynamics in cortex - 811
Dr Jong-Won Kim, School of Physics, University of Sydney, Australia

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Michael LF Letch, University of Wollongong, Australia

Time-Resolved Spectroscopy of Eumelanin and Eumelanin Analogues - 813
Stephen P Nightsward-Rempel, University of Queensland, Australia

Is melanin broadband absorbance due to scattering? - 814
Jennifer J Riesz, University of Queensland, Australia

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James A Roberts, School of Physics, University of Sydney, Australia

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David D Rowland, Griffith University, Australia

Characterisation of optical properties of organosilica microspheres - 817
Kathrina Y T Seet, The University of Queensland, Australia

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Mr Dongchoon Sin, Queensland University of Technology, Australia

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Dr David J Turnbull, Faculty of Sciences, University of Southern Queensland, Australia

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Feng Wang, Swinburne University of Technology, Australia

Including higher-order statistics in cortical mean-field modelling - 821
Marcus T Wilson, University of Waikato, New Zealand

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Dmitri K Gramotnev, Queensland University of Technology, Australia

Deposition and surface evolution of composite aerosol particles - 796
Dmitri K Gramotnev, Queensland University of Technology, Australia

Multi-channel statistical analysis for the detailed investigation of combustion aerosols - 797
Mrs Galina Gramotnev, Queensland University of Technology, Australia

Characterization of beach rocks of South East Coast of Tamilnadu, India by spectroscopic techniques - 798
Ravisankar R Ravi, SSN College of Engineering, Kalavakkam, India

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Peter Schouten, University of Southern Queensland, Australia

Stochastic physic model for estimation of river's pollution - 800
Nikolay Vasilevich Sokolov, Russian Academy of Sciences, Russia

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Dr David J Turnbull, Faculty of Sciences, University of Southern Queensland, Australia

Quasi-stationary heterogeneous burning of spherical particle in caseous Medium at large temperature differences and large concentrations of Chemically active component - 802
Ludmila A Uvarova, Moscow State University of Technology, Russia

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Solar cells with electron beam produced junctions - 803
Heinrich Hora, University of New South Wales, Australia

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Paul E Schwoenn, The University of Queensland, Australia
Thursday, 7 December 2006

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Quantum Information Concepts and Coherence (QUICC)
Exhibition Area, Plaza Terrace Room

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A Carlini, Tokyo Institute of Technology, Japan and Center for Quantum Computer Technology, Macquarie University, Australia

Quantum Control from a Linear Algebraic Viewpoint - 823
P G Morrison, Centre for Quantum Computer Technology, Macquarie University, Australia

Quantum computing with spin qubits interacting through delocalized excitons: Overcoming hole mixing - 824
Dr Ansan Nazir, Centre for Quantum Computer Technology, Centre for Quantum Dynamics, School of Science, Griffith University, Australia

Quantum teleportation of resonance fluorescence: Analytical results for spectra and photon correlations - 825
Changsoo Noh, University of Auckland, New Zealand

Quantum simulations of the Riemann Zeta function and other higher transcendentalts - 826
J Twamley, Macquarie University, Centre for Quantum Computer Technology, Australia

On finding the general form of master equations - 827
Dr James D Cresser, Center for Quantum Computer Technology, Physics Department, Macquarie University, Australia

Strongly coupled single-electron transistor backaction and sensitivity for charge qubit measurements - 828
Dr He-Bi Sun, Centre for Quantum Computer Technology, Centre for Quantum Dynamics, School of Science, Griffith University, Australia

Subspace confinement of qubit systems - 829
Mr Jared H Cole, Centre for Quantum Computer Technology, School of Physics, University of Melbourne, Parkville 3010, Australia

Remote implementation of multipartite unitary operations - 830
Dr Dominic W Berry, Centre for Quantum Computer Technology, Macquarie University, Australia

Loss tolerant optical quantum computation with weak nonlinearities - 831
Ms Agata M Branczyk, University of Queensland, Australia

Entanglement transfer between two distant systems - 832
Mr Stanley Chan, University of Queensland, Australia

Rapid state-purification of a register using Quantum Feedback Control - 833
Joshua Combes, Centre for Quantum Computer Technology, Centre for Quantum Dynamics, School of Science, Griffith University, Australia

Geodesics and optimal Quantum simulation - 834
Mr Mark R Dowling, University of Queensland, Australia

A comparison of gate characterisation methods - 835
Mr Zac W E Evans, Centre for Quantum Computer Technology, School of Physics, The University of Melbourne, Australia

Consistent description of quantum-classical interactions - 836
Michael JW Hall, Australian National University, Australia

Circuit-based quantum computing with a loss-tolerant error code - 837
Mr Alexander J F Hayes, University of Queensland, Australia

A quantum study of information delay via electromagnetically induced transparency - 838
Magnus TL Hsu, Australian National University, Australia
Dr Ben C Buchler, Australian National University, Australia

Quantum study of information delay via electromagnetically induced transparency - 839
Magnus TL Hsu, Australian National University, Australia

Pulse design for quantum computation in the Kane architecture - 840
Mr Gajendran Kandasamy, Centre for Quantum Computer Technology, School of Physics, University of Melbourne, Parkville, Victoria, Australia

Spatial quantum tomography with real-world holograms - 841
Nathan K Langford, University of Queensland, Australia

Transforming Biphotonic Quibits - 842
Mr Benjamin P Lanyon, University of Queensland, Australia

Improving fidelity of skewed output states of optical zeno gates - 843
Patrick M Leung, University of Queensland, Australia

Loss in coherent state quantum computing - 844
Austin P Lund, Centre for Quantum Computer Technology, Australia

Radiative properties of a linear chain of qubits - 845
Courtney J Mewton, The University of Queensland, Australia

Quantum mechanics with final as well as initial boundary conditions - 846
David J Miller, University of New South Wales, Australia

Using a coplanar waveguide as a quantum limited transducer for a nano-electromechanical oscillator - 847
Mr A K Ringsmith, The University of Queensland, Australia

Tight informationally complete quantum measurements - 848
Andrew J Scott, Centre for Quantum Dynamics, School of Science, Griffith University, Australia

Fault tolerant quantum computation on isolated logical cells - 849
Mr Ashley M Stephens, Centre for Quantum Computer Technology, School of Physics, The University of Melbourne, Australia

Progress toward ion trap quantum computing at Griffith - 850
Erik W Streed, Centre for Quantum Dynamics, Griffith University, Australia

Implementing a robust CNOT gate to correct for fabrication induced variations in donor based exchange coupling - 851
Mr Matthew J Tastolm, Centre for Quantum Computer Technology, School of Physics, University of Melbourne, Australia

Optimal reference ancillas for maximising accessible entanglement of identical particles - 852
Mr Graham A White, Centre for Quantum Dynamics, Griffith University, Australia

Quantum direction indicators using indistinguishable particles - 853
Daniel Yardley, University of Sydney, Australia

18:00-20:00 Poster - PS03.5
Acoustics and Music (AAS)
Exhibition Area, Plaza Terrace Room

Measurement the sound speed dependence of the sound speed in gases - 854
Khaidej Najafi, Zanjan University, Iran

Optical determination of sound speed in liquids - 855
Khaidej Najafi, Zanjan University, Iran

18:00-20:00 Poster - PS03.6
Plasma Physics (AIPSE)
Exhibition Area, Plaza Terrace Room

Spatial dust distribution and plasma dynamics in the Tokamak edge - 856
Sergey V Vladimirov, University of Sydney, Australia

SF_ Plasma functionalisation of Carbon surfaces - 857
Anders J Banlow, Flinders University South Australia, Australia

Stability of horseradish peroxidase on plasma modified ultra high molecular weight polyethylene - 858
Miss Joan Pui Yee Ho, University of Sydney, Australia

Electron transport in crossed E and B fields of a closed electron drift discharge - 859
Dr Igor Levchenko, School of Physics, University of Sydney, Australia

Complex plasma afterglow - 860
Dr Alex A Samarian, School of Physics, University of Sydney, Australia

Dynamics of two particles in a plasma sheath - 861
Dr Alex A Samarian, School of Physics, University of Sydney, Australia
Thursday, 7 December 2006

18:00-20:00 Poster - PS03.7
Complex Systems, Computational and Mathematical Physics (CSCMP)
Exhibition Area, Plaza Terrace Room

Small-world quantum routers - 862
C Facer, Macquarie University, Centre for Quantum Computer Technology, Australia

Origin of symmetry and self-organization in Sub-Nano patterns - 863
Dr Igor Levcenko, School of Physics, University of Sydney, Australia

Self-organization of large scale quantum dot patterns - 864
Dr Igor Levcenko, School of Physics, University of Sydney, Australia

A functional wireless radio system before Hertz - 865
Neil J Boucher, Compassart, Australia

Application on some the physics problems of Open Riemann Surface - 866
Guner Ilican, Anadolu University, Turkey

Probabilistic potentials in quantum mechanics - 867
Abdel N Kolic, Anadolu University, Turkey

In-silico demonstration of the Crooks' relation for a Brownian particle in a time-dependent harmonic trap - 868
Ranganathan Prabhakar, Australian National University, Australia

Characteristics of the trajectory of a projectile in a linear resisting medium and the Lambert W function - 869
Sein M Steward, The Petroleum Institute, United Arab Emirates

Critical exponents for structural transitions in a complex plasma - 870
Mr James DE Stokes, University of Sydney, Australia

Peculiarities of stochastic resonance in dispersive systems - 871
Ludmila A Uvarova, Moscow State University of Technology, Russia

The simulation of the propagation of the information in the complex systems - 872
Ludmila A Uvarova, Moscow State University of Technology, Russia
Prof Dr Tatiana V Kazarov, Moscow State University of Technology, Russia

Optical trapping of a cube - 873
Ms Agata M Branczyk, University of Queensland, Australia

18:00-20:00 Poster - PS03.8
Atom Optics (AO)
Exhibition Area, Plaza Terrace Room

Origin of a disorder potential on a magnetic film atom chip - 874
Prof Andrei I Sidorov, ACQAO and CAUS, Swinburne University of Technology, Australia

Progress towards a Molecular BEC via the Association of Ultracold Fermionic Atoms - 875
Grainne Duffy, ARC Centre of Excellence for Quantum Atom Optics and Centre for Atom Optics and Ultrafast Spectroscopy, Swinburne University, Australia

Photodissociation spectroscopy of magnetically trapped metastable Helium - 876
Lesa J Byron, Australia

Phase space methods for fermions - 877
A/Prof Bryan J Dalton, ARC QOE for Quantum Atom Optics, Swinburne University of Technology, Melbourne, Australia, Australia

Dynamics of Bose-Einstein condensates in an asymmetric double-well - 878
Brenton V Hall, ARC Centre of Excellence for Quantum Atom Optics, Center for Atom Optics and Ultrafast Spectroscopy, Swinburne University of Fe, Australia

First results using the Hybrid phase-space method - 879
Mr Scott E Hoffmann, ACGA, University of Queenslend, Australia

Classical and quantum reflection of Bose-Einstein condensates from arrays of current carrying wires - 880
Thomas E Judd, University of Nottingham, United Kingdom

Phonon superradiance from dilute gas Bose-Einstein condensates - 881
Ms Sarah L Midgley, ARC Centre of Excellence for Quantum-Atom Optics, Physics Dept., The Australian National University, Australia

Two-time correlation functions in the Wigner representation - 882
Dr Murray K Oton, University of Queensland, Australia

Magnetic lattices for ultracold atoms and quantum degenerate gases - 883
Mr Mandip Singh, ARC Centre of Excellence for Quantum-Atom Optics and Centre for Atom Optics and Ultrafast Spectroscopy, Swinburne University, Australia

Dispersion of the ⁴²⁹Rb cycling transition - 884
Paul N Summers, Australian National University, Australia

Quantum phase transition in a circular waveguide - 885
Andrew G Sykes, Australian Centre for Quantum and Atom Optics, Australia

ESA's atomic clock ensemble in space mission - 886
Michael E Tobar, University of Western Australia, Australia

Coherence of elongated quasi-condensates - 887
Mr Otto Vainio, University of Turku, Finland

Atom counting in ultra-cold gases using photoionisation - 888
Dr Chris J Vale, University of Queensland, Australia

Bose-Einstein condensate dynamics in combined optical and magnetic potentials - 889
Dr Chris J Vale, University of Queensland, Australia

Supersonic optical tunnels for Bose-Einstein condensates - 890
Sebastian Wueestler, ARC Centre of Excellence for Quantum-Atom Optics, Australian National University, Australia

Update on GPS Carrier Phase and TWSTFT comparisons of clock ensembles based at UWA and NMI - 891
John G Hartnett, University of Western Australia, Australia