Monday, December 11, 2000

8:30 am — 10:30 am

PLENARY SESSION 1

VENUE: BONYTHON HALL
Chairperson: Tony Thomas

8:30 am Professor John PILBROW Australian Institute of Physics
Introduction

8:40 am Mr Neil BRYANS DSTO
Welcome

8:45 am His Excellency Sir Eric NEAL AC CVO Governor or South Australia
Official Opening

9:00 am Prof John BARROW University of Cambridge
001 The Origin of the Universe

9:45 am Dr Mike KELLEY Cornell University
002 Exciting New Discoveries in Ionospheric Science

10:30 am — 11:00 am MORNING TEA

11:00 am — 12:30pm

PLENARY SESSION 2

VENUE: BONYTHON HALL
Chairperson: Jaan Oitmaa

11:00 am Sir Gareth ROBERTS Institute of Physics
003 Sagacity and Significant Stretch for Survival

11:45 am Prof Michael HOUGH University of Wollongong
004 Physics Education in a Globalizing Economy where Knowledge and Information are Competitive Advantages

12:30 pm — 2:00 pm LUNCH

2:00 pm — 3:30 pm

18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

VENUE: KERR GRANT
Chairperson: Andrew Stuchbery

2:00 pm Dr Martin SEVIOR University of Melbourne
020 Exploring the standard model with the Belle Detector

2:30 pm A/Prof Paul BARKER University of Auckland
021 Superallowed beta decays, $V_{ud}$ and the CKM matrix: The case of $^{38}$K

2:50 pm Miss Jasna DRAGIC University of Melbourne
022 Thermal simulations of the new design for the Belle Silicon Vertex detector

3:10 pm Mr Nick HASTINGS University of Melbourne
023 Determination of $B^0\bar{B}^0$ mixing rate from the time evolution of dilepton events at the Y(4s)

AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)

VENUE: BENHAM THEATRE
Chairperson: Jesper Munch

2:00 pm Dr David MCCLELLAND Australian National University
300 Gravitational wave detection this decade?
### Conference Schedule

#### AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)

**Monday, December 11, 2000**

**2:00 pm — 3:30 pm**

**VENUE: BRAGG THEATRE**

**Chairperson:** Jaan Oitmaa

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00 pm</td>
<td>Mr Antony SEARLE Australian National University</td>
<td>Network analysis for gravitational wave astronomy</td>
</tr>
</tbody>
</table>

#### CONDENSED MATTER PHYSICS (CMP)

**VENUE: MACBETH THEATRE**

**Chairperson:** Jaan Oitmaa

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 pm</td>
<td>Prof Michele PARRINELLO Max-Planck-Institut fur Festkörperforschung</td>
<td>Pressure-induced structural transformations in nanocrystals</td>
</tr>
<tr>
<td>2:35 pm</td>
<td>A/Prof David MCKENZIE University of Sydney</td>
<td>Applications of materials processing for biotechnology</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>A/Prof John DOBSON Griffith University</td>
<td>Prediction of dispersion forces in condensed matter and biophysics</td>
</tr>
</tbody>
</table>

#### CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

**VENUE: MACBETH THEATRE**

**Chairperson:** David McKenzie

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 pm</td>
<td>Dr Elizabeth CHELKOWSKA University of Tasmania</td>
<td>Improved outcomes in Physics service courses</td>
</tr>
<tr>
<td>2:15 pm</td>
<td>A/Prof Ian JOHNSTON The University of Sydney</td>
<td>In search of a right way to teach Physics</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Dr Geoff SWAN Edith Cowan University</td>
<td>Teaching learning skills and problem solving</td>
</tr>
<tr>
<td>2:45 pm</td>
<td>Ms Susan FETERIS Monash University</td>
<td>Undergraduate Physics laboratories - Staff perceptions of purposes and outcomes</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>A/Prof Trevor FINLAYSON Monash University</td>
<td>A Professional studies unit for third year university students</td>
</tr>
<tr>
<td>3:15 pm</td>
<td></td>
<td>Discussion of all papers presented at this session</td>
</tr>
</tbody>
</table>

#### SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

**VENUE: CINEMA, LEVEL 5**

**Chairperson:** Dick Thomas

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 pm</td>
<td>Prof Peter DYSON La Trobe University</td>
<td>An overview of the Tasman International Geospace Environment Radar (TIGER)</td>
</tr>
<tr>
<td>2:18 pm</td>
<td>Dr Murray PARKINSON La Trobe University</td>
<td>HF digital ionosonde and TIGER backscatter radar observations of magnetospheric electric fields penetrating the southern-hemisphere mid-latitude ionosphere</td>
</tr>
<tr>
<td>2:36 pm</td>
<td>Dr Murray PARKINSON La Trobe University</td>
<td>Rates of occurrence of TIGER HF radar echo parameters sorted according season, the KP index and the interplanetary magnetic field at sunspot maximum</td>
</tr>
<tr>
<td>2:52 pm</td>
<td>Prof Peter DYSON La Trobe University</td>
<td>TIGER backscatter ionogram observations</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>Dr Fred MENK University of Newcastle</td>
<td>TIGER HF radar observations of ULF waves near the plasmapause</td>
</tr>
</tbody>
</table>

#### AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA)

**VENUE: RENNIE THEATRE**

**Chairperson:** Mike Roach

<table>
<thead>
<tr>
<th>Time</th>
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<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 pm</td>
<td>Prof Michael HOUGH University of Wollongong</td>
<td>Physics education in a globalizing economy where knowledge and information are competitive advantages - Secondary physics context</td>
</tr>
</tbody>
</table>

#### 18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

**VENUE: KERR GRANT**

**Chairperson:** Bruce McKellar

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>4:00 pm</td>
<td>Prof George DRACOULIS Australian National University</td>
<td>Trends in the spectroscopy of neutron-rich nuclei</td>
</tr>
</tbody>
</table>
4:00pm — 5:30pm 18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

4:30 pm Dr Robert BARK Australian National University
025 Search for chiral bands in the A = 130 region

4:50 pm Dr Glenn MOLONEY University of Melbourne
026 Investigations of chiral symmetry of the CHAOS detector

5:10 pm Mr Jamie VARAS University of Sydney
027 Impact parameter estimation in heavy ion collisions

AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)

4:00 pm Dr Susan SCOTT Australian National University
302 Coherent line removal in Caltech 40m data

4:30 pm Daniel SHADDOCK Australian National University
303 Power recycled Michelson interferometer with resonant sideband extraction for advanced gravitational wave detection

5:00 pm Mr Christopher HOLLITT Adelaide University
304 A direct measurement of the spectrum of thermal noise

CONDENSED MATTER PHYSICS (CMP)

4:00 pm Prof Robert A ROBINSON Australian Nuclear Science & Technology Organisation
403 Neutron scattering at Australia’s replacement research reactor

4:35 pm Prof Oscar MOZE Università di Modena e Reggio
404 Magnetic structures and interactions in novel rare-earth intermetallics

5:10 pm A/Prof John BOLDEMAN Australian Nuclear Science & Technology
405 Boomerang: The Australian light source

CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

4:00 pm Dr David LOW University College, UNSW
605 Making air visible: Communicating ideas about the atmosphere

4:15 pm Dr SOEGENG Institut Teknologi Bandung
606 Simulation of the electromagnetic wave propagation in a rectangular waveguide

4:30 pm Dr Michelle LIVETT University of Melbourne
607 A web-based learning environment designed for interactive learning

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

4:00 pm Prof Brian FRASER University of Newcastle
905 Are electromagnetic ion cyclotron waves bouncing wave packets?

4:18 pm Dr Pavlo PONOMARENKO University of Newcastle
906 Spatial integration and Pc5 ULF azimuthal wavenumbers observed on the ground

4:36 pm Mr Paul MANUSIU University of Newcastle
907 Propagation characteristics of electromagnetic ion cyclotron waves propagating in the magnetosphere: CRRES Poynting Vector observations

4:54 pm Mr Sean ABLES University of Newcastle
908 Transient ULF wave signatures at the cusp

5:12 pm Mr Tim HOWARD University of Newcastle
909 Propagation of ULF (10 – 50 mHz) waves into the high latitude magnetosphere

4:00 pm — 5:30pm AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA) INFORMATION EXCHANGE

4:00 pm Dr Pal FEKETE University of Sydney
801 High School Physics Resources on the WEB

4:15 pm Mr Anton RAYNER The University of Queensland
802 Teaching Problem Solving to Young Scientists
Monday, December 11, 2000

**AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA)**

4:00 pm — 5:30 pm

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30 pm</td>
<td>Mr Dan O'KEEFFE</td>
<td>Camberwell Grammar School</td>
<td>Participation in Secondary Physics across Australia</td>
</tr>
<tr>
<td>4:45 pm</td>
<td>Ms Anne FERNANDEZ</td>
<td>UniServe Science</td>
<td>Web-based references and resources for secondary science</td>
</tr>
<tr>
<td>5:00 pm</td>
<td>Prof John PRESCOTT</td>
<td>Adelaide University</td>
<td>Careers in Physics</td>
</tr>
<tr>
<td>5:30 pm</td>
<td>Dr Judith POLLARD</td>
<td>Adelaide University</td>
<td><em>POSTER: Have Syllabus changes improved understanding in mechanics?</em></td>
</tr>
</tbody>
</table>

5:00 pm — 5:30 pm

**CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)**

**VENUE: GAMES, LEVEL 5**

**OZCUPE POSTER SESSION**

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT 001</td>
<td>Mrs Suzanne HOGG</td>
<td>University of Technology, Sydney</td>
<td>TAAcT reviewed and revisited</td>
</tr>
<tr>
<td>MT 002</td>
<td>A/Prof Roger LEWIS</td>
<td>University of Wollongong</td>
<td>Project-based learning in a WebCT environment</td>
</tr>
<tr>
<td>MT 003</td>
<td>Dr David LOW</td>
<td>University College, UNSW</td>
<td>Approaches to Flexible Delivery in Physics</td>
</tr>
<tr>
<td>MT 004</td>
<td>Dr Judith POLLARD</td>
<td>Adelaide University</td>
<td><em>POSTER: Have Syllabus changes improved understanding in mechanics?</em></td>
</tr>
<tr>
<td>MT 005</td>
<td>Ms Manjula SHARMA</td>
<td>University of Sydney</td>
<td>An investigation of student understanding of gravity</td>
</tr>
<tr>
<td>MT 006</td>
<td>Ms Kate WILSON</td>
<td>University of Sydney</td>
<td>Development of cooperative-learning thematic workshop tutorials</td>
</tr>
</tbody>
</table>

5:45 pm — 7:45 pm

**WOMEN IN PHYSICS FORUM AND DINNER**

5:45 pm — 6:45 pm

**PLENARY**

**VENUE: BONYTHON HALL**

**MASSEY LECTURE**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:45 pm</td>
<td>Prof Tony THOMAS</td>
<td>Centre for the Subatomic Structure of Matter</td>
<td>MASSEY LECTURE: Probing the Heart of Matter</td>
</tr>
</tbody>
</table>

7:00 pm — 9:00 pm

**AINSE/NUPP RECEPTION**

Tuesday, December 12, 2000

9:00am — 10:30am

**PLENARY SESSION 4**

**VENUE: BONYTHON HALL**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>Dr Alun JONES</td>
<td>Institute of Physics</td>
<td>Developments in Science/Physics Policy and Funding in the UK</td>
</tr>
<tr>
<td>9:45 am</td>
<td>Prof Dean ZOLLMAN</td>
<td>Kansas State University</td>
<td>Teaching Quantum Mechanics to Everyone: Can it be done with Technology?</td>
</tr>
</tbody>
</table>

10:30 am — 11:00 am

**MORNING TEA**

11:00am — 12:30 pm

**18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)**

**VENUE: KERR GRANT**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 am</td>
<td>Dr Derek LEINWEBER</td>
<td>Adelaide University</td>
<td>Quantum Monte Carlo studies in lattice gauge theory</td>
</tr>
</tbody>
</table>
11:00am — 12:30 pm 18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

11:30 am  Mr William DETMOLD University of Adelaide
Theoretical aspects of QCD at large quark density

11:50 am  Dr Aidan BYRNE Australian National University
Core excited states in trans-lead nuclei

12:10 pm  Mr Martyn ROBINSON Australian National University
Perturbed DCO measurements of g-factors in 180-184Pt

VENUE: BONYTHON HALL

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

11:00 am  Dr Birgit LOHMANN Griffith University
Ionization of heavy rare gases - a challenge to theory

11:30 am  Dr Helen DORSETT DSTO
Detonation chemistry

12:00 pm  Prof William MACGILLIVRAY Griffith University
New electron-atom collision experiments involving lasers

VENUE: BENHAM THEATRE

AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)

11:00 am  Ms Cindy NG Adelaide University
Attractor solutions of generalised scalar field potentials and quintessence

11:30 am  Dr Malcolm ANDERSON Universiti Brunei Darussalam
Embedding a straight cosmic string in a Robertson-Walker background

12:00 pm  Mr Marcus THATCHER Monash University
Exotic Behaviour due to Frame Dragging in the Space-time of a Superconducting Cosmic String

CONDESED MATTER PHYSICS (CMP)

11:00 am  A/Prof Trevor HICKS Monash University
Magnetic glassy behaviour in antiferromagnets

11:35 am  A/Prof Roger LEWIS University of Wollongong
Optical studies of colossal magnetoresistance

12:10 pm  Dr Emma MITCHELL CSIRO Telecommunications and Industrial Physics
Effect of Abrikosov Vortices on Josephson Junction Currents in High Temperature Superconductors

VENUE: BRAGG THEATRE

CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

11:00 am  Mrs Anna - Eugenia BINNIE Macquarie University
The NSW HSC Physics syllabus and its implications for first year university Physics

11:15 am  Mr Peter FLETCHER University of Sydney
How tertiary level Physics and Chemistry students learn to conceptualise quantum mechanics

11:30 am  Mr Ian SEFTON University of Sydney
Tracing two common misconceptions about energy

11:45 am  Physics Education Group Annual General Meeting

12:00 pm  Discussion of all papers presented at this session

VENUE: MACBETH THEATRE

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

11:00 am  Dr Dave NEUDEGG Rutherford-Appleton Lab
High-latitude geospace coupling: Preparing for Cluster II operations with Equator-S and SuperDARN observations

11:18 am  Dr Murray SCIFFER University of Newcastle
Mixed ULF wave modes and HF Doppler oscillations

11:36 am  Mr Phillip WEBB La Trobe University
Comparisons of the Global Plasmasphere Ionosphere Density (GPID) model to direct observations of the plasmasphere

11:54 am  Dr Robert GARDNER-GARDEN Defence Science and Technology Organisation
Real time modelling of ionospheric electron density (in the Australian region)

Chairperson: Robert Stening

VENUE: CINEMA, LEVEL 5
11:00 am — 12:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: FLENTJE THEATRE
Chairperson: Chris Walsh

1A METROLOGY AND THIN FILMS

11:00 am  Mr. Ramin LALEZARI Research Electro-Optics, Inc
200  Ion beam sputter deposition of optical interference coatings

11:30 am  Dr. Andre LUITEN University of Western Australia
201  Linking the microwave and optical frequency domains with a phase-coherent bridge

12:00 pm  Mr. John MCFERRAN University of Western Australia
202  An optical frequency interval divider spanning 141THz using a ridge wave-guide laser at 709nm

12:15 pm  Dr. Kiyofumi MATSUDA University of Sydney
203  Real time phase difference amplification using a liquid crystal spatial light modulator

11:00 am — 12:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: HORACE LAMB THEATRE
Chairperson: Jesper Munch

1B IMAGING AND VISION  Sponsored by SOLA International

11:00 am  Dr. Jim GARDNER CSIRO
204  How well can we measure colour?

11:30 am  A/Prof. David ATCHISON Queensland University of Technology
205  Strip lenses to correct peripheral refractive errors of the human eye

11:45 am  Ms. Manjula SHARMA University of Sydney
206  Pupil filters for optimizing imaging through scattering media

12:00 pm  Dr. Xiaosong GAN Swinburne University of Technology
207  Three-dimensional imaging based on fluorescence resonance energy transfer in living cells under two-photon excitation

12:15 pm  Mr. Eric AMPEM-LASSEN University of Melbourne
208  Optical fibre characterisation using near field scanning optical microscopy

11:00 am — 12:30 pm

AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA)

VENUE: RENNIE THEATRE
Chairperson: Tony Thomas

KEYNOTE SESSION 2

11:00 am  Prof. Dean ZOLLMAN Kansas State University
807  Teaching Quantum Mechanics to Everyone: Can it be done with Technology? - Secondary Physics Context

12:30 pm — 2:00 pm  LUNCH

1:30 pm — 3:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: HORACE LAMB THEATRE
Chairperson: Murray Hamilton

KEYNOTE SESSION 1

1:30 pm  Dr. Alex BOIKO Electro Optic Systems Pty Limited
209  TECHNICAL OPTICS AWARD: Special coatings for commercial and research applications

2:00 pm  Richard HOOVER George C Marshall Space Flight Center
210  Evidence for microfossils in ancient rocks and meteorites

2:30 pm  Dr. Esa JAATINEN CSIRO
211  Australia’s frequency doubled Nd:YAG primary wavelength standard

2:45 pm  A/Prof. Barry SANDERS Macquarie University
212  Security aspects of practical quantum cryptography
Tuesday, December 12, 2000

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

3:00 pm Mr Anton RAYNER The University of Queensland
213 Laser refrigeration of optical fibres

3:15 pm Dr David PATERSO NUniversity of Melbourne
214 Young’s two slit experiment to measure spatial coherence of soft x-ray undulator radiation.

2:00 pm — 3:30 pm

18TH AINSE NUCLEAR & PARTICLE PHYSICS
CONFERENCE (AINSE/NUPP)

VENUE: KERR GRANT
Chairperson: George Dracoulis

2:00 pm Dr Paul MANTICA Michigan State University
032 Low-energy structure of neutron-rich near the N = 40 subshell closure studied by beta decay

2:30 pm Mr Thomas MCGORAM Australian National University
033 Four-quasiparticle isomers and K-forbidden transitions in 176Lu

2:50 pm Prof Robert DELBOURGO University of Tasmania
034 Electromagnetic and gravitational decay of the Higgs boson

3:10 pm Dr Michael WALKER Australian National University
035 Chiral symmetry breaking is permitted in supersymmetric QED

ATOMIC & MOLECULAR PHYSICS & QUANTAM
CHEMISTRY (AMPQC)

VENUE: BONYTHON HALL

2:00 pm Dr Robert SANG Griffith University
103 Total absolute electron-metastable neon collision cross section measurements via a
magneto-optical trap

2:15 pm Dr David WATERHOUSE University of Western Australia
104 Long-range Coulomb interactions in low energy (e,2e) data

2:30 pm Dr Julian LOWER Australian National University
105 (e,2e) Collisions with polarized electrons and excited, oriented and spin polarized targets

2:45 pm Mr Matthew HAYNES Griffith University
106 Low energy electron impact ionization measurements of argon in coplanar symmetric and
asymmetric geometries

3:00 pm Dr Robert GULLEY Australian National University
107 Absolute electron scattering from C6H6 and C6F6

3:15 pm Ms Linda UHLMANN Australian National University
108 Absolute elastic cross sections for electron scattering from SF6

AUSTRALIAN GENERAL RELATIVITY WORKSHOP -
AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY &
GRAVITATION (ASGRG)

VENUE: BENHAM THEATRE
Chairperson: Susan Scott

2:00 pm PD Makoto NARITA Rikkyo University
308 Asymptotic singular behavior of inhomogeneous spacetimes in string theory

2:30 pm Mr Mike ASHLEY Australian National University
309 Stability of the abstract boundary for space-time and optimal embeddings

3:00 pm Dr Andrew NORTON University of Canberra
310 Symbolic computation of polyhomogeneous asymptotic solutions of Einstein’s equations in null
characteristic transport form

CONDENSED MATTER PHYSICS (CMP)

VENUE: BRAGG THEATRE
Chairperson: Geoff Smith

2:00 pm Dr David WILLIAMS Australian National University
409 Folding of DNA - tennis racquets, toroids and hollow spheres

2:35 pm Prof Paul MCCORMICK Advanced Powder Technology Pty Ltd
410 Solid-state mechanochemical synthesis of nanopowders

3:10 pm Dr Craig BUCKLEY Curtin University
411 A quantitative analysis of the hydrogen-vacancy complexes in the hydrogen aluminium system

CONFERENCE ON UNIVERSITY PHYSICS EDUCATION
(OZCUPE)

VENUE: BRAGG LABORATORY 7

2:00 pm Ms Manjula SHARMA University of Sydney
611 Easily Adaptable Thematic Physics Workshops
## CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

2:00 pm — 3:30 pm

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>3:00 pm</td>
<td>Dr Judith POLLARD</td>
<td>Providing choices in learning experiences for large classes - beyond Studio Physics</td>
</tr>
<tr>
<td>3:15 pm</td>
<td></td>
<td>Discussion of all papers presented at this session</td>
</tr>
</tbody>
</table>

### SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5
Chairperson: Elizabeth Essex

<table>
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<tbody>
<tr>
<td>2:00 pm</td>
<td>Dr Richard M THOMAS</td>
<td>Equatorial scintillation on GPS links during 2000</td>
</tr>
<tr>
<td>2:18 pm</td>
<td>Dr Manuel CERVERA</td>
<td>Observations of equatorial ionospheric radio-wave scintillation in South East Asia</td>
</tr>
<tr>
<td>2:36 pm</td>
<td>Lech HAJKOWICZ</td>
<td>Simultaneous observations of ionospheric quasiperiodic scintillations from short and long meridional baselines using VHF transmissions from transit satellites</td>
</tr>
<tr>
<td>2:54 pm</td>
<td>Dr Gordon BOWMAN</td>
<td>Similarities between equatorial and mid-latitude spread-F, as recorded by ionograms</td>
</tr>
</tbody>
</table>

### AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA)

VENUE: RENNIE THEATRE

COMPUTER INTERFACING

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>2:00 pm</td>
<td>Dr Tony PUGATSCHEW</td>
<td>Computer Interfacing - “Developments and Directions”</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Dr Stephen HOWARD</td>
<td>Computer Interfacing - “Developments and Directions”</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>Mr Russell ARMSTRONG</td>
<td>Computer Interfacing - “Developments and Directions”</td>
</tr>
</tbody>
</table>

3:30 pm — 4:00 pm AFTERNOON TEA

### 13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: GAMES, LEVEL 5

AOS POSTER SESSION 1

<table>
<thead>
<tr>
<th>Poster</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT 010</td>
<td>Light guiding light: Non-linear refraction in rubidium vapour</td>
</tr>
<tr>
<td>MT 012</td>
<td>Large holographically corrected telescopes</td>
</tr>
<tr>
<td>MT 014</td>
<td>Distance ranging to biological tissue using fibre-optic fabry-perot, short tuning range FMCW interferometry</td>
</tr>
<tr>
<td>MT 016</td>
<td>Wavefront coding in high numerical aperture microscopy</td>
</tr>
<tr>
<td>MT 018</td>
<td>Measuring aberrations of the human eye</td>
</tr>
<tr>
<td>MT 020</td>
<td>Caesium beam line for in-line interferometry</td>
</tr>
<tr>
<td>MT 022</td>
<td>Resolution improvement of two-photon fluorescence microscopy caused by the nonlinear response in a single-mode fibre</td>
</tr>
<tr>
<td>MT 024</td>
<td>Design optimisation and commercial application of a LIBS simultaneous elemental analysis system</td>
</tr>
<tr>
<td>MT 026</td>
<td>Influence of three-ion energy transfer up-conversion on the green fluorescence in Er3+ : fluoride glasses</td>
</tr>
<tr>
<td>MT 028</td>
<td>Simplified method for beatlength measurement for optical fiber</td>
</tr>
</tbody>
</table>

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AIP 2000 Congress Program as at Friday, December 1, 2000, 10:02:51 AM
Mr Gregory COLLECUITT University of Queensland
MT 030  Digital response in a parametric AND gate
Dr Stephen COLLINS Victoria University

Ms Imogen COLTON University of Melbourne
MT 034  Measuring larmor precession with an atomic beam in a vapour cell
Dr Xiaoyuan DENG Swinburne University of Technology

Dr Bipina DHAL University of Melbourne
MT 038  Absolute measurements of EXAFS for copper and gold
Dr Svetlana DLIGATCH CSIRO

Mr David DRAGE CSIRO
MT 040  Fabrication of multilayer thin filmed designs which are highly sensitive to manufacturing errors
Mr Vladimir DUBAI Swinburne University of Technology

Mr Troy EICHMANN University of Queensland
MT 042  Progress towards a small-scale, automated optical thin-film production capability
Mr Philip FAIRMAN CSIRO DTIP

A/Prof Peter FARRELL Victoria University
MT 044  Optic fibre bundle contact imaging probe employing laser scanning confocal microscope

A/Prof Matthew FEWELL University of New England
MT 046  A study of two and three dimensional flows over cylinders

Ms Jenn FISHBURN Macquarie University
MT 048  Ellipsometric monitoring during production of multi-layer thin films
Mr David FARRANT CSIRO Telecommunication and Industrial Physics

Mr Thang HA Macquarie University
MT 050  Geometrically-qualified ESPI vibration analysis

Mr Keith GIBBS Swinburne University
MT 052  Absolute concentration image of praseodymium within a fibre core by fluorescence confocal microscopy
A/Prof Matthew FEWELL University of New England

Ms Jenn FISHBURN Macquarie University
MT 054  The Hamiltonian for two-photon transitions and the rotating-wave approximation

Mr Kiang KHO Swinburne University of Technology
MT 056  Spot-size dependence of ablation parameters in visible nanosecond ablation of metallic substrates
Tadyuki FUNABA University of Sydney

Mr Neil MANSON Australian National University
MT 058  Multiphoton excitation through scattering media: Monte Carlo simulations

Mr Thang HA Macquarie University
MT 060  Physical interpretation of fluorescence waveforms from coupled energy levels

Dr Esa JAATINEN CSIRO
MT 062  Laser-induced lesions in heart muscle to treat atrial fibrillation

Mr Kiyofumi MATSUDA University of Sydney
MT 064  Stabilising the laser source for the atomic kilogram

Mr Valerian KUZNETSOV University of Sydney
MT 066  A novel high-throughput polarisation insensitive spectrometer for separation of closely-spaced fluorescence spectra

Dr Neil MANSON Australian National University
MT 068  Development of a Shack-Hartmann wavefront sensor at CRCERT for eye research

Dr Neil MANSON Australian National University
MT 070  Can a colour centre in diamond be useful for quantum computing?

Dr Kiyofumi MATSUDA University of Sydney
MT 071  Interaction of an electromagnetic induced transparency and a spectral hole

Dr Alex MAZZOLINI Swinburne University of Technology
MT 074  Beam collimation using wedged plate multiple beam shearing interferometry

Prof Jesper MUNCH The University of Adelaide
MT 076  Application of fringe counting interferometry to MEMS micropump characterisation

Dr Bill MUNRO University of Queensland
MT 078  Practical concepts for large, low cost, holographic lidar receivers

Dr Bill MUNRO University of Queensland
MT 080  Mixed state quantum entanglement manipulation
<table>
<thead>
<tr>
<th>Time</th>
<th>Author(s)</th>
<th>Title</th>
<th>Venue</th>
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</thead>
<tbody>
<tr>
<td>3:30 pm</td>
<td>Roger NETTERFIELD CSIRO</td>
<td>Thin film laser protection filters - Design and production considerations</td>
<td></td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Dr Bob OREB CSIRO Telecommunications and Industrial Physics</td>
<td>Precision interferometric measurement of right angles with the aid of an etalon</td>
<td></td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Miss Benedicte REBIERE Sunflor - Dept of Electrical and Information Engineering</td>
<td>Interferometric measurement of refractive index homogeneity on polished substrates</td>
<td></td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Bob OREB CSIRO Telecommunications and Industrial Physics</td>
<td>Fast scanning OCT: Two dimensional scanning using a blacked optical fiber Bragg Grating</td>
<td></td>
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<tr>
<td>3:30 pm</td>
<td>Robert SCHOLTEN University of Melbourne</td>
<td>Theoretical calculation of saturated absorption for multilevel atoms</td>
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<tr>
<td>3:30 pm</td>
<td>Robert SCHOLTEN University of Melbourne</td>
<td>A new model for saturated absorption</td>
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<tr>
<td>3:30 pm</td>
<td>Matthew SELLARS Australian National University</td>
<td>Can a single photon be stored in a co-herent time domain optical memory?</td>
<td></td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Elwyn SMITH University of Western Australia</td>
<td>Stitching interferometric measurements for inspection of large optical components</td>
<td></td>
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<tr>
<td>3:30 pm</td>
<td>Andrew STEVENSON Victoria University of Technology</td>
<td>Non-scanning optical coherence domain reflectometry with arbitrary source spectral profiles</td>
<td></td>
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<tr>
<td>3:30 pm</td>
<td>Bronwen TAYLOR Macquarie University</td>
<td>Intrinsic fibre optic sensor for dynamic structural sensing</td>
<td></td>
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<tr>
<td>3:30 pm</td>
<td>Ben TRAVAGLIONE University of Queensland</td>
<td>Optical implementation of Kitaev’s algorithm</td>
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<tr>
<td>3:30 pm</td>
<td>Lincoln TURNER University of Melbourne</td>
<td>Solving the momentum-space Lippman-Schwinger equation using a rotated-contour method</td>
<td></td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Brian ROBSON Australian National University</td>
<td>The fusion of heavy nuclei</td>
<td>Kerr Grant</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Dr Mahananda DASGUPTA Australian National University</td>
<td>Effect of breakup on near barrier fusion</td>
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<tr>
<td>4:00 pm</td>
<td>Matt GARBUTT University of Melbourne</td>
<td>Constraining right-handed and scalar currents in the weak interaction</td>
<td></td>
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<tr>
<td>4:00 pm</td>
<td>Gabrielle BRIGHT University of Melbourne</td>
<td>Bose-Einstein correlations in like and unlike-sign charged pion pairs</td>
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<tr>
<td>4:10 pm</td>
<td>Dr John FURST University of Newcastle</td>
<td>Measuring Zero: How photon polarisation measurements provide an insight into the dynamics of electron scattering from the rare gases</td>
<td>Bonython Hall</td>
</tr>
<tr>
<td>4:10 pm</td>
<td>Dr Dmitry FURSA The Flinders University of South Australia</td>
<td>Electron scattering from the ground state of mercury</td>
<td></td>
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<tr>
<td>4:10 pm</td>
<td>Dr Bipina DHAL University of Melbourne</td>
<td>Competitive channel of double electron transfer in ion-atom collision</td>
<td></td>
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<tr>
<td>4:10 pm</td>
<td>Dr Alisher KADYROV Flinders University</td>
<td>Convergent close-coupling: extension to positron-hydrogen</td>
<td></td>
</tr>
<tr>
<td>4:10 pm</td>
<td>Mr Anthony BLACKETT Murdoch University</td>
<td>Solving the momentum-space Lippman-Schwinger equation using a rotated-contour method</td>
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</table>
4:00 pm — 5:30 pm  AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)

VENUE: BENHAM THEATRE
Chairperson: Malcolm Anderson

4:00 pm  Dr Peter BOUKNEGT Adelaide University
311  Recent progress in string theory

4:45 pm  Dr David WILTSHIRE Adelaide University
312  Brane Worlds

CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

VENUE: MACBETH THEATRE

4:00 pm  Dr John M LONG Deakin University
613  Internet control of a fluid mechanics practical for distance education students

4:15 pm  Dr David MILLS Monash University
614  Physics – concepts and simulations – effectiveness of a flexible learning software package

4:30 pm  Mr Anton RAYNER The University of Queensland
615  Advantages of flexible delivery for introductory physics

4:45 pm  Mrs Suzanne HOGG University of Technology, Sydney
616  Print, Publish or Program?

5:00 pm  Mr Pablo ANON University of Technology, Sydney
617  Flexible learning and intellectual property

5:15 pm  Discussion of all papers presented at this session

4:00 pm — 5:30 pm  CONDENSED MATTER PHYSICS (CMP)

VENUE: GAMES, LEVEL 5

CMP POSTER SESSION 1

Dr Arthur ANDERSON The University of New South Wales
MT 110  Evidence for linking an oxygen pairing process and superconductivity in high temperature superconductors
Mr Tim BYRNES University of New South Wales
MT 112  Improved 4-block DMRG algorithms
Dr Yong CAI Synchrotron Radiation Research Center
MT 168  Spin-resolved valence electronic structure in epitaxial Fe3O4 films on Pt(111)
A/Prof Don CHAPLIN University College, UNSW
MT 114  NMRON on a mixed halide antiferromagnet (54Mn)Mn(Cl0.6Br0.4)2.4H2O
A/Prof John DOBSON Griffith University
MT 116  Correlation energy and excitation properties of many-electron systems from model exchange-correlation kernels
Mr Simon DREW Monash University
MT 118  CW and pulsed EPR of transition metal ions in some silicate and fluoride glasses
Dr Hans-Peter ECKLE University of New South Wales
MT 120  Electrical and mechanical properties of strongly-correlated systems
Dr Tunay ERSEZ Australian Nuclear Science and Technology Organisation
MT 122  Polarised neutron scattering and magnetic studies of rhombohedral La1-xSr0.5Mn3O3+s
Dr Tunay ERSEZ Australian Nuclear Science and Technology Organisation
MT 124  Polarised Neutron Scattering Developments at the Australian Nuclear Science and Technology Organisation
A/Prof Matthew FEWELL University of New England
MT 126  Diffraction of expanded austenite using synchrotron radiation
A/Prof Trevor FINLAYSON Monash University
MT 128  Microstructure and magnetic properties of rapidly solidified nanocrystalline Fe81Zr7B12Alloy
Dr Darren GOOSSSENS Australian National University
MT 130  Diffuse x-ray scattering from benzil, C14H10O2: analysis via automatic refinement of a Monte Carlo model
A/Prof Chris HAMER University of NSW
MT 132  Linked cluster series expansions for multiparticle excitations in quantum lattice models
**CONDENSED MATTER PHYSICS (CMP)**

**4:00 pm — 5:30 pm**

- **Mr Joo-Von KIM** University of Western Australia
  - *Calculations of long-wavelength spin-waves in exchange-biased bilayers*
- **N KIRBY** Curtin University of Technology
  - *Crucible corrosion in the melt processing of YBa2Cu3O7-d superconductors*
- **Dr Michael KUCHIEV** University of New South Wales
  - *Enhancement of nuclear reactions in matter*
- **Ms Audrey LOBO** University of Sydney
  - *Green function formalism for nonlinear acoustic waves in layered media*
- **Prof Jaan OITMAA** University of New South Wales
  - *The square lattice J1 - J2 Heisenberg antiferromagnet*
- **Dr Ross PILTZ** ANSTO
  - *In situ electric field studies of the relaxor ferroelectric PZN-PT using neutron scattering*
- **Dr Don PRICE** CSIRO Telecommunications & Industrial Physics
  - *Non-linear elastic wave propagation in a planar waveguide*
- **Dr Glen STEWART** Australian Defence Force Academy
  - *Neutron scattering studies of Mn12-Acetate*
- **A/Prof Oleg SUSHKOV** University of New South Wales
  - *Mössbauer detection of nuclear magnetic resonance at millikelvin temperatures*
  - *Spontaneous spin stripe dimerization in the doped 1-J model*
- **Prof Robert A ROBINSON** Australian Nuclear Science & Technology Organisation
  - *Critical dynamics of singlet excitations in a frustrated spin system*
- **Dr Gordon TROUP** Monash University
  - *EPR measurements of phenolic concentration in developing red grapeseeds - a pilot study*
  - *EPR studies of the free radicals in the spices and pigments turmeric and saffron*
- **Dr Weihong ZHENG** University of New South Wales
  - *Extended bound states in the J1 - J2 - d chain*
  - *Anomaly of second magnetization peak in overdoped Bi2Sr2CaCu2Oz single crystals*

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**13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)**

**VENUE: FLENTJE THEATRE**

**Chairperson: TBA**

**LASERS AND INTERFEROMETRY**

**4:00 pm**
- **Dr Deb KANE** Macquarie University
  - *The effects of optical feedback on semiconductor lasers*

**4:30 pm**
- **Prof Jesper MUNCH** The University of Adelaide
  - *Precision interferometry: From Michelson to gravitational waves*

**5:00 pm**
- **Prof Damien MUDGE** University of Adelaide
  - *A high-power diode-laser-pumped CW Nd:YAG laser using a stable-unstable resonator*

**5:15 pm**
- **Professor John HARVEY** University of Auckland
  - *Parabolic pulses from Yb:fiber amplifiers: a new method for high power ultrashort pulse generation*

**5:30 pm**
- **Mr Peter DEKKER** Centre for Lasers and Applications
  - *1 W CW green self-frequency-doubled Yb:YAl3(BO3)4 laser*
Tuesday, December 12, 2000

AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA)

VENUE: RENNIE THEATRE

PHYSICS COURSES IN AUSTRALIA

4:00 pm  Mr Neil CHAMPION Board of Studies
811 Physics Courses in Australia
4:15 pm  Ms Rosemary HAFNER Board of Studies
812 Physics Courses in Australia
4:30 pm  Mr Ian FAULKNER SSABS
813 Physics Courses in Australia
4:45 pm  Mr Trevor PORTLOCK Pembroke School
814 Physics Courses in Australia

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: GAMES, LEVEL 5

STSP POSTER SESSION

Dr Anthony BREED Australian Antarctic Division
MT 171 Digisonde observation at Casey, Antarctica on the “Day the Solar Wind Almost Stopped”, May 10-12, 1999
Dr Laurence CAMPBELL Adelaide University
MT 172 Identification and analysis of meteor reflections
Dr Russell CLARKE
MT 173 A study of equatorial sporadic-E
Dr Junhu DU IPS Radio and Space Services
MT 174 A comparison between ISM measurements and TEC fluctuations in South East Asian regions
A/Prof Geoffrey GOODWIN University of South Australia
MT 175 Rainfall measurement using a piezoelectric technique suitable for weather stations
Dr Hedley J HANSEN ESST Group
MT 176 The remote sensing of objects using thermal signatures at millimetre wave frequencies (94 GHz)
Mr Longsong HE La Trobe University
MT 177 Geospace effects at Zhongshan sStation (L=13.9) during solar storms: Initial results
Dr Didier MONSELESAN IPS Radio and Space Services
MT 178 Digital ionosonde observations of E/F - Regions during intense lacuna conditions at polar cap latitude: Implications for drift velocity determination
Dr Didier MONSELESAN IPS Radio and Space Services
MT 179 Simultaneous observations of E and F region drift at Canberra and Camden, two mid-latitude stations
Dr Phil WILKINSON IPS Radio & Space Services
MT 180 A review of the space weather month, September 1999

8:00 pm — 10:00 pm

PLENARY

PUBLIC LECTURE

VENUE: BONYTHON HALL

8:00 pm  Prof Paul DAVIES
015 Time travel: fact or fiction?

Wednesday, December 13, 2000

8:45 am — 10:45 am

PLENARY SESSION 5

VENUE: BONYTHON HALL

Chairperson: George Dracoulis

8:45 am  Prof Phillip STILES North Carolina State University
008 Condensed Matter Physics: The last 50 years and future directions
9:30 am  Prof Victor NINOV Lawrence Berkeley National Laboratory
009 Production and Structure of Super-Heavy Elements
Wednesday, December 13, 2000

8:45 am — 10:45 am PLENARY SESSION 5

10:15 am Dr Ping Koy LAM Australian National University
010 BRAGG LECTURE: Applications of Quantum Electro-optic Control and Squeezed Light

10:45 am — 11:15 am MORNING TEA

11:15 am — 12:45 pm PLENARY SESSION 6

VENUE: BONYTHON HALL
Chairperson: Bruce McKellar

11:15 am Prof Janet CONRAD Columbia University
016 Navigating the World of Neutrino Oscillations
12:00 pm AIP General Meeting

1:30 pm — OPTIONAL TOURS
T1 DISCOVERING THE FLEURIEU PENINSULA
T2 COME TASTE THE WINES OF MCLAREN VALE
T3 AN AFTERNOON IN THE ADELAIDE HILLS
T4 A VISIT TO CLELAND WILDLIFE PARK
T5 TOURS OF PHYSICS-BASED INDUSTRY IN ADELAIDE

Thursday, December 14, 2000

9:00 am — 10:30 am PLENARY SESSION 7

VENUE: BONYTHON HALL
Chairperson: Halina

9:00 am Prof Sajeev JOHN University of Toronto
011 Sponsored by Coherent Scientific
Photonic Band Gap Materials: A New Frontier in Quantum and Nonlinear Optics
9:45 am Prof Jeffrey HARRIS Australian National University
012 Plasma Physics: Innovation in Energy and Industrial Technology

10:30 am — 11:00 am MORNING TEA

11:00 am — 12:30 pm 18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

VENUE: KERR GRANT
Chairperson: Brian Robson

11:00 am Dr Stuart TOVEY University of Melbourne
040 Neutrino oscillations search in the NOMAD experiment
11:30 am Dr Kevin VARVELL University of Sydney
041 Coherent meson production in the NOMAD experiment
11:50 am Mr Frederic BONNET University of Adelaide
042 Revealing nonperturbative physics in Lattice QCD
12:10 pm A/Prof Chris HAMER University of NSW
043 Quantum Monte Carlo methods in Hamiltonia lattice gauge theory

VENUE: BONYTHON HALL

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

11:00 am Prof Gerard MILBURN The University of Queensland
115 Quantum phase transitions in an ion trap
11:30 am Prof Victor FLAMBAUM University of New South Wales
116 Do fundamental constants vary with time and distance?
12:00 pm Dr Victor KARAGANOV Flinders University
117 Superelastic scattering of electrons from laser excited alkali atoms
CONDENSED MATTER PHYSICS (CMP)  

VENUE: BRAGG THEATRE  

Chairperson: John Liesegang  

11:00 am  Prof James WILLIAMS The Australian National University  
412 From fundamental solid state physics to innovative semiconductor devices  
11:35 am  A/Prof Steven PRAWER University of Melbourne  
413 Diamonds and blue lasers  
12:10 pm  A/Prof Philip SMITH University of Newcastle  
414 The dissociative chemisorption of silane on the Si(111)7x7 surface  

MEDICAL PHYSICS (MP)  

VENUE: NORTH DINING  

Chairperson: Eva Bezak  

11:00 am  Mr Jeremy BOOTH Royal Adelaide Hospital  
500 The effect of variable fractional doses on rectum complications  
11:20 am  Dr Plamen Ch. IVANOV Boston University  
501 Fractal and multifractal approaches to human heartbeat dynamics  
11:40 am  Mr Guilin LIU Department of Medical Physics, Royal Adelaide Hospital  
502 Linear accelerator mechanical radiation ISO centre assessment with an EP  
12:00 pm  Dr Gil VELLA University of Sydney  
503 The effect of arterial perfusion on the measured ultrasound induced heating in a fetal skull bone phantom  
12:20 pm  Dr Michael JACKSON Royal Prince Alfred Hospital  
504 Australian National Proton Facility  

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)  

VENUE: CINEMA, LEVEL 5  

Chairperson: Trevor Harris  

11:00 am  Dr Stuart ANDERSON DSTO Salisbury  
919 Radiowave signatures of dynamical processes in the ionosphere  
11:18 am  Dr Dan MEHHAN DSTO  
920 Dealiassing range/doppler ambiguous HF ground backscatter  
11:36 am  Dr Didier MONSELESAN IPS Radio and Space Services  
921 CADI and DPS ionospheric drift measurements at Casey Station, Antarctica  
11:54 am  Miss Larisa LINDSAY DSTO  
922 Comparison of maximum-useful-frequencies obtained from oblique ionograms with those predicted by monthly median ionospheric models  
12:12 pm  Mr Brett NORTHEY DSTO  
923 A comparison of DSTO and UK DERA background noise measurement systems with the CCIR noise model

11:00 am — 12:30 pm  

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)  

VENUE: FLENTJE THEATRE  

Chairperson: Peter Hannaford  

4A SPECTROSCOPY  

11:00 am  Dr Harry QUINEY University of Melbourne  
220 Quantum electrodynamics, time-reversal and parity violation: a relativistic QED approach to atomic and molecular theory  
11:30 am  Dr Alexander AKULSHIN University of Melbourne  
221 Negative group velocity of light, electromagnetically induced absorption, and other peculiarities of quantum interference in degenerate two-level atoms  
11:45 am  Mr Craig LINCOLN Swinburne University of Technology  
222 Ultrafast laser spectroscopy of haemoproteins  
12:00 pm  Dr Valentin BOGDANOV Swinburne University  
223 Energy transfer processes in heavily doped Er3+ :fluoride glasses  
12:15 pm  A/Prof Peter FARRELL Victoria University  
224 Fluorescence decay rate, temperature and praseodymium concentration in fluoride glasses  

11:00 am — 12:30 pm
**13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)**

**VENUE:** HORACE LAMB THEATRE  
Chairperson: Min Gu

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:00 am</td>
<td>Geoff ANDERSEN USAF Academy</td>
<td>Holographic Raman Lidar</td>
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<tr>
<td>11:15 am</td>
<td>Dr Stephen COLLINS Victoria University</td>
<td>Strain sensitivity of fluorescence from rare-earth-doped optical fibres</td>
</tr>
<tr>
<td>11:30 am</td>
<td>Dr Mikhail VASILIEV Victoria University of Technology</td>
<td>Low-coherence strain system using an optimising triple-wavelength combination source and chirped Bragg Grating-based Fabry-Perot sensor</td>
</tr>
<tr>
<td>11:45 am</td>
<td>Dr Deb KANE Macquarie University</td>
<td>Dry laser cleaning of alumina particles from glass using a XeCl excimer laser</td>
</tr>
<tr>
<td>12:00 pm</td>
<td>Dr Thu-Lan KELLY University of Adelaide</td>
<td>Dual conjugate wavefront generation for testing adaptive optics systems</td>
</tr>
<tr>
<td>12:15 pm</td>
<td>Dr Andrei ZVYAGIN University of Western Australia</td>
<td>A new purely classical achromatic optical phase modulator</td>
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**23RD AINSE PLASMA SCIENCE & TECHNOLOGY CONFERENCE (PLASMA 2000)**

**VENUE:** RENNIE  
Chairperson: Andrew Cheetham

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<tr>
<td>11:00 am</td>
<td>Dr Alan TURNBULL General Atomics Inc</td>
<td>The advanced Tokamak concept</td>
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<tr>
<td>11:30 am</td>
<td>Dr Boyd BLACKWELL Australian National University</td>
<td>Results from Helical Axis Stellarators</td>
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<tr>
<td>11:45 am</td>
<td>Mr Scott COLLIS Australian National University</td>
<td>Electron density transport studies on the H-INF Heliac</td>
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<tr>
<td>12:00 pm</td>
<td>Mr Fenton GLASS Australian National University</td>
<td>Time-resolved Tomographic Spectroscopy system for H-INF</td>
</tr>
<tr>
<td>12:15 pm</td>
<td>Prof Robin STORER Flinders University of South Australia</td>
<td>Resistive magnetohydrodynamics for three-dimensional plasmas</td>
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**18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)**

**VENUE:** KERR GRANT  
Chairperson: Robert Delbourgo

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<tbody>
<tr>
<td>2:00 pm</td>
<td>Dr Paul CODDINGTON Adelaide University</td>
<td>Cluster computing for the Lattice QCD simulations</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Dr Vadim GUZEY University of Adelaide</td>
<td>On the role of delta (1232) in DIS on polarized He-3 and the extraction of neutron spin structure function g1n (x,Q2)</td>
</tr>
<tr>
<td>2:50 pm</td>
<td>Miss Rachel BUTT Australian National University</td>
<td>The effect of target spin on fission fragment angular distributions</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>Dr Reza HASHEMI-NEZHAD University of Sydney</td>
<td>Accelerator driven sub-critical nuclear assemblies; spallation neutron induced nuclear waste transmutation in lead and graphite neutron moderating environments</td>
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**ATOMIC & MOLECULAR PHYSICS & QUANTUM CHEMISTRY (AMPQC)**

**VENUE:** BONYTHON HALL

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<td>2:00 pm</td>
<td>Mr Peter RIGGS Department of Defence</td>
<td>Quantum phenomena in terms of energy - momentum transfer</td>
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<tr>
<td>2:15 pm</td>
<td>Mr Michael BROMLEY Northern Territory University</td>
<td>Configuration interaction calculations of positronical atoms and ions</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Dr Andrey LUGOVSKOY Flinders University</td>
<td>Shake-up of a light atom in a collision with a hard wall</td>
</tr>
</tbody>
</table>
Thursday, December 14, 2000

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

2:00 pm — 3:30 pm

2:45 pm  Mr Ben TRAVAGLIONE University of Queensland
  Applying Kitaev’s algorithm in an ion trap quantum computer

3:00 pm  Prof Peter DRUMMOND University of Queensland
  STIRAP in coupled atomic and molecular superchemistry

3:15 pm  Mr Chanh Quoc TRAN University of Melbourne
  X-ray extended-range technique for precision measurement of the x-ray mass attenuation coefficient and IM(F) for copper using synchrotron radiation

CONDENSED MATTER PHYSICS (CMP)
VENUE: BRAGG THEATRE
Chairperson: Gerard Milburn

2:00 pm  Prof Robert CLARK University of New South Wales
  Australian US initiative to construct a silicon-based solid state quantum computer

2:35 pm  Dr Robert STAMPS University of Western Australia
  High frequency spin dynamics in magnetic heterostructures

MEDICAL PHYSICS (MP)
VENUE: NORTH DINING
Chairperson: Gill Vella

2:00 pm  Ms Trang TRAN Adelaide University
  Comparisons of two ferrous-sulphate gels for high image reconstruction using an optical scanning system

2:20 pm  Dr Bhaskar MUKHERJEE Australian Nuclear Science Technology Organisation
  Cosmic radiation dosimetry of Australian air crew and passengers using superheated bubble dosimeter and miniature PIN diode detector

2:40 pm  Dr Ian MACLEAN Australian Communications Authority
  Do mobile phones cause brain cancer?

3:00 pm  Dr Alfio PARISI University of Southern Queensland
  Spectral, Broadband and Personal Solar UV Measurements at a Sub--Tropical Latitude

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)
VENUE: HORACE LAMB THEATRE
Chairperson: Ken Baldwin

KEYNOTE SESSION 2

2:00 pm  Professor Richard POWELL University of Arizona
  Overview of solid state lasers with applications as LIDAR transmitters and optical image amplifiers

2:30 pm  Dr Howard WISEMAN Griffith University
  Adaptive measurements and optimal states for quantum interferometry

2:45 pm  Mr Winfried HENSINGER The University of Queensland
  Observation of bifurcations in a non-linear Hamiltonian system using cold atoms

3:00 pm  Prof Geoffrey OPAT The University of Melbourne
  An oscillating mirror beam splitter for laser cooled neutral atoms

3:15 pm  Prof John LOVE Australian National University
  Towards extremely high capacity optical fibre transmission systems

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)
VENUE: CINEMA, LEVEL 5
Chairperson: Brian Fraser

PLASMA & SPACE JOINT SESSION

2:00 pm  Prof Peter ROBINSON University of Sydney
  Stochastic growth of localized plasma waves

2:30 pm  Prof Manfred HELLBERG University of Natal
  Waves in plasmas with power-law distributions

2:45 pm  Dr Murray SCIFFER University of Newcastle
  One dimensional model for ULF wave propagation in the ionosphere

3:05 pm  Mr Phillip WEBB La Trobe University
  The Global Plasmasphere Ionosphere Density (GPID) model
3:30 pm — 4:00 pm

**AFTERNOON TEA**

3:30 pm — 6:00 pm

**VENUE: GAMES, LEVEL 5**

**13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)**

**AOS POSTER SESSION 2**

Mr Shahraam AFSHAARVAHID Adelaide University
TF 001 Comparison of numerical and experimental results of the tempord

Uzma AKRAM The University of Queensland
TF 002 Effect of quantum interference on a three-level atom driven by two laser fields
Dr Igor ANIKEEV The University of Adelaide
TF 003 Phase conjugate oscillator as a source of short-coherence-length laser radiation
Dr Stephen BARTLETT Macquarie University
TF 004 Abelian and non-abelian geometric phase in quantum interferometry
Dr Anton BARTY University of Melbourne
TF 005 Are mini Zeeman slowers a viable slow atom beam source?
Mr Ivan BLAJER University of Melbourne
TF 006 Precision measurement of x-ray complex atomic form factor using rotating anode generator
Ms Zoe BRADY Griffith University
TF 007 Robust unravelings for resonance fluorescence
Mr Phillip BURNS Macquarie University
TF 008 Energy transfer in Er3+:YCOB crystals and investigation into laser performance at 1.5-1.6um
Mr Phillip BURNS Macquarie University
TF 009 Cavity design for single-frequency Yb:YAB micro lasers
Dr George CHRISTODOULOU University of Melbourne
TF 010 Detector and spectrometer development for QED tests
Dr John CLOSE Australian National University
TF 011 Progress towards BEC at ANU
Mr Paul COCHRANE The University of Queensland
TF 012 Teleportation using coupled oscillator states
Dr Judith DAWES Centre for Lasers and Applications
TF 013 Thermal characteristics and quantum efficiency of YB, YAB
Mr Martin DE JONGE University of Melbourne
TF 014 A broad range channel cut monochromating crystal for laboratory x-ray experiments between 5-30 keV.
Mr Martin DE JONGE University of Melbourne
TF 015 Absolute energy calibration of 15-50 keV X-rays at the advanced photon source
Mr Peter DEKKER Centre for Lasers and Applications
TF 016 Q-switched green Yb, YA13 (BO3)4 Laser
Ms Jennifer DODD Australian National University
TF 017 Coherence properties of a quantum field theory of an atom laser
Miss Elaine FALLSHAW University of Melbourne
TF 018 Novel methods for solving the transport of intensity equation
S FINDLAY University of Melbourne
TF 019 Calculating computer-generated optical elements to produce arbitrary intensity distributions
Dr Marlies FRIESE University of Queensland
TF 020 Light torque on cold atoms
Mr Jay GAMBITTA Griffith University
TF 021 Estimation of quantum states and Hamiltonians using quantum trajectories
Mr Michael HARVEY The University of Queensland
TF 022 Observation of stimulated emission of rhodamine 6G in mesostructured host system
Mr Michael HARVEY The University of Queensland
TF 023 Prevention of laser dye dimerization in liquid crystal host systems
Mr Winfried HENSINGER The University of Queensland
TF 024 Experimental phase space state preparation in atom optics using the quantum driven pendulum
Mr Tim HILL University of Adelaide
TF 025 Antiphase dynamics of a multilongitudinal mode Nd:YAG laser
Ms Yvonne JANSEN Adelaide University/DSTO
TF 026 Development of optical limiters based on non-linear absorption
Mr Jon LAWRENCE Macquarie University
TF 027 Modulation of a laser diode with optical feedback: contrasting short and long external cavities.
Mr John LIN University of Melbourne
TF 028 Spatial coherence measurement of undulator radiation using uniformly undedundant arrays
Mr Edward LIPNICKI Macquarie University
TF 029 A diode-pumped Tm:YAG laser with an elliptical mode
Ms Pearl LOUIS Australian National University
TF 030 Investigating decoherence in BEC Schrodinger Cats
Mr R Martin LOWE Swinburne University
TF 031 Interaction of ultrashort laser pulses with transparent polymers
Ms Tracey MACKIN University of Melbourne
TF 032 Atomic manipulation with novel light fields
L MAGUIRE University of Melbourne
TF 033 Nanofabrication by laser-focused deposition of a rubidium beam
Ms Magda MICHNA University of Melbourne
TF 034 Investigating phase retrieval using the transport of intensity equation through turbid media and the study of artworks
Dr Richard MILDREN Macquarie University
TF 035 Temporally resolved measurements of H atom density in a Cu Hybrid laser
Mr Dru MORRISH Swinburne University of Technology
TF 036 Optimisation on transverse trapping efficiency on metallic Mie particles
Dr Timo NIEMINEN Qld University of Technology
TF 037 Approximate and rigorous analyses of the frequency response of extremely asymmetrical scattering of electromagnetic waves in periodic gratings
Dr Timo NIEMINEN Qld University of Technology
TF 038 Rigorous analysis of extremely asymmetrical scattering and double-resonant extremely asymmetrical scattering in slanted periodic gratings
Dr David PAGANIN University of Melbourne
TF 039 Quantitative methods in phase - Contrast x-ray imaging
Ms Rachel PARKER University of Sydney
TF 040 Optical AC bloch oscillations in curved waveguides
Dr Helen PASK Macquarie University
TF 041 1.2 W diode-pumped yellow roman laser at 578nm
Dr Helen PASK Macquarie University
TF 042 A small-scale compact all-solid-state Raman Laser at 1197nm
Dr Andrew PEELE University of Melbourne
TF 043 LIGA for lobster: First observations of lobster-eye focusing from lithographically produced optics
Ms Ruth PLATHE Swinburne University
TF 044 Strong up-conversion in Er:Yb co-doped fluorozirconate glasses pumped at 980nm.
Mr Kenneth PREGNELL Griffith University
TF 045 Measurability of the phase cosine variance of light
Mr James RICHMOND University of Melbourne
TF 046 A magnetic guide for cold atoms
Dr Andrew STEVENSON Victoria University of Technology
TF 047 Quantifying dopant diffusion processes in optical fibre splices
Mr James SWANSSON Australian National University
TF 048 New cryogenic metastable helium source for loading a magneto-optical trap
Miss Laura THOMSEN Griffith University
TF 049 The effect of twin-beam squashing on a three level atom
<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>3:30 pm</td>
<td>Mr Chanh Quoc TRAN</td>
<td>University of Melbourne</td>
<td>Scattering contribution and higher order harmonic contamination</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Mr Lincoln TURNER</td>
<td>University of Melbourne</td>
<td>Non-interferometric atomic phase measurement: competitive with interferometers?</td>
</tr>
<tr>
<td>4:15 pm</td>
<td>Miss Jin WANG</td>
<td>University of Queensland</td>
<td>Stabilization of a two-level atomic system via Homodyne-mediated feedback</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>Mr Prahlad WARSZAWSKI</td>
<td>Griffith University</td>
<td>Realistic photodetection</td>
</tr>
<tr>
<td>4:45 pm</td>
<td>Mr Karl WEBER</td>
<td>University of Melbourne</td>
<td>Measurement of laser cooling using polarisation imaging</td>
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<tr>
<td>5:00 pm</td>
<td>Mr Tom WHITE</td>
<td>University of Sydney</td>
<td>Application of the Rayleigh method to holey fibres</td>
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<td>Dr Michael WITHFORD</td>
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4:00 pm — 5:30 pm

**VENUE: BONYTHON HALL**

### ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

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<td>Mr Winfried HENSINGER</td>
<td>The University of Queensland</td>
<td>Single atom phase space tunneling</td>
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<td>4:15 pm</td>
<td>Dr Howard WISEMAN</td>
<td>Griffith University</td>
<td>Reducing the linewidth of an atom laser by feedback</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>Ms Jacinda GINGES</td>
<td>University of New South Wales</td>
<td>Calculation of parity nonconserving s-d transitions in Cs, Fr, Ra II, and Ba II</td>
</tr>
<tr>
<td>4:45 pm</td>
<td>Dr Vladimir DZUBA</td>
<td>University of New South Wales</td>
<td>Atomic theory and test of the standard model</td>
</tr>
<tr>
<td>5:00 pm</td>
<td>Dr Christopher CHANTLER</td>
<td>University of Melbourne</td>
<td>What is wrong with the fundamental constants of nature?</td>
</tr>
<tr>
<td>5:15 pm</td>
<td>Dr David PATERSON</td>
<td>University of Melbourne</td>
<td>High-accuracy absolute test of Quantum Electrodynamics for helium-like and hydrogenic vanadium using the NIST electron-beam ion trap</td>
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### MEDICAL PHYSICS (MP)

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<tr>
<td>4:00 pm</td>
<td>Mr Setayesh BEHIN-AIN</td>
<td>Adelaide University</td>
<td>Enhanced Monte Carlo simulation techniques used in modeling early tumour detection</td>
</tr>
<tr>
<td>4:20 pm</td>
<td>Dr Eva BEZAK</td>
<td>Royal Adelaide Hospital</td>
<td>Monte Carlo simulations of proton energy deposition at the distal fall-off of the spread out Bragg peak in tissue</td>
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### SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

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<td>4:00 pm</td>
<td>Dr Fred MENK</td>
<td>University of Newcastle</td>
<td>Mapping the plasmapause using ULF waves</td>
</tr>
<tr>
<td>4:18 pm</td>
<td>Dr Anthony BREED</td>
<td>Australian Antarctic Division</td>
<td>Polar patch studies above Casey, Antarctica</td>
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<tr>
<td>4:36 pm</td>
<td>Prof Brian FRASER</td>
<td>University of Newcastle</td>
<td>Pc3-5 ULF wave observations from a triangular network of closely spaced magnetometers near Davis Station, Antarctica</td>
</tr>
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<td>4:54 pm</td>
<td>Dr Pavlo PONOMARENKO</td>
<td>University of Newcastle</td>
<td>Spectral structure of Pc3 ULF wave energy at high latitudes</td>
</tr>
<tr>
<td>5:12 pm</td>
<td>Mr Michael TERKILDSEN</td>
<td>University of Newcastle</td>
<td>Southern hemisphere imaging riometer observations of impulsive transients in the high-latitude ionosphere</td>
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4:00 pm — 5:30 pm

**VENUE: NORTH DINING**

**Chairperson: Ian Maclean**

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**VENUE: CINEMA, LEVEL 5**

**Chairperson: Ray Morris**

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4:00 pm — 5:30 pm
Dr Allan BAXTER Australian National University  
**TF 057 Spectroscopy of 189Pb**

Mr Sundance BILSON-THOMPSON Adelaide University  
**TF 058 Non-trivial self-dual gluon configurations in Lattice QCD**

Mr Frederic BONNET University of Adelaide  
**TF 059 The quark propagator in a Covariant gauge**

Miss Rachel CHALLIS  
**TF 060 A study of charms particles - recent results from NOMAD**

Dr John COSTELLA Mentone Grammar  
**TF 061 The Thomas rotation**

Ms Joanne CULPEPPER University of Melbourne  
**TF 062 Development of a metrology system for the forward module of the Atlas Silicon Tracking Detector**

Mr William DETMOLD University of Adelaide  
**TF 063 Extrapolation of Lattice moments of quark distribution functions towards the chiral limit**

Mr Rohan DOWD University of Melbourne  
**TF 064 Measurement of Decay Rate of B\(\rightarrow K\)**

Prof George DRACOULIS Australian National University  
**TF 065 Shape co-existence and octupole correlations in Pb-190**

Dr Tunay ERSEZ Australian Nuclear Science and Technology Organisation  
**TF 066 Polarised neutron scattering and magnetic studies of rhombohedral La\(_{1-x}\)Sr\(_x\)MnO\(_3+s\)**

Dr Tunay ERSEZ Australian Nuclear Science and Technology Organisation  
**TF 067 Polarised Neutron Scattering Developments at the Australian Nuclear Science and Technology Organisation**

Mr Craig EVERTON University of Melbourne  
**TF 068 Determining the CKM parameter V\(_{ub}\) from the inclusive decay of B\(\rightarrow D_{s+} X\) using the Belle detector at KEK, Japan**

Prof Victor FLAMBAUM University of New South Wales  
**TF 069 Quantum Munchhausen effect: radiative corrections increase tunneling probability**

Prof Victor FLAMBAUM University of New South Wales  
**TF 070 Atom made from charged elementary black hole**

Prof Victor FLAMBAUM University of New South Wales  
**TF 071 Increase of entropy in chaotic many-body systems and "quantum computer"**

Ms Jacinda GINGES University of New South Wales  
**TF 072 Time reversal violating nuclear polarizability and atomic electric dipole moment**

Dr Grant GORFINE University of Sydney  
**TF 073 Production testing of silicon modules for the ATLAS experiment**

Dr Xin-Heng GUO University of Adelaide  
**TF 074 Bethe-Salpeter equation for heavy baryons in the diquark picture**

Dr Alexander KALLONIATIS University of Adelaide  
**TF 075 Domain-like structures in the QCD vacuum and meson properties**

Mr Waseem KAMLEH CSSM and University of Adelaide  
**TF 076 Inexpensive cChirality on the lattice**

Mr Sandor KAZI University of Melbourne  
**TF 077 Modelling of performance of the Atlas SCT detector**

Mr Nicholas KENT University of Melbourne  
**TF 078 Investigation of the interaction nmN\(_{\rightarrow K0}\)sm+m-X**

Dr Ayse KIZILERSU Adelaide University  
**TF 079 Regulator free method to solve Schwinger-Dyson equations**

Dr Derek LEINWEBER Adelaide University  
**TF 080 Nucleon resonance phenomenology from Lattice QCD**

Mr Antonio LIMOSANI University of Melbourne  
**TF 081 Measuring the B\(\rightarrow f\)K branching ratio**
Mr Mushtaq LOAN University of New South Wales

TF 082 Scale parameters from the background field approach for improved lattice gauge actions
Samina MASOOD Quaid-I-Azam University

TF 083 Thermodynamics of stars
Samina MASOOD Quaid-I-Azam University

TF 084 Scattering cross sections at finite temperature and density
Dr Ian MCARTHUR University of Western Australia

TF 085 Kappa symmetry in coset superspaces
Prof Bruce MCKELLAR University of Melbourne.

TF 086 Quantum chaos in the Heisenberg picture
Dr Glenn MOLONEY University of Melbourne

TF 087 Measurement $\sin(2\varphi)$ via B/Epp decays with the Belle detector
Dr Bhaskar MUKHERJEE Australian Nuclear Science Technology Organisation

TF 088 Radiological shielding calculations for high energy particle accelerators
A/Prof Akhtar Abbas NAQVI King Fahd University of Petroleum and Minerals

TF 089 DWBA analysis of $^{14}\text{N}(d,a^0)^{12}\text{C}$ cross section data at $E_d=0.9-1.2$ MeV
Dr Peter NORMAN Monash University

TF 090 Super - Heavy Nuclei
Prof Keith NUGENT University of Melbourne

TF 091 Quantitative phase imaging with neutrons
A/Prof Lawrence PEAK University of Sydney

TF 092 Application of PIN photodiodes as radiation detectors
A/Prof Lawrence PEAK University of Sydney

TF 093 Fluctuation analysis in heavy ion collisions
A/Prof Anatoly ROSENFELD University of Wollongong

TF 094 A system for radiation damage monitoring on HEP accelerators
A/Prof Anatoly ROSENFELD University of Wollongong

TF 095 Mapping of synchrotron microplanar beams with micron spatial resolution using MOSFET detector
Dr Andreas SCHREIBER University of Adelaide

TF 096 The Feynman variational approach to relativistic quantum field theory
Ms Tanja J SCHUCK The Australian National University

TF 097 Experimental study of the fusion dynamics of $^{32,34}\text{S}+^{A97}\text{Au}$ with quasi elastic scattering
Dr Martin SEVIOR University of Melbourne

TF 098 Investigations of chiral symmetry of the chaos detector
Dr Andrew STUCHBERRY Australian National University

TF 099 Nuclear structure from measured gyromagnetic ratios in the mass 80 region
Dr Andrew STUCHBERRY Australian National University

TF 100 Gyromagnetic ratios and shell model calculations near semimagic nuclei; probing proton-neutron interactions
Mr James SWANSSON Australian National University

TF 101 How relativistic wave equations enlighten the Aharonov-casher Effect
Mr David TELLIS University of Adelaide

TF 102 The topology of gauge fields
Dr Kazuo TSUSHIMA University of Adelaide

TF 103 Alternative to a quark gluon plasma to explain $J/Psi$ suppression
Mr Juan URBASTERA Australian National University

TF 104 Heavy ion ERD of oxy-nitride and nitride films with a position-sensitive gas ionization detector
Mr Andrew WALTERS Flinders University of SA

TF 105 Ion transport across a gas-liquid interface in xenon applications to double beta decay
Dr David WEISSER Australian National University

TF 106 Superconducting cavities for ANU Linac
Mr Stewart WRIGHT University of Adelaide

TF 107 Calculating the sigma commutator from lattice QCD
Mr Ross YOUNG University of Adelaide

TF 108 Fixing the low energy constants from the cloudy bag model
## CONDENSED MATTER PHYSICS (CMP)

### CMP POSTER SESSION 2

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Author(s)</th>
<th>Institution(s)</th>
</tr>
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<tbody>
<tr>
<td>TF 125</td>
<td>Non abelian fractional quantum hall fluids</td>
<td>Dr Peter BOUWKNEGT</td>
<td>Adelaide University</td>
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<tr>
<td>TF 126</td>
<td>Single-electron transistor architectures for simulation of solid-state quantum computer read-out</td>
<td>Mr Rolf BRENNER</td>
<td>University of New South Wales</td>
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<tr>
<td>TF 127</td>
<td>Nanofabrication of a multi-qubit solid state quantum computer device</td>
<td>Mr Tilo BUEHLER</td>
<td>University of New South Wales</td>
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<tr>
<td>TF 129</td>
<td>Noise in quantum systems: facts and fantasies</td>
<td>Dr Mukunda DAS</td>
<td>Australian National University</td>
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<tr>
<td>TF 130</td>
<td>Kondo resonance in an aharonov-bohm-casher ring with a quantum dot: exact results for the persistent current</td>
<td>Peter FENG</td>
<td>La Trobe University</td>
</tr>
<tr>
<td>TF 131</td>
<td>Surface, interface and bulk properties of GaAs (111)B treated by Se layers</td>
<td>Prof Victor FLAMBAUM</td>
<td>University of New South Wales</td>
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<tr>
<td>TF 132</td>
<td>Possible mechanism of the fractional conductance quantization in a one-dimensional constriction</td>
<td>Prof Victor FLAMBAUM</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>TF 133</td>
<td>Increase of entropy in chaotic many-body systems and “quantum computer”</td>
<td>Dr Mike FORD</td>
<td>Flinders University</td>
</tr>
<tr>
<td>TF 134</td>
<td>Electronic structure of alkaline earth metals, Ca and Be, as revealed by electron momentum spectroscopy (EMS)</td>
<td>Dr Hsi-Sheng GOAN</td>
<td>The University of Queensland</td>
</tr>
<tr>
<td>TF 135</td>
<td>Continuous quantum measurement of coherence in two-coupled quantum dots</td>
<td>Dr Zhong-Tao JIANG</td>
<td>Murdoch University</td>
</tr>
<tr>
<td>TF 136</td>
<td>Quantitative analysis of PECVD processed silicon nitride thin films using AES XPS and spectroscopic ellipsometry (SE)</td>
<td>Dr Zhong-Tao JIANG</td>
<td>Murdoch University</td>
</tr>
<tr>
<td>TF 137</td>
<td>Further studies of photoelectron and auger electron lineshape of CuOx/Cu and Cu by a recently modified auger photoelectron coincidence spectroscopy (APECs)</td>
<td>A/Prof Roger LEWIS</td>
<td>University of Wollongong</td>
</tr>
<tr>
<td>TF 138</td>
<td>Thermionic cooling in semiconductor</td>
<td>Dr John M LONG</td>
<td>Deakin University</td>
</tr>
<tr>
<td>TF 139</td>
<td>Elemental depth profiling in solids by glow-discharge optical emission spectrometry</td>
<td>Dr Saravanamuthu MAHESWARAN</td>
<td>University of Western Sydney</td>
</tr>
<tr>
<td>TF 140</td>
<td>Investigation of iron oxide surfaces and interfaces using high energy ion scattering techniques</td>
<td>Dr Saravanamuthu MAHESWARAN</td>
<td>University of Western Sydney</td>
</tr>
<tr>
<td>TF 141</td>
<td>Surface properties of hydrogen-implanted SrTiO3 using high energy ion scattering techniques</td>
<td>Mr Jeremy O'BRIEN</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>TF 142</td>
<td>Scanning tunnelling microscope fabrication of phosphorus array in silicon for a nuclear spin quantum computer</td>
<td>Mr Rodney POLKINGHORNE</td>
<td>University of Queensland</td>
</tr>
<tr>
<td>TF 143</td>
<td>Charge detection with micromechanical electroscopes</td>
<td>Dr Ali RAKHSANI</td>
<td>Kuwait University</td>
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<tr>
<td>TF 144</td>
<td>Effect of microstructure on optoelectrical properties of CdS windows in thin-film solar cells</td>
<td>Mr David REILLY</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>TF 145</td>
<td>Many-body spin related phenomena in ultra-low-disorder quantum wires</td>
<td>Dr Sergey SAMARIN</td>
<td>University of WA</td>
</tr>
<tr>
<td>TF 146</td>
<td>Spin-resolved (e,2e) experiment on a ferromagnetic iron surface</td>
<td>Mr Steven SCHOFIELD</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>TF 147</td>
<td>Scanning tunnelling microscopy study of phosphorus dopants on the Si(001)2x1 surface</td>
<td>A/Prof Roger LEWIS</td>
<td>University of Wollongong</td>
</tr>
</tbody>
</table>
Thursday, December 14, 2000

4:00 pm — 5:30 pm  CONDENSED MATTER PHYSICS (CMP)

Dr Andrew SMITH Monash University
TF 148  Ballistic electrons and plasmons in semiconductors and metals using empirical pseudopotentials
Prof Geoff SMITH University of Technology
TF 149  Nanoparticle doped polymer foils for use in solar control glazing: limitations, theory and experiment
Prof Geoff SMITH University of Technology
TF 150  Light transmission anomalies in metal films containing sub-50nm nanoholes
Miss Kallista STEWART Australian National University
TF 151  An evaluation of phosphorus and cavity gettering
Mr Richard TARRANT University of Sydney
TF 152  Deposition of thick carbon coating by cathodic arc
Mr Glen TRUDGETT University of Technology
TF 153  Deconvolution of the instrumental profile function from soft Fe L x-ray spectra
Dr Maarten VOS Australian National University
TF 154  The effects of electron-electron correlation in solids studied by electron momentum spectroscopy
Ms Carlin YASIN University of New South Wales
TF 155  Observation of an apparent metal-insulator transition in an ultra high quality two-dimensional GaAs electron system

4:00 pm — 5:30 pm  23RD AINSE PLASMA SCIENCE & TECHNOLOGY CONFERENCE (PLASMA 2000)

VENUE: RENNIE
Chairperson: Robin Storer

DUSTY PLASMAS AND PLASMA THEORY

4:00 pm  Mr Nathan PRIOR Flinders University of South Australia
705  Oscillations of particles in a dusty plasma
4:15 pm  Dr Neil CRAMER University of Sydney
706  Plasma kinetics around a dust grain in an ion flow
4:30 pm  Dr Alex SAMARIAN University of Sydney
707  Strongly coupled Coulomb systems with positive dust grains: Thermal and UV-induced Plasmas
4:45 pm  Ms Sally LLOYD Australian National University
708  The response of magnetic islands to pressure change
5:15 pm  Mr Rod BOSWELL Australian National University
709  Communication systems and the role of plasma processing

4:00 pm — 5:45 pm  13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: FLENTJE THEATRE
Chairperson: Tim Ralph

OPTICAL INFORMATION PROCESSING: QUANTUM AND CLASSICAL

4:00 pm  Prof Min GU Swinburne University of Technology
236  Three-dimensional bit optical data storage in polymers
4:30 pm  Prof Min GU Swinburne University of Technology
237  Confocal microscopy readout of three-dimensional optical data storage in a photorefractive polymer
4:45 pm  Mr Dennis MCPHAIL Swinburne University of Technology
238  Three-dimensional optical data storage in polymer-dispersed liquid crystals
5:00 pm  Prof Gerard MILBURN The University of Queensland
239  Quantum computation using linear optics and single photons
5:15 pm  Dr Matthew SELLARS Australian National University
240  Quantum computing in rare-earth doped solids
5:30 pm  Prof Paul EDWARDS University of Canberra
241  Single-photon free-space global quantum cryptography

4:20 pm — 5:30 pm  MEDICAL PHYSICS (MP)

VENUE: GAMES, LEVEL 5

POSTER SESSION

Dr Aidan BYRNE Australian National University
TF 156  Production of Terbium-149,152 by heavy ion reactions
Thursday, December 14, 2000

4:20 pm — 5:30 pm MEDICAL PHYSICS (MP)

Dr Aidan BYRNE Australian National University
TF 157 A versatile composite material for fast neutron shielding
Mrs Loredana MARCU University of Adelaide
TF 158 Fractionation and delivery schedules in combined radiotherapy-cisplatin for head and neck cancer
Mr Bayu PURNOMO University of South Australia
TF 159 The evaluation of bioeffect treatment planning using neural network analysis

7:00 pm — 11:30 pm CONFERENCE DINNER (DRESS: SMART CASUAL)

VENUE: HYATT REGENCY

Friday, December 15, 2000

9:00am — 10:30am
PLENARY SESSION 8

VENUE: BONYTHON HALL
Chairperson: John O'Connor

9:00 am Prof Roger HORN University of South Australia
Prof 013 Surfaces Cover Everything
9:45 am Prof Chris GREENE University of Colorado
Prof 014 Photoionization of Light Atoms and Molecules: A Window into Few-Body and Many-Body Dynamics

10:30 am — 11:00 am MORNING TEA

11:00 am — 12:30 pm
18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

VENUE: KERR GRANT
Chairperson: Tony Thomas

11:00 am Prof Geoffrey TAYLOR University of Melbourne
Prof 049 Status of the ATLAS experiment at CERN
11:30 am Mr Aldo SAAVEDRA University of Sydney
Prof 050 The Australian assembly system for semiconductor ATLAS detector modules
11:50 am Ms Annette BERRIMAN Australian National University
Prof 051 Entrance channel dependent fission probabilities in heavy-ion fusion-fission reactions
12:10 pm Dr Anjali MUKHERJEE Australian National University
Prof 052 Enhancement or suppression of fusion cross-sections around the barrier

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

VENUE: BONYTHON HALL
Chairperson: Phil Wilkinson

11:00 am A/Prof Andris STELOVICS Murdoch University
Prof 130 How to calculate electron-atom ionisation
11:30 am Dr Anatoli KHEIFETS The Australian National University
Prof 131 Two-electron photoionization from correlated atomic targets
12:00 pm Dr Jamal BERAKDAR Max-Planck Institute
Prof 132 Two particle wave function engineering

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5
Chairperson: Phil Wilkinson

11:00 am Dr Ken LYNN Ionopheric Systems Research
Prof 929 Low latitude negative storm effects observed in the daytime ionospheric F2 region
11:18 am A/Prof Robert STENING University of NSW
Prof 930 The lunar tide in the equatorial ionospheric electric field
11:36 am Ms Frances PHILLIPS Australian Antarctic Division
Prof 931 Determining temperatures from the Hydroxyl (8-3) band
11:54 am Dr John INNIS Australian Antarctic Division
Prof 932 Thermospheric gravity waves in the southern polar cap
11:00 am — 12:30 pm

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

11:12 am A/Prof Robert STENING University of NSW
933 Simulating the lunar geomagnetic variations

VENUE: FLENTJE THEATRE

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

7A QUANTUM OPTICS 1

11:00 am  Prof Gerd LEUCHS Physikalisches Institut
242 Quantum communication with bright pulsed light
11:30 am  Dr Benjamin VARCOE Max Planck Institute for Quantum Optics
243 Photon number states: The ultimate non-classical states of light
12:00 pm  Mr Ben BUCHLER Australian National University
244 Enhancing quantum nondemolition measurements
12:15 pm  Dr Tim RALPH University of Queensland
245 Bell-type correlations from continuous variable measurements

7B PROPAGATION & FIBRES 1

11:00 am  Prof Colin SHEPPARD University of Sydney
246 Ultrashort pulse propagation
11:30 am  Professor Yuri KIVSHAR Australian National University
247 Molecules of light: Dipole-mode vector solitons
11:45 am  Dr Eduard TSOY The University of Sydney
248 Modulational instability of electromagnetic waves and two-photon absorption
12:00 pm  Mr Djenan GANIC Swinburne University of Technology
249 Mie scattering of evanescent electromagnetic waves in near-field microscopy
12:15 pm  Dr Timo NIEMINEN Qld University of Technology
250 Grazing-angle scattering of bulk and guided electromagnetic waves in non-uniform arrays

VENUE: HORACE LAMB THEATRE

23RD AINSE PLASMA SCIENCE & TECHNOLOGY CONFERENCE (PLASMA 2000)

RF PLASMA PHYSICS

11:00 am  Dr Gerard BORG Australian National University
710 An overview of plasma antenna research
11:30 am  A/Prof Andrew CHEETHAM University of Canberra
711 Surface wave excitation for plasma antenna applications
11:45 am  Dr Kostyantyn OSTRIKOV Nanyang Technological University
712 Mode transitions and power transfer in low-frequency inductively coupled plasmas
12:00 pm  Mr Erekle TSAKADZE NIE, Nanyang Technological University
713 Inductively coupled plasmas in a cylindrical resonator with phase-varying radio-frequency currents

VENUE: RENNIE

CONDENSED MATTER PHYSICS (CMP)

VACUUM SOCIETY AND CONDENSED MATTER PHYSICS JOINT SESSION

11:00 am  A/Prof Stephen THURGATE Murdoch University
418 The liquid/solid interface: UHV techniques
11:35 am  Dr Robert ELLIMAN Australian National University
419 Ion beam analysis of thin films and surfaces using high-energy heavy ions
12:10 pm  A/Prof Matthew FEWELL University of New England
420 Comparative studies of the composition of nitrided stainless steel
12:00 pm — 3:30 pm

**7TH VACUUM SOCIETY OF AUSTRALIA CONGRESS (VSA)**  
**POSTERS**

A/Prof Bruce KING University of Newcastle

**TF 177** Low energy ion scattering analysis of platinum - rhodium surface alloys  
Dr Bruce WEDDING University of South Australia

**TF 178** Vacuum testing of the Fedsat communications payload

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12:15 pm — 12:30 pm

**23RD AINSE PLASMA SCIENCE & TECHNOLOGY CONFERENCE (PLASMA 2000)**  
**POSTER SESSION**

Dr Boyd BLACKWELL Australian National University

**TF 160** Computers in plasma physics: Remote data access and magnetic configuration design  
Dr Boyd BLACKWELL Australian National University

**TF 161** The H-1 National Plasma Research Facility  
Mr Felix CHEUNG Flinders University

**TF 162** The rotation of dust plasma crystals in an axial magnetic field  
Dr Neil CRAMER University of Sydney

**TF 163** The equilibrium and oscillations of dust grains in a discharge  
Dr Neil CRAMER University of Sydney

**TF 164** Dynamics of a macroparticle in a plasma flow  
Dr Neil CRAMER University of Sydney

**TF 165** Dust - crystal experiments in a RF - discharge plasma  
Prof Robert DEWAR The Australian National University

**TF 166** Global ballooning modes in a low-shear stellarator  
Peter FENG La Trobe University

**TF 167** High power laser raman scattering from a Rarefied plasma  
Liviu LUNGU Australian National University

**TF 176** Investigation and design of a variable microwave plasma lens  
Prof Lance MCCARTHY Flinders University

**TF 168** The Flinders Spherical Tokamak target plasma for RMF current drive tests  
Dr Frederick OSMAN University of WEstern Sydney Nepean

**TF 169** Geometric phases and monodromy at singularities in laser atom interactions  
Dr Kostyantyn OSTRIKOV Nanyang Technological University

**TF 170** Standing surface waves in dusty microwave slot-excited plasmas  
Mr Horst PUNZMANN Australian National University

**TF 171** Multi-channel spectroscopy diagnostic for line intensity ratio measurements  
Dr John RAYNER University of Canberra

**TF 172** Antenna matching for a helicon plasma source  
Dr Alex SAMARIAN University of Sydney

**TF 173** The changing of dust particles in plasma sheath  
Dr Alex SAMARIAN University of Sydney

**TF 174** Instabilities in dusty plasma with the spatial varaiation of grain charges  
Dr George WARR Australian National University

**TF 175** Electron density Tomography on the H-INF Heliac

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2:00 pm — 3:30 pm

**18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)**  
**Chairperson: Lawrence Peak**

2:00 pm  
A/Prof Anatoly ROSENFELD University of Wollongong

**053** Development of a PET detector module incorporating a silicon photodiode array
2:30 pm  Ms Tessica WEYERS Australian National University
054 A detailed study of the pulse height deficit effect in gas ionisation detectors
2:50 pm  Mr Jesse CARLSSON University of Melbourne
055 Improved lattice Hamiltonians
3:10 pm  Mr Pradip DEB University of Melbourne
056 New results from a predictive microscopic model of P-nucleus scattering

**ATOMIC & MOLECULAR PHYSICS & QUANTUM CHEMISTRY (AMPQC)**

VENUE: BONYTHON HALL

2:00 pm  Dr Peter HAMMOND University of Western Australia
133 Radiative decay of doubly excited states
2:30 pm  Dr Maarten HOOGERLAND Australian National University
134 Electron scattering from laser cooled metastable helium atoms
3:00 pm  Dr Harry QUINEY University of Melbourne
135 Relativistic molecular quantum electrodynamics: light, and the heavy elements

**SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)**

VENUE: CINEMA, LEVEL 5
Chairperson: Iain Reid

2:00 pm  Dr Gary BURNS Australian Antarctic Division
934 Southern hemisphere noctilucent clouds
2:18 pm  Mr John FRENCH Australian Antarctic Division
935 Seasonal and trend results from seven years of hydroxyl airglow rotational temperatures at Davis Station (68.68S, 78.08E), Antarctica

**7TH VACUUM SOCIETY OF AUSTRALIA CONGRESS (VSA)**

VENUE: NORTH DINING
Chairperson: John O’Connor

2:00 pm  Prof John ROBINS University of Western Australia
1003 The relevance of the IUVSTA to Australian Scientists
2:30 pm  Mr Benjamin WATTS University of Newcastle
1004 Orientation Study of 3APS on Zinc Oxide Surfaces
3:00 pm  Ms Liz MIKAJLO Flinders University
1005 The electronic structure of ionic solids - theory vs. experiment

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**13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)**

**8A ATOM OPTICS 1**

VENUE: FLENTJE THEATRE
Chairperson: Hans Bachor

2:00 pm  Dr Andrew WILSON University of Otago
251 Atom laser output oupling and phase encoding of Bose-Einstein condensates
2:30 pm  Dr Murray OLSEN University of Auckland
252 Quantum nonlinear atom optics: where the mean-field approach fails
2:45 pm  Dr Craig SAVAGE Australia National University
253 Noise properties of an atom laser
3:00 pm  Dr David PAGANIN University of Melbourne
254 Matter-wave phase measurement - A noninterferometric approach
3:15 pm  Dr Joseph HOPE Australian National University
255 Stochastic field description of molecular photoassociation of a Bose-Einstein condensate

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**13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)**

**8B PROPAGATION AND FIBRES 2**

VENUE: HORACE LAMB THEATRE
Chairperson: Martijn de Sterke

2:00 pm  Mr Tristram ALEXANDER Australian National University
256 Multistep cascading and fourth-harmonic generation
2:00 pm — 3:30 pm  13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

2:15 pm  Ms Nina RIMAC Swinburne University of Technology
257  Fabrication of three-dimensional photonic crystal structures using two-photon photopolymerization.

2:30 pm  Dr Ara ASATRYAN University of Sydney
258  Green tensor and local density of states in finite two-dimensional photonic crystals

2:45 pm  Prof Lindsay BOTTEN University of Technology, Sydney
259  Aphrodite’s iridescence and the photonic crystal

3:00 pm  Dr Brett PATTERSON University of Western Australia
260  In vivo quasi-distributed temperature sensing with fibre Bragg gratings

3:15 pm  Ms Nicoleta DRAGOMIR Victoria University
261  Reconstructing refractive index from DIC images of optical fibres and waveguides

2:00 pm — 3:30 pm  23RD AINSE PLASMA SCIENCE & TECHNOLOGY CONFERENCE (PLASMA 2000)

VENUE: RENNIE  Chairperson: Boyd Blackwell

PLASMA APPLICATIONS

2:00 pm  Mr Matthew HOLE University of Sydney
714  Review of plasma phenomena in vacuum Arc centrifuges

2:15 pm  Dr Ian FALCONER University of Sydney
715  The nature of the discharge in a Plasma display panel pixel

2:30 pm  Dr Ian FALCONER University of Sydney
716  Filaments and feelers: uv and visible imaging of Xe excimer dielectric barrier discharge lamps

2:45 pm  A/Prof Matthew FEWELL University of New England
717  First results on nitriding aluminium alloys in a low-pressure rf plasma

3:00 pm  A/Prof Brian JAMES University of Sydney
718  A spectroscopic study of a high-voltage fuse arc

3:15 pm  Mr Matthew COLLINS University of Western Sydney
719  Guassian beams and electron acceleration

3:30 pm — 4:00 pm  AFTERNOON TEA

4:00 pm — 5:30 pm  18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)

VENUE: KERR GRANT  Chairperson: Andrew Stuchbery

4:00 pm  Dr Refaat EL-HAJJE University of New South Wales
057  The interdependence of fission fragment angular and mass distributions

4:20 pm  Dr Tibor KIBEDI Australian National University
058  HONEY - An array for Electron-Electron coincidence spectroscopy

4:40 pm  Mr Stewart WRIGHT University of Adelaide
059  Hadron masses from Lattice QCD

4:00 pm — 5:30 pm  13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: FLENTJE THEATRE  Chairperson: Andrew Wilson

9A  QUANTUM & ATOM OPTICS 2

4:00 pm  Mr Robert DALL Australian National University
262  Atom wave guides using laser light fields

4:15 pm  P. FOX University of Melbourne
263  Non-interferometric phase imaging of a frequency chirped atomic beam

4:30 pm  Dr Andrei SIDOROV CSIRO Manufacturing Science and Technology
264  Specular reflection of ultracold atoms from microfabricated magnetic mirrors

4:45 pm  Dr Timo NIEMINEN Qld University of Technology
265  Theory of optical force and position measurement for an optically trapped probe particle

5:00 pm  Mr Warwick BOWEN Australian National University
266  Generation of continuous variable entanglement with type 1 optical parametric oscillators
5:15 pm  Miss Jin WANG University of Queensland
267 Supression and enhancement of spontaneous emission in molecular system (Quantim Interference Effect)

4:00 pm — 5:30 pm
13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: HORACE LAMB THEATRE
Chairperson: Keith Nugent

4:00 pm — 5:30 pm
13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

9B  X-RAY OPTICS

4:00 pm  Dr Jose VARGHESE Biomolecular Research Institute
268 Optics for protein microcrystallography using synchrotron and laboratory x-ray sources

4:30 pm  Dr Stephen WILKINS CSIRO
269 New generation quantitative x-ray microscopy encompassing phase-contrast

4:45 pm  Mr Martin DE JONGE University of Melbourne
270 Proposed measurement of the imaginary component of atomic form factor for medium z elements in regions exhibiting significant discrepancies

5:00 pm  Mr Thomas IRVING University of Melbourne
271 Rapid and accurate metrology of lobster-eye (square pore) optics

5:15 pm  Dr Christopher CHANTLER University of Melbourne
272 New theoretical investigation resolving discrepancies of atomic form factors in the near-edge soft x-ray regime

4:00 pm — 5:30 pm
ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

VENUE: GAMES, LEVEL 5

AMPQC POSTER SESSION

TF 110  Dr Jamal BERAKDAR Max-Planck Institute
On the many-body Green operator of few interacting particles
Dr Laurence CAMPBELL Flinders University of SA
Vibrational-electronic excitation of NO and N2 by electron impact
Mr Max COLLAR Australian National University
Low energy electron scattering from cold metastable helium atoms : total cross section measurements
Dr Vladimir DZUBA University of New South Wales
Atomic clocks and search for variation of the fine structure constant
Dr Vladimir DZUBA University of New South Wales
Calculation of positron binding to copper, silver and gold atoms
Dr Vladimir DZUBA University of New South Wales
Enhancement of parity and time invariance violation in radium
Prof Victor FLAMBAUM University of New South Wales
Chaotic many-body states as a source of strong enhancement of electron recombination with multicharged ions
Prof Victor FLAMBAUM University of New South Wales
Cold-atom scattering: from the scattering length to the glory oscillations
Mr Jay GAMBETTA Griffith University
Super elastic scattering from the 5P levels of atomic rubidium
Mr Nathaniel GROOTHOFF Griffith University
Superelastic scattering from the 5P Levels of atomic rubidium
Dr Robert GULLEY Australian National University
Very low energy electron scattering in nitromethane, nitroethane and nitrobenzene.
Dr Radmila PANAJOTOVIC Australian National University
Experimental investigation of temporary negative ions in electron scattering from magnesium atoms
Ms Holly ROSE University of Western Australia
Measurements of scattering parameters of the He(33D) and He(41,3F) states
Mr Tony SHACKLETON Murdoch University
Failure of the n3 scaling law in the Temkin-Poet model of e-H scattering
4:00 pm  —  5:30 pm  ATOMIC & MOLECULAR PHYSICS & QUANTUM CHEMISTRY (AMPQC)

Drs Erik VAN OOIJEN University Utrecht
TF 122  Dynamical spectroscopy in an optical lattice
Mr Michael WENT Griffith University
TF 123  Complete electron rubidium collision experiments
Dr Dehong YU University of Western Australia
TF 124  Electron exchange in the dissociation and excitation of molecules by polarized electrons

4:00 pm  —  5:30 pm

23RD AINSE PLASMA SCIENCE & TECHNOLOGY CONFERENCE (PLASMA 2000)

VENUE: RENNIE
Chairperson: Ian Falconer

PLASMA DIAGNOSTICS

4:00 pm  Mr Clive MICHAEL Australian National University
720  The MOSS camera for ion thermal transport studies on the H-1NF Heliac

4:15 pm  Mr Andreas DANIELSSON Australian National University
721  Measurement of vector B using Zeeman effect and optical coherence techniques

4:30 pm  Mr Richard TARRANT University of Sydney
722  Optical spectroscopy of a cathodic arc

4:45 pm  Dr Mohammad NADEEM Chalmers University of Technology
723  Drift waves in plasma

5:00 pm  Mr Daniel ANDRUCZYK The University of Sydney
724  A supersonic He probe beam for L/F measurements of electric fields in plasmas

5:15 pm  Mr Wayne SOLOMON Australian National University
725  Plasma characterisation using combined Mach/Triple probe techniques