



14th National Congress of the Australian Institute of Physics

Adelaide University, South Australia:
December 10 — 15, 2000



**Driving Technology Through Discovery,
Understanding and Innovation**

AIP 2000 CONGRESS PROGRAM

VERSION 2 (29 Nov)

To find an author, or topic,
select the binoculars
button

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 of 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

11:00am — 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

2:00pm — 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 $^{38}K^m$*
- 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 $B^0 B^0$ mixing rate from the time evolution of dilepton events at the (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?*

Monday, December 11, 2000

To find an author, or topic, select the binoculars

2:00 pm — 3:30 pm **AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)**

3:00 pm Mr Antony SEARLE Australian National University
301 *Network analysis for gravitational wave astronomy*

CONDENSED MATTER PHYSICS (CMP)

VENUE: BRAGG THEATRE

Chairperson: Jaan Oitmaa

2:00 pm Prof Michele PARRINELLO Max-Planck-Institut für Festkörperforschung
400 *Pressure-induced structural transformations in nanocrystals*

2:35 pm A/Prof David MCKENZIE University of Sydney
401 *Applications of materials processing for biotechnology*

3:10 pm A/Prof John DOBSON Griffith University
402 *Prediction of dispersion forces in condensed matter and biophysics*

CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

VENUE: MACBETH THEATRE

2:00 pm Dr Elizabeth CHELKOWSKA University of Tasmania
600 *Improved outcomes in Physics service courses*

2:15 pm A/Prof Ian JOHNSTON The University of Sydney
601 *In search of a right way to teach Physics*

2:30 pm Dr Geoff SWAN Edith Cowan University
602 *Teaching learning skills and problem solving*

2:45 pm Ms Susan FETERIS Monash University
603 *Undergraduate Physics laboratories - Staff perceptions of purposes and outcomes*

3:00 pm A/Prof Trevor FINLAYSON Monash University
604 *A Professional studies unit for third year university students*

3:15 pm *Discussion of all papers presented at this session*

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5

Chairperson: Dick Thomas

2:00 pm Prof Peter DYSON La Trobe University
900 *An overview of the Tasman International Geospace Environment Radar (TIGER)*

2:18 pm Dr Murray PARKINSON La Trobe University
901 *HF digital ionosonde and TIGER backscatter radar observations of magnetospheric electric fields penetrating the southern-hemisphere mid-latitude ionosphere*

2:36 pm Dr Murray PARKINSON La Trobe University
902 *Rates of occurrence of TIGER HF radar echo parameters sorted according season, the KP index and the interplanetary magnetic field at sunspot maximum*

2:52 pm Prof Peter DYSON La Trobe University
903 *TIGER backscatter ionogram observations*

3:10 pm Dr Fred MENK University of Newcastle
904 *TIGER HF radar observations of ULF waves near the plasmopause*

2:00 pm — 3:30 pm

AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA) VENUE: RENNIE THEATRE

Chairperson: Mike Roach

KEYNOTE SESSION 1

2:00 pm Prof Michael HOUGH University of Wollongong
800 *Physics education in a globalizing economy where knowledge and information are competitive advantages - Secondary physics context*

3:30 pm — 4:00 pm **AFTERNOON TEA**

4:00pm — 5:30 pm

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

VENUE: KERR GRANT

Chairperson: Bruce McKellar

4:00 pm Prof George DRACOULIS Australian National University
024 *Trends in the spectroscopy of neutron-rich nuclei*

- 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)**

VENUE: BENHAM THEATRE

Chairperson: David McClelland

- 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)

VENUE: BRAGG THEATRE

Chairperson: Don Chaplin

- 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)**

VENUE: MACBETH THEATRE

- 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)

VENUE: CINEMA, LEVEL 5

Chairperson: Fred Menk

- 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*

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

VENUE: RENNIE THEATRE

- 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

To find an author, or topic, select the binoculars

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

- 4:30 pm Mr Dan O'KEEFFE Camberwell Grammar School
803 *Participation in Secondary Physics across Australia*
- 4:45 pm Ms Anne FERNANDEZ Uniserve Science
805 *Web-based references and resources for secondary science*
- 5:00 pm Prof John PRESCOTT Adelaide University
806 *Careers in Physics*
- 5:30 pm Dr Judith POLLARD Adelaide University
POSTER: Have Syllabus changes improved understanding in mechanics?
-

5:00 pm — 5:30 pm

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

VENUE: GAMES, LEVEL 5

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

5:45 pm — 7:45 pm

WOMEN IN PHYSICS FORUM AND DINNER

5:45 pm — 6:45 pm

PLENARY

VENUE: BONYTHON HALL

Chairperson: Lawrence Peak

MASSEY LECTURE

- 5:45 pm Prof Tony THOMAS Centre for the Subatomic Structure of Matter
005 *MASSEY LECTURE: Probing the Heart of Matter*
-

7:00 pm — 9:00 pm

AINSE/NUPP RECEPTION

Tuesday, December 12, 2000

9:00am — 10:30am

PLENARY SESSION 4

VENUE: BONYTHON HALL

Chairperson: Keith Nugent

- 9:00 am Dr Alun JONES Institute of Physics
006 *Developments in Science/Physics Policy and Funding in the UK*
- 9:45 am Prof Dean ZOLLMAN Kansas State University
007 *Teaching Quantum Mechanics to Everyone: Can it be done with Technology?*
-

10:30 am — 11:00 am

MORNING TEA

11:00am — 12:30 pm

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

VENUE: KERR GRANT

Chairperson: Alan Baxter

- 11:00 am Dr Derek LEINWEBER Adelaide University
028 *Quantum Monte Carlo studies in lattice gauge theory*
-

- 11:30 am Mr William DETMOLD University of Adelaide
029 *Theoretical aspects of QCD at large quark density*
- 11:50 am Dr Aidan BYRNE Australian National University
030 *Core excited states in trans-lead nuclei*
- 12:10 pm Mr Martyn ROBINSON Australian National University
031 *Perturbed DCO measurements of g-factors in 180-184Pt*

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

VENUE: BONYTHON HALL

- 11:00 am Dr Birgit LOHMANN Griffith University
100 *Ionization of heavy rare gases - a challenge to theory*
- 11:30 am Dr Helen DORSETT DSTO
101 *Detonation chemistry*
- 12:00 pm Prof William MACGILLIVRAY Griffith University
102 *New electron-atom collision experiments involving lasers*

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

VENUE: BENHAM THEATRE

Chairperson: David Wiltshire

- 11:00 am Ms Cindy NG Adelaide University
305 *Attractor solutions of generalised scalar field potentials and quintessence*
- 11:30 am Dr Malcolm ANDERSON Universiti Brunei Darussalam
306 *Embedding a straight cosmic string in a Robertson-Walker background*
- 12:00 pm Mr Marcus THATCHER Monash University
307 *Exotic Behaviour due to Frame Dragging in the Space-time of a Superconducting Cosmic String*

CONDENSED MATTER PHYSICS (CMP)

VENUE: BRAGG THEATRE

Chairperson: Stephen Collocott

- 11:00 am A/Prof Trevor HICKS Monash University
406 *Magnetic glassy behaviour in antiferromagnets*
- 11:35 am A/Prof Roger LEWIS University of Wollongong
407 *Optical studies of colossal magnetoresistance*
- 12:10 pm Dr Emma MITCHELL CSIRO Telecommunications and Industrial Physics
408 *Effect of Abrikosov Vortices on Josephson Junction Currents in High Temperature Superconductors*

CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

VENUE: MACBETH THEATRE

- 11:00 am Mrs Anna - Eugenia BINNIE Macquarie University
608 *The NSW HSC Physics syllabus and its implications for first year university Physics*
- 11:15 am Mr Peter FLETCHER University of Sydney
609 *How tertiary level Physics and Chemistry students learn to conceptualise quantum mechanics*
- 11:30 am Mr Ian SEFTON University of Sydney
610 *Tracing two common misconceptions about energy*
- 11:45 am *Discussion of all papers presented at this session*
- 12:00 pm *Physics Education Group Annual General Meeting*

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5

Chairperson: Robert Stening

- 11:00 am Dr Dave NEUDEGG Rutherford-Appleton Lab
910 *High-latitude geospace coupling: Preparing for Cluster II operations with Equator-S and SuperDARN observations*
- 11:18 am Dr Murray SCIFFER University of Newcastle
911 *Mixed ULF wave modes and HF Doppler oscillations*
- 11:36 am Mr Phillip WEBB La Trobe University
912 *Comparisons of the Global Plasmasphere Ionosphere Density (GPID) model to direct observations of the plasmasphere*
- 11:54 am Dr Robert GARDINER-GARDEN Defence Science and Technology Organisation
913 *Real time modelling of ionospheric electron density (in the Australian region)*

11:00 am — 12:30 pm **SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)**

- 12:12 pm Dr Chris COLEMAN Adelaide University
 914 *Feynman integration techniques applied to the analysis of radio wave propagation in the atmosphere and ionosphere*

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 AMPPEM-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*

- 3:00 pm Mr Anton RAYNER The University of Queensland
213 *Laser refrigeration of optical fibres*
- 3:15 pm Dr David PATERSON University of Melbourne
214 *Young's two slit experiment to measure spatial coherence of soft x-ray undulator radiation.*

2:00pm — 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 C_6H_6 and C_6F_6*
- 3:15 pm Ms Linda UHLMANN Australian National University
108 *Absolute elastic cross sections for electron scattering from SF_6*

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*

Tuesday, December 12, 2000

To find an author, or topic, select the binoculars

2:00 pm — 3:30 pm CONFERENCE ON UNIVERSITY PHYSICS EDUCATION (OZCUPE)

- 3:00 pm Dr Judith POLLARD Adelaide University
612 *Providing choices in learning experiences for large classes - beyond Studio Physics*
3:15 pm *Discussion of all papers presented at this session*

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5

Chairperson: Elizabeth Essex

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

2:00 pm — 3:30 pm

AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA) VENUE: RENNIE THEATRE

COMPUTER INTERFACING

- 2:00 pm Dr Tony PUGATSCHEW Intellecta Technologies
808 *Computer Interfacing - "Developments and Directions"*
2:30 pm Mr Stephen HOWARD TAINLab
809 *Computer Interfacing - "Developments and Directions"*
3:00 pm Mr Russell ARMSTRONG Serrata Pty Ltd
810 *Computer Interfacing - "Developments and Directions"*

3:30 pm — 4:00 pm AFTERNOON TEA

3:30 pm — 6:00 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: GAMES, LEVEL 5

AOS POSTER SESSION 1

- Mr Joseph ANDERSEN The University of Queensland
MT 010 *Light guiding light: Non-linear refraction in rubidium vapour*
Geoff ANDERSEN USAF Academy
MT 012 *Large holographically corrected telescopes*
Mr Julian ARMSTRONG University of Western Australia
MT 014 *Distance ranging to biological tissue using fibre-optic fabry-perot, short tuning range FMCW interferometry*
Mr Matthew ARNISON University of Sydney
MT 016 *Wavefront coding in high numerical aperture microscopy*
A/Prof David ATCHISON Queensland University of Technology
MT 018 *Measuring aberrations of the human eye*
Ms Catherine BELLAIR University of Melbourne
MT 020 *Caesium beam line for in-line interferometry*
Mr Damian BIRD Swinburne University of Technology
MT 022 *Resolution improvement of two-photon fluorescence microscopy caused by the nonlinear response in a single-mode fibre*
Dr Doug BODY CRC for Clean Power from Lignite
MT 024 *Design optimisation and commercial application of a LIBS simultaneous elemental analysis system*
Prof David BOOTH Swinburne University
MT 026 *Influence of three-ion energy transfer up-conversion on the green fluorescence in Er³⁺ : fluoride glasses*
Ms Rui Hong CHU University of Sydney
MT 028 *Simplified method for beatlength measurement for optical fiber*

- Mr Gregory COLLECUTT University of Queensland
 MT 030 *Digital response in a parametric AND gate*
 Dr Stephen COLLINS Victoria University
- MT 032 *An experimental study of laser induced ultrasonic attenuation in composite materials using optical laser techniques*
 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
- MT 036 *Monte Carlo simulation for imaging through complex tissue-like scattering media in optical microscopy*
 Dr Bipina DHAL University of Melbourne
- MT 038 *Absolute measurements of EXAFS for copper and gold*
 Dr Svetlana DLIGATCH CSIRO
- MT 040 *Fabrication of multilayer thin filmed designs which are highly sensitive to manufacturing errors*
 Mr David DRAGE CSIRO
- MT 042 *Progress towards a small-scale, automated optical thin-film production capability*
 Mr Vladimir DUBAJ Swinburne University of Technology
- MT 044 *Optic fibre bundle contact imaging probe employing laser scanning confocal microscope*
 Mr Troy EICHMANN University of Queensland
- MT 046 *A study of two and three dimensional flows over cylinders*
 Mr Philip FAIRMAN CSIRO DTIP
- MT 048 *Ellipsometric monitoring during production of multi-layer thin films*
 Mr David FARRANT CSIRO Telecommunication and Industrial Physics
- MT 050 *Geometrically-qualified ESPI vibration analysis*
 A/Prof Peter FARRELL Victoria University
- MT 052 *Absolute concentration image of praseodymium within a fibre core by fluorescence confocal microscopy*
 A/Prof Matthew FEWELL University of New England
- MT 054 *The Hamiltonian for two-photon transitions and the rotating-wave approximation*
 Ms Jenn FISHBURN Macquarie University
- MT 056 *Spot-size dependence of ablation parameters in visible nanosecond ablation of metallic substrates*
 Tadyuki FUNABA University of Sydney
- MT 058 *Multiphoton excitation through scattering media: Monte Carlo simulations*
 Mr Keith GIBBS Swinburne University
- MT 060 *Physical interpretation of fluorescence waveforms from coupled energy levels*
 Mr Thang HA Macquarie University
- MT 062 *Laser-induced lesions in heart muscle to treat atrial fibrillation*
 Dr Esa JAATINEN CSIRO
- MT 064 *Stabilising the laser source for the atomic kilogram*
 Mr Kiang KHO Swinburne University of Technology
- MT 066 *A novel high-throughput polarisation insensitive spectrometer for separation of closely-spaced fluorescence spectra*
 Mr Valerian KUZNETSOV University of Sydney
- 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 Neil MANSON Australian National University
- MT 071 *Interaction of an electromagnetic induced transparency and a spectral hole*
 Dr Kiyofumi MATSUDA University of Sydney
- MT 074 *Beam collimation using wedged plate multiple beam shearing interferometry*
 Dr Alex MAZZOLINI Swinburne University of Technology
- MT 076 *Application of fringe counting interferometry to MEMS micropump characterisation*
 Prof Jesper MUNCH The University of Adelaide
- MT 078 *Practical concepts for large, low cost, holographic lidar receivers*
 Dr Bill MUNRO University of Queensland
- MT 080 *Mixed state quantum entanglement manipulation*

- Dr Roger NETTERFIELD CSIRO
- MT 082 *Thin film laser protection filters - Design and production considerations*
Dr Bob OREB CSIRO Telecommunications and Industrial Physics
- MT 084 *Precision interferometric measurement of right angles with the aid of an etalon*
Dr Bob OREB CSIRO Telecommunications and Industrial Physics
- MT 085 *Interferometric measurement of refractive index homogeneity on polished substrates*
Miss Benedicte REBIERE Sunflor - Dept of Electrical and Information Engineering
- MT 088 *Fast scanning OCT: Two dimensional scanning using a blacked optical fiber Bragg Grating*
Dr Robert SCHOLTEN University of Melbourne
- MT 090 *Theoretical calculation of saturated absorption for multilevel atoms*
Dr Robert SCHOLTEN University of Melbourne
- MT 092 *A new model for saturated absorption*
Dr Matthew SELLARS Australian National University
- MT 094 *Can a single photon be stored in a co-herent time domain optical memory?*
Dr Mikael SJODAHL CSIRO Telecommunications & Industrial Physics
- MT 096 *Stitching interferometric measurements for inspection of large optical components*
Dr Elwyn SMITH University of Western Australia
- MT 098 *Non-scanning optical coherence domain reflectometry with arbitrary source spectral profiles*
Dr Andrew STEVENSON Victoria University of Technology
- MT 100 *Intrinsic fibre optic sensor for dynamic structural sensing*
Ms Bronwen TAYLOR Macquarie University
- MT 102 *Novel hybrid optical-microwave source*
Mr Ben TRAVAGLIONE University of Queensland
- MT 104 *Optical implementation of Kitaev's algorithm*
Mr Lincoln TURNER University of Melbourne
- MT 106 *Diode laser lock analysis without a spectrum analyser*
Dr Chris WALSH JDS Uniphase
- MT 108 *Interferometer for the measurement of the radius of a polished sphere*

4:00pm — 5:30 pm

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

VENUE: KERR GRANT

Chairperson: Stuart Tovey

- 4:00 pm Dr Brian ROBSON Australian National University
036 *The fusion of heavy nuclei*
- 4:30 pm Dr Mahananda DASGUPTA Australian National University
037 *Effect of breakup on near barrier fusion*
- 4:50 pm Mr Matt GARBUTT University of Melbourne
038 *Constraining right-handed and scalar currents in the weak interaction*
- 5:10 pm Ms Gabrielle BRIGHT University of Melbourne
039 *Bose-Einstein correlations in like and unlike-sign charged pion pairs*

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

VENUE: BONYTHON HALL

- 4:10 pm Dr John FURST University of Newcastle
109 *Measuring Zero: How photon polarisation measurements provide an insight into the dynamics of electron scattering from the rare gases*
- 4:15 pm Dr Dmitry FURSA The Flinders University of South Australia
110 *Electron scattering from the ground state of mercury*
- 4:30 pm Dr Bipina DHAL University of Melbourne
111 *Competitive channel of double electron transfer in ion-atom collision*
- 4:45 pm Dr Alisher KADYROV Flinders University
112 *Convergent close-coupling: extension to positron-hydrogen*
- 5:00 pm Mr Anthony BLACKETT Murdoch University
113 *Solving the momentum-space Lippman-Schwinger equation using a rotated-contour method*

Tuesday, December 12, 2000

To find an author, or topic, select the binoculars

4:00 pm — 5:30 pm **AUSTRALIAN GENERAL RELATIVITY WORKSHOP - AUSTRALASIAN SOCIETY OF GENERAL RELATIVITY & GRAVITATION (ASGRG)**

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

VENUE: BENHAM THEATRE

Chairperson: Malcolm Anderson

4:00 pm Dr Peter BOUWKNEGT 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(Cl_{0.6}Br_{0.4})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 La_{1-x}Sr_xMnO_{3+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 GOOSSENS 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*

- Mr Joo-Von KIM University of Western Australia
 MT 134 *Calculations of long-wavelength spin-waves in exchange-biased bilayers*
 N KIRBY Curtin University of Technology
 MT 136 *Crucible corrosion in the melt processing of YBa₂Cu₃O_{7-d} superconductors*
 Dr Michael KUCHIEV University of New South Wales
 MT 138 *Enhancement of nuclear reactions in matter*
 Ms Audrey LOBO University of Sydney
 MT 140 *Green function formalism for nonlinear acoustic waves in layered media*
 Prof Jaan OITMAA University of New South Wales
 MT 142 *The square lattice J_1 - J_2 Heisenberg antiferromagnet*
 Dr Ross PILTZ ANSTO
 MT 144 *In situ electric field studies of the relaxor ferroelectric PZN-PT using neutron scattering*
 Dr Don PRICE CSIRO Telecommunications & Industrial Physics
 MT 146 *Non-linear elastic wave propagation in a planar waveguide*
 Prof Robert A ROBINSON Australian Nuclear Science & Technology Organisation
 MT 148 *Neutron scattering studies of Mn₁₂-Acetate*
 Dr Glen STEWART Australian Defence Force Academy
 MT 150 *Mössbauer detection of nuclear magnetic resonance at millikelvin temperatures*
 A/Prof Oleg SUSHKOV University of New South Wales
 MT 152 *Spontaneous spin stripe dimerization in the doped t - J model*
 A/Prof Oleg SUSHKOV University of New South Wales
 MT 154 *Spin 1/2 magnetic impurity in a 2D magnetic system close to quantum critical point*
 A/Prof Oleg SUSHKOV University of New South Wales
 MT 156 *Critical dynamics of singlet excitations in a frustrated spin system*
 Dr Gordon TROUP Monash University
 MT 158 *EPR measurements of phenolic concentration in developing red grape seeds - a pilot study*
 Dr Gordon TROUP Monash University
 MT 160 *EPR studies of the free radicals in the spices and pigments turmeric and saffron*
 Yong ZHAO University of New South Wales
 MT 162 *A study on magnetic properties of poly-schiff-base polymer containing bisthiazole rings with Fe (II) sulfate*
 Yong ZHAO University of New South Wales
 MT 164 *Anomaly of second magnetization peak in overdoped Bi₂Sr₂CaCu₂O_z single crystals*
 Dr Weihong ZHENG University of New South Wales
 MT 166 *Extended bound states in the J_1 - J_2 - d chain*

4:00 pm — 5:45 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

LASERS AND INTERFEROMETRY

VENUE: FLENTJE THEATRE

Chairperson: TBA

- 4:00 pm Dr Deb KANE Macquarie University
 215 *The effects of optical feedback on semiconductor lasers*
 4:30 pm Prof Jesper MUNCH The University of Adelaide
 216 *Precision interferometry: From Michelson to gravitational waves*
 5:00 pm Damien MUDGE University of Adelaide
 217 *A high-power diode-laser-pumped CW Nd:YAG laser using a stable-unstable resonator*
 5:15 pm Professor John HARVEY University of Auckland
 218 *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
 219 *1 W CW green self-frequency-doubled Yb:YA I₃(BO₃)₄ laser*

4:00 pm — 5:15 pm

Tuesday, December 12, 2000

To find an author, or topic, select the binoculars

4:00 pm — 5:15 pm AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS (SASTA)

AUSTRALIAN CONFERENCE FOR TEACHERS OF PHYSICS VENUE: RENNIE THEATRE (SASTA)

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 SSABSA
813 *Physics Courses in Australia*
- 4:45 pm Mr Trevor PORTLOCK Pembroke School
814 *Physics Courses in Australia*
-

4:00 pm — 5:30 pm

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 piezo-electric 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

VENUE: BONYTHON HALL

PUBLIC LECTURE

- 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

To find an author, or topic, select the binoculars

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*

10:45am — 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

9:00am — 10:30am

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

11:00am — 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*

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

VENUE: BONYTHON HALL

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 assesment 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: TrevorHarris

- 11:00 am Dr Stuart ANDERSON DSTO Salisbury
919 *Radiowave signatures of dynamical processes in the ionosphere*
- 11:18 am Dr Dan MEEHAN DSTO
920 *Dealiasing 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-usable-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

4B APPLICATIONS

Chairperson: Min Gu

- 11:00 am Geoff ANDERSEN USAF Academy
225 *Holographic Raman Lidar*
- 11:15 am Dr Stephen COLLINS Victoria University
226 *Strain sensitivity of fluorescence from rare-earth-doped optical fibres*
- 11:30 am Dr Mikhail VASILIEV Victoria University of Technology
227 *Low-coherence strain system using an optimising triple-wavelength combination source and chirped Bragg Grating-based Fabry-Perot sensor*
- 11:45 am Dr Deb KANE Macquarie University
228 *Dry laser cleaning of alumina particles from glass using a XeC1 excimer laser*
- 12:00 pm Dr Thu-Lan KELLY Univesity of Adelaide
229 *Dual conjugate wavefront generation for testing adaptive optics systems*
- 12:15 pm Dr Andrei ZVYAGIN University of Western Australia
230 *A new purely classical achromatic optical phase modulator*

11:00 am — 12:30 pm

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

VENUE: RENNIE

TOKAMAKS AND STELLERATORS

Chairperson: Andrew Cheetham

- 11:00 am Dr Alan TURNBULL General Atomics Inc
700 *The advanced Tokamak concept*
- 11:30 am Dr Boyd BLACKWELL Australian National University
701 *Results from Helical Axis Stellarators*
- 11:45 am Mr Scott COLLIS Australian National University
702 *Electron density transport studies on the H-INF Helicac*
- 12:00 pm Mr Fenton GLASS Australian National University
703 *Time-resolved Tomographic Spectroscopy system for H-INF*
- 12:15 pm Prof Robin STORER Flinders University of South Australia
704 *Resistive magnetohydrodynamics for three-dimensional plasmas*

12:30 pm — 2:00 pm **LUNCH**

2:00pm — 3:30 pm

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

VENUE: KERR GRANT

Chairperson: Robert Delbourgo

- 2:00 pm Dr Paul CODDINGTON Adelaide University
044 *Cluster computing for the Lattice QCD simulations*
- 2:30 pm Dr Vadim GUZEY University of Adelaide
045 *On the role of delta (1232) in DIS on polarized He-3 and the extraction of neutron spin structure function $g_{1n}(x, Q^2)$*
- 2:50 pm Miss Rachel BUTT Australian National University
046 *The effect of target spin on fission fragment angular distributions*
- 3:10 pm Dr Reza HASHEMI-NEZHAD University of Sydney
047 *Accelerator driven sub-critical nuclear assemblies; spallation neutron induced nuclear waste transmutation in lead and graphite neutron moderating environments*

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

VENUE: BONYTHON HALL

- 2:00 pm Mr Peter RIGGS Department of Defence
118 *Quantum phenomena in terms of energy - momentum transfer*
- 2:15 pm Mr Michael BROMLEY Northern Territory University
119 *Configuration interaction calculations of positronic atoms and ions*
- 2:30 pm Dr Andrey LUGOVSKOY Flinders University
120 *Shake-up of a light atom in a collision with a hard wall*

- 2:45 pm Mr Ben TRAVAGLIONE University of Queensland
121 *Applying Kitaev's algorithm in an ion trap quantum computer*
- 3:00 pm Prof Peter DRUMMOND University of Queensland
122 *STIRAP in coupled atomic and molecular superchemistry*
- 3:15 pm Mr Chanh Quoc TRAN University of Melbourne
123 *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
415 *Australian US initiative to construct a silicon-based solid state quantum computer*
- 2:35 pm Dr Robert STAMPS University of Western Australia
416 *High frequency spin dynamics in magnetic heterostructures*
- 3:10 pm Dr He Bi SUN University of Queensland
417 *Master Equation Approach to Probing Electron States*

MEDICAL PHYSICS (MP)

VENUE: NORTH DINING

Chairperson: Gill Vella

- 2:00 pm Ms Trang TRAN Adelaide University
505 *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
506 *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
507 *Do mobile phones cause brain cancer?*
- 3:00 pm Dr Alfio PARISI University of Southern Queensland
508 *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
231 *Overview of solid state lasers with applications as LIDAR transmitters and optical image amplifiers*
- 2:30 pm Dr Howard WISEMAN Griffith University
232 *Adaptive measurements and optimal states for quantum interferometry*
- 2:45 pm Mr Winfried HENSINGER The University of Queensland
233 *Observation of bifurcations in a non-linear Hamiltonian system using cold atoms*
- 3:00 pm Prof Geoffrey OPAT The University of Melbourne
234 *An oscillating mirror beam splitter for laser cooled neutral atoms*
- 3:15 pm Prof John LOVE Australian National University
235 *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
936 *Stochastic growth of localized plasma waves*
- 2:30 pm Prof Manfred HELLBERG University of Natal
937 *Waves in plasmas with power-law distributions*
- 2:45 pm Dr Murray SCIFFER University of Newcastle
938 *One dimensional model for ULF wave propagation in the ionosphere*
- 3:05 pm Mr Phillip WEBB La Trobe University
939 *The Global Plasmasphere Ionosphere Density (GPID) model*

3:30 pm — 4:00 pm

3:30 pm — 4:00 pm

AFTERNOON TEA

3:30 pm — 6:00 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: GAMES, LEVEL 5

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*
- Mr 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 GAMBETTA 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 uedundant 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*

- Mr Chanh Quoc TRAN University of Melbourne
 TF 050 *Scattering contribution and higher order harmonic contamination*
 Mr Lincoln TURNER University of Melbourne
 TF 051 *Non-interferometric atomic phase measurement: competitive with interferometers?*
 Miss Jin WANG University of Queensland
 TF 052 *Stabilization of a two-level atomic system via Homodyne-mediated feedback*
 Mr Prahlad WARSZAWSKI Griffith University
 TF 053 *Realistic photodetection*
 Mr Karl WEBER University of Melbourne
 TF 054 *Measurement of laser cooling using polarisation imaging*
 Mr Tom WHITE University of Sydney
 TF 055 *Application of the Rayleigh method to holey fibres*
 Dr Michael WITHFORD Centre for Lasers and Applications
 TF 056 *Second harmonic generation of high power UV*

4:00 pm — 5:30 pm

ATOMIC & MOLECULAR PHYSICS & QUANTAM CHEMISTRY (AMPQC)

VENUE: BONYTHON HALL

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

MEDICAL PHYSICS (MP)

VENUE: NORTH DINING

Chairperson: Ian Maclean

- 4:00 pm Mr Setayesh BEHIN-AIN Adelaide University
 509 *Enhanced Monte Carlo simulation techniques used in modeling early tumour detection*
 4:20 pm Dr Eva BEZAK Royal Adelaide Hospital
 510 *Monte Carlo simulations of proton energy deposition at the distal fall-off of the spread out Bragg peak in tissue*

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5

Chairperson: Ray Morris

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

4:00 pm — 5:30 pm

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

VENUE: GAMES, LEVEL 5

AINSE/NUPP POSTER SESSION

- 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 fFunctions towards the chiral limit*
- Mr Rohan DOWD University of Melbourne
TF 064 *Measurement of Decay Rate of $B \rightarrow _ K$*
- Prof George DRACOLIS 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 $La_{1-x}Sr_xMnO_{3+s}$*
- 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 $B-Ds+ Xu$ 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 $nmN\bar{K}0sm+m-X$*
- 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 $B_+ [D f]K$ 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 Quiad-I-Azam University
- TF 083 *Thermodynamics of stars*
Samina MASOOD Quiad-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 $\sin(2f_2)$ via $B\bar{E}pp$ 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 $^{14}N(d,a)^{12}C$ 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 $^{32,34}S+^{197}Au$ 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/Ψ suppression*
Mr Juan URIBASTERA 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*

Mr James ZANOTTI University of Adelaide

TF 109 *Novel fat-link fermion actions for Lattice QCD*

4:00 pm — 5:30 pm

CONDENSED MATTER PHYSICS (CMP)**VENUE: GAMES, LEVEL 5****CMP POSTER SESSION 2**

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

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

To find an author, or topic, select the binoculars

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
013 *Surfaces Cover Everything*
9:45 am Prof Chris GREENE University of Colorado
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
049 *Status of the ATLAS experiment at CERN*
11:30 am Mr Aldo SAAVEDRA University of Sydney
050 *The Australian assembly system for semiconductor ATLAS detector modules*
11:50 am Ms Annette BERRIMAN Australian National University
051 *Entrance channel dependent fission probabilities in heavy-ion fusion-fission reactions*
12:10 pm Dr Anjali MUKHERJEE Australian National University
052 *Enhancement or suppression of fusion cross-sections around the barrier*

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

VENUE: BONYTHON HALL

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

SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)

VENUE: CINEMA, LEVEL 5

Chairperson: Phil Wilkinson

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

11:00 am — 12:30 pm **SOLAR, TERRESTRIAL & SPACE PHYSICS (STSP)**

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

11:00 am — 12:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: FLENTJE THEATRE

Chairperson: Gerard Milburn

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*

11:00 am — 12:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: HORACE LAMB THEATRE

Chairperson: John Love

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*

11:00 am — 12:30 pm

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

VENUE: RENNIE

Chairperson: Jeffrey Harris

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*

11:00 am — 12:30 pm

CONDENSED MATTER PHYSICS (CMP)

VENUE: BRAGG THEATRE

Chairperson: John O'Connor

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 nitrated stainless steel*

12:00 pm — 3:30 pm

7TH VACUUM SOCIETY OF AUSTRALIA CONGRESS (VSA) VENUE: GAMES, LEVEL 5

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*
-

12:15 pm — 12:30 pm

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

VENUE: GAMES, LEVEL 5

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 variation of grain charges*
Dr George WARR Australian National University
TF 175 *Electron density Tomography on the H-INF Helic*
-

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: Lawrence Peak

- 2:00 pm A/Prof Anatoly ROSENFELD University of Wollongong
053 *Development of a PET detector module incorporating a silicon photodiode array*

Friday, December 15, 2000

To find an author, or topic, select the binoculars

2:00pm — 3:30 pm **18TH AINSE NUCLEAR & PARTICLE PHYSICS CONFERENCE (AINSE/NUPP)**

- 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 & QUANTAM 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*

2:00 pm — 3:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: FLENTJE THEATRE

Chairperson: Hans Bachor

8A ATOM OPTICS 1

- 2:00 pm Dr Andrew WILSON University of Otago
251 *Atom laser output outpling 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*

2:00 pm — 3:30 pm

13TH CONFERENCE OF THE AUSTRALIAN OPTICAL SOCIETY (AOS)

VENUE: HORACE LAMB THEATRE

Chairperson: Martijn de Sterke

8B PROPAGATION AND FIBRES 2

- 2:00 pm Mr Tristram ALEXANDER Australian National University
256 *Multistep cascading and fourth-harmonic generation*

Friday, December 15, 2000

To find an author, or topic, select the binoculars

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 *Gaussian beams and electron acceleration*
-

3:30 pm — 4:00 pm **AFTERNOON TEA**

4:00pm — 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 *Suppression and enhancement of spontaneous emission in molecular system (Quantum Interference Effect)*

4:00 pm — 5:30 pm

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

Chairperson: Keith Nugent

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 & QUANTUM CHEMISTRY (AMPQC)**VENUE: GAMES, LEVEL 5****AMPQC POSTER SESSION**

- Dr Jamal BERAKDAR Max-Planck Institute
TF 110 *On the many-body Green operator of few interacting particles*
- Dr Laurence CAMPBELL Flinders University of SA
TF 111 *Vibrational-electronic excitation of NO and N2 by electron impact*
- Mr Max COLLA Australian National University
TF 180 *Low energy electron scattering from cold metastable helium atoms : total cross section measurements*
- Dr Vladimir DZUBA University of New South Wales
TF 112 *Atomic clocks and search for variation of the fine structure constant*
- Dr Vladimir DZUBA University of New South Wales
TF 113 *Calculation of positron binding to copper, silver and gold atoms*
- Dr Vladimir DZUBA University of New South Wales
TF 114 *Enhancement of parity and time invariance violation in radium*
- Prof Victor FLAMBAUM University of New South Wales
TF 115 *Chaotic many-body states as a source of strong enhancement of electron recombination with multicharged ions*
- Prof Victor FLAMBAUM University of New South Wales
TF 116 *Cold-atom scattering: from the scattering length to the glory oscillations*
- Mr Jay GAMBETTA Griffith University
TF 179 *Super elastic scattering from the 5P levels of atomic rubidium*
- Mr Nathaniel GROOTHOFF Griffith University
TF 117 *Superelastic scattering from the 5P Levels of atomic rubidium*
- Dr Robert GULLEY Australian National University
TF 118 *Very low energy electron scattering in nitromethane, nitroethane and nitrobenzene.*
- Dr Radmila PANAJOTOVIC Australian National University
TF 119 *Experimental investigation of temporary negative ions in electron scattering from magnesium atoms*
- Ms Holly ROSE University of Western Australia
TF 120 *Measurements of scattering parameters of the He(3D) and He(41,3F) states*
- Mr Tony SHACKLETON Murdoch University
TF 121 *Failure of the n3 scaling law in the Temkin-Poet model of e-H scattering*

Friday, December 15, 2000

To find an author, or topic, select the binoculars

4:00 pm — 5:30 pm **ATOMIC & MOLECULAR PHYSICS & QUANTAM 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*
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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 Helic*
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*