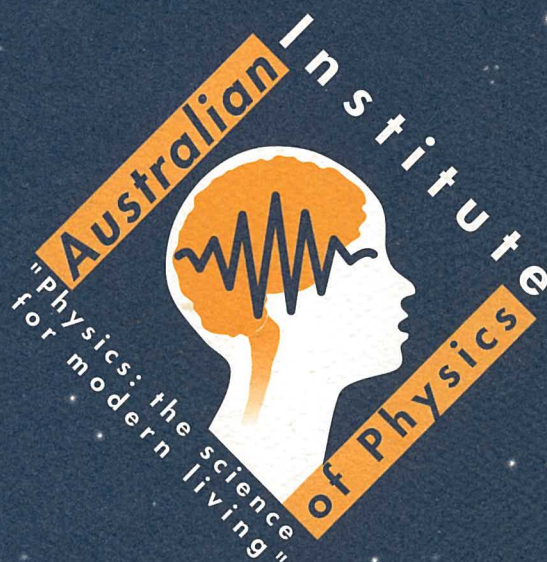


PROGRAM AND ABSTRACTS

13th National Congress
of the
Australian Institute of Physics
Fremantle, Western Australia
September 27 - October 2 1998



in association with

17th AINSE Nuclear & Particle Physics Conference (NUPP)

Atomic and Molecular Physics and Quantum Chemistry (AMPQC)

5th Congress of Vacuum Society of Australia (VSA)

OzCUPE 4 (4th Australian Computers in University
Physics Education meeting)

Science Teachers Association of Western Australia (STAWA)

Solar, Terrestrial and Space Physics Group of the AIP (STSP)



INSE



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This volume is a pre-Congress publication of the abstracts to be presented at the 13th National AIP Congress, held in association with the 17th AINSE Nuclear & Particle Physics Conference (NUPP), Atomic and Molecular Physics and Quantum Chemistry (AMPQC) meeting, 5th Congress of Vacuum Society of Australia (VSA), OzCUPE 4 (4th Australian Computers in University Physics Education meeting), Science Teachers Association of Western Australia (STAWA) meeting and the Solar, Terrestrial and Space Physics Group of the AIP (STSP).

The printing of the publication was sponsored jointly by The University of Western Australia, Curtin University of Technology, Edith Cowan University and Murdoch University.

The abstracts submitted were reviewed by a panel of relevant specialists and scheduled accordingly.

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WELCOME TO THE CONGRESS

On behalf of the Organising Committee of our Australian Institute of Physics 13th National Congress, I am pleased to offer you an exciting program of plenary speakers, microsymbiosia sessions and 6 affiliated meetings addressing the Congress theme - "Physics, the Science for Modern Living". The Congress also includes an Industry Exhibition, and features an entertaining social program aimed at encouraging networking with colleagues within Congress sessions and also on the famous Fremantle "cappuccino" strip which is but a stroll away.

The breadth of the Congress underlines the enormous contribution that our discipline makes to virtually every field of science and technology, and therefore to the progression of society, as well as advancing the fundamentals of Physics. The Congress will cause us to reflect on the impact that Physics will have on the next millennium after the extraordinary manner in which the discipline has shaped the 20th Century.

The magnificent response by the nation's Physics community in committing to this historic meeting bodes well for the future. The Organising Committee has chosen Fremantle as a new type of Congress venue to break with the tradition of meeting on university campuses. We hope that the wonderful

ambience of a Spring meeting in Fremantle will result in future Congresses being held in other attractive venues within the general community.



The generous support of our various sponsors is sincerely acknowledged. We thank especially our principal sponsor, The Department of Commerce and Trade (Western Australia) which has done so much in the State to support infrastructure development for science and technology. The generous support provided by various sponsors of our international plenary speakers has been critically important to the Congress.

We hope that participants visiting Western Australian will extend their stay to take in the wonders of the wildflower state in Spring in enchanting places such as Rottnest Island, Margaret River and Exmouth.

We look forward to your participation and to meeting you.

Professor Brian O'Connor
Congress Chairman

ASSOCIATED MEETINGS

SESSION LEADERS

These people have co-ordinated the generation of the program in their areas.

AINSE	Dr Dennis Mather AINSE
AMPQC	Professor Jim Williams The University of Western Australia
AUSTRALIAN/GERMAN WORKSHOP	Associate Professor Andris Stelbovics Murdoch University
BIOPHYSICS	Professor Jim Williams The University of Western Australia
CMP	Associate Professor Andris Stelbovics Murdoch University
GWAS	Dr Tim St Pierre The University of Western Australia
	Dr Bob Stamps The University of Western Australia
	Professor David Blair The University of Western Australia

EARTH SCIENCES

Associate Professor Mervyn Lynch
Curtin University, Western Australia

Associate Professor John Penrose
Curtin University, Western Australia

ISSUES IN PHYSICS

Dr Mario Zadnik
Curtin University, Western Australia

APPLICATIONS OF NUCLEAR SCIENCE

Professor Brian O'Connor
Curtin University, Western Australia

OFMS WORKSHOP

Dr Andre Luiten
The University of Western Australia

OzCUPE 4

Dr Bob Loss
Curtin University, Western Australia

STSP

Professor Brian Fraser
University of Newcastle,
New South Wales

VSA

Associate Professor John O'Connor
University of Newcastle,
New South Wales

On behalf of the Organising Committee, a special thank you is extended to the Session Leaders for the amount of time and effort that has gone into coordination of the program.

FINAL PROGRAM

Oral Papers and Poster Presentations have been listed with the presenting author only.
A complete list of authors is included at the back of this book.

PRE-CONGRESS DAY: SATURDAY SEPTEMBER 26 1998

9.00am Heads of Departments Meeting

PRE-CONGRESS DAY: SUNDAY SEPTEMBER 27 1998

4.00pm Registration desk opens

OPENING CEREMONY

Welcome to the AIP Congress

Professor Brian O'Connor

Congress Chairman

Welcome to Fremantle

Councillor Morris Caputi

representing The Hon Richard Utting

Mayor of Fremantle

Official Opening Address

The Hon Hendy Cowan

Deputy Premier of Western Australia

Karina - A voice to remember

A National Event

Professor Jaan Oitmaa

President, Australian Institute of Physics

Welcome from AINSE

Dr Dennis Mather

Scientific Secretary AINSE

Welcome from VSA

Associate Professor John O'Connor

Chairman, VSA

Welcome from all other Groups

6.05pm

An Invitation to the Welcome Reception

Associate Professor Steve Thurgate

Chairman, Congress Organising Committee

PRE-CONGRESS LECTURE

7.30pm

Gravitational waves: a new window onto the universe

Professor Kip Thorne (Feynman Professor of Theoretical Physics, California Institute

of Technology, USA)

WEST END CONVENTION CENTRE

CHAIR: D Blair

DAY ONE: MONDAY SEPTEMBER 28 1998

Opening Remarks

WEST END CONVENTION CENTRE
CHAIR: B O'Connor

Determination of energy-momentum densities of electrons in matter by electron momentum spectroscopy
Professor Erich Weigold (Director of Research, School of Physical Sciences, Australian National University)

Molecular self-organisation and electrical properties of cell membranes: membrane biophysics for fun and profit
Professor Hans Coster (Chair, School of Physics, University of NSW)

MORNING TEA AND POSTER DISPLAY IN THE ISLAND SUITE / 2ND FLOOR

MICROSYMPOSIUM 1

VENUE/CHAIR	AINSE 1	EARTH SCIENCES (Acoustical Oceanography I)	STSP (Cosmic Ray, Solar & High Latitude Phenomena I)	BIOPHYSICS I	CMP (Magnetism I)	AMPQC 1 (Electron excitation of simple atoms)
11.15am	PORT ROOM / L Peak Recent results from the NOMAD Experiment K Varvell (University Of Sydney)	M. COLLIE ROOM / J Penrose Exploiting underwater science and technology to discover the rest of the planet earth B Woodward (Loughborough University, UK)	BAY ROOM / B Fraser Observation of the tail-in and loss cone anisotropies in cosmic rays J Humble (University Of Tasmania)	ROTTNEST ROOM / R Fox New methods of x-ray imaging based on phase-contrast S Wilkins (CSIRO, Division of Manufacturing Science & Technology)	M. BOARDROOM / R Street Mossbauer and neutron studies of magnetic materials S Campbell (University of NSW)	M. BALLROOM / A Stelbovics Atomic collisions research with a bright beam of metastable (2^3S) helium atoms S Buckman (Australian National University)
11.45am	Spectroscopy of ^{207}Pb A Baxter (Australian National University)	Dual use of hydro-acoustic monitoring stations in the Indian Ocean A Forbes (CSIRO Division of Marine Research, Hobart)	Two-dimensional stability analysis of arcade structures in the solar atmosphere M Scffer (University Of Newcastle)	Spectral determination of tissue compensation filters, in plain film radiography, using Compton scatter techniques R Davidson (Charles Sturt University)	Magnetic properties and microstructure studies of hard magnetic thin films H Sun (University Of WA)	Orientation and alignment in electron scattering from the alkalis P Teubner (Flinders University)
12.05pm	Isomer decays and interference between spherical and deformed states in ^{199}Pb A Baxter (Australian National University)	Expectations for very low frequency sea noise off south-west Australia D Cato (DSTO Sydney)	Meso-scale spatial structure in the high latitude-atmosphere M Conde (University of Alaska Fairbanks, USA)	Direct measurement of x-ray spectra at diagnostic energies using a Pelletier-Cooled CdZnTe Detector: application to medical imaging quality assurance S Rianto (Curtin University)	Investigating domain structures in modern permanent magnet materials using magnetic force microscopy R Woodward (University Of WA)	Measurements of scattering parameters of the He(3^1D) state H Rose (University Of WA)
12.25pm	Search for ν_e oscillations A Godley (University Of Sydney)	Indian Ocean acoustic thermometry - the next step A Forbes (CSIRO Division of Marine Research, Hobart)	Tidal periodicities in observations of the Oh(6-2) emission from Eastern Antarctica P Greet (Australian Antarctic Division)	Determination of age, disease+gender-related differences in trabecular architecture using fourier and wavelet transforms R Price (Sir Charles Gairdner Hospital)	Exchange coupled ferromagnet-antiferromagnet composites L Wee (University Of WA)	(e,2e) measurements from threshold to intermediate energies R van Boeyen (University Of WA)

LUNCH IN THE ATRIUM GARDEN RESTAURANT

MICROSYMPOSIUM 2

VENUE/CHAIR	AINSE 2	EARTH SCIENCES (Acoustical Oceanography II)	STSP (High Latitude Phenomena II)	BIOPHYSICS II	CMP (Condensed Matter I)	AMPQC 2 (some hot topics)
2.00pm	PORT ROOM / B Delbourgo Relativistic wave equations and hydrogenic atoms B Robson (Australian National University)	M. COLLIE ROOM / B Woodward A user-engaging method for inverting shallow water transmission loss data to obtain seabed acoustic properties M Hall (DSTO Sydney)	BAY ROOM / P Dyson Thermospheric 630nm observations from Davis, Antarctica P Greet (Australian Antarctic Division)	ROTTNEST ROOM / B Hartley Monte Carlo radiation transport calculations-applications in radiation medicine M Ebert (Sir Charles Gairdner Hospital)	M. BOARDROOM / M Das The metal-insulator transition in 2D, the electron solid, and possible new phases of quantum localization D Neilson (University Of NSW)	M. BALLROOM / J Williams Laser micromanipulation H Rubinsztein-Dunlop (University of Queensland)

Theory of linear and non-linear far field scattering from a dielectric sphere
Prevention of arterial narrowing
Solar can optical images observed

2.30pm	Accelerator driven nuclear energy systems J Boldeman (ANSTO)	Sea noise and sea floor acoustics in Spencer Gulf D Cato (DSTO Sydney)	Polar cap optical images observed at Scott Base, Antarctica I Wright (University Of Newcastle)	Prevention of arterial narrowing using 188Re R Fox (Royal Perth Hospital)	Theory of linear and non-linear far infrared optics of ferroelectrics D Tilley (Universiti Sains Malaysia)	Time dependent approach to quantum scattering J Wang (University Of WA)
2.50pm	Uranium decay and fission P Norman (Monash University)	Geoacoustic inversion of shallow water sound propagation in Cleveland Bay, North Queensland D Matthews (DSTO Sydney)	Ionospheric variability P Wilkinson (IPS Radio and Space Services)	Analysis of the distribution of intra-arterial microspheres in human liver following selective internal radiation therapy A Campbell (Royal Perth Hospital)	Quadratic solitons: past, present and future A Buryak (Australian National University)	Electrically charged magnetic monopoles as a source of time reversal invariance violation and electric dipole moments of atoms D Murray (University Of NSW)
3.10pm	Relativistic wave equations and Compton scattering S Sutaranto (Australian National University)	Shallow water acoustic propagation, comparison of modelling and experimental data J Penrose (CMST Curtin University)	Cap ionosphere-the Dopplionogram approach P Dyson (La Trobe University)	Reviewing the development of biophysics courses and its interrelation to hospitals in Indonesia: a case of Brawijaya University J Noor (Brawijaya University)	Some new strategies for CW and pulsed EPR in ordered and disordered systems J Pilbrow (Monash University)	Quantum decoherence for trapped ions and quantum gate operations S Scheider (University of Queensland)

AFTERNOON TEA AND POSTER DISPLAY IN THE ISLAND SUITE / 2ND FLOOR

MICROSYMPOSIUM 3

VENUE/CHAIR	AINSE 3	EARTH SCIENCES (Acoustical Oceanography III)	STSP (High Latitude Phenomena III)	VSA	CMP (Magnetism II)	AMPQC 3 (Fundamental Interactions)
4.00pm	PORT ROOM / G Taylor Aspects of the dynamics of the fusion & fission processes C Morton (Australian National University)	ROTTNEST ROOM / D Cato Multisensor acoustic source localisation by multipath ray tracing methods D McMahon (DSTO HMAS Stirling)	BAY ROOM / R Morris Coupling of the ionosphere and magnetosphere at high latitudes M Terkildsen (University Of Newcastle)	M. COLLIE ROOM / J O'Connor Scanning probe microscopy of complex surfaces K T Wandel (Universitat Bonn, Institut für Physikalische und Theoretische Chemi, Germany)	M. BOARDROOM / H Sun Slow magnetic relaxation in magneto-optic films R Street (University Of WA)	M. BALLROOM / H Rubinsztein-Dunlop Putting the Q into cavity QED B Sanders (Macquarie University)
4.30pm	Time invariance violating nuclear moments D Murray (University Of NSW)	Airgun signal influences on humpback whales J Penrose (CMST Curtin University)	Seasonal and diurnal dynamics of Pc3 pulsations observed in the cusp region P Ponomarenko (University Of Newcastle)	Sampling efficient software applied to the acquisition of Auger Electron Spectra K Friday (Murdoch University)	The dynamic magnetic behaviour of ultrafine particles: making use of the time windows offered by different experimental techniques T St Pierre (University Of WA)	An x-ray spectrometer for precision tests of QED: calibration and systematics D Paterson (University Of Melbourne)
4.50pm	The anapole moment and nucleon weak interactions D Murray (University Of NSW)	A plausible physical cause for live cetacean mass strandings R James (University of WA)	Generation and propagation of Pc3-4 pulsations at high latitudes F Menk (University Of Newcastle)	Copper L_{α} M_{α} $M_{\alpha 45}$ Auger coincidence spectroscopy C Creagh (Murdoch University)	A novel method for the production of three-dimensional arrays of nanoscale magnetic particles S Walton (University Of WA)	Absolute quantum electrodynamics measurements on the Nist Electron-Beam Ion Trap C Chantler (University Of Melbourne)
5.10pm	Spectroscopy of $^{175,176,177}Lu$ through incomplete fusion reactions T McGoram (Australian National University)	Optimising the background noise correction of echo integration data with a low signal to noise ratio I Higginbottom (Australian Antarctic Division)	Using GPS to monitor ionospheric irregularities in the southern high latitude region Y Wang (IPS Radio & Space Services)	Copper L_{α} M_{α} $M_{\alpha 45}$ Auger coincidence spectroscopy C Creagh (Murdoch University)	Time dependent effects in coupled magnetic nanostructures: excitations, high frequency dynamics and switching R Stamps (University Of WA)	Orientation and alignment in electron scattering from potassium K Stockman (Flinders University)

CLOSE OF SESSIONS

SPECIAL PLENARY 1

A Healing Vision - one hundred years of medical imaging
Brian Manley CBE (President of the Institute of Physics)

BRAGG LECTURE

Solitons due to quadratic non-linearities
Dr Alexander Buryak (Australian National University)

Optional Social Program - Fish & Chips on the Trans

WEST END CONVENTION CENTRE
CHAIR: J Oitmaa

WEST END CONVENTION CENTRE
CHAIR: J Oitmaa

DAY TWO: TUESDAY SEPTEMBER 29 1998

		WEST END CONVENTION CENTRE CHAIR: T St Pierre			
8.00am	Registration				
8.30am	PLENARY ADDRESS	Prospects for group IV nanostructures Professor Sue Bayliss (Professor of Advanced Materials, Solid State Research Centre, De Montfort University, UK)			
9.30am	PAWSEY LECTURE	Black holes and megamasers Dr Ray Norris (Head of Astrophysics, CSIRO Australia Telescope Facility, NSW)			
10.30am	SPECIAL PLENARY 2	Physics at the crossroads: what the enrolments tell us Professor John de Laeter (Emeritus Professor of Physics, Curtin University, WA)			
11.00am	MORNING TEA AND POSTER DISPLAY IN THE ISLAND SUITE / 2ND FLOOR				
M I C R O S Y M P O S I U M 4					
AINSE 4					
VENUE/CHAIR	PORT ROOM / B Robson	EARTH SCIENCES (Acoustical Oceanography & Remote Sensing)	STSP (Middle Atmosphere I)	VSA	GWAS (Astronomy and Astrophysics)
11.30am	Weak non-leptonic particle decays R Delbourgo (University Of Tasmania)	M. COLLIE ROOM / M Lynch An assessment of target orientation on single ping acoustic target strength estimates for Antarctic krill: implications for the choice of probability density function describing orientation effects T Pauly (Australian Antarctic Division, Hobart)	BAY ROOM / G Burns Gravity wave "weather" in the middle atmosphere S Eckermann (Computational Physics Inc, USA) Thermospheric neutral winds at mid-latitudes derived from airglow and ionosonde measurements P Dyson (La Trobe University)	ROTTNEST ROOM / K Wandelt High resolution electron spectroscopy: a solution to the charge transfer problem P Weightman (University Of Liverpool, UK)	M. BOARDROOM / P Veitch Isotopic astrophysics J de Laeter (Curtin University) Higher order perturbations of black holes A Lun Neutron capture on ¹¹³ Cd in lunar samples D Sands (Curtin University) Discovering planets by gravitational microlensing R Martin (Perth Observatory) The automated supernova search: getting significant statistics from few events A Williams (Perth Observatory)
12.00pm	A search for the d-dibaryon with the CHAOS detector J Clark (University of Melbourne)	The development of algorithms to enable upward looking sonars to discriminate between sea ice and open water A Duncan (CMST Curtin University)	Dynamics of the lower thermosphere from Fabry Perot 558nm observations G Price (Murdoch University)	Adsorption on gold single crystals S Thurgate (Murdoch University)	Relativistic effects in electron-atom scattering R Srivastava (University of Roorkee, India) Electron scattering from barium ground and excited states D Fursa (Flinders University) Complete determination of the 3-D state of helium A Mikosza (University Of WA)
12.20pm	Blocking of octupole correlations deduced from the decay of a multiparticle isomer in ²¹² At A Byrne (Australian National University)	Underwater acoustic transducer calibration by time delay spectrometry G Cook (University Of WA)	Multiple parameter simulation of the Fabry Perot Interferometer T Davies (La Trobe University)	Growth kinetics of CdS thin films chemically-deposited from an Ammonia-Thiourea Reaction System S Hinkley (Edith Cowan University)	Optical normalisation of molecular total excitation cross sections A Wedding (University Of SA)
12.40pm	TDPAD measurement of G-factors in ¹⁷⁹ W A Byrne (Australian National University)	Remote sensing validation data from the Hillarys Cross-Shelf Transect P Fearns (Curtin University)	A new VHF radar for use in operational meteorology I Reid (University Of Adelaide)	Magnetic reversal in sputter deposited and evaporated ultrathin films J Con Foo (University of Wisconsin-Madison, USA)	
1.00pm	LUNCH IN THE ATRIUM GARDEN RESTAURANT				
M I C R O S Y M P O S I U M 5					
AINSE 5					
VENUE/CHAIR	PORT ROOM / G Dracoulis	EARTH SCIENCES (Remote Sensing I)	STSP (Middle Atmosphere II)	VSA	GWAS (Gravity Waves & Supernovae)
2.00pm	CP symmetry and the Belle Experiment L Peak (University of Sydney)	M. COLLIE ROOM / D Jupp Recent developments in HF radar remote sensing S Anderson (WASD, DSTO)	BAY ROOM / P Wilkinson Lidar observations of the middle atmosphere above Kingston, Tasmania (43.0°S, 147.3°E) R Morris (Australian Antarctic Division)	ROTTNEST ROOM / C Lund Atomic force microscopy and indentation responses of human teeth J Fulton (Curtin University)	M. BOARDROOM / D McClelland Overview of AClGa and its role in the world-wide gravitational wave research program D Blair (University Of WA)

2.30pm	L Peak (University of Sydney) Charge parity exotic mesons C Burden (Australian National University)	S Anderson (WASD, DSTO) Effects of atmosphere refractivity on infra-red propagation at low altitudes over the sea S Ng (University Of WA)	R Morris (Australian Antarctic Division) Multisensor acoustic localisation by multipath ray tracing methods D McMahon (DSTO, HMAS Stirling)	J Fulton (Curtin University) Interface chemistry and electronic properties of ZnSe grown on GaAs(111)B J Xue (La Trobe University)	D Blair (University Of WA) World-wide gravitational wave research program	I McCarthy (Flinders University) Spectroscopy of argon: validation of technique approximations
2.50pm	P Silaban (Institute Technology Bandung) An extended Electroweak Model	S Ng (University Of WA) Effects of atmospheric refractivity on infra-red propagation at low altitudes over the ocean	I Reid (University Of Adelaide) Seasonal variability in gravity wave activity over Adelaide, Australia, measured using a three field photometer	K Watanabe (Sony Corporation Atsugi Technology Centre, Japan) Electronic structure of layered perovskite SrBi ₂ Ta ₂ O ₉ thin films	C Walsh (CSIRO Telecommunications and Industrial Physics) Calculating the cosmic background radiation	J Williams (University Of WA) Electron impact excitation of the 2p state of atomic hydrogen
3.10pm	P Tjiang (Australian National University) Gauge covariant fermion-photon vertex in quenched, massless three dimensional quantum electrodynamics	B Osborne (Curtin University) Temperature micro-sounding of the lower atmosphere through high spectral resolution infra-red interferometry	G Bowman (University Of Queensland) An investigation of relationships between tropospheric atmospheric gravity waves recorded at Brisbane, and geomagnetic activity over three sunspot-minimum periods	Atsugi Technology Centre, Japan) Perovskite SrBi ₂ Ta ₂ O ₉ thin films	R Burman (University Of WA) Observations of SN 1998A and comparison with similar unusual supernovae	M Green (Flinders University) Differential and integral cross section measurements for electron impact excitation of the '6.1 eV States' of O ₂

3.30pm AFTERNOON TEA AND POSTER DISPLAY IN THE ISLAND SUITE / 2ND FLOOR

M I C R O S Y M P O S I U M 6						
A I N S E 6						
VENUE/CHAIR	PORT ROOM / A Byrne	EARTH SCIENCES (Remote Sensing II)	CMP (Condensed Matter II)	VSA	GWAS (Gravity Wave Detectors)	AMPQC 6 (Low Energy Atom and Molecule Interactions)
4.00pm	Picosecond pre-equilibrium effects in magnetic hyperfine fields immediately following ion implantation A Stuchbery (Australian National University)	M. COLLIE ROOM / S Anderson Research and applications in the CSIRO (Australia) Earth Observation Centre Program D Jupp (CSIRO Earth Observation Centre)	BAY ROOM / H Reinholz High Tc superconductivity: a dozen years after Bednorz and Muller M Das (Australian National University)	ROTTNEST ROOM / E Walker Photodegradation, stability and the long term performance of solar cells and modules C Lund (Murdoch University)	M. BOARDROOM / R Norris High power lasers and optics for gravitational wave interferometry P Veitch (University Of Adelaide)	M. BALLROOM/ B Wedding Atom optics and other manifestations of atom-laser interactions R Scholten (University Of Melbourne)
4.30pm	Chiral symmetry in supersymmetric QED3 (nuclear & particle physics) M Walker (Australian National University)	High spectral resolution land surface emissivity investigations N Bower (Curtin University)	Thermal conductivity and thermoelectric power of superconducting crystals in a magnetic field G Russell (University Of NSW)	In-situ scanning tunnelling spectroscopy of metal species adsorbed onto highly oriented pyrolytic GRAPHITE M Clark (Murdoch University)	Gravity waves: isolation from seismic vibrations to low frequencies J Winterflood (University Of WA)	Very low energy electron collisions with Cl₂, OClO, Cl₂O and O₃ R Guiley (Australian National University)
4.50pm	Influence of residual proton-neutron interactions on signature splittings and crossing frequencies R Bark (Australian National University)	Optical detection of soil acidity induced stress in agricultural crops G Newnham (Curtin University)	Thin film solar cells: an emerging technology P Jennings (Murdoch University)	Analysis of hydrogen bonding in a-Si:H thin films using combined infrared and temperature desorption spectroscopy D Santjojo (Murdoch University)	Candidate gravitational wave event extraction and analysis I Heng (University Of WA)	Wave functions directly from diffraction experiments D Jayatilaka (University Of WA)
5.10pm	Measured magnetic moments in the deformed nucleus ¹⁶⁹Tm M Robinson (Australian National University)	Change detection in multitemporal, multispectral satellite image data L Renzullo (Curtin University)	Muon implantation studies (MuSR) of semiconductors A Singh (Monash University)	An in-situ scanning tunnelling microscopy investigation in the adsorption of the aurocyanide ion onto graphite G Poineh (Murdoch University)	Four years performance of a niobium resonant bar gravitational wave antenna at UWA N Hathii (University Of WA)	Diffraction experiments and charge and spin density. Comparisons between theory and experiment G Chandler (University Of WA)

5.30pm CLOSE OF SESSIONS

5.45pm POSTER SESSION 1 IN THE ISLAND SUITE / 2ND FLOOR (presenters to be in attendance)

7.00pm INSTITUTE OF PHYSICS RECEPTION IN THE ISLAND SUITE / 2ND FLOOR

8.15pm **MASSEY LECTURE**
Twinkle twinkle little pulsar/quasar
Professor Don Melrose (Professor of Physics (Theoretical), Sydney University, NSW)

Optional Social Program - Perth by Night

WEST END CONVENTION CENTRE
CHAIR: B Manley CBE

POSTER PRESENTATIONS

SESSION 1 - Tuesday September 29 5.45pm

- Effect of particle size on the magnetic properties of the iron storage protein ferritin*
P Allen (University Of WA)
- Testing of high G-Factor compound pendulums for laser interferometer gravitational wave detectors*
R Andrew (University Of WA)
- Phase compositions & developments of calcium aluminates in alumina/calcium hexaluminate composites*
D Asmi (Curtin University)
- Electron impact ionisation measurements of argon and helium using a double toroidal (e,2e) analyser*
D Barton (University Of WA)
- Wavelet analysis of (e,2e) electron correlations in argon*
D Barton (University Of WA)
- Local structure of Il-N films*
S Bayless (De Montfort University)
- Calcium (Ca) absorption in lactating humans using high precision thermal ionisation mass spectrometry*
A Bogdan (Curtin University)
- Comparisons of calculated and measured dose from radiotracer-phantom experiments*
J Boucek (Curtin University)
- Comprehensive study of the aluminium-hydrogen system*
C Buckley (Curtin University)
- Current status of methods for reducing the light induced degradation of amorphous silicon*
J Cornish (Murdoch University)
- Characterisation of band gap surface states on III-V compound semiconductors*
R Craig (Murdoch University)
- Use of the navy aerosol model in atmospheric correction of satellite observations of ocean colour*
J Davies (Curtin University)
- Effects of weak field magnetic stimulation of EEG-recorded brainwave activity in epileptics*
J Dobson (University Of WA)
- The effect of magnetic structure on magnetic viscosity*
M Elton (The University Of WA)
- Modelling ocean colour*
P Fearn (Curtin University)
- Calculation of electron-photon coincidence parameters for single-triplet mixed 4F states of helium*
D Fursa (Flinders University)
- Microstructure of two-phase GMP materials determined from P(M,H)*
D Geoghegan (University Of WA)
- Fast rise time thin oxide film laser detectors*
J Gonda (King Fahd Uni Of Petroleum & Minerals, Saudi Arabia)
- Exchange spring magnetic materials*
P Goutlet (University Of WA)
- High temperature diffraction study of structural transformations during the oxidation of chalcocite*
P Hamilton-Brown (Curtin University)
- Excitation of Ne 4d, 4s and 4p states by polarized electrons*
P Hayes (University Of WA)
- Invitation for ocean bottom properties*
J Hoffman (Curtin University)

- Detergent conductivity and electrostatic properties of spacers for pressurised metered dose inhalers*
R James (University Of WA)
- Triple differential cross section measurements for Kr (4p) electron impact ionization*
B Lohmann (Griffith University)
- An ocean colour remote sensing study of the phytoplankton distribution off the Western Australian Coast*
M Marinelli (Curtin University)
- Investigation into a radance equation for satellite sea surface temperature estimation*
B McAtee (Curtin University)
- Multi-coincidence characterisation of an atomic D state*
A Mikosza (University Of WA)
- Layered alpha particle models of the products of stellar nucleosynthesis*
P Norman (Monash University)
- Spanning the gap: communication in cooperative research centres*
K O'Mara (Murdoch University)
- Application of adaptive signal processing to vibration control and signal processing for laser interferometer gravitational wave detectors*
P Ponomarenko (University Of Newcastle)
- Unusual structural and magnetic phase transitions in dense plasma*
H Reinholz (University Of WA)
- A high resolution superconducting pressure gauge*
D Saxe (University Of WA)
- Seabed classification using acoustic backscatter*
P Swabessy (Curtin University)
- A novel high resolution system for quantitative measurement of defects in materials*
LSponder (DSTO)
- Studies of magnetic anisotropies and exchange in magnetic films and layered structures using spin waves*
R Stamps (University Of WA)
- Transmission through magnetic films and layers*
D Tilley (Universiti Sains Malaysia)
- The physics of x-ray production by electron bombardment: new understanding & experiments*
C Titan (University Of Melbourne)
- Multi-frequency contribution to ultrasound heating and the consequences for the thermal index for soft tissue*
G Vella (University Of Sydney)
- Studies of the structure and bonding of amorphous silicon solar cell materials using UVV surface analysis techniques*
E Walker (Murdoch University)
- Auger transitions and electron momentum densities of a simple organic molecule: methane (CH₄)*
D Waterhouse (University Of WA)
- A very low frequency folded pendulum as an ocean wave height indicator*
M Woo (University Of WA)
- The performance of a long baseline triangular cavity for laser frequency stabilisation and mode cleaning*
Y Yang (University Of WA)

- The Tring-pan nebula*
M Young (University Of WA)
- Operation of an 8m suspended Michelson interferometer*
C Zhao (University Of WA)

SESSION 2 - Thursday October 1 5.45pm

- Microstructural and fracture characteristics of alumina/calcium-hexaluminate composites*
D Asmi (Curtin University)
- The development of a cheap & robust electricity teaching kit*
K Bunker (Kit Bunker & Associates)
- Precision measurements of the imaginary component of atomic form factors using synchrotron radiation: new results for silicon (Si keV to 20keV) and copper (8.84keV to 20keV)*
C Chanter (University Of Melbourne)
- Route the measurement of irrigation water drop sizes*
I Charlesworth (University Of South Australia)
- Thermalisation of the D₀ and D₁ excited states in europium-doped optical fibre*
S Collins (Victoria University)
- Solar photometer data for the Perth Region*
J Davies (Curtin University)
- GPS and Topex/Poseidon observations of the southern hemisphere ionosphere in the Australian Region*
E Essex (La Trobe University)
- Thermal concept inventory a tool to determine student conceptual understanding in thermal physics*
P Fekete (University Of Sydney)
- The relationship between equatorial and low latitude Pc3 ULF waves*
B Fraser (University Of Newcastle)
- Long-term ionospheric monitoring of auroral electrojet activity in a sub-auroral location*
L Hajkovicz (University Of Queensland)
- Passive millimetric wave deflection at 94 Ghz*
H Hansen (WASD, DSTO)
- Denial of the ether - the great blunder of 20th C. Physics*
J Hodges (S J Prokhorov Institute)
- Using concept maps to investigate student understanding in physical optics*
K Hogg (University Of Sydney)
- Polar cap gravity waves as a heat source for the high-latitude thermosphere*
J Innis (Australian Antarctic Division)
- The development of attenuated half-tone phase-shifting mask materials for deep-ultraviolet lithography*
Z Jiang (Shizuoka University, Japan)
- The Temkin-Poet ionization problem in hyperspherical coordinates*
S Jones (Murdoch University)
- The atomic kilogram: metrology's great challenge*
M Kenny (CSIRO)
- Error correction for multi-layer quasi-parabolic model for the over-horizon radar*
S Liang (La Trobe University)

- Inelastic & superelastic electron scattering from laser prepared rfp states of alkali atoms*
W Macgillivray (Griffith University)
- Contribution of the Breit Interaction to electron scattering from Xenon and Mercury*
R McEachan (Australian National University)
- Time dependent approach to quantum transport in nanostructures*
S Magley (University Of WA)
- Enhancement of the T-and P-odd electron electric dipole moment in heavy atoms*
D Murray (University Of NSW)
- The structure of chromium islands on Fe₂C_{1.38}*
D O'Connor (University Of Newcastle)
- Reaching the next generation: school and community education on renewable energy*
K O'Mara (Murdoch University)
- Oscillations in thermo-optic reaction diffusion systems*
R O'Sullivan (RMIT)
- Imaging ionometer observations of quasi-periodical processes in the low-altitude lower ionosphere at Davis Station*
J Pan (University Of WA)
- Time dependent approach to s-wave positron-hydrogen scattering*
N Riste (University Of WA)
- Industrial uses of ultra-small-angle neutron scattering*
T Sabine (ANSTO)
- The construction of a slow neutron metastable atomic beam source for atomic physics experiments*
R Sang (Griffith University)
- Real time impedance plots for EEG applications*
A Seaton (University Of Technology, Sydney)
- Light-induced defects in amorphous semiconductors*
J Singh (Northern Territory University)
- Modelling of texture using neutron diffraction data*
H Sitepu (Curtin University)
- Characterisation of phase developments and residual strains in functionally-graded alumina/aluminium titanate composites*
R Skala (Curtin University)
- A complete physics resource?*
G Swan (Edith Cowan University)
- An invariant graphical method for setting up the close-coupling equations*
J Wang (Murdoch University)
- A model for ionospheric doppler shift due to ULF waves*
C Waters (University Of Newcastle)
- Testing random number generators with a simple elastic electron-molecule collision model*
A Wedding (University Of SA)
- Comparison of data scaled using different autocorrelation methods*
P Wilkinson (IFS Radio And Space Services)

Posters will be on display in the Island Suite - 2nd floor.

DAY THREE: WEDNESDAY SEPTEMBER 30 1998

8.00am Registration

8.00am

PLENARY ADDRESS

Time reversed acoustics

Professor Mathias Fink (Laboratoire Ondes de Acoustique ESPI, University Denis Diderot, France)

WEST END CONVENTION CENTRE
CHAIR: C Edwards

9.00am

PLENARY ADDRESS

Liquid crystals understanding novel and unusual soft states of matter

Dr Helen Gleeson (Department of Physics and Astronomy, University of Manchester, UK)

10.00am

MORNING TEA IN THE ISLAND SUITE / 2ND FLOOR

10.30am

PLENARY ADDRESS

Magnetic stress in solar system plasmas

Professor Christopher Russell (Department of Earth and Space Sciences, University of California, Los Angeles, USA)

WEST END CONVENTION CENTRE
CHAIR: C Edwards

11.30am

PLENARY ADDRESS

Hunting down the Higgs Boson

Associate Professor Geoffrey Taylor (School of Physics, Faculty of Science, University of Melbourne, Victoria)

12.30pm

CLOSE OF SESSIONS

LUNCH - own arrangements

OPTIONAL TOURS DEPART

1.00pm

Tour 1: City of Perth and Kings Park

Travel via the beach and join us for an orientation tour of the beautiful city of Perth including a view of major and historic attractions, time at the renowned Kings Park with majestic city views and wildflowers in their glory, and a visit to the Perth Mint, one of the oldest operating Mints in the world. Witness a gold pour and take the opportunity to purchase from the many items on display.

Departs from the Esplanade Hotel at 1pm, returns 5.30pm
Cost: A\$35 per person (minimum of 10 persons required)

Tour 2: Winetasting in the Scenic Swan Valley

Take a tour of the oldest wine-growing region in Western Australia, including tasting at three wineries with light refreshments. Included in the tour is a visit to historic Guildford, a local pottery and tour of the Darling Escarpment with a view of the local wildflowers.

Departs from the Esplanade Hotel at 1pm, returns 5.30pm
Cost: A\$40 per person (minimum of 10 persons required)

Tour 3: Artists at Work

Experience the unique opportunity of witnessing some of Western Australia's foremost craftspeople at their work. The tour will cover a selection of art, sculpture, silverware jewellery, quilting and pottery and includes afternoon tea. This is an opportunity to appreciate the work of some of Perth's talented artists and the chance to purchase items should you desire.

Departs from the Esplanade Hotel at 1pm, returns 5.30pm
Cost A\$57 per person. (minimum of 10 persons required)

OTHER OPTIONS

Fremantle has many and varied things to see and do as well as many arcades and malls for shopping. A wide range of brochures can be obtained from the concierge desk at the front of the hotel for those who would like a chance to explore Fremantle in detail.

Optional Social Program - Candlelight Tour of Fremantle Prison

DAY FOUR: THURSDAY OCTOBER 1 1998

8.00am Registration

8.30am **PLENARY ADDRESS**
Ultra-cold atoms
Dr Christophe Salomon (Ecole Normale Supérieure (ENS) France)

9.30am **PLENARY ADDRESS**
The structure and dynamics of 'Soft Matter'
Professor John White (Research School of Chemistry, Australian National University, ACT)

10.30am MORNING TEA AND POSTER DISPLAY IN THE ISLAND SUITE / 2ND FLOOR

MICROSYMPOSIUM 7

AINSE 7
PORT ROOM / T Ophel
Review of the ATLAS Experiment at the LHC (CERN)
G Taylor (University of Melbourne)

EARTH SCIENCES (Isotope Science)
ROTTNEST ROOM / K Rosman
Isotopic record of lead pollution measured in Greenland ice dating from the Industrial Revolution
K Rosman (Curtin University)

GWAS (Gravity Wave Technology)
M. BOARDROOM / J de Laeter
Advanced interferometer configurations for gravitational wave detection
D McClelland (Australian National University)

OzCUPE 4 (Education)
BAY ROOM / R Loss
Use of the web for university science teaching in Australia
I Johnston (University Of Sydney)

WORKSHOP

OFMS WORKSHOP (Microwave Oscillators & Frequency Standards)

M. COLLIE ROOM / B Young
The CSIRO trapped ion clock
P Fisk (CSIRO National Measurement Laboratory)

WORKSHOP
AMPQC 7 (Cooled or prepared atoms)
M. BALLROOM / G Milburn
Ion collisions with laser-prepared atoms
H Lutz (Bielefeld University, Germany)

Interaction-driven equilibrium and statistical laws in small Fermi Systems
I Ponomarev (University Of NSW)

Global map of lead isotopes for identifying and tracing the distribution of anthropogenic aerosols
A Bollhoefer (Curtin University)

Sapphire test masses for laser interferometer gravitational wave detectors
L Ju (University Of WA)
Rayleigh scattering noise in laser interferometric gravitational waves detectors with sapphire test masses
F Benabdil (University Of WA)

Use of the web in scientific literacy training
M Kovler (Curtin University)

The UWA sapphire oscillator - a microwave secondary frequency standard
A Mann (University Of WA)

Spin-dependent interactions in the excitation of noble gases by polarized electrons
D Yu (University Of WA)
Extraction of spin-orbit interactions from experimental data
D Lun (Australian National University)

Lattice calculations of the massive Schwinger model
P Sriganesh (University Of NSW)

The lead isotopic record of aerosols in a Bolivian peat bog
C Ly (Curtin University)

Design & verification of low acoustic loss suspension systems for measuring the Q-Factor of a gravitational wave detector test mass
M Taniwaki (University Of WA)

Teaching tertiary physics on the Web
C Lund (Murdoch University)

Frequency-temperature compensation in Tl^{3+} and Tl^{4+} doped Sapphire Whispering Gallery Mode Resonators
J Hartnett (University Of WA)

Electron scattering from cooled metastable atoms
M Standaig (Griffith University)
Differential electron spectra for double ionization of helium by fast highly charged ions
S Keller (Universitat Frankfurt, Germany)

Performance of SCT prototype irradiated binary micro-strip detector modules
A Saavedra (University of Sydney)

Detecting free-mass common-mode motion induced by incident gravitational waves
M Tobar (University Of Tokyo, Japan)

Interactive learning of atomic structures
J Wang (University Of WA)

Microwave circuit interferometry: applications to precision measurements and noise reduction in oscillators and amplifiers
E Ivanov (University Of WA)

12.30pm LUNCH IN THE ATRIUM GARDEN RESTAURANT

MICROSYMPOSIUM 8

AINSE 8
PORT ROOM / L Peak
Description of octupole excitations in Bessel Models
S Kuyucak (Australian National University)

APPLICATIONS OF NUCLEAR (Neutron Scattering I)
ROTTNEST ROOM / C Tuniz
What will a new reactor do for Australian science?
A Klein (University of Melbourne)

STSP (Magnetosphere I)
M. BOARDROOM / C Waters
Understanding the high altitude polar magnetosphere: a synthesis of numerical modeling and in-situ observation
C T Russell (University of California, USA)

OzCUPE 4 (Education)
BAY ROOM / G Swan
Oh no! Not multiple choice
S Hogg (University of Technology, Sydney)

WORKSHOP

OFMS WORKSHOP (High Power & Low Noise Lasers)

M. COLLIE ROOM / M Kourogi
A high power, cw Nd:YAG laser for high precision interferometry
P Veitch (University of Adelaide)

WORKSHOP

AGWEC 1 (Quantum correlations and classical limits)

M. BALLROOM / J Williams
Quantum correlations, quantum optics
G Milburn (University of Queensland)

2.30pm	S Kuyucak (Australian National University)	S Klein (University of Melbourne)	S Hogg (University of Technology, Sydney)	G Milburn (University of Queensland)	Quantum correlations, quantum optics
2.50pm	S Mullins (Australian National University)	M Eicombe (ANSTO)	B Fraser (University Of Newcastle)	E Wong (University Of WA)	Laser with frequency stability of 0.5Hz
3.10pm	T Kibedi (Australian National University)	T Hicks (Monash University)	E Essex (La Trobe University)	B Buchler (Australian National University)	Improved thermal noise measurement via electro-optical feedback
3.30pm	A Stuechly (Australian National University)	R Knott (ANSTO)	C Waters (University Of Newcastle)	M Sharma (University Of Sydney)	Addressing the issue of relevant service course
AFTERNOON TEA AND POSTER DISPLAY IN THE ISLAND SUITE / 2ND FLOOR					
MICROSYMPOSIUM 9					
4.00pm	N Nimura (Japan Atomic Energy Research Institute)	J McDonald (Curtin University)	P Webb (La Trobe University)	R Loss (Curtin University)	Explaining dispersion in optical fibres with the aid of a computer
4.30pm	P Reynolds (Australian National University)	P Okoye (Curtin University)	C Waters (University Of Newcastle)	L Kirkup (University of Technology, Sydney)	Rethinking laboratory based supply teaching for first year engineering students
4.50pm	C Buckley (Curtin University)	B Hartley (Curtin University)	F Menk (University Of Newcastle)	R Soegeng (Institut Teknologi Bandung, Indonesia)	Simple simulation in physics education
5.10pm	P Reynolds (Australian National University)	V Wilson (Curtin University)	H McCreadie (La Trobe University)	C Salomon (Ecole Normale Supérieure)	Recent progress in cold atom clocks
5.30pm					
5.45pm					
7.00pm					
VENUECHAIR					
4.00pm	B O'Connor	N Uren	M. BOARDROOM / C Russell	M. COLLIE ROOM / P Fisk	AGWEC 2 (Correlations)
4.30pm	N Nimura (Japan Atomic Energy Research Institute)	J McDonald (Curtin University)	P Webb (La Trobe University)	C Savage (Australian National University)	Structure and fragmentation of few-body coulomb systems
4.50pm	C Buckley (Curtin University)	B Hartley (Curtin University)	F Menk (University Of Newcastle)	D McClelland (Australian National University)	Helium double photo-ionisation and Compton scattering: a showcase for electron correlation
5.10pm	P Reynolds (Australian National University)	V Wilson (Curtin University)	H McCreadie (La Trobe University)	U Becker (Fritz-Haber Institut, Germany)	

DAY FIVE: FRIDAY OCTOBER 2 1998

Registration		New ideas for promoting physics Dr Dominic Dickson (Department of Physics, University of Liverpool, UK)				WEST END CONVENTION CENTRE CHAIR: B O'Connor	
8.00am	PLENARY ADDRESS	Clouds, radiation and climate from the earth observing system Dr Michael King (EOS Senior Project Scientist, NASA Goddard Space Centre, USA)					
8.30am	PLENARY ADDRESS	Higher education in the UK Dr Alun Jones (Chief Executive of the Institute of Physics)					
9.30am	SPECIAL PLENARY 3	MORNING TEA IN THE ISLAND SUITE / 2ND FLOOR					
10.30am	MICROSYMPOSIUM 10	APPLICATIONS OF NUCLEAR (Synchrotron Radiation I)		STSP (Ionosphere I)	OzCUPE 4 (Education)	WORKSHOP OFMS WORKSHOP (Frequency Chains I)	WORKSHOP AGWEC 3 (Correlations)
11.00am	PORT ROOM / H Rietveld	BIOPHYSICS III	M. BOARDROOM / G Reid	BAY ROOM / M Zadnik	M. COLLIE ROOM / L Hollberg	M. BALLROOM / E Weigold	
11.30am	The Australian Synchrotron Research Program and a feasibility study for an Australian Based Synchrotron Facility J Boldeman (ANSTO)	ROTTNEST ROOM / R Price	ULF waves in the low latitude ionosphere: observations and modelling F Menk (University Of Newcastle)	Testing conceptual understanding in physics using a browser-based computer managed system A Mazzolini (Swinburne University)	Optical frequency measurement by conventional frequency multiplication C Weiss (Physikalisch-Technische Bundesanstalt, Germany)	Electron momentum spectroscopy I McCarthy (Flinders University)	
12.00pm	New opportunities for research at the Australian National Beamline at The Photon Factory D Creagh (University Of Canberra)	Radiofrequency radiation levels produced by mobile telephone base stations M Grollo (La Trobe University)	Modelled ionosphere drifts over Casey, Antarctica P Smith (La Trobe University)	Student understanding of key concepts in physical optics K Hogg (University of Sydney)	Optical frequency measurements on atomic hydrogen and the design of a new type of frequency chain T Udem (Max-Planck-Institut für Quantenoptik, Germany)	Electron-photon and (e,2e) experiments involving polarised electrons. F Hanne (Universität Münster, Germany)	
12.20pm	Research opportunities at the SR/CAT K Nugent (University of Melbourne)	Biogenic magnetite in the human brain: observations and biophysical consequences H Pardoe (University Of WA)	The TIGER SuperDARN Radar P Dyson (La Trobe University)	What do students really learn from interactive multimedia? A physics case study. S Yeo (Curtin University)	The design and predicted performance of the UWA/PTB optical to microwave frequency chain A Luiten (University Of WA)		
12.40pm	Materials science research opportunities at the advanced photon source I Gentle (University of Queensland)	Low frequency low field magnetic susceptibility of ferritin and hemociderin P Allen (University Of WA)	Oscillations with the CUTLASS HF Radar F Menk (University Of Newcastle)	Fluid physics for health science students G Vella (University Of Sydney)	Novel wavelength light generation with application to frequency chains J McFerran (University Of WA)		
1.00pm	LUNCH IN THE ATRIUM GARDEN RESTAURANT						
	MICROSYMPOSIUM 11	BIOPHYSICS IV		STSP (Ionosphere II)	OzCUPE 4 (Education)	WORKSHOP OFMS WORKSHOP (Frequency Chains Technology)	WORKSHOP AGWEC 4 (Scattering Dynamics)
	APPLICATIONS OF NUCLEAR (Synchrotron Radiation II)	ROTTNEST ROOM / J Dobson	M. BOARDROOM / F Menk	BAY ROOM / P Fekete	M. COLLIE ROOM / C Weiss	M. BALLROOM / W MacGillivray	
	PORT ROOM / J Boldeman	Low frequency electrical properties of human breast milk R Sadleir (University Of WA)	Modelling and mapping sporadic E clouds using backscatter radar R Norman (La Trobe University)	Application of dynamic modelling software STELLA in atomic physics S Deylitz (Universität Bremen, Germany)	Stable operation of wideband optical frequency generators H Telle (Physikalisch-Technische Bundesanstalt, Germany)	Propensity roles for dynamic spin polarization in resonant Auger transitions B Lohmann (Universität Münster)	
	New developments in small SR machines and their significance for a local facility S Wilkins (CSIRO Division of Manufacturing Science & Technology)	Wavelet transform application to ionogram data S Pearce (La Trobe University)	HF propagation via the F3 layer P Dyson (La Trobe University)	Designing and implementing an online astronomy course M Mazzolini (Swinburne University)	Superwide span optical frequency comb generation M Kourogi (Tokyo Institute of Technology, Japan)		
	Macromolecular structure, the new biology and synchrotron radiation J Varghese (Biomolecular Research Institute)	Ultrasonic heating of bone and its dependence on bone thickness and bone mineral content G Vella (University Of Sydney)					
2.00pm	VENUECHAIR						
2.30pm							
	Relaxation processes in						
	Magnetic imaging as a						
	FL1.5/F3 layer?						
	An innovative course for improving physics students' communication						
	Electronic phase locking of laser diodes in the UWA/PTB optical-to-						
	Coherence and exchange in electron scattering from the alkalis						
	P. Toubner (Flinders University)						

2.30pm	Macromolecular structure, the new biology and synchrotron radiation J Varghese (Biomolecular Research Institute)	Ultrasound heating of bone and its dependence on bone thickness and bone mineral content G Vella (University Of Sydney)	HF propagation via the F3 layer P Dyson (La Trobe University)	Designing and implementing an online astronomy course M Mazzolini (Swinburne University)	Superwide span optical frequency comb generation M Kourogi (Tokyo Institute of Technology, Japan)
2.50pm	Relaxation processes in monomolecular films-a millisecond reflectometer J White (Australian National University)	Magnetic resonance imaging as a non-invasive method in the monitoring of iron-overload in tissues P Clark (University Of WA)	FL5/F3 layer? T Harris (SSD, DSTO)	An innovative course for improving physics students' communication skills M Zadnik (Curtin University)	Coherence and exchange in electron scattering from the alkalis P Teubner (Flinders University)
3.10pm	Panel Discussion J Boldeman (ANSTO)	Magnetic behaviour of ferritin and hemosiderin from thalassaemic patients G Black (University Of WA)	Modelling of the ionospheric effects on HF doppler backscatter, of the total solar eclipse of October 1995 D Meehan (SSD, DSTO)	An interactive wind generator G Swan (Edith Cowan University)	
3.30pm	AFTERNOON TEA IN THE ISLAND SUITE / 2ND FLOOR				

M I C R O S Y M P O S I U M 12					
APPLICATIONS OF NUCLEAR (Accelerator Science)					
VENUE/CHAIR	PORT ROOM / D Mather	BIOPHYSICS V	STSP (Ionosphere III)	OZCUPE 4 (Education)	WORKSHOP
4.00pm	Ultrasonic analysis for global science C Tuniz (ANSTO)	ROTTNEST ROOM / T St Pierre Drug design against shifting targets - a structural basis for drug resistance to an influenza virus neuraminidase variant J Varghese (Biomolecular Research Institute)	M. BOARDROOM / E Essex MUF variability model A Pincombe (WASD, DSTO) Testing ASAPS in Indonesia T Harris (SSD, DSTO) Monitoring the high frequency backscatter environment over the full 360 degree azimuth range M Wilson (WASD, DSTO)	BAY ROOM / I Johnston Enlivening everyday presentations with sound S Hoegg (University of Technology, Sydney) Extend: a cross curriculum software tool for schools P Fearns (Curtin University) Visualizing relativity A Searle (Australian National University) New student-centered web-based resource for introductory thermal physics P Fekete (University Of Sydney)	AGWEC 5 (Particle Interactions) M. BALLROOM / F Hanne Coherent excitation in ion-atom collisions via the Pauli-trap mechanism G von Oppen (Technische Universität Berlin) Quantum chaos, statistical equilibrium and resonant radiative capture by multicharged ions G Gribakin (University of NSW)
4.30pm	New techniques for the analysis of composite materials with heavy ions H Timmers (University Of Newcastle)	Molecular mass estimation in respiratory doppler ultrasound trials R James (University Of WA)	A Time-Series Model of Radio-Wave Ionospheric Scintillation M Cervera (WASD, DSTO) Ionospheric slab thickness and total electron content determined in Australia A Breed (University Of SA) A regional GPS Receiver Network for monitoring equatorial scintillation and total electron content R Thomas (WASD, DSTO)	Frequency stabilisation of a Nd: YAG laser to a cavity at liquid nitrogen temperatures T Brown (University Of WA) A low noise medium power, Nd: YAG laser D Ottway (University Of Adelaide)	
4.50pm	Analysis and microanalysis using accelerator based ion beam methods at ANSTO D Cohen (ANSTO)	Image formation in tissue-like turbid media under an optical scanning microscope M Gu (Victoria University Of Technology)			
5.10pm	The A-Z of SIMS applications with the SHRIMP A Kennedy (Curtin University)	Forensic imaging for positive identification C Smith (Edith Cowan University)			
5.30pm	CLOSE OF SESSIONS				
5.45pm	CONFERENCE CLOSING REMARKS IN THE WEST END CONVENTION CENTRE				

The following program information is included for reference only.

DAY SIX: MONDAY OCTOBER 5 1998

Workshop Program continues

8.30am	<p>AMPQC 8 (Manipulation of Cold Atoms) CHAIR: H Bachor <i>Cooling and trapping of metastables in electric field</i> G von Oppen (Technische Universität Berlin, Germany) <i>Evidence of initial state two centre effects for (e,2e) reactions</i> S Jones (Murdoch University) <i>A triple coincidence experiment to investigate electron recapture near the Auger Threshold</i> D Waterhouse (University Of WA) <i>Determination of Dyson orbitals from electron momentum spectroscopy: an application to allene</i> F Wang (University of Melbourne)</p> <p>MORNING TEA</p> <p>AGWEC 6 (Atom Dynamics) CHAIR: U Becker <i>Dichroism and polarization effects in (e,2e) collisions with atoms</i> E Weigold (Australian National University) <i>Interference and spin effects in relativistic (e,2e) collisions</i> S Keller (Universität Frankfurt, Germany) <i>Hollow He- triply excited negative ion resonances in electron scattering from helium</i> S Buckmann (Australian National University)</p> <p>LUNCH</p> <p>AGWEC 7 (Atom Dynamics) CHAIR: G von Oppen <i>The behaviour of atoms in coherent laser fields</i> R Scholten (University of Melbourne) <i>Optical force/atom deflection methods</i> W MacGillivray (Griffiths University)</p> <p>AFTERNOON TEA</p> <p>AGWEC 8 (Molecular Phenomena) CHAIR: A Stelbovics <i>Polarisation studies of H₂ fragmentation in H⁺ and He⁺ collisions with H₂</i> R Hippler (Ernst-Moritz-Arndt University of Greifswald) <i>Recoll-ion momentum spectroscopy</i> H Schmidt-Boecking (Universität Frankfurt, Germany)</p>
5.30pm	SESSION CLOSE

DAY SEVEN: TUESDAY OCTOBER 6 1998

Workshop Program continues

8.30am	<p>AMPQC 9 (Many Body Interactions) CHAIR: S Buckmann <i>Design of materials for molecular electronics</i> J Reimers (University of Sydney) <i>Many-body coulomb problem in the near-threshold region</i> M Kuchiev (University of NSW) <i>Truncated dipole series in H⁻</i> H Freidrich (Technische Universität Berlin, Germany) <i>Mechanisms of positron annihilation on molecules</i> G Gribakin (University Of NSW)</p> <p>MORNING TEA</p> <p>AGWEC 9 (Correlated Atoms) CHAIR: H Freidrich <i>Multi-fragmentation of molecules and clusters</i> H Lutz (University of Bielefeld) <i>Electron correlation phenomena in metal clusters studied by photo-electron spectroscopy</i> K Meiwes-Broer (Universität Rostock)</p> <p>LUNCH</p> <p>AGWEC 10 (Surface Correlations) CHAIR: J Briggs <i>Auger photoelectron coincidence spectroscopy</i> S Thurgate (Murdoch University) <i>Photoelectron spectroscopy of surfaces</i> R Leckey (La Trobe University)</p> <p>AFTERNOON TEA</p> <p>AGWEC 11 (Surfaces, Thin Films and Beyond) CHAIR: R Hippler <i>Spin polarised electron studies of low-dimensional magnetic systems</i> M Donath (Max-Planck Institut für Plasmaphysik, Garching) <i>Bose Einstein Condensation</i> C Savage (Australian National University)</p>
5.30pm	SESSION CLOSE

EXTENDED MEETINGS