Books, journal articles and reports, along with conference and workshop presentations, are the primary means by which research accomplishments are communicated. Their measure, together with patents and the award of special honours, medals and distinctions, are clear indicators of the achievements of the School during the year. Some highlights of the latter are mentioned at greater length in the Director's report, however, a complete list of major awards is presented below.

Over 330 papers were published in refereed journals this year, as detailed below. Also listed in this section are invited and/or keynote presentations to the total of 68 papers, that were presented at domestic and international workshops and conferences. Details of other conference and workshop presentations may be found on the School web site by department: http://rsphysse@anu.edu.au

The papers published by staff of the School are listed in this section according to the authors' affiliation. Many papers have authors from more than one department. These have been assigned according to the affiliation of the first RSPhysSE author. In a few cases, this author has a joint appointment with two departments. In these cases, the paper appears in both lists, with the words "also listed under Theoretical Physics", for example, following the reference.
Honours and Awards

Dr Ole Bang, Optical Sciences Centre, received the Talent Grant from the Danish Technical Scientific Research Council for the amount of 3 million Danish Kroner to be used over 3 years to set up a nonlinear optics group in Denmark at the IMM.

Professor Rod Boswell, Plasma Research Laboratory, was made a Fellow of the Australian Academy of Technological Sciences and Engineering.

Professor Stephen Buckman, Atomic and Molecular Physics Laboratories, was awarded a Short Term Fellowship by the Japan Society for the Promotion of Science.

Professor Robert Crompton, Atomic and Molecular Physics Laboratories, was made a Member of the Order of Australia in the New Year's Honours List.

Dr Mukunda Das, Department of Theoretical Physics, was elected Fellow of the Institute of Physics, UK.

Professor George Dracoulis, Department of Nuclear Physics, was inducted into the Australian Academy of Science in May, where he also contributed to a special New Fellows session, with a paper entitled "Living Longer".

Mr Keith Gaff, Optical Sciences Centre, won the Dean's Prize for the best theoretical paper at the Postgraduate Students Seminar Series. He was awarded the prize on Founder's Day.

Professor Stephen Hyde, Department of Applied Mathematics, was appointed Visiting Professor, Université Cergy-Pontoise (France) August – September.

Professor Chennupati Jagadish, Electronic Materials Engineering, was elected as AdCOM Member, IEEE Electron Devices Society. He was also appointed Visiting Professor, COBRA, Eindhoven University of Technology, Netherlands. August-September.

Mr Owen Kershaw, Mechanical Workshop, was awarded the Council Medal for General Staff Excellence Team Award. It was presented at the Conferring of Degrees ceremony on 1st October (jointly with Mr Miroslav Peric).

Dr Anatoli Kheifets, Atomic and Molecular Physics Laboratories and Department of Theoretical Physics, was awarded a Visiting Fellowship, Science and Technology Agency of Japan.

Professor Yuri Kivshar, Optical Sciences Centre, was appointed the Associate Editor of Physical Review E for the initial period 1999–2002. He became the first Australian (and second non-American) Editor of the Physical Review in the history of the American Physical Society.

Mr Marcus Kohonen, Department of Applied Mathematics, was the winner of the inaugural Director's Award for best student paper published over the last year.

Dr Sergey Kun, Department of Theoretical Physics, was awarded the following Fellowships:

Max-Planck-Institute for Nuclear Physics, Heidelberg, Germany, MPI Fellowship, Spontaneous Coherence in Complex Microscopic and Mesoscopic Systems, April–July.

Alexander von Humboldt Foundation, Germany, AvH Fellowship, Nonequilibrium phase transitions in complex microscopic and mesoscopic systems, May–June.

Professor Stepjan Marcelja, Department of Applied Mathematics, was appointed a Sackler Scholar at the Mortimer and Raymond Sackler Institute of Advanced Studies, Tel Aviv University, Israel, from October.
Dr Clyde Morton, Department of Nuclear Physics, was awarded an ARC Fellowship in December.

Professor Barry Ninham, Department of Applied Mathematics, was appointed to the UNESCO World Commission on Ethics of Scientific Knowledge and Technology, and took up the Tage Erlander Chair of the National Research Council, Sweden for one year.

Professor Trevor Ophel, Department of Nuclear Physics, was awarded an Honorary Fellowship of the Australian Institute of Nuclear Science and Engineering (AINSE) in December.

Dr Elena Ostrovskaya, Optical Sciences Centre, received the T.M. Cherry Prize for the best student presentation at the Annual Conference of the ANZIAM Society, Applied Mathematics Conference. She was also awarded the inaugural Jagdishwar Mahanty Prize for the best PhD thesis in 1998/99, which was presented on Founder's Day.

Mr Miroslav Peric, Mechanical Workshop, was awarded the Council Medal for General Staff Excellence Team Award, which was presented at the Confering of Degrees ceremony on 1st October (jointly with Mr Owen Kershaw).

Mr Horst Punzmann, PhD student in the Plasma Research Laboratory, won the Best Student Poster prize at PLASMA 99, the 22nd AINSE Plasma Science and Technology Conference held in Canberra from 8-9 February.

Ms Anita Smith, Laser Physics Centre, was chosen to represent the ANU at the 8th International Women in Leadership Conference hosted by the Edith Cowan University. The conference was held in Perth in November, and her attendance was funded by a grant from the ANU's Equity and Diversity Unit.

Mr Wayne Solomon, PhD student in the Plasma Research Laboratory, won the Director's prize in the Postgraduate Students Seminar Series. The award was presented by the Director on Founder's Day. He also won the prize for the best student talk at the 22nd AINSE Plasma Science and Technology Conference held in Canberra from 8-9 February.

Ms Kalista Stewart, Winner of the inaugural Wanda Henry Prize, awarded to the top physics student who attended the Optical Communications course, PHYS3018/ENGN4513, presented by Professor John Love, Dr Adrian Ankiewicz and Mr Keith Gaff in the Faculties.

Dr Heiko Timmers, who holds a joint position with the Nuclear Physics/Electronic Materials and Engineering/Department of Physics and Theoretical Physics, The Faculties, was awarded an ARC Fellowship in January.

Ms Tessica Weijers, Department of Electronic Materials Engineering/Nuclear Physics, won a 1998 University Medal for Honours in Physics. The medal was presented to Tessica at the Confering of Degrees Ceremony on 22 April.

Mr Felix White, a joint Honours student in Applied Mathematics/BAMBI, won a 1998 University Medal for Honours in Biochemistry and Molecular Biology. The medal was presented to Felix at the Confering of Degrees Ceremony, on 22 April.
**Awards and Publications**

**Books and Book Chapters**

**Publications in Refereed Journals**
Books and Book Chapters
Elliman, R.G.
Semiconductor Heterostructures

Electronic Materials Engineering
Awards & Publications

(1999) 773-777
Nuclear Instruments and Methods B 148
Crystals
Thermal Fatigue of Ion Implanted Magnesium Oxide
J.S. and Conway, M.

Electronics Letters 35
(1999) 815-817
GaAs-Lasers
Vertial Integration of Dual Wavelength Index Guided
Kerr, A., Welham, N.J. and Willis, P.E.

Applied Physics Letters 75
(1999) 923-925
Quantum Well Infrared Photodetector Tuning for Colour
Tan, H.H.

Nuclear Instruments and Methods B 156
(1999) 350-354
Amorphous Si-N Formed by Ion Implantation and Annealing
Lobo, C., Leon, R. #, Marcinkevicius, S*., Yang, W.*, Rowe, R. A., Moore, J.* and Cockayne, D.J.H.*

Journal of Applied Physics 86
(1999) 752-758
Non-thermal Production of Tungsten from Scheelite
Welham, N.J.

Journal of the European Ceramic Society 19
(1999) 2833-2841
Titanium Nitride-Alumina Composites from TiO 2 and FeTiO 3
Ambient-temperature Mechanochemical Formation of (Ta, Nb)C and (Ta, Nb)N
Welham, N.J.

Journal of Applied Physics 86
(1999) 752-758
Non-thermal Production of Tungsten from Scheelite
Welham, N.J.

Metallurgical and Materials Transactions 30 B
(1999) 1075-1081
The Role of Oxygen in the Stability of Getting of Metals to Carbon
Williams, J.S., Chen, Y., Wang, L.-J., Kerr, A. * and Swan, M.V.

Journal of Materials Research 14
(1999) 2833-2841
Ultra-micro-Indentation of Silicon and Compound Semiconductors with Spherical Indenters
Williams, J.S.

Journal of Applied Physics 86
(1999) 6608-6671
5 and Si Ion Implantation in GaN Grown on GaAs
Radigay, M.C.

Physical Review B 59
(1999) 15214-15224
Effect of MeV O 2+ Implantation on the Reactive Ion Etch Cavitities in Silicon
Leech, P.W. and Ridgway, M.C.

Journal of Applied Physics 86
(1999) 752-758
Non-thermal Production of Tungsten from Scheelite
Welham, N.J.

Physical Review B 59
(1999) 15214-15224
Effect of MeV O 2+ Implantation on the Reactive Ion Etch Cavitities in Silicon
Leech, P.W. and Ridgway, M.C.

Physical Review B 59
(1999) 15214-15224
Effect of MeV O 2+ Implantation on the Reactive Ion Etch Cavitities in Silicon
Leech, P.W. and Ridgway, M.C.

Physical Review B 59
(1999) 15214-15224
Effect of MeV O 2+ Implantation on the Reactive Ion Etch Cavitities in Silicon
Leech, P.W. and Ridgway, M.C.

Physical Review B 59
(1999) 15214-15224
Effect of MeV O 2+ Implantation on the Reactive Ion Etch Cavitities in Silicon
Leech, P.W. and Ridgway, M.C.

Physical Review B 59
(1999) 15214-15224
Effect of MeV O 2+ Implantation on the Reactive Ion Etch Cavitities in Silicon
Leech, P.W. and Ridgway, M.C.
Cheryan, S., Manson, N. and Elliman, R.G. *The Effect of Ion Dose and Annealing Ambient on Room Temperature Photoluminescence from Si Nanocrystals in SiO2*.  Nuclear Instruments and Methods B 148 (1999) 986-990 (also listed under Electronic Materials Engineering)


Greentree, A.D., Wei, C., Holmstrom, S.A.*, Martin, J.P.D., Manson, N.B., Catchpole, K. and Savage, C.* *Probing a Double Drive Two-level Atom* Journal of Optics B: Quantum and Semiquantum Optics 1 (1999) 204-244

Greentree, A.D., Wei, C. and Manson, N.B.* Polychromatic Excitation of a Two-level System Physical Review A 59 (1999) 4083-4086


Riley, M.J.K., Krauz, R.E., Manson, N.B. and Henderson, B.* *Selectively Excited Luminescence and Magnetic Circular Dichroism of Cu+ doped YAG and YIG* Physical Review B 59 (1999) 1850-1856


Sellars, M.J., Dye, T.R., Pyde, G.J. and Manson, N.B.* *Time Domain Optical Memories using Rare Earth Ions Materials Science Forum 315-317 (1999) 59-68


Wei, C. and Manson, N.B.* Observation of the Strong Stark Effect on Electromagnetically Induced Transparency Physical Review A 60 (1999) 2540-2546


Refereed Conference Proceedings


Nuclear Physics

Books and Book Chapters


Fifield, L.K. * Measuring Barriers to Fusion * Annual Review of Nuclear and Particle Science, Annual Review of Nuclear and Particle Science, California, USA (1998) 401-461

Florjancic, M. * In Isotope Fractionation in the Solar System * In Isotope Fractionation in the Solar System, University of California, USA (1998) 401-461


Fifield, L.K. * Measuring Barriers to Fusion * Annual Review of Nuclear and Particle Science, Annual Review of Nuclear and Particle Science, California, USA (1998) 401-461


Fifield, L.K. * Measuring Barriers to Fusion * Annual Review of Nuclear and Particle Science, Annual Review of Nuclear and Particle Science, California, USA (1998) 401-461


Optical Sciences Centre

Books and Book Chapters

Krivosh, Yu.S.

Spatial Optical Solitons

Krivosh, Yu.S., Benner, H.* and Braun, O.*
Nonlinear Models for the Dynamics of Topological Defects in Solids

Krivosh, Yu.S. and Luther-Davies, B.
From Dark Solitons to Vortices

Publications in Refereed Journals

Akhmediev, N. and Ankiewicz, A.
Partially Coherent Solitons on a Finite Background

Akhmediev, N., Ankiewicz, A. and Himbein, B.*
Hamiltonian Versus Energy Diagrams in Soliton Theory
Physical Review E 59 (1999) 6088-6096

Ankiewicz, A., Akhmediev, N. and Watanetz, P.*
Singularity Analysis, Balance Equations and Soliton Solutions of Nonlocal Complex Ginzburg-Landau Equation

Artigas, D., Tomer, L. and Akhmediev, N.
Dynamics of Quadratic Soliton Eversion
Optics Communications 162 (1999) 347-356

Bang, O., Berge, L.* and Rasmussen, J.J.*
Fusion, Collisions, and Stationary-Bound States of Incoherently Coupled Waves in Bulk Cubic Media
Physical Review E 59 (1999) 4660-4663

Bang, O., Edmundson, D. and Krolikowski, W.
Collapse of Incoherent Light Beams in Inertial Bulk Kerr Media
Physical Review Letters 83 (1999) 5479-5482

Beltrami, D.R.* Love, J.D. and Labudovce, F.
Multimode Planar Devices
Optical and Quantum Electronics 31 (1999) 307-326

Burya, A. V., Krivosh, Yu.S., Shih, M.* and Segre, M.*
Induced Coherence and Stable Soliton Spontaneous Ejection
Physical Review Letters 82 (1999) 81-84

Chen, Y.
Dark Solitons in Dispersive Compressed Fiber Transmission Systems
Optics Communications 161 (1999) 267-270

Claussen, C.B., Krivosh, Yu.S., Bang, O. and Christiansen, P.*
Quasiperiodic Envelope Solitons

Observation of Polarization-locked Vector Solitons in an Optical Fiber

Izuka, T. and Krivosh, Yu.S.
Optical Gap Solitons in Nonresonant Quadratic Media
Physical Review E 59 (1999) 7148-7151

Johansson, M.* and Krivosh, Yu.S.
Discreteness-induced Oscillatory Instabilities of Dark Solitons

Krivosh, Yu.S., Alexander, T.J. and Salitied, S.
Spatial Optical Solitons Resulting from Multistep Cascading
Optics Letters 24 (1999) 759-761

Krivosh, Yu.S., Sukhorukov, A.A. and Salitied, S.M.*
Two-frequency Multistep Cascading and Parametric Soliton-induced Waveguides

Lichtenhain, N.*, Krolikowski, W., Akhmediev, N. and Agrawal, G.*
Asymmetric Partially Coherent Solitons in a Saturable Media
Physical Review E 60 (1999) 2377-2380

Mitchell, D.J. and Snyder, A.W.
Soliton Dynamics in a Nonlocal Medium
Journal of the Optical Society of America B 16 (1999) 236-239

Musslimani, Z.H.*, Segre, M.* and Nepomnyashchy, A.* and Krivosh, Yu.S.
Suppression of Transverse Instabilities for Vector Solitons

Ostrovskaya, E. and Krivosh, Yu.S.
Multi-flip Optical Solitons in a Saturable Medium

Ostrovskaya, E., Krivosh, Yu.S., Chen, Z.* and Segre, M.*
Interaction Between Vector Solitons and Solitonic Gluons
Optics Letters 24 (1999) 327-329


Savin, A.N.* Krivosh, Yu.S. Ostrovskaya, E. and Benner, H.*
Generation of Spin-wave Envelope Dark Solitons

Soto-Crespo, J.M.* and Akhmediev, N.
Multisoliton Regime of Pulse Generation by Lasers Passively Mode-locked with Slow Saturable Absorber

Sukhorukov, A. and Akhmediev, N.
Coherent and Incoherent Contributions to Multisoliton Complexes

Sukhorukov, A.A., Krivosh, Yu.S. and Bang, O.
Two-colour Nonlinear Localized Photonic Modes

Towers, J.*, Sammut, R.* Buryak, A.V. and Malomed, B.A.*
Soliton Multistability as a Result of Double-resonance Wave Mixing in $^{40}$Ca Media
Optics Letters 24 (1999) 1734-1736

Referred Conference Proceedings

Akhmediev, A. and Ankiewicz, A.
Kinks in Optical Fibers with Higher Order Effects
24th ACOFT'99 Proceedings, Sydney, 4-9 July, 1999, BREE Society, Sydney, 155-158

Akhmediev, A., Akhmediev, N.N. and Chu, P.*
New Approach to Stability of 2D Beams in Nonlinear Media

Ash, A., Austin, M.* and Love, J.
Analysis of Crossed Waveguide Sections using the Scalar Beams Propagation Method in Conjunction with Conformal Mapping
24th ACOFT'99 Proceedings, Sydney, 4-9 July, 1999, BREE Society, Sydney, 41-44

Burya, A. V.*, Krivosh, Yu.S., Shih, M.* and Segre, M.*
Induced Coherence and Stable Soliton Spontaneous Ejection

Interaction Between Vector Dolitons and Solitonic Gluons
CLEO'99, Baltimore, Maryland, 23-28 May 1999, OSA Technical Digest, Optical Society of America, Washington, DC, USA (May 1999) 102-103

Photorefractive 2D-beam and 2D-beam Silicon Films Produced by Helicon Activated Reactive Evaporation

Gaff, K., Labudovce, F. and Love, J.
A Six-port, Two-wavelength Add/Drop Planar Waveguide Filter

Huntington, S.*, Ashby, S., Love, J. and Elias, M.
Direct Measurement and Modelling of Core Depop Diffusion Within Fused Biconical Fiber Couplers
24th ACOFT'99 Proceedings, Sydney, 4-9 July, 1999, BREE Society, Sydney, 84-87

Izuka, T. and Krivosh, Yu.S.
Optical Gap Solitons in Nonresonant Quadratic Media
Nonlinear Guided Waves and Their Applications, Dijon, France, 1-3 September 1999, OSA Technical Digest, Optical Society of America, Washington, DC, USA (August 1999) 136-138

Krivosh, Yu.S., Benner, H.* and Braun, O.*
Nonlinear Models for the Dynamics of Topological Defects in Solids

Krivosh, Yu.S. and Luther-Davies, B.
From Dark Solitons to Vortices

Study of the Static Quadrupole Moment of the Kr-352 isomer in 79R

Walker, P.* and Dracoullid, G.
Energy Traps in Atomic Nuclei
Plasma Research Laboratory

Publications in Refereed Journals


Chi, K.-K.*, Sheridan, T.E. and Boswell, R.W. Brevanum-Current Modes of a Bounded Helicon Discharge Plasma Sources Sciences and Technology 8 (1999) 421-431

Degeling, A.W., Sheridan, T.E. and Boswell, R.W. Results for Relaxation Oscillations in Helicon Discharge Plasma of Polymers 6 (1999) 1641-1648


Publications in Refereed Journals


Ball, R., McIntosh, A.C.* and Brindley, J.* The Role of Chain-forming Processes in the Thermal Decomposition of Cellulose Physical Chemistry Chemical Physics 1 (1999) 5035-5043

Barker, F.C. Wall of the 30 Mound State Physical Review E 60 (1999) 555-558

Barker, F.C. E2 Transitions to the 8(2p) 3P Cross Section Nuclear Physics A 660 (1999) 249-254

Theoretical Physics

Books and Book Chapters


Publications in Refereed Journals


Ball, R., McIntosh, A.C.* and Brindley, J.* The Role of Chain-forming Processes in the Thermal Decomposition of Cellulose Physical Chemistry Chemical Physics 1 (1999) 5035-5043

Barker, F.C. Wall of the 30 Mound State Physical Review E 60 (1999) 555-558

Barker, F.C. E2 Transitions to the 8(2p) 3P Cross Section Nuclear Physics A 660 (1999) 249-254
Kheifets, A.S., Bray, I.*, Dugut, A.*, Lahmann-Brennan, A.* and Tsouil, I.*
A Comparative Experimental and Theoretical Investigation of the Electron Impact Double Ionization of He and HeI
Region
(also listed under Atomic and Molecular Physics Laboratories)

Kheifets, A.S., Bray, I.*, Soejima, K.*, Danjo, A.*, Okuno, K.* and Togihara, A.*
Experimental and Theoretical Study of Linear and Circular Dichroism in Helium Dressed Photionization
(also listed under Atomic and Molecular Physics Laboratories)

Full-potential Linearized-Muffin-Tin-Ovital Calculation of Electron Momentum Densities
(also listed under Atomic and Molecular Physics Laboratories)

Kumar, K.
Fourier Transformation and Related Operators

Kun, S. Yu.
Slow Nuclear Decoherence: Possibilities to Detect the Decay of Thermalized nonequilibrated Matter

Kun, S. Yu., Rohon, B.A. and Vagov, A.V.*
Oscillating-correlated Nonstatistical Structures, Slow Spin Decoherence and Hyperdressed Rotational States in $^{16}$O$^{2+}$+$^{32}$S and $^{16}$O$^{2+}$+$^{18}$O Scattering

Kun, S. Yu., Vagov, A.V.* and Vorov, O.K.*
Coherently Rotating Hyperdressed Quasimolecules in $^{24}$Mg$^{2+}$ Scattering?

Kuyucak, S.
Shape-Phase Transitions in the Vibron Model and Best Molecules

Kuyucak, S.
Tests and Applications of Self-consistent Cranking in the Interacting Binon Model
Physical Review C 59 (1999) 3146-3152

Kuyucak, S. and Stichbury, A.E.
Comment on “$\Delta N$ Bifurcation in Ground Bands of Even-Even Nuclei and the Interacting Binon Model”

Kuyucak, S.
Comment on “Mean-field Approach to the Algebraic Treatment of Molecules: Best Molecules”
Physical Review A 60 (1999) 5147-5148

Lenzi, G.*
Talaman, I. and the Sterke, CM.*
Block Oscillations in an Array of Curved Optical Waveguides

Lewandowski, J. L. V.
Radial Structure of Electron Drift Waves in Tokamak Geometry

Lewandowski, J. L. V. and Ellen, R. M.
Effect of Radial Wavevector on Collisional Drift Waves in a Toroidal Heliac
Australian Journal of Physics 52 (1999) 71-83

Metz, C.*
Tschenschos, Th. *, Stötti, P.*, Kheifets, A.S.*, Lun, D.R.*, Sattler, T.*, Schneider, J.R.* and Bell, F.
Three-dimensional Electron Momentum Density of Aluminum by x-ray Spectroscopy
Physical Review B 59 (1999) 10512-10520
(also listed under Atomic and Molecular Physics Laboratories)

Metz, C.*
Tschenschos, Th. *, Stötti, P.*, Kheifets, A.S.*, Lun, D.R.*, Sattler, T.*, Schneider, J.R.* and Bell, F.
Three-dimensional Electron Momentum Densities of Graphite and Fullerene: A Comparison
(also listed under Atomic and Molecular Physics Laboratories)

Walker, M.L.* and Burden, C.J.
Nonperturbative Vertices in Symmetric Quantum Electrodynamics
Physical Review D 60 (1999) 105018-1 (10 pages)
Walker, M.L.* and Burden, C.J.
Chiral Symmetry in Symmetric Three Dimensional Quantum Electrodynamics
Physical Review D 59 (1999) 125013 (7 pages)

Zhang, Y.S.*, Rohon, B.A., Zhou, Y.* and Li, Y.G.*
Spin Effect of Antiproton-Nucleus Ion-Implantation Scattering
Physical Review C 60 (1999) 056816 (6 pages)

Zimrin, S.*
Cros, R. C.* and Dewar, R.L.
Overview of Australian Activities of Fusion Neutronics
Fusion Engineering and Design 45 (1999) 117-126

Referred Conference Proceedings

Baxter, R.J. and Bauman, V.Y.
Two-layer Zamolodchikov Model

Burden, C.J.
Heavy Quark Propagators
Nonperturbative Methods in Quantum Field Theory, 2-13 February 1999, Akiel, 113-118

Boutsier, M.L. and Burden, C.J.
The Wixx Immeasurble Pointion Theor

Green, F.* and Das, M.P.
Mesoscopic Noise Theory: Microscopic, or Phenomenology?

Galasci, M. and McCulloch, I.P.
Anisotropic Antiferromagnets

Traces of intermediate dinuclear states through damped oscillations in the energy auto-correlation functions of the $^{16}$O$^{2+}$+$^{32}$S Scattering

Kuyucak, S.
Dynamical Symmetries and Their Breaking in the Vibron Model

Tiang, P.C. and Burden, C.J.
Test of Gauge Couvariance of the Fermion-photon Vertex in Quenched, Massless Three Dimensional Quantum Electrodynamics

Walker, M.L.* and Burden, C.J.
Chiral Symmetry in Symmetric QED

Centre for the Mind

Snyder, A.W. and Mitchell, D.J.
In Integer Arithmetic Fundamental to Mental Processing?: The Mind's Secret Arithmetic
Invited Conference Presentations and Lectures

For all other School conference presentations, lectures and posters please refer to the School web page http://rsphysse.anu.edu.au

Applied Mathematics

Contemporary Research in Physical Metallurgy, Monash University, February

Hyde, S.T. – Alloy structures and non-eutectic sphere packings

Scanned Probe Microscopy II Conference, Sydney University, February

Sendek, T.J. – Polymer Adsorption and Adhesion at the Molecular Scale

Special Swedish Universities National Meeting, Thorskog Slot, Sweden, March

Ninham: B.W. – Problems in Aqueous Solutions and Interfaces

Inaugural meeting of UNESCO World Commission on Ethics of Scientific Knowledge and Technology, Oslo, Norway, 28-30 April

Ninham: B.W. – Ethics of Water

40th Society of Nuclear Medicine, Los Angeles, May

Sendek, T.J. – The Nature of Technologies

International Conference on Small Angle Scattering (SAXS99), Brookhaven, N.Y., USA, 17-20 May


Biophysics in the New Millennium, Coolfont, West Virginia, 28-31 May

Marcella, S. – Problems in Aqueous Solutions and Interfaces

Ninham: B.W. – Specific Ion Effects and Role of Dissolved Gas in Biology

Regional Summer School on Scaling and Disordered Systems, Zanjan, Iran, 3-16 July

Knechtel, M.A. – Fluid Penetration into Porous Networks: The Role of Por Morphology

26th International Conference on Solution Chemistry, Fukuoka, Japan, 28-31 July

Christenson, H.K. – Origin of the Long-Range Attraction between Certain Hydrophobic Surfaces

Gordon Conference on Chemistry and Physics of Liquids, Plymouth, New Hampshire, 1-6 August

Christenson, H.K. – Wetting and Phase Transitions at Mica Surfaces

Joint AIrSE-ANU Symposium on Small Angle Scattering and Reflectometry, AIrSE, Lucas Heights, Sydney, 30 September-1 October


9th Gordon Godfrey Workshop on Condensed Matter Physics: Condensed Matter in Zero, One and Two Dimensions, University of New South Wales, 8 November

Stewart, A.M. – General Gauge Independence of Diamagnetism plus Paramagnetism

11th AIrSE Conference on Nuclear Techniques of Analysis and 6th Vacuum Society of Australia Congress, Lucas Heights, Sydney, 24-26 November

Radlinski, A.P., Radlinska, E.Z. – Applications of Small Angle Neutron Scattering in Petroleum Geology

UNESCO COMEST Sub-Commission on Water, Aswan, Egypt, 27-29 November

Ninham, B.W. – Scientific Uncertainty and Scientists as Factors in Ethics of Water

Atomic and Molecular Physics Laboratories

Plasma ’99 – The 22nd AIrSE Plasma Science and Technology Conference, Canberra, 8-9 February

Hoogerland, M.D., Galley, R.J., Collins, M., Su, W., Milic, D., Baldwin, K.G. and Buckman S.J. – Atomic Collisions Research with Excited Atomic Species

The 16th Conference of Photopolymer Science and Technology with The International Symposium on Materials and Processes for Giga-bit Lithography ’99, Chiba, Japan, 22-25 June

La, W., Hoogerland, M.D., Buckman, S.J. and Baldwin, K.G. – Atomic Lithography using a Laser Controlled Manoeuvrable Helium Beam

International Symposium on Electron-Molecule Collisions and Swarms 1999, Tokyo, Japan, 18-20 July

Galley, R.J. and Buckman, S.J. – Low Energy Electron-Molecule Collisions: A Comparison of Recent Experiment and Theory

The International Symposium on (e,2e) Double Photoionization and Related Topics, Beijing, China, 29 July-1 August


Elliott, A.M., Lowery, J.C.A. and Weigold, E. – Dictinium and Polarization Effect in (e,2e) Collisions on Sodium

Japan-US Seminar on the Theory of Atomic Collisions, Tokyo, Japan, 31 July-1 August

Kheifets, A.S. and Bray, L. * – Double Ionization of Two-Electron Atomic targets by the Photon and Fast Electron Impact

International Symposium on Atomic Physics, Hanoi, Vietnam, 2-6 August

Elliott, A.M., Lowery, J.C.A. and Weigold, E. – (e,2e) Collisions with Polarized Electrons and Oriented and Oriented and Spin-Polarized Targets

Electronic Materials Engineering

5th IUMRS International Conference on Advanced Materials, Beijing, China, 15-18 October


14th International Conference on Ion Beam Analysis, Dresden, 26-30 July


International Conference of Nanotechnology in Carbon and Related Materials, Brighton, UK, 8-10 September

International Workshop on Physics of Semiconductor Devices, New Delhi, India, 14-18 December

Third International Conference on Unsorted Problems of Noise, Adelaide

Laser Physics Centre

Australian Institute of Nuclear Science and Engineering, Canberra, 7-8 February

Hoogerland, M.D., Gullvey, R.I., Colla, M., Lu, W., Miele, D., Balfield, K.G.H. and Buckman, S.J. – Atomic Collisions Research with Excited Atomic Species

XIIIth International Winter School on Electronic Properties of Novel Materials (WEPNM'99), Kirezhberg, Austria, 27 February–6 March


3rd International Conference on Frontiers of Polymers and Advanced Materials, Poznan, Poland, 21-25 June

Samos, M., Samoc, A. and Luther-Davies, B. – Third-Order Nonlinear Optical Effects Due to One and Two-Photon Absorption in Conjugated Polymers

Electrical and Related Properties of Organic Solids – ERPOS-8, Zakopane, Poland, 26-30 June

Samos, M., Samoc, A. and Luther-Davies, B. – Two-Photon and One-Photon Resonant Third-Order Nonlinear Optical Properties of & Conjugated Polymers

5th International Conference on Laser Ablation (COLA'99), Goettingen, Germany, 19-23 July

Rud, A.V., Gamaly, E.G. and Luther-Davies, B. – Ultrafast Laser Ablation with High-Pulse-Rate Lasers

International Conference on Lasers and Electrooptics, LEOS'99, San Francisco, USA, 8-11 November

Luther-Davies, B. and Kozlikowski, W. – Formation and Interaction of Spatially Incoherent Solitons in a Slow Nonlinear Medium

II Nonlinear Science Festival, Riso National Laboratory, Roskilde, Denmark, 1-4 December

Kozlikowski, W. – Incoherent Spatial Optical Solitons in a Slow Nonlinear Medium

Nuclear Physics

The Nucleus, New Physics for the New Millenium, Faire, South Africa, 18-22 January

Deaconu, G.D. – Summarizing the Nucleus

Workshop on Nuclear Structure Physics near the Coulomb Barrier: Into the 21st Century, Yale University, USA, 10-12 June

Stuckier, A.E. – Nuclear Moments and Related Physics


Deaconu, G.D. – Spherical and Deformed States in Light Lead Nuclei

Second International Conference on Fission and Neutron-rich Nuclei, St. Andrews, Scotland, 28 June-2 July

Hinde, D.J. – Interplay of Fission and Fission Dynamics

International Conference on Achievements and Perspectives in Nuclear Structure, Cetee, Greece, 11-17 July

Dracoulis, G.D. – High-K States as a Probe of Nuclear Structure


Stuckier, A.E. – Thermal Spike Lifetime from Pre-Equilibrium Effects in Hypervelocity Fields Following Ion Implantation

14th International Conference on Ion Beam Analysis, Dresden, Germany, 26-30 July


8th International Conference of Accelerator Mass Spectrometry, Vienna, Austria, 6-10 September

Fildes, J.K. – Advances in Accelerator Mass Spectrometry (Keynote Address)

ANA-99, the Australian Nuclear Association Conference on Nuclear Science and Engineering in Australia, Canberra, 27-28 October

Fantasia, G.D. – International and Local Trends in Nuclear Physics

10th ANSSE Conference on Nuclear Techniques of Analysis, Lucas Heights, NSW, 24-26 November

Obert, R.M. – NTI since 1935: A Nostalgic Review (plenary address)

Optical Sciences Centre


Kivshar, Yu.S. – Nonlinear Modes in Discrete Lattices

International Workshop on Kinetic Equations and their Applications, Technion, Haifa, 1-7 June

Kivshar, Yu.S. – Multi-Color and Quasi-Periodic Nonlinear Waves

Dynamics Day Asia-Pacific: First International Conference in Nonlinear Science, Hong-Kong, 13-16 July

Kivshar, Yu.S. – Spatial Optical Solitons: An Overview

Workshop on Novel Solitons and Nonlinear Periodic Structures – 99, Abhayo de la Bussiere, 30-31 August

Alkhimov, N.N. – Consequence of Non Paraxiality

The Australian Institute of Physics, Melbourne, 9 September

Kivshar, Yu.S. – Solitary Waves in Solids and optics

ROSIC Symposium: Massive WDM and TDM Soliton Transmission Systems, Kyoto, Japan, 9-12 November

Kivshar, Yu.S. – Multi-Soliton Pulse Transmission and Pulse Shepherding in Bi-Parallel Optical Fiber Links

Plasma Research Laboratory

12-th International Stellarator Workshop, Madison, Wisconsin, 27 September–1 October

Harris, J.H. – States and Planes for the H-1 Heliac

Shaw, M.G. – Fluctuations and Turbulent Transport Studies in the H-1 Heliac

Third Conference on Nuclear Science and Engineering in Australia, Canberra, 27-28 October

Harris, J.H. – Fusion Energy for the 21st Century

41st Meeting of the American Physical Society, Division of Plasma Physics, Seattle, USA, 15-19 November

Bor, G.G. – Plasma as Antennas: Theory, Experiment and Application

Theoretical Physics

International Workshop on Superconductivity, Magnetost- Resistive Materials and Strongly Correlated Quantum Systems, Hanoi, Vietnam, 4-10 January

Das, M.P. – Why Worry About the Anomalies and What Can You Do About it?

Random Matrices and their Application, Mathematical Sciences Research Institute, Berkeley, 19, 21-23 January

Baxandall, R.L. – Solvable Model in Statistical Mechanics: Ising to Chiral Potts and The Chiral Potts Model

Workshop on Symmetry Principles in Many Body Phenomena, Hawaii, USA, 17-22 February

Kevrekid, S. – Dynamical Symmetries and Shape-Phase Transition in the Vitochn Model

Workshop on Numerical Methods in Many-Body Physics, Seattle, USA, 15-19 March

Kevrekid, S. – Octupole States in the Interacting Boson Model

University of Sydney, School of Physics Colloquium, 19 April

Dewar, R.L. – Balloonning Modes

Statistical Physics on the Eve of the Twenty-First Century, Florida Atlantic University, Delray Beach, Florida, 7 May

Baxandall, R.L. – Ramifications of the Yang-Baxter Relation

Symposium in Honor of C.N. Yang, State University of New York at Stony Brook, for Theoretical Physics, 21 May

Baxandall, R.L. – Solvable Model in Statistical Mechanics: Ising to Chiral Potts

23rd International Workshop on Condensed Matter Theories, Ithaca, Greece, 17-23 June

Das, M.P. – Kinetic Approach to Mesoscopic Noise

7th International CLUSTER ’99 Conference, Island of Rab, Croatia, 14-19 June

Kun, S. V. – Spontaneous Nucleus Clustering and Atomic Electron Effects in Deeply Inelastic Heavy-Ion Collisions

Kun, S. Yu and Robson, B.A. – Hot Hyperdeformed Collectively Rotating Clusters in 94Mo, 94Ge and 94Sn Elastic and Inelastic Scattering

The Fractional Quantum Hall Effect of the New Millenium, University of Adelaide, 16-20 August

Balnave, V.V. – Quantum Brownian Motion in a Periodic Potential and Conformal Field Theory

Workshop on Solids, Surfaces and Defects: Theory and Experiment, Victor Harbor, 28-29 September


International Workshop on Concepts in Electron Correlation, Trieste, Croatia, September

Gliozzi, M. – The Kondo Limit Revisited: An Exact Result

2nd Tama Workshop on Gravitational Wave Detection, Tokyo, 19-22 October

Scott, S. – Cachet 4m Interferometer Characterisation: Spectral Properties of the Data

* External to the University
# Former member of the University

Pressentor of contributed paper is underlined