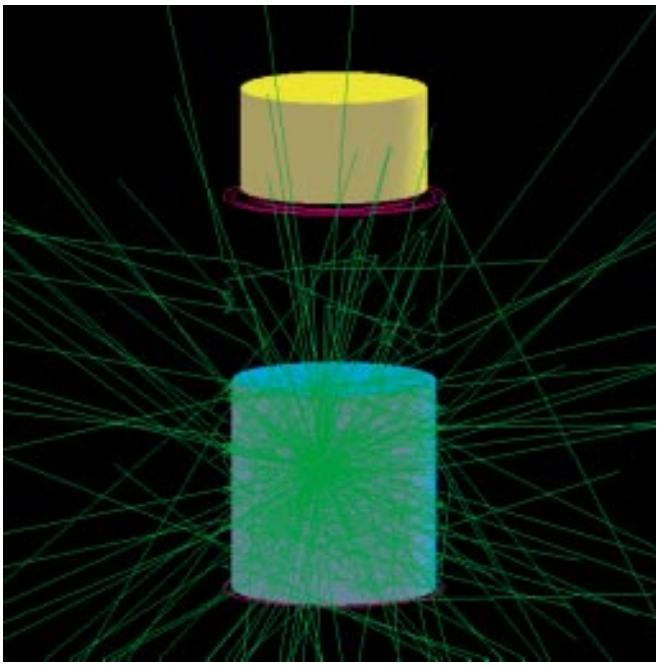
The University of Sydney

School of Physics Annual Report 2008

Contents



Gamma ray transport in a liquid scintillation vial (see nuclear physics report page 26)

Front cover shows the rocket carrying the STEREO satellites as it blasts into the night sky from Cape Canaveral October 2008

Head of School Report

PROFESSOR ANNE GREEN
HEAD, SCHOOL OF PHYSICS

THIS YEAR HAS BEEN AN EXCITING and busy year with a major refurbishment project undertaken to provide new laboratories and office space to better support our growing numbers. We were pleased to welcome 15 members of staff and graduate students from the now closed Optic Fibre Technology Centre; they are all now fully integrated into the School of Physics. Our undergraduate student cohort continues to increase, but the most spectacular rise is with our Honours class and postgraduate student numbers. Together with our success in the competitive grants schemes (we were awarded $15.9M in total research funds for 2008) and a very impressive publication rate (more than 430 papers in 2008), these demonstrate that this School of Physics has an outstanding profile both nationally and internationally. The downside is we are very pressed for space. Our 1924 heritage listed Main Building, designed by Professor Leslie Wilkinson, is beautiful but there is an urgent need for a new building, with world-class nanofabrication facilities, if we are to continue to attract top researchers and teachers and the best students. A proposal for a precinct jointly with Medicine is being planned and we are very keen to have this proceed.

New appointments to the Research and Teaching staff include Dr David Reilly who joins us as a Senior Lecturer, from a research position at Harvard University. His research into mesoscopic physics will see a new laboratory established in the School's basement for experiments that probe quantum objects at ultra low temperatures. David features on the front cover of this issue. We are also pleased to welcome a new Lecturer, Dr Pulin Gong, from the RIKEN Laboratory for Perpetual Dynamics in Japan. Pulin is working in biomedical physics studying the organised behaviour of time-varying signals in neural circuits and how the brain processes information. Dr Roman Kompaneets is our third exciting new appointment, joining the School as the Harry Messel Research Fellow. His research is in complex theoretical plasmas, working with Professors Don Melrose and Sergey Vladimirov. A full staff list can be found in this report.

The School congratulates our outstanding staff and students who received awards in 2008. Professor Peter Robinson was awarded his second Federation Fellowship – the only one awarded to the University of Sydney in 2008. Professor Robinson is the Leader of the Complex Systems Group, which undertakes research in Brain Dynamics, Waves and Space Physics among other topics. Professor Benjamin Eggleton was awarded the NSW Science Prize for Physics & Astronomy; PhD student, Christopher Hales won the 2008 Bok Prize, awarded by the Astronomical Society of Australia for the best Honours thesis completed in the previous year; Dr Amanda Karakas has been awarded a University of Sydney Postdoctoral Fellowship to work in Astronomy with Prof Tim Bedding. I also warmly congratulate Drs Shami Chatterjee and Stuart Jackson on the award of their ARC QEII Fellowships and the three staff members who were awarded Citations for outstanding contributions to student learning, Drs John O'Byrne and Joe Khachan and Associate Professor Manjula Sharma.

Congratulations to those staff who received promotion during the year: Drs Dennis Stello, Laszlo Kiss and Boris Kuhlmey, Associate Professors Scott Croom, Andrew Hopkins, Manjula Sharma and Michael Wheatland and Professor Geraint Lewis. This is an excellent result for the School. The promotion process is rigorous and recognises the outstanding achievement of these members of the academic staff.

It was a very exciting year for particle physics with the Large Hadron Collider in CERN beginning operation. Three of our physicists, Drs Kevin Varvell, Aldo Saavedra and Bruce Yabsley, of the High Energy Research Group, have been part of the international team of 35 countries collaborating on this massive project. In September, when the first beam was produced, there was huge media and public interest – a School of Physics public talk excited over 800 responses. Dr Karl Kruszelnicki (the Julius Sumner Miller Fellow) and Dr Kevin Varvell gave an enlightening and informative talk to an enthusiastic crowd. Free public talks are part of the School's outreach activities and continue to be popular with both alumni and non-alumni.

The Science Foundation for Physics supports the activities of the School of Physics and works to raise the awareness of science in the wide community. The Foundation provides up to $100,000 in untied funds to assist special projects. During 2008, support was provided included the following projects:

- High definition screens and teleconference facilities for the Remote Observing Centre Sydney, to enable remote observing at optical interferometers in Narrabri and the USA.
- The upgrading of audiovisual and presentation facilities for two areas now regularly used for seminars and events such as 'Physics Research Bites'.
- Contribution to museum cabinets for the refurbishment of the heritage Foyer of the Main Building.

The School of Physics provides a vibrant and productive research and teaching environment for staff and students and it is encouraging to see the enthusiasm translated into success and ongoing effort to continue to improve our performance across all the diverse activities undertaken here and in collaboration with the Faculty and other disciplines in the University.

Finally I would like to take this opportunity to thank the Dean of Science, Professor David Day, for his continued support of the research, teaching, outreach and other activities of the School of Physics throughout 2008.

Staff

ARC Federation Fellows
Marcela M Bilek, BSc PhD Camb MBA Roch
Joss Bland-Hawthorn, BSc AU Birm PhD Sus & RGO
Benjamin J Eggleton, BSc PhD
Bryan Gaensler, BSc PhD
Peter A Robinson, BSc PhD
Catherine Stampfl, BSc PhD LaTrobe

Australian Professorial Fellows
Iver H Cairns, BSc PhD
David R McKenzie, BSc PhD NSW
Ross C McPhedran, BSc PhD Tas
Elaine M Sadler, BSc Qld PhD ANU
Sergei Vladimirov, MSc PhD Mosc

Professor in Theoretical Physics and University Chair
Donald B Melrose, BSc Tas DPhil Oxf

Professor in Medical Physics
Clive Baldock, BSc Sus MSc PhD Lond

Professor in Theoretical Physics
Martijn de Sterke, MEng Delft PhD Roch

Professors in Astrophysics
Timothy R Bedding BSc PhD
Richard W Hunstead, BSc PhD

Professor in Sustainability Research
Manfred Lenzen, PhD Dip Bonn

Professor in Astrophysics, Head of School and Director, Science Foundation for Physics
Anne Green, BSc Melb PhD

Adjunct Professors
Russell Cannon, BSc MA PhD Camb
Matthew Colless, BSc PhD Camb
Robert Robinson

Associate Professors
Geraint Lewis, BSc Lond PhD Camb
Serdar Kuyucak, BSc METU PhD Yale
Peter G Tuthill, BSc Qld BSc(Hons) ANU PhD Camb

Adjunct Associate Professors
Roger Fulton, PhD UTS
Andrew Hopkins, BSc PhD
from November
Lyn Oliver, MSc Lond PhD Camb
Natalka Suchowerska, BSc Birm MSc UTS PhD
Robert Wilkins, BE MEngSc PhD

Teaching Management
Dr Richard Tarrant, BA MSc PhD
Richard Thompson, BSc PhD

Postgraduate Teaching Fellows
Po-chia Chen
Myles Covers
Bejamin Fulcher
Christopher Hales
Christine Lindstrom

Senior Lecturers
Stephen Bartlett, BSc Waterloo MSc PhD Toronto
Seyed Reza Hashemi-Nezhad, MSc PhD Birm
Joseph Khachan, BSc PhD NSW
Zdenka Kuncic, BSc PhD ANU
Nigel Marks, BSc PhD
until June
David J Moss, BSc Waterloo MSc PhD Toronto
John W O'Byrne, BSc PhD
J Gordon Robertson, BSc Adel PhD
Manjula D Sharma, MSc DAPh SPac
Kevin E Varvell, BSc WAust DPhil Oxf
Michael S Wheatland, BSc PhD

Adjunct Senior Lecturers
Shamibrata Chatterjee , BTech IIT Madras MSc PhD Cornell
from December
Lois Holloway, BSc Woll PhD NSW

Lecturers
Pulin Gong, BS PhD Xi'an Jiaotong
Christian Karnutsch, Dip Ingeniewr MSc Karlsruhe

ARC Queen Elizabeth II Research Fellows
Scott Croom, BSc PhD Durham
Andrew Hopkins, BSc PhD
until November
Kostyantyn Ostrikov, DSc Kharkov
until July
Alexander A Samarian, MSc Kiev PhD RAS (Mosc)

ARC Postdoctoral Research Fellows
Christian E Grillet, MSc Montpellier II PhD Ecole Lyon
Boris T A Kuhlmey, PhD
Christelle Monat PhD LEOM, CNRS
Nelson K L Ng, PhD
Dr Bruce Yabsley, Research only, ARC Research Fellow, High Energy Group

Research Fellows
Helen M Johnston, PhD CalifIT BSc
Vasili Lobzin
Dr Aldo Saavedra, Research only, Post Doctoral Fellow, High Energy Research Group
Snjezana Tomljenovic-Hanic

Senior Research Fellows
Christopher Dey, PhD
Laszlo Kiss, DPhys PhD Attila
Alexey Kondyurin, PhD Perm
Qinghuan Luo, BSc NIHM MSc Heilongjiang PhD
Eric Magi, BSc ANU PhD NSW
Joy Murray,
Oliver Warschkow, BSc PhD Toronto
Yongbai Yin, MSc Nankai PhD

Professor Harry Messel Research Fellow
Roman Kompaneets, BSc Moscow State PhD Munich

Denison Research Fellows
Cenk Kocer, BSc Monash PhD
Dixon Kwok, BSc PhD Camb
until February

Postdoctoral Fellows
Julia J Bryant, PhD
Qijin Chen
Lisa Harvey-Smith
Jong Won Kim, BS MS Soel PhD Maryland
Sunnie Lim, BappSc PhD RMIT
Peter Loxley, BSc Murd PhD UWA BSc
until September
Bo L Li, MSc Nankai PhD JCUNQ
Tara Murphy, PhD Edin BSc
Stephen Ng
Lai Chun (Cat) So
Eduard N Tsoy, MSc St Petersburg PhD Tashkent
until December
Jeanette I Weise, BSc PhD Melb

Research Associates
Hans Bruntt PhD Aarhus
Xiangyuan Carl Cui
Damien Carter
Katawat Chuasiripattana
Aisling Clark
Peter Drysdale, BSc LLB PhD
Xiangmei Duan
Alex Judge
Feng Luan
Neil Nosworthy
Swarma M Patra
until November
Mark Pelusi
Rebecca Powles
until June
Vincent Pureur,
Aloysius Soon
until February

Xingqiu Yuan
until April
Victor Zhou

Julius Sumner Miller Fellow
Karl Kruszelnicki, BSc MBioMedE NSW MBBS

CUDOS Chief Operating Officer
Chris Walsh, PhD

CUDOS Laboratory Manager and Assistant
Jeremy Bolger, BSc UWA PhD Heriot-Watt
until June
Joseph Zheng

CUDOS Administrative Assistant
Wendy Espinoza
from July
Emily Higginson
on leave from July
Kali Madden

Teaching Laboratory Support Staff
Nathan Apps
Marek Dolleiser
Brian Ford
from August
Amelita Napthali
Barry Napthali
Myo Win

Computing Staff
Sebastian Juraszek, PhD
Anthony Monger, PhD
Guoliang George Shan, PhD
Xue (Sue) Zhang

Senior Technical Officers
Robert Davies
Phil Denniss
Andre Kyme, BSc(Hons) UNSW MMedPhys Wollongong
until February
Barbara Piestrzynska

School Manager
Paul Harbon, MBA DipMngmt Deakin DipMath SQld BSc

Science Communicator (Physics)
Phil Dooley, BSc PhD ANU
Lara Davis
from November

Student Support Office
Hyacinth Alfonso
Verdi Arli
until June
Eve Teran, BSc

Finance
Nelly Leh Hwa Liew
David Young

Human Resources Personnel and Administrative Officer
Chindy Praseuthsouk, DipHRMngmt SIT BA
on leave from October

Human Resources and Administrative Assistants
Sang Huynh
Jean Pierre Cheaib

Science Foundation for Physics Executive Officer
Adam Selinger BSc Grad Dip (Science Comm) ANU

Science Foundation for Physics Community Relations Manager
Alison Muir

Science Foundation for Physics Education and Administrative Officer
Alex Viglienzone

Physics Workshop Technical Officers
Michael Paterson
Terry Pfeiffer

Molonglo Telescope Manager
Duncan Campbell-Wilson, BSc ANU

Molonglo Technical Officers
Roger Ashwell CertIV Electronic Eng N Syd TAFE
Adrian Blake
Tim Hubbard
until June

Emeritus Professors
Richard Edward Collins, BSc PhD NY
John Davis, BSc PhD Manc
Harry Messel, AC CBE, BA BSc Qld BMilSc NUI DSc
Bernard Mills, AC BSc BE ME DScEng FRS FAA

Honorary Professors
David J H Cockayne, MSc Melb DPhil Oxf
Lawrence E Cram, BSc BE PhD
Kostyantyn Ostrikov, DSc Kharkov
Colin JR Sheppard, MA PhD Camb DSc Oxf
Barry S Thornton, AM, MSc PhD NSW DSc

Honorary Reader
Graham Derrick, BSc Qld PhD

Honorary Associate Professors
Dale L Bailey, BAppSc NSWIT MAppSc UTS PhD Surrey
Rodney C Cross, PhD DipEd
Robert G Hewitt, PhD
Brian W James, BSc PhD
Ian D S Johnston, BSc Qld PhD
Brian McInnes, BSc PhD Qld
Lawrence S Peak, PhD
Murray Winn, BSc PhD Birm

Honorary Senior Lecturers
Roy Allen, BSc PhD Manc
Peter Barnes, BSc PhD
Ian M Bassett, MSc PhD Melb
G Fergus Brand, MSc Otago PhD
Neil F Cramer, BSc PhD
David F Crawford, BSc PhD
Ian S Falconer, MSc NZ PhD ANU
Bruce McAdam, MSc NZ PhD Camb
James B T McCaughan, MSc PhD
Rosemary Miller, BSc Qld MEd
Richard Morrow, BSc Adel PhD Flin BA
Ian Sefton, MSc
Robert Shobbrook, BSc StAnd PhD
William J Tango, BSc Calif PhD Colorado
Anthony J Turtle, BA PhD Camb
Juris Ulrichs, PhD

Honorary Associates
Martin Abendroth
Dimitri Alexiev
Roy Allen
Dale Bailey
Andrew Bakich, MSc PhD
John Boldeman
Jeremy Bolger
Jeremy Booth
Alexander Buryak
Jenkins Charles
Gerald Cecil
Ian J Cooper, BSc MPhys DipEd NSW
Graham Derrick, PhD
Ludovico De Souza
Martijn van Eijkelenborg, MSch PhD Leiden
Mark Englund
Robert Fletcher, DipEd UTS BSc MSc PhD
Richard Grey
Julienne I Harnett, BA Macq DipT Tas CAE PhD
Christopher Howard
Alexandra Hugman
Natalie James
David L Jauncey, PhD
Simon Johnston, BSc Edin PhD Manc
Dixon Kwok, BSc PhD Camb
from February
Tim Langtry, BS PhD NSW MAppSc UTS
Maryanne Large, BSc PhD Dub
James K Lowry, BA Richmond MA William & Mary PhD Cant
Robert Lucas
Roy Macleod
Pamela McNamara, BSc Swansea (Wales), MSc Sheff PhD Bangor (Wales)
David R Mills, BSc PhD NSW
Graham Morrison, BE PhD Melb
Bhaskar Mukherjee, BE Calc MSc PhD Technisch
Julian North
Andrew R Parker, BSc JM Liv, PhD Macq
John Piggot
Rebecca Powles
Mark Reinhard, BSc PhD Woll
Christopher Rennie, BSc ANU MBioEng NSW
Michael Scholz, BSc Tuebingen MSc PhD Hamburg
Peter Shaver
Geoff Smith, MSc Witw PhD NSW
Lindsey Smith
Jeff Stanger, PhD
Michael Steel PhD
Ravi Subrahmanya
Thomas Wiedmann
Theo Armand ten Brummelaar
Jocelyn Towson, BSc UWA BA Camb MSc Lond
John Tuthill
Mark J Wardle, MSc Auck PhD Prin
Kinwah Wu, BSc HK MSc PhD Louisiana

Teaching Highlights

PROFESSOR RICHARD (DICK) HUNSTEAD
CHAIR, ACADEMIC PROGRAMS COMMITTEE

Undergraduate student numbers rose a little in 2008 because of increased enrolment in several Junior Physics units. Two new continuing Teaching and Research staff joined the School – Drs Pulin Gong and David Reilly. Retired staff and some of our research-only staff continue to make significant contributions to the teaching program of the School. In addition, in 2008 for the first time, five postgraduate students were employed as Postgraduate Teaching Fellows. These first and second year PhD students were selected from a pool of applicants for one or two year appointments. They worked one day a week in first and second year teaching and assisted in other teaching development roles.

Another significant change was the improvement in lecture demonstration arrangements and the development of a new database of lecture demonstrations. The database provided demonstration information on-line and allowed lecturers to select their demonstration requirements or recall and edit a list from the previous year.

Numbers in each teaching year were approximately as follows:

Unit	Semester 1	Semester 2
Junior Physics		
Mainstream units	897	555
COSC Junior units	-	38
EDUH 1017 Sports Mechanics	75	-
EDUF 1017 Science Foundations2	-	108
PHYS 1500 Astronomy	-	146
AFNR 1002 Climate and the Environment	-	117
Intermediate Physics		
Mainstream units	115	113
PHYS	22	13
Physics 2EE	-	56
Senior Physics		
Core units only	82	86
COSC Senior units	9	-
Honours	27	26
Postgraduate coursework (full time equivalent)		27
Postgraduate research		94

Junior (1st year) Physics:
The numbers in Junior Physics mainstream units in semester 1 were significantly higher than in recent years, largely because a change in Civil Engineering requirements brought around 130 extra students into PHYS 1001. Astronomy student numbers rose by 50% in response to an email advertising the unit to a wide range of students across the University.

After a trial in the Environmental unit in 2007, the MasteringPhysics web-based tutorial and assignment scheme was extended to both the Fundamentals and Environmental units in 2008. This puts all assignments in mainstream Junior units into MasteringPhysics. In addition, the Astronomy unit used MasteringAstronomy. While eliminating the marking load of assignments, the primary benefit was to provide on-line assistance and timely feedback on assignments to the students. This change was accompanied by the adoption of new textbooks in the Fundamentals and Environmental units and Astronomy.

Intermediate (2nd year) Physics:
Student numbers in Intermediate Physics were down by around 15% in 2008. In addition, the take-up of the optional second semester unit dropped below 60%. The Advanced/Normal ratio was very close to 1:1. MasteringPhysics was used again for some assignments in the main second semester unit, while the first year Labrat system for recording marks was introduced into the second year laboratory.

Senior (3rd year) Physics:
The numbers in Senior Physics were down very slightly in 2008 but remain rather higher than several years ago. The Advanced/Normal ratio was around 2:1. The laboratory once again operated three days a week to cope with the large number of students. A smaller number of students did special projects within research groups in place of lab, 21 in semester 2 2008 compared to 35 in semester 2 2007.

Honours:
The numbers in Honours were similar to the previous year, at historically high levels. Four students completed honours in semester 1, while another 22 completed in semester 2. Four received the University medal: Andrew Darmawan, Tom Grujic, Alessandro Tuniz and Joel Wallman.

Postgraduate Coursework:
The numbers in Postgraduate Coursework were relatively steady. Medical Physics continued to attract students, with 9 new enrolments for a total of 27 students (some part-time). This includes 4 enrolments in the new Masters and Graduate Diploma in Applied Nuclear Science. Some units were in common between the two programs and some Honours students took units associated with the coursework Masters programs.

Postgraduate Research:
The numbers in Postgraduate Research were relatively steady, at a level 50% higher than they had been 6 or 7 years ago!

Talented Student Program

The Talented Student Program (TSP) is an initiative of the Faculty of Science aimed at introducing high-achieving students to research in their first years at University. The Physics TSP experience in 2008 consisted of weekly research seminars by staff, research fellows and postgraduate students on topics ranging from the "Death Star" to tests of general relativity, radiation oncology to microstructured optical fibres, complex plasmas to brain dynamics.

Research groups across the School offered mini projects in second semester to Junior and Intermediate students in the Talented Student Program. These projects were done in place of part of the regular experimental physics program. The response was excellent, with 43 students opting to do project work. The student talks and reports were of a uniformly high standard, and many of the TSP students continued with their research projects as summer vacation scholars. Six of the TSP students came on a short excursion in the September mid-semester break to observatories at Molonglo, Mt Stromlo and Tidbinbilla, as well as visits to research labs at the Australian National University.

[clockwise from left] TSP at MOST; TSP on Excursion – The TSP excursion group at Tidbinbilla with our guide, Dr David Jauncey (CSIRO); TSP at Parkes – Group in front of the 70-metre antenna at Tidbinbilla

Postgraduate Students

Degree Name	Degree Level Name	Student	Supervisor
Ph.D.	Phd (Research)	Scott Young Allan	David Mckenzie
Ph.D.	Phd (Research)	Gemma Elizabeth Anderson	Bryan Gaensler
Ph.D.	Phd (Research)	Kevin Matthews Aquino	Peter Robinson
Ph.D.	Phd (Research)	Andrew Das Arulsamy	Kostya Ostrikov
Ph.D.	Phd (Research)	Neil Jeffrey Baker	Benjamin Eggleton
Ph.D.	Phd (Research)	Keith William Bannister	Bryan Gaensler
Ph.D.	Phd (Research)	Matthew James Barton	Peter Robinson
Ph.D.	Phd (Research)	Daniel William Bennett	Joseph Khachan
Ph.D.	Phd (Research)	Jennifer Mary Bennett	Oliver Warschkow
M.Sc.	Masters By Research	David Nicolas Bennie	Clive Baldock
Ph.D.	Phd (Research)	Lindsey Jordan Bignell	Reza Seyed Hashemi-Nezhad
Ph.D.	Phd (Research)	Jacob John Borger	Reza Seyed Hashemi-Nezhad
Ph.D.	Phd (Research)	Brendon James Brewer	Geraint Lewis
Ph.D.	Phd (Research)	Jess William Broderick	Richard Hunstead
Ph.D.	Phd (Research)	Regina Mary Bromley	Clive Baldock
Ph.D.	Phd (Research)	Sam Campbell	Martijn De Sterke
Ph.D.	Phd (Research)	Kin Wa Chan	Clive Baldock
Ph.D.	Phd (Research)	Parry Chen	Ross C Mcphedran
Ph.D.	Phd (Research)	Po-Chia Chen	Serdar Kuyucak
Ph.D.	Phd (Research)	Alan King Ip Chiang	Peter Robinson
Ph.D.	Phd (Research)	Aaron Paul Chippendale	Anne J Green
Ph.D.	Phd (Research)	Gwi Ae Cho	Clive Baldock
Ph.D.	Phd (Research)	Jonathon Mark Clearwater	Peter Robinson
Ph.D.	Phd (Research)	Ryan Cooke	Zdenka Kuncic
Ph.D.	Phd (Research)	William Peter Corcoran	Benjamin Eggleton
Ph.D.	Phd (Research)	Christophe Cornet	David Mckenzie
Ph.D.(Cotutelle)	Phd (Research)	Lenaic Gael Herve Fabien Couedel	Alexander Samarian
Ph.D.	Phd (Research)	Myles Francis Cover	Marcela Bilek
Ph.D.	Phd (Research)	Felicity Mary Cox	Maryanne Large
Ph.D.	Phd (Research)	Justin Bryan Davies	Clive Baldock
M.Sc.	Masters By Research	Garth De Visser	Joseph Khachan
Ph.D.	Phd (Research)	Stephen Alan Dekker	Marcela Bilek
Ph.D.	Phd (Research)	Aliz Derekas	Timothy Bedding
Ph.D.	Phd (Research)	Peter Byron Dobbie	Zdenka Kuncic
M.Sc.	Masters By Research	Francis James Farvis	Clive Baldock
Ph.D.	Phd (Research)	Stephen Louis Beral Fine	Scott Croom
Ph.D.	Phd (Research)	Michael Jeffrey Fitzgerald	Joseph Khachan
Ph.D.	Phd (Research)	Matthew James Francis	Geraint Lewis
M.Sc.	Masters By Research	Benjamin David Fulcher	Peter Robinson
Ph.D.	Phd (Research)	Hugh Brownlee Garsden	Geraint Lewis
M.Sc.	Masters By Research	Daryl Max Gibson	Clive Baldock
Ph.D.	Phd (Research)	Ryuichiro Goto	Simon Fleming
Ph.D.	Phd (Research)	Nathaniel Groothoff	John Canning
Ph.D.	Phd (Research)	Mathew Charles Guenette	Marcela Bilek
Ph.D.	Phd (Research)	Christopher Hales	Bryan Gaensler
Ph.D.	Phd (Research)	Paul Jacob Hancock	Elaine Sadler
Ph.D.	Phd (Research)	Hal Henke	Peter Robinson
Ph.D.	Phd (Research)	Robin Freddie Hill	Clive Baldock
Ph.D.	Phd (Research)	Dean Spencer Hillan	Iver H Cairns
M.Sc.	Masters By Research	Jonathan James Hindmarsh	Clive Baldock
Ph.D.	Phd (Research)	John Murray Hornibrook	David Reilly
Ph.D.	Phd (Research)	Daniel Huber	Timothy Bedding
Ph.D.	Phd (Research)	Andrew Jacob	James Robertson
Ph.D.	Phd (Research)	Benjamin Timothy Jelliffe	Scott Croom
Ph.D.	Phd (Research)	Erin Jolley	Zdenka Kuncic
Ph.D.	Phd (Research)	Irina Kabakova	Martijn De Sterke

Degree Name	Degree Level Name	Student	Supervisor
Ph.D.	Phd (Research)	Cliff Clark Kerr	Peter Robinson
Ph.D.	Phd (Research)	Madhura Killedar	Geraint Lewis
Ph.D.	Phd (Research)	John Kipritidis	Joseph Khachan
Ph.D.	Phd (Research)	Juliana Kwan	Geraint Lewis
Ph.D.	Phd (Research)	Andre Kyme	Roger Fulton
Ph.D.	Phd (Research)	Jamil Lambert	David Mckenzie
Ph.D.	Phd (Research)	Michael Robert Elsdon Lamont	Benjamin Eggleton
Ph.D.	Phd (Research)	Richard Reade Lane	Geraint Lewis
Ph.D.	Phd (Research)	Felix James Lawrence	Martijn De Sterke
Ph.D.	Phd (Research)	Jason Sang Hun Lee	Kevin Varvell
Ph.D.	Phd (Research)	Michael Whalen Lee	Benjamin Eggleton
Ph.D.	Phd (Research)	Christine Lindstrom	Manjula Sharma
Ph.D.	Phd (Research)	Sahand Mahmoodian	Martijn De Sterke
Ph.D.	Phd (Research)	Elizabeth Kate Mahony	Elaine Sadler
Ph.D.	Phd (Research)	Mamdouh Matar	Ian Bassett
Ph.D.	Phd (Research)	Aimee Louise Mcnamara	Zdenka Kuncic
Ph.D.	Phd (Research)	Samuel Thomas Mconie	Kevin Varvell
Ph.D.	Phd (Research)	Andrew Mark Michie	Ian Bassett
Ph.D.	Phd (Research)	Amaal Mohamed	Iver H Cairns
Ph.D.	Phd (Research)	Pourandokht Naseri	David Mckenzie
M.Sc.	Masters By Research	Patrick Reinhard Christian Neumann	Marcela Bilek
Ph.D.	Phd (Research)	Katherine Joanna Newton Mcgee	Anne J Green
Ph.D.	Phd (Research)	Hong Chuyen Nguyen	Benjamin Eggleton
Ph.D.(Cotutelle)	Phd (Research)	Ondrej Novak	Marcela Bilek
Ph.D.	Phd (Research)	Stephen Michael Owens	James Robertson
Ph.D.	Phd (Research)	Matthew Craig Palmer	Stephen Bartlett
Ph.D.	Phd (Research)	Andrew John Phillips	Peter Robinson
Ph.D.(Cotutelle)	Phd (Research)	Jerome Poulin	Maryanne Large
Ph.D.	Phd (Research)	Kate Elizabeth Randall	Andrew Hopkins
Ph.D.	Phd (Research)	Amanda Evelyn Rider	Kostya Ostrikov
Ph.D.	Phd (Research)	William Robbins	Bryan Gaensler
Ph.D.	Phd (Research)	James Andrew Roberts	Peter Robinson
Ph.D.	Phd (Research)	Roberto Sangines-De Castro	Marcela Bilek
Ph.D.	Phd (Research)	Alexandr Sergeevich	Stephen Bartlett
M.Sc.	Masters By Research	Anthony Graham Smith	Andrew Hopkins
Ph.D.	Phd (Research)	Cameron Smith	Benjamin Eggleton
Ph.D.	Phd (Research)	Vello Tabur	Timothy Bedding
Ph.D.	Phd (Research)	Eugene Tam	Kostya Ostrikov
Ph.D.	Phd (Research)	Anant Tanna	Bryan Gaensler
Ph.D.	Phd (Research)	Mark David Tucker	Marcela Bilek
Ph.D.	Phd (Research)	Sacha Jennifer Van Albada	Peter Robinson
Ph.D.	Phd (Research)	Alix Laura Verdon	Iver H Cairns
Ph.D.	Phd (Research)	Matthew William Verdon	Donald Melrose
Ph.D.	Phd (Research)	Philip John Vial	Clive Baldock
Ph.D.	Phd (Research)	Duc Trung Vo	Benjamin Eggleton
Ph.D.	Phd (Research)	Scott Allen Wales	Geraint Lewis
Ph.D.	Phd (Research)	Hsiao-Chuan Wang	Simon Fleming
Ph.D.	Phd (Research)	Anthony Terence Waugh	Kevin Varvell
Ph.D.	Phd (Research)	Kathy Willowson	Dale L Bailey
Ph.D.	Phd (Research)	Richard Wood	Manfred Lenzen
Ph.D.	Phd (Research)	Henry Christian Andreas Woodruff	Peter Tuthill
M.Sc.	Masters By Research	Kjetil Wormnes	Iver H Cairns
M.Sc.	Masters By Research	Darran Kin Chun Wu	Benjamin Eggleton
Ph.D.	Phd (Research)	Huiying Wu	Peter Robinson
Ph.D.(Cotutelle)	Phd (Research)	Zhengwei Wu	Sergue Vladimirov
Ph.D.	Phd (Research)	Daniel Yardley	Bryan Gaensler

Prizes and Scholarships 2008

AWARDS TO STAFF

The following School of Physics staff received awards in 2008.

Dr Kostya Ostrikov
Kostya Ostrikov won the Australian Academy of Sciences Pawsey Medal for his experimental and theoretical work in plasma nanoscience. Kostya joins an illustrious group of scientists who have been recipients of the Pawsey Medal, which recognises outstanding research in physics by a scientist under 40 years of age for research conducted in Australia.

Since its establishment in 1967 there have been 42 medals awarded, with Professor Lord Robert May of Oxford, OM AC FRS being the inaugural winner. We now have eight medallists currently in the School of Physics – this is an Australian record! Our stars are:

Professor Kostya Ostrikov (2008)
Professor Ben Eggleton (2007)
Professor Marcela Bilek (2004)
Professor Sergey Vladimirov (2002)
Professor Martijn deSterke (1999)
Professor Peter Robinson (1995)
Adjunct Professor Richard Manchester (1978)
Professor Don Melrose (1974)

Professor Joss Bland-Hawthorn
Shared the Muhlmann Award of the Astronomical Society of the Pacific with Professor Karl Glazebrook (Swinburne University of Technology), a distinguished prize for achievements in astronomical instrumentation.

Associate Professor Manjula (Manju) Sharma, Drs John O'Byrne & Joe Khachan
The Australian Learning and Teaching Council gave a citation award to Associate Professor Manju Sharma, Dr John O'Byrne and Dr Joe Khachan for their long-standing contribution to the quality of student learning. John, Joe and Manju won a team award for ongoing development and implementation of a program that encourages collaborative and interactive learning in large first-year physics classes.

Manju, John and Joe were also awarded a Faculty of Science Citation for Excellence in Teaching.

Professor Ben Eggleton
Professor Eggleton was awarded a NSW Government Science Prize (organised through the Office of Science and Medical Research) in the category 'Physics and Astronomy'.

Professor Bryan Gaensler
Professor Gaensler was honoured with a Young Tall Poppy Award at Parliament House. Bryan was one of four academics at The University of Sydney to be given such an award for NSW.

Bryan uses the static and crackle of the radio waves produced by stars and galaxies to study magnetic fields in the universe. The Tall Poppy Campaign was created by the Australian Institute of Policy & Science to recognise and celebrate Australian scientific and intellectual excellence and to encourage younger Australians to follow in the footsteps of our outstanding achievers.

Bryan has also been appointed to the Anglo-Australian Telescope Board (AATB). His appointment runs from 1 January 2009 until 30 June 2010 (when the current AAT Agreement ends).

Professors Marcela Bilek and Bryan Gaensler
Marcela and Bryan were both selected as delegates to the Australia 2020 Summit in Canberra in April 2008. This Federal Government initiative aimed at harnessing the best ideas for building a modern Australia ready for the challenges of the 21st century, inviting 1000 plus leading Australians to the national Parliament to debate and develop long-term options for the nation across 10 critical areas. Bryan was in 'The Productivity Agenda _ education, skills, training, science and innovation'. Marcela was in 'Population, sustainibility, climate change and water'.

Dr David Moss
Dr Moss was awarded a Fellowship of the Optical Society of America (OSA) for significant contributions to the theory of semiconductor optical nonlinearities and quantum-well optoelectronics and to experimental demonstrations of integrated optical signal processing, as well as for developing commercial devices for optical communications.

AWARDS TO UNDERGRADUATE STUDENTS

The following students were awarded prizes or scholarships in 2008 based on their academic achievements in 2007.

JUNIOR PHYSICS

The Levey Scholarship No. 1 for Physics
Laura McKemmish

School of Physics-Julius Sumner Miller Scholarship No. 1
Martin Seneviratne
Blake Churton

Science Foundation for Physics Scholarship No. 1
Jason Ting
Andrew Danos
Graham White
Matthias Wong
Katherine Leong

Smith Prize in Experimental Physics (shared)
Michael Su
Martin Seneviratne

Sky and Space Prize for Astronomy
Francesca von Braun Bates

INTERMEDIATE PHYSICS

School of Physics-Julius Sumner Miller Scholarship No. 2
Cameron Cuthbert
Colin Tuft

Winners of Physics Scholarships and Prizes
Awarded in 2008 for achievements in 2007

1. Dr John O'Byrne - Chair, Academic Programs
2. Mr Trevor Danos - President, Science Foundation
3. Dr Julian North
4. Dr Kieran Larkin - Canon Systems Research Australia
5. Emeritus Professor Harry Messel
6. Joel Wallman
7. Hannah Kennelly
8. Brett Layden
9. Daniel Graham
10. Maki Takahashi
11. Andrew Layden
12. Xin Zhang
13. Konstantinos Diamantis-Spanos
14. Anna Wang
15. Matthew Nichols
16. James Colless
17. Timothy White
18. Colin Tuft
19. Thomas Grujic
20. David Williams
21. Alexandra Graham
22. James Henderson
23. Juliana Kwan
24. Christopher Hales
25. Cameron Cuthbert
26. Laura McKemmish
27. Francesca von Braun-Bates
28. Dr Karl Kruszelnicki - Julius Sumner Miller Fellow
29. Michael Su
30. Mr Ted King
31. Andrew Danos
32. Blake Churton
33. Mohammad Rafat
34. Katherine Leong
35. Graham White
36. Murad Tayebjee
37. Andrew Darmawan
38. Timothy Giles
39. Mrs King
40. Nikhul Patel
41. Michael Delanty
42. Professor David Day - Dean, Faculty of Science
43. Professor Anne Green - Head of School & Director, Science Foundation

For more information see www.physics.usyd.edu.au/current/scholarships.shtml

Science Foundation for Physics Scholarship No. 2
Xin Zhang
Timothy White
James Colless
David Williams
Anna Wang

The Slade Prize for Practical Physics (shared)
Alexandra Graham
Xin Zhang

The Geoffrey Builder-AWA Prize (shared)
James Colless
Konstantinos Diamantis-Spanos

SENIOR PHYSICS

Deas-Thomson Scholarship (shared)
Thomas Grujic
James Henderson

The Walter Burfitt Scholarship No. 2 for Physics (shared)
Thomas Grujic
James Henderson

School of Physics-Julius Sumner Miller Scholarship No. 3
Thomas Grujic & James Henderson (shared)
Andrew Darmawan

Science Foundation for Physics Scholarship No. 3
Joel Wallman
Michael Delanty
Andrew Layden
Murad Tayebjee
Brett Layden

The School of Physics Honours Scholarship
Hannah Kennelly
Matthew Nichols
Daniel Graham
Mohammad Rafat
Nikhul Patel
Maki Takahashi
Timothy Giles

The W.I.B. Smith Prize
Aaron Hayward

The Malcolm Turki Memorial Scholarship
Daniel Graham

PHYSICS HONOURS

Shiroki Prize for Best Honours Project in Physics
Tom Griffin

The Australian Institute for Physics (NSW) Branch Prize
Tom Griffin

Henry Chamberlain Russell Prize in Astronomy (shared)
Christopher Hales
Juliana Kwan

AWARDS TO POSTGRADUATE STUDENTS

CISRA Postgraduate Physics Prize (shared)
Julian North
Cameron Smith

The School of Physics Postgraduate Alumni Prize
Paul Steinvurzel

Science Outreach and Communication

DR PHIL DOOLEY
SCIENCE COMMUNICATOR, SCHOOL OF PHYSICS

Overview

Julius Sumner Miller Fellow – Dr Karl Kruszelnicki and Dr Kevin Varvell, who leads the High Energy Group within the School of Physics, gave an enthralling free public talk about the purpose and functioning of the Large Hadron Collider located at the European Organisation for Nuclear Research (CERN)in Geneva, Switzerland. The RSVP list for the public talk grew from 80 to over 800 in the space of three days.

Dr Karl was also featured in an episode of ABC TV's *Collectors* program talking about the collection of the Physics Museum. In the program paid particular relevance to Julius Sumner-Miller and the equipment he used in science demonstrations, some of which was even 'autographed'. The program was produced after *The Collectors* visited the ABC Ultimo and saw the *Why Is It So?* exhibition held in its foyer during National Science Week. The Exhibition and the *Collectors* program were organised using the resources of the Science Foundation for Physics.

The Science Foundation for Physics also hosted four *Science in the 21st Century* lunches. The format of the lunches is that a Federation Fellow presents on his or her recent research, followed by general discussion. Attendees at the lunches have included the Vice Chancellor, the Deputy Vice Chancellor (Research), the Deputy Chancellor, the Dean of Science, NSW Government Ministers, the NSW Chief Scientist, ISS alumni and some of the country's most senior business executives.

These activities showcase the Foundation, the School and the University and provide an excellent opportunity for high level networking and targeted fundraising, as well as reminding the leadership of the University of the Foundation's relevance, worth and contribution (an important consideration when there are 40 or so other foundations competing for their attention and support). These activities also reinforce the Foundation's role and value in the minds of the School and its staff. The roll out of these and similar activities will continue in 2009.

Science Communication within the School of Physics

Dr Philip Dooley, Science Communicator and Ms Lara Davis, Outreach Officer, communicate physics to secondary school students through University of Sydney initiated Kickstart Program (including Kickstart on the Road), Gifted and Talented Workshops, Degree in a Day and Science in the City.

Kickstart workshops give HSC students a chance to do experiments and demonstrations of key ideas in the syllabus that are difficult to do in the classroom. Over the last four years Physics has hosted thousands of Year 11 and 12 students in our labs.

Kickstart on the Road is a Physics initiative and for two weeks in 2008 Phil and Lara, along with several young physics demonstrators travelled to regional New South Wales. Led by Dr Phil Dooley the crew managed to pack in a Science Teacher's Workshop, two modules of Kickstart, a Nobel Prize talk and a Great Physics Airshow for kids into a combined program that saw 300 NSW Higher School Certificate students and 44 teachers.

Thanks to the generous sponsorship of IBM Australia, Kickstart is also able to take physics equipment out to regional parts of NSW.

The 'On the Road' program bases itself in three regional centres, Wagga Wagga, Dubbo and Armidale. Schools travel up to 200km to attend Kickstart sessions. It also gives remote schools with only one or two students access to workshops that we run in Sydney for large metropolitan schools.

For the students, a day usually consists of two three-hour sessions in the lab using equipment such as induction coils, AC and DC motors, and the all-important liquid nitrogen-fuelled superconductors. Over lunch they are treated to a detailed, interactive talk all about Relativity. This year we also took a large discharge tube, which wowed the students with its striped purple glow long before they even began their lab sessions.

Gifted and Talented held in Spring 2008 had a radioactivity theme in recognition of the Large Hadron Collider launch and Degree in a Day in Summer starts ramping up to the International Year of Astronomy with telescope activities. The School enthused Year 8 and 9 high school students with the NSW Office of Science and Medical Research's Science EXPOsed; primary school children in Giant Science, and Science in the Bush visits the Hawkesbury and Albury for Flying, Floating, Freezing Physics shows. As far as the kids are concerned too much physics is barely enough!

As well as these activities, which aim to encourage an enthusiastic interest in students studying science, Phil and Lara organised and promoted public talks. During 2008 The Science Communication team were involved in a staggering 622 outreach activities.

Above: Dr Philip Dooley, Science Communicator and Ms Lara Davis, Outreach Officer; below: Eli Matar demonstrating physics to high school students as part of Kickstart on the Road

Science Foundation for Physics

SUPPORTING THE SCHOOL OF PHYSICS

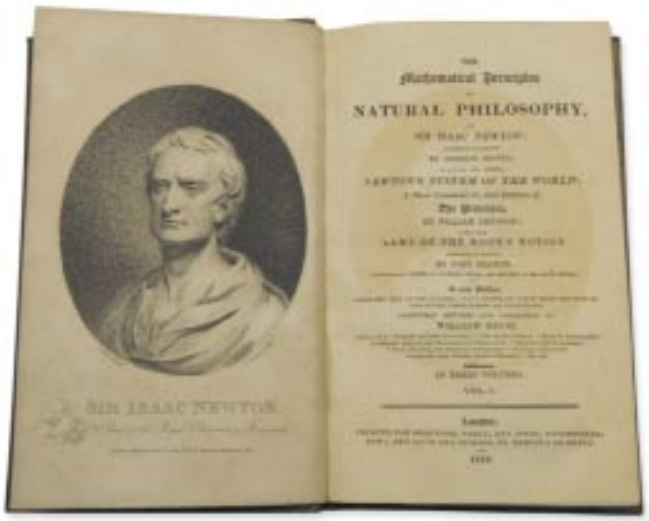
PROFESSOR ANNE GREEN
DIRECTOR, SCIENCE FOUNDATION FOR PHYSICS

Untied Funds

Each year, the Science Foundation for Physics provides between $50,000 and $100,000 in untied funds to assist the School of Physics in areas where conventional funding is difficult to obtain. Foundation funds have been used in the past, for example, in the renovation of the School's Computational Science computer labs. The Foundation was once again pleased to be able to transfer the full amount of $100,000 to the School in 2008.

The School identified several projects to make use of this funding during 2008. These are:

1. High definition screens and teleconference facilities for the Remote Observing Centre Sydney (ROCS).
2. Upgrading audiovisual and presentation facilities for Physics Tea Room, now used for seminars and School events such as 'Research Bites' and 'Astro-Tea'.
3. Contribute to museum cabinets for the refurbished Main Foyer currently being restored by an expert conservator.
4. Audio visual upgrade (new console) for Tutorial Room 414, which is not under the University of Sydney's management.



Above: The annotated first edition of Sir Issac Newton's Principia (one of four copies in the world—estimated value A$8million) on display as part of *Rare Science,* held by the Science Foundation for Physics in the Fisher Library during 2008

Alumni Relations

The School of Physics, with support from the Science Foundation for Physics, keeps in touch with two groups of alumni: Physics graduates and scholars from the International Science School established in 1962 by Professor Harry Messel. In 2008, Ms Alison Muir again managed the School's alumni activities, working with Dr John O'Byrne and the University of Sydney's Alumni Relations Office.

The School of Physics *Alumni News* is distributed widely each year. Alison also edits this biannual newsletter, which updates readers on the research, events and activities of the School. The Science Foundation for Physics pays for the design, printing and distribution of *Alumni News*.

During 2008 the monthly one-page newsletter, *Alumni Update*, was emailed to over 1600 alumni. *Alumni Update* helps keep alumni informed about with news, research developments, events and activities of both the School of Physics and the Science Foundation for Physics.


The University of Sydney
School of Physics & International Science School

Alumni News

WINTER 2009

Kepler Takes Off

Sydney's Photonic Future is Bright

2008 Federation Fellows

In 2008 the School of Physics had six ARC Federation Fellows each working on diverse areas of research.
Federation Fellow Professor **Joss Bland Hawthorn**'s research area, Astrophotonics, is an area of research that Bland-Hawthorn has been pioneering for 20 years and which links in with research into photonics and optics. The optical fibres developed for telecommunications have narrow cores and work in single mode, and have been the basis of many exciting new devices built into the fibres. In astronomical applications, where light is scarce, fibres are much thicker to allow more light to pass down the fibre to the detector. As a result, astronomical fibres are usually multimode. Research in astrophotonics aims to develop new applications of photonic devices, originally developed for telecommunications, to important tasks in astronomy. In 2008 the first Astrophotonics workshop within the University of Sydney was held.

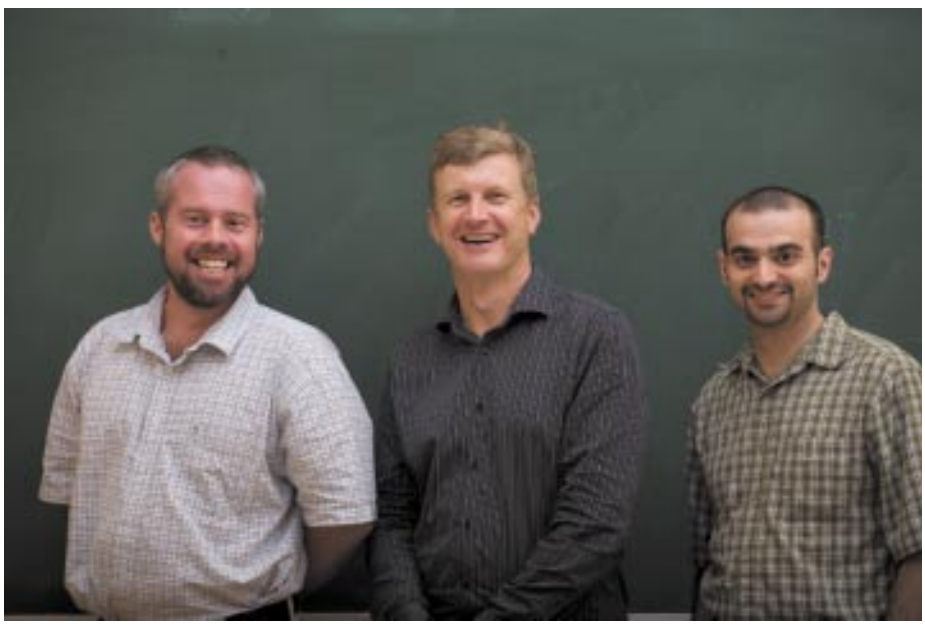
Federation Fellow Professor **Ben Eggleton**, Research Director of CUDOS, received both national and international media when the photonic integrated chip – the next generation of high-speed communications – was developed a year ahead of schedule. In 2008 Eggleton was awarded NSW Scientist of the Year the Office of Science and Medical Research. Eggleton received the award for his research into physics and astronomy, for the pioneering work of CUDOS under his directorship, as well as acknowledging work done while at Bell Labs – congratulations to Professor Eggleton.

Also part of the Astrophotonics group is Federation Fellow Professor **Bryan Gaensler** from the Institute of Astronomy. Gaensler's current research focuses on the origin of magnetism in the Universe, and on the demography of neutron stars and black holes in our Milky Way. Until 2007, he held the position of International Project Scientist for the Square Kilometre Array, a next-generation radio telescope and he still takes a keen interest in this project.

Celestial phenomena are also on the agenda for Federation Fellow, Professor **Peter Robinson**, whose Complex Systems group continued theoretical studies of Plasmas, including those in the gas clouds between stars and galaxies. At the other end of the scale Professor Robinson's group also models plasmas to create nanotechnology, and, to complete an extraordinarily breadth of research, Professor Robinson continued his extremely successful theoretical modeling of the brain, through his collaborative Brain Dynamics Centre.

The intersection of physics and biology is also the subject of research by Federation Fellow Professor **Marcela Bilek**, who has invented methods for manipulating ionised matter (plasma) by means of electric and magnetic fields in order to create uniform, high-performance surface coatings. She has developed techniques of treating materials with high-energy ions and thereby reducing their intrinsic stress and improving adhesion. This is the key to the production of robust, high performance coatings required for demanding applications such as implantable medical devices and high speed cutting tools. These methods are being used both in Australia and internationally.

In contrast to the experimental research of Professor Bilek, Federation Fellow Professor **Cathy Stampfl** studies the properties of materials from a theoretical standpoint. Her Condensed Matter Theory group strives to achieve fundamental understanding of the processes and reactions occurring at the surfaces of materials, with a view to improving the manufacture of complex materials such as electronic, magnetic and optical devices, sensors, catalysts and hard coatings. Stampfl's research interests include adsorption on metal surfaces, chemical reactions at surfaces, oxidation/corrosion of metal surfaces, surface phase transitions, superhard nitride-based materials for hard coatings, dilute magnetic III-Nitrides, doping and defects in III-Nitrides.



Three Federation Fellows: Professors Ben Eggleton, Joss Bland-Hawthorn and Bryan Gaensler who presented the Universe at Light Speed event in March 2008

ARC DISCOVERY PROJECTS FOR FUNDING TO COMMENCE IN 2009

Primary RFCD 2401 ASTRONOMICAL SCIENCES

DP0988751 Prof J Bland-Hawthorn, Prof KC Freeman, Dr SC Keller, Prof M Asplund
Project Title: Galactic Archaeology: a Challenge for the Cold Dark Matter Paradigm
2009: $ 170,000
2010: $ 170,000
2011: $ 170,000

DP0987072 Dr S Chatterjee, Prof BM Gaensler
Project Title: Snap, Crackle, Pop: Opening the Window on the Variable Radio Universe
2009: $ 190,000
2010: $ 190,000
2011: $ 170,000
2012: $ 166,000
2013: $ 160,000
including QEII Fellowship for S Chatterjee

DP0987331 Dr AM Hopkins, Prof J Bland-Hawthorn
Project Title: The mass assembly of galaxies and structure in the universe
2009: $ 130,000
2010: $ 80,000
2011: $ 80,000

Primary RFCD 2402 THEORETICAL AND CONDENSED MATTER PHYSICS

DP0984389 Prof CM Stampfl, Dr S Piccinin, Prof MR Scheffler, Prof AJ Freeman
Project Title: First-principles engineering of advanced multicomponent materials for clean, energy efficient thermoelectric and catalytic technologies
2009: $ 150,000
2010: $ 100,000
2011: $ 120,000

Primary RFCD 2403 ATOMIC AND MOLECULAR PHYSICS; NUCLEAR AND PARTICLE PHYSICS; PLASMA PHYSICS

DP0986853 Dr F Zare, Prof PJ O'Shea, Prof GF Ledwich, A/Prof BW James, Dr RJ Carman, Prof H Akiyama, Prof F Blaabjerg
Project Title: Improving the efficiency of silent discharge plasma systems through an effective high voltage power converter design match
2009 : $ 85,000
2010 : $ 85,000
2011 : $ 60,000

Primary RFCD 2404 OPTICAL PHYSICS

DP0986503 Dr GJ Pryde, Dr AC Doherty, Dr SD Bartlett, Prof HM Wiseman
Project Title: Approved Quantum limits in measurement and communication
2009: $ 150,000
2010: $ 130,000
2011: $ 130,000

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

DP0986960 Dr SD Jackson
Project Title: Microfibre photonics: function densification on a wavelength scale
2009: $ 160,000
2010: $ 85,000
2011: $ 85,000
2012: $ 120,000
2013: $ 130,000
including QEII Fellowship for S Jackson

DP0987515 Dr DJ Moss
Project Title: Silicon All-Optical Nanophotonic Devices for 160Gb/s Systems
2009: $ 150,000
2010: $ 100,000
2011: $ 120,000

Primary RFCD 2999 OTHER ENGINEERING AND TECHNOLOGY

DP0986237 Prof SC Fleming
Project Title: Compact Tunable Visible Lasers - New Approaches to Phase-Matching
2009: $ 170,000
2010: $ 120,000
2011: $ 120,000

Primary RFCD 3008 ENVIRONMENTAL SCIENCES

DP0985522 Prof M Lenzen
Project Title: Developing a global environmental, social and economic information system
2009: $ 125,000
2010: $ 95,000
2011: $ 95,000

ARC LINKAGE PROJECTS

Primary RFCD 2917 COMMUNICATIONS TECHNOLOGIES

LP0989752 Prof BJ Eggleton, Dr S Frisken (with Optium (Australia) inc)
Project Title: Approved Tailoring ultrafast pulses for Tb/s transmission with advanced modulation formats
2009: $ 96,000
2010: $ 95,000
2011: $ 90,000

NHMRC PROJECT

569211 Dr PB Greer, Prof C Baldock, Dr K Kuncic, Prof JW Denham
Project Title: Investigation of a new imaging device for radiation therapy dose delivery verification
Total Budget: $393,441

NATIONAL BREAST CANCER FOUNDATION PROJECTS

SL Kilbreath, LC Ward, KM Refshauge, C Baldock, D Bailey, B Giuffre, MJ Lee
Determination of the clinical correlates of lymphoedema: a pilot study
Total Budget: $118,424

Z Kuncic, R Hill
Towards more effective radiotherapy treatment of breast cancer
Total Budget: $105,000

PHYSICS GRANTS & FELLOWSHIPS AWARDED 2008

ARC LIEF GRANTS

Prof Marcela Bilek – $750,000
Comprehensive Analysis Facility for Thin Films and Surfaces

This was one of ten grants awarded to the University in 2008, and the second largest funded.

UNIVERSITY OF SYDNEY GRANTS FOR MAJOR EQUIPMENT

Professor Ben Eggleton – $61,900
PicoSolve optical sampling oscilloscope PSO 101A

INTERNATIONAL VISITING RESEARCH FELLOWSHIPS

A/Professor Ole Bang – Department of Photonics & Engineering, Technical University of Denmark, Lyngby, Denmark

Dr Theo ten Brummelaar – Centre for High Angular Astronomy, Georgia State University

Professor Moshe Elitzer – Physics and Astronomy Department, University of Kentucky, Lexington, Kentucky

Professor Craig Kletzing – Department of Astronomy, University of Iowa, Iowa City, Iowa

Professor Walfhard Moeller – Department of Physics, Technische Universitat Dresden, Dresden, Germany

A/Professor Jeremy O'Brien – Centre for Quantum Photonics, University of Bristol

Professor Matthius Scheffler – Fritz Haber Institute, The Max Planck Society, Berlin, Germany.

UNIVERSITY OF SYDNEY POSTDOCTORAL RESEARCH FELLOWS

The School of Physics hosts two of seven University fellowships awarded in 2008:

Dr Florian Girelli
formerly The International School of Advanced Sciences, SISSA, Trieste, Italy. Research field: Quantum reference frames in quantum gravity and quantum information theory

Dr Gregory Madsen
Formerly the Anglo-Australian Observatory, Sydney.
Research field: Interstellar Ionised gas and the evolution of galaxies

LEARNING AND TEACHING GRANTS 2008

Staff in the School of Physics were awarded 5 grants for work in 2009:

O'Byrne, J.W., Thompson, R,
'Just in Time' teaching in Physics
- Faculty SciFER grant – $5,000

Wheatland, M.S. and Hudson, T.S.
Subject retention rates in physics and chemistry
- Faculty SciFER grant – $2500

O'Byrne, J.W., Thompson, R., Tarrant, R.,
Video presentation of first year physics concept maps
- Small TIES grant – $5,108

O'Byrne, J.W., Meikle, S, Robinson, J.
A new approach to teaching Medical Radiation Physics
- Large TIES grant – $46,500

MD Sharma, Les Kirkup (UTS) and project team.
Australian Learning and Teaching Council – Forging New Directions in Physics Education in Australian Universities
- $130,000 over 2008-2009.

Research Highlights 2008

APPLIED AND PLASMA PHYSICS

The Applied and Plasma Physics research group led by ARC Federation Fellow, Professor Marcela Bilek, and Professor David McKenzie, undertakes research into exciting new areas of physics that have practical 'real world' applications in industry, medicine and the environment. The research group currently has major projects underway in the areas of:

- biointerfaces and interactions of biosystems for medicine;
- novel plasma deposition and processing methods to create new materials;
- the development of thin film materials for application in the microelectronics and manufacturing industries;
- materials and processes for renewable and sustainable energy including fusion; and
- materials for novel applications such as quantum computation.

THE SYDNEY UNIVERSITY PHYSICS EDUCATION RESEARCH (SUPER) GROUP

The Sydney University Physics Education Research (SUPER) Group was founded in 1992 to undertake physics education research (PER) in the School of Physics. The SUPER group is led by Associate Professor Manju Sharma.The SUPER group is made up of physicists with common interests in the issues of teaching and student learning.

In 2008 the group focused on completing various projects with eight journal publications capturing various facets of student projects. Dr Derek Muller graduated and Ms Christine Lindstrom continued her PhD studies. Mr Nigel Kuan completed a third year special project with the group. Three overseas students worked with the SUPER group in 2008. Mr Apisit Tongchai, from Mahidol University, Thailand completed 18 months of his PhD candidature in October investigating student understanding of mechanical waves. Mr Sait Gokalp and Ms Nurgul Duzenli-Gokalp from Middle Eastern Technical University, Turkey worked on WebQuests and mathematics education respectively.

THE INSTITUTE OF ASTRONOMY (IOA)

Led by Professor Richard (Dick) Hunstead, the Institute of Astronomy (IoA), based within the School of Physics is a leading centre for astrophysical research in Australia. IoA research spans a wide range of theoretical, observational and instrumental programs and is conducted in many exciting, frontline areas including stellar astrophysics, plasma astrophysics, cataclysmic variables, black-hole binaries, masers, pulsars, supernovae and their remnants, the interstellar medium and the Galactic centre. Beyond our Galaxy, studies include normal galaxies, the Magellanic Clouds, clusters of galaxies, active galaxies and quasars, gravitational lensing and cosmology.

COMPLEX SYSTEMS

The Complex Systems Group draws together researchers with interests in complex natural or artificial systems including:

- Brain Dynamics
- Space & Solar Physics
- Plasma Theory

The Group's research in these areas is primarily theoretical and computational, with strong interactions with experimentalists, observers, and industry. It typically involves investigating physics at scales ranging from microscopic to whole-system, then integrating these into overall theories that can be applied to understand real systems.

Much of the Group's work involves nonlinear and random processes, and emergent phenomena that exist only when large systems are assembled from their constituent parts. Interdisciplinary interactions are also a key feature of our research, spanning a wide array of areas, including astrophysics, brain dynamics, complex and dusty plasmas, critical phenomena, nonlinear dynamics, space physics, and solar physics. ARC Federation Fellow, Professor Peter Robinson leads the Complex Systems Group.

QUANTUM PHYSICS

The new field of quantum information science aims to push the boundaries of our understanding of quantum mechanics and to develop powerful new technologies based on the unique properties of quantum systems. The Quantum Physics Group at the University of Sydney undertakes research in quantum information theory and carries out experiments on nanoscale devices with the aim of learning how to engineer complex quantum systems. The Group is led by Dr Stephen Bartlett (Theory) and Dr David Reilly (Experiment).

Topics of interest include: quantum measurement and control of spin qubits, few biomedical technology based on quantum systems, foundations of quantum physics and quantum gravity and Quantum Information Theory (QIT).

CONDENSED MATTER THEORY

Professor Cathy Stampfl leads the research in Condensed Matter Theory, which focuses on ab initio investigations of materials and surface science phenomena. First-principles electronic structure calculations are used in conjunction with high performance computing to probe chemical reactions at interfaces and explore the energetics, atomic, electronic, and magnetic properties of polyatomic systems. Our goal is to acquire a detailed understanding of the fundamental science to engineer and design complex materials.

CUDOS

ARC Federation Professor Ben Eggleton is the Director of CUDOS which has a vision to be an international leader in nonlinear photonics and microphotonics and a mission to demonstrate all-optical processing applications and devices for ultra-high bandwidth optical telecommunications systems. These derive from fundamental research in the most exciting and vibrant areas of photonics science-non-linear optical materials, photonic crystals, micro-structured optical fibres and micro-photonics. CUDOS@Sydney is a major centre of the national CUDOS Centre of Excellence which combines the expertise of researchers at the University of Sydney, ANU, Macquarie University, Swinburne University, the University of Technology Sydney and CSIRO.

HIGH ENERGY PHYSICS

Dr Kevin Varvell leads The Sydney University High Energy Physics Group. High Energy, or Particle, physics involves the study of the world of subatomic particles by observing the collisions of particles accelerated either naturally (as in cosmic rays) or using accelerators. The group is currently involved in several main areas of research in collaboration with various universities. In Australia, we are collaborating on the Belle and ATLAS projects with the Experimental Particle Physics Group (EPP) of the University of Melbourne. High Energy Physics areas of research are:

- The search for Higgs Bosons at ATLAS, CERN, Geneva, Switzerland.
- The search for CP-violation at Belle, KEK, Tsukuba, Japan.
- The development of accelerator-driven nuclear reactors.

THE INSTITUTE OF MEDICAL PHYSICS

The Institute of Medical Physics is led by director Professor Clive Baldock and provides a focus for all research and teaching activities within the School that are related to Medical Physics. Research activities include: Radiation Physics and Dosimetry; applications of PET/CT and SPECT; Monte Carlo Radiation Transport; Radiotherapy verification; Radiobiology and Radiation Biophysics; and Bio-acoustics.

THE INSTITUTE OF NUCLEAR SCIENCE

The Institute of Nuclear Science, led by Dr Razi Hashemi-Nezhad, acts as an umbrella for all research and teaching activities within the School that are related to nuclear science. Many of these activities are undertaken collaboratively with the Australian Nuclear Science & Technology Organisation (ANSTO).

INTEGRATED SUSTAINABILITY ANALYSIS (ISA)

The Centre for Integrated Sustainability Analysis (ISA) develops leading-edge research and applications for environmental and broader sustainability issues, bringing together expertise in environmental science, economics, technology, and social science. ISA, under the direction of Professor Manfred Lenzen, has developed a carbon footprint, which was featured on ABC TV's Catalyst program during 2008.

SPACE AND SOLAR PHYSICS

Led by Professor Iver Cairns Space Science covers everything from Earth's surface to the Sun and then out into the galaxy. The range of space physics studied at the School of Physics is from Earth's ionosphere to the Sun's surface to the outer boundaries of the heliosphere and solar system, where the Sun's 'solar wind' interacts with the local interstellar medium. As such it includes the solar corona and solar wind (sometimes called the interplanetary medium), the ionospheres and magnetospheres of Earth and the other planets, and the 'Space Weather' that results from interactions between the Sun and Earth.

Space physics is essential for understanding humanity's local environment and solar system. It is also crucial for modern astrophysics, since space plasmas are the only extraterrestrial plasmas available for detailed in situ study and comparison of theory with data. Plasma physics is the basic underlying sub-discipline of physics. The reason is that these regions all contain plasmas, the so-called 'Fourth State of Matter', in which atoms are either partially or fully ionized into electrons and ions, thereby being strong influenced by electromagnetic waves and vice-versa. Research areas include:

1. Space Physics Phenomena – development and testing of theories for space phenomena, especially related to solar activity (e.g., flares and coronal mass ejections/CMEs), radio emissions, and the outer heliosphere.
2. Instruments and Space Missions.
3. Prediction of Space Weather – especially radio and particle signatures.

THEORETICAL PHYSICS

Professor Don Melrose heads the Theoretical Physics Group. Theoretical work occurs in all research groups, spanning many areas of Physics. The Theoretical Physics group concentrates its research on the physics of astrophysical plasmas. Research in Plasma Theory concentrates on various theoretical topics such as particle acceleration and heating, non-linear wave processes and complex dusty plasmas. Most members of this group are also affiliated with the Institute of Astronomy (IoA).

INSTITUTE OF ASTRONOMY

AWARDS AND HONOURS

In 2008, Professor Joss Bland-Hawthorn was the recipient of the inaugural Group Award from the Royal Astronomical Society (UK) for his role in the Two Degree Field Galaxy Redshift Survey. He also received the Muhlmann Award (shared with Glazebrook and Cuillandre) from the Astronomical Society of the Pacific (USA) for his invention of the nod and shuffle technique, which has revolutionized sky subtraction in astronomical data.

Professor Bryan Gaensler was selected as one of 1000 delegates to the "Australia 2020" summit held in Canberra in April 2008, and participated in the stream on "The Productivity Agenda". Gaensler was also appointed by Governor-General Quentin Bryce to the Board of the Anglo-Australian Telescope, for the term Jan 2009 to Jun 2010, and was a keynote speaker at the National Congress of the Australian Institute of Physics, held in Adelaide in December 2008.

In a ceremony at NSW Parliament House in October 2008, Gaensler was named a 2008 "Young Tall Poppy" by the Australian Institute of Policy & Science, for his work on studying magnetic fields in the Universe. The Young Tall Poppy awards are presented annually for excellence in academic achievement, community engagement and promotion of science.

PhD student Chris Hales was awarded the 2008 Bok Prize for outstanding research in astronomy by an Honours student at an Australian university, for his honours thesis "Cosmic Forensics: A Study of the Pulsar Wind Nebula G359.23-0.82, 'The Mouse'". The Astronomical Society of Australia (ASA) awards the prize annually. Chris received his award and gave an oral presentation on his work at the July 2008 annual scientific meeting of the ASA in Perth. Julian North shared the CISRA Postgraduate Physics Prize, for the best refereed publication.

WR 104: THE DEATH STAR?

New images produced by Associate Professor Peter Tuthill's astronomical imaging work have revealed the elegant spiral plume being cast from the extreme Wolf-Rayet star system WR 104. At the heart of the system, a pair of stars in a binary system orbit every eight months, and their dance is woven into the form of the surrounding nebula with the stately Archimedian spiral appearing to rotate on the sky. The image depicted in Figure 1 shows a dozen individual frames of data, each rotated to follow the motion and then stacked together.

In nature, beauty and danger can go hand-in-hand, and there is just a chance that this remarkable structure could be something more than an idle curiosity tucked away in a corner of the constellation Sagittarius. The Wolf-Rayet star at the heart of the system is at the end of its life, and will explode as a supernova within a few hundred thousand years. It is believed that events like this can sometimes generate a gamma-ray burst, in which beams of energy erupt along the polar axis of the star. Going by the images, it could be that Earth lies uncomfortably close to looking down the barrel of this particular system; a spectacular but risky vantage point which could even impact life on Earth.

However, many processes are also at work, which can defuse this particular type of bomb, and the chance that this star system could pose a credible threat to Earth's biosphere is extremely remote. However, while Tuthill and his colleagues used to simply admire the system for its elegant physics and striking appearance, now there is just that little hint of danger lurking beneath the surface.

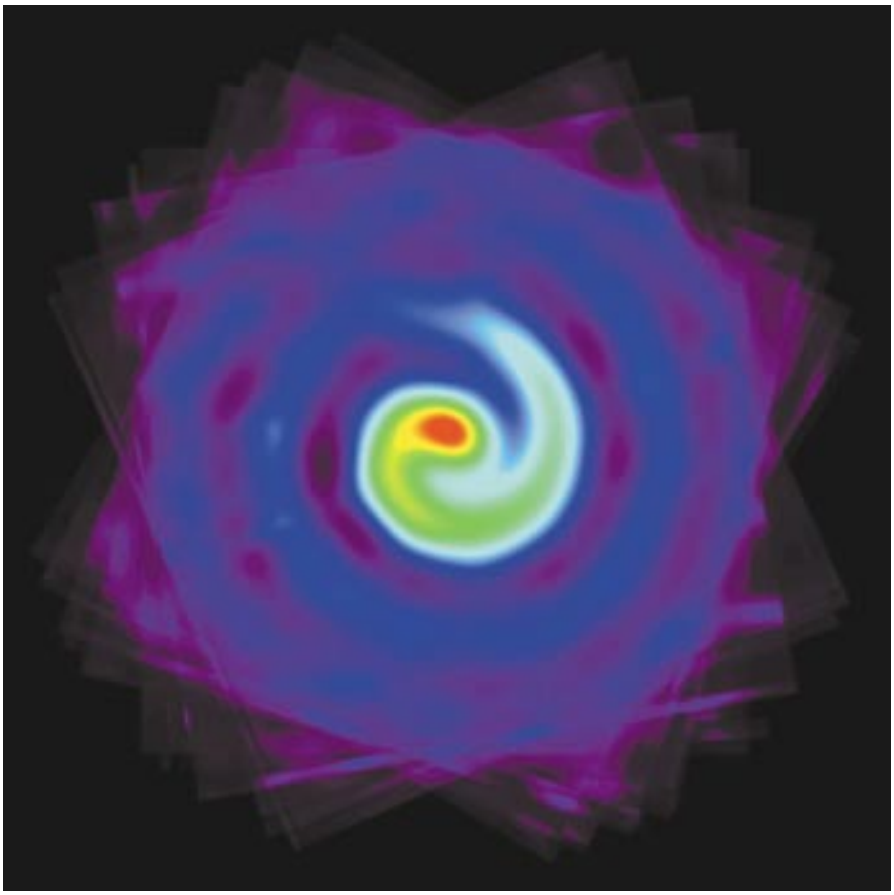


Figure 1: The spectacular Pinwheel Nebula, WR 104.

A NEW YOUNG SUPERNOVA REMNANT

Postgraduate student Anant Tanna and Prof. Bryan Gaensler used ESA's orbiting X-ray observatory XMM-Newton to re-discover an ignored celestial gem. The object in question, known as "G350.1-0.3", is incredibly small and young in astronomical terms, only eight light years across and about 1000 years old. “Only a handful of such young supernova remnants are known. So even having one more is important” said Tanna. That is because young supernova remnants are highly luminous, with the newly formed chemical elements glowing brightly, making them easier to study. Its shape, age and chemical composition will allow astronomers to better understand the violent ways in which stars end their lives. The results were published in May 2008 in *The Astrophysical Journal Letters*.

DOUBLING THE SIZE OF THE MILKY WAY

It took just a couple of hours using data available on the internet for Bryan Gaensler, Greg Madsen & Shami Chatterjee from the School of Physics, along with Harvard PhD student Sui Ann Mao, to discover that the Milky Way is twice as thick as previously realised. The team found that our Milky Way Galaxy is 12,000 light years thick, not the 6,000 light years that had been previously thought. The team's results were presented in January 2008 at the 211th meeting of the American Astronomical Society in Austin, Texas, and were published in late-2008 in the Proceedings of the Astronomical Society of Australia. "Some colleagues have come up to me and have said 'That wrecks everything!'" said Prof. Gaensler. "And others have said 'Ah! Now everything fits together!'"

THE STRUCTURE OF DISK GALAXIES

Prof Joss Bland-Hawthorn's group continued to work on the outer disks of Sculptor galaxies. With PhD student Marija Vlajic, he has now shown that the heavy element abundances in NGC 300 decline with radius, but then flatten off in the outer disk, an effect that was completely unexpected but was recently detected in the outer disk of the Milky Way Galaxy.

Measuring super-massive black holes PhD Student Stephen Fine, together with his supervisor, A/Prof Scott Croom, used the dynamics of the high velocity gas at the centre of over 30,000 quasars to infer the masses of the black holes thought to power these enigmatic objects. More importantly, this work tested some of the assumptions used to make such black hole mass estimates. A surprising conclusion was that the broad spectral lines (which are velocity broadened) emitted from the gas near the black hole show remarkably little variation from object to object. This calls into question the standard techniques for estimating black hole masses in quasars which relies on combination of luminosity and line-width measurements. In their paper, published in the *Monthly Notices of the Royal Astronomical Society*, Fine and Croom also used geometric arguments to demonstrate that the high velocity gas emitting the broad emission lines cannot lie primarily in a disk, but must have a substantial spherically symmetric component.

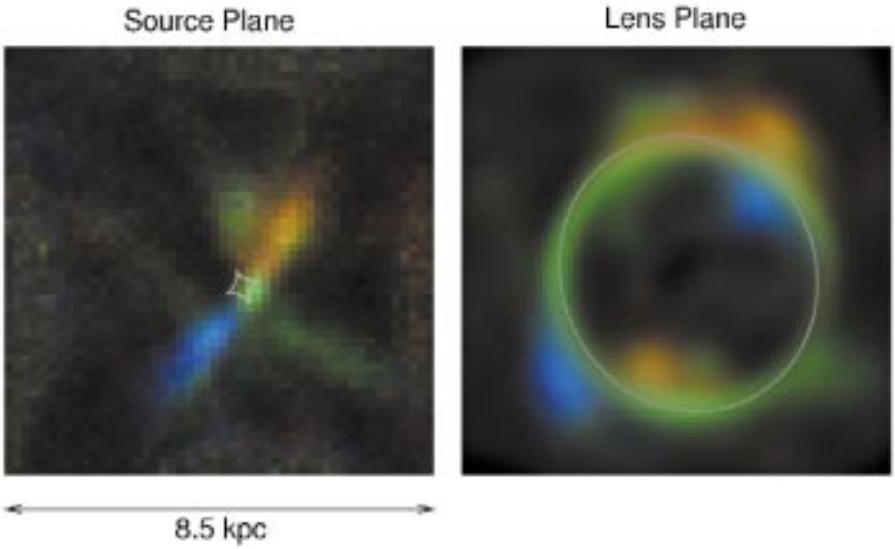


Figure 2: Reconstruction of the huge molecular gas disk in PSS J2322+1944. The right-hand panel presents the observed radio ring formed by a distant source being gravitationally lensed by a nearby galaxy, with the colour-coding representing velocity. The left-hand panel is the distribution of gas in the high-redshift source, revealing a massive rotating disk.

GRAVITATIONAL ASTROPHYSICS

In 2008, the Gravitational Astrophysics group continued its strong research output, with a number of significant results. Brendon Brewer, in collaboration with his supervisor, A/Prof Geraint Lewis, Dominik Riechers (MPIA) and Prof Chris Carilli (NRAO) used his powerful Bayesian reconstruction technique on the gravitational lens PSS J2322+1944. Radio observations of this system show a distorted ring (known as an Einstein Ring), and the reconstruction reveals the source to be a huge rotating disk of cold molecular gas, the fuel for star formation and nuclear activity (Figure 2). This provides one of the most detailed views of a galaxy in formation and received substantial international press attention, with the results appearing in the *Astrophysical Journal*.

Through 2008, the Gravitational Astrophysics group continued to explore the theme of fundamental cosmology, by addressing whether the expansion of space is an observable effect. Our discussion of this issue forms an important pedagogical basis for understanding the basic model of our universe. It is published as an article in the Monthly Notices of the Royal Astronomical Society, titled "Cosmological radar ranging in an expanding universe", and features the following members of the group, A/Prof Geraint Lewis, Dr Matthew Francis, and Juliana Kwan.

Microlensing represents one of the most computation challenging aspects of the phenomenon of gravitational lensing, and typically the range of scientific questions that can be addressed has been severely limited by the lack of a supercomputer implementation of the computational tool. PhD student, Hugh Garsden, and his supervisor, A/Prof Geraint Lewis, have developed the first true parallel approach to the question of gravitational microlensing, allowing us to take full advantage of a supercomputer environment. Using the Green Machine in Swinbune, we have so far considered scenarios a thousand times greater than those typically addressed (Figure 3), opening up a new regime for study.

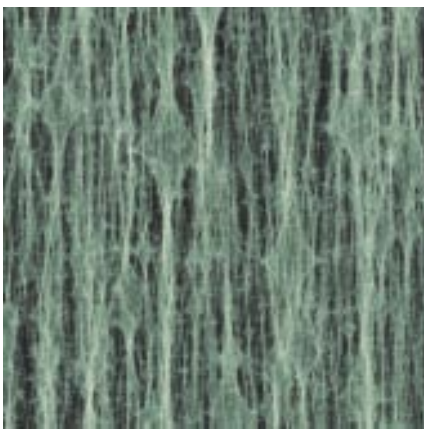


Figure 3: A gravitational microlensing magnification map, formed by the presence of a billion lensing stars. The detailed revealed in this map would not have been possible with previous approaches.

The School hosted OzLens2008, a major international conference, which attracted 80 participants from over 30 institutes around the world. The week-long conference invited the lensing community to share their recent research activities, ideas and theoretical & observational results within a variety of fields; the topics covered included microlensing, galaxies & strong lensing, galaxy clusters, gravitational telescopes, cosmology, lens surveys, time-delays, weak lensing & large-scale structure and CDM substructure. Our visitors also enjoyed the conference dinner at the QVB Tea Room, as well as the university surrounds and the attractions of Sydney city. The meeting, led by the School's Prof. Geraint Lewis in collaboration with Marusa Bradac (UCSB) was an undeniable success, and provided the School's Ph.D. students with the opportunity to present their research to the international audience.

NEW AND NOVEL ASTRONOMICAL INSTRUMENTATION

The group lead by Prof Joss Bland-Hawthorn has been working closely with the AAO on two new instruments. Research Fellows Simon Ellis and Torgny Karlsson have developed the science case for HERMES, a multi-object echelle spectrograph for the AAT devoted to galactic archaeology. The group has also worked on the GNOSIS instrument, a new OH suppression spectrograph for AAT/Gemini using photonic technologies developed by the group and demonstrated at Siding Spring Observatory in December 2008.

MOLONGLO RADIO OBSERVATORY

With the completion of the SUMSS and MGPS2 surveys, the major development work at the Observatory during 2008 involved SKAMP, the Square Kilometre Array Molonglo Prototype. This involved simultaneous observations with the SKAMP1 correlator and the existing MOST backend to debug and correct baseline errors. Progress was hampered by persistent strong interference arising from mobile phones, which also compromised ongoing observing programs. At the same time software, firmware and hardware design of SKAMP2 proceeded, with installation of new racks and a complete redesign of the main control room.

A 2-day pulsar conference was held on site in March, attracting 27 astronomers from Sydney and interstate. Observatory staff also hosted visits by students attending the National Youth Science Forum, as well as visits by students from local schools and special interest groups.

SYDNEY UNIVERSITY STELLAR INTERFEROMETER (SUSI)

The Sydney University Stellar Interferometer (SUSI; see Figure 4) group was busy during 2008, with a number of scientific results being released, and commencement of a major upgrade of the instrument's beam-combiner system as well as preparations for remote observing. Mike Ireland, Peter Tuthill, Gordon Robertson, John Davis, Bill Tango, Julian North and Andrew Jacob from the School were all involved in the project, and Theo ten Brummelaar (CHARA array, California) made a major contribution to the remote observing work.

SUSI observations of the star beta Virginis were used to measure an accurate angular diameter, which was then combined with published observations of the oscillation frequencies of the star to calculate a mass accurate to 4%. Accurate stellar masses are vital to understanding the structure and evolution of stars, but in the past were available only for stars, which are members of well-observed binary systems. Beta Vir is the second isolated star for which the SUSI group has been able to overcome this limitation, by using combined interferometry and asteroseismology. In another study (led by Hans Bruntt), SUSI observations were used to find the angular diameter of the rapidly oscillating peculiar A star alpha Circini. This was the first interferometric study of such a star, and allowed its fundamental parameters (radius and effective temperature) to be found, thereby constraining models of the atmospheric structure and pulsation. Analysis of SUSI observations was concluded for the Cepheid l Carinae, for which the distance was directly measured by combining interferometric angular diameters as a function of the pulsation cycle and radial velocity measurements. In another completed study, the binary orbit and masses of the stars in the unusual system delta Scorpii were determined. The results show the effects of an outburst of one of the stars.

Instrumental development was centred on the commissioning of the new PAVO beam combiner for SUSI. Taking full advantage of the availability of fast photon-counting CCDs, PAVO will observe multiple simultaneous wavelength channels, thereby greatly increasing the sensitivity and flexibility of the instrument. It also will improve data quality through subdivision of the optical pupil.

Full exploitation of the scientific potential of the upgraded PAVO system will require observations on a large fraction of the clear nights, over a period of years. With no permanent staff member stationed at SUSI, this has not been possible in the past. To overcome this bottleneck, the group is implementing remote observing.

Figure 4: The Sydney University Stellar Interferometer at twilight.

2008 saw the refurbishment of a room in the School of Physics as the Remote Observing Centre Sydney (ROCS), from which it will be possible to operate SUSI, the CHARA Array in California, or other telescopes. Work was started at SUSI to facilitate remote operation, including the installation of motors to move the siderostat station roofs and modification of the control system so all essential functions are controlled through computers. This work was ongoing at the end of 2008.

COMPLEX SYSTEMS

The Complex Systems Group focuses primarily on research on real-world systems that involve interactions across many scales in space and time. Research thus ranges from studies of fundamental physics of subsystems to issues surrounding the integration of interacting subsystems to yield new emergent behaviors at the global level. The systems of interest range from neurons and brain oscillations, to complex and dusty plasmas in the laboratory and space, to wave and wave-particle dynamics, chaos, nonlinear dynamics, criticality, and stochastic processes. Theoretical, computational, and experimental approaches are thus employed to investigate such phenomena in numerous physical situations.

The group maintains a wide variety of interdisciplinary interactions both internally and with a broad range of research partners around the world. These include local and international universities, research institutions, hospitals, government agencies, and technology companies, as detailed below.

Complex Systems is one of the largest research groups in the School, accounting for nearly one-fifth of the School's, research activity, publications, grant income, and postgraduate enrolments. In 2008 it involved one Federation Fellow, two Australian Professorial Fellows, two QEII Fellows, one Lecturer, 10 Research Fellows, over 20 Postgraduate and Honors students, and several other members. In 2008 the group published one book and approximately 100 refereed articles in its main areas of Brain Dynamics and Computational Neuroscience, Complex Plasmas, Plasma Nanotechnology, Space Plasma Physics, and Theoretical Astrophysics, detailed below.

BRAIN DYNAMICS AND COMPUTATIONAL NEUROSCIENCE

The dynamics and information processing pathways of the brain are of intense research interest. A key window on these functions exists because the cerebral cortex exhibits spatiotemporal patterns of activity ("brain waves") that are detected by electroencephalography, magnetic resonance imaging, and other techniques. Our work focuses on developing quantitative models of how these dynamical patterns and observations relate to the underlying physiology and structure of the brain, and to their functions. These models yield excellent agreement with multiple classes of experiment.

During 2008, work continued in a number of directions in areas ranging from pure theory to data analysis and experiment, in conjunction with psychologists, psychiatrists, signal analysts, medical staff and others in the Brain Dynamics Center at Westmead Hospital, RPA Hospital, and elsewhere, and with industry partners, including Brain Resource Ltd.

Some 2008 research highlights were that we

- Developed and published improved methods for extracting brain parameters from noninvasive electrical measurements, including electroencephalograms and responses evoked by stimuli.
- Used our brain model to study the spreading and possible control of epileptic seizures.
- Extended and used our quantitative model of the sleep-wake switch in the brainstem to analyze jetlag, fatigue, sleep deprivation, and a variety of other phenomena. Excellent agreement with experimental work has been found.
- Developed new models for evoked responses and their modulation by large-scale brain networks.
- Used physical principles to constrain the types of brain networks that can exist, consistent with brain stability under dynamical changes in brain connectivity required during information processing.
- Investigated transient synchronized dynamics using high-density EEG recordings and found the functional relevance of these transient periods in perceptual grouping tasks.
- Developed a novel information processing paradigm of the brain, termed distributed dynamical computation, in which information is communicated by propagating waves, and processed in their interactions.
- Published a major review of neural field theory of brain activity.
- Continued our work with Brain Resource Ltd on development and commercialization of brain function measures, and began development of new software for sleep analysis.

COMPLEX AND DUSTY PLASMAS

In 2008 the research highlights were:

- Small clusters of dust particles with variable charges were studied to analyze mode spectra of dust particle oscillations. It was demonstrated that the main effect related to the charge fluctuations was a splitting of the spectrum modes. The splitting depended on the value of the charge variance. It was discovered that the most affected mode was the fundamental pure rotational mode while the least affected modes were the pure translational ones. Other modes demonstrated mixed response to the variance of the charge fluctuations. Furthermore, particular attention was paid to the influence of correlated and uncorrelated charge fluctuations on the mode spectra of these clusters. It was found that the main signature of the correlated charge fluctuations was the shift of the lowest-frequency (shear) mode; other modes were split/shifted according to their mode number and the weight of the shear and compressional parts in their oscillation pattern. The obtained results are useful for plasma diagnostics as the character of dust charge fluctuations extracted from the analysis of the cluster mode spectra provides important information on the plasma characteristics.
- Studying fundamental properties of dust in a plasma, the stability and arrangements of two dust particles were investigated in terms of the Hamiltonian of the system. It was shown that the Hamiltonian description of a non-Hamiltonian system can be used to predict qualitative features of possible equilibriums in a variety of confinement potentials and can provide useful plasma diagnostics. The results obtained compared favorably with those of simulations and were used to create experimental hypotheses. In particular, the symmetry-breaking transition of the particles as they leave the horizontal

plane admits a Hamiltonian description which is used to elucidate the wake parameters.

- It was shown that in a multi-component low-temperature plasma containing electrons, ions and dust, the complicated dependence of the ion viscosity on the ion temperature gradients leads to a plasma equilibrium state with anisotropic pressure. This pressure anisotropy can be of the order of the ion pressure in some limiting cases, in which the ion Larmor radius or the ion mean free path are of the order of the characteristic length of the plasma nonuniformity. For a sufficiently large dust number density, they contribute to the plasma pressure anisotropy and to its spatial dependence. It was predicted that under certain conditions, convective plasma flows can arise in confinement devices.
- When investigating effects of dust in the plasma sheath, the linear screening of a point non-absorbing charge in homogeneous collisionless plasma with cold ion flow was studied. The potential in the direction perpendicular to the flow was found to have an attractive part (i.e. two like charges aligned perpendicular to the flow can attract each other electrostatically). This is relevant to the screening of charged dust particles levitated in the plasma-wall transition layer. By using the Bohm collisionless sheath model, it was shown that in certain cases electrons do not contribute significantly to the screening of dust particles: deep in the non-neutral sheath the electron density is much smaller than the ion density, and in the quasineutral pre-sheath (well above the sheath entrance) kinetic energies of ions are small as compared with the electron temperature. The model proposed was shown to be in agreement with existing measurements of the interaction potential between two dust particles aligned perpendicular to the ion flow in the plasma-wall transition layer of a radio-frequency discharge. Furthermore, the structure of a plasma sheath in the presence of an oblique magnetic field was investigated. The effect of plasma magnetization, plasma ionization and plasma–neutral collisions on the sheath was examined for different orientations of the magnetic field. It was demonstrated that the width of the plasma sheath is dependent not only on the collision frequencies and the plasma magnetization but also on the angle of magnetic field orientation. The size of the sheath layer decreased with the increase in the angle between the magnetic field and wall. The grain inside the sheath acquired a more positive charge when the magnetic field was perpendicular to the wall in comparison with the parallel to the wall case. This resulted in the different levitational equilibriums of the grain.
- The nonlinear wave propagation in collisional dusty plasma was investigated, with application to astrophysical dusty plasmas. It was shown that when electrons and ions move approximately with the same bulk velocity, the large amplitude waves can be easily excited in such a collisional dusty medium and they can be described by derivative nonlinear Schrödinger equation. These soliton solutions may be useful in explaining the parsec scale structures in the astrophysical plasmas.
- When studying motion of a small charged absorbing body (micrograin) immersed in a stationary weakly ionized high pressure plasma environment, it was discovered that the total frictional (drag) force acting on the grain can be directed along its motion, causing the grain acceleration. Moreover, it was found that at some velocity, the forces associated with different plasma components can balance each other, allowing free undamped superfluid-like motion of the grain. The conditions when such behavior can be realized and the possibility of a superconductive grain current were discussed in the context of complex (dusty) plasmas.
- The wake behind conducting objects in a supersonic plasma flow with a directed photon flux was studied numerically. The electron emission leads to a positive charge on the object. It was discovered that the resulting plasma wake differs significantly from the case without photoelectrons. This wake was studied for different photon fluxes and different angles between the incoming unidirectional photons and the plasma flow velocity. Furthermore, the potential distributions surrounding elongated insulating objects being charged by supersonic plasma flows were studied using the particle-in-cell method. The plasma flow introduced an asymmetry in the charging of the body. This resulted in a complex surface charge distribution on the object, and to ion focusing in the wake region. It was demonstrated that the charge and potential distributions on the surface and the wake behind the object depended on the rod length and its inclination angle with respect to the flow. The role of the surface charge distribution in the interactions between insulating rods in a plasma was discussed. The simulations were carried out in two spatial dimensions, treating ions and electrons as individual particles.
- The theory of magnetorotational instability (MRI) in a rotating plasma was further developed as a result of extensive international collaboration effort (including Russia, Ukraine, Georgia, and Brazil). Furthermore, the effect of immobile dust on stability of a magnetized rotating plasma was analyzed. In the presence of dust, a new instability of the magnetized rotating plasma called the dust-induced rotational instability (DRI) was shown to develop. It was shown that in contrast to the MRI in an ideal plasma, requiring the decreasing radial profile of the plasma rotation frequency, the DRI can appear for an increasing rotation frequency profile.
- For plasma technological applications, the growth of carbon nanocone arrays on metal catalyst particles by deposition from a low-temperature plasma was studied by multiscale Monte Carlo/surface diffusion numerical simulation. It was demonstrated that the variation in the degree of ionization of the carbon flux provides an effective control of the growth kinetics of the carbon nanocones, and leads to the formation of more uniform arrays of nanostructures. It was uncovered that a higher degree of ionization leads to a better uniformity of the metal catalyst saturation and the nanocone growth, thus contributing to the formation of more height-uniform arrays of carbon nanostructures.

PLASMA NANOSCIENCE

In 2008, the Plasma Nanoscience group continued computational, theoretical, and experimental studies of plasma-specific effects on the synthesis and post-processing of a range of nanoscale objects of different dimensionalities that find numerous uses in optoelectronic, photonic, nanoelectronic devices, ultra-sensitive sensors and other applications. This research involved major

collaborations with Nanyang Technological University (Singapore), University of Michigan (USA), The George Washington University (USA), Shanghai Jiao Tong University (China), and Josef Stefan Institute (Slovenia, EU). Several important results that improve control and predictability of a number of present-day nanoscale processes have been obtained; these results significantly advance modern nanoscience and in particular, in the area of nanoscale assembly under strongly nonequilibrium conditions, such as on solid surfaces exposed to thermally nonequilibrium low-temperature plasmas.

SPACE PLASMA PHYSICS

The Space Plasma Physics group studies the physics of plasmas and their applications to solar system phenomena and objects. As such, its interests range from Earth's tropopause (the top of the cloud layer) to the Sun to the local interstellar medium. Its primary focus is the plasma physics of particle acceleration and growth of waves and radio emission in the solar corona and interplanetary medium.

During the most powerful events on the Sun, such as solar flares and coronal mass ejections (CMEs), energetic electrons produce radio emissions via linear and nonlinear processes in the solar corona and interplanetary medium. These events are the major sources of space weather and can profoundly influence the terrestrial environment. Type II and III solar radio bursts were discovered almost 60 years ago and are now known to be associated with CME-driven shocks and beams of energetic electrons ejected from sites of solar flares. During 2008 the Space Physics group continued to advance the quantitative understanding of type II and III bursts. This is particularly relevant to the STEREO spacecraft, on which two of the Group are Co-Investigators for theory and interpretation of data from its radio and plasma waves instrument, SWAVES.

Some 2008 research highlights were:

- Publication of two major papers on the theory and instrumentation of the S/Waves experiment on the STEREO spacecraft.
- Analysis of the requirements for testing stochastic wave growth theories in laboratory plasmas.
- Extensive simulations of increasingly realistic scenarios for type III solar radio bursts.
- New analyses of mode conversion of Langmuir waves into electromagnetic radiation in nonuniform plasmas, leading to improved estimates of conversion efficiency.
- Development of tools for automatic detection of solar radio bursts, in collaboration with the Ionospheric Prediction Service.
- Simulation of collisionless shocks and application of shock theory to a variety of space plasmas.

THEORETICAL ASTROPHYSICS

The theoretical astrophysics activities of the Complex Systems group are largely focused on high-energy phenomena associated with magnetized plasmas in strong gravity environments. Some of the most powerful sources in the Universe are driven by the process of accretion, whereby matter is driven inevitably towards a strongly gravitating object, such as a white dwarf, neutron star, or black hole. Enormous amounts of energy can be released by this process, especially in the case of accretion onto a black hole.

In 2008 Dr Kuncic presented an invited talk at the 18th International Congress on Plasma Physics (ICPP), in Fukuoka, Japan. She presented work on modeling MHD turbulence and outflows from accreting black holes in active galaxies that is being undertaken by PhD student Peter Dobbie, with collaborators at the ANU and at the University of Chicago. The ICPP invited talk, which was published in a special issue of Plasma Fusion Research, highlighted the analogy between solar physics and the inner regions of active galaxies (see figure below).

Dr Kuncic also continued to make significant progress on her projects involving modeling high-energy astrophysical sources and in particular, polarization of cosmic X-rays. This work is being conducted by PhD students Aimee McNamara and Erin Jolley in collaboration with University College London and Oxford University.

CONDENSED MATTER THEORY

HIGHLIGHTS OF RESEARCH 2008

Our research involves first principles quantum mechanical investigations into the properties of materials and their surfaces for systems of high relevance to technological applications, as well as of fundamental interest; for example:

1. Heterogeneous catalysts for energy production, manufacturing, and emission control
2. Engineering nitride-based dilute magnetic semiconductor interfaces for potential spintronics applications
3. Fundamental investigations into the physics of gas-surface interactions and adsorption

Below are some highlights of work done over the last year:

Understanding Iridium-based catalysts on the atomic scale

Obtaining a detailed knowledge of the surface structure and stoichiometry is crucial for understanding the physical and chemical properties of advanced materials such as those used in heterogeneous catalysis, corrosion resistance, electronic devices, sensors, and fuel cells. This knowledge is also central for enhancing the performance of existing catalysts as well as developing new ones. Many current industrial processes involve catalytic oxidation reactions, where the catalysts are typically transition metal particles dispersed on oxide supports. The importance of transition metals (TMs) for such reactions has motivated large numbers of studies on oxygen-metal interactions at low index surfaces of TMs with the aim of obtaining a better understanding of the underlying mechanisms on the atomic scale.

As a late 5d transition metal, iridium shows potential in a great variety of applications, particularly as a heterogeneous catalyst in various industrial chemical reactions. With the increased demand for clean alternative energy, iridium is seen as a potential catalyst for COx-free production of hydrogen from ammonia and gasoline to be used as fuel in automobile fuel cells. In addition, it is also considered as an improvement to the automobile catalytic converter because of its unique ability to decompose NO as well as reduce NOx in the presence of hydrocarbons. Clearly, an atomic-level understanding of the interactions of these gas phase species with Ir surfaces would be very valuable, and could lead to improved Ir-based catalysts.

We have initially focussed on the interaction of oxygen with the (111) surface of Ir, and through first-principles calculations we determined the pressure-temperature phase diagram (see Figure 1) for conditions extending from ultrahigh vacuum to those typical of technical catalysis.

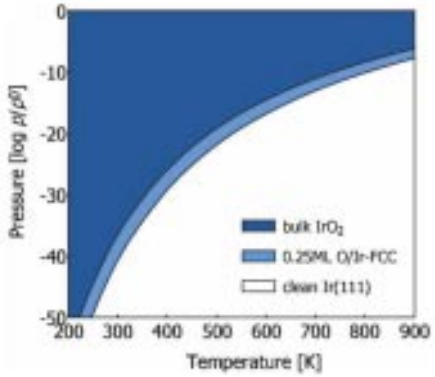


Figure 1: Surface (p,T) phase diagram showing the stability range of the lowest energy structures.

Such phase-diagrams predict the stable surface atomic structure and composition for a given oxygen partial pressure and system temperature. Our results show that there are only three thermodynamically stable regions, namely, the clean Ir(111) surface, the ordered (2x2) oxygen adsorption phase, and bulk iridium oxide. Interestingly, our study reveals that a thin trilayer (O-Ir-O) surface oxide-like structure (see Figure 2) is rather low in energy and is metastable in the region that the bulk oxide is predicted. This suggests that should the formation of the bulk oxide be kinetically hindered (e.g. due to the presence of energy activation barriers) then, this latter phase could be present on the Ir catalyst surface under technical conditions close to those of the real catalysts. This prediction, was in fact recently verified by experimental work.

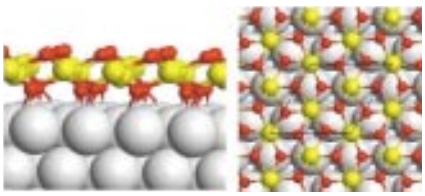


Figure 2

Built-in electric field assisted spin injection in Cr and Mn ?-layer doped AlN/GaN(0001) heterostructures from first-principles

Recently, there has been a rapidly growing interest in the field of semiconductor spintronics, which aims to add spin-dependent functionality and enhanced performance to the existing principles of electronic device operation. One of the crucial prerequisites, and still a challenge, for successful implementation of this concept is the ability to create a desired spin orientation of carriers and to transport them in a semiconductor to an active region of a device with minimum loss of spin-polarization. Traditionally, spin-polarized electrons have been created in semiconductors simply by illuminating the materials with circularly polarized light so that spin-polarized electrons with a preferred spin direction are excited, following the optical selection rules, enabling the generation of a spin-polarized current. For practical spintronic device applications, however, electrical spin injection is required. Electrical spin injection requires a contact material as the spin source, or spin aligner, and a corresponding interface that facilitates the transport of spin-polarized carriers into the semiconductor.

The search for efficient spin injection contact materials falls broadly into two categories. One natural approach is to use ferromagnetic (FM) metal electrodes, such as Fe, which have a high Curie temperature (Tc). The other approach is to use diluted magnetic semiconductors (DMSs). Recently we have carried out extensive first-principles density-functional theory calculations to investigate the feasibility of using Cr- and Mn-doped wurtzite polar AlN/GaN(0001) heterostructures for efficient electrical spin injection systems (see Figure 3).

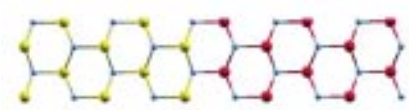


Figure 3

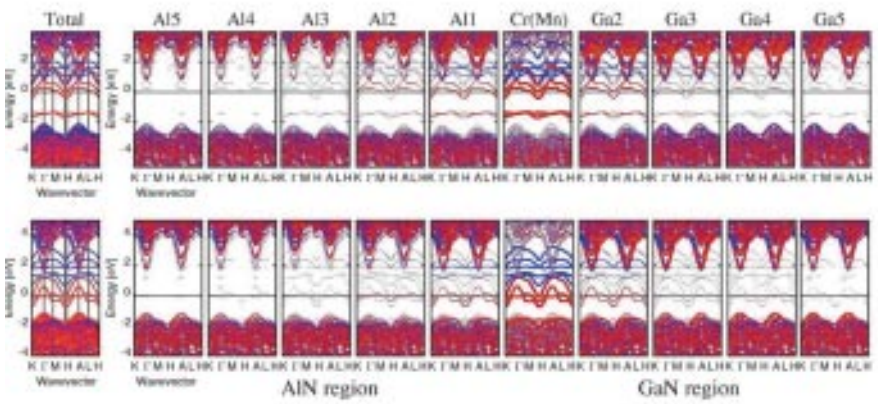
Figure 4 (below): Total and atom-resolved band structures for Cr- (upper panel) and Mn-doped (lower panel) AlN/GaN(0001) heterostructures at the concentration of 1/2 ML. Red denotes majority bands, and blue denotes minority bands.

To overcome the formation of detrimental embedded clusters, we propose digital ?-layer doping perpendicular to the growth direction so as to realize enhanced performance at room temperature, and achieve the desired half-metallic character with 100% spin-polarization. We investigated the formation energy, electronic and magnetic properties, and the degree of spin polarization for both neutral and charged valence states for various dopant concentrations. Our results show that under both metal-rich (Al- or Ga-rich) and N-rich conditions, Cr and Mn dopants prefer to segregate into the GaN region and reside close to the interface. Spin injection channels are constructed via the hybridization between dopant 3d and surrounding host atoms, up to a few monolayers around the interface, where the spin-polarized t2 electrons are injected into the AlN region (see Figure 4).

Significantly, for the energetically favorable configurations, the built-in electric field in the AlN/GaN(0001) heterointerface serves as a driving force for efficient spin injection through the interface and spin transport in the AlN region (see Figure 5). Also importantly, the electronic properties of the heterostructures (half metallic, semiconducting, or metallic) are found to depend sensitively upon the doping concentration and valence charge states. In general, charged valence states can destroy the ferromagnetic half metallicity for both systems, particularly in n-type materials. These results will be useful with regard to the practical fabrication of desirable heterostructures for optoelectronic and semiconductor spintronic devices

Trends and understanding of rare-gas atom (He, Ne, Ar, Kr, Xe) adsorption on the Pd(111) surface

It was recently found from ab initio investigations [J. L. F. Da Silva et al.,



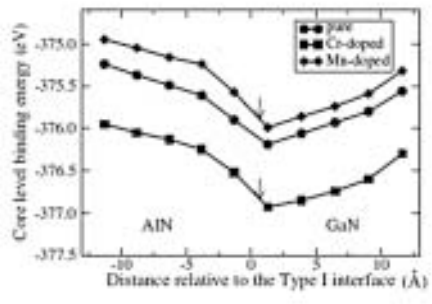


Figure 5: Nitrogen 1s core-level binding energies in pure and Cr and Mn-doped AlN/GaN(0001) heterostructures, demonstrating the presence of the build-in electric filed. The arrows indicate the energetically most favorable ?-layer doping positions.

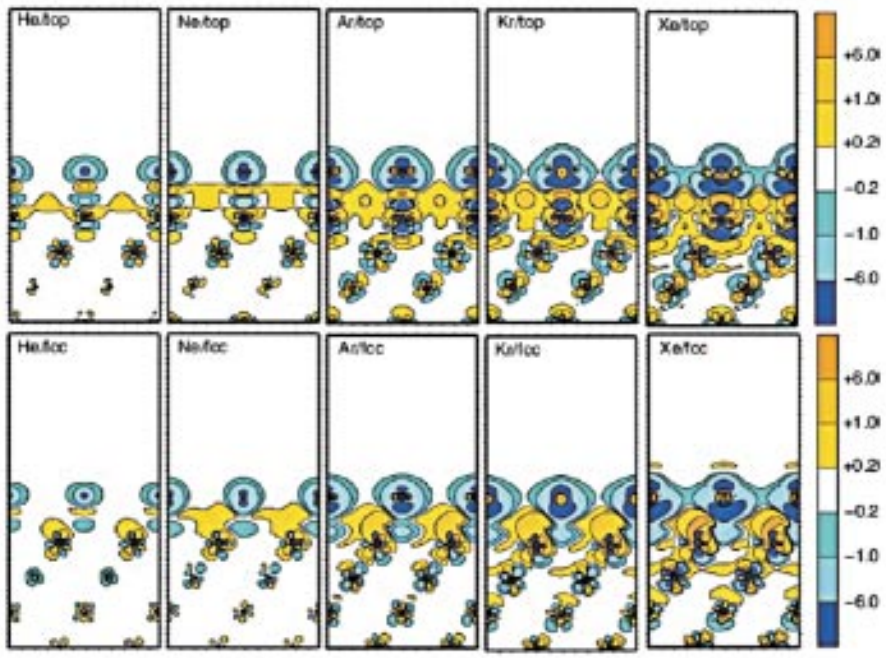
Phys. Rev. Lett. 90, 066104 (2003)] that polarization effects and the site dependence of the Pauli repulsion largely dictate the nature of the interaction and the site preference of Xe adatoms on close-packed metal surfaces. It is unclear if the same interaction mechanism occurs for all rare-gas atoms adsorbed on such surfaces. To address this question, we performed all-electron density functional theory calculations for He, Ne, Ar, Kr, and Xe on Pd(111). Our results confirm that polarization effects of the rare-gas adatoms and Pd atoms in the topmost surface layer (see Figure 6), together with the site-dependent Pauli repulsion, largely determine the interaction between rare-gas atoms and the surface. Similar to our earlier ab initio study mentioned above, the on-top site preference is obtained, which was hitherto completely unexpected based on early understanding.

CUDOS

Background: One of two Australian Research Council Centres of Excellence administered by the University of Sydney is headquartered in the School of Physics. Under the direction of Federation Fellow Professor Ben Eggleton, CUDOS (the Centre for Ultrahigh bandwidth Devices for Optical Systems) commenced operation in 2003 and by 2008 had over one hundred researchers, students and administrative staff spread over six Universities, three in NSW, two in Melbourne and one in the ACT. The node in the School of Physics represents approximately half the total output of the Centre.

The Centre's research focus is primarily on integrated photonics, where a multiplicity of optical functions are integrated onto one photonic chip. See the figure for an illustrative example, where light is transported from optical fibres into a planar structure. Using lithography and etching similar to that in the electronics industry, we modify the planar surface to produce waveguides, spectral dispersers, dispersion compensators,

Figure 6: Difference electron density distributions for He, Ne, Ar, Kr, and Xe (from left to right) adatoms on the Pd(111) surface in the on-top (upper) and fcc (lower) sites. Yellow, gold, and orange (cyan, sky blue, and blue) indicate regions where the electron density increases (decreases).

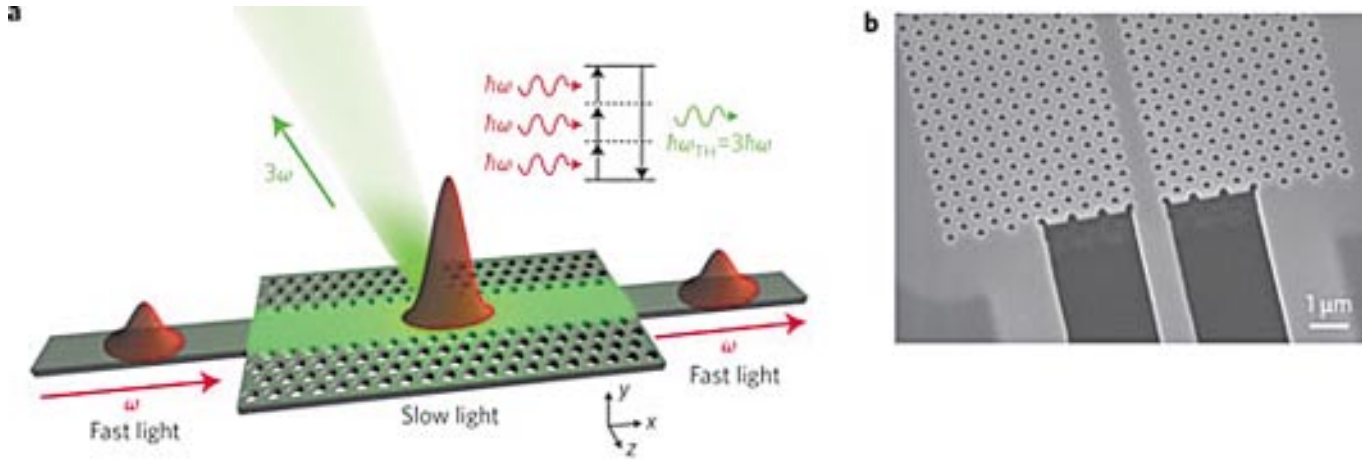


Professor Ben Eggleton with Dr Jeremy Bolger and Dr Mark Pelusi in the CUDOS Labatory

splitters and couplers. We aim produce all the optical components that one might expect to find in a normal optical communications system, but on a single chip rather than a whole series of discrete components connected by fibres.

Research highlights: During 2008 we demonstrated that the photonic chip is a reality. University of Sydney researchers achieved national and international attention for their work done in collaboration with the CUDOS group at ANU and with a research team at the Danish Technical University in Copenhagen to demultiplex data from a 640 Gb/s signal using an all-optical switching technique.

The success of this experiment lay in an innovative application of a nonlinear optical phenomenon called four wave mixing, where light at two different wavelengths co-propagating through a nonlinear optical material parametrically excites light at new wavelengths shifted by the difference frequency between the two optical inputs. The efficiency of this process dramatically increases with the intensity of the two mixing beams. The nonlinear mixing element was a planar waveguide around 50 mm in length fabricated in chalcogenide glass. Light at one wavelength carrying the 640 Gb/s data stream and a demultiplexing signal with a clocking pulse at 10 Gb/s carried on a second optical wavelength were coupled into the waveguide. When pulses from the two signals overlap in time, the intensity of the two beams will parametrically



excite, by four wave mixing, new optical wavelengths. Data from the 640 Gb/s signal is therefore clocked at 10 Gb/s onto one of these new carrier wavelengths which can be spectrally filtered to isolate it.

The team presented results showing optical demultiplexing of a 10 Gb/s signal from a 640 Gb/s data stream with minimal system penalty. The result was reported at the OECC Meeting in Sydney and a press release associated with this presentation attracted international media attention, including an in-depth review on Channel Nine's *Sunday* program.

This ability to tightly confine light, thus creating very high intensities which in waveguides of nonlinear material like chalcogenide or silicon can excite nonlinear optical behaviour, has led to some startling experimental observations that have been reported in *Nature Photonics*. One of these was the observation of frequency tripling, from 1.5 ?m to 0.5 ?m in silicon (see figure). This completely unexpected result (as silicon is opaque to green light) was due to the slowing of the light in a photonic crystal, increasing the strength of the nonlinear interaction between the light field and the nonlinear waveguide material. The dispersion in the waveguide enabled the fundamental and third harmonic to be phase matched, an essential condition for parametric excitation.

International Conference Organisation: The largest meeting in optics and photonics to be held in Australia for at least ten years was held at Darling Harbour in July 2008, with CUDOS staff playing leading roles in the organisation. Ben Eggleton chaired the Opto-electronics and Communications Conference (OECC), Asia's most prestigious meeting in this area, while CUDOS COO Chris Walsh chaired the Congress of the International Commission for Optics (ICO), a triennial event attended by optics researchers from all fields. The meetings were co-located at Darling Harbour with over 700 attendees.

Commercialisation: The School of Physics through CUDOS has hosted a Linkage project with Finisar, originally an Australian start up but now part of an international company. The Australian group developed novel wavelength-selective switching technology with application to optical communications networks.

The Linkage project used the high speed optical test facilities built up as part of the Centre of Excellence and the expertise of CUDOS researchers to develop an entirely new product based on Optium technology. This is now being marketed world wide, with the Company paying the ultimate compliment by recruiting the postdoctoral Fellow (Dr Michael Roelens) working on the project.

HIGH ENERGY PHYSICS

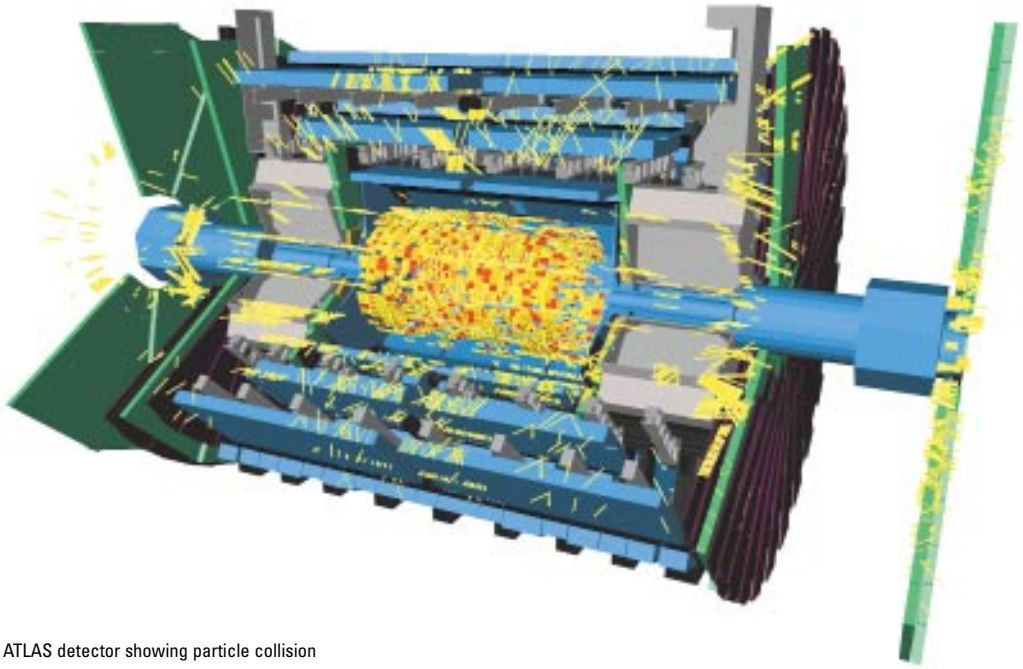
The High Energy Physics group is involved in large international experiments at CERN near Geneva, Switzerland and at KEK in Tsukuba, Japan.

2008 proved to be an exciting if ultimately frustrating year for the ATLAS experiment at CERN in which the School of Physics is involved. ATLAS is one of the giant detectors on the Large Hadron Collider (LHC) which will study proton – proton collisions at an energy approaching an order of magnitude higher than has previously been achieved. Its aim is both to complete the so-called "Standard Model" of the fundamental particles of nature by finding a particle called the Higgs boson, linked to the question of why particles have mass, and to look for new things beyond the Standard Model, such as supersymmetry, evidence for extra dimensions, and mini-black holes.

September saw the first beams injected and circulated in the LHC, amidst a phenomenal wave of interest from the media. Group members found themselves doing radio and television interviews, giving highly oversubscribed public lectures and generally getting immersed in the hype. Unfortunately a problem occurred with one of the superconducting magnets in the LHC ring when the circulating proton beams were being ramped up to full energy. A number of magnets were damaged in the incident and operations were forced to cease for the year whilst repairs were begun. First collisions will now occur in 2009, and our group remains busy preparing the necessary strategies we will use to analyse the first data when it arrives.

During the startup the ATLAS detector, which had previously been recording cosmic ray interactions, was switched to recording interactions that occurred when a proton beam was directed at a target just near the detector. ATLAS worked just as expected and the Figure on page 26 shows a splash of particles from one of the collisions lighting up the detector.

Meanwhile, in Japan, the other experiment in which the School of Physics participates, *Belle*, continued to collect data and also received some exciting recognition for its efforts over the last decade. *Belle* utilises the KEKB accelerator, the most luminous colliding beam accelerator ever built, to study B mesons, which are composite particles containing a bottom quark and a lighter antiquark (or vice versa). Many



Cross section of the ATLAS detector showing particle collision

hundreds of millions of B-anti-B meson pairs have been collected to the end of 2008. These have been mostly used for the study of an effect called CP symmetry violation, which is essentially a difference between the behaviour of matter and antimatter. *Belle* first demonstrated differences between B mesons and their antiparticles in 2001, and further results from the experiment since have confirmed that the Standard Model provides a good picture of what is going on. The exciting news for us in 2008 was that the theoretical physicists who developed the Standard Model picture which we test, Kobayashi and Maskawa, were awarded the 2008 Nobel Prize in Physics. This would not have happened without the beautiful verification of their ideas which our experiment has provided.

At the beginning of the year the group welcomed back former graduate student Dr Bruce Yabsley, who took up his position as an Australian Research Fellow. Bruce joined the ATLAS effort to primarily study bound states of heavy quarks, whilst maintaining a significant role in *Belle* as well.

INSTITUTE OF NUCLEAR SCIENCE

Current members:
Dr Reza Hashemi–Nezhad (Director), Prof. J Boldeman; From the Sydney of University.
Drs D. Alexiev and Li Mo; From ANSTO, Ionising Radiation Physics Group, and the Sydney of University PhD students: Lindsey Bignell, Jacob Borger, Claude Le Comte and Katia Peceros.

The Institute of Nuclear Science (INS) was founded at the end of 2007 with the aim of acting as a focus for high-quality nuclear science research and education in the University. Building on the signing of the Memorandum of Understanding between the University of Sydney and ANSTO and administratively hosted in the School of Physics, the Institute of Nuclear Science brings together research and teaching expertise from across the University, and capitalises on Australia's renewed status as a leader in nuclear science by virtue of the OPAL research nuclear reactor.

Approval was given by the University in 2007 for the introduction of the Master of Applied Nuclear Science degree (MApplNucSci) and Graduate Diploma of Applied Nuclear Science (GradDipApplNucSci) in the Institute of Nuclear Science, School of Physics. The first enrolment of students was started in Semester 1, 2008.

The research activities of the INS cover a broad spectrum and involve national and international research collaborations. These are currently Ionising Radiation Physics Group, ANSTO, Accelerator Science Group, ANSTO and Neutron activation Group, ANSTO

INS has close and productive international research collaboration with the following institutes:

- Institut für Physikalische, Kern- und Makromolekulare Chemie, Philipps-Universität, Marburg, Germany.
- Nuclear Physics Institute, Rez, Czech Republic.
- Joint Institute for Nuclear Research, Dubna, Russia.
- Joint Institute for Nuclear and Power Research, Sosny, Minsk, Belarus.
- Institute of Theoretical and Experimental Physics (ITEP), Moscow, Russia.
- Aristotle University of Thessaloniki, Greece.

RESEARCH INTO ACCELERATOR DRIVEN SYSTEMS

Dr. Reza Hashemi-Nezhad and his students Jacob Borger, Lindsey Bignell and Claude LeComte conduct research into Accelerator Driven Systems (ADS). ADS refers to subcritical nuclear assemblies in which fission chain reaction is sustained by spallation neutrons produced in interaction of energetic nuclear particles (such as 1 GeV protons) with extended heavy targets such as lead. ADS hold the promise not only of a safer and less expensive way of generating power than conventional reactors, but also a means of transmuting long-lived radioactive waste into shorter-lived or

even stable isotopes which can be easily dealt with.

The fuel of accelerator driven subcritical reactor is bred from natural thorium. Investigations in the thorium fuel cycle are part of our research into accelerator driven systems (Australia has world's largest thorium reserves, 300,000 tons).

SPALLATION NEUTRON PRODUCTION IN INTERACTION OF 1 GEV PROTONS WITH A CYLINDRICAL LEAD TARGET.

Simulation was carried out using the Geant4 Monte Carlo code.

This research is carried on the basis of the 'Energy plus Transmutation (EpT)' international collaboration. The EpT experimental setup is composed of a lead target surrounded with 206.4 kg of natural uranium blanket. The target of the EpT is irradiated with protons and deuteron ions of energy in the range of 0.5 – 4 GeV using the Nuclotron accelerator of the Joint Institute for Nuclear Research (JINR), Dubna, Russia. In these studies the neutronics of the ADS and transmutation of the nuclear waste isotopes such as 238Pu, 239Pu, 237Np, 241Am and 129I is investigated experimentally and by Monte Carlo methods.

The target blanket assembly when it is outside of the Energy plus Transmutation experimental setup. The radiochemical sensors and nuclear waste samples on the blanket can be seen.

RESEARCH INTO GENERATION IV REACTORS

Molten Salt Nuclear Reactor (MSR) is one of the generation IV reactors which could be fuelled with thorium. Reza Hashemi-Nezhad and Claude LeComte conduct research in neutronics of the Accelerator Driven Molten Salt Reactors (ADMSR).

NUCLEAR MATERIALS SIMULATION

INS is strongly involved in Monte Carlo simulations of the Accelerator Driven Systems, Molten Salt Reactors, spallation neutron sources, transmutation of nuclear waste materials, particle detectors, radiation dosimetry and nuclear safeguards. In these studies MCNP, MCNPX and Geant4 Monte Carlo codes are used.

LIQUID SCINTILLATION NON-LINEARITY MODELLING

All scintillating materials exhibit a non-linear response for a given energy deposition event due to quenching at high linear energy transfers to the scintillant and different cascade processes. It is important to account for such processes when calculating the energy deposited into the scintillant necessary for absolute activity measurement and to aid in the design of improved scintillation detectors. This project aims to use simulated and experimental data to characterise the scintillation process from energy deposit to photon transport and to improve existing models.

A model of the LS-TDCR system has been developed, a paper on the

INS-ANSTO collaboration's beam-line at the ANTARES accelerator.

sensitivity and uncertainty analysis of the system model has been accepted for publication, and a study to quantify the effect of multiple scintillant interactions in a given decay process on scintillant non-linearity is underway.

NUCLEAR DATA

The development of Accelerator Driven Systems (ADS) requires accurate models to assist in the study and design of such reactors. This project will involve studies at ANSTO's ANTARES accelerator to calibrate track detectors in proton and neutron fields expected in larger experiments. The ANTARES work will also provide useful information on the fission fragment momentum distribution asymmetry associated with direct thorium fission by ~15 MeV protons and neutrons. The larger experiment, to be conducted in collaboration with the Joint Institute for Nuclear Research (JINR), Dubna, Russia. This study will involve the irradiation of the EpT setup with 4 GeV deuteron using the Nuclotron accelerator of the JINR. This experiment, in conjunction with the calibrated track detectors, will allow useful data to be acquired which may then be used to benchmark simulated results. This research work is part of Doctoral student studies.

INVESTIGATIONS INTO REACTOR NEUTRON SPECTRA

The determination of neutron flux in facilities within the past HIFAR reactor and the present OPAL reactor were previously undertaken using the neutron activation of gold wires either bare or with a cadmium shield. Two separate measurements were therefore required to record thermal and epithermal flux in a particular position. Investigations are underway into other techniques and isotopes for neutron activation to allow the determination of a broader variety of neutron spectrum parameters such as the neutron temperature, the thermal and epithermal flux parameter and a spectral shape parameter. The use of zirconium in combination with gold allows the determination of these parameters without the need for a separate cadmium covered irradiation. Combining these measurements with simulations using the MCNPX code will provide further insight into the ability of different techniques and isotopes to reproduce the proportion and shape of reactor neutron spectra.
Further to this, the adoption of zirconium as a flux monitor at OPAL has positive implications for the ability of staff to assure quality in NTD (neutron transmutation doped) silicon irradiations by providing more information about the neutron flux than is possible with bare gold.

INTEGRATED SUSTAINABILITY ANALYSIS (ISA)

ISA – GROWING UP FAST

In 2008 sustainability reporting emerged as a central challenge from the Australia 2020 Summit. One of the ideas developed was for "a set of national environmental accounts, including carbon and water accounts, to inform government, business and community decision-making. These could be linked with the current national economic accounts." (2020 Interim Summit Report, 2007: 14). This increased focus had brought increased demand on the ISA team's sustainability reporting expertise. The team increased by 75% to assist with furthering its research.

ISA – 2008 OUTREACH EDUCATION & TRAINING

ISA had delivered six Triple Bottom Line (TBL) workshops. These workshops cover: what's "carbon neutral" and how do we know what's to be neutralized; what's a carbon/ecological footprint and how does it fit into the TBL; and sharing responsibility along the supply chain. Participants also work on their own TBL case study using the ISA developed BL? software (www.bottomline3.com). This exercise helps participants with data collection, data input, BL? software functionality, output analysis and reporting the output accurately.

CONFERENCES & SUMMITS

Professor Marcela Bilek from the School of Physics attended The Australia 2020 Summit. Marcela's support resulted in some important inclusions in the discussion: "Regular company reporting of sustainability indicators: a low-cost option could be to mandate triple bottom-line accounting for companies, using 'balancing act' methodology– developed by the University of Sydney and CSIRO – to map resource inputs and areas of wastage in different sectors. Additional information could be gained using existing company registers and making sure everyone is using the same standard for reporting." (Australia 2020 Summit – Final Summit Report, 2008: 85).

Late 2008, ISA was invited to participate in the technical working group for the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol's Product and Supply Chain Accounting and Reporting Standard development process. This represents the international standard for the development of complete reporting. Governments around the world, including Australia's have largely adopted he methodologies of previous protocols.

To find out more please visit the GHG Protocol website at: www.ghgprotocol.org

ISA E-NEWSLETTER

In January 2008, ISA launched its first quarterly e-newsletter which was distributed to over 445 subscribers; by October 2008, ISA's e-newsletter readership increased by almost 25%. The readership consists mostly of researchers, industry, government and environmental consultants.

ACADEMIC JOURNAL OF THE INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Since October 2008 ISA has been the Editorial Office for the journal, Economic Systems Research (ESR). ESR is a double-peer reviewed scientific journal dedicated to the furtherance of theoretical and factual

The ISA team – Dr Joy Murray, Dr Chris Dey (left) and Professor Manfred Lenzen.

knowledge about economic systems, structures and processes, and their change through time and space, at the sub-national, national and international levels. The journal contains sensible, matter-of-fact tools and data for modelling, policy analysis, planning and decision-making in large economic environments. It promotes understanding in economic thinking and between theoretical schools of East and West, North and South. The journal is non-partisan, factual and problem-oriented.

ISA – 2008 COMPLETED CONSULTANCY PROJECTS

In 2008 the ISA team completed approximately five consultancy projects. These projects used the ISA framework in various tools and reports for Federal, State and Local Governments, NGOs, Industries and small to medium enterprises (SME).

Highlights from the 2008 completed consultancy projects:

- The Department of Climate Change released the Carbon Pollution Reduction Scheme Green Paper in July 2008. ISA's methodology in sustainability measurement was used to produce detailed emissions breakdowns by industry sector for the Federal Government's emissions trading policy development: "The following table is based on analysis conducted by the Centre for Integrated Sustainability Analysis (CISA), University of Sydney using the Australian Bureau of Statistics' (ABS) Australian National Accounts Input-Output Tables 2001–02, the National Greenhouse Gas Inventory 2002 and various industry-specific sources. The data includes all national emissions, other than those from deforestation." (Carbon Pollution Reduction Scheme Green Paper, 2008: 497)
- Energy Australia – Launch of new 'Carbon Emissions & You' website to educate customers on their impact in energy use. See website: http://www.energysave.energyaustralia.com.au/carbon_emissions_and_you/learn/
- The Department for Environment, Food and Rural Affairs (Defra), who commissioned Integrated Sustainability Analysis (ISA), CenSA (formerly ISA-UK) and partner the Stockholm Environment Institute (SEI) at the University of York, to research the carbon footprint of UK trade, published a report which identifies the CO2 emissions created by goods and services imported into the UK. It found that carbon dioxide emissions associated with UK consumption increased by 115 million tonnes (18%), between 1992 and 2004. A ground-breaking new modelling approach, called multi-region input-output analysis, was developed specifically for the UK and thoroughly tested for its robustness. Visit this website for the full report: http://randd.defra.gov.uk/Document.aspx?Document=EV02033_7331_FRP.pdf

ISA – 2008 RESEARCH PROJECTS

The ISA team submitted five journal article papers and two book chapters[CJD1], and had written two reports.

Highlights from the 2008 completed research projects:

- The University of Sydney has incorporated the ISA methodology in the University of Sydney's Triple-Bottom-Line (TBL) Project. The results can be read on pages 10 to 12 of the University of Sydney Annual Report 2008: http://www.usyd.edu.au/about/publications/annual_report/2008/annual_report_2008.pdf.

QUANTUM PHYSICS

Staff: Dr Stephen Bartlett (Senior Lecturer), Dr David Reilly (Senior Lecturer), Dr Yeong-Cherng Liang (postdoc), Dr Owen Maroney (postdoc), Dr Hans Westman (postdoc)

The new field of quantum information science aims to push the boundaries of our understanding of quantum mechanics and to develop powerful new technologies based on the unique properties of quantum systems. The Quantum Physics Group within the School of Physics undertakes research in quantum information theory and carries out experiments on nanoscale devices with the aim of learning how to engineer complex quantum systems.

Some highlights of 2008 include:

A NEW RESEARCH EFFORT IN EXPERIMENTAL MESOSCOPIC PHYSICS

In 2008, the School welcomed the addition of Dr David Reilly as a new Senior Lecturer (Teaching & Research). David is developing a new experimental laboratory to explore mesoscopic physics: matter on scales below a micron, where quantum effects become important. Low temperature experiments will probe quantum objects such as single electron charges or spins, often on nanosecond time scales.

Figure 1: James Colless and Maaike Witteveen in the Mesoscopic Physics Lab.

RESEARCH FUNDING AND COLLABORATIONS

Dr Stephen Bartlett is sole CI on a new ARC Discovery Project starting in 2008 to explore quantum-enhanced reference systems. We are developing new theoretical methods for performing ultra-precise metrology using single-photon optics or cold atoms. Our ongoing collaboration with the Quantum Information group of Dr Terry Rudolph at Imperial College London (UK) has been strengthened with the award of an International Program Development Fund (IPDF) grant from the University. This project will increase the number of student and postdoc exchanges between our two groups. Also, funded via the University's International Visiting Research Fellowship scheme, Prof Jeremy O'Brien from the University of Bristol (UK) visited the Quantum Physics group at Sydney for an extended period in November/December 2008.

PERIMETER INSTITUTE – AUSTRALIA FOUNDATIONS (PIAF)

The Perimeter Institute – Australia Foundations (PIAF) collaboration, between the premier international research institute in quantum foundations (PI) and three Australian universities including the University of Sydney, aims to promote quantum foundations as a subject to be studied and researched in academia. In 2008, the School of Physics (jointly with the School of Philosophical and Historical Inquiry) have welcomed two new postdoctoral fellows under this initiative – Dr Owen Maroney and Dr Hans Westman.

ACHIEVEMENTS BY RESEARCH STUDENTS IN QUANTUM PHYSICS

Three students completed their Honours research projects in quantum physics in 2008, with two of them – Andrew Darmawan and Joel Wallman – receiving University Medals for their outstanding performance. In addition, Joel Wallman was awarded first prize for his poster presentation on his Honours research at the AIP Congress in Adelaide, December 2008.

SYDNEY UNIVERSITY PHYSICS EDUCATION RESEARCH (SUPER)

In 2008, the Australian Learning and Teaching Council funded project 'Forging New Directions in Physics Education in Australian Universities' was successfully completed with Assoc. Prof. Sharma as one of the leaders. The project consisted of three strands – Service Teaching, Undergraduate Experimentation and Graduates in the Workforce – with School of Physics staff contributing to all three. The Graduates project, led by Dr O'Byrne, surveyed graduates and employers nationally to identify graduate destinations and employer expectations and explore the suitability of current course learning activities and outcomes. The project website is http://www.physics.usyd.edu.au/super/ALTC/.

In terms of research, the group focused on completing various projects with eight journal publications capturing various facets of student projects. Dr Derek Muller graduated and Ms Christine Lindstrom continued her PhD studies. Mr Nigel Kuan completed a third year special project with the group. Three overseas students worked with the SUPER group in 2008. Mr Apisit Tongchai, from Mahidol University, Thailand completed 18 months of his PhD candidature in October investigating student understanding of mechanical waves. Mr Sait Gokalp and Ms Nurgul Duzenli-Gokalp from Middle Eastern Technical University, Turkey worked on WebQuests and mathematics education respectively.

Drs O'Byrne and Khachan, and Assoc. Prof. Sharma were awarded the Faculty of Science Citation for Excellence in Teaching in the School of Physics and an Australian Learning & Teaching Council Team Citation for Outstanding Contributions to Student Learning.

Publications

BOOKS

Aslund, M L, **de Sterke, C M**, Poladian, L, Canning, J 2008, *Bragg Grating Optical Add-drop Multiplexers: An Introduction into Bragg Grating Interference Devices*, Germany

Kondyurin, A, **Bilek, M** 2008, *Ion Beam Treatment of Polymers - Application Aspects from Medicine to Space*, Oxford, UK

Large, M C, Poladian, L, Barton, G W, **Van Eijkelenborg, M A** 2008, *Microstructured Polymer Optical Fibres*, New York, US

Melrose, D B 2008, *Quantum Plasmadynamics: Unmagnetized plasmas*, New York

BOOK CHAPTERS

Davis, J, **Ireland, M J**, **Jacob, A**, **North, J R**, **Owens, S M**, **Robertson, J G**, **Tango, W J**, **Tuthill, P G** 2008, *The Power of Optical/IR Interferometry: Recent Scientific Results and 2nd Generation Instrumentation Proceedings of the ESO Workshop held in Garching, Germany, 4-8 April 2005*, Cepheid Observations with the Sydney University Stellar Interferometer: l Carinae and beta Doradus, Springer Berlin Heidelberg New York, Germany, 105-109

Tuthill, P G 2008, *The Power of Optical/IR Interferometry: Recent Scientific Results and 2nd Generation Instrumentation Proceedings of the ESO Workshop held in Garching, Germany, 4-8 April 2005*, Evolved Stars: Interferometer Baby Food or Staple Diet?, Springer Berlin Heidelberg New York, Germany, 119-130

Radic, S, **Moss, D J**, **Eggleton, B J** 2008, *Optical Fiber Telecommunications V A: Components and Subsystems*, Nonlinear Optics in Communications: From Crippling Impairment to Ultrafast Tools, Academic Press, Burlington, San Diego, London, 1, 759-828

Bougeret, J, Goetz, K, Kaiser, M, Bale, S, Kellogg, P, Maksimovic, M, Monge, N, Monson, S, Astier, P, Davy, S, Cairns, I H, Robinson, P A 2008, *The Stereo Mission*, S/WAVES: The Radio and Plasma Wave Investigation on the STEREO Mission, Springer Science+Business Media B.V, USA, 487-528

Aschwanden, M, Burlaga, L, Kaiser, M, Ng, C, Reames, D, Reiner, M, Gombosi, T, Lugaz, N, Manchester IV, W, Roussev, I, **Cairns, I H**, **Robinson, P A** 2008, *The Stereo Mission*, Theoretical Modeling for the STEREO Mission, Springer Science+Business Media B.V, USA, 565-604

Moss, D J, **Eggleton, B J** 2008, *Advances in Information Optics and Photonics*, Toward Photonic Integrated Circuit All-Optical Signal Processing Based on Kerr Nonlinearities, SPIE, Bellingham, Washington, USA, 6, 657-686

JOURNALS

Aad, G, Abat, E, Abdallah, J, Abdelalim, A, Abdesselam, A, Abdinov, O, Abi, B, Abolins, M, Abramowicz, H, Acerbi, E, et al, N, **Lee, J S H**, **Peak, L S**, **Saavedra, A**, **Varvell, K E**, **Waugh, A T** 2008, *Journal of Instrumentation*, The ATLAS Experiment at the CERN Large Hadron Collider, 3, 1-437

Abe, T, **Kocer, C**, Ode, M, Murakami, H, Yamabe-Mitari, Y, Hashimoto, K, Onodera, H 2008, *CALPHAD*, Thermodynamic re-assessment of the Allr system, 32, 686-692

Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Belous, K, Bhardwaj, V, Bitenc, U, Blyth, S, **McOnie, S T**, **Peak, L S**, **Varvell, K E** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurement of the branching fraction and charge asymmetry of the decay B+ D+D0 and search for B0 D0D0, 77, 091101-1-091101-5

Ahmad, M 2008, *Physics of Plasmas*, Spatially limited ion acoustic drift soliton in electron-positron-ion magneto plasma, 15, 082313-1-082313-6

Ahmad, M, Khan, R 2008, *Physica Scripta: an international journal for experimental and theoretical physics*, Linear and nonlinear studies of two-stream instabilities in electronpositronion plasmas with quantum corrections, 78, 015501-1-015501-5

Ahn, T, Park, Y, **Moss, D J**, Ramachandran, S, Azana, J 2008, *Optics Letters*, Frequency-domain modal delay measurement for higher-order mode ber based on stretched pulse interference, 33(1), 19-21

Akimov, Y A, **Ostrikov, K** 2008, *Physics of Plasmas*, Nonresonant power transfer in plasma-surface interactions via two-surface wave decay, 15(1), 012113-1-012113-7

Alexieva, D, **Mo, L**, Prokopovich, D, Smith, M, Matuchova, M 2008, *IEEE Transaction on Nuclear Science*, Comparison of LaBr3 : Ce and LaCl3 : Ce with NaI(Tl) and Cadmium Zinc Telluride (CZT) detectors, 55(3), 1174-1177

Alinejad, H, **Robinson, P A**, Skjaeraasen, O, **Cairns, I H** 2008, *Journal of Plasma Physics*, Coupled Langmuir and nonlinear ion acoustic waves in the presence of non-thermal electrons, published online 15/07/08(doi:10.1017/S0022377808007435), 1-10

An, H, **Fleming, S C** 2008, *Optics Communications*, Second-order optical nonlinearity in thermally poled Pyrex borosilicate glass, 281(5), 1263-1267

An, H, **Fleming, S C**, McMillen, B, Chen, K, Snoke, D 2008, *Applied Physics Letters*, Thermal poling induced second-order nonlinearity in femtosecond-laser-modied fused silica, 93, 061115-1-061115-3

Arentoft, T, Kjeldsen, H, **Bedding, T R**, Bazot, M, Christensen-Dalsgaard, J, Dall, T, Karoff, C, Carrier, F, Eggenberger, P, Sosnowska, D, Wittenmyer, R, **Bruntt, H**, **Kiss, L L** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A Multisite Campaign to Measure Solar-Like Oscillations in Procyon. I. Observations, Data Reduction, and Slow Variations, 687(2), 1180-1190

Argyros, A, **Leon-Saval, SG**, Pla, J, Docherty, A 2008, *Optics Express*, Antiresonant reflection and inhibited coupling inhollow-core square lattice optical fibres, 16(8), 5642-5648

Argyros, A, **Lwin, R**, **Large, M C** 2008, *Optics Express*, Bend loss in highly multimode fibres, 16(23), 18590-18598

Arinstein, K, Adachi, I, Aihara, H, Aulchenko, V, Aushev, T, Aziz, T, Bahinipati, S, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, **Cole, S B**, **McOnie, S T**, **Yabsley, B D** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Measurement of the ratio (D0 + 0)/ B(D 0 K + 0) and the time-integrated CP asymmetry in D0 + 0, 662, 102-110

Arulsamy, A D, **Fronzi, M** 2008, *Physica E-Low-Dimensional Systems & Nanostructures*, Length-dependent resistance model for a single-wall carbon nanotube, 41, 74-79

Aschwanden, M, Burlaga, L, Kaiser, M, Ng, C, Reames, D, Reiner, M, Gombosi, T, Lugaz, N, Manchester IV, W, Roussev, I, **Cairns, I H**, **Robinson, P A**, et al, N 2008, *Space Science Reviews*, Theoretical modeling for the STEREO mission, 136(1 to 4), 565-604

Aslund, M L, **Jackson, S D**, Jovanovic, N, Withford, M 2008, *Optics Communications*, Efficient double-clad Yb3+-doped silica fibre laser pumped by an unfocused diode laser, 281(15-16), 4092-4094

Aslund, M L, Jovanovic, N, **Groothoff, N**, Canning, J, Marshall, G, **Jackson, S D**, Fuerbach, A, Withford, M 2008, *Optics Express*, Optical loss mechanisms in femtosecond laser-written point-by-point fibre Bragg gratings, 16(18), 14248-14254

Awaja, F, Gilbert, M, Kelly, G, Fox, B, Brynolf, R, Pigram, P 2008, *Surface and Interface Analysis*, Surface properties of polypropylene following a novel industrial surface-treatment process, 40, 1454-1462

Awaja, F, van Riessen, G, Kelly, G, Fox, B, Pigram, P 2008, *Journal of Applied Polymer Science*, Tof-sims Investigation of Epoxy Resin Curing Reaction at Different Resin to Hardener Ratios, 110, 2711-2717

Balagura, V, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Barberio, E, Bay, A, Belous, K, Bhardwaj, V, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Observation of Ds1(2536)+D+-K+ and angular decomposition of Ds1(2536)+D*+KS0, 77(3), 032001-1-032001-10

Baldock, C 2008, *Australasian Physical & Engineering Sciences in Medicine*, The h-index and medical physics, 31(2), xi-xii

Barkby, S N, **Vladimirov, S**, **Samarian, A A** 2008, *Physics Letters. Section A: General, Atomic and Solid State Physics*, Oscillation modes in Coulomb clusters with variable charges, 372(9), 1501-1507

Barnes, P J, **Baldock, C**, **Meikle, S R**, **Fulton, R R** 2008, *Physics in Medicine and Biology*, Benchmarking of a motion sensing system for medical imaging and radiotherapy, 53, 5845-5857

Bastug, T, **Chen, P**, **Patra, S M**, **Kuyucak, S** 2008, *Journal of Chemical Physics*, Potential of mean force calculations of ligand binding to ion channels from Jarzynski's equality and umbrella sampling, 128(15), 155104-1-155104-9

Bastug, T, **Kuyucak, S** 2008, *Journal of Chemical Physics*, Response to "Comment on 'Free energy simulations of single and double ion occupancy in gramicidin A' " [J. Chem. Phys. 128, 227101 (2008)], 128(22), 227102-1-227102-2

Bellazzini, M, Ibata, R, Chapman, S, Mackey, A, Monaco, L, Irwin, M, Martin, N, **Lewis, G F**, Dalessandro, E 2008, *The Astronomical Journal*, The Nucleus of the Sagittarius Tarius DSPH Galaxy and M54: A Window on the process of Galaxy Nucleation, 136, 1147-1170

Best, S, Ralston, A, **McKenzie, D R**, **Suchowerska, N O** 2008, *Physics in Medicine and Biology*, Effect of scatter material on diode detector performance for in vivo dosimetry, 53(1), 89-97

Bewes, J, **Suchowerska, N O**, Jackson, M, Zhang, M, **McKenzie, D R** 2008, *Physics in Medicine and Biology*, The radiobiological effect of intra-fraction dose-rate modulation in intensity modulated radiation therapy (IMRT), 53(13), 3567-3578

Bewes, J, **Suchowerska, N O**, **McKenzie, D R** 2008, *Physics in Medicine and Biology*, Automated cell colony counting and analysis using the circular Hough image transform algorithm (CHiTA), 53(21), 5991-6008

Bhardwaj, V, Kumar, R, Singh, J, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, Aziz, T, Bahinipati, S, **Bakich, A M**, Balagura, V, Barberio, E, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Observation of B(2S) and search for direct CP violation, 78, 051104-1-051104-6

Bi, H, Kou, K, **Ostrikov, K**, Zhang, J 2008, *Journal of Applied Physics*, Graphitization of nanocrystalline carbon microcoils synthesized by catalytic chemical vapor deposition, 104(3), 033510-1-033510-6

Bignell, L, Mo, L, Smith, M, Alexieva, D, **Hashemi-Nezhad, S R** 2008, *IEEE Transaction on Nuclear Science*, Monte Carlo Simulation of a 198Au Thin Foil: The Response of a 4- Detector, 55(6), 3550-3555

Bignell, L, Smith, M, Alexieva, D, **Hashemi-Nezhad, S R** 2008, *Nuclear Engineering and Technology*, Analysis of Adhesive Tape Activation during Reactor Flux Measurements, 40(1), 93-98

Bitenc, U, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, **Bakich, A M**, Balagura, V, Bedny, I, Belous, K, Bondar, A, Bozek, A, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Improved search for D0 - D0 mixing using semileptonic decays at Belle, 77, 112003-1-112003-20

Bjoreland, A, Lindvall, P, Karlsson, A, **Gustafsson, H B**, Back, S, Karlsson, M, Bergenheim, T 2008, *Acta oncologica*, Liquid ionization chamber calibrated gel dosimetry in conformal stereotactic radiotherapy of brain lesions, 47, 1099-1109

Bland-Hawthorn, J, Buryak, A, Kolossovski, K 2008, *Optical Society of America*, Journal A: Optics Image Science and Vision, Optimization algorithm for ultrabroadband multichannel aperiodic fiber Bragg grating filters, 25(1), 153-158

Bog, U, **Smith, C L**, **Lee, M**, **Tomljenovic-Hanic, S**, **Grillet, C E**, **Monat, C B**, O'Faolain, L, **Karnutsch, C**, Krauss, T, **McPhedran, R C**, **Eggleton, B J** 2008, *Optics Letters*, High-Q microuidic cavities in silicon-based two-dimensional photonic crystal structures, 33(19), 2206-2208

Boileau, J, Sheridan, L, Laforest, M, **Bartlett, S D** 2008, *Journal of Mathematical Physics*, Quantum reference frames and the classification of rotationally invariant maps, 49(3), 032105-1-032105-19

Bonod, N, Popov, E, **McPhedran, R C** 2008, *Optics Express*, Increased surface plasmon resonance sensitivity with the use of double Fourier harmonic gratings, 16(16), 11691-11702

Boshuizen, C R, **Bedding, T R**, Pfitzner, L, Grimminck, M, Kjeldsen, H, **Monger, A G** 2008, *Optical Engineering*, MONS space telescope, part 2: analysis of very high stray-light rejection, 47(1), 013001-1-013001-11

Bosi, S G, Hayes, J C, **Large, M C**, Poladian, L 2008, *Applied Optics*, Color, iridescence, and thermoregulation in Lepidoptera, 47(29), 5235-5241

Bougeret, J, Goetz, K, Kaiser, M, Bale, S, Kellogg, P, Maksimovic, M, Monge, N, Monson, S, Astier, P, Davy, S, **Cairns, I H**, **Robinson, P A**, et al, N 2008, *Space Science Reviews*, S/WAVES: The radio and plasma wave investigation on the STEREO Mission, 136(1 to 4), 487-528

Bower, R, **Cross, R C** 2008, *Sports Engineering*, Elite tennis player sensitivity to changes in string tension and the effect on resulting ball dynamics, 11(1), 31-36

Brandt, R, Ditlov, V, Dwivedi, K, Ensinger, W, Ganssauge, E, Shi-Lun, G, Haiduc, M, **Hashemi-Nezhad, R**, Khan, H, Krivopustov, M, Odoj,, R 2008, *Radiation Measurements*, Studies with SSNTD and nuclear chemistry on nuclear reactions induced by relativistic heavy ions in thick targets: A Review, 43, S132-S138

Brandt, R, Ditlov, V, Dwivedi, K, Ensinger, W, Ganssauge, E, Shi-Lun, G, Haiduc, M, **Hashemi-Nezhad, S R**, Khan, H, Krivopustov, M, Odoj,, R 2008, *Physics of Particles and Nuclei*, Interactions of relativistic heavy ions in thick heavy element targets and some unresolved problems, 39(2), 259-285

Brawley, G, **Ta'eed, V G**, **Bolger, J A**, Sanghera, J, Aggarwal, I, **Eggleton, B J** 2008, *Electronics Letters*, Strong photoinduced Bragg gratings in arsenic selenide optical fibre using transverse holographic method, 44(14), 846-847

Brewer, B J, **Lewis, G F** 2008, *Royal Astronomical Society. Monthly Notices*, Unlensing HST observations of the Einstein ring 1RXS J1131-1231: a Bayesian analysis, 390(1), 39-48

Brodzicka, J, Palka, H, Adachi, I, Aihara, H, Aulchenko, V, **Bakich, A M**, Barberio, E, Bay, A, Bedny, I, Bitenc, U, Bondar,, A, et al, N, **McOnie, S T**, **Yabsley, B D** 2008, *Physical Review Letters*, Observation of a New DsJ Meson in B+ D0D0K+ Decays, 100(9), 092001-1-092001-6

Brown, S, Bailey, D L, Willowson, K P, **Baldock, C** 2008, *Applied Radiation and Isotopes*, Investigation of the relationship between linear attenuation coefficients and CT Hounsfield units using radionuclides for SPECT, 66, 1206-1212

Brown, S, Venning, A, De Deene, Y, **Vial, P**, **Oliver, L D**, Adamovics, J, **Baldock, C** 2008, *Applied Radiation and Isotopes*, Radiological properties of the PRESAGE and PAGAT polymer dosimeters, 66, 1970-1974

Bruntt, H, De Cat, P, Aerts, C 2008, *Astronomy & Astrophysics*, A spectroscopic study of southern (candidate) gamma Doradus stars - II. Detailed abundance analysis and fundamental parameters, 478(2), 487-496 (+ online material 1-4)

Bruntt, H, Evans, N, **Stello, D**, Penny, A, Eaton, J, Buzasi, D, Sasselov, D, Preston, H, Miller-Ricci, E 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Polaris the Cepheid returns: 4.5 years of monitoring from ground and space, 683(1), 433-440

Bruntt, H, North, J R, Cunha, M, Brandao, I, Elkin, V, Kurtz, D, **Davis, J**, **Bedding, T R**, Jacob, A, Owens, S M, Robertson, J G, Tango, W J, Gameiro, J, Ireland, M, Tuthill, P G 2008, *Royal Astronomical Society. Monthly Notices*, The fundamental parameters of the roAp star alpha Circini, 386(4), 2039-2046

Bucher, D, **Kuyucak, S** 2008, *The Journal of Physical Chemistry Part B: Condensed Matter, Materials, Surfaces, Interfaces & Biophysical*, Polarization of water in the first hydration shell of K+ and Ca2+ ions, 112(35), 10786-10790

Campbell, S, Botten, L, **McPhedran, R C**, **de Sterke, C M** 2008, *Optical Society of America, Journal A: Optics Image Science and Vision*, Modal method for classical diffraction by slanted lamellar gratings, 25(10), 2415-2426

Canning, J, **Groothoff, N**, Cook, K, Martelli, C, Pohl, AAP, Holdsworth, J, Bandyopadhyay, S, Stevenson, M 2008, *Laser Chemistry*, Gratings in structured optical fibres, 2008, 239417-1-239417-19

Carter, D J, Gale, J, Delley, B, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Geometry and diameter dependence of the electronic and physical properties of GaN nanowires from first principles, 77(11), 115349-1-115349-12

Ceberg, S, Karlsson, A, **Gustafsson, H B**, Wittgren, L, Back, S 2008, *Physics in Medicine and Biology*, Verification of dynamic radiotherapy: the potentialfor 3D dosimetry under respiratory-like motion usingpolymer gel, 53, N387-N396

Champion, D, Ransom, S, Lazarus, P, Camilo, F, Bassa, C, Kaspi, V, Nice, D, Freire, P, Stairs, I, van Leeuwen, J, **Chatterjee, S**, **Gaensler, B M** 2008, *Science*, An eccentric binary millisecond pulsar in the galactic plane, 320(5881), 1309-1312

Chan, V, Buehler, T, Ferguson, A, McCamey, D, **Reilly, D**, Dzurak, A, Clark, R, Yang, C, Jamieson, D 2008, *Journal of Applied Physics*, Ion implanted Si:P double dot with gate tunable interdot coupling, 100, 106104-1-106104-3

Chapman, S, Ibata, R, Irwin, M, Koch, A, Letarte, B, Martin, N, Collins, M, **Lewis, G F**, McConnachie, A, Penarrubia, J, Rich, R, Trethewey, D, Ferguson, A, Huxor, A, Tanvir, N 2008, *Royal Astronomical Society. Monthly Notices*, The kinematic footprints of five stellar streams in Andromeda's halo, 390(4), 1437-1452

Chen, K, Hou, W, Shapkin, M, Sokolov, A, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Bay, A, et al, N, **McOnie, S T**, **Yabsley, B D** 2008, *Physical Review Letters*, Observation of Anomalous Y(1S)+-and Y(2S)+ - Production near the Y(5S) Resonance, 100(11), 112001-1-112001-6

Chen, X, Launhardt, R, Bourke, T, Henning, T, **Barnes, P J** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, ATCA and Spitzer observations of the binary protostellar systems CG 30 and BHR 71, 683(2), 862-875

Cheng, Q C, Xu, S, Huang, S, Long, J, Ren, Y, Xu, M, **Ostrikov, K** 2008, *IEEE Transactions on Plasma Science*, Inductively coupled plasma-assisted RF magnetron sputtering deposition of highly uniform SiC nanoislanded films, 36(4), 870-871

Cheng, Q, Xu, S, Chai, J, Huang, S, Ren, Y, Long, J, Rutkevych, P, **Ostrikov, K** 2008, *Thin Solid Films*, Influence of hydrogen dilution on the growth of nanocrystalline silicon carbide films by low-frequency inductively coupled plasma chemical vapor deposition, 516(18), 5991-5995

Cheng, Q, Xu, S, Long, J, Ni, Z, **Rider, AE**, **Ostrikov, K** 2008, *Journal of Physics D: Applied Physics*, High-rate, low-temperature synthesis of composition controlled hydrogenated amorphous silicon carbide films in low-frequency inductively coupled plasmas, 41(5), 055406-1-055406-9

Cheung, C K W, **McNamara, P**, Barton, G W, Liu, Z 2008, *Journal of Non-crystalline Solids*, Germania nanocrystals in Modified Chemical Vapour Deposition, 354, 3958-3964

Chiang, A K, **Rennie, C J**, **Robinson, P D**, **Roberts, J A**, **Rigozzi, M K**, **Whitehouse, R W**, Hamilton, R, Gordon, E 2008, *Journal of Neuroscience Methods*, Automated characterization of multiple alpha peaks in multi-site electroencephalograms, 168(2), 396-411

Chiang, C, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Bedny, I, Bhardwaj, V, Bitenc, U, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurement of B0 + - + - decays and search for B0 p0p0, 78(11), 111102-1-111102-7

Choi, S, Olsen, S, Adachi, I, Aihara, H, Aulchenko, V, Aushev, T, Auziz, T, **Bakich, A M**, Balagura, V, Bedny, I, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review Letters*, Observation of a Resonance like Structure in the pi+-psi 0 Mass Distributionin Exclusive B Kpi+-psi Decays, 100, 142001-1-142001-6

Christiansen, J, **Derekas, A**, **Kiss, L L**, Ashley, M, Curran, S, Hamacher, D, Hidas, M, Thompson, M, Webb, J, Young, T 2008, *Royal Astronomical Society. Monthly Notices*, The University of New South Wales Extrasolar Planet Search: a catalogue of variable stars from fields observed between 2004 and 2007, 385(4), 1749-1763

Cioni, M, Irwin, M, Ferguson, A, McConnachie, A, Conn, B, Huxor, A, Ibata, R, **Lewis, G F**, Tanvir, N 2008, *Astronomy & Astrophysics*, AGB stars as tracers of metallicity and mean age across M 33, 487(1), 131-146

Clausen, J, Torres, G, **Bruntt, H**, Andersen, J, Nordstroem, B, Stefanik, R, Latham, D, Southworth, J 2008, *Astronomy & Astrophysics*, Absolute dimensions of eclipsing binaries. XXVI. Setting a new standard: Masses, radii, and abundances for the F-type systems AD Bootis, VZ Hydrae, and WZ Ophiuchi, 487(3), 1095-1117 (+ online material 1 - 4)

Clearwater, J, **Kerr, C C**, Rennie, C J, **Robinson, P A** 2008, *Journal of Integrative Neuroscience*, Neural mechanisms of erp change: combining insights from electrophysiology and mathematical modeling, 7(4), 529-550

Clearwater, J, **Rennie, C**, **Robinson, P A** 2008, *Journal of Theoretical Biology*, Mean field model of aceylcholine mediated dynamics in the thalamocortical system, 255, 287-298

Conn, B C, **Lane, R R**, **Lewis, G F**, Irwin, M, Ibata, R, Martin, N, Bellazzini, M, **Tuntsov, A V** 2008, *Royal Astronomical Society. Monthly Notices*, The Anglo-Australian Telescope/Wide Field Imager survey of the Monoceros Ring and Canis Major dwarf galaxy - II. From l = (280-025)degrees, 390(4), 1388-1398

Cooke, R, **Bland-Hawthorn, J**, Sharp, R, **Kuncic, Z** 2008, *Astrophysical Journal Letters*, Ionization Cone in the X-Ray Binary LMC X-1, 687, L29-L32

Cooper, J, Bicknell, G, Sutherland, R, **Bland-Hawthorn, J** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Three-dimensional simulations of a starburst-driven galactic wind, 674(1), 157-171

Couedel, L, **Samarian, A A**, Mikikian, M, Boufendi, L 2008, *Europhysics Letters: a letters journal exploring the frontiers of physics*, Dust charge distribution in complex plasma afterglow, 84, 35002-p1-35002-p5

Couedel, L, **Samarian, A A**, Mikikian, M, Boufendi, L 2008, *IEEE Transactions on Plasma Science*, Dust-cloud dynamics in a complex plasma afterglow, 36(4), 1014-1015

Couedel, L, **Samarian, A A**, Mikikian, M, Boufendi, L 2008, *Physics Letters. Section A: General, Atomic and Solid State Physics*, Dust density effect on complex plasma decay, 372(32), 5336-5339

Couedel, L, **Samarian, A A**, Mikikian, M, Boufendi, L 2008, *Physics of Plasmas*, Influence of the ambipolar-to-free diffusion transition on dust particle charge in a complex plasma afterglow, 15(6), 063705-1-063705-11

Cover, M F, **Warschkow, O**, **Bilek, M**, **McKenzie, D R** 2008, *Advanced Engineering Materials*, Elastic properties of Tin+1AlCn and Tin+1AlNn MAX phases, 10(10), 935-938

Cross, R C 2008, *American Journal of Physics*, Cue and ball deflection (or "squirt") in billiards, 76(3), 205-212

Cross, R C 2008, *American Journal of Physics*, Differences between bouncing balls, springs, and rods, 76(10), 908-915

Cross, R C 2008, *American Journal of Physics*, Forensic Physics 101: Falls from a height, 76(9), 833-837

Cross, R C 2008, *Physics Today*, Tennis Physics, anyone?, 61(9), 84-85

Cui, X C, Medvedeva, J, Delley, B, Freeman, A, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Built-in electric eld assisted spin injection in Cr and Mn delta-layer doped AlN/GaN(0001) heterostructures from rst principles, 78, 245317-1-245317-15

Cvelbar, U, **Ostrikov, K**, Drenik, A, Mozetic, M 2008, *Applied Physics Letters*, Nanowire sensor response to reactive gas environment, 92(13), 133505-1-133505-3

Cvelbar, U, **Ostrikov, K**, Mozetic, M 2008, *Nanotechnology*, Reactive oxygen plasma-enabled synthesis of nanostructured CdO: tailoring nanostructures through plasma-surface interactions, 19(40), 405605-1-405605-7

da Angela, J, Shanks, T, **Croom, S M**, Weilbacher, P, Brunner, R, Couch, W, Miller, L, Myers, A, Nichol, R, Pimbblet, K, De Propris, R, Richards, G, Ross, N, Schneider, D, Wake, D 2008, *Royal Astronomical Society. Monthly Notices*, The 2dF-SDSS LRG and QSO survey: QSO clustering and the Lz degeneracy, 383, 565-580

Da Silva, J, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Trends in adsorption of noble gases He, Ne, Ar, Kr, and Xe on Pd(111)(3x3)R30: All-electron density-functional calculations, 77(4), 045401-1-045401-13

Davies, J B, **Baldock, C** 2008, *Radiation Physics and Chemistry*, Sensitivity and stability of the Fricke-gelatin-xylenol orange gel dosimeter, 77(6), 690-696

de Oliveira-Costa, A, Tegmark, M, **Gaensler, B M**, Jonas, J, **Landecker, T**, Reich, P 2008, *Royal Astronomical Society. Monthly Notices*, A model of diffuse Galactic radio emission from 10 MHz to 100 GHz, 388(1), 247-260

Deco, G, Jirsa, V, **Robinson, P A**, **Breakspear, M J**, Friston, K 2008, *P L o S Computational Biology*, The Dynamic Brain: From Spiking Neurons to Neural Masses and Cortical Fields, 4(8), e1000092-1-e1000092-35

Denysenko, I, **Ostrikov, K**, Cvelbar, U, Mozetic, M, Azarenkov, N 2008, *Journal of Applied Physics*, Carbon nanofiber growth in plasma-enhanced chemical vapor deposition, 104(7), 073301-1-073301-9

Dossou, K, **Botten, L**, **McPhedran, R C**, Poulton, C, Asatryan, A, **de Sterke, C M** 2008, *Physical Review A (Atomic, Molecular and Optical Physics)*, Shallow defect states in two-dimensional photonic crystals, 77(6), 063839-1-063839-18

Drenik, A, **Cvelbar, U**, **Ostrikov, K**, Mozetic, M 2008, *Journal of Physics D: Applied Physics*, Catalytic probes with nanostructured surface for gas/discharge diagnostics: a study of a probe signal behaviour, 41(11), 115201-1-115201-7

Duan, X, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Nitrogen vacancies in InN: Vacancy clustering and metallic bonding from first principles, 77(11), 115207-1-115207-9

Dudley, J, Genty, G, **Eggleton, B J** 2008, *Optics Express*, Harnessing and control of optical rogue waves in supercontinuum generation, 16(6), 3644-3651

Eberl, S, **Fulton, R R**, Mohamed, A, Verschuer, J, Fulham, M 2008, *The Journal of Nuclear Medicine*, Comparison of 3 ring and 4 ring Biograph TruePoint PET/CT Systems, 49(1), 409-409

Eichhorn, M, **Jackson, S D** 2008, *Optics Letters*, High-pulse-energy, actively Q-switched Tm3+,Ho3+-codoped silica 2m fiber laser, 33(10), 1044-1046

Ellis, S, **Bland-Hawthorn, J** 2008, *Royal Astronomical Society. Monthly Notices*, The case for OH suppression at near-infrared wavelengths, 386, 47-64

Ellis, S, **Bland-Hawthorn, J** 2008, *Royal Astronomical Society. Monthly Notices*, The case for OH suppression at near-infrared wavelengths, 386(1), 47-64

Emonts, B, Morganti, R, Oosterloo, T, Holt, J, Tadhunter, C, van der Hulst, J, Ojha, R, **Sadler, E M** 2008, *Royal Astronomical Society. Monthly Notices*, Enormous disc of cool gas surrounding the nearby powerful radio galaxy NGC 612 (PKS 0131-36), 387(1), 197-208

Ergun, R, Malaspina, D, **Cairns, I H**, Goldman, M, Newman, D, **Robinson, P A**, Eriksson, S, Bougeret, J, Briand, C, Bale, S, Cattell, C, Kellogg, P, Kaiser, M 2008, *Physical Review Letters*, Eigenmode structure in solar-wind Langmuir waves, 101(5), 051101-1-051101-4

Eun-Hwa, K, **Cairns, I H**, **Robinson, P A** 2008, *Physics of Plasmas*, Mode conversion of Langmuir to electromagnetic waves at magnetic field-aligned density inhomogeneities: Simulations, theory, and applications to the solar wind and the corona, 15(10), 102110-1-102110-19

Faraon, A, Englund, D, Bulla, D, Luther-Davies, B, **Eggleton, B J**, Stoltz, N, Petroff, P, Vuckovic, J 2008, *Applied Physics Letters*, Local tuning of photonic crystal cavities using chalcogenide glasses, 92(4), 043123-1-043123-3

Ferrera, M, Razzari, L, Duchesne, D, Morandotti, R, Yang, Z, Liscidini, M, Sipe, J, Chu, S, Little, B, **Moss, D J** 2008, *Nature Photonics*, Low-power continuous-wave nonlinear optics in doped silica glass integrated waveguide structures, 2, 737-740

Field, M, McCulloch, D, **Lim, S**, Anders, A, Keast, V, Burgess, R 2008, *Journal of Physics: Condensed Matter*, The electronic structure of tungsten oxide thin films prepared by pulsed cathodic arc deposition and plasma-assisted pulsed magnetron sputtering, 20(17), 175216-1-175216-7

Fine, S L, **Croom, S M**, Hopkins, P, Hernquist, L, **Bland-Hawthorn, J**, Colless, M, Hall, P, Miller, L, Myers, A, Nichol, R, Pimbblet, K, Ross, N, Schneider, D, Shanks, T, Sharp, R 2008, *Royal Astronomical Society. Monthly Notices*, Constraining the quasar population with the broad-line width distribution, 390(4), 1413-1429

Fleming, S C, **An, H** 2008, *Ceramic Society of Japan. Journal*, Poled glasses and poled fibre devices, 116(10), 1007-1023

Fok, S, **Domachuk, P**, Rosengarten, G, Krause, N, Braet, F C, **Eggleton, B J**, Soon, L L 2008, *Biophysical Journal*, Planar Microfluidic Chamber for Generation of Stable and Steep Chemoattractant Gradients, 95, 1523-1530

Ford, H, McClure-Griffiths, N, Lockman, F, Bailin, J, Calabretta, M, Kalberla, P, **Murphy, T**, Pisano, D 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, H I Clouds in the Lower Halo. I. The Galactic All-Sky Survey Pilot Region, 688(1), 290-305

Foroutan Kharajou, G, Khalilpour, H, Moslehi-Fard, M, **Li, B**, **Robinson, P A** 2008, *Physics of Plasmas*, Quasilinear dynamics of a cloud of hot electrons propagating through a plasma with decreasing density and temperature, 15, 122904-1-122904-10

Freeman, D, **Grillet, C E**, **Lee, M**, **Smith, C L**, Ruan, Y, Rode, A, Krolikowska, M, **Tomljenovic-Hanic, S**, **de Sterke, C M**, **Steel, M J**, Luther-Davies, B, Madden, S, Moss, D J, Lee, Y, **Eggleton, B J** 2008, *Photonics and Nanostructures: Fundamentals and Applications*, Chalcogenide glass photonic crystals, 6(1), 3-11

Fu, L, **Pelusi, M D**, **Magi, E C**, **Ta'eed, V G**, **Eggleton, B J** 2008, *Electronics Letters*, Broadband all-optical wavelength conversion of 40 Gbit/s signals in nonlinearity enhanced tapered chalcogenide fibre, 44(1), 44-45

Fukuda, K, **Lim, S**, Anders, A 2008, *Thin Solid Films*, Coalescence of magnetron-sputtered silver islands affected by transition metal seeding (Ni, Cr, Nb, Zr, Mo, W, Ta) and other parameters, 516(14), 4546-4552

Fulcher, B D, **Phillips, A J**, **Robinson, P A** 2008, *Physical Review E, Modeling the impact of impulsive stimuli on sleep-wake dynamics*, 78, 051920-1-051920-14

Gaensler, B M, **Madsen, G J**, **Chatterjee, S**, Mao, S 2008, *Publications of the Astronomical Society of Australia*, The Vertical Structure of Warm Ionised Gas in the Milky Way, 25, 184-200

Gaensler, B M, Tanna, A, Slane, P, Brogan, C, Gelfand, J, **McClure-Griffiths, N**, Camilo, F, Ng, C Y, Miller, J 2008, *Astrophysical Journal Letters*, The (Re-)discovery of G350.1-0.3: A young, luminous supernova remnant and its neutron star, 680(1), L37-L40

Genty, G, Dudley, J, **Eggleton, B J** 2008, *Applied Physics B: Lasers and Optics*, Modulation control and spectral shaping of optical ber supercontinuum generation in the picosecond regime, published first online(DOI 10.1007/s00340-008-3274-1)

George, D F, **Bilek, M**, **McKenzie, D R** 2008, *Bioelectromagnetics*, Non-thermal effects in the microwave induced unfolding of proteins observed by chaperone binding, 29(4), 324-330

George, D F, **Bilek, M**, **McKenzie, D R** 2008, *Biosensors and Bioelectronics*, Detecting and exploring partially unfolded states of proteins using a sensor with chaperone bound to its surface, 24, 963-969

Goicoechea, L, Shalyapin, V, Koptelova, E, **Gil-Merino, R**, Zheleznyak, A, Ullan, A 2008, *New Astronomy*, First robotic monitoring of a lensed quasar: Intrinsic variability of SBS 0909+532, 13(3), 182-193

Goldenzweig, P, Schwartz, A, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, Bahinipati, S, **Bakich, A M**, Bay, A, Bedny, I, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Physical Review Letters*, Evidence for Neutral B Meson Decays to K*0, 101, 231801-1-231801-6

Goto, R, **Jackson, S D**, **Fleming, S C**, **Kuhlmey, B T**, **Eggleton, B J**, Himeno, K 2008, *Optics Express*, Birefringent all-solid hybrid microstructured ber, 16(23), 18752-18763

Gray, R T, **Robinson, P A** 2008, *Journal of computational neuroscience*, Stability and structural constraints of random brain networks with excitatory and inhibitory neural populations, DOI 10.1007/s10827-008-0128-0

Gray, R T, **Robinson, P A** 2008, *Neurocomputing*, Stability and synchronization of random brain networks with a distribution of connection strengths, 71(7 to 9), 1373-1387

Griffin, T, **Bartlett, S D** 2008, *Physical Review A (Atomic, Molecular and Optical Physics)*, Spin lattices with two-body Hamiltonians for which the ground state encodes a cluster state, 78, 062306-1-062306-15

Grillet, C E, Bian, S N, **Magi, E C**, **Eggleton, B J** 2008, *Applied Physics Letters*, Fiber taper coupling to chalcogenide microsphere modes, 92(17), 171109-1-171109-3

Groothoff, N, Martelli, C, **Canning, J** 2008, *Journal of Applied Physics*, A dual wavelength distributed-feedback fiber laser, 103(1), 013101-1-013101-6

Grujic, T, **Nguyen, H**, **Lamont, M**, **de Sterke, C M**, **Eggleton, B J** 2008, *Optics Communications*, All-optical regeneration based on a nonlinear long period grating, 281(5), 1280-1285

Guio, P, **Miloch, W J**, Pecseli, H, Trulsen, J 2008, *Physical Review E*, Patterns of sound radiation behind pointlike charged obstacles in plasma flows, 78(1), 016401-1-016401-9

Haque, Q, Mahmood, S, **Ahmad, M** 2008, *Physics of Plasmas*, Nonlinear electrostatic drift waves in dense electron-positron-ion plasmas, 15, 082315-1-082315-5

Harris, B, Bailey, D L, Roach, P J, Schembri, G, Ho Shon, I A, Chicco, P, **Bailey, E.A**, King, G G 2008, *Nuclear Medicine Communications 2005*, A clinical comparison between traditional planar V/Q images and planar images generated from SPECT V/Q scintigraphy, 29(4), 323-330

Harvey-Smith, L, Soria-Ruiz, R 2008, *Royal Astronomical Society. Monthly Notices*, European VLBI Network observations of 6.7-GHz methanol masers in a candidate circumstellar disc, 391, 1273-1278

Harvey-Smith, L, Soria-Ruiz, R, Duarte-Cabral, A, Cohen, R 2008, *Royal Astronomical Society. Monthly Notices*, First images of 6.7-GHz methanol masers in DR21(OH) and DR21(OH)N, 384(2), 719-726

Hashemi-Nezhad, S R, Zhuk, I, Kievets, M, Krivopustov, M, Sosnin, A, Westmeier, W, Brandt, R 2008, *Nuclear Instruments & Methods in Physics Research. Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment*, Determination of natural uranium fission rate in fast spallation and fission neutron field: An experimental and Monte Carlo study, 591(3), 517-529

Haverkorn, M, Brown, J, **Gaensler, B M**, **McClure-Griffiths, N** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, The outer scale of turbulence in the magnetoionized galactic interstellar medium, 680(1), 362-370

Hayasaka, K, Abe, K, Adachi, I, Aihara, H, Anipko, D, Arinstein, K, Aulchenko, V, **Bakich, A M**, Barberio, E, Bay, A, Bedny, I, **Peak, L S**, **Stoeck, H**, **Yabsley, B D** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, New search for and e decays at Belle, 666, 16-22

Hessels, J, Nice, D, **Gaensler, B M**, Kaspi, V, Lorimer, D, Champion, D, Lyne, A, Kramer, M, Cordes, J, Freire, P, Camilo, F 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, PSR J1856+0245: Arecibo Discovery of a Young, Energetic Pulsar Coincident with the TeV-Ray Source Hess J1857+026, 682(1), L41-L44

Hill, B N, Venning, A, **Baldock, C** 2008, *Physica Medica*, Polymer gel dosimetry on a multiscale computed tomography scanner: effect of changing parameters on CTDI, 24, 149-158

Hill, R F, Brown, S, **Baldock, C** 2008, *Radiation Measurements*, Evaluation of the water equivalence of solid phantoms using gamma ray transmission measurements, 43, 1258-1264

Hong, K, Park, H, Kim, B, Hwang, I, Jin, W, Ju, J, **Yeom, D I** 2008, *Applied Physics Letters*, 1000 nm tunable acousto-optic filter based on photonic crystal fiber, 92(3), 031110-1-031110-3

Hopkins, A M, **McClure-Griffiths, N**, **Gaensler, B M** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Linked evolution of gas and star formation in galaxies over cosmic history, 682(1), L13-L16

Horii, Y, Trabelsi, K, Yamamoto, H, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Balagura, V, Barberio, E, Bedny, I, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Study of the suppressed B meson decay B--> DK D -> K+-, 78(7), 071901-1-071901-7

Hou, J, Bird, D, George, A, Maier, S, **Kuhlmey, B T**, Knight, J 2008, *Optics Express*, Metallic mode confinement in microstructured fibres, 16(9), 5983-5990

Huang, S, **Ostrikov, K**, Xu, S 2008, *Journal of Applied Physics*, Plasma-enabled growth of ultralong straight, helical, and branched silica photonic nanowires, 104(3), 033301-1-033301-7

Huxor, A, Tanvir, N, Ferguson, A, Irwin, M, Ibata, R, Bridges, T, **Lewis, G F** 2008, *Royal Astronomical Society. Monthly Notices*, Globular clusters in the outer halo of M31: the survey, 385(4), 1989-1997

Ibata, R, **Lewis, G F** 2008, *Science*, The Cosmic Web in Our Own Backyard, 319, 50-52

Ipatov, S, Kutyrev, A, **Madsen, G J**, Mather, J, Moseley, S, Reynolds, R 2008, *Icarus*, Dynamical Zodiacal Cloud Models Constrained by High Resolution Spectroscopy of Zodiacal Light, 194, 769-788

Ireland, M J, **Scholz, M**, Wood, P 2008, *Royal Astronomical Society. Monthly Notices*, Dynamical opacity-sampling models of Mira variables I. Modelling description and analysis of approximations, 391, 1994-2002

Ireland, M, Kraus, A, Martinache, F, Lloyd, J, **Tuthill, P G** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Dynamical mass of GJ 802B: A brown dwarf in a triple system, 678(1), 463-471

Irwin, M, Ferguson, A, Huxor, A, Tanvir, N, Ibata, R, **Lewis, G F** 2008, *Astrophysical Journal Letters*, Andromeda XVII: A new low-luminosity satellite of M31, 676(1), L17-L20

Iwabuchi, M, Nakao, M, Adachi, I, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, Belous, K, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E** 2008, *Physical Review Letters*, Search for B+ D*+0 Decay, 101, 041601-1-041601-5

Jackson, S D 2008, *Optics Communications*, Efficient Tm3+, Ho3+-co-doped silica fibre laser diode pumped at 1150 nm, 281(14), 3837-3840

Johnston-Hollitt, M, **Hunstead, R W**, Corbett, E 2008, *Astronomy & Astrophysics*, The optical morphology of A3667 re-examined, 479(1), 1-8

Johnston, H M, **Sadler, E M**, Cannon, R, **Croom, S M**, Ross, N, Schneider, D 2008, *Royal Astronomical Society. Monthly Notices*, Radio galaxies in the 2SLAQ Luminous Red Galaxy survey - II. The stellar populations of radio-loud and radio-quiet LRGs, 384(2), 692-700

Johnston, S, Taylor, R, Bailes, M, Bartel, N, Baugh, C, Bietenholz, M, Blake, C, Braun, R, Brown, J, **Chatterjee, S**, Darling, J, **Gaensler, B M**, **Hopkins, A M**, **Sadler, E M** 2008, *Experimental Astronomy*, Science with ASKAP: The Australian square-kilometre-array pathnder, 22, 151-273

Jolley, E.J.D, **Kuncic, Z** 2008, *Royal Astronomical Society. Monthly Notices*, Jet-enhanced accretion growth of supermassive black holes, 386(2), 989-994

Jolley, E.J.D, **Kuncic, Z** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Constraints on jet-driven disk accretion in sagittarius A, 676(1), 351-360

Kambe, E, Ando, H, Sato, B, Izumiura, H, Sekii, T, Paulson, D, Yanagisawa, K, Masuda, S, Shibahashi, H, Hatzes, A, **Kiss, L L**, **Bruntt, H**, **Bedding, T R** 2008, *Publications of Astronomical Society of Japan*, Development of iodine cells for Subaru HDS and Okayama HIDES. III. An improvement on the radial-velocity measurement technique, 60(1), 45-53

Kaplan, D, **Chatterjee, S**, **Gaensler, B M**, Anderson, J 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A precise proper motion for the crab pulsar, and the difficulty of testing spin-kick alignment for young neutron stars, 677(2), 1201-1215

Kedziora, D J, **Vladimirov, S**, **Samarian, A A** 2008, *Europhysics Letters: a letters journal exploring the frontiers of physics*, Mode-spectral analysis of 2D Coulomb clusters with uctuating charges, 84, 55001-1-55001-6

Keidar, M, **Levchenko, I**, Arbel, T, Alexander, M, Waas, A, **Ostrikov, K** 2008, *Applied Physics Letters*, Increasing the length of single-wall carbon nanotubes in a magnetically enhanced arc discharge, 92(4), 043129-1-043129-3

Keidar, M, **Levchenko, I**, Arbel, T, Alexander, M, Waas, A, **Ostrikov, K** 2008, *Journal of Applied Physics*, Magnetic-field-enhanced synthesis of single-wall carbon nanotubes in arc discharge, 103(9), 094318-1-094318-8

Kerr, C C, **Rennie, C J**, **Robinson, P D** 2008, *Biological Cybernetics*: communication and control in organisms and automata, Physiology-based modeling of cortical auditory evoked potentials, 98(2), 171-184

Khan, S, **Ahmad, M**, Masood, W 2008, *Physics of Plasmas*, Dust ion-acoustic waves in magnetized quantum dusty plasmas with polarity effect, 15, 013701-1-013701-5

Kim, J, **Robinson, P A** 2008, *Physical Review E*, Controlling limit-cycle behaviors of brain activity, 77(5), 051914-1-051914-4

Kipritidis, J, **Khachan, J**, **Fitzgerald, M J**, **Shrier, O** 2008, *Physical Review E*, Absolute densities of energetic hydrogen ion species in an abnormal hollow cathode discharge, 77(6), 066405-1-066405-9

Kiss, L L, **Szabo, G M**, Balog, Z, Parker, Q, Frew, D 2008, *Royal Astronomical Society. Monthly Notices*, AAOmega radial velocities rule out current membership of the planetary nebula NGC 2438 in the open cluster M46, 391, 399-404

Kivisto, S, Koskinen, R, Paajaste, J, **Jackson, S D**, Guina, M, Okhotnikov, O 2008, *Optics Express*, Passively Q-switched Tm3+, Ho3+-doped silica fiber laser using a highly nonlinear saturable absorber and dynamic gain pulse compression, 16(26), 22058-22063

Kjeldsen, H, **Bedding, T R**, Arentoft, T, Butler, R, Dall, T, Karoff, C, **Kiss, L L**, Tinney, C, Chaplin, W 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, The amplitude of solar oscillations using stellar techniques, 682(2), 1370-1375

Kjeldsen, H, **Bedding, T R**, Christensen-Dalsgaard, J 2008, *Astrophysical Journal Letters*, Correcting stellar oscillation frequencies for near-surface effects, 683(2), L175-L178

Knebe, A, Arnold, B, Power, C, **Gibson, B K** 2008, *Royal Astronomical Society. Monthly Notices*, The dynamics of subhaloes in warm dark matter models, 386(2), 1029-1037

Knebe, A, Yahagi, H, Kase, H, **Lewis, G F**, Gibson, B K 2008, *Royal Astronomical Society. Monthly Notices*, The radial alignment of dark matter subhaloes: from simulations to observations, 388(1), L34-L38

Kompaneets, R, **Vladimirov, S**, Ivlev, A, Morfill, G 2008, *New Journal of Physics*, Reciprocal interparticle attraction in complex plasmas with cold ion flows, 10(2008), 063018-1-063018-16

Kondyurin, A 2008, A*dvances in Space Research*, Preface, 34(7)

Kondyurin, A, **Bilek, M**, Janke, A, Stamm, M, Luchnikov, V 2008, *Plasma Processes and Polymers*, Nanostructured carbonized thin films produced by plasma immersion ion implantation of block-copolymer assemblies, 5(2), 155-160

Kondyurin, A, **Gan, B K**, **Bilek, M**, **McKenzie, D R**, Mizuno, K, Wuhrer, R 2008, *Nuclear Instruments & Methods in Physics Research*. Section B: Beam Interactions with Materials and Atoms, Argon plasma immersion ion implantation of polystyrene films, 266(7), 1074-1084

Kondyurin, A, **Nosworthy, N J**, **Bilek, M** 2008, *Acta Biomaterialia*, Attachment of horseradish peroxidise to polytetrafluorethylene (teflon) after plasma immersion ion implantation, 4, 1218-1225

Kondyurin, A, Pecheva, E, Pramatarova, L 2008, *Journal of Materials Science: Materials in Medicine*, Calcium phosphate formation on plasma immersion ion implanted low density polyethylene and polytetrafluorethylene surfaces, 19(3), 1145-1153

Kondyurin, A, Polonskyi, O, **Nosworthy, N J**, Matousek, J, Hildek, P, Biederman, H, **Bilek, M** 2008, *Plasma Processes and Polymers*, Covalent Attachment and Bioactivity of Horseradish Peroxidase on Plasma-Polymerized Hexane Coatings, 5(8), 727-736

Kuhlmey, B T, **Luan, F**, **Fu, L**, **Yeom, D I**, **Eggleton, B J**, Wang, A, Knight, J 2008, *Optics Express*, Experimental reconstruction of bands in solid core photonic bandgap bres using acoustic gratings, 16(18), 13845-13856

Kusaka, A, Wang, C, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bedny, I, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurement of CP asymmetries and branching fractions in a time-dependent Dalitz analysis of B0 ()0 and a constraint on the quark mixing angle 2, 77, 072001-1-072001-25

Kwok, T D 2008, *Journal of Computational Physics*, A hybrid Boltzmann electrons and PIC ions model for simulating transient state of partially ionized plasma, 227(11), 5758-5777

Kwok, T D, Wu, S, Liu, X, Chu, P 2008, *Journal of Applied Physics*, Investigation of plasma immersion ion implantation of nickel-titanium rod by multiple-grid particle-in-cell simulation, 103(5), 053308-1-053308-5

Kyme, A, **Zhou, W V**, **Meikle, S R**, **Fulton, R R** 2008, *Physics in Medicine and Biology*, Real-time 3D motion tracking for small animal brain PET, 53, 2651-2666

Lacour, S, Meimon, S, Thiebaut, E, Perrin, G, Verhoelst, T, Pedretti, E, Schuller, P, Mugnier, L, Monnier, J, Berger, J, Haubois, X, et al, N 2008, *Astronomy & Astrophysics*, The limb-darkened Arcturus: imaging with the IOTA/IONIC interferometer, 485(2), 561-570

Lambert, J, **Suchowerska, N O**, Jackson, M, **McKenzie, D R**, **Law, S H** 2008, *Brachytherapy*, Real-time brachytherapy dosimetry: Clinical application of a plastic scintillation dosimeter, 7(2), 113

Lambert, J, **Yin, Y**, **McKenzie, D R**, **Law, S H**, **Suchowerska, N O** 2008, *Physics in Medicine and Biology*, Cerenkov-free scintillation dosimetry in external beam radiotherapy with an air core light guide, 53, 3071-3080

Lamont, M, **Kuhlmey, B T**, **de Sterke, C M** 2008, *Optics Express*, Multi-order dispersion engineering for optimal four-wave mixing, 16(10), 7551-7563

Lamont, M, Luther-Davies, B, Choi, D, Madden, S, **Eggleton, B J** 2008, *Optics Express*, Supercontinuum generation in dispersion engineered highly nonlinear (= 10 /W/m) As2S3 chalcogenide planar waveguide, 16(19), 14938-14944

Lamont, M, Luther-Davies, B, Choi, D, Madden, S, Gai, X, **Eggleton, B J** 2008, *Optics Express*, Net-gain from a parametric amplifier on a chalcogenide optical chip, 16(25), 20374-20381

Lau, D, McCulloch, D, Taylor, M, Partridge, J, **McKenzie, D R**, **Marks, N A**, Teo, E, Tay, B 2008, *Physical Review Letters*, Abrupt stress induced transformation in amorphous carbon films with a highly conductive transition phase, 100(17), 176101-1-176101-4

Lawrence, F J, Botten, L, Dossou, K, **de Sterke, C M** 2008, *Applied Physics Letters*, Antireflection coatings for two-dimensional photonic crystals using a rigorous impedance denition, 93, 121114-1-121114-3

Lee, M, **Grillet, C E**, Poulton, C, **Monat, C B**, **Smith, C L**, **Magi, E C**, Freeman, D, Madden, S, Luther-Davies, B, **Eggleton, B J** 2008, *Optics Express*, Characterizing photonic crystal waveguides with an expanded k-space evanescent coupling technique, 16(18), 13800-13808

Lee, S, Miyabayashi, K, Aihara, H, Aushev, T, Aziz, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, Belous, K, Bhardwaj, V, et al, N, **McOnie, S T**, **Varvell, K E** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Improved measurement of time-dependent CP violation in B0J/0 decays, 77, 071101-1-071101-6

Lenzen, M 2008, *Energy Conversion and Management*, Life cycle energy and greenhouse gas emissions of nuclear energy: A review, 49(8), 2178-2199

Lenzen, M 2008, *Journal of Cleaner Production*, Sustainable island businesses: a case study of Norfolk Island, 16(18), 2018-2035

Lenzen, M 2008, *Journal of Industrial Ecology*, Double-Counting in Life Cycle Calculations, 12(4), 583-599

Lesiak, T, Adachi, I, Aihara, H, Arinstein, K, **Bakich, A M**, Barberio, E, Balagura, V, Bedny, I, Belous, K, Bhardwaj, V, Bitenc, U, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Measurement of masses of the Ec(2645) and Ec(2815) baryons and observation of Ec(2980)-Ec(2645), 665, 9-15

Levchenko, I, **Ostrikov, K** 2008, *Applied Physics Letters*, Plasma/ion-controlled metal catalyst saturation: Enabling simultaneous growth of carbon nanotube/nanocone arrays, 92(6), 063108-1-063108-3

Levchenko, I, **Ostrikov, K** 2008, *Nanotechnology*, Carbon saturation of arrays of Ni catalyst nanoparticles of different size and pattern uniformity on a silicon substrate, 19(33), 335703-1-335703-7

Levchenko, I, **Ostrikov, K**, Cvelbar, U 2008, I*EEE Transactions on Plasma Science*, Simulation and visualization of self-assembled nanodevice networks synthesized via plasma-surface interaction, 36(4), 866-867

Levchenko, I, **Ostrikov, K**, Diwan, K, Winkler, K, Mariotti, D 2008, *Applied Physics Letters*, Plasma-driven self-organization of Ni nanodot arrays on Si(100), 93, 183102-1-183102-3

Levchenko, I, **Ostrikov, K**, Keidar, M 2008, *Journal of Nanoscience and Nanotechnology*, Plasma-Assembled Carbon Nanotubes: Electric Field-related Effects, 8, 6112-6122

Levchenko, I, **Ostrikov, K**, Keidar, M, Cvelbar, U 2008, *Journal of Physics D: Applied Physics*, Modes of nanotube growth in plasmas and reasons for single-walled structure, 41(13), 132004-1-132004-6

Levchenko, I, **Ostrikov, K**, **Khachan, J**, **Vladimirov, S** 2008, *Physics of Plasmas*, Growth of carbon nanocone arrays on a metal catalyst: The effect of carbon flux ionization, 15(10), 103501-1-103501-8

Levchenko, I, **Ostrikov, K**, Mariotti, D 2008, *Carbon*, The production of self-organized carbon connections between Ag nanoparticles using atmospheric microplasma synthesis, 47(1), 344-347

Levchenko, I, **Ostrikov, K**, Mariotti, D, Murphy, A 2008, *Journal of Applied Physics*, Plasma-controlled metal catalyst saturation and the initial stage of carbon nanostructure array growth, 104(7), 073308-1-073308-8

Levchenko, I, **Ostrikov, K**, Murphy, A 2008, *Journal of Physics D: Applied Physics*, Plasma-deposited Ge nanoisland films on Si: is Stranski-Krastanow fragmentation unavoidable?, 41(9), 092001-1-092001-5

Levchenko, I, **Ostrikov, K**, Xu, S 2008, *IEEE Transactions on Plasma Science*, Distribution of ion-current density on substrate between carbon nanotubes grown from low-temperature plasma, 36(4), 864-865

Lewis, G F, **FRANCIS, M**, **Barnes, L A**, **Kwan, J**, **JAMES, J.B**. 2008, *Royal Astronomical Society. Monthly Notices*, Cosmological radar ranging in an expanding universe, 388(3), 960-964

Li, B, **Cairns, I H**, **Robinson, P A** 2008, *Journal of Geophysical Research*, Simulations of coronal type III solar radio bursts: 1. Simulation model, 113(6), A06104-1-A06104-11

Li, B, **Cairns, I H**, **Robinson, P A** 2008, *Journal of Geophysical Research*, Simulations of coronal type III solar radio bursts: 2. Dynamic spectrum for typical parameters, 113(6), A06105-1-A06105-14

Li, B, **Robinson, P A**, **Cairns, I H** 2008, *Journal of Geophysical Research*, Quasilinear-based simulations of bidirectional type III bursts, 113, A10101-1-A10101-19

Li, B, **Robinson, P A**, **Cairns, I H** 2008, *Plasma Physics and Controlled Fusion*, Requirements for testing stochastic wave growth in laboratory plasmas using beam-plasma experiments, 50(7), 074019-1-074019-10

Li, J, Adachi, I, Arinstein, K, Aushev, T, **Bakich, A M**, Balagura, V, Bedny, I, Bhardwaj, V, Bitenc, U, Bozek, A, Bracko, M, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Physical Review Letters*, Measurement of the Time-Dependent CP Asymmetries in B0 K0s0 Decays, 101, 251601-1-251601-6

Li, W, **An, H**, **Fleming, S C** 2008, *Electronics Letters*, Second-order optical nonlinearity in thermally poled multilayer germanosilicate thin lms, 44(10), 639-640

Liang, YC, Masanes, L, Doherty, A 2008, *Physical Review A (Atomic, Molecular and Optical Physics)*, Convertibility between two-qubit states using stochastic local quantum operations assisted by classical communication, 77, 012332-1-012332-9

Librantz, A, **Jackson, S D**, Gomes, L, Ribeiro, S, Messaddeq, Y 2008, *Journal of Applied Physics*, Pump excited state absorption in holmium-doped fluoride glass, 103(2), 023105-1-023105-8

Lin, S, Unno, Y, Hou, W, Chang, P, Adachi, I, Aihara, H, Akai, K, Arinstein, K, Aulchenko, V, Aushev, T, et al, N, **Bakich, A M**, **Cole, S B**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Nature*, Difference in direct charge-parity violation between charged and neutral B meson decays, 452, 332-335

Liu, D Y T, **Kuhlmey, B T**, Smith, P M, Day, D J, Faulkner, C R, Overall, R L 2008, *Journal of Microscopy*, Reflection across plant cell boundaries in confocal laser scanning microscopy, 231(2), 349-357

Liu, M, Dupuy, T, **Ireland, M J** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Keck Laser Guide Star Adaptive Optics Monitoring of 2MASS J15344984 - 2952274AB: First Dynamical Mass Determination of a Binary T Dwarf, 689, 436-460

Lobzin, V, **Cairns, I H**, **Robinson, P A** 2008, *Astrophysical Journal Letters*, Evidence for wind-like regions, acceleration of shocks in the deep corona, and relevance of 1/f dynamic spectra to coronal type II bursts, 677(2), L129-L132

Lobzin, V, Krasnoselskikh, V, Musatenko, K, Dudok de Wit, T 2008, *Annales Geophysicae: atmospheres, hydrospheres and space sciences*, On nonstationarity and rippling of the quasiperpendicular zone of the Earth bow shock: Cluster observations, 26, 2899-2910

Lotz, J, Davis, M, Faber, S, Guhathakurta, P, Gwyn, S, Huang, J, Koo, D, Le Floc'h, E, Lin, L, Newman, J, Noeske, K, **Hopkins, A M** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, The evolution of galaxy mergers and morphology at z < 1.2 in the Extended Groth Strip, 672(1), 177-197

Loxley, P 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Rate of magnetization reversal due to nucleation of soliton-antisoliton pairs at point-like defects, 77(14), 144424-1-144424-14

Lu, Q, **Marks, N A**, Schatz, G, Belytschko, T 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Nanoscale fracture of tetrahedral amorphous carbon by molecular dynamics: Flaw size insensitivity, 77, 014109-1-014109-9

Luo, Q, **Melrose, D B** 2008, *Royal Astronomical Society. Monthly Notices*, Oscillating pulsar polar gaps, 387(3), 1291-1302

MacDonald, C L, **Morrow, R**, Weiss, A S, **Bilek, M** 2008, *Journal of the Royal Society*. Interface, Covalent attachment of functional protein to polymer surfaces: a novel one-step dry process, 5(23), 663-669

Maddox, N, Hewett, P, Warren, S, **Croom, S M** 2008, *Royal Astronomical Society. Monthly Notices*, Luminous K-band selected quasars from UKIDSS, 386(3), 1605-1624

Mahmood, S, **Ahmad, M** 2008, *Physics Letters. Section A: General, Atomic and Solid State Physics*, Quantum ion acoustic solitary waves in electronion plasmas: A Sagdeev potential approach, 372, 3467-3470

Manolopoulou, M, Stoulos, S, Fragopoulou, M, Brandt, R, Westmeier, W, Krivopustov, M, Sosnin, N, **Hashemi-Nezhad, S R**, Zamani-Valassiadou, M 2008, *Nuclear Instruments & Methods in Physics Research. Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment*, Proton and neutron production from GAMMA-2 spallation source irradiated by relativistic proton beams, 586(2), 239-245

Mao, S, **Gaensler, B M**, Stanimirovic, S, Haverkorn, M, McClure-Griffiths, N, Staveley-Smith, L, Dickey, J 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A Radio and Optical Polarization Study of the Magnetic Field in the Small Magellanic Cloud, 688(2), 1029-1049

Mapelli, M, Moore, B, **Bland-Hawthorn, J** 2008, *Royal Astronomical Society. Monthly Notices*, Lopsided galaxies: the case of NGC 891, 388(2), 697-708

Marcolini, A, D'Ercole, A, Battaglia, G, **Gibson, B K** 2008, *Royal Astronomical Society. Monthly Notices*, The chemical evolution of dwarf spheroidal galaxies: dissecting the inner regions and their stellar populations, 386(4), 2173-2180

Mariotti, D, Lindstrom, H, Bose, A, **Ostrikov, K** 2008, *Nanotechnology*, Monoclinic -MoO3 nanosheets produced by atmospheric microplasma: application to lithium-ion batteries, 19, 495302-1-495302-6

Marks, N A, Thomas, B S, Smith, K, Lumpkin, G 2008, *Nuclear Instruments & Methods in Physics Research. Section B: Beam Interactions with Materials and Atoms*, Thermal spike recrystallisation: Molecular dynamics simulation of radiation damage in polymorphs of titania, 266(12 to 13), 2665-2670

Masanes, L, **Liang, YC**, Doherty, A 2008, *Physical Review Letters*, All Bipartite Entangled States Display Some Hidden Nonlocality, 100, 090403-1-090403-4

Masood, W, **Ahmad, M** 2008, *Physics Letters. Section A: General, Atomic and Solid State Physics*, Obliquely propagating magnetosonic waves in multicomponent quantum magnetoplasma, 372, 4283-4289

Masood, W, **Ahmad, M** 2008, *Physics of Plasmas*, Electron acoustic soliton in a quantum magnetoplasma, 15, 022306-1-022306-5

Massardi, M, Ekers, R, **Murphy, T**, Ricci, R, **Sadler, E M**, Burke, S, De Zotti, G, Edwards, P, **Hancock, P J**, Jackson, C, Kesteven, M, **Mahony, E K**, Phillips, C, Staveley-Smith, L 2008, *Royal Astronomical Society. Monthly Notices*, The Australia telescope 20-GHz (AT20G) survey: the bright source sample, 384(2), 775-802

Maystre, D, Enoch, S, **McPhedran, R C** 2008, *Optical Society of America, Journal A: Optics Image Science and Vision*, Why a harmonic solution for lossless, perfectly homogeneous, left-handed material cannot exist, 25(8), 1937-1943

McConnachie, A, Huxor, A, Martin, N, Irwin, M, Chapman, S, Fahlman, G, Ferguson, A, Ibata, R, **Lewis, G F**, Richer, H, Tanvir, N 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A Trio of New Local Group Galaxies with Extreme Properties, 688(2), 1009-1020

McKenzie, D R, **Suchowerska, N O**, **Lambert, J**, **Law, S H** 2008, *International Journal Of Radiation: Oncology-Biology-Physics*, Cerenkov-free scintillation dosimeter for use in external beam radiotherapy, 72(S1), S679-S680

McMillen, B, Chen, K, **An, H**, **Fleming, S C**, Hartwell, V, Snoke, D 2008, *Applied Physics Letters*, Waveguiding and nonlinear optical properties of three-dimensional waveguides in LiTaO3 written by high-repetition rate ultrafast laser, 93, 111106-1-111106-3

McNamara, A L, **Kuncic, Z**, Wu, K 2008, *Royal Astronomical Society. Monthly Notices*, X-ray polarization signatures of Compton scattering in magnetic cataclysmic variables, 386(4), 2167-2172

McNamara, A L, **Kuncic, Z**, **Wu, K W**, Galloway, D, Cullen, J 2008, *Royal Astronomical Society. Monthly Notices*, Compton scattering of Fe K alpha lines in magnetic cataclysmic variables, 383(3), 962-970

McPhedran, R C, Zucker, I, **Botten, L**, **Nicorovici, N** 2008, *Proceedings of The Royal Society A. Mathematical, Physical and Engineering Sciences*, On the Riemann property of angular lattice sums and the one-dimensional limit of two-dimensional lattice sums, 464(2100), 3327-3352

Mendonca, P, Napolitano, R, Marchiolli, M, Foster, C, **Liang, YC** 2008, *Physical Review A (Atomic, Molecular and Optical Physics)*, Alternative delity measure between quantum states, 78(5), 052330-1-052330-11

Metcalf, T, Derosa, M, Schrijver, C, Graham, B, van Ballegooijen, A, Wiegelmann, T, **Wheatland, M S**, Valori, G, McTtiernan, J 2008, *Solar Physics: a journal for solar and solar-stellar research and the study of solar terrestrial physics*, Nonlinear force-free modeling of coronal magnetic fields. II. Modeling a filament arcade and simulated chromospheric and photospheric vector fields, 247(2), 269-299

Mikhailovskii, A, Lominadze, J, Churikov, A, Tsypin, V, Erokhin, N, Erokhin, N, Konovalov, S, Pashitskii, E, Stepanov, A, **Vladimirov, S**, Galvao, R 2008, *Journal of Experimental and Theoretical Physics*, Contributions to the theory of magnetorotational instability and waves in a rotating plasma, 106(1), 154-165

Mikhailovskii, A, **Vladimirov, S**, Lominadze, J, Tsypin, V, Churikov, A, Erokhin, N, Galvao, R 2008, *Physics of Plasmas*, Dust-induced instability in a rotating plasma, 15(1), 014504-1-014504-3

Mikikian, M, **Couedel, L**, Cavarroc, M, Tessier, Y, Boufendi, L 2008, *IEEE Transactions on Plasma Science*, Plasma emission modifications and instabilities induced by the presence of growing dust particles, 36(4), 1012-1013

Miloch, W J, **Vladimirov, S**, Pecseli, H, Trulsen, J 2008, *Physical Review E*, Numerical simulations of potential distribution for elongated insulating dust being charged by drifting plasmas, 78, 036411-1-036411-7

Miloch, W J, **Vladimirov, S**, Pecseli, H, Trulsen, J 2008, *Physical Review E*, Wake behind dust grains in flowing plasmas with a directed photon flux, 77(6), 065401-1-065401-4

Milton, G, **Nicorovici, N**, **McPhedran, R C**, Cherednichenko, K, Jacob, Z 2008, *New Journal of Physics*, Solutions in folded geometries, and associated cloaking due to anomalous resonance, 10, 115021-1-115021-21

Mitchell, J J, **Cairns, I H**, Pogorelov, N, Zank, G 2008, *Journal of Geophysical Research*, Draping of the local interstellar magnetic field over the heliopause, 113(4), A04102-1-A04102-14

Miyazaki, Y, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, Bitenc, U, **McOnie, S T** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Search for lepton flavor violating decays into three leptons, 660(3), 154-160

Mizuk, R, Chistov, R, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D**, et al, N 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Observation of two resonancelike structures in the (+)(c1) mass distribution in exclusive (B)overbar(0)-> K-(+)(c1) decays, 78(7), 072004-1-072004-14

Mizuno, K, **Gan, B K**, **Kondyurin, A**, **Bilek, M**, **McKenzie, D R** 2008, *Plasma Processes and Polymers*, Reducing water permeability while maintaining transparency of PET: A Plasma Immersion Ion Implantation Study, 5(9), 834-839

Monat, C B, **Domachuk, P**, **Grillet, C E**, Collins, M, **Eggleton, B J**, **Cronin-Golomb, M**, Mutzenich, S, Mahmud, T, Rosengarten, G, Mitchell, A 2008, *Microfluidics and Nanofluidics*, Optofluidics: a novel generation of reconfigurable and adaptive compact architectures, 4, 81-95

Monnier, J, Tannirkulam, A, **Tuthill, P G**, **Ireland, M J**, Cohen, R, Danchi, W, Baron, F 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Discovery of a circumbinary disk around Herbig Ae/Be System V892 Tauri, 681, L97-L100

Mouhcine, M, **Gibson, B K**, Renda, A, Kawata, D 2008, *Astronomy & Astrophysics*, Simulating the mass-metallicity relation from z ~ 1, 486(3), 711-720

Moutou, C, **Bruntt, H**, Guillot, T, Shporer, A, Gunther, E, Aigrain, S, Almernara, A, Alonso, R, Auvergne, M, Baglin, A, Barbieri, M, et al, N 2008, *Astronomy & Astrophysics*, Transiting exoplanets from the CoRoT space mission - V. CoRoT-Exo-4b: stellar and planetary parameters, 488(2), L47-L50

Muller, D A, **Bewes, J**, **Sharma, M D**, **Reimann, P** 2008, *Journal of Computer Assisted Learning*, Saying the wrong thing: improving learning with multimedia by including misconceptions, 24(2), 144-155

Muller, D A, **Sharma, M D**, Reimann, P 2008, *Science Education*, Raising cognitive load with linear multimedia to promote conceptual change, 92(2), 278-296

Munari, U, Tomasella, L, Fiorucci, M, Bienayme, O, Binney, J, **Bland-Hawthorn, J**, Boeche, C, Campbell, R, Freeman, K, Gibson, B, Gilmore, G, et al, N 2008, *Astronomy & Astrophysics*, Diffuse interstellar bands in RAVE survey spectra, 488, 969-973

Muno, M, **Gaensler, B M**, Nechita, A, Miller, J, Slane, P 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A search for new galactic magnetars in archival Chandra and XMM-Newton observations, 680(1), 639-653

Murphy, T, **Gaensler, B M**, **Chatterjee, S** 2008, *Royal Astronomical Society. Monthly Notices*, A 20-yr radio light curve for the young supernova remnant G1.9+0.3, 389(1), L23-L27

Ng, C Y, **Gaensler, B M**, **Staveley-Smith, L**, Manchester, R, Kesteven, M, Ball, L, Tzioumis, A 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Fourier modeling of the radio torus surrounding SN 1987A, 684(1), 481-497

Ng, C Y, Romani, R 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Fitting pulsar wind tori. II. Error analysis and applications, 673(1), 411-417

Ng, C Y, Slane, P, **Gaensler, B M**, Hughes, J 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Deep Chandra Observation of the Pulsar Wind Nebula Powered by Pulsar PSR J1846-0258 in the Supernova Remnant KES, 75, 686, 508-519

Nguyen, H, **Yeom, D I**, **Magi, E C**, **Fu, L**, **Kuhlmey, B T**, **de Sterke, C M**, **Eggleton, B J** 2008, *Applied Physics Letters*, Nonlinear long-period gratings in As2Se3 chalcogenide fiber for all-optical switching, 92(10), 101127-1-101127-3

Nguyen, H, **Yeom, D I**, **Magi, E C**, **Kuhlmey, B T**, **de Sterke, C M**, **Eggleton, B J** 2008, *Journal of the Optical Society of America B: Optical Physics*, Nonlinear switching using long-period gratings in As2Se3 chalcogenide ber, 25(8), 1393-1401

Nicorovici, N, **McPhedran, R C**, Enoch, S, Tayeb, G 2008, *New Journal of Physics*, Finite wavelength cloaking by plasmonic resonance, 10, 115020-1-115020-16

Nishio, Y, Inami, K, Ohshima, T, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, Aziz, T, **Bakich, A M**, Balagura, V, **McOnie, S T** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Search for lepton flavour violating LVO decays at Belle, 664, 35-40

Oates, T W, **Ryves, L**, **Bilek, M** 2008, *Optics Express*, Dielectric functions of a growing silver film determined using dynamic in situ spectroscopic ellipsometry, 16(4), 2302-2314

Ode, M, Abe, T, Murakami, H, Yamabe-Mitarai, Y, Hara, T, Nagashio, K, **Kocer, C**, Onodera, H 2008, *Intermetallics*, An investigation of the phase diagram Al-IR binary system, 16, 1171-1178

Ostrikov, K, **Levchenko, I**, Xu, S 2008, *Pure and Applied Chemistry*, Self-organized nanoarrays: Plasma-related controls, 80(9), 1909-1918

Ostrikov, K, **Levchenko, I**, Xu, S, Huang, S, Cheng, Q, Long, J, Xu, M 2008, *Thin Solid Films*, Self-assembled low-dimensional nanomaterials via low-temperature plasma processing, 516(19), 6609-6615

Ostrikov, K, Xu, S, Huang, S, **Levchenko, I** 2008, *Surface and Coatings Technology*, Nanoscale surface and interface engineering: Why plasma-aided?, 202, 5314-5318

Pakhlova, G, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, Bakich, A M, Balagura, V, Barberio, E, Bedny, I, et al, N, McOnie, S T, Peak, L S, Yabsley, B D 2008, *Physical Review Letters*, Observations of the psi(4415) DD*2(2460) Decay using initial-state radiation, 100(6), 062001-1-062001-6

Pakhlova, G, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Bay, A, Bedny, I, Bitenc, U, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurement of the near-threshold e+e-DD cross section using initial-state radiation, 77(1), 011103-1-011103-5

Pakhlova, G, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Bedny, I, Bhardwaj, V, Bitenc, U, **Peak, L S**, **Yabsley, B D**, et al, N 2008, *Physical Review Letters*, Observation of a Near-Threshold Enhancement in the e(+) e(-)-> (+)(c) (-)(c) Cross Section Using Initial-State Radiation, 101(17), 172001-1-172001-6

Pakhlova, G, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, Aziz, T, **Bakich, A M**, Balagura, V, Barberio, E, Bedny, I, et al, N, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review Letters*, Production of New Charmoniumlike States in e+e- J/psiD(*)D-(*) at square root of s 10.6 GeV, 100, 202001-1-202001-5

Pandey, B P, **Samarian, A A**, **Vladimirov, S** 2008, *Plasma Physics and Controlled Fusion*, Plasma sheath in the presence of an oblique magnetic field, 50(5), 055003-1-055003-10

Pandey, B P, **Vladimirov, S**, **Samarian, A A** 2008, *Physics of Plasmas*, Nonlinear waves in collisional dusty plasma, 15(5), 053705-1-053705-5

Park, C, Chang, H, Kong, K, Park, J, Im, S, **Warschkow, O** 2008, *Journal of the Korean Physical Society*, Multiscale simulation studies on the electromechanical properties of carbon nanotubes, 52(4), 1281-1286

Pelusi, M D 2008, *IEEE Photonics Technology Letters*, 160-Gb/s Optical Time-Division Demultiplexing Using a MachZehnder Modulator in a Fiber Loop, 20(12), 1060-1062

Pelusi, M D, **Luan, F**, **Magi, E C**, **Lamont, M**, **Moss, D J**, **Eggleton, B J**, Sanghera, J, Shaw, L, Aggarwal, I 2008, *Optics Express*, High bit rate all-optical signal processing in a fiber photonic wire, 16(15), 11506-11512

Pelusi, M D, **Taeed, V G**, **Fu, L**, **Magi, E C, Lamont, M**, Madden, S, Choi, D, Bulla, D, Luther-Davies, B, **Eggleton, B J** 2008, *IEEE Journal on Selected Topics in Quantum Electronics*, Applications of highly-nonlinear chalcogenide glass devices tailored for high-speed all-optical signal processing, 14(3), 529-539

Persson, P, **Rosen, J**, **McKenzie, D R**, **Bilek, M**, Hoglund, C 2008, *Journal of Applied Physics*, A solid phase reaction between TiCX thin films and Al2O3 substrates, 103(6), 066102-1-066102-3

Persson, P, **Ryves, L**, Tucker, M D, **McKenzie, D R**, **Bilek, M** 2008, *Journal of Applied Physics*, Oriented graphite layer formation in Ti/C and TiC/C multilayers deposited by high current pulsed cathodic arc, 104(7), 074317-1-074317-5

Phillips, A J, **Robinson, P A** 2008, *Journal of Theoretical Biology*, Sleep deprivation in a quantitative physiologically based model of the ascending arousal system, 255, 413-423

Piccinin, S, **Stampfl, C**, Scheffler, M 2008, *Physical Review B (Condensed Matter and Materials Physics)*, First-principles investigation of Ag-Cu alloy surfaces in an oxidizing environment, 77(7), 075426-1-075426-9

Ponseca Jr, C, Pobre, R, Estacio, E, Sarukura, N, **Argyros, A**, **Large, M C**, **Van Eijkelenborg, M A** 2008, *Optics Letters*, Transmission of terahertz radiation using a microstructured polymer optical fiber, 33(9), 902-904

Popov, E, Maystre, D, **McPhedran, R C**, Neviere, M, Hutley, M, Derrick, G 2008, *Optics Express*, Total absorption of unpolarized light by crossed gratings, 16(9), 6146-6155

Quillen, A, **Bland-Hawthorn, J** 2008, *Royal Astronomical Society. Monthly Notices*, When is star formation episodic? A delay differential equation 'negative feedback' model, 386(4), 2227-2234

Quillen, A, **Bland-Hawthorn, J**, Green, J, Smith, J, Prasad, D, Alonso-Herrero, A, Cleary, K, Brookes, M, Lawrence, C 2008, *Royal Astronomical Society. Monthly Notices*, Spitzer Space Telescope Infrared Spectrograph mapping of the central kpc of Centaurus A, 384(4), 1469-1482

Reilly, D, Taylor, J, Laird, E, Petta, J, Marcus, C, Hanson, M, Gossard, A 2008, *Physical Review Letters*, Measurement of Temporal Correlations of the Overhauser Field in a Double Quantum Dot, 101, 236803-1-236803-4

Reilly, D, Taylor, J, Petta, J, Marcus, C, Hanson, M, Gossard, A 2008, *Science*, Suppressing Spin Qubit Dephasing by Nuclear State Preparation, 321, 817-821

Ren, Y, **Ostrikov, K**, Xu, S 2008, *Physics of Plasmas*, Electron/ion energy loss to discharge walls revised: A case study in low-temperature, thermally nonequilibrium plasmas, 15(2), 023502-1-023502-7

Ren, Y, Xu, S, Long, J, Rutkevych, P, Cheng, Q, Huang, S, **Ostrikov, K** 2008, *IEEE Transactions on Plasma Science*, Hydrocarbon plasma for treatment of biodegradable food containers, 36(4), 1306-1307

Richardson, A C, **Sharma, M D**, **Khachan, J** 2008, *CAL-Laborate*, What are students learning in practicals? A cross sectional study in university physics laboratories, 16, 20-27

Richardson, J, Ferguson, A, Johnson, R, Irwin, M, Tanvir, N, Faria, D, Ibata, R, Johnston, K, **Lewis, G F**, McConnachie, A, Chapman, S 2008, *The Astronomical Journal*, The nature and origin of substructure in the outskirts of M31. I. Surveying the stellar content with the Hubble Space Telescope Advanced Camera for Surveys, 135(6), 1998-2012

Rider, AE, **Levchenko, I**, **Chan, K K F**, **Tam, E**, **Ostrikov, K** 2008, *Journal of Nanoparticle Research*, Size-selected Ni catalyst islands for single-walled carbon nanotube arrays, 10, 249-254

Rider, AE, **Ostrikov, K**, **Levchenko, I** 2008, *Nanotechnology*, Tailoring the composition of self-assembled Si1-xCx quantum dots: simulation of plasma/ion-related controls, 19(35), 355705-1-355705-12

Riechers, D, Walter, F, **Brewer, B J**, Carilli, C, **Lewis, G F**, Bertoldi, F, Cox, P 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A Molecular Einstein Ring at z=4.12: Imaging the dynamics of a Quasar host galaxy through a cosmic lens, 686(2), 851-858

Roberts, A L, **Sharma, M D**, **Sefton, I M**, **Khachan, J** 2008, *CAL-Laborate*, Differences in two evaluations of answers to a conceptual physics question: a preliminary analysis, 16, 28-38

Roberts, J A, **Robinson, P A** 2008, *Journal of Theoretical Biology*, Modeling absence seizure dynamics: Implications for basic mechanisms and measurement of thalamocortical and corticothalamic latencies, 253(1), 189-201

Roberts, J A, **Robinson, P A** 2008, *Physical Review E*, Modeling distributed axonal delays in mean-field brain dynamics, 78(5), 051901-1-051901-8

Robinson, P A, Chen, P, Yang, L 2008, *Biological Cybernetics: communication and control in organisms and automata*, Physiologically based calculation of steady-state evoked potentials and cortical wave velocities, 98(1), 1-10

Robinson, P A, **Wu, H**, **Kim, J** 2008, *Journal of Theoretical Biology*, Neural rate equations for bursting dynamics derived from conductance-based equations, 250, 663-672

Robishaw, T, Quateart, E, Heiles, C 2008, *The Astrophysical Journal*: an international review of astronomy and astronomical physics, Extragalactic Zeeman Detections in OH Megamasers, 680, 981-998

Robson, R, Nicoletopoulos, P, **Li, B**, White, R 2008, *Plasma Sources Science & Technology*, Kinetic theoretical and fluid modelling of plasmas and swarms: the big picture, 17(2), 024020-1-024020-7

Roelens, M A, **Bolger, J A**, Williams, D, **Eggleton, B J** 2008, *Optics Express*, Multi-wavelength synchronous pulse burst generation with a wavelength selective switch, 16(14), 10152-10157

Roelens, M A, Frisken, S, **Bolger, J A**, Abakoumov, D, Baxter, G, Poole, S, **Eggleton, B J** 2008, *Journal of Lightwave Technology*, Dispersion trimming in a reconfigurable wavelength selective switch, 26(1), 73-78

Rosen, J, **Persson, P**, Ionescu, M, **Kondyurin, A**, **McKenzie, D R**, **Bilek, M** 2008, *Applied Physics Letters*, Oxygen incorporation in Ti2AlC thin films, 92(6), 064102-1-064102-3

Ross, N, Shanks, T, Cannon, R, Wake, D, Sharp, R, **Croom, S M**, Peacock, J 2008, *Royal Astronomical Society. Monthly Notices*, Luminous red galaxy clustering at z similar or equal to 0.7 - first results using AAOmega, 387(3), 1323-1334

Sadler, E M, Ricci, R, Ekers, R, Sault, R, Jackson, C, De Zotti, G 2008, *Royal Astronomical Society. Monthly Notices*, The extragalactic radio-source population at 95 GHz, 385(3), 1656-1672

Sahoo, H, Browder, T, Trabelsi, K, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, Bahinipati, S, **Bakich, A M**, Balagura, V, Barberio, E, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurements of time-dependent CP violation in B0 (2S)K0S decays, 77, 091103-1-091103-6

Samara, M, LaBelle, J, **Cairns, I H** 2008, *Annales Geophysicae: atmospheres, hydrospheres and space sciences*, Statistics of auroral Langmuir waves, 26, 3885-3895

Sangines, R, Sobral, H 2008, *IEEE Transactions on Plasma Science*, Laser resonant absorption photography of pulsed-laser ablation on iron targets, 36(4), 1118-1119

Schrijver, C, Derosa, M, Metcalf, T, Barnes, G, Lites, B, Tarbell, T, McTiernan, J, Valori, G, Wiegelmann, T, **Wheatland, M S**, Amari, T, Aulanier, G, Demoulin, P, Fuhrmann, M, Kusano, K, Regnier, S, Thalmann, J 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Nonlinear force-free field modeling of a solar active region around the time of a major flare and coronal mass ejection, 675(2), 1637-1644

Schwanda, C, Urquijo, P, Barberio, E, Limosani, A, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, Bahinipati, S, **Bakich, A M**, Balagura, V, et al, N, **McOnie, S T**, **Peak, L S**, **Varvell, K E**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurement of the moments of the photon energy spectrum in B Xs decays and determination of |Vcb| and mb at Belle, 78, 032016-1-032016-13

Seabroke, G, Gilmore, G, Siebert, A, Bienayme, O, Binney, J, **Bland-Hawthorn, J**, Campbell, R, Freeman, K, Gibson, B, Grebel, E, Helmi, A 2008, *Royal Astronomical Society. Monthly Notices*, Is the sky falling? Searching for stellar streams in the local Milky Way disc in the CORAVEL and RAVE surveys, 384, 11-32

Seidl, R, Perdekamp, M, Ogawa, A, Adachi, I, Aihara, H, Bahinipati, S, **Bakich, A M**, Bartel, W, Bitenc, U, Bondar,, A, Bozek, A, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Measurement of Azimuthal Asymmetries in Inclusive Production of Hadron Pairs in e+e- Annihilation at \sqrt{s} = 10.58 GeV, 78(3), 032011-1-032011-24

Seymour, N, Dwelly, T, **Moss, D**, McHardy, I, Zoghbi, A, Rieke, G, Page, M, **Hopkins, A M**, Loaring, N 2008, *Royal Astronomical Society. Monthly Notices*, The star formation history of the Universe as revealed by deep radio observations, 386, 1695-1708

Sharma, M D, Pollard, J, **Mendez, A**, Mills, D, **O'Byrne, J W**, **Scott, D**, Hagon, S, Gribble, J, Kirkup, L, Livett, M, Lowe, D, Merchant, A, Rayner, A, Swan, G, Zadnik, M, Zealey, W 2008, *European Journal of Physics*, What does a physics undergraduate education give you? A perspective from Australian physics, 29(1), 59-72

Shi, H, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Shape and surface structure of gold nanoparticles under oxidizing conditions, 77(9), 094127-1-094127-9

Siebert, A, Bienayme, O, Binney, J, **Bland-Hawthorn, J**, Campbell, R, Freeman, K, Gibson, B, Gilmore, G, Grebel, E, Helmi, A, Munari, U, et al, N 2008, *Royal Astronomical Society. Monthly Notices*, Estimation of the tilt of the stellar velocity ellipsoid from RAVE and implications for mass models, 391, 793-801

Slane, P, Helfand, D, Reynolds, S, **Gaensler, B M**, Lemiere, A, Wang, Z 2008, *Astrophysical Journal Letters*, The infrared detection of the pulsar wind nebula in the galactic supernova remnant 3C 58, 676(1), L33-L36

Smail, I, Sharp, R, Swinbank, A, Akiyama, M, Ueda, Y, Foucaud, S, Almaini, O, **Croom, S M** 2008, *Royal Astronomical Society. Monthly Notices*, A pilot survey for KX QSOs in the UKIDSS Ultra Deep Survey Field, 389, 407-414

Smith, A G, **Hopkins, A M**, **Hunstead, R W**, Schmidt, S, Afonso, J, Georgakakis, A, Cram, L, Mobasher,, B, Sullivan, M 2008, *The Astronomical Journa*l, The PHOENIX deep survey: Extremely red galaxies and cluster candidates, 136, 358-366

Smith, C L, **Bog, U**, **Tomljenovic-Hanic, S**, **Lee, M**, **Wu, D K C**, O'Faolain, L, **Monat, C B**, **Grillet, C E**, Krauss, T, **Karnutsch, C**, **McPhedran, R C**, **Eggleton, B J** 2008, *Optics Express*, Reconfigurable microfluidic photonic crystal slab cavities, 16(20), 15887-15896

Smith, D, Mach, H, Penttila, H, **Bradley, H**, Aysto, J, Elomaa, V, Eronen, T, Ghita, D, Hakala, J, Hauth, M, Jokinen, A, et al, N 2008, *Physical Review C (Nuclear Physics)*, Lifetime measurements of the negative-parity 7(-) and 8(-) states in Cd-122, 77(1), 014309-1-014309-7

Smith, M, **Bignell, L**, Alexieva, D, Mo, L, Harrison, J 2008, *Nuclear Instruments & Methods in Physics Research. Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment*, Evaluation of lead shielding for a gamma-spectroscopy system, 589(2), 275-279

Soon, A S, Wong, L, Delley, B, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Morphology of copper nanoparticles in a nitrogen atmosphere: A first-principles investigation, 77(12), 125423-1-125423-13

Soria, R, **Kuncic, Z** 2008, *Advances in Space Research*, Black hole mass estimates from soft X-ray spectra, 42(3), 517-522

Spence, D, **Zhao, Y**, **Jackson, S D**, Mildren, R 2008, *Optics Express*, An investigation into Raman mode locking of fiber lasers, 16(8), 5277-5289

Stampfl, C, **Soon, A S**, **Piccinin, S**, **Shi, H**, **Zhang, H** 2008, *Journal of Physics: Condensed Matter*, Bridging the temperature and pressure gaps: close-packed transition metal surfaces in an oxygen environment, 20(18), 184021-1-184021-19

Staric, M, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, **Bakich, A M**, Barberio, E, Bay, A, Bedny, I, Belous, K, Bhardwaj, V, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Search for a CP Asymmetry in Cabbibo-suppressed D 0 Decays, 670, 190-195

Stello, D, **Bruntt, H**, Preston, H, Buzasi, D 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Oscillating K giants with the wire satellite: Determination of their asteroseismic masses, 674(1), L53-L56

Stokes, J D, **Samarian, A A**, **Vladimirov, S** 2008, *Physical Review E*, Dynamics of two particles in a plasma sheath, 78, 036402-1-036402-6

Sturrock, P, **Wheatland, M S** 2008, *Solar Physics: a journal for solar and solar-stellar research and the study of solar terrestrial physics*, Analysis and packaging of radiochemical solar neutrino data: A Bayesian approach, 247(2), 217-224

Subrahmanyan, R, Saripalli, L, Safouris, V, **Hunstead, R W** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, On the relationship between a giant radio galaxy msh 05-22 and the ambient large-scale galaxy structure, 677(1), 63-78

Sukhorukov, A, Neshev, D, Dreischuh, A, Krolikowski, W, **Bolger, J A**, **Eggleton, B J**, Bui, L, Mitchell, A, Kivshar, Y 2008, *Optics Express*, Observation of polychromatic gap solitons, 16(9), 5991-5996

Szabo, G M, **Kiss, L L**, Sarneczky, K 2008, *Astrophysical Journal Letters*, Cometary activity at 25.7 AU: Hale-Bopp 11 years after perihelion, 677(2), L121-L124

Szabo, G, **Kiss, L L** 2008, *Icarus*, The shape distribution of asteroid families: Evidence for evolution driven by small impacts, 196(1), 135-143

Tam, E, **Ostrikov, K** 2008, *Applied Physics Letters*, Plasma-controlled adatom delivery and (re) distribution: Enabling uninterrupted, low-temperature growth of ultralong vertically aligned single walled carbon nanotubes, 93, 261504-1-261504-3

Tam, E, **Ostrikov, K**, **Levchenko, I**, Keidar, M, Xu, S 2008, *Computational Materials Science*, Multiscale hybrid numerical simulation of the growth of high-aspect-ratio nanostructures, 44, 9-15

Tang, F, **McNamara, P**, Barton, G W, Ringer, S P 2008, *Journal of Non-crystalline Solids*, Multiple Solution-Doping in Optical Fibre Fabrication: I - Aluminium Doping, 354, 927-937

Tang, F, **McNamara, P**, Barton, G W, Ringer, S P 2008, *Journal of Non-crystalline Solids*, Multiple solution-doping in optical fibre fabricationII Rare-earth and aluminium co-doping, 354, 1582-1590

Taniguchi, N, Nakao, M, Nishida, S, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, Aziz, T, **Bakich, A M**, Balagura, V, Bay, A, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review Letters*, Measurement of Branching Fractions, Isospin, and CP-Violating Asymmetries for Exclusive b dy Modes, 101(11), 111801-1-111801-6

Tannirkulam, A, Monnier, J, Harries, T, Millan-Gabet, R, Zhu, Z, Pedretti, E, **Ireland, M J**, **Tuthill, P G**, ten Brummelaar, T, McAlister, H, Farrington, C, Goldfinger, P 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, A Tale of Two Herbig Ae STARS, MWC 275 and AB Aurigae: Comprehensive Models for Spectral Energy Distribution and Interferometry, 689, 513-531

Tsoy, E N, **de Sterke, C M** 2008, *Physics Letters. Section A: General, Atomic and Solid State Physics*, Oscillations of the soliton parameters in nonlinear interference phenomena, 372(11), 1856-1861

Tsoy, E N, **de Sterke, C M**, Abdullaev, F 2008, *Physical Review A (Atomic, Molecular and Optical Physics*), Gap-soliton trapping in random one-dimensional gratings, 78, 031803-1-031803-4

Tsypin, V, **Vladimirov, S**, Galvao, R, de Azevedo, C 2008, *Plasma Sources Science & Technology*, Anisotropy of thermal stresses in confined dusty plasmas, 17(1), 015006-1-015006-7

Tuniz, A, **Brawley, G**, **Moss, D J**, **Eggleton, B J** 2008, *Optics Express*, Two-photon absorption effects on Raman gain insingle mode As2Se3 chalcogenide glass fiber, 16(22), 18524-18534

Tuthill, P G, Monnier, J, Lawrance, N, Danchi, W, Owocki, S, Gayley, K 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, The prototype colliding-wind pinwheel WR 104, 675(1), 698-710

Tyshetskiy, Y O, **Cairns, I H**, **Robinson, P A** 2008, *Physics of Plasmas*, Statistics of beam-driven waves in plasmas with ambient fluctuations: Reduced-parameter approach, 15, 092110-1-092110-10

Uehara, S, Adachi, I, Aihara, H, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, Belous, K, Bitenc, U, Bondar,, A, et al, N, **McOnie, S T**, **Peak, L S**, **Stoeck, H**, **Yabsley, B D** 2008, *European Physical Journal C*. Particles and Fields, Study of charmonia in four-meson nal states produced in two-photon collisions, 53, 1-14

Ushiroda, Y, Sumisawa, K, Taniguchi, N, Adachi, I, Aihara, H, Arinstein, K, Aushev, T, Bahinipati, S, **Bakich, A M**, Balagura, V, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review Letters*, Time-Dependent CP-Violating Asymmetry in B0 P0y Decays, 100, 021602-1-021602-5

Van Eijkelenborg, M A, **Argyros, A**, **Leon-Saval, SG** 2008, *Optics Letters*, Polycarbonate hollow-core microstructuredoptical fiber, 33(21), 2446-2448

Van Etten, A, Romani, R, **Ng, C Y** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Rings and jets around PSR J2021+3651: The "Dragonfly Nebula", 680(2), 1417-1425

Veltz, L, Bienayme, O, Freeman, K, Binney, J, **Bland-Hawthorn, J**, Gibson, B, Gilmore, G, Grebel, E, Helmi, A, Munari, U, Navarro, J, et al, N 2008, *Astronomy & Astrophysics*, Galactic kinematics with RAVE data - I. The distribution of stars towards the Galactic poles, 480(3), 753-765

Verdon, M, **Melrose, D B** 2008, *Physical Review E*, Wave dispersion in a counterstreaming, cold, magnetized, electron-positron plasma, 77(4), 046403-1-046403-10

Vial, P, Greer, P, Hunt, P, **Oliver, L D**, **Baldock, C** 2008, *Medical Physics*, The impact of MLC transmitted radiation on EPID dosimetry for dynamic MLC beams, 35(4), 1267-1277

Vial, P, Greer, P, Oliver, L D, **Baldock, C** 2008, *Medical Physics*, Initial evaluation of a commercial EPID modied to a novel direct-detection conguration for radiotherapy dosimetry, 35(10), 4362-4374

Vial, P, Hunt, P, Greer, P, **Oliver, L D**, **Baldock, C** 2008, *Australasian Physical & Engineering Sciences in Medicine*, Software tool for portal dosimetry research, 31(3), 216-222

Vladimirov, S, Khrapak, S, Chaudhuri, M, Morfill, G 2008, *Physical Review Letters*, Superfluidlike motion of an absorbing body in a collisional plasma, 100(5), 055002-1-055002-4

Volodin, P, **Kondyurin, A** 2008, *Journal of Physics D: Applied Physics*, Dewetting of thin polymer film on rough substrate: I. Theory, 41(6), 065306-1-065306-11

Volodin, P, **Kondyurin, A** 2008, *Journal of Physics D: Applied Physics*, Dewetting of thin polymer film on rough substrate: II. Experiment, 41(6), 065307-1-065307-8

Vu, K, Malinowski, A, **Roelens, M A**, Ibsen, M, Petropoulos, P, Richardson, D 2008, *IEEE Photonics Technology Letters*, Full Characterization of Low-Power PicosecondPulses From a Gain-Switched Diode Laser UsingElectrooptic Modulation-Based Linear FROG, 20(7), 505-507

Wake, D, **Croom, S M**, **Sadler, E M**, **Johnston, H M** 2008, *Royal Astronomical Society. Monthly Notices*, The clustering of radio galaxies at z 0.55 from the 2SLAQ LRG survey, 391, 1674-1684

Wake, D, Sheth, R, Nichol, R, Baugh, C, **Bland-Hawthorn, J**, **Colless, M**, Couch, W, **Croom, S M**, De Propris, R, Drinkwater, M, Edge, A, Loveday, J, Lam, T, Pimbblet, K, Roseboom, I, Ross, N, Schneider, D, Shanks, T, Sharp, R 2008, *Royal Astronomical Society. Monthly Notices*, The 2dF-SDSS LRG and QSO Survey: evolution of the clustering of luminous red galaxies since z=0.6, 387(3), 1045-1062

Walker, M A, Koopmans, L, Stinebring, D, van Straten, W 2008, *Royal Astronomical Society. Monthly Notices*, Interstellar holography, 388(3), 1214-1222

Wang, Z, Bassa, C, Kaspi, V, **Bryant, J J**, Morrell, N 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Optical/infrared observations of the anomalous X-ray pulsar 1E 1048.1-5937 during its 2007 X-ray flare, 679(2), 1443-1446

Warschkow, O, Schofield, S, **Marks, N A**, Radny, M, Smith, P, **McKenzie, D R** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Water on silicon (001): C defects and initial steps of surface oxidation, 77(20), 201305-1-201305-4

Warschkow, O, **Wang, Y**, Subramanian, A, Asta, M, Marks, L 2008, *Physical Review Letters*, Structure and local-equilibrium thermodynamics of the c(2x2) reconstruction of rutile TiO2 (100), 100(8), 086102-1-086102-4

Wei, J, Wang, M, Adachi, I, Aihara, H, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, Belous, K, **Cole, S B**, **McOnie, S T**, **Varvell, K E** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Study of the decay mechanism for B + p pK + and B + p p +, 659(1-2), 80-86

Weibull, A, **Gustafsson, H B**, Mattsson, S, Svensson, J 2008, *NeuroImage 2005*, Investigation of spatial resolution, partial volume effects and smoothing in functional MRI using artificial 3D time series, 41, 346-353

Weise, J I 2008, *Physical Review E*, Dispersive properties of a magnetized degenerate electron gas, 78(4), 046408-1-046408-17

Welikala, N, Connolly, A, **Hopkins, A M**, Scranton, R, Conti, A 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Spatially resolved galaxy star formation and its environmental dependence. I, 677(2), 970-984

Wheatland, M S 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, The energetics of a flaring solar active region and observed flare statistics, 679(2), 1621-1628

White, T, Botten, L, **de Sterke, C M**, Dossou, K, **McPhedran, R C** 2008, *Optics Letters*, Efficient slow-light coupling in a photonic crystal waveguide without transition region, 33(22), 2644-2646

Wicht, J, Adachi, I, Aihara, H, Anipko, D, Aulchenko, V, Aushev, T, **Bakich, A M**, Barberio, E, Bedny, I, Bitenc, U, Bizjak, I, **McOnie, S T**, **Stoeck, H**, **Varvell, K E**, **Yabsley, B D** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, Search for resonant B k h k decays at Belle, 662, 323-329

Wicht, J, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, Bay, A, Belous, K, Bhardwaj, V, et al, N, **McOnie, S T**, **Yabsley, B D** 2008, *Physical Review Letters*, Observation of B0 and Search for BS0 77 Decays at Belle, 100(12), 121801-1-121801-6

Widhalm, L, Adachi, I, Aihara, H, Aushev, T, **Bakich, A M**, Balagura, V, Barberio, E, Bay, A, Bedny, I, Bhardwaj, V, Bitenc, U, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review Letters*, Measurement of B(Ds+ +), 100(24), 241801-1-241801-6

Wilkins, S, **Hopkins, A M**, Trentham, N, Tojeiro, R 2008, *Royal Astronomical Society. Monthly Notices*, Extragalactic constraints on the initial mass function, 391, 363-368

Wilkins, S, Trentham, N, **Hopkins, A M** 2008, *Royal Astronomical Society. Monthly Notices*, The evolution of stellar mass and the implied star formation history, 385(2), 687-694

Willowson, K P, Bailey, D L, **Baldock, C** 2008, *Physics in Medicine and Biology*, Quantitative SPECT reconstruction using CT-derived corrections, 53(12), 3099-3112

Wittkowski, M, Boboltz, D, Driebe, T, Le Bouquin, J, Millour, F, Ohnaka, K, **Scholz, M** 2008, *Astronomy & Astrophysics*, J, H, K spectro-interferometry of the mira variable S Orionis, 479(1), L21-L24

Wolfe, A, Jorgenson, R, **Robishaw, T**, Heiles, C, Prochaska, J 2008, *Nature*, An 84-G magnetic field in a galaxy at redshift z = 0.692, 455, 638-640

Woodruff, H C, **Tuthill, P G**, Monnier, J, **Ireland, M**, **Bedding, T R**, **Lacour, S**, Danchi, W, **Scholz, M** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, The Keck Aperture Masking Experiment: Multi-Wavelength Observations of 6 Mira Variables, 673, 418-433

Wu, K W, **Kiss, L L** 2008, *Astronomy & Astrophysics*, High and low states of the system AM Herculis, 481(2), 433-439

Wu, Q, Mishra, S, Godley, A, Petti, R, Alekhin, S, Astier, P, Autiero, D, Baldisseri, A, Baldo-Ceolin, M, Banner, M, **Boyd, S B**, **Ellis, M**, **Peak, L S**, **Ulrichs, J**, **Soler, F J**, **Varvell, K E**, **Yabsley, B D** 2008, *Physics Letters. Section B: Nuclear, Elementary Particle and High-Energy Physics*, A precise measurement of the muon neutrinonucleon inclusive charged current cross section off an isoscalar target in the energy range 2.5 < Ev < 40 GeV by NOMAD, 660, 19-25

Wu, X, Zhong, X, **Ostrikov, K** 2008, *Applied Physics Letters*, Nanopore processing in dielectric materials and dielectric template-assisted nanoarray synthesis: Using pulsed bias to enhance process throughput and precision, 92(22), 223104-1-223104-3

Xiong, C, Wadsworth, W 2008, *Optics Express*, Polarized supercontinuum in birefringent photonic crystal fibre pumped at 1064 nm and application to tuneable visible/UV generation, 16(4), 2438-2445

Xu, M, Xu, S, Chai, J, Long, J, Cheng, Q, Ee, Y, **Ostrikov, K** 2008, *Journal of Applied Physics*, Visible photoluminescence from plasma-synthesized SiO2-buffered SiNx films: Effect of film thickness and annealing temperature, 103(5), 053512-1-053512-6

Yeom, D I, **Magi, E C**, **Lamont, M**, **Roelens, M A**, **Fu, L**, **Eggleton, B J** 2008, *Optics Letters*, Low-threshold supercontinuum generation in highly nonlinear chalcogenide nanowires, 33(7), 660-662

Yin, Y, Hang, L, Xu, J, **McKenzie, D R**, **Bilek, M** 2008, *Thin Solid Films*, Surface adsorption and wetting properties of amorphous diamond-like carbon thin films for biomedical applications, 516(16), 5157-5161

Yin, Y, **Lambert, J**, **McKenzie, D R**, **Suchowerska, N O** 2008, *Physics in Medicine and Biology*, Real-time monitoring and diagnosis of scintillation dosimeters using an ultraviolet light emitting diode, 53(9), 2303-2312

Yu, C.Y., **Van Eijkelenborg, M A**, **Leon-Saval, SG**, **Argyros, A**, Barton, G W 2008, *Applied Optics*, Enhanced magneto-optical effect in cobalt nanoparticle-doped optical fiber, 47(35), 6497-6501

Yuan, C, Shen, C, Wang, P, Wang, X, Adachi, I, Aihara, H, Arinstein, K, Aulchenko, V, Aushev, T, **Bakich, A M**, Balagura, V, et al, N, **McOnie, S T**, **Peak, L S**, **Yabsley, B D** 2008, *Physical Review D (Particles, Fields, Gravitation and Cosmology)*, Observation of e+e- K+K-J/psi via initial-state radiation at Belle, 77(1), 011105-1-011105-6

Yuan, L, Zhong, X, **Ostrikov, K** 2008, *Nanotechnology*, Nanosphere monolayer-templated, ion-assisted nanofeature etching in dielectric materials: a numerical simulation of nanoscale ion flux topography, 19, 155304-1-155304-10

Yuan, X, **Cairns, I H**, **Robinson, P A** 2008, *Journal of Geophysical Research*, Numerical simulation of electron distributions upstream and downstream of high Mach number quasi-perpendicular collisionless shocks, 113(8), A08109-1-A08109-17

Yuan, X, **Cairns, I H**, Trichtchenko, L, Rankin, R 2008, *Journal of Geophysical Research*, Effects of shock parameters on upstream energetic electron burst events, 113, A09106-1-A09106-14

Yuksel, H, Kistler, M, Beacom, J, **Hopkins, A M** 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Revealing the high-redshift star formation rate with gamma-ray bursts, 683(1), L5-L8

Zeiger, B, Brisken, W, **Chatterjee, S**, Goss, W 2008, *The Astrophysical Journal: an international review of astronomy and astronomical physics*, Proper motions of PSRs B1757-24 and B1951+32: Implications for ages and associations, 674(1), 271-277

Zeng, A, **Bilek, M**, **McKenzie, D R**, Lay, P A 2008, *Thin Solid Films*, Deposition of a-C: N films and evaluation of their robustness in electrochemical applications, 516(16), 5231-5235

Zeng, A, **Bilek, M**, **McKenzie, D R**, Lay, P A, La Fontaine, A J, Keast, V 2008, *Carbon*, Correlation between film structures and potential limits for hydrogen and oxygen evolutions at a-C:N film electrochemical electrodes, 46(4), 663-670

Zhang, H, **Soon, A S**, Delley, B, **Stampfl, C** 2008, *Applied Surface Science*, Aluminium Absorption on Ir(I I I) at a quarter monolayer coverage: A first principles study, 254, 7655-7658

Zhang, H, **Soon, A S**, Delley, B, **Stampfl, C** 2008, *Physical Review B (Condensed Matter and Materials Physics)*, Stability, structure, and electronic properties of chemisorbed oxygen and thin surface oxides on Ir(111), 78(4), 045436-1-045436-12

Zhou, V, **Kyme, A**, Meikle, S R, **Fulton, R R** 2008, *Molecular Imaging and Biology*, An event-driven motion correction method for neurological PET studies of awake laboratory animals, 10, 315-324

Zhuk, I, **Hashemi-Nezhad, S R**, Potapenko, A, Krivopustov, M 2008, *Radiation Measurements*, Determination of high energy proton beam profile using track detectors, 43, S210-S214

Zhuk, I, Potapenko, A, **Hashemi-Nezhad, S R**, Krivopustov, M 2008, *Radiation Measurements*, Determination of high-energy deuteron beam prole and spatial distribution of high-energy neutrons in a U/Pb assembly under 1.26 GeV/nucleon deuteron irradiation, 43(1), S199-S203

Zucker, I, **McPhedran, R C** 2008, *Proceedings of The Royal Society A. Mathematical, Physical and Engineering Sciences*, Dirichlet L-series with real and complex characters and their application to solving double sums, 464(2094), 1405-1422

Zwitter, T, Siebert, A, Munari, U, Freeman, K, Siviero, A, Watson, F, Fullbright, J, Wyse, R, Campbell, R, Seabroke, G, et al, N, **Bland-Hawthorn, J** 2008, *The Astronomical Journal*, The Radial Velocity Experiment (RAVE): Second data release, 136(1), 421-451

CONFERENCES 2008

Ahn, T, Park, Y, **Moss, D J**, Ramachandran, S, Azana, J 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, paper OMT7, 1-3

An, H, Fleming, S C 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Argyros, A, Pla, J, **Lwin, R, Ladouceur**, F 2008, *The 17th International Conference on Plastic Optical Fibers (POF2008)*, IGI Publishing, USA, 1-5

Aslund, M L, Jovanovic, N, **Groothoff, N**, Canning, J, Marshall, G, **Jackson, S D, Fuerbach, A**, Withford, M 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, 0, 0-on-line

Aslund, M L, Jovanovic, N, **Groothoff, N**, Canning, J, Marshall, G, Jackson, S D, **Fuerbach, A**, Withford, M 2008, *SPIE: Microelectronics, MEMS and Nanotechnology*, SPIE, Washington, USA, 6800, 68000V-1-68000V-12

Aslund, M L, Jovanovic, N, **Jackson, S D**, Canning, J, Marshall, G, Fuerbach, A, Withford, M 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, 0, 0-on-line

Awaja, F 2008, 17th International Vacuum Congress (IVC-17), 13th International Conference on Surface Science, (ICSS-13) and International Conference on Nanoscience and Technology (ICN + T 2007), IOP Publishing, UK, 100, 012026-012030

Baker, N J, **Roelens, M A**, Madden, S, Luther-Davies, B, **de Sterke, C M**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online,

Bignall H E, Lovell J E J, Rickett B J, Macquart J P, Jauncey D L, Kedziora-Chudczer L, Ojha R,
Pursimo T, Senkbeil C, Shabala S and Dutk, M, 2008, Australian Institute of Physics, 18th National Congress, AIP, Adelaide, 41-44

Bog, U, Smith, C L, **Karnutsch, C**, **Tomljenovic-Hanic, S**, **Grillet, C E**, **Monat, C B**, **Wu, D K C**, O'Faolain, L, White, T, Krauss, T, **McPhedran, R C**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Bolger, J A, **Luan, F**, **Yeom, D I**, **Tsoy, E N**, **de Sterke, C M**, **Eggleton, B J** 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology – Photonics: Design, Technology, and Packaging III*, SPIE, Bellingham, Washington, USA, 6801, 68010B-1

Champion, D, Ransom, S, Lazarus, P, Camilo, F, Kaspi, V, Nice, D, Freire, P, Cordes, J, Hessels, J, Bassa, C, **Gaensler, B M**, et, a 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 448-452

Cotton, W, Monnier, J, Baron, F, Hofmann, K, Kraus, S, Weigelt, G, Rengaswamy, S, Thiebaut, E, Lawson, P, Jaffe, W, Hummel, C, Pauls, T, Schmitt, H, **Tuthill, P G**, Young, J 2008, *SPIE 7013 - Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 70131N-1-70131N-14

Cox, F, Large, M C, Cordeiro, C, Lwin, R, Argyros, A 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 700427-1-700427-4

De Iuliis, J, **Groothoff, N**, Holdsworth, J, Canning, J, Martelli, C, **Michie, A M**, **Jackson, S D** 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70042I-1-70042I-4

Doherty, A, **Liang, YC**, Toner, B, Wehner, S 2008, *Proceedings of the 2008 23rd Annual IEEE Conference on Computational Complexity*, http://xxx.lanl.gov/, Online

Dossou, K, **Botten, L**, Mahmoodian, S, **McPhedran, R C**, Poulton, C, **Asatryan, A**, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Duchesne, D, Ferrera, M, Razzari, L, Morandotti, R, Little, B, **Moss, D J** 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Eichhorn, M, **Jackson, S D** 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA, 1-2

El Fakhri, G, Fulton, R R, Gray, J, Marengo, M, Zimmerman, B, Dondi, M, McLean, I D, Palm, S 2008, 2008 AAPM Annual Meeting Program, American Association of Physicists in Medicine, USA, 35, 6-2659

El Fakhri, G, **Fulton, R R**, Gray, J, Marengo, M, Zimmerman, B, Palm, S, McLean, I D, Dondi, M 2008, *2008 Annual Meeting EANM*, European Association of Nuclear Medicine, Vienna, Austria

Ferrera, M, Razzari, L, Duchesne, D, Morandotti, R, **Yang, Z**, Liscidini, M, Sipe, J, Little, B, **Moss, D J** 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Fulton, R, Leung, W C, 2008, Australian Institute of Physics, 18th National Congress, AIP, Adelaide, 69-72

Fulton, R R, **Kyme, A**, **Zhou, V**, Leaver, K, Kassiou, M, Lehnert, W, Meikle, S R 2008, *2008 World Molecular Imaging Congress*, World Molecular Imaging Congress, Europe

Grillet, C E, Bian, S N, **Magi, E C**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online

Groothoff, N, Lancry, M, Guizard, S, Poumellec, B, Canning, J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, 0, online-online

Groothoff, N, Lancry, M, Poumellec, B, Canning, J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, 0, 0-on-line

Hambley, P O, Canning, J 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70042X-1-70042X-4

Hambley, P O, **Michie, A M**, **Bassett, I M**, Henry, P C, Ingram, J 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70042W-1-70042W-4

Hemming, A, Sabella, A, Bennetts, S, **Jackson, S D**, Lancaster, D 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Ireland, M J, Merand, A, ten Brummelaar, T, **Tuthill, P G**, Schaefer, G, Turner, N, Sturmann, J, Sturmann, L, McAlister, H 2008, *SPIE 7013 – Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 701324-1-701324-10

Jackson, S D 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Jackson, S D 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology - Photonics: Design, Technology, and Packaging III*, SPIE, Bellingham, Washington, USA, 6801, 680104-1

Kedziora, D J, **Samarian, A A**, **Vladimirov, S**, **James, B W** 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, ?, 32D, 1 of 4 (4 pages)-4 of 4

Kedziora, D J, **Vladimirov, S**, **Samarian, A A** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 321-322

Khrapak, S, **Vladimirov, S**, Chaudhuri, M, Morfill, G 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 257-258

Kim, J, Shin, H, **Robinson, P A** 2008, *Complex Systems II*, SPIE, Washington, USA, 6082, 6802T, 68020T-1-68020T-8

Kirkup, L, **Mendez, A**, Scott, D, **Sharma, M D**, O'Byrne, J W, Quinton, J, Pollard, J, Petelina, S, Creagh, C, Keleher, P, Bhathal, R 2008, *UniServe Science Symposium 2008*, Uniserve Science, Sydney, NSW, Australia, 35-40

Kirkup, L, **Mendez, A**, **Sharma, M D**, **O'Byrne, J W** 2008, *Australian Institute of Physics 18th National Congress*, Australian Institute of Physics, Not Known, 131-134

Kuhlmey, B T, **Bolger, J A**, **Wu, D K C**, Giessen, H, **Eggleton, B J** 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology – Photonics: Design, Technology, and Packaging III*, SPIE, Bellingham, Washington, USA, 6801, 680118-1

Kuhlmey, B T, **Luan, F**, **Fu, L**, **Yeom, D I**, **Eggleton, B J**, Wang, A, Knight, J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online

Lamont, M, **Kuhlmey, B T**, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Lancaster, D, Bennetts, S, Sabella, A, **Henry, P C**, **Jackson, S D** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online

Large, M C, Moran, J, Ye, L 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 700468-1-700468-4

Lawrence, F J, Botten, L, Dossou, K, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online

Lee, M, **Grillet, C E**, **Tomljenovic-Hanic, S**, **Smith, C L**, **Monat, C B**, Freeman, D, Madden, S, Luther-Davies, B, Eggleton, B J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online

Liang, YC, Masanes, L, Doherty, A 2008, *4th Asia Pacific Conference on Quantum Information Science (APCQIS)*, Not Known, Not Known

Luan, F, **Bolger, J A**, **Yeom, D I**, **Tsoy, E N**, **de Sterke, C M**, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, paper OWM3, 1-3

Luan, F, **Kuhlmey, B T**, **Fu, L**, **Yeom, D I**, **Eggleton, B J**, Wang, A, Knight, J 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Luo, Q, **Melrose, D B** 2008, *Astrophysics of Compact Objects, International Conference on Astrophysics of Compact Objects*, Springer, online, 968, 159-164

Lwin, R, **Argyros, A**, **Large, M C** 2008, *The 17th International Conference on Plastic Optical Fibers (POF2008)*, IGI Publishing, USA, 1-5

Mahmoodian, S, Dossou, K, **McPhedran, R C**, Botten, L, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online

Martelli, C, Canning, J, Kristensen, M, **Groothoff, N** 2008, *XXI International Congress on Glass (ICG 2007)*,

Mason, B, **Robishaw, T**, Finkbeiner, D 2008, *A Celebration of NRAO's 50th Anniversary ASP*, Not Known, USA, 395, 373

McKenzie, D R, **Suchowerska, N O**, **Lambert, J**, **Law, S H** 2008, *50th annual ASTRO Meeting*, Elsevier, 72, 1, S679-S680

Melrose, D B, **Luo, Q** 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 47-50

Mendonca, P, Napolitano, R, Marchiolli, M, Foster, C, **Liang, YC** 2008, *Australian Institute of Physics 18th National Congress*, Australian Institute of Physics

Michie, A M, Ingram, J, **Bassett, I M**, Haywood, J H, **Hambley, P O**, **Henry, P C** 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70043I-1-70043I-4

Miloch, W J, Pecseli H, Trulsen J, **Vladimirov S** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 287-288

Miloch W J, **Vladimirov S**, Pecseli H, Trulsen J 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, 32D, 1 of 4-4 of 4

Miloch W, Vladimirov S, Pecseli H L, Trulsen J, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide, 204-207

Miloch W, Vladimirov S, Pecseli H L, Trulsen J, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide, 208-211

Miloch W J , Vladimirov S , Pecseli H L and Trulsen J, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide,155-158

Min, S, **Zhao, Y**, **Fleming, S C** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Mok, J T, Ibsen, M, **de Sterke, C M**, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, paper OWD6, 1-3

Monat, C B, Corcoran, B, **Grillet, C E**, **Moss, D J**, **Eggleton, B J**, **White, T**, O'Faolain, L, Krauss, T 2008, *34th European Conference and Exhibition on Optical Communication (ECOC2008)*, IEEE, online, 7 paper code Th.3.D.7, 1-2

Monnier, J, Zhao, M, Pedretti, E, Thureau, N, **Ireland, M J**, Muirhead, P, Berger, J, Millan-Gabet, R, van Belle, G, ten Brummelaar, T, McAlister, H, Ridgway, S, Turner, N, Sturmann, L, Sturmann, J, Berger, D, Tannirkulam, A, Blum, J 2008, *SPIE 7013 – Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 701302-1-701302-11

Moss, D J, Ferrara, M, Razzari, L, Duchesne, D, Morandotti, R, Yang, Z, Liscidini, M, Sipe, J, Chu, S, Little, B 2008, *34th European Conference and Exhibition on Optical Communication (ECOC2008)*, IEEE, online, 5, 1-2

Moss, D J, Ferrara, M, Razzari, L, Duchesne, D, Morandotti, R, Yang, Z, Liscidini, M, Sipe, J, Chu, S, Little, B 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Moss, D J, Razzari, L, Duchesne, D, Morandotti, R, Springthorpe, A 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

O'Byrne, J W, **Mendez, A**, **Sharma, M D**, Kirkup, L, Scott, D 2008, *Australian Institute of Physics 18th National Congress*, Australian Institute of Physics, 143-146

Pandey, B P, **Samarian, A A**, **Vladimirov, S** 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, ?, 32D, 1 of 4-4 of 4

Pandey, B P, **Samarian, A A**, **Vladimirov, S** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 319-320

Pelusi, M D, **Luan, F**, **Mägi, E C**, **Lamont, M**, **Moss, D J**, **Eggleton, B J**, Madden, S, Choi, D, Bulla, D, Luther-Davies, B 2008, *IEEE Photonics Global Conference*, IEEE, USA

Pohl, AAP, Neves, P, Oliveira, R, Stevenson, M, **Groothoff, N**, Canning, J 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70041I-1-70041I-4

Rea, N, McLaughlin, M, **Gaensler, B M**, **Chatterjee, S**, Camilo, F, Kramer, M, Lorimer, D, Lyne, A, Israel, G, Possenti, A 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 74-78

Robertson, J G, **Tuthill, P G**, **Lacour, S** 2008, *SPIE 7013 – Optical and Infrared Interferometry*, SPIE, Washington USA, 7013 cd and hardcopy and online, 70133R-1-70133R-10

Robinson, P A, **Gray, R T**, Fung, CKC 2008, *Complex Systems II*, SPIE, Washington, USA, 6802, 68020S-1-68020S-10

Robishaw, T, Heiles, C, Quataert, E 2008, *IAU Symposium, Vol. 242*, Not Known, Not known, 242, 467

Roelens, M A, Abakoumov, D, **Bolger, J A**, Baxter, G, Frisken, S, Poole, S, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, Paper OWP3, 1-3

Sabella, A, Hemming, A, Bennetts, S, **Jackson, S D**, Lancaster, D 2008, *OECC/ACOFT 2008 Conference*, IEEE

Samarian, A A, Boufendi, L, Couedel, L, Mikikian, M 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 37-40

Smith, C L, **Wu, D K C**, **Lee, M**, **Monat, C B**, **Tomljenovic-Hanic, S**, **Freeman, D**, **Madden, S**, **Grillet, C E**, Luther-Davies, B, Giessen, H, Eggleton, B J 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology - Device and Process Technologies for Microelectronics, MEMS, Photonics, and Nanotechnology IV*, SPIE, Bellingham, Washington, USA, 6800, 680003-1

Stokes, J D, **Samarian, A A**, **Vladimirov, S** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 323-324

Stokes, J D, **Samarian, A A**, **Vladimirov, S**, **James, B W** 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, ?, 32D, 1 of 4-4 of 4

Taeed, V G, **Pelusi, M D**, **Eggleton, B J**, Choi, D, Madden, S, Bulla, D, Luther-Davies, B 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, Paper OMP2, 1-3

Tomljenovic-Hanic, S, **de Sterke, C M**, **Steel, M**, **Eggleton, B J**, Tanaka, Y, Noda, S 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Tuthill, P G, **Davis, J**, **Ireland, M J**, **Jacob, A**, **North, J R**, **Owens, S M**, **Robertson, J G**, **Tango, W J**, ten Brummelaar, T 2008, *SPIE 7013 – Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 701304-1-701304-10

Vanda, J, Skapa, J, Vasinek, V, **Argyros, A**, **Van Eijkelenborg, M A**, **Large, M C**, **Lwin, R** 2008, *Photonics 2008: International Conference on Fiber Optics and Photonics*, Indian Institute of Technology Delhi (iitd), online, 4 pages online

Verdon, M, **Melrose, D B** 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 133-135

Vladimirov, S 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology – conference on Complex Systems II*, SPIE, Bellingham, Washington, USA, 6802, 68020M-1-68020M-8

Wang, HC, **Fleming, S C**, Lee, Y 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Wilson, K, Mendez, A, Mills, D, Sharma, M and Kirkup, L, 2008, *Australian Institute of Physics, 18th National Congress, Improving Undergraduate Laboratory Work in Physics: Outcomes of the 'Forging new directions in physics education in Australian universities' Project*, AIP, Adelaide,155-158

Xu, J, Galili, M, Mulvad, H, Oxenlowe, L, Clausen, A, Jeppesen, P, Luther-Davies, B, Madden, S, Rode, A, Choi, D, **Pelusi, M D**, **Luan, F**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Yeom, D I, **Magi, E C**, **Lamont, M**, **Fu, L**, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, Paper OTuB5, 1-3

Yu, C.Y., **Argyros, A**, Barton, G W, **Leon-Saval, SG**, **Van Eijkelenborg, M A** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Yu, C.Y., **Argyros, A**, Barton, G W, **Leon-Saval, SG**, **Van Eijkelenborg, M A** 2008, *The 17th International Conference on Plastic Optical Fibers (POF2008)*, IGI Publishing, USA

Zhou, V, **Kyme, A**, **Meikle, S R**, **Fulton, R R** 2008, *2008 IEEE Nuclear Science Symposium, Medical Imaging Conference and 16th International Workshop on Room-temperature Semiconductor X- and Gamma-Ray Detectors (RTSD)*, Institute of Electrical and Electronics Engineers (IEEE), CD-Rom, 4252-4256

Zhou, V, **Kyme, A**, **Meikle, S R**, Lehnert, W, **Fulton, R R** 2008, *2008 IEEE Nuclear Science Symposium, Medical Imaging Conference and 16th International Workshop on Room-temperature Semiconductor X- and Gamma-Ray Detectors (RTSD)*, Institute of Electrical and Electronics Engineers (IEEE), CD-Rom, 5452-5456

KEYNOTE/INVITED SPEAKERS AT INTERNATIONA/NATIONAL CONFERENCES 2008

Professor Martijn de Sterke (1)
Australian Institute of Physics (AIP) National Congress, Adelaide
1– 5 December 2008

Professor Bryan Gaensler (1)
Australian Institute of Physics (AIP) National Congress, Adelaide
1-5 December 2008

Professor Cathy Stampfl (1)
8th Triennial Congress of the World Association of Theoretical and Computational Chemists (WATOC)
14-19 September 2008

Professor Don Melrose (2)
Electron Cyclotron Maser Emission from Astrophysical and Space Plasmas Invited review presented by DBM at the International Workshop EC-15, Yosemite, California USA
March 2008

Coherent Emission
Presented by DBM at IAU Symposium 257, Ionnina, Greece
September 2008

Professor Iver Cairns (9)
Gaseous Electronics Meeting (GEM) 15
Space Plasma Phenomena and Associated Laboratory Experiments, Murramarang, Australia
February 2008

7th International Workshop on Nonlinear Waves and Turbulence in Space Plasmas
Beam-wave and wave-wave interactions in solar radio bursts
Beaulieu, France
April 2008

AOGS Meeting, Multi-scale Theory for Type II Bursts and Comparisons with Data
Busan, Korea
June 2008

2nd Laboratory, Space and Astrophysical Plasma Workshop
Topical Research Program of the Asia Pacific Center for Theoretical Physics
2-D Hybrid Simulations of Reforming Shocks
Pohang, Korea
June 2008

COSPAR Meeting
New Focus of Space Research in Australia
Montreal, Canada
July 2008

Australian Space Development Conference
The First Decadal Plan for Australian Space Science
Adelaide, Australia
July 2008

Australian Space Science Conference
Development Status and Summary of the first Decadal Plan for Australian Space Science
Canberra Australia
October 2008

Australian Institute of Physics Congress
Adelaide Australia
December 2008

Australian Institute of Physics Congress
Evidence for wind-like regions, acceleration of shocks in the deep corona and relevance of dynamic spectra for coronal type II bursts
Adelaide, Australia
December 2008

Professor Clive Baldock (1)
Historical overview of the development of gel dosimetry: Another personal perspective
5th International Conference on Radiotherapy Gel Dosimetry, Hersonissos, Crete Greece
29 September–3 October 2008

Professor Ben Eggleton (7)
Ultrafast nonlinear optics on a photonic chip
Sypmosium of the Dodd-Walls Centre for Quantum Science and Technology
Queenstown, New Zealand
December 2008

Ultrafast nonlinear optics on a photonic chip
International Workshop on Advances in Nanoscale Nonlinear Optics
Italy
October 2008

Ultrafast nonlinear optics on a photonic chip
Photonics 2008 9th International Conference on Fibre Optics and Photonics
Plenary Presentation
New Delhi, India
December 2008

Reconfigurable Photonic Crystal Circuits
SPIE Photonics Annual Meeting
San Diego, USA
August 2008

Ultrafast Chalcogenide Photonic Circuits
International Conferences on Optics, Optoelectronics, Photonic Materials and Applications
Edmonton, Canada
July 2008

Ultrafast all-optical signal processing using photonic integrated circuits
LEOS Summer Topical Meeting
Acapulco, Mexico
July 2008

Optofluidics
SPIE Photonics
West San Jose, USA
January 2008

Professor Ross McPhedran (3)
Cloaking by reaction through plasmonic resonance
NATO Advanced Research Workshop

Interaction and finite wavelength effects in cloaking by plasmonic resonance
Metamaterials 2008
Pamplona, Spain
21-26 September, 2008

Interaction and finite wavelength effects in cloaking by plasmonic resonance
Australia Japan Nanophotonics Workshop
Canberra, Australia
9-10 December 2008

Dr Maryanne Large (2)
Post Processing of Microstructured Polymer Optical Fibres
Workshop on Speciality Optical Fibres and their applications
Sao Pedro Brazil
20-22 August 2008.

Optical and mechanical properties of biologically occurring microstructures
First International Workshop on Advanced Nano- and Biomaterials and Their Device Applications
Poiana Brasov, Romania
17-21 September 2008

REFEREED CONFERENCES (E1)

An, H, **Fleming, S C** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Argyros, A, Pla, J, **Lwin, R**, **Ladouceur, F** 2008, *The 17th International Conference on Plastic Optical Fibers (POF2008)*, IGI Publishing, USA, 1-5

Aslund, M L, Jovanovic, N, **Groothoff, N**, Canning, J, Marshall, G, **Jackson, S D**, **Fuerbach, A**, Withford, M 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Aslund, M L, Jovanovic, N, **Groothoff, N**, Canning, J, Marshall, G, **Jackson, S D**, **Fuerbach, A**, Withford, M 2008, *SPIE: Microelectronics, MEMS and Nanotechnology*, SPIE, Washington, USA, 6800, 68000V-1-68000V-12

Aslund, M L, Jovanovic, N, **Jackson, S D**, Canning, J, Marshall, G, Fuerbach, A, Withford, M 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Awaja, F 2008, *17th International Vacuum Congress (IVC-17), 13th International Conference on Surface Science, (ICSS-13) and International Conference on Nanoscience and Technology (ICN + T 2007)*, IOP Publishing, UK, 100, 012026-012030

Baker, N J, **Roelens, M A**, Madden, S, Luther-Davies, B, **de Sterke, C M**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online,

Bignall H E, Lovell J E J, Rickett B J, Macquart J P, Jauncey D L, **Kedziora-Chudczer L**, Ojha R, Pursimo T, Senkbeil C, Shabala S and Dutk, M, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide, 41-44

Bog, U, Smith, C L, **Karnutsch, C**, **Tomljenovic-Hanic, S**, **Grillet, C E**, **Monat, C B**, **Wu, D K C**, O'Faolain, L, White, T, Krauss, T, **McPhedran, R C**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Bolger, J A, **Luan, F**, **Yeom, D I**, **Tsoy, E N**, **de Sterke, C M**, **Eggleton, B J** 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology - Photonics: Design, Technology, and Packaging III*, SPIE, Bellingham, Washington, USA, 6801, 68010B-1

Champion, D, Ransom, S, Lazarus, P, Camilo, F, Kaspi, V, Nice, D, Freire, P, Cordes, J, Hessels, J, Bassa, C, **Gaensler, B M**, et, a 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 448-452

Cotton, W, Monnier, J, Baron, F, Hofmann, K, Kraus, S, Weigelt, G, Rengaswamy, S, Thiebaut, E, Lawson, P, Jaffe, W, Hummel, C, Pauls, T, Schmitt, H, **Tuthill, P G**, Young, J 2008, *SPIE 7013 – Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 70131N-1-70131N-14

Cox, F, **Large, M C**, Cordeiro, C, **Lwin, R**, **Argyros, A** 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 700427-1-700427-4

De Iuliis, J, **Groothoff, N**, Holdsworth, J, Canning, J, Martelli, C, **Michie, A M**, **Jackson, S D** 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70042I-1-70042I-4

Doherty, A, *Liang, YC*, Toner, B, Wehner, S 2008, *Proceedings of the 2008 23rd Annual IEEE Conference on Computational Complexity*, http://xxx.lanl.gov/, Online

Dossou, K, **Botten, L**, **Mahmoodian, S**, **McPhedran, R C**, Poulton, C, **Asatryan, A**, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online, online, 2 pages

Duchesne, D, Ferrera, M, Razzari, L, Morandotti, R, Little, B, **Moss, D J** 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Eichhorn, M, **Jackson, S D** 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science), Optical Society of America (OSA)*, USA, 1-2

Ferrera, M, Razzari, L, Duchesne, D, Morandotti, R, **Yang, Z**, Liscidini, M, Sipe, J, Little, B, Moss, D J 2008, CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science), Optical Society of America (OSA), USA

Fulton, R, Leung, W C, 2008, Australian Institute of Physics, 18th National Congress, AIP, Adelaide, 69-72

Grillet, C E, Bian, S N, Magi, E C, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Groothoff, N, Lancry, M, Guizard, S, Poumellec, B, Canning, J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Groothoff, N, Lancry, M, Poumellec, B, Canning, J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Hambley, P O, Canning, J 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70042X-1-70042X-4

Hambley, P O, **Michie, A M**, **Bassett, I M**, **Henry, P C**, Ingram, J 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70042W-1-70042W-4

Hemming, A, Sabella, A, Bennetts, S, **Jackson, S D**, Lancaster, D 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Ireland, M J, Merand, A, **ten Brummelaar, T**, **Tuthill, P G**, Schaefer, G, Turner, N, Sturmann, J, Sturmann, L, McAlister, H 2008, *SPIE 7013 - Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 701324-1-701324-10

Jackson, S D 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Jackson, S D 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology - Photonics: Design, Technology, and Packaging III*, SPIE, Bellingham, Washington, USA, 6801, 680104-1

Kedziora, D J, **Samarian, A A**, **Vladimirov, S**, **James, B W** 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, ?, 32D, 1 of 4 (4 pages)-4 of 4

Kedziora, D J, **Vladimirov, S**, **Samarian, A A** 2008, 5th International Conference on the Physics of Dusty Plasmas, AIP, Melville, New York, 1041, 321-322

Khrapak, S, **Vladimirov, S**, Chaudhuri, M, Morfill, G 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 257-258

Kim, J, Shin, H, **Robinson, P A** 2008, *Complex Systems II*, SPIE, Washington, USA, 6082, 6802T, 68020T-1-68020T-8

Kirkup, L, **Mendez, A**, Scott, D, **Sharma, M D**, **O'Byrne, J W**, Quinton, J, Pollard, J, Petelina, S, Creagh, C, Keleher, P, Bhathal, R 2008, *UniServe Science Symposium 2008*, Uniserve Science, Sydney, NSW, Australia, 35-40

Kirkup, L, **Mendez, A**, **Sharma, M D**, **O'Byrne, J W** 2008, *Australian Institute of Physics 18th National Congress*, Australian Institute of Physics, 131-134

Kuhlmey, B T, **Bolger, J A**, **Wu, D K C**, Giessen, H, **Eggleton, B J** 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology – Photonics: Design, Technology, and Packaging III*, SPIE, Bellingham, Washington, USA, 6801, 680118-1

Kuhlmey, B T, **Luan, F**, **Fu, L**, **Yeom, D I**, **Eggleton, B J**, Wang, A, Knight, J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Lancaster, D, Bennetts, S, Sabella, A, **Henry, P C**, **Jackson, S D** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Large, M C, Moran, J, Ye, L 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 700468-1-700468-4

Lawrence, F J, Botten, L, Dossou, K, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Lee, M, **Grillet, C E**, **Tomljenovic-Hanic, S**, **Smith, C L**, **Monat, C B**, Freeman, D, Madden, S, Luther-Davies, B, Eggleton, B J 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Luan, F, **Bolger, J A**, **Yeom, D I**, **Tsoy, E N**, **de Sterke, C M**, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, paper OWM3, 1-3

Luan, F, **Kuhlmey, B T**, **Fu, L**, **Yeom, D I**, **Eggleton, B J**, Wang, A, Knight, J 2008, *CLEO/QELS and PhAST 2008 (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, Optical Society of America (OSA), USA

Luo, Q, **Melrose, D B** 2008, *Astrophysics of Compact Objects, International Conference on Astrophysics of Compact Objects*, Springer, online, 968, 159-164

Lwin, R, **Argyros, A**, **Large, M C** 2008, The 17th *International Conference on Plastic Optical Fibers (POF2008)*, IGI Publishing, USA, 1-5

Mahmoodian, S, Dossou, K, **McPhedran, R C**, Botten, L, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Martelli, C, Canning, J, Kristensen, M, **Groothoff, N** 2008, *XXI International Congress on Glass (ICG 2007)*,

Mason, B, **Robishaw, T**, Finkbeiner, D 2008, *A Celebration of NRAO's 50th Anniversary ASP*, USA, 395, 373

Melrose, D B, **Luo, Q** 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 47-50

Michie, A M, Ingram, J, **Bassett, I M**, Haywood, J H, **Hambley, P O**, **Henry, P C** 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70043I-1-70043I-4

Miloch, W J, Pecseli H, Trulsen J, **Vladimirov S** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 287-288

Miloch W J, **Vladimirov S**, Pecseli H, Trulsen J 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, 32D, 1 of 4-4 of 4

Miloch W, **Vladimirov S**, Pecseli H L, Trulsen J, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide, 204-207u

Miloch W, **Vladimirov S**, Pecseli H L, Trulsen J, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide, 208-211

Miloch W J, **Vladimirov S**, Pecseli H L and Trulsen J, 2008, *Australian Institute of Physics, 18th National Congress*, AIP, Adelaide,155-158

Min, S, **Zhao, Y**, **Fleming, S C** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Mok, J T, Ibsen, M, **de Sterke, C M**, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, paper OWD6, 1-3

Monat, C B, **Corcoran, B**, **Grillet, C E**, **Moss, D J**, **Eggleton, B J**, W**hite, T**, O'Faolain, L, Krauss, T 2008, 34th *European Conference and Exhibition on Optical Communication (ECOC2008)*, IEEE, online, 7 paper code Th.3.D.7, 1-2

Monnier, J, Zhao, M, Pedretti, E, Thureau, N, **Ireland, M J**, Muirhead, P, Berger, J, Millan-Gabet, R, van Belle, G, **ten Brummelaar**, T, McAlister, H, Ridgway, S, Turner, N, Sturmann, L, Sturmann, J, Berger, D, Tannirkulam, A, Blum, J 2008, *SPIE 7013 – Optical and Infrared Interferometry*, SPIE, Washington USA, 7013, 701302-1-701302-11

Moss, D J, Ferrara, M, Razzari, L, Duchesne, D, Morandotti, R, Yang, Z, Liscidini, M, Sipe, J, Chu, S, Little, B 2008, *34th European Conference and Exhibition on Optical Communication (ECOC2008)*, IEEE, online, 5, 1-2

Moss, D J, Ferrara, M, Razzari, L, Duchesne, D, Morandotti, R, Yang, Z, Liscidini, M, Sipe, J, Chu, S, Little, B 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Moss, D J, Razzari, L, Duchesne, D, Morandotti, R, Springthorpe, A 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

O'Byrne, J W, **Mendez, A**, **Sharma, M D**, Kirkup, L, Scott, D 2008, *Australian Institute of Physics 18th National Congress*, Australian Institute of Physics, Adelaide, 143-146

Pandey, B P, **Samarian, A A**, **Vladimirov, S** 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, 32D

Pandey, B P, **Samarian, A A**, **Vladimirov, S** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 319-320

Pelusi, M D, **Luan, F**, **Mägi, E C**, **Lamont, M**, **Moss, D J**, **Eggleton, B J**, Madden, S, Choi, D, Bulla, D, Luther-Davies, B 2008, *IEEE Photonics Global Conference*, IEEE, USA

Pohl, AAP, Neves, P, Oliveira, R, Stevenson, M, **Groothoff, N**, Canning, J 2008, *19th International Conference on Optical Fibre Sensors (OFS 19)*, SPIE, USA, 7004, 70041I-1-70041I-4

Rea, N, McLaughlin, M, **Gaensler, B M**, **Chatterjee, S**, Camilo, F, Kramer, M, Lorimer, D, Lyne, A, Israel, G, Possenti, A 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 74-78

Robertson, J G, **Tuthill, P G**, **Lacour, S** 2008, *SPIE 7013 - Optical and Infrared Interferometry*, SPIE, Washington USA, 7013 cd and hardcopy and online, 70133R-1-70133R-10

Robinson, P A, **Gray, R T**, Fung, CKC 2008, *Complex Systems II*, SPIE, Washington, USA, 6802, 68020S-1-68020S-10

Robishaw, T, Heiles, C, Quataert, E 2008, *IAU Symposium, Vol. 242*, 242, 467

Roelens, M A, Abakoumov, D, **Bolger, J A**, Baxter, G, Frisken, S, Poole, S, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, Paper OWP3, 1-3

Samarian, A A, Boufendi, L, **Couedel, L**, Mikikian, M 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 37-40

Smith, C L, **Wu, D K C**, **Lee, M**, **Monat, C B**, **Tomljenovic-Hanic, S**, Freeman, D, Madden, S, Grillet, C E, Luther-Davies, B, Giessen, H, **Eggleton, B J** 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology – Device and Process Technologies for Microelectronics, MEMS, Photonics, and Nanotechnology IV*, SPIE, Bellingham, Washington, USA, 6800, 680003-1

Stokes, J D, **Samarian, A A**, **Vladimirov, S** 2008, *5th International Conference on the Physics of Dusty Plasmas*, AIP, Melville, New York, 1041, 323-324

Stokes, J D, **Samarian, A A**, **Vladimirov, S**, **James, B W** 2008, *35th EPS Conference on Plasma Physics*, Europhysics Conference Abstracts, 32D, 1 of 4-4 of 4

Taeed, V G, **Pelusi, M D**, **Eggleton, B J**, Choi, D, Madden, S, Bulla, D, Luther-Davies, B 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, Paper OMP2, 1-3

Tomljenovic-Hanic, S, **de Sterke, C M**, **Steel, M**, **Eggleton, B J**, Tanaka, Y, Noda, S 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Tuthill, P G, **Davis, J**, **Ireland, M J**, **Jacob, A**, **North, J R**, **Owens, S M**, **Robertson, J G**, **Tango, W J**, ten Brummelaar, T 2008, SPIE 7013 - Optical and Infrared Interferometry, SPIE, Washington USA, 7013, 701304-1-701304-10

Vanda, J, Skapa, J, Vasinek, V, **Argyros, A**, **Van Eijkelenborg, M A**, **Large, M C**, **Lwin, R** 2008, *Photonics 2008: International Conference on Fiber Optics and Photonics*, Indian Institute of Technology Delhi (iitd), online

Verdon, M, **Melrose, D B** 2008, *AIP 40 Years of Pulsars: Millisecond Pulsars, Magnetars and More*, American Institute of Physics, USA, 983, 133-135

Vladimirov, S 2008, *SPIE 2007 Symposium on Microelectronics, MEMS, and Nanotechnology – conference on Complex Systems II*, SPIE, Bellingham, Washington, USA, 6802, 68020M-1-68020M-8

Wang, HC, **Fleming, S C**, Lee, Y 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Wilson, K, **Mendez, A**, Mills, D, **Sharma, M** and Kirkup, L, 2008, *Australian Institute of Physics, 18th National Congress, Improving Undergraduate Laboratory Work in Physics: Outcomes of the 'Forging new directions in physics education in Australian universities' Project*, AIP, Adelaide,155-158

Xu, J, Galili, M, Mulvad, H, Oxenlowe, L, Clausen, A, Jeppesen, P, Luther-Davies, B, Madden, S, Rode, A, Choi, D, **Pelusi, M D**, **Luan, F**, **Eggleton, B J** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Yeom, D I, **Magi, E C**, **Lamont, M**, **Fu, L**, **Eggleton, B J** 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, Paper OTuB5, 1-3

Yu, C.Y., **Argyros, A**, Barton, G W, **Leon-Saval, SG**, **Van Eijkelenborg, M A** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online

Yu, C.Y., **Argyros, A**, Barton, G W, **Leon-Saval, SG**, **Van Eijkelenborg, M A** 2008, *The 17th International Conference on Plastic Optical Fibers (POF2008)*, IGI Publishing, USA

Zhou, V, **Kyme, A**, **Meikle, S R**, Lehnert, W, **Fulton, R R** 2008, *2008 IEEE Nuclear Science Symposium, Medical Imaging Conference and 16th International Workshop on Room-temperature Semiconductor X- and Gamma-Ray Detectors (RTSD)*, Institute of Electrical and Electronics Engineers (IEEE), CD-Rom, 5452-5456

NON-REFEREED CONFERENCES (E2)

Zhou, V, Kyme, A, Meikle, S R, Fulton, R R 2008, *2008 IEEE Nuclear Science Symposium, Medical Imaging Conference and 16th International Workshop on Room-temperature Semiconductor X- and Gamma-Ray Detectors (RTSD)*, Institute of Electrical and Electronics Engineers (IEEE), CD-Rom, 4252-4256

ABSTRACTS/POSTERS/SHORT PAPERS (E3)

El Fakhri, G, **Fulton, R R**, Gray, J, Marengo, M, Zimmerman, B, Dondi, M, McLean, I D, Palm, S 2008, *2008 AAPM Annual Meeting Program*, American Association of Physicists in Medicine, USA, 35, 6-2659

El Fakhri, G, **Fulton, R R**, Gray, J, Marengo, M, Zimmerman, B, Palm, S, McLean, I D, Dondi, M 2008, *2008 Annual Meeting EANM*, European Association of Nuclear Medicine, Vienna, Austria

Fulton, R, **Kyme, A**, **Zhou, V**, Leaver, K, Kassiou, M, Lehnert, W, Meikle, S R 2008, *2008 World Molecular Imaging Congress*, World Molecular Imaging Congress, Europe

Liang, YC, Masanes, L, Doherty, A 2008, *4th Asia Pacific Conference on Quantum Information Science (APCQIS)*

McKenzie, D R, **Suchowerska, N O**, **Lambert, J**, **Law, S H** 2008, *50th annual ASTRO Meeting*, Elsevier, 72, 1, S679-S680

Mendonca, P, Napolitano, R, Marchiolli, M, Foster, C, **Liang, YC** 2008, *Australian Institute of Physics 18th National Congress*, Australian Institute of Physics, Adelaide

NON-REFEREED CONFERENCES – OTHER (E5)

Ahn, T, Park, Y, **Moss, D J**, Ramachandran, S, Azana, J 2008, *Optical Fiber Communication Conference and Exposition (OFC) and The National Fiber Optic Engineers Conference (NFOEC) 2008*, Optical Society of America (OSA) and IEEE, online, paper OMT7, 1-3

Lamont, M, **Kuhlmey, B T**, **de Sterke, C M** 2008, *OECC/ACOFT 2008 Conference*, IEEE, online