RESEARCH SCHOOL^{of} PHYSICS & ENGINEERING ANNUAL REPORT 2012

Mann whe







ANU COLLEGE OF PHYSICAL AND MATHEMATICAL SCIENCES

FOR FURTHER INFORMATION PLEASE CONTACT

Director's Office Research School of Physics and Engineering Australian National University Oliphant Building #60, Mills Road ACTON ACT 0200 Email: Director.RSPE@anu.edu.au Phone: 6125 2476 Fax: 6125 5457

TABLE OF CONTENTS

| Director's Report | 4 |
|---|----|
| Staff Awards and Achievements | 5 |
| Fellowships of Learned Societies | 8 |
| Staff Outreach Activities | 11 |
| Deputy Director (Research) Report | 12 |
| Deputy Director (Technology Development) Report | 13 |
| Deputy Director (Education) Report | 14 |
| Staff who contributed to teaching | 15 |
| School Resources | 17 |
| Departments | |
| Applied Mathematics | 21 |
| Atomic & Molecular Physics | 24 |
| Electronic Materials Engineering | 26 |
| Laser Physics Centre | 29 |
| Nonlinear Physics Centre | 32 |
| Nuclear Physics | 34 |
| Plasma Research Laboratories SP3 | 37 |
| Plasma Research Laboratories TORO | 38 |
| Quantum Physics | 40 |
| Theoretical Physics | 43 |
| Publications | |
| Book Chapters | 45 |
| Journal Articles | 45 |
| Patents | 71 |
| Conference Papers | 71 |
| Grants | 84 |

DIRECTOR'S REPORT





Professor Jim Williams Director until March 2012

Professor Stephen Buckman Director from April 2012

The Research School of Physics and Engineering (RSPE) is the leading institution in the country for physics research and its applications. It is the largest physics-based research activity in Australia by some measure, with over 160 academic staff and a similar number of PhD students during 2012. We are also supported by more than 110 outstanding professional staff. The School has an excellent track record in innovative research and development and we support these activities through a large number of research grants from the Australian Research Council, other government agencies, and industry.

RSPE also pursues and achieves excellence in research-led education, and we strive to maintain the highest training standards and ensure a quality educational experience for all our students.

We continue to develop our staff to their full potential whilst ensuring that staff skills are matched to priority directions, and implement appropriate succession planning to replace key late career staff. It is the ability of the School to launch appropriately resourced research efforts built around outstanding staff in a number of important areas of national significance, the unique and integrated research infrastructure and the interdisciplinary collaboration with colleagues across the ANU, nationally and internationally, that distinguish the School's research effort and capacity in the national and international landscape.

Grant successes were again strong in 2012 and these are detailed in the report from the Deputy Director Research (Professor Ken Baldwin). We maintain a strong presence in three ARC Centres of Excellence, continue to host significant national research infrastructure in Nuclear, Plasma and Materials science, as well as a number of other facilities of national importance.

During 2012 the School continued to ramp up its development program in both commercial and philanthropic directions. We have appointed a new Deputy Director, Technology Development (Professor Tim Senden) to oversee the commercial development activities in the School. Our new Development Manager, Ms Kavitha Robinson, continues to focus on the growth of non-conventional funding through individual donors and alumni. She has been instrumental in the growth and consolidation of School endowments, the encouragement of workplace giving, and a stronger engagement with Alumni and friends of the School.

The Deputy Director Education (Dr Anna Wilson) left the School during 2012 and Professor John Close was appointed to this important role. John has been deeply involved in education in the School for more than 15 years and brings a wealth of experience and dynamism to the role.

A significant event for the School in 2012 was the retirement of long-serving Director, Professor Jim Williams. Jim led the School through a significant period of change for the ANU, with the entry to the ARC in 2001 and the advent of the College structure in 2009. His term as Director saw the School almost double in personnel, and almost triple in budget, and his leadership during these somewhat turbulent times was truly outstanding.

STAFF ACCOMPLISHMENTS

External Honours & Awards



2012 Eureka Prize for Innovation in Commercialisation, supported by Rio Tinto (jointly awarded to the research teams at UNSW and ANU, and the staff of Digitalcore).

Professor Jim Williams elected as a council member for Physical Sciences at the Australian Academy of Sciences

Prof. Barry Luther-Davies: Australian Optical Society W.H. Beattie Steel Award

Dr Marcus Doherty: Visiting Fellowship of the Network for Functional Nanostructures, Baden-Wuerttemberg (granted in 2012 to be used in 2013)

Professor Craig Savage - The American Physical Society, Outstanding Referee, January 2012

Prof Boswell Elected Member of the Order of Australia; Awarded Doctorate Honouris Causa, University of Orleans.

Professor Chennupati Jagadish (Secretary A, Physical Sciences) was appointed as Vice-President, at the Australian Academy of Science, until the conclusion of 2013 Annual General Meeting.

Prof Jagadish was selected as the 2012 winner of the Electronics and Photonics Division Award of the Electronics and Photonics Division of the Electrochemical Society.

Left to right: Dr Andrew Kingston (ANU), A/Prof Christoph Arns (UNSW), Dr Victor Pantano (Digitalcore), John McGagh (Rio Tinto head of Technology and Innovation), Prof Tim Senden (ANU), Professor Val Pinczewski (UNSW), Mr Tim Sawkins (ANU).



Professor Rod Boswell receiving a Doctorate Honouris Causa, University of Orleans

STAFF AWARDS AND ACHIEVEMENTS

Prof Jagadish was conferred with an Honorary Professorship at Nanjing University during their 110th anniversary celebrations.

Dr Thomas Symul – Finalist of Australian Innovation Challenge ICT Division

Professor Ping Koy Lam - Finalist of Australian Innovation Challenge ICT Division

Dr Syed Assad - Finalist of Australian Innovation Challenge ICT Division

Prof. John Howard: Finalist in the Australian Innovation Challenge (Energy category)

Dr Elizabeth Williams - Australian Institute of Policy & Science (AIPS) ACT Young Tall Poppy Science Award.

Promotions

Level B

Dr Yana Izdebskaya, Nonlinear Physics Dr John Miller, Quantum Science

Level C

Dr Michael Gao, Electronic Materials Engineering

Level D

Dr Greg Lane, Nuclear Physics Dr Andrey Sukhorukov, Nonlinear Physics

Internal Honours & Awards

Professor Aidan Byrne was awarded the Peter Baume Award. Named after former ANU Chancellor, Professor the Hon. Peter Baume AC, this is the University's most prestigious award. It recognises eminent achievement and merit of the highest order.

Professor Neil Manson was awarded Emeritus Professor of the School

Mr Rana Ganguly was awarded a Vice-Chancellor's Award for Career Advancement



Professor Chennupati Jagadish



Professor Mandy Thomas and Dr Elizabeth Williams



Rana Ganguly and Professor Ian Young

Mr Owen Kershaw was awarded a 30 year pin for service to the School.

Mr Michael Aggett was awarded the 25 year service medal of the University

Mr Craig MacLeod was awarded the 25 year service medal of the University

Mr Andrew Papworth was awarded the 25 year service medal of the University

Director's Awards

Anna Wilson

For exceptional contributions to the teaching of physics at ANU through undergraduate teaching, peermentoring and discipline leadership

Team award: Peter Alexander, Stephen Holgate, Dennis Gibson and John Wach For combining their talents toward supporting students and staff inside and outside RSPE.

Goran Radovanovic For exceptional and cheerful support to RSPE

Gillian Harman

For her sustained commitment, passion for excellence and dedicated service to the School community in her role as HR Officer

Alistair Muirhead For his outstanding innovations and leadership in





Professor Stephen Buckman presenting Mr Owen Kershaw with the 30 year award.

FELLOWSHIPS OF LEARNED SOCIETIES

American Association for Advancement of Science

Professor Chennupati Jagadish (since 2007)

American Physical Society

Professor Ken Baldwin (since 2008) Professor Murray Batchelor (since 1993) Professor Rod Boswell (since 1998) Professor Peter Bouwknegt (since 2000) Professor Stephen Buckman (since 1998) Emeritus Professor Robert Crompton (since 1995)* Professor Mukunda Das (2003)* Professor Robert Dewar (since 1980) Emeritus Professor George Dracoulis (since 1993)*

American Vacuum Society

Professor Chennupati Jagadish (since 2008)

Astronomical Society of Australia

Professor David McClelland (since 2006)

Australian Academy of Science

Professor Vladimir Bazhanov (since 2010) Professor Rod Boswell (since 2008) Emeritus Professor Robert Crompton (since 1979)* Professor Mahananda Dasgupta (since 2011) Professor Robert Dewar (since 1992) Emeritus Professor George Dracoulis (since 1997)* Emeritus Professor Neville Fletcher (since 1976)* Professor David Hinde (since 2006) Professor Chennupati Jagadish (since 2003) Professor Anatoli Kheifets (since 2004) Professor Yuri Kivshar (since 2006) Professor Brenton Lewis (since 2001)* Professor David McClelland (since 2010) Adjunct Professor Robert Robson (since 1994) Emeritus Professor Erich Weigold (since 1990)* Professor Jim Williams (since 2006)

Professor David J. Hinde (since 2011)

Professor Stephen Hyde (since 2005) Professor Chennupati Jagadish (since 2005) Professor Yuri Kivshar (since 2002) Professor Stjepan Marcelja (since 1991)* Emeritus Professor Barry Ninham (since 1978)* Emeritus Professor Erich Weigold (since 1986)* Professor Jim Williams (since 2003)

Australian Academy of Technological Sciences and Engineering

Professor Rod Boswell (since 1999) Emeritus Professor Neville Fletcher (since 1987)* Professor Chennupati Jagadish (since 2002) Professor Mark Knackstedt (since 2011) Professor Barry Luther-Davies (since 2005) Emeritus Professor Erich Weigold (since 1996)* Professor Jim Williams (since 1992)

Australian Institute of Physics

- Professor Hans Bachor (since 1987) Professor Ken Baldwin (since 1995) Professor Stephen Buckman (since 1992) Professor Mahananda Dasgupta (since 2004) Emeritus Professor George D. Dracoulis (since 1990)* Professor Rob Elliman (since 1994) Professor L. Keith Fifield (since 1997) Emeritus Professor Neville Fletcher (since 1960)* Professor David J. Hinde (since 1996)
- Professor Chennupati Jagadish (since 1993) Professor Yuri Kivshar (since 2000) Professor David McClelland (since 2000) Professor Susan Scott (since 2004) Professor Andrew Stuchbery (since 1992) Dr David C. Weisser (since 1992) Professor Jim Williams (since 1988)

Australian Mathematical Society

Professor Murray Batchelor (since 2001) Professor Peter Bouwknegt FAustMS (since 2001)

Electrochemical Society

Professor Chennupati Jagadish (since 2006)

European Academy of Sciences

Professor Susan Scott (since 2002)

Higher Education Academy

Professor John Close (Senior Fellow since 2014) A/Prof Paul Francis (Senior Fellow since 2014) Dr Joe Hope (Senior Fellow since 2014) Professor Craig Savage (Senior Fellow since 2013)

Institute of Electrical and Electronics Engineers

Professor Chennupati Jagadish (since 2002)

Institute of Physics (UK)

Professor Hans Bachor (since 1999) Professor Ken Baldwin (since 2006) Professor Murray Batchelor (since 2004) Professor Stephen Buckman (since 2004) Professor Rob Elliman (since 2003) Emeritus Professor Neville Fletcher (since 1961) Professor David J. Hinde (since 2005) Professor John Howard (since 2005) Professor Chennupati Jagadish (since 1998) Professor Yuri Kivshar (since 2012) Professor Susan Scott (since 1999)

FELLOWSHIPS OF LEARNED SOCIETIES

International Society for Optical Engineering

Professor Chennupati Jagadish (since 2006)

Institution of Engineering and Technology

Professor Chennupati Jagadish (since 2007)

Institute of Nanotechnology

Professor Chennupati Jagadish (since 2001)

Materials Research Society

Professor Jim Williams (since 2008) Professor Chennupati Jagadish (since 2010)

Optical Society of America

Professor Nail Akhmediev (since 1996) Professor Hans Bachor (since 2009) Professor Ken Baldwin (since 2000) Professor Chennupati Jagadish (since 2005) Professor Yuri Kivshar (since 2001) Professor Wieslaw Krolikowski (since 2007) Professor Brenton Lewis (since 2003)* Professor Barry Luther-Davies (since 2006)

Royal Meteorological Society

Adjunct Professor Robert Robson (since 1977)

Royal Society of New Zealand

Emeritus Professor George D. Dracoulis (Hon)* (since 1997)

The Acoustical Society of America

Emeritus Professor Neville Fletcher (since 1975)*

The Australian Acoustical Society

Emeritus Professor Neville Fletcher (since 1980)*

* retired

STAFF OUTREACH ACTIVITIES

Staff in RSPE contribute to a wide range of outreach activities. In the year 2012 these activities included:

National Youth Science Forum

Mr Andrew Papworth, David Powell, Dr Khu Vu and Dr Gregory Lane who presented the closing address for the NYSF in January 2012.

ACT Science Experience

Dr Gregory Lane was the Local Director for the ACT Science Experience that was held from 3rd to 5th of October. In the 2012 program, 45 year 9 and 10 students from across the ACT and NSW visited a number of scientific laboratories at both the Australian National University and Geoscience Australia.

Old Bones, New Insights Exhibition

Old Bones, New Insights Exhibition – Canberra Museum and Art Gallery, November 2011 to February 2012. Curated by Dr Gavin Young (RSES) and Prof Tim Senden this was hugely successful public display of leading ANU palaeontological research married with advanced micro-CT and 3D printing from the Department.

Heavy Ion Accelerator Symposia on Fundamental and Applied Science (HIAS).

In 2012 the Department of Nuclear Physics instituted the Heavy Ion Accelerator Symposia on Fundamental and Applied Science (HIAS). The first meeting was held from 11 – 13 April 2012. The symposium was attended by a total of 65 instrumentation and accelerator experts, national and international researchers, students and potential user communities. The meeting was successful in providing a forum to bring together researchers to develop applications of Australian Heavy Ion Accelerators

Workshop on Nuclear Measurement Techniques

In the week of September 24th to the 27th, the Department of Nuclear Physics hosted 30 undergraduate students from the University of Wollongong for the annual "Workshop on Nuclear Measurement Techniques". The students produced long-lived radioisotypes using the 14UD accelerator and then characterised the decay by measuring changes in the emitted gamma-rays over the course of the week.

The 7th Digicore Consortium

12 multinational oil/gas companies met at the Finkel Lecture Theatre for a 2 day workshop on progress the Department has made during the past year in the field of digital core analysis. They were 21 company participants and 24 from the ANU and UNSW groups. 18 talks were presented, together with a poster session.

Research

Professor Ken Baldwin Deputy Director (Research)



The Research School of Physics and Engineering (RSPE) is the largest university-based institution in the country for physics research by some measure, with 165 academics, 120 professional staff and 160 post graduate students.

Physics at ANU has achieved the highest rank in the Excellence for Research in Australia ranking (ERA level 5). In 2012, ANU Physics was also the highest ranked department (30th in the world) in any discipline in Australia according to the Shanghai Jiao Tong Academic Ranking of World Universities (ARWU).

The School's research thrusts in selected areas of strength cover the entire spectrum from fundamental research (understanding nature) through to applied research and pre-commercial development. The research program is built around three "big picture" themes: quantum science and technology; advanced materials and technology, and energy and environmental science and technology. The research programme is not only confined to the discipline of Physics as the School has significant links with Engineering, Medicine and other science disciplines.

The School continued to excel in its research performance in 2012, with almost 500 journal publications and 150 international conference publications. In 2012 the School was successful in winning over \$34 million in research grants including over \$15 million from the Australian Research Council, with the remainder comprising funds from the Education Investment Fund (EIF), National Collaborative Research Infrastructure Strategy (NCRIS), Australian Space Research Program (ASRP) and industry.

RSPE hosts four major national facilities supported by EIF and NCRIS funding: the National Plasma Fusion Research Facility (H-1NF), the Heavy-Ion Accelerators Facility (HIAF), and the ACT node of the Australian National Fabrication Facility (ANFF) "NeCTAR: The Characterisation Virtual Laboratory (NeCTAR). RSPE is also part of the Australian Nanotechnolgoy Network (ANN).

The School is the lead institution for the ARC Centre of Excellence for Antimatter-Matter Studies (CAMS), and is a partner in the Centre for Quantum Computing and Communications (CQC2T) and the Centre for Ultrahigh Bandwidth Devices and Optical Systems (CUDOS).

In 2012 the School was successful in being awarded 4 Future Fellowships and 2 DECRA Fellowships. RSPE also was awarded 17 ARC discovery and linkage grants for physics research.

RSPE is comprised of nine research departments. A brief description of each department is detailed in the following pages as well as a list of staff dedicated to that area.

Professor Ken Baldwin is Deputy Director (Research) of RSPE, as well as being Director of the Centre for Quantum-Atom Optics and Director of the ANU Energy Change Institute, and a Professor in the Department of Atomic and Molecular Physics, RSPE.

TECHNOLOGY DEVELOPMENT



Professor Tim Senden Deputy Director (Technology Development) from September 2012

This is a wholly new role within our School, born of the shared vision between Stephen Buckman and Jim Williams to diversify research funding and expand our culture of engagement with industry. It is an honour to be the first to hold this position and I am keen to set the tenor, choosing a title which reflects the goals and respects the research principles which drive the School. Often this type of position attracts titles which include 'commercialisation', 'innovation', 'industry' and so on. These all presuppose the role of the position, and might be at odds with the core objective of RSPE. Thus, *Technology Development*, seems to capture the opportunity to apply our science without forcing a skewed perspective about the key research drivers in RSPE. I owe much to Victor Pantano for helping to crystalize these thoughts. Nonetheless, applications for our research often come knocking and building a responsive culture firstly, and subsequently one that proactively promotes opportunities is a productive use of publicly funded research.

A team is being assembled spanning our School and the Office Commercialisation (OC), lead by Fiona Nelms. Rana Ganguly is the first to join this team with foundations coming from his time in advanced industry in India. Soon to join the OC is Neil Radford presently en route from the University of Leicester and starting in early 2013. He will be based in the School one day per week and will build industry relationships as well as manage the IP portfolio for physical sciences. The School Development Board have promoted the concept of a locally-focused Business Development Manager. A search is soon to start fill this position to be based largely in RSPE.

Departments are defined by distinctly different cultures. Most have experience with industry engagement and there are numerous mentors already within our School. One challenge is to grow new opportunities, the grander challenge is to build a sustainable model for funding these opportunities. The ways in which we engage must build on our core strength to do fundamental research. This necessarily means that we embark on a multistep path that enhances our research teams along the way. Consequential funding along this path ultimately returns more long-term value than simple licensing deals or spin-offs. The value is in building productive relationships across universities and industry alike. I like to consider that, in general, a license or spin-off are symptomatic of an established and productive relationship.

EDUCATION

Professor John Close Deputy Director (Education)



2012 has been another successful year for the Physics Education Centre (PEC). Student numbers in physics have grown steadily over the last five years, and a training in physics continues to be relevant to modern society not only as a discipline in its own right, but also as an enabling science for students whose major interest lies in other areas. ANU and RSPE are unique in Australia in their ability to provide a research led education to an undergraduate student population. In 2012, we continued to expand our undergraduate research project offerings and expanded the involvement of research staff in the research led teaching enterprise.

The most significant change to the management of PEC in 2012 was in its leadership. After many years of dedicated contribution to physics education at the ANU, A/Prof Anna Wilson resigned as leader of the PEC to take up a new position at the University of Oxford. Her expertise in physics education, and her detailed knowledge of how the PEC operates within RSPE and within the ANU are a role model for future leaders of the organisation. We wish her all the best in this new phase of her career.

A very substantial number of RSPE staff are involved and active in the PEC in diverse roles. Undergraduate lecturers are drawn from all departments in RSPE. These staff exhibited tremendous dedication in bringing their expertise to the undergraduate population through lectures, through lab sessions and through special research topics. Lecturing staff were supported by a large number of graduate student demonstrators who ran tutorials, laboratory sessions and provided help with assignments to our undergraduate cohort. Although too numerous to list here, the contribution made by our student demonstrators and tutors is highly valued by the PEC. In addition to lecturing staff, the honours program is supported by honours supervisors and examiners, and we thank those staff involved in that program.

Departmental education coordinators continue to play an important role in the PEC providing information to staff in their local areas and driving the research/teaching culture in the School. The complete list of 2012 education coordinators is provided at the end of this report. Their service in this important role is much appreciated. Similarly, the year convenors play an important role in coordinating courses within each year. Again their service is much appreciated by staff and students in PEC.

In the last years, our first year numbers have grown markedly. First year is the only year that has streamed courses. The strong demand highlights the continued relevance of physics as a discipline in its own right and as an enabling discipline for other fields. The growing numbers in our Foundations Course, our main-stream first year physics courses and our Life Physics course put increased demand on our technical support staff.

ANU and RSPE are complex organisations and expert administrative staff are essential to the smooth running of the organisation. Our administrative staff play key-roles in the Department. Our administrative staff fielded a myriad of questions from both students and staff during the year, and their contribution to ANU and RSPE is an essential part of our success.

2012 has been a very successful year with increasing student numbers and increasing involvement of staff across the School in the research led teaching enterprise that is at the core of the PEC's mission. We thank all those involved in making 2012 a success, and we look forward to 2013.

STAFF WHO CONTRIBUTED TO TEACHING

Physics Education Centre Lecturers

Undergraduate Coursework

PHYS 1001 Foundations of Physics Nick Robins, A. Shavlov, John Debs

PHYS1101 Advanced Physics I Craig Savage, Paul Francis

PHYS1004 Life Physics Adrian Sheppard, Jodie Bradby

PHYS1201 Advanced Physics II Craig Savage, Paul Francis, John Love

PHYS2013 Quantum Mechanics Anna Wilson, Andrew Truscott

PHYS2020 Thermal Physics Frank Mills, Vladimir Mangazeev, Rachel Salmeron, Anna Wilson

PHYS2016 Electricity and Magnetism John Close, Cormac Corr, Igor Ivanov

PHYS2017 Waves and Optics Ben Buchler, Jong Chow

PHYS3001 Advanced Theoretical 1 Joe Hope, Andre Carvalho

PHYS3033 Nuclear Physics Greg Lane, Cedric Simenel, Maurits Evers

PHYS3034 Fluid Mechanics Ross Kerr, Andy Hogg, Ross Griffiths, Graham Hughes (RSES)

PHYS3057 Optical Physics Dan Shaddock, Dragomir Neshev, Vincent Daria

PHYS3060 Fibre Optic Communication Systems John Love and Jong Chow

PHYS3041/3044/5 Special Research Topics Joe Hope

PHYS3002 Advanced Theoretical II Susan Scott, Michael Hush

PHYS3031 Atomic Physics Matt Sellars, Steve Gibson

PHY3032 Condensed Matter Physics Patrick Kluth, David Williams, Jenny Wong-Leung

PHYS3051/ENGN4613:Microphotonics, Biophotonics and Nanophtonics John Love PHYS3058 Work Experience in Photonics John Love

PHYS3060/ENGN4513: Fibre Optic Communications Systems John Love, Jong Chow

PHYS3070 Physics of the Earth Hrovje Tkalcic, Ian Jackson (RSES)

MATH2406 Mathematical Methods 2 Honours Vladimir Mangazeev, Murray Batchelor

MATH3351/MATH6211 Topics in Mathematical Physics Honours David Ridout, Murray Batchelor

Honours Coursework

Science Communication: Hans Bachor

Electromagnetism: Mathew Hole

Quantum Mechanics: Joseph Hope

Classical Mechanics: David Williams

Statistical Mechanics: Edie Sevick (Chemistry)

Scattering Physics: Steve Buckman and Mahananda Dasgupta

Quantum Measurement: Mathew James (CECS)

Nonlinear Physics: Dragomir Neshev, Andrey Sukhorukov

Non-equilibrium Statistical Mechanics: Denis Evans (Chemistry)

Relativistic Electricity and Magnetism: Ron Burman (UWA) with Nick Robins

General Relativity: Susan Scott

Surface Physics: Maarten Vos

Car Physics: David Williams

Graduate coursework

Master of Photonics Courses

PHYS6500 Optical Physics Daniel Shaddock, Dragomir Neshev

PHYS6501 Fibre Optic Communication Systems John Love

PHYS6502 Microphotonics, Biophotonics & Nanophotonics

STAFF WHO CONTRIBUTED TO TEACHING

John Love

PHYS6503 Work Experience in Photonics John Love

PHYS6504 Semiconductors Andrew Blakers

PHYS8505 Research Project John Love

Master of Engineering Courses

ENGN6512 Optical Physics Daniel Shaddock, Dragomir Neshev

ENGN6513 Fibre Optic Communication Systems John Love

ENGN6613 Microphotonics, Biophotonics & Nanophotonics John Love

ENGN6625 Power Electronics Boyd Blackwell

Master of Nuclear Science Courses

PHYS8201 Nuclear Fundamentals Andrew Stuchbery

PHYS8202 Reactor Science Andrew Stuchbery, Tony Irwin

PHYS8203 Accelerator Science Andrew Stuchbery

PHYS8204 Nuclear Radiation Greg Lane

PHYS8205 Nuclear Fuel Cycle Andrew Stuchbery

PHYS8206 Nuclear Measurement Methods Greg Lane

Undergraduate Year Coordinators

Paul Francis (1st year) Anna Wilson (2nd year) Joseph Hope (3rd year) and Special Topics Coordinator Jodie Bradby PhB convenor David Williams (Honours)

Departmental Education Coordinators

Joseph Hope: Department of Quantum Science Matt Sellars: Laser Physics Cormac Corr: Plasma Physics Adrian Sheppard: Applied Mathematics Patrick Kluth: Electronic Materials Engineering Andrew Stuchbery: Nuclear Physics Elena Ostrovskaya: Nonlinear Physics Stephen Gibson: Atomic and Molecular Physics Laboratories Vladimir Mangazeev: Theoretical Physics

Professional Staff

Departmental Administrator Laura Walmsley

Assistant Departmental Administrator Gaye Carney

HDR student support (JAG) Karen Nulty Liudmila Mangos

Technical Staff

Head Technical Officer Andrew Papworth

Laboratory Development Officer Mika Kohonen

Technical Officer (Electronics) Shane Grieves

Laboratory Coordinators First year: Mika Kohonen Second year: Ben Buchler, Anna Wilson

50



Mr Rana Ganguly School Manager

EA to Director Deborah Bordeau (until March) Andrea Benson, BA Hons Archaeology ANU (from March)

School Outreach
Tim Wetherell

School Development Kavitha Robinson

School Projects Liz Micallef

School Computer Unit James Irwin (Manager) Martin Conway Julie Dalco Deane Larkman

Facilities & Services Graeme Cornish (Manager) Lyndell Paseka

OHS Anthony Hyde Assoc IE Aust (Manager)

School Stores Ken Staples (Manager) Richard Adamow Goran Radovanovic

SCHOOL RESOURCES

Mechanical Workshop

Craig Young (Manager) Anthony Barling Thomas Cave Steve Holgate Owen Kershaw Richard Kolterman Miroslav Peric Luke Roberts (from August) Alex Shanahan

Electronic Workshop

David Anderson (Manager) Dennis Gibson Steven Huynh David Kelly Steven Marshall Luke Materne Wasantha Ramasundara Paul Redman Tristan Steele Daniel Tempra Andrew Zeylemaker

Electrical Patrick Lang Nounou Chanthapanya

Carpentry Anthony MacKey Tristan Kent (until April)

Reception Susie Radovanovic

Tearoom Josephine Ivanic

SCHOOL SUPPORT STRUCTURE

Research School of Physics and Engineering



FOUNDER'S DAY

The RSPE Founder's Day was held on Friday 12 October with invited guests from ANU, government organisations, industry and the media, as well as former employees. Over 400 people attended the day's celebrations.

Founder's Day is a RSPE celebration honouring Sir Mark Oliphant. Sir Mark was an eminent Australian physicist and the founding Director of the School. In 1981, Professor John Carver (then Director of RSPE) introduced Founder's Day as an initiative to unite the School in a celebration of the year's achievements.

Founder's Day involved research and education highlight presentations, informative talks on the School's achievements during the year, a presentation of the RSPE Endowment awards and School awards, and finished with a BBQ lunch enjoyed by nearly 400 people in the Oliphant tearoom and courtyard.

Departmental talks

Fluids in porous media – new insights from tomography and microscopy Dr Andrew Fogden, Applied Mathematics

Webcast Worked Examples - an unreasonably effective teaching method?

Dr Paul Francis, Physics Education Centre

From magic to applied science: unveiling the potential of metamaterials Dr Manuel Decker, Non-Linear Physics

Going right to the source – plutonium in a coral from Enewetak Atoll Prof Keith Fifield, Nuclear Physics

Nanowires for Next Generation Optoelectronics Dr Patrick Parkinson, Electronic Materials Engineering

Move over Wireless - here comes Fibreless! Dr Gerard Borg, Plasma Research Laboratory

Nonlinear Ops: Going Rogue David Kedziora, Theoretical Physics

Control of quantum systems: exploring the strength of weak measurements Dr Andre Carvalho, Quantum Science

Thinking globally, acting locally: Applying physics, chemistry, and engineering on a research journey from Venus to Canberra ... and back? Dr Frank Mills, Atomic and Molecular Physics Laboratories



Tim Wetherell



Uyen Nguyen and Daniel Schauries



Left: Kathy Hicks. Right: Goran Radovanovic and John Bottega

SCHOOL ACADEMIC STRUCTURE

HIAF- Heavy Ion Accelerator Facility Murray Batchelor Research School of Physics and Engineering Theoretical Physics Deputy Director (Education) Lucia Lu John Close Education Physics Centre Laura Walmsley David McClelland Quantum Science Department of Laura Walmsley PingKoy Lam Amanda White CQC2T David Hinde Physics Petra Rickman Nuclear Nikolai Lobanov Keith Fifield HIAF Plasma Research School Manager Rana Ganguly John Howard Laboratory-Uyen Nguyen TORO Boyd Blackwell Horst Punzmann H1-NF Plasma Research Christine Charles Laboratory-Uyen Nguyen SP3 Stephen Buckman School Director cubos /uri Kivshar Kathy Hicks Nonlinear Yuri Kivshai Physics Andrea Benson Barry Luther-Davies cubos Krolikowski Laser Physics Wieslaw Sonia Padrun Deputy Director (Technology Development) lagadish Fouad Karouta ANFF lagadish ANN Viark Ridgway Engineering Electronic Materials Tim Senden Julie Arnold Aichael Brungei Deputy Director (Research) CAMS Adam Edwards Australian National University Maarten Vos Laboratories Atomic and Molecular Physics Ken Baldwin Julia Wee Martina Landsmann Mathematics Tim Senden Applied

CQC2T - ARC Centre of Excellence for Quantum Computation and Communication Technology

CAINS - ARC Centre of Excellence for Antimatter-Matter Studies

ANFF- Australian National Fabrication Facility

ANN - Australian Nanotechnology Network

Liz Micallef

CUDOS - ARC Centre of Excellence for Ultrahigh Bandwidth Devices for Optical Systems

H1-NF-The Australian Plasma Fusion Research

APPLIED MATHEMATICS



Professor Tim Senden Head of Department

A quick scan of the 2012 Applied Mathematics publication titles has one feeling that the list must surely span several departments, or even Research Schools. If this is the first reaction then I am relieved. The Department remains as diverse as ever and continues to elude rigorous definition – just as our founders intended. Yet the challenge is not in staying broad, it would be trivial to be unfocussed. The key is to keep a direction guided by a particular set of fundamentals that tie seemingly disparate fields together. Whether this means exploring the role of dispersion forces has on the balance of electrolytes in cells, the topological frustration collagen undergoes as skin hydrates, the complex interfacial rearrangements which happen when water displaces oil in a reservoir rock, or the leap from disorder to order as grains pack under shear are all topics that stem from an understanding of interplay between structure and local forces. It is no coincidence that two of the most substantial investments in instrument development with the Department have been around the measurement of molecular forces (SFA) and microscopic structure (CT). Both instrument have and do support the very basic research fabric that attracts so many of the rich collaborations we enjoy with researchers an industry alike. The very existence of these instruments is a symbol of how technical excellence intersects academic innovation. This productive union of professional and academic staff separate the great universities from all the rest.

Just as the Surface Force Apparatus brought collaborators in from around the world, the micro-CT facility has equally focused a spectrum of new activities, from palaeontology, to entomology, granular materials and of course, flow through porous materials. By the end of the late 90's some 37 complete systems had been sold world-wide, resulting in over a thousand publications. The micro-CT (Heliscan) is set to be an equally significant venture for the Department and to date six systems have been ordered by collaborators around the world, forming part of the key technology on which Digitalcore is based.

By the end of the year the merger of Digitalcore with Norway-based Numerical Rocks was publicly announced, a result of an 18 month negotiation. Driven by the union of two complementary digital core technologies the new company, Lithicon, is well set to become a world leader in the Oil and Gas Industry. The awarding of the Eureka prize (below) is testament to this.

While it might appear that we are loosely captured by a materials science theme we mostly seem to attract people with an instinctive and natural curiosity for the nature of 'things', and it is with pleasure I specifically note our visitors: our resident artists, Erica Seccombe and Denise Higgins, our notable historian, Emeritus Professor John Maloney, Professor Norm Morrow a regular visitor and leader in petroleum research, Dr Judith Caton, an expert on bush foods and Kioloa Fellow, and Professor Phil Evans a world-class wood anatomist and composites expert. The diversity of human intellect in our a little Department is something to celebrate. And we do.

Academic Staff

Head of Department and Professor

Vince Craig BSc PhD, ARC Future Fellow (until February)

Tim Senden BSc PhD (from February for 3 years)

Professors

Stephen Hyde BSc PhD Monash, ARC Federation Fellow

Mark Knackstedt BSc Columbia, PhD Rice (on leave, Digitalcore Pty Ltd)

David Williams BSc Sydney, PhD Cambridge

Senior Fellows Adrian Sheppard BSc Adelaide, PhD

Research Fellows

Lilliana De Campo BSc PhD Graz Andrew Fogden BSc PhD Docent Lund David King BSc Shannon Notley BSc PhD (until February) Drew Parsons PhD Vanessa Robins BSc, PhD Colorado (on leave) Ross Stephens PhD Sydney Trond Varslot MSc PhD NTNU (on leave from August, Digitalcore Pty Ltd)

Postdoctoral Fellows

Hongjie An PhD (from February) Nicolas Francois PhD Bordeaux (until March) Andrew Kingston PhD Monash Shane Latham BSc PhD UQ Glenn Myers PhD Monash Mohammad Saadatfar PhD

Visiting Fellows

Dr Linnea Andersso, Stockholm University (from December) Dr Christoph Arns, University of NSW

Dr Tomaso Aste, University of Kent

Dr Mathais Bostrom, Linköping Universitet Sweden Dr Anna Carnerup, PhD (Digitalcore Pty Ltd) Dr Judith Caton, PhD Mr Arthur Davies Prof Phil Evans, University of British Columbia Dr Olaf Delgado Friedrich (from May) Prof John Maloney Prof Stjepan Marcelja, University of Rochester Dr Rainer Mittelbach (from February) Prof Norman Morrow, University of Wyoming (from November) Prof Barry Ninham Dr Gerd Schröder-Turk, University of Erlangen Dr Rob Sok, (Digitalcore Pty Ltd)

Professional Staff

Senior Software Designer

Paul Veldkamp BSc BEc

Technical Officers

Holger Averdunk Jessica Blackmore Ron Cruikshank Karen Knox (from August) Rohini Marathe, BSc Mumbai, MSc Rutgers Tim Sawkins Michael Turner, PhD

Contractors

Joe Micallef (CT sales) Joseph Hamilton (geologist for Consortium)

Departmental Administrator Margo Davies DipDent Tasmania (until March)

Departmental Coordinator Martina Landsmann (from July)

Students

PhD

Castle, Toen Deniz, Vivianne Duignan, Timothy Howard, Shaun Kim, Min-Chul Li, Heyang McKay, Thomas Middleton, Jill Pozzi, Francesco Ramsden, Stuart Sham, Alison Song, Tao Tayati, Ponlawat Valbuena Soler, Johnny Walsh, Rick

MPhil

Cheng, Qianhao Hannah, Nicholas Honours Carroll, Sebastian Chung, Gavin Khor, Josiah Tupper, Lewis Wolk, Brendon

PhB

Pagram, Thomas

Visiting Students

Alexandre, Lucile, Pierre and Marie Currie University, France

Alizadeh, Mehdi, University of New South Wales

Arnoux, Thibaud, Pierre and Marie Currie University, France

Liu, Tianshu, Australian National University

Mucadam, Riyad, Victoria University, New Zealand

Seccombe, Erica, Australian National University

Tao, Jin, Australian National University

Wu, Bo, University of Science & Technology, China

Ziyuan, Qi, China University of Petroleum (Huadong), P.R. China

ATOMIC & MOLECULAR PHYSICS





Professor Stephen Buckman Head of Department Until March

Professor Ken Baldwin Acting Head Mar -Sept



Dr Maarten Vos Head of Department from Oct

The Atomic and Molecular Physics Laboratories (AMPL) are engaged in a broad range of experimental and theoretical studies of the interaction of electrons, positrons, and photons with atoms, molecules and solids as well as the internal structure of a new state of matter: Bose-Einstein condensates. Our goal is both to further our knowledge of fundamental physical and chemical processes, and to provide essential information that is critical to applications in other scientific disciplines, technology, and the environment.

AMPL has a long and proud tradition of developing new, cutting-edge experiments. Our outstanding technical staff is pivotal for the success of these developments. In this tradition, we are particularly excited that 2012 has seen the start of research in a brand new area (jointly with the Non-Linear Physics Centre): polaritronics, a state that is a mixture of light and matter. This research will complement our successful research in Bose-Einstein condensation of metastable helium atoms which have a similar high-degree of internal coherence.

New free-electron lasers are coming on-line overseas, producing extreme intensities of photons. Experiments using these sources reveal the intricate behavior of atoms in these strong photon fields. Understanding these phenomena is presently a hot topic and our theoretical physics group plays a leading role here.

AMPL's laboratories research activities include photon interactions: VUV/XUV laser spectroscopy, laser photodetachment and photofragment spectroscopy, computational molecular physics, positron and electron interactions: low-energy positron and electron physics, materials studies with positrons and electrons, and computational studies of charged particle interactions, Bose Einstein condensation studies of helium atoms, atom manipulation, experimental tests of QED theory, and quantum-atom optics.

AMPL also hosts an Australian Research Council Centre of Excellence: the Centre of Excellence for Antimatter-Matter Studies (CAMS), whose experimental and theoretical program is based on the study of the interaction of positrons and electrons with matter. The centre operates two unique positron beam lines: one for positron scattering from atoms and molecules, the other for the interaction of positrons with surfaces.

There is also a strong interest in environmental and climate change issues within AMPL. We study the molecular processes in the Venus atmosphere to enhance our understanding of what determines the climate on a planet. We study aerosols in the atmosphere, are involved (together with the Fenner School of the Environment) in understanding cloud physics in order to forecast the output of rooftop photovoltaics. We also play an important role in the ANU Energy Change Institute.

Academic Staff

Head of Department and Professors

Stephen Buckman BSc PhD Flinders, FAPS, FAIP, FInstP (until 1 April) Kenneth Baldwin BSc MSc, DIC PhD London, FAIP, FInstP, FOSA, FAPS (2 April to 30 September)

Head of Department

Maarten Vos MSc PhD Groningen (from 1 October)

Professors

Anatoli Kheifets BSc PhD St Petersburg, FAPS

Brenton Lewis PhD DSc Adelaide, C Phys, FInstP, FAPS, FOSA, FAIP (until 24 July)

Emeritus Professors

Robert Crompton AM FAA FAPS FAIP Brenton Lewis PhD DSc Adelaide, C Phys, FInstP, FAPS, FOSA, FAIP (from 25 July)

Erich Weigold AM FAA FTSE FAPS FAIP

Senior Fellows

Stephen Gibson BSc PhD Adelaide

Research Fellows

James Sullivan BSc PhD

Andrew Truscott BSc PhD Queensland

David Sprouster (from April) BSc (Honours) Wollongong PhD

Robert Dall BSc Queensland PhD

Igor Ivanov PhD DSc Moscow

Mitsuhiko Kono MSc KyotoIT, PhD GUAS Tokyo (from June)

Postdoctoral Fellows

Eskender Mume BSc PhD Uppsala (ANSTO) (until 31 December)

Selvakumar Sellaiyan BSc PhD (ANSTO) (until 1 December)

Visiting Fellows

Dr Simon Armitage (University of North Texas) Prof Michael Brunger (Flinders University) Dr Steven Cavanagh (Defense, from 1 May) Prof Lewis Chadderton (to 19 December) Dr Luca Chiari (Flinders University) Prof Hyuck Cho (Chungnam University) Prof Gustavo García Gómez-Tejedor (Spanish National Research Council, CSIC) Assoc Prof Oddur Ingólfsson (University of Iceland) Dr Kandis Lea Jessup (Southwest Research Institute) Dr Mitsuhiko Kono Dr Paulo Limao-Vieira (Universidade Nova de Lisboa) Prof Robert McEachran Prof Dennis Mueller (University of North Texas) Adjunct Prof Robert Robson (James Cook University) Prof Akira Uedono (Tsukuba University)

Professional Staff

CAMS Chief Operating Officer

Adam Edwards LLB Nottingham, BSc Wollongong, GDM Western Sydney, MAppFin Charles Sturt

Technical Officers

Stephen Battisson AssocDip MechEng CIT Colin Dedman AssocDip SciInst Bendigo CAE Ross Tranter

Departmental Administrator

Julia Wee BA Sydney, GCM MGSM

Students

PhD

Roisin Boadle Colin Campbell Andrew Geoffrey Manning Joshua Machacek Prasanga Palihawadana Jason Roberts Wade Tattersall Ju-Kuei Wu

Honours & Other Scholars

Emma Anderson (Honours – ANU) Ly Duong (Honours, Summer Scholar – ANU) Joseph Horst (Summer Scholar) Jacob Hughes (Honours – ANU) James Frith (Summer Scholar - ANU) Ashton Walker (ASC)

Visiting Students

Christopher Lee (Uni North Texas) Corbin Vermet (Uni North Texas)

ELECTRONIC MATERIALS ENGINEERING

Professor Mark Ridgway Head of Department



The Department of Electronic Materials Engineering (EME) conducts interdisciplinary research in condensed matter physics, materials science and device engineering. This includes world-class research in the growth, structure, properties and applications of electronic materials. Diversity is a key strength and underpins a broad collaborative base and an ability to attract students and researchers from a range of disciplines and countries.

The year of 2012 was yet another successful one. The Departmental population continued to grow such that EME now ranks as the largest in the School. We welcomed back/welcomed numerous persons across the academic, professional and student sectors. This included the return of Founding EME Professor Jim Williams upon his retirement as School Director. (Jim now assumes the role of EME Post-Directorial Fellow, a Departmental first!). EME personnel represent not only a broad range of scientific backgrounds and expertise but also a broad range of cultural and ethnic origins with the Departmental population now drawn from over 25 countries world-wide.

Successes this year included a range of promotions, awards, grants, fellowships, elections and appointments too numerous to list though details are provided below. The Departmental research programs continued to expand and will soon be supported by major upgrades in experimental capabilities over the next few years including the installation of major infrastructure in the MOCVD, ANFF and ion accelerator laboratories. Similarly, Departmental teaching programs grew with academic staff contributing to a variety of under-graduate courses in addition to formally assuming responsibility for the delivery of the third-year condensed matter physics course. This integration of teaching and research will further strengthen the Department and bodes well for the future of EME.

Academic Staff

Head of Department and Professor

Mark Ridgway BSc McM, MSc PhD Queens

Distinguished Professor & Australian Laureate Fellow

Chennupati Jagadish MSc, PhD Delhi, FAA, FTSE, FAIP, FInstP, FIoN, FIEEE, FAPS, FOSA, FSPIE, FECS, FIET, FAAAS, FAVS, FECS

Professors

Robert Elliman BAppSci MAppSci RMIT, PhD DSc Salford, FAIP, FIP

Jim Williams BSc PhD UNSW, FAA, FAIP, FIEAust, FTSE, FAPS, FMRS (till October) (Director til March)

Emeritus Professor

Jim Williams BSc PhD UNSW, FAA, FAIP, FIEAust, FTSE, FAPS, FMRS (from October)

Visiting Fellows

Neville Fletcher AM, PhD Harvard, DSc Sydney, FAA, FTSE, FInst P, FAIP, FAAS. FASA

Haroldo Hattori (ADFA)

Simon Ruffell (Varian)

Senior Fellows

Hoe Tan BE Melbourne, PhD Yin Yin (Jennifer) Wong Leung BSc Bristol, PhD

Fellows

Jodie Bradby BAppSc RMIT, PhD Lan Fu MSc UTSC, PhD Patrick Kluth DipPhys Düsseldorf, PhD Jülich Jiandong Ye PhD Nanjing Qiang (Michael) Gao MS BSc NEU PhD

Research Fellows Sudha Mokkapati PhD Dinesh Venkatachalam PhD RMIT, MSc BITS Kiran Mangalapalli M.Sc, PhD U of Hyderabad

Postdoctoral Fellows

Bianca Haberl PhD

Tae Hyun Kim PhD (until December)

Patrick Parkinson MPhys DPhil Oxon (until November)

Matias Rodriguez PhD

Avi Shalav PhD UNSW, MSc DipTchg Massey

Hao Wang MSc Jinan, PhD South China Normal

Steffen Breuer PhD HU

Pawel Sajewicz MSc Warsaw U of Tech, PhD UCC Tyndall

Hazar Salama PhD UNSW

Felipe Kremer PhD UFRGS

Research Assistants

Kidane Belay BSc MSc AAU Ethiopia, PhD David Llewellyn (joint CMBE)

Visiting Fellows

Neville Fletcher AM, PhD Harvard, DSc Sydney, FAA, FTSE, FInst P, FAIP, FAAS. FASA Haroldo Hattori (ADFA) Simon Ruffell (Varian)

Professional Staff

Technical Officers

Michael Aggett AssocDipMechEng CIT Dane Kelly Bernie King ONC London Thomas Kitchen AdvDipMechEng (until May) Josh Carr (from June)

Departmental Administrator

Helen Shelper (January-April) Julie Arnold (from April)

ELECTRONIC MATERIALS ENGINEERING

Australian National Fabrication Facility (ANFF)

Manager

Fouad Karouta BSc LUB, PhD Perpignan, PhD Montpellier

Processing Engineers

Animesh Basak PhD KUL (joint with AMMRF) (until March) Jie Tian PhD CAEP (until October) Kaushal Vora PhD Latrobe

Naeem Shahid (from November) KTH Stockholm

Administrator

Jeffrey Kealley

Australian Nanotechnology Network Manager

Elizabeth Micallef

Students

PhD

Boshra Afra Amira Ameruddin Leonardus (Bimo) Bayu Aji **Thomas Bierschenk Timothy Burgess** Keng Chan Ruixing (Andy) Feng (from July) Aruni Fonseka Ms Qian Gao Yu-Heng (Jaret) Lee Hao Feng Lu Mykhaylo Lysevych Sahar Mirzaei Miranda Nash (from Feb) Nian (Jenny) Jiang Kun Peng (from February)

Aldowan Premala (from June) Daniel Pyke Dhruv Saxena Daniel Schauries (from July) Clara Teniswood Ian Yesaya Wenas (from March) Mr Xiaoming (Fred) Yuan

MPhil

Sam Turner Sarita Deshmukh Sherman Wong Shriniwas Deshpande Prakash Prasai

Honours

Ryland Harris Christian Henderson Angus Heyworth Zhi (Rex) Li Beau Olsen Ben Weise (till June) Wei Yang Kangrui Zhou (till June)

Occupational Trainees

Manuel Buerzle (Feb- April) Sreekar Molakalapalli (June-August) Thomas Lisy (from October) Jens Hansen Ölmedal (July-November) Samer Sulieman (September-December)

LASER PHYSICS CENTRE



Professor Wieslaw Krolikowski Head of Department

During 2012 the Laser Physics Centre was engaged in numerous high profile research projects of a fundamental as well as applied nature, covering such areas as nonlinear optics, material science, quantum computing, solid state spectroscopy, laser matter interaction and optical trapping.

Notable achievements in 2012 included:

Optical devices

• Demonstration of the first mid-infrared super continuum generated in a dispersion engineered chalcogenide glass waveguide

• Demonstration of record high Q 2-D photonics crystal nano cavity in a 2D photonic crystal membrane fabricated from chalcogenide glass fully embedded in a silica-like cladding.

• In collaboration with researcher at the University of Sydney, the first on-chip demonstration of stimulated Brillouin scattering in planar waveguides leading to slow and fast light and SBS based microwave photonics filters

• In collaboration with researchers at Macquarie University, the design and production of chalcogenide waveguides for efficient generation of correlated photon pairs

• Demonstration of the first loss compensated nonlinear planar waveguides and first very low loss vertical taper coupler spot size transformers for efficient fibre coupling to chalcogenide nano waveguides

• Demonstration of first low loss highly Erbium doped chalcogenide planar waveguides

Optical materials and nonlinear optics

• Theory of Cerenkov second harmonic generation induced by the spatial modulation of quadratic nonlinearity

• Theory of anomalous interaction of solitons in media with competing nonlinearities, (in collaboration with Danish researchers)

• Theoretical and experimental studies of second and third harmonic generation in media with randomized nonlinearity (in collaboration with groups in Spain and Poland).

• Theory of soliton stability in nonlocal random media (in collaboration with researchers from Germany) *Laser matter interaction*

• Observation of several new phases of silicon formed in ultrafast light induced micro-explosion.

• Observation of polarization-dependent ablation of silicon using tightly focused femtosecond laser vortex pulses

Solid state spectroscopy and quantum computing

• Formulation of the first comprehensive theory of the properties of the NV spin qubit. This work is a clear milestone in the understanding of the NV centre and is a key resource for the future development of NV centre quantum technologies.

• Development of the first theoretical proposal for the employment of the NV centre to measure geometric phases due to a macroscopic rotation. Whilst important to the fundamental understanding of geometric phases, this proposal has also led to the pursuit of high precision nanoscale quantum gyroscopes based upon

LASER PHYSICS CENTRE

the NV centre for nanotechnology applications. (in collaboration with Melbourne University)
Demonstration of optical access to a single dopant atom in a silicon. This was achieved in a hybrid approach were a single erbium atom was resonantly addressed by light and its excitation measured using a Field Effect Transistor (FET) detecting the change in the charge state of the atom. This is a major step forward towards interfacing silicon and photonic based quantum computing technologies (in collaboration with the University of New South Wales)

Laser trapping

• "Proof-of-principle' experiments demonstrating that a hollow-core Bessel beam from a cw laser source does apply sufficient radiation pressure to divert the particle jet in Free Electron Laser X-ray experiments (in collaboration with DESY, Hamburg)

- Revealing the role of polarization of optical beam on photophoretic trapping of airborne particles
- Demonstration of optical manipulation of particle ensembles in air

Our research activities have been supported mainly by the Australian Research Council (Discovery projects and Centre of Excellence). In the 2012 round of the ARC Discovery program Dr. Cyril Hnatovsky won the DECRA postdoctoral fellowships to work on application of vector beams in laser micromachining.

In 2012 our colleague Prof. Barry Luther-Davies was awarded the Australian Optical Society SW.H. (Beattie) Steel Medal for "strong and sustained record or authority, enterprise and innovation in the field of optics in Australia." In 2012 Sarah Beavan, Xin Gai, Lachlan Rogers, Khu Vu, Ting Han, Malte Duering and Morgan Hedges completed their graduate studies and have been subsequently awarded their PhD. In addition Zhe Jin has been awarded his MSc degree. We congratulate them on this achievement.

Academic Staff

Head of Department and Professor

Krolikowski, Wieslaw (MSc PhD Warsaw)

Professors

Luther-Davies, Barry (PhD S'ton, SIEE, FAIP, FTSE)

Manson, Neil (PhD Aberdeen)

Rode, Andrei (PhD Moscow)

Senior Fellows

Choi, Duk-Yong (PhD Seoul)

Gamaly, Eugene (MSc PhD DSc, Full Professor of Physics, Moscow)

Madden, Stephen (PhD Imperial College)

Sellars, Matthew (PhD ANU)

Fellows Wang, Rongping (PhD CAS)

Research Fellows

Hnatovsky, Cyril (PhD Ottawa) Shvedov, Vladlen (PhD Taurida National) Yang, Zhiyong (PhD CAS)

Postdoctoral Fellows

Sheng, Yan (PhD CAS, ARC Postdoctoral Fellow)

Hedges, Morgan (PhD Melbourne Uni)

Doherty, Marcus (PhD, Bch Science (honours), Bch Engineering (honours))

Rapp, Ludovic (PhD)

Vu, Khu (PhD ANU, Mphil Southampton, BSc Honors ANU, BSc Monash)

Wittig, Sven (PhD)

Visiting Fellows

Deng Feng Chen

Ma, Dongli (Chinese Academy of Sciences, China)

Roppo, Vito (Polytechnic University of Catalunya, Barcelona, Spain)

Samoc, Anna

Samoc, Marek

Professional Staff

Technical Officers

Bottega, John Debbarma, Sukhanta Krolikowska, Maryla MacLeod, Craig (AssocDip MechEng CIT) Smith, Anita (until August 2012)

Departmental Administrator

Uyen Nguyen (until June 2012) Sonia Padrun (from July 2012)

Students

PhD Students Ahlefeldt, Rose Louise Bartholomew, John Glen Beavan, Sarah Elizabeth Maria Eckerskorn, Niko Ferguson, Katherine Freeman, Darren Gai,Xin Jin, Zhe Kalinowski,Ksawery Kajetan Marzban, Sara McMurtrie, Roger Learmonth Paulraj, Joseph Rancic, Milos Rogers, Lachlan James Sun, Yue Wang, Ting Yan, Kunlun Yu, Yi (lvy) Zhong, Manjin (Grace)

Visiting Students

Li, Li (OT) Ma, Pan (OT) Pischke, Thomas (OT) Reville, Victor (OT) Su, Xueqiong (OT) Sun, Yue (OT -- LPC/NLP) Wei, Wenhou (OT) Yan, Kunlun (OT until August 2012, then PhD student) Zhang, Yu (OT)

NONLINEAR PHYSICS CENTRE

Professor Yuri Kivshar Head of Department



Nonlinear Physics are engaged in theoretical and experimental interdisciplinary research in several diverse areas unified by the general concepts of nonlinear physics and photonics. Nonlinear Physics are defined by six major research groups.

The experimental photonics group, led by Dr Dragomir Neshev, undertakes experimental studies of linear and nonlinear properties of light propagation and localization in integrated and optically-induced photonic and nanoplasmonic structures, including light self-action and harmonic generation, optical metamaterials, and nanophotonics. In 2012, the group's activities moved towards quantum optics in waveguide arrays, and the physics of optical metamaterials and plasmonic structures.

The theoretical photonics group, led by Dr Andrey Sukhorukov undertakes the study of different linear and nonlinear optical systems. Currently, this involves the development of theoretical models and numerical simulations of the propagation of slow light in nolinear photonic structures with close collaboration with the experimental groups. More recently, this included the development of novel concepts of light control in periodically modulated waveguide arrays and optomechanics, as well as quantum effects on waveguide arrays.

The singular photonics group, led by Dr Anton Desyatnikov undertakes both theoretical and experimental studies of the light beams with angular momentum, optical vortices, optical polarization singularities, and vortex lattices. The new activities in 2011 are associated with the physics of knots and complex phases of light, topologically protected states, and singular beams in periodic optical lattices. A part of the group's activities is devoted to the experimental studies of self-action effects in nematic liquid crystals.

The nonlinear matter waves and quantum-atom optics group, led by Dr Elena Ostrovskaya, is involved in the development of novel theoretical models, analytical and numerical studies of matter waves and nonlinear atom-optics problems, cold atoms, Bose-Einstein condensated in optical lattices, atom laser, quantum optics of nonclassical and squeezed light. More recently, the group developed several novel concepts, including the study of solitons and vortices in polariton condensates.

The research on composite structures and left-handed metamaterials, led by Dr Ilya Shadrivov is in the general direction involving the phenomenon of negative refraction, nonlinear metamaterials and left-handed materials, and optical cloaking. Recently, the group developed novel concepts for tunable and reconfigurable metamaterials, and supported them by a series of experimental observations at microwave and THz frequencies.

More recent developments of the NLPC research activities, and the success of Dr Andrey Miroshnichenko with a Future Fellowship grant led to the creation of the sixth research group focused on the study of the physics and applications of linear and nonlinear plasmonic structures and optical nanoantennas. The most recent research of this new team is devoted to the so-called "magnetic light" and nanophotonics of all-dielectric optical structures.

Academic Staff

Head of Department and Professor

Yuri Kivshar BSc PhD Kharkov, FAIP, FOSA, FAA, FAPS, FInstP, ARC Federation Fellow

Senior Fellows

Andrei Maimistov (April-June) Dragmoir Neshev PhD Sofia Andrey Sukhorukov MSc Moscow, PhD

Fellows

Anton Desyatnikov PhD Moscow Elena Ostrovskaya MSc Moscow, PhD Alexander Savin PhD Moscow (May to July) Ilya Shadrivov PhD

Research Fellows

Manuel Decker PhD Karlsruhe Aliaksandr Minovich PhD Andrey Miroshnichenko PhD Dresden David Powell PhD RMIT

Postdoctoral Fellows

Ivan Garanovich PhD (to April) Christian Helgert PhD Jena (to March) Yana Izdebskaya PhD Simferopol Ivan Maksymov PhD Kharkov (to August) Michal Matuszewski PhD Warsaw (to March) Isabelle Staude PhD Karlsruhe Omri Triedel PhD Haifa (March-June)

Visiting Fellows

Dr Nora Alexeeva, Capetown South Africa Prof Igor Bareshenkov, Capetown South Africa Dr Mikhail Lapin, University of Sydney Dr Pusheng Liu, UEST China

Professional Staff

Departmental Administrator

Kathy Hicks AdvDipAcct DipMngment CIT

Research Assistants

Diana Antonosyan (March-August) Andrei Komar (October-December)

Students

PhD Students

Jasur Abdullaev Diana Antonosyan Rui Guo Kirsty Hannam Ksawery Kalinowsky Ali KH Mirzaei Sergey Kruk Daniel Leykam Guangao (Leo) Li Mingkai Liu Wei Liu Alexander Solntsev Che Wen (Allen) Wu Sun Yue

Honours Students

Ben Hopkins Shuai Li

Visiting Students

Martin Boguslawski, University of Muenster, Germany Wen-Chen Chen, Boston College, USA Michael Greppmair, University of Applied Science,

Regensburg Germany

Francois-Xavier Parise, Polytech Clermont-Ferrand, France

Andreas Pusch, Imperial College, London

Patrick Rose, University of Muenster, Germany

Stefan Schlecht, University of Applied Science, Regensburg Germany

Ivan Shishkin, loffe Physical Technical Institute, Russian Academy of Sciences

Sergey Suchkov, Russian Academy of Sciences

NUCLEAR PHYSICS

Professor David Hinde Head of Department



The Department of Nuclear Physics carries out fundamental research in Nuclear Physics, as well as developing and applying nuclear techniques for basic studies in interdisciplinary accelerator based research. The Heavy Ion Accelerator Facility, maintained, developed and operated by the Department is supported financially by the ANU, and by CRIS and now NCRIS operational funding from the Federal Government. It provides a range of energetic heavy-ion beams produced with a suite of ion sources and accelerated by a 15 million-Volt tandem electrostatic accelerator and a superconducting linear accelerator. Beams are delivered to ten separate beam-lines, each dedicated to specialised detector instrumentation.

The facilities are used by staff and students of the Department as well as external users from other Australian universities and institutions, and scientists from many overseas Universities and laboratories in Europe, North and South America and Asia. Scientists from the United Kingdom have formal access to the Facility through the ANU-STFC agreement.

The Department and its facilities constitute the main laboratory in Australia for accelerator based research and training in Nuclear Physics. It contributes to undergraduate and postgraduate teaching and training at honours, masters and PhD levels, conducts expert workshops in radiation physics and accelerator techniques, and manages a Master of Nuclear Science by coursework degree that was instituted in 2007. To complement the research carried out on the local facilities,

Department members collaborate with international scientists and utilise major experimental facilities overseas, gaining access through competitive processes.

Current nuclear research areas of interest cover nuclear spectroscopy and the study of exotic nuclear quantum states, heavy-ion reaction dynamics including nuclear fusion, nuclear fission and reactions of weakly-bound nuclei, and the study and use of hyperfine interactions for moment measurements and for elucidating nuclear structure. Nuclear techniques and heavy-ion detection techniques are used in a range of materials science applications including materials modification and characterisation. The technique of Accelerator Mass Spectrometry is applied to a broad range of topics including research and applications in archaeology, hydrology, climate change, soil erosion and trace isotopic analyses applied to environmental pollution studies, both nuclear and non-nuclear.

Academic Staff

Head of Department and Professor

David Hinde BSc Manchester, PhD, FAIP, FInstP, FAPS,FAA

Professor and Director, Heavy Ion Accelerator Facility

Keith Fifield MSc Auckland, PhD Penn, FAIP

Professors

Mahananda Dasgupta MSc Rajasthan, PhD Bombay, FAIP, FAA

Andrew Stuchbery BSc PhD Melbourne, FAIP

Emeritus Professor

George Dracoulis BSc PhD Melbourne, FAIP, FAPS, Hon FRSNZ, FAA

Senior Fellows

Tibor Kibédi PhD Debrecen Gregory Lane BSc PhD (ARC Future Fellow) Anton Wallner PhD Vienna

Fellows
Stephen Tims BSc PhD Melbourne

Research Fellows

Mario DeCesare PhD Naples (from March) Rickard Du Rietz MSc PhD Lund (until Feb) Elizabeth Williams PhD Yale

Postdoctoral Fellows

Maurits Evers PhD

Duc Huy Luong PhD (from Oct)

Ramachandran Kandasamy PhD Mumbai (from April)

Matthew Reed MPhys Leicester PhD Surrey (from March)

Michaela Srncik PhD Vienna (from March)

Visiting Fellows

Dr Tezer Esat, ANSTO Dr Heiko Timmers, University of New South Wales/

ADFA

Dr Cedric Simenel, CEA/Sacley, France (from April) Rickard Du Rietz MSc PhD Lund (from Feb)

Professional Staff

Accelerator Research and Operations Managers

Nikolai Lobanov BSc Moscow, PhD St Petersburg

David Weisser MSc, PhD Minn, FAIP (Special Projects)

Accelerator Engineer

Peter Linardakis PhD

Computer Manager Heavy Ion Facility

Dimitrios Tsifakis, BSc (Hons)

Computer Control Specialist

Angus Gratton, BSc, BAS (until Dec)

Technical Officers

John Bockwinkel, AdvDip MechEng CIT

Alan Cooper, Fitting and Machinist Trade Cert. AssDip MechEng CIT

Gareth Crook, Cert IV MechEng CIT

Caleb Gudu, AdvDip MechEng CIT

Gordon Foote BSc London, PhD (Casual)

Allan Harding, Fitting and Machinist Trade Cert.

Justin Heighway, AssDip AppSci CIT

Lorenzo Lariosa

Alistair Muirhead, Fitting and Machinist Trade Cert.

Thomas Tunningley AdvDip EngDesign CIT, B.Ind.Des. (Hon) UC

Departmental Administrator

Petra Rickman

Students

PhD students Badriah Alshahrani

NUCLEAR PHYSICS

Michael East Michael Edwards Ian Carter WeeTeck Hoo Rajeev Lal Albert Lee Russell Leslie Duc Huy Luong (until July) Steven McNeil Dominic Rafferty Michael Smith Aditya Wakhle

Masters students (MPhil)

Asif Ahmed Michael Brown Vincent Margerin Nyaladzi Palalani

Masters students (CWk)

Jesse Boylan Duncan Crawford Dongyun Jeung Michael Lane Peter Lewis Vanessa Masters Robert Parker Dimitrios Tsifakis Nick Vazenios Eric Wawra

Honours

Kaitlin Cook Boon Quan Lee Puvanesvari Rajan Mapril Ng

Summer Scholars (ANU) Melanie Hampel, University of Bonn, ANU Exchange

Visiting students Khalid Al Hashmi, University of Wollongong

Sultan Alhujaili, University of Wollongong Yasser Al Rahbi, University of Wollongong Taleb Alwadi, University of Wollongong Kevin Bai, University of Wollongong Wing Chan, 3rd year project, ANU Catherin Cheak, University of Wollongong Gan Chin Chin, 3rd year project, ANU Patrick Copp, University of Wisconsin, US Donna Curtis, University of Wollongong Shreder Daria, University of Wollongong Saptarshi Das, 3rd year project, ANU Keiran Delves, University of Wollongong Yu Deng, University of Wollongong Mitchell de Vries, 3rd year project, ANU Andrew Dipuglia, University of Wollongong Andrew Duong, Monash University Ali Ghabag, University of Wollongong Patrick James, University of Wollongong Haijie Jin, University of Wollongong Azira Khalil, University of Wollongong Andrew Manettas, University of Wollongong Ellen Manning, University of Tasmania Bradley McAlpine, University of Wollongong Leanne Miller-Bassett, University of Wollongong Joel O'Brian, Alstonville High School Carmela Sampang, University of Wollongong Rohit Inipully Somasundaran, Uni of Wollongong Matthew Talia, Monash University Nikolina Vicoroski, University of Wollongong James Vohradsky, University of Wollongong Clair Walsh, University of Wollongong Sean Wang, University of Wollongong Bryce Webb, University of Wollongong Melek Zarifi, University of Wollongong
PLASMA RESEARCH LABORATORIES SP3



Professor Christine Charles Head of Department

The Space Plasma, Power and Propulsion division is lead by Prof Christine Charles and conducts work on both basic and applied plasma physics. The core research areas involve experimental, theoretical and computer simulation aspects of low pressure helicon discharges and high pressure (including atmospheric pressure) radiofrequency discharges and of their numerous applications.

Interaction of these plasmas with surfaces (etching, sputtering, deposition, surface functionalisation) are applied to microelectronics and optoelectronics processes, to focused ion beam sources, to fuel cell manufacturing for the hydrogen economy and to the design of materials with biological responses, catalytic activity, optical or mechanical properties. Formal collaborative development of industrial plasmas is proceeding successfully with LAM research of Silicon Valley.

Expansion of these plasmas is applied to electric propulsion with the development of three new thrusters (HDLT, Pocket Rocket, DS4G) and to space plasma physics such as the magnetic funnels of the solar corona and the Earth's aurora. Other research on space plasma physics includes studying high-beta plasmas, wave-plasma interactions, plasma instabilities, cross-field diffusion, momentum imparted from plasma expansion and plasma detachment from magnetic fields. We are developing a new national space simulation facility to test the thrusters in collaboration with the astronomers at Mount Stromlo and with various industry partners (e.g. EADS-Astrium).

Academic Staff

Head of Department and Professor

Christine Charles BEng MSc Rennes, PhD Hab Orléans, BMus

Professor

Roderick Boswell BSc Adelaide, PhD Flinders, FTSE, FAPS

Visiting Fellows

Dr Craig Davis, Stayz Pty Ltd 2011

Dr Timo Gans, University of York, UK

Dr Deborah O'connell, University of York, UK

Robert Laine, SPACINOV, France

Jay Vennick, VIPAC, Australia (ASRP Project with RSAA)

Professional Staff

Technical Officers

Andrew Bish

Peter Alexander Mike Petkovic (ASRP Project with RSAA) Nick Herald (ASRP Project with RSAA) Robert Boz (ASRP Project with RSAA) Nicolas Paulin (ASRP Project with RSAA)

Departmental Administrator

Uyen Nguyen BA Monash

Students

PhD students

Dixon, Sam Dedrick, James Greig, Amelia

Visiting Student

Timo Schroeder, Max Planck Institute of Plasma Physics

PLASMA RESEARCH LABORATORIES TORO

Professor John Howard Head of Department



Toroidal Plasma Research embraces a diversity of activities associated with the physics of magnetised plasma, electromagnetics, fluids and remote sensing. The Department is home to the H-1 Australian Plasma Fusion Research Facility, which is the national focus of high temperature experimental plasma fusion research for clean energy generation. It also houses a variety of smaller plasma devices and the experimental facilities of the physics of fluids group. There are four primary research activities within the Department.

The Experimental Plasma Science group undertakes research into plasma magnetic confinement on the H-1 heliac, and fusion-relevant materials studies on the MAGnetised Plasma Interaction Experiment (MAGPIE) (which also involves formal collaborations with the Australian Nuclear Science and Technology Organisation). The techniques and instruments pioneered in the laboratory are deployed at many fusion institutes around the world.

The Plasma Theory and Modeling group focuses on the fundamental physics and modelling of magnetic confinement fusion energy devices. The group has flourishing research links with many international fusion laboratories around the world.

The Physics of Fluids group undertakes research into waves, turbulence and non linear phenomena, important for the physics of weather, climate, and plasma confinement.

The BushLAN project is developing the world's first fully distributed wireless telecommunications network. A demonstrator is nearing completion and industrial partners are being sought. The distributed approach is inherently superior to, and potentially more economical than current universal cellular networks.

Academic Staff

Head of Department and Professor

John Howard BSc PhD Sydney, FInstP

Professors

Michael Shats MSc KPI, PhD GPI Moscow

Robert Dewar MSc Melbourne, PhD Princeton, FAIP, FAPS, FAA

Senior Fellows

Boyd Blackwell BSc PhD Sydney

Research Fellows

Cormac Corr PhD Belfast Gerard Borg BSc PhD Sydney Matthew Hole BSc BE PhD Sydney Hua Xia MSc Chongquing PhD Clive Michael Bsc PhD

Postdoctoral Fellows

Graham Dennis PhD Gregory von Nessi BSc Massachusetts PhD Michael Fitzgerald PhD University of Sydney Nicolas Francois BEng Toulouse PhD Université Bordeaux 1

Visiting Fellows

Dr Jerew Oday Dr Jay Larson, Argonne National Laboratory, USA Dr Kazunori Takahashi, Iwate University, Japan Prof. Zensho Yoshiba, University of Tokyo, Japan Dr Stuart Hudson, Princeton Plasma Physics Laboratory Dr Jana Brotankova Dr Oliver Ford, Max-Planck-Institut für Plasmaphysik Prof. Gregory Falkovich, Weizmann Institute of Science, Rehovot, Israel Prof. Roger Hosking, University of Adelaide

Professional Staff

Technical Officers

Bernhard Seiwald PhD Graz Uni. of Tech. David Pretty BSc Melb PhD Fenton Glass BSc Queensland PhD Horst Punzmann BSc Regensburg PhD Michael Blacksell Peter Alexander

Departmental Administrator

Uyen Nguyen BA Monash

Students

PhD students

Abdullatif, Farzand Bowie, Craig Bowden, George Byrne, David Caneses, Juan Chang, Lei Chen, Haitao Haskey, Shaun Khandaker, Asaduzzaman Lester, Romana McGann, Mathew Qu, Zhisong Stock, Graham Thapar, Nandika

Thompson, Matt, BSc ANU, awarded PhD in August 2011 (ANU)

Masters students (MPhil)

Bertram, Jason Frost, Benjamin Gibson, Ashley Cox, Sebastian Nizette, Aimee

Honours

Thorman, Alexander Woolfe, Kieran Chan, Ka-Jin

Summer Scholars

Le, Kavin Jacobs, Marthinus Wright, Adelle McKay, James

Visiting students

Thomas Harle, University of Surrey, UK

Aude Petin, University Paris sud-11,

Maimbourg Thibaud, Ecole Normale Supérieure (ENS) in Paris

Zhai Yang, Nanjing University of Science and Technology, China

Kamil Szewc, The Institute of Fluid-Flow Machinery in Gdańsk, Poland

QUANTUM SCIENCE

Professor David McClelland Head of Department



The core research programs in the Department of Quantum Science cover a broad range of activities linked by the quest to investigate the interface between the quantum and classical realms, to probe the quantum mechanical limits to measurement, to develop precision measurement using quantum sources, and to use these concepts in technological applications. These activities are pursued in three programs.

Quantum Optics: The quantum optics group aims to exploit quantum mechanical properties of laser field for metrological and information technology applications. As the second largest node of the Centre of Excellence for Quantum Computation and Communication Technology, it hosts programs in Secure Quantum Communication, Quantum Memory and Quantum Repeater. In addition to the Centre programs, the group also undertakes research in quantum opto-mechanics and ultra-precision machining. Major results in 2012 include: Demonstration of precision spectral manipulation of light using optical memory (published in PRX), characterization of quantum discord as a resource for quantum communications (Nature Physics), demonstration of programmable multimode quantum network (Nature Communications), and nonlinear interaction enhancement using optical memory (Nature: light science and applications).

Atom Optics: The atom optics program has focused on the development of the atom laser as a useful tool for investigations in fundamental physics and in precision inertial measurement. All cold atom precision inertial measurements have used cold thermal atomic sources, and all are limited in their precision by classical or technical noise sources. Can the high brightness and long coherence length of atom lasers mitigate these limiting effects? This is the question that, in part, drives our research program. At the applied end of the research spectrum, we are exploiting our technology in the development of field deployable inertial sensors in close collaboration with end users. In 2012 for example, we developed a state of the art cold atom gravimeter.

The Centre for Gravitational Physics (CGP) undertakes research on many aspects of gravity, from mathematical relativity to searching for gravitational waves to developing technology for future generations of ground and space based gravitational wave detectors and earth observations. Highlights in 2012 include: producing the 'quietest' laser yet at audio frequencies; using this quantum enhancement to deliver the most sensitive gravitational wave detector ever built; and searching for gravitational waves from rapidly spinning neutron stars. We continued our collaboration with the National Measurement Institute to develop optical sensors for drug testing and our program to revolutionise the next space-based Gravity Climate and Recovery Experiment by using a laser interferometer produced prototype hardware which passed environmental testing.

Academic Staff

Head of Department and Professor

David McClelland MSc UWA, PhD Otago

Professors

John Close PhD Berkeley Ping Koy Lam BSc Auckland, PhD Craig Savage PhD Waikato Susan Scott BSc Melbourne, PhD Adelaide

Senior Fellows

Joseph Hope PhD Daniel Shaddock PhD

Fellows

Benjamin Buchler PhD Nicholas Robins PhD Thomas Symul PhD CNET

Research Fellows

Jong Chow BSEE Vermont, PhD ANU Vincent Daria PhD (until 30 June) Andre de Carvalho PhD UFRJ Brazil Jiri Janousek PhD DTU Denmark Mattias Johnsson PhD Canterbury Bram Slagmolen PhD Robert Ward PhD Caltech

Postdoctoral Fellows

Syed Assad PhD NUS Singapore/ANU Julien Bernu PhD ENS France David Bowman PhD ADFA Roland Fledderman PhD LUH Germany (from 6 Feb) Angela Maria Florio PhD INRIM Turin (until 3 May) Boris Hage PhD LUH Germany (until 31 January) Ra Inta PhD UNSW John Miller PhD Glasgow Conor Mow-Lowry PhD (until 8 March) Olivier Pinel PhD Paris Alberto Stochino PhD Caltech

Visiting Fellows

Dr Mark Andrews Emeritus Prof Hans Bachor Dr Quentin Glorieux Dr Peter Riggs Emeritus Prof John Sandeman Dr Edward Teo

Professional Staff

Head Technical Officer

Andrew Papworth

Technical Officers

Neil Devlin James Dickson Shane Grieves Neil Hinchey Paul McNamara Paul Tant

Departmental Administrator Laura Walmsley

Assistant Administrative Officer

Gaye Carney

Centre of Excellence for Quantum Computation and Communication Technology

Node Administrator

Amanda White

GRACE FoM Project Administrator Kerrie Cook

Students

PhD Students

Adlong, Sarah Altin, Paul Armstrong, Seiji Barry, Richard

Bennetts, Shayne Bentley, Christopher Brieussel, Alexandre Campbell, Geoff Chrzanowski, Helen Debs, John Chua, Sheon Guccione, Giovanni Hardman, Kyle Higginbottom, Daniel Hillman, Briana Hosseini, Mahdi Hosseini, Sara Hudspeth, Jessica Hush, Michael Lam, Timothy Lewis, Benjamin McDonald, Gordon Mills, Ruth Morizur, Jean-Francois Mullavey, Adam Ngo, Silvie Nguyen, Thanh Poldy, Rachel Riesen, Nicolas (PEC) Roberts, Lyle Sparkes, Benjamin Stefszky, Michael Stevenson, Robin Sutton, Andrew Szigeti, Stuart Threlfall, Philip Wade, Andrew Whitfield, Ross Wuchenich, Danielle

Masters Students (Coursework)

Archer, Ian

Beltman, Scott Boylan, Jesse Crawford, Duncan Gleeson, Jeremy Harding, Daniel Jeung, Dongyun Lane, Michael Lewis, Peter Parker, Robert Pretty, David Robertson, Vanessa Tsifakis, Dimitrios Vazenios, Nicholas Wang, Kun Wawra, Eric Wu, Che Wen Zhang, Meiying **Summer Scholars** Bandutunga, Chathura Mansell, Georgia Torrisi, Dominic

Occupational Trainees

Yong, Shen Geng, Jiao

Honours Students

Aslanides, John Chua, Alvin Dong, Jarrod Elliot, Megan (Engineering) Francis, Sam (Engineering) Johnston, David Kalyanasundaram, Shankar (Engineering) Keal, Hannah Malikedes, Emmanuel Wigley, Paul

THEORETICAL PHYSICS



Professor Murray Batchelor Head of Department

The Department of Theoretical Physics is one of the university's founding departments. The primary research themes in the Department are in mathematical physics and optical sciences.

The work in mathematical physics is in a number of related areas in statistical mechanics, quantum field theory and string theory. Professor Vladimir Bazhanov and Dr Vladimir Mangazeev lead research in (i) finite lattice systems, combinatorics and Painleve equations, (ii) computational approaches to scaling and universality in statistical physics, (iii) quantum geometry and three-dimensional integrable systems. Dr Xiwen Guan leads research on exactly solved (integrable) models in cold atoms and spin systems.

Professor Murray Batchelor leads research on aspects of exactly solved models in statistical mechanics, most recently on understanding the implications of the remarkable connection between the theory of Yang-Baxter integrability and the notion of discrete holomorphicity. Professor Peter Bouwknegt leads research on the mathematics of string theory and quantum field theory. Dr David Ridout leads research on the mathematical structures underlying conformal field theory, with the properties of logarithmic conformal field theories of particular interest. Work on fundamental aspects of condensed matter is led by Professor Makunda Das, in particular on high temperature superconductivity and vortex matter phase transitions and electron transport in mesoscopic systems.

The Optical Sciences Group led by Professor Nail Akhmediev and Dr Adrian Ankiewicz performs studies in extreme events, rogue waves and soliton theory. The group develops basic theory of dissipative solitons that includes high-power ultra-short pulse lasers and giant waves in the ocean. The group is strongly linked to international research laboratories working at the forefront of ocean waves, nonlinear optics and dissipative systems.

Academic Staff

Head of Department and Professor

Murray Batchelor BSc (Hons) UNSW, PhD, FAIP, FAustMS, FInstP (jointly with MSI)

Professors

Nail Akhmediev MS PhD DSc Moscow, FOSA

Peter Bouwknegt MSc Utrecht, PhD Amsterdam, FAIP, FAustMS (Deputy Director of MSI)

Vladimir Bazhanov PhD Serpukhov FAA

Research Fellows

Adrian Ankiewicz BSc BE UNSW, PhD Xi-Wen Guan BSc Qufu, MSc Sichuan, PhD Jilin Vladimir Mangazeev MSc Moscow, PhD Serpukhov Zengo Tsuboi MSc PhD Tokyo David Ridout BSc, MSc UWA, PhD Adelaide (ARC Fellowship)

Postdoctoral Fellows

Natasha Devine PhD PeiWen Kao BSc(Hons) PhD

Visiting Fellows

Uwe Bandelow PhD Humboldt University Thomas J Creutzig PhD from DESY Hamburg (Germany) Daisuke Takahashi University of Tokyo Mukunda Das BSc PhD Roorkee University Subir Ghosh PhD SINP Calcutta Michael Hall MSc PhD ANU Yusuke Kageyama PhD Kyushu Univeristy Astuo Kuniba University of Tokyo Carlos Kuhn Occupational Trainee Brian Robson MSc PhD DSc Melb, FAIP Lindsay Tassie MSc PhD Melb, FAIP Daisuke Takahashi PhD University of Tokyo Metin Unal MPhil PhD Glasgow University Yvan Saint-Aubin PhD from U de Montreal (Canada)

Sergey Sergeev MSc PhD Steklov Institute of Mathematics

Yan Wang PhD Shanxi University, China Simon Wood PhD from ETH Zurich (Switzerland)

Professional Staff

Departmental Administrator

Lucia Lu

Students

PhD

Mikhail Dudalev Imam Alam Amdadul H Chowdury David Kedziora Andrew Kels Brendan Wilson

MPhil

Seong Joon Yi

50



Book chapter

(9 publications)

Daria V, Palima D, Gluckstad J, *Efficient generation of optical twisters using helico-conical beams*, **The Angular Momentum of Light**, Cambridge University Press, United States of America (2012) 352-364

Davis J, Jagadish C, *Semiconductors and their nanostructures*, **Optical Techniques for Solid-State Materials Characterization**, CRC Press LLC, Boca Raton Florida USA (2012) 39-78

Desyatnikov A, Kivshar Y, *Optical beams with orbital angular momentum in nonlinear media*, **The Angular Momentum of Light**, Cambridge University Press, United States of America (2012) 71-97

Dracoulis G, Nuclear Energy - Risk and Reward, Catastrophic Complexity, Aon Benfield Australia Ltd, Gold Coast Australia (2012) 400

Miroshnichenko A, Kivshar Y, *Resonant Light Scattering in Photonic Devices: Role of Defects*, **Optical Properties of Photonic Structures**, Taylor & Francis Group, Florida, USA (2012) 429-443

Neshev D, Sukhorukov A, Kivshar Y, *Nonlinear control of multicolor beams in coupled optical waveguides*, **Nonlinear Photonics and Novel Optical Phenomena**, Springer, New York, USA (2012) 111-132

Robson B, *The Generation Model of Particle Physics*, **Particle Physics**, InTech Open Access Publisher, Rijeka Croatia (2012) 1-28

Samoc M, Samoc A, Dalton G, Cifuentes M, Humphrey M, Fleitz P, *Two-photon Absorption Spectra and Disper*sion of the Complex Cubic Hyperpolarizability γ in Organic and Organometallic Chromophores, **Multiphoton Pro**cesses in Organic Materials and Their Application, Old City Publishing Inc, Philadelphia (2012) 335-349

White R, Sullivan J, Bankovic A, Dujko S, Robson R, Petrovic Z, Garcia G, Brunger M, Buckman S, *Positron and Electron Interactions and Transport in Biological Media: Modelling Tracks and Radiation Damage*, **Radiation Damage in Biomolecular Systems**, Springer, Netherlands (2012) 542 / 1-1

Journal article

(467 publications)

Abadie J, Abbott B, Abbott R, Abbott T, Abernathy M, Accadia T, Acernese F, Adams C, Adhikari A, Anderson S, Araya M, Blackburn J, Etzel T, Ivanov A, Kozak D, Meshkov S, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, *All-sky search for periodic gravita-tional waves in the full S5 LIGO data*, **Physical Review D 85** (2012) 022001/1-19

Afra B, Rodriguez M, Lang M, Ewing R, Kirby N, Trautmann C, Kluth P, SAXS study of ion tracks in San Carlos olivine and Durango apatite, Nuclear Instruments and Methods in Physics Research: Section B 286 (2012) 243-246

Ageyskiy A, Kosulnikov S, Maslovski S, Kivshar Y, Belov P, *Quarter-wavelength nanorod lens based on internal imaging*, **Physical Review B: Condensed Matter and Materials 85**, 3 (2012)

Akhmediev N, Rottwitt K, Focus issue introduction: Nonlinear Photonics, **Optics Express 20**, 24 (2012) 27212-27220

Al-Dahan N, Regan P, Podolyak Z, Walker P, Alkhomashi N, Dracoulis G, Farrelly G, Benlliure J, Pietri S, Casten R, Stevenson P, Gelletly W, Steer S, Garnsworthy A, Casarejos E, Gerl J, Wollersheim H, Grebosz J, Gorska M, Kojouharov I, Schaffner H, Algora A, Benzoni G, Blazhev A, Boutachkov P, Bruce A, Cullen I, Denis Bacelar A, Deo A, Estevez M, Fujita Y, Hoischen R, Kumar R, Lalkovski S, Liu Z, Mason P, Mihai C, Molina F, Mucher D, Rubio B, Tamii A, Tashenov S, Valiente-Dobon J, Woods P, *Multiple 6– decaying states in 194Re: Shape evolution in neutron-rich osmium isotopes*, **Physical Review C: Nuclear Physics 85**, 034301 (2012) 9

Alam I, Batchelor M, Integrability as a consequence of discrete holomorphicity: the ZN model, Journal of Physics A: Mathematical and Theoretical 45, 49 (2012)

Alexander T, Heenan K, Salerno M, Ostrovskaya E, Dynamics of matter-wave solitons in harmonic traps with flashing optical lattices, Physical Review A: Atomic, Molecular and Optical Physics 85, 6 (2012) 063626 1-8

Alexeeva N, Barashenkov I, Sukhorukov A, Kivshar Y, *Optical solitons in PT-symmetric nonlinear couplers with gain and loss,* **Physical Review A: Atomic, Molecular and Optical Physics 85**, 6 (2012) 0638371-13

Allmond J, Radford D, Pavan J, Lagergren K, Baktash C, Beene J, Bingham C, Chaturvedi L, Danchev M, Fong D, Galindo-Uribarra A, Hausladen P, Hwang J, Krolas W, Liang J, Padilla-Rodal E, Reviol W, Sarantites D, Seweryniak D, Shapira D, Stuchbery A, Urrego-Blanco J, Varner R, Wang X, Yu C, Zhu S, *One-neutron transfer study of 135Te and 137Xe by particle-y coincidence spectroscopy: The v1i13/2 state at N = 83*, **Physical Review C: Nuclear Physics 86**, 031307(R) (2012) 1-6

Andryieuski A, Ha S, Sukhorukov A, Kivshar Y, Lavrinenko A, *Bloch-mode analysis for retrieving effective parameters of metamaterials*, **Physical Review B: Condensed Matter and Materials 86**, 3 (2012)

Anyon M, Orchard M, Buzza D, Humphries S, Kohonen M, *Effect of particulate contamination on adhesive ability and repellence in two species of ant (Hymenoptera; Formicidae),* **Journal of Experimental Biology 215**, 4 (2012) 605-616

Anzai K, Kato H, Hoshino M, Tanaka H, Itikawa Y, Campbell L, Brunger M, Buckman S, Cho H, Blanco F, Garcia G, Limao-Vieira P, Ingolfsson O, Cross section data sets for electron collisions with H2, O2, CO, CO2, N2O and H2O, **European Physical Journal D: Atomic, Molecular, Optical and Plasma Physics 66,** 2 (2012) 8

Araujo L, Giulian R, Sprouster D, Schnohr C, Llewellyn D, Johannessen B, Byrne A, Ridgway M, *Structural properties of embedded Ge nanoparticles modified by swift heavy-ion irradiation*, **Physical Review B: Condensed Matter and Materials 85**, 23 (2012) 235417-1-11

Armstrong S, Morizur J, Janousek J, Hage B, Treps N, Lam P, Bachor H, *Programmable multimode quantum net-works*, **Nature Communications 3** (2012)

Asatryan A, Botten L, Byrne M, Freilikher V, Gredeskul S, Shadrivov I, McPhedran R, Kivshar Y, *Transmission and Anderson localization in dispersive metamaterials*, **Physical Review B: Condensed Matter and Materials 85**, 4 (2012)

Aste T, Gramatica R, Di Matteo T, *Random and frozen states in complex triangulations*, **Philosophical Magazine** 92, 1-3 (2012) 246-254

Aste T, Gramatica R, Di Matteo T, *Exploring complex networks via topological embedding on surfaces*, **Physical Review E-Statistical, Nonlinear and Soft Matter Physics 86**, 3 (2012) 036109-1-11

Baimova Y, Dmitriev S, Savin A, Kivshar Y, Velocities of sound and the densities of phonon states in a uniformly strained flat graphene sheet, **Physics of the solid state 54**, 4 (2012) 866-874

Baldwin T, Catford W, Mahboub D, Timis C, Ashwood N, Clarke N, Curtis N, Ziman V, Brown T, Fox S, Weisser D First excited 1/2(+) state in B-9, **Physical Review C: Nuclear Physics 86**, 3 (2012)

Bandelow U, Akhmediev N, *Persistence of rogue waves in extended nonlinear Schrödinger equations: Integrable Sasa-Satsuma case*, **Physics Letters A 376**, 18 (2012) 1558-1561

Bandelow U, Akhmediev N, Sasa-Satsuma equation: Soliton on a background and its limiting cases, Physical Review E-Statistical, Nonlinear and Soft Matter Physics 86, 2 (2012)

Bankovic A, Dujko S, White R, Buckman S, Petrovic Z, On *approximations involved in the theory of positron transport in gases in electric and magnetic fields*, **European Physical Journal D: Atomic, Molecular, Optical and Plasma Physics 66**, 7 (2012) 1-10



Bankovic A, Dujko S, White R, Buckman S, Petrovic Z, *Monte Carlo simulation and Boltzmann equation analysis of non-conservative positron transport in H-2*, **Nuclear Instruments and Methods in Physics Research: Section B 279** (2012) 92-95

Bankovic A, Dujko S, White R, Marler J, Buckman S, Marjanovic S, Malovic G, Garcia G, Petrovic Z, *Positron transport in water vapour*, **New Journal of Physics 14** (2012) 035003+23

Baraglia D, *Leibniz algebroids, twistings and exceptional generalized geometry*, **Journal of Geometry and Physics 62**, 5 (2012) 903-934

Barashenkov I, Suchkov S, Sukhorukov A, Dmitriev S, Kivshar Y, *Breathers in PT-symmetric optical couplers*, Physical Review A: Atomic, Molecular and Optical Physics 86, 5 (2012)

Barlow A, Babgi B, Samoc M, Corkery T, Van Cleuvenbergen S, Asselberghs I, Clays K, Cifuentes M, Humphrey M, Organometallic complexes for non-linear optics. 51. Second- and third-order non-linear optical properties of alkynylgold complexes, Australian Journal of Chemistry 65, 7 (2012) 834-841

Barunik J, Aste T, Di Matteo T, Liu R, *Understanding the source of multifractality in financial markets*, **Physica A: Statistical mechanics and its applications 391**, 17 (2012) 4234-4251

Bazhanov V, Sergeev S, A master solution of the quantum Yang-Baxter equation and classical discrete integrable equations, Advances in Theoretical and Mathematical Physics 16, 1 (2012) 65-95

Bazhanov V, Sergeev S, *Elliptic gamma-function and multi-spin solutions of the Yang-Baxter equation*, **Nuclear Physics B 856**, 2 (2012) 475-496

Beavan S, Hedges M, Sellars M, *Demonstration of photon-echo rephasing of spontaneous emission*, **Physical Review Letters 109**, 9 (2012)

Beha K, Batalov A, Manson N, Bratschitsch R, Leitenstorfer A, Optimum photoluminescence excitation and recharging cycle of single nitrogen-vacancy centers in ultrapure diamond, **Physical Review Letters 109**, 9 (2012)

Bennet F, Molina M, *Nonlinear light localization around the core of a holey fiber*, **Journal of the Optical Society of America B 29**, 8 (2012) 2161-2165

Bergmair I, Hackl W, Losurdo M, Helgert C, Isic G, Rohn M, Jakovljevic M, Mueller T, Giangregorio M, Kley E, Fromherz T, *Nano- and microstructuring of graphene using UV-NIL*, **Nanotechnology 23**, 33 (2012) 1-6

Berrington M, Bostock C, Fursa D, Bray I, McEachran R, Stauffer A, *Calculations of electron scattering from cad*mium, Physical Review A: Atomic, Molecular and Optical Physics 85, 4 (2012) 042708-1-21

Bertram J, Blackwell B, Hole M, *Ideal magnetohydrodynamic theory of low-frequency Alfven waves in the H-1 heliac,* **Plasma Physics and Controlled Fusion 54**, 5 (2012) 055009

Bhuyan S, Bradby J, Ruffell S, Haberl B, Saint C, Williams J, Munroe P, *Phase stability of silicon during indentation at elevated temperature: evidence for a direct transformation from metallic Si-II to diamond cubic Si-I*, **MRS Communications 2**, 1 (2012) 9-12

Biermanns A, Breuer S, Davydok A, Geelhaar L, Pietsch U, *Structural polytypism and residual strain in GaAs nanowires grown on Si(111) probed by single-nanowire X-ray diffraction,* **Journal of Applied Crystallography 45**, 2 (2012) 239-244

Biermanns A, Breuer S, Trampert A, Davydok A, Geelhaar L, Pietsch U, *Strain accommodation in Ga-assisted GaAs nanowires grown on silicon (111)*, **Nanotechnology 23**, 30 (2012)

Blackwell B, Caneses J, Samuell C, Wach J, Howard J, Corr C, *Design and characterization of the Magnetized Plasma Interaction Experiment (MAGPIE): A new source for plasma-material interaction studies,* **Plasma Sources Science and Technology 21**, 5 (2012) 1-7 Bliokh K, Gredeskul S, Rajan P, Shadrivov I, Kivshar Y, *Nonreciprocal Anderson localization in magneto-optical random structures*, **Physical Review B: Condensed Matter and Materials 85**, 1 (2012) 0142051-7

Bostrom M, Sernelius B, *Repulsive van der Waals forces due to hydrogen exposure on bilayer grapheme*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 1 (2012)

Bostrom M, Brevik I, Sernelius B, Dou M, Persson C, Ninham B, *Enlarged molecules from excited atoms in na*nochannels, Physical Review A: Atomic, Molecular and Optical Physics 86, 1 (2012) 014701-1-5

Bostrom M, Ellingsen S, Brevik I, Parsons D, Sernelius B, *Sign of the Casimir-Polder interaction between atoms and oil-water interfaces: Subtle dependence on dielectric properties,* **Physical Review A: Atomic, Molecular and Optical Physics 85**, 6 (2012) 1-5

Bostrom M, Ninham B, Brevik I, Persson C, Parsons D, Sernelius B, Ultrathin metallic coatings can induce quantum levitation between nanosurfaces, Applied Physics Letters 100, 25 (2012) 2531041-4

Bostrom M, Sernelius B, Baldissera G, Persson C, Ninham B, *Casimir-Lifshitz interaction between ZnO and SiO2* nanorods in bromobenzene turns repulsive at intermediate separations due to retardation effects, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 4 (2012) 044702-1-4

Bostrom M, Sernelius B, Brevik I, Ninham B, *Retardation turns the van der Waals attraction into a Casimir repulsion as close as 3 nm*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 1 (2012)

Bouwknegt P, Mathai V, Wu S, Bundle gerbes and moduli spaces, Journal of Geometry and Physics 62 (2012) 1-10

Brault P, Caillard A, Charles C, Boswell R, Graves D, *Platinum nanocluster growth on vertically aligned carbon nanofiber arrays: Sputtering experiments and molecular dynamics simulations*, **Applied Surface Science 263** (2012) 352-356

Bray I, Fursa D, Kadyrov A, Stelbovics A, Kheifets A, Mukhamedzhanov A, *Electron- and photon-impact atomic ionisation*, **Physics Reports: Review Section of Physics Letters 520**, 3 (2012) 135-174

Burke A, Waddington D, Carrad D, Lyttleton R, Tan H, Reece P, Klochan O, Hamilton A, Rai A, Reuter D, Wieck A, Micolich A, Origin of gate hysteresis in p-type Si-doped AlGaAs/GaAs heterostructures, Physical Review B: Condensed Matter and Materials 86, 16 (2012) 1-13

Byrnes A, Pant R, Li E, Choi D, Poulton C, Fan S, Madden S, Luther-Davies B, Eggleton B, *Photonic chip based tunable and reconfigurable narrowband microwave photonic filter using stimulated Brillouin scattering*, **Optics Express 20**, 17 (2012) 18845-18854

Caballero Benitez S, Paredes R, *Phase diagram of Landau-Zener phenomena in coupled one-dimensional Bose quantum fluids*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 2 (2012) 0236051-8

Campbell G, Hage B, Buchler B, Lam P, *Generation of high-order optical vortices using directly machined spiral phase mirrors*, **Applied Optics 51**, 7 (2012) 873-876

Campbell G, Hosseini M, Sparkes B, Lam P, Buchler B, *Time- and frequency-domain polariton interference*, **New** Journal of Physics 14 (2012) 1-10

Campbell K, Barwick R, Senden T, *Development of the posterior endocranium of the Devonian dipnoan Griphognathus whitei*, Journal of Vertebrate Paleontology 32, 4 (2012) 781-798

Cartwright I, Weaver T, Cendon D, Fifield K, Tweed S, Petrides B, Swane I, *Constraining groundwater flow, residence times, inter-aquifer mixing, and aquifer properties using environmental isotopes in the southeast Murray Basin, Australia,* **Applied Geochemistry 27,** 9 (2012) 1698-1709

Castle T, Evans M, Hyde S, Ramsden S, Robins V, *Trading spaces: Building three-dimensional nets from twodimensional tilings*, Interface Focus 2, 5 (2012) 555-566



Cavanagh S, Gibson S, Lewis B, High-resolution photoelectron spectroscopy of linear <- bent polyatomic photodetachment transitions: The electron affinity of CS2, Journal of Chemical Physics 137, 14 (2012)

Cavanagh S, Gibson S, Lewis B, High-resolution photoelectron spectroscopy of linear \leftarrow bent polyatomic photodetachment transitions: The electron affinity of CS2, **The Journal of Chemical Physics 137**, 14 (2012) 4

Chabchoub A, Akhmediev N, Hoffmann N, *Experimental study of spatiotemporally localized surface gravity water waves*, Physical Review E-Statistical, Nonlinear and Soft Matter Physics 86, 1 (2012)

Chabchoub A, Hoffmann N, Akhmediev N, *Observation of rogue wave holes in a water wave tank*, Journal of Geophysical Research: Oceans 117, 2 (2012)

Chabchoub A, Hoffmann N, Onorato M, Akhmediev N, *Super rogue waves: Observation of a higher-order breather in water waves,* **Physical Review X 2**, 1 (2012)

Chabchoub A, Hoffmann N, Onorato M, Slunyaev A, Sergeeva A, Pelinovsky E, Akhmediev N, *Observation of a hierarchy of up to fifth-order rogue waves in a water tank*, **Physical Review E-Statistical, Nonlinear and Soft Matter Physics 86**, 5 (2012) 6

Chabchoub A, Neumann S, Hoffmann N, Akhmediev N, *Spectral properties of the Peregrine soliton observed in a water wave tank*, **Journal of Geophysical Research: Oceans 117**, 2 (2012)

Chabchoub A, Neumann S, Hoffmann N, Akhmediev N, *Spectral properties of the Peregrine soliton observed in a water wave tank*, **Journal of Geophysical Research: Space Physics / Atmospheres 117**, C00J03 (2012) 6

Chandra S, Svalbe I, Guedon J, Kingston A, Normand N, *Recovering missing slices of the discrete fourier transform using ghosts,* **IEEE Transactions on Image Processing 21,** 10 (2012) 4431-4441

Chang L, Roberts A, *Ferromagnetic resonance characterization of greigite (Fe 3S 4), monoclinic pyrrhotite (Fe 7S 8), and non-interacting titanomagnetite (Fe 3-xTi xO 4),* **Geochemistry, Geophysics, Geosystems. G3 13**, 5 (2012)

Chang L, Hole M, Caneses J, Chen G, Blackwell B, Corr C, *Wave modeling in a cylindrical non-uniform helicon discharge*, **Physics of Plasmas 19**, 8 (2012) 083511

Charles C, Boswell R, *Measurement and modelling of a radiofrequency micro-thruster*, **Plasma Sources Science** and Technology 21, 2 (2012) 022002

Charles C, Boswell R, Takahashi K, *Investigation of radiofrequency plasma sources for space travel*, **Plasma Physics and Controlled Fusion 54**, 12 (2012) 1-7

Charles C, Takahashi K, Boswell R, *Axial force imparted by a conical radiofrequency magneto-plasma thruster*, **Applied Physics Letters 100** (2012) 113504

Charnvanichborikarn S, Wong-Leung J, Jagadish C, Williams J, *Direct correlation of R-line luminescence with rod-like defect evolution in ion-implanted and annealed silicon*, **MRS Communications 2**, 3 (2012) 101-105

Chebykin A, Orlov A, Simovski C, Kivshar Y, Belov P, *Nonlocal effective parameters of multilayered metaldielectric metamaterials*, Physical Review B 86 (2012) 8

Chen F, Liu Y, Sun Y, Walker P, Dracoulis G, *Residual interactions and the K-mixing-induced fast decay of the three-quasiparticle isomer in 171Tm*, **Physical Review C: Nuclear Physics 85**, 024324 (2012) 5

Chen J, Wang L, Su X, Wang R, *Pulsed laser deposited InGaZnO thin film on silica glass*, **Journal of Non-crystalline Solids 358**, 17 (2012) 2466-2469

Chen Y, Teo E, *Balanced electric-magnetic dihole in Kaluza-Klein theory*, **Journal of High Energy Physics 2012**, 9 (2012)

Chen Y, Teo E, Rotating black rings on Taub-NUT, The Journal of High Energy Physics 2012, 6 (2012) 1-27

Chen Y, Hong K, Teo E, *A doubly rotating black ring with dipole charge*, **The Journal of High Energy Physics 2012**, 6 (2012) 1-23

Chen Z, Lei W, Chen B, Wang Y, Liao X, Tan H, Zou J, Ringer S, Jagadish C, Can *misfit dislocations be located above the interface of InAs/GaAs (001) epitaxial quantum dots?*, Nanoscale Research Letters 7 (2012) 486

Chiari L, Zecca A, Girardi S, Trainotti E, Garcia G, Blanco F, McEachran R, Brunger M, *Positron scattering from O-2,* Journal of Physics B: Atomic, Molecular and Optical Physics 45, 21 (2012)

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Adhikari A, Adhikari R, Arai K, Blackburn J, Patel P, Wallace L, Weinstein A, Willems P, Search for gravitational waves associated with gamma-ray bursts during Ligo science run 6 and Virgo science runs 2 and 3, Astrophysical Journal, The 760, 12 (2012)

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Anderson S, Araya M, Billingsley G, Black E, Blackburn J, Coyne D, *The characterization of Virgo data and its impact on gravitational-wave searches*, **Classical and Quantum Gravity 29** (2012) 155002/41

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Black E, Etzel T, Heefner J, Kozak D, Vass S, Whitcomb S, *All-sky search for gravitational-wave bursts in the second joint LIGO-Virgo run,* Physical **Review D 85** (2012) 122007/15

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Anderson S, Araya M, Blackburn J, Coyne D, Etzel T, Ivanov A, Pedraza M, *Upper limits on a stochastic gravitational-wave background using LIGO and Virgo interferometers at 600-1000 Hz*, **Physical Review D 85** (2012) 122001/1-14

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Anderson S, Araya M, Blackburn J, Etzel T, Ivanov A, Kozak D, Meshkov S, *Search for gravitational waves from intermediate mass binary black holes*, **Physical Review D 85** (2012) 102004/1-13

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Anderson S, Araya M, Blackburn J, Etzel T, Ivanov A, Kozak D, Meshkov S, *First low-latency LIGO plus Virgo search for binary inspirals and their electromagnetic counterparts*, **Astronomy and Astrophysics 541** (2012) A155/1-12

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *Astronomy and astrophysics with gravitational waves in the advanced detector era*, **Journal of Physics: Conference Series 375** (2012) 062001

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *Recent results for the search of continuous waves with the LIGO and Virgo detectors*, **Classical and Quantum Gravity 29** (2012) 1-10

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *Data quality studies of enhanced interferometric gravitational wave detectors*, **Classical and Quantum Gravity 29** (2012) 1-11

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *A Bayesian search for gravitational waves from the Vela Pulsar in Virgo VSR2 data*, **Journal of Physics: Conference Series 363** (2012) 1-10



Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *Estimating transient detection efficiency in electromagnetic follow up searches*, Journal of Physics: Conference Series 363 (2012) 012036

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, Search for gravitational waves associated with the InterPlanetary Network short gamma ray bursts, Journal of Physics: Conference Series 363, 2012 (2012) 012034 1-10

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *The analysis of ROTSE images of potential counterparts to gravitational wave events,* **Journal of Physics: Conference Series 363**, 2012 (2012) 012033 1-6

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, *Recent searches for gravitational-wave bursts associated with magnetar flares with LIGO, GEO, and Virgo, Journal of Physics: Conference Series* **363**, 2012 (2012) 012026 1-7

Chow J, Taylor M, Lam T, Knittel J, Sawtell-Rickson J, Shaddock D, Gray M, McClelland D, Bowen W, *Critical coupling control of a microresonator by laser amplitude modulation*, **Optics Express 20**, 11 (2012) 12622-12630

Chshelokova A, Kapitanova P, Poddubny A, Filonov D, Slobozhanyuk A, Kivshar Y, Belov P, *Hyperbolic transmission-line metamaterials*, Journal of Applied Physics 112, 7 (2012)

Chua J, Hall M, Savage C, *Interacting classical and quantum particles*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 2 (2012) 022110

Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Billingsley G, Black E, Etzel T, King P, Sengupta A, Wallace L, *Implementation and testing of the first prompt search for electromagnetic counterparts to gravitational wave transients*, **Astronomy and Astrophysics 539**, A124 (2012) 1-15

Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Anderson S, Araya M, Blackburn J, Etzel T, Ivanov A, Kozak D, Meshkov S, Search for gravitational waves from low mass compact binary coalescence in LIGO's sixth science run and Virgo's science runs 2 and 3, **Physical Review D 85** (2012) 082002/1-12

Chua S, Inta R, McClelland D, Mow-Lowry C, Mullavey A, Scott S, Shaddock D, Slagmolen B, Stefszky M, Abadie J, Abbott B, Abbott R, Anderson S, Araya M, Blackburn J, Etzel T, Ivanov A, Kozak D, Meshkov S, *Implications for the origin of GRB 051103 from LIGO observations*, **Astrophysical Journal**, **The 755**, 2 (2012) 8

Ciret C, Coda V, Rangelov A, Neshev D, Montemezzani G, *Planar achromatic multiple beam splitter by adiabatic light transfer*, **Optics Letters 37**, 18 (2012) 3789-3791

Close J, Robins N, Precision measurement with cold atoms, Physics 5, 26 (2012) 1-3

Collin G, Shalav A, Elliman R, *SiOx/GeOx nanowires grown via the active oxidation of Si/Ge substrates*, **Materials Science Forum 700** (2012) 133-136

Collins M, Clark A, He J, Choi D, Williams R, Judge A, Madden S, Withford M, Steel M, Luther-Davies B, Xiong C, Eggleton B, Low Raman-noise correlated photon-pair generation in a dispersion-engineered chalcogenide As2S3 planar waveguide, **Optics Letters 37**, 16 (2012) 3993-3995

Corr C, At the Edge Plasma-Surface Science for Future Fusion Reactors, Australian Physics 49, 5 (2012) 148-153

Corr C, Gomez S, Graham W, Discharge kinetics of inductively coupled oxygen plasmas: experiment and model, **Plasma Sources Science and Technology 21**, 5 (2012) 055024/1-13

Creutzig T, Ridout D, *Modular data and Verlinde formulae for fractional level WZW models I*, **Nuclear Physics B 865**, 1 (2012) 83-114

Cumming B, Debbarma S, Luther-Davies B, Gu M, *Effect of refractive index mismatch aberration in arsenic trisulfide*, **Applied Physics B: Lasers and Optics 109**, 2 (2012) 227-232

Danisik M, Shane P, Schmitt A, Hogg A, Santos G, Storm S, Evans N, Fifield K, Lindsay J, *Re-anchoring the late Pleistocene tephrochronology of New Zealand based on concordant radiocarbon ages and combined U-238/Th-230 disequilibrium and (U-Th)/He zircon ages,* **Earth and Planetary Science Letters 349** (2012) 240-250

Das M, Green F, *Nonequilibrium mesoscopic transport: A genealogy*, **Journal of Physics: Condensed Matter 24**, 18 (2012) 1-13

De Cesare M, Fifield K, Sabbarese C, Tims S, De Cesare N, D'Onofrio A, D'Arco A, Esposito A, Petraglia A, Roca V, Terrasi F, Actinides AMS at CIRCE and 236U and Pu measurements of structural and environmental samples from in and around a mothballed nuclear power plant, Nuclear Instruments and Methods in Physics Research: Section B 294 (2012) 152-159

Decoster S, Johannessen B, Glover C, Cottenier S, Bierschenk T, Salama H, Kremer F, Temst K, Vantomme A, Ridgway M, Direct observation of substitutional Ga after ion implantation in Ge by means of extended x-ray absorption fine structure, **Applied Physics Letters 101**, 26 (2012) 1-4

Dedrick J, Boswell R, Rabat H, Hong D, Charles C, *Control of diffuse and filamentary modes in an RF asymmetric surface barrier discharge in atmospheric-pressure argon*, **Plasma Sources Science and Technology 21**, 5 (2012) 055016 7

Delanty M, Rebic S, Twamley J, *Novel collective effects in integrated photonics*, **European Physical Journal D:** Atomic, Molecular, Optical and Plasma Physics 66, 4 (2012)

Dennis G, Davis M, Hope J, *Quantum kinetic theory model of a continuous atom laser*, **Physical Review A: Atomic, Molecular and Optical Physics** 86 (2012) 013640/1-11

Desyatnikov A, Buccoliero D, Dennis M, Kivshar Y, *Spontaneous knotting of self-trapped waves*, **Scientific Reports 2** (2012)

Dewar R, Leykam D, *Dressed test particles, oscillation centres and pseudo-orbits,* **Plasma Physics and Controlled Fusion 54,** 1 (2012) 8

Dewar R, Hudson S, Gibson A, *Generalised action-angle coordinates defined on island chains,* Plasma **Physics and Controlled Fusion 55**, 1 (2012) 014004/1-10

Dmitriev S, Baimova J, Savin A, Kivshar Y, *Ultimate strength, ripples, sound velocities, and density of phonon states of strained grapheme*, **Computational Materials Science 53**, 3 (2012) 194-203

Doherty M, Dolde F, Fedder H, Jelezko F, Wrachtrup J, Manson N, Hollenberg L, *Theory of the ground-state spin of the NV- center in diamond*, **Physical Review B 85**, 20 (2012) 205203

Dracoulis G, Lane G, Byrne A, Watanabe H, Hughes R, Palalani N, Kondev F, Carpenter M, Janssens R, Lauritsen T, Lister C, Seweryniak D, Zhu S, Chowdhury P, Shi Y, Xu F, *Long-lived three-quasiparticle isomers in 1911r and 1931r with triaxial deformation*, **Physics Letters B 709** (2012) 59-64

Drouet S, Merhi A, Grelaud G, Cifuentes M, Humphrey M, Matczyszyn K, Samoc M, Toupet L, Paul-Roth C, Paul F, Enhanced two-photon absorption cross-sections of zinc(II) tetraphenylporphyrins peripherally substituted with d6 -metal alkynyl complexes, **New Journal of Chemistry 36**, 11 (2012) 2192-2195

Drouet S, Merhi A, Yao D, Cifuentes M, Humphrey M, Wielgus M, Olesiak-Banska J, Matczyszyn K, Samoc M, Paul F, Paul-Roth C, *Cubic nonlinear optical properties of new zinc tetraphenyl porphyrins peripherally functionalized with electron-rich Ru(II) alkynyl substituents*, **Tetrahedron 68**, 50 (2012) 10351-10359



Drozdov A, Kozlov S, Sukhorukov A, Kivshar Y, *Self-phase modulation and frequency generation with few-cycle optical pulses in nonlinear dispersive media*, **Physical Review A: Atomic, Molecular and Optical Physics 86**, 5 (2012) 053822 1-10

Eckerskorn N, Zheng N, Shvedov V, Krolikowski W, Rode A, *Effect of polarization on transport of particles in air by optical vortex beam*, **Journal of Optics 14**, 5 (2012) 055302

Edwardson C, Coleman P, Li T, Cuevas A, Ruffell S, *Positron annihilation studies of the AlOx/SiO2/Si interface in solar cell structures*, Journal of Applied Physics 111, 5 (2012) 053515

Eggleton B, Vo T, Pant R, Schröde J, Pelusi M, Choi D, Madden S, Luther-Davies B, *Photonic chip based ultrafast optical processing based on high nonlinearity dispersion engineered chalcogenide waveguides*, Laser and Photonics Reviews 6, 1 (2012) 97-114

Elliman R, Kim T, Shalav A, Fletcher N, *Controlled Lateral Growth of Silica Nanowires and Coaxial Nanowire Het*erostructures, Journal of Physical Chemistry C 116 (2012) 3329-3333

Ellis-Gibbings L, Johansson V, Walsh R, Kloo L, Quinton J, Andersson G, *Formation of N719 dye multilayers on dye* sensitized solar cell photoelectrode surfaces investigated by direct determination of element concentration depth profiles, Langmuir 28, 25 (2012) 9431-9439

Esbensen B, Bache M, Krolikowski W, Bang O, *Quadratic solitons for negative effective second-harmonic diffraction as nonlocal solitons with periodic nonlocal response function,* Physical Review A: Atomic, Molecular and Optical Physics 86, 2 (2012)

Evans P, Fridriksson J, Gehrels N, Homan J, Osborne J, Siegel M, Beardmore A, Handbauer P, Gelbord J, Kennea J, Smith M, Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, *Swift follow-up observations of candidate gravitational-wave transient events*, **Astrophysical Journal Supplement Series 203**, 2 (2012)

Ezerskaya A, Ivanov D, Kozlov S, Kivshar Y, *Spectral approach in the analysis of pulsed terahertz radiation*, **Journal of Infrared, Millimeter and Terahertz Waves 33**, 9 (2012) 926-942

Fang Z, Samoc M, Webster R, Samoc A, Lai Y, *Triphenylamine derivatized phenylacetylene macrocycle with large two-photon absorption cross-section*, **Tetrahedron Letters 53**, 36 (2012) 4885-4888

Feali M, Pinczewski W, Cinar Y, Arns C, Arns J, Turner M, Senden T, Francois N, Knackstedt M, *Qualitative and quantitative analyses of the three-phase distribution of oil, water, and gas in bentheimer sandstone by use of micro-ct imaging*, **SPE Reservoir Evaluation and Engineering 15**, 6 (2012) 706-711

Feige J, Wallner A, Winkler S, Merchel S, Fifield K, Korschinek G, Rugel G, Breitschwerdt D, *The search for super-nova-produced radionuclides in terrestrial deep-sea archives*, **Publications of the Astronomical Society of Austral-ia 29** (2012) 109-114

Fifield K, Tims S, Stone J, Argento D, De Cesare M, *Ultra-sensitive measurements of 36Cl and 236U at the Australian National University*, **Nuclear Instruments and Methods in Physics Research: Section B 294**, 2013 (2012) 126-131

Filonov D, Krasnok A, Slobozhanyuk A, Kapitanova P, Nenasheva E, Kivshar Y, Belov P, *Experimental verification* of the concept of all-dielectric nanoantennas, **Applied Physics Letters 100**, 20 (2012) 2011131-4

Filonov D, Slobozhanyuk A, Belov P, Kivshar Y, *Double-shell metamaterial coatings for plasmonic cloaking*, **Physica Status Solidi: Rapid Research Letters 6**, 1 (2012) 46-48

Fiori E, Georgiev G, Stuchbery A, Jungclaus A, Balabanski D, Blazhev A, Cabaret S, Clement E, Danchev M, Daugas J, Grevy S, Hass M, Kumar V, Leske J, Lozeva R, Lukyanov S, Mertzimekis T, Modamio V, Mouginot B, Nowacki F, Penionzhkevich Y, Perrot J, Pietralla N, Sieja K, Speidel K, Stefan I, Stodel C, Thomas J, Walker J, Zell K, *First g(2+) measurement on neutron-rich 72Zn, and the high-velocity transient field technique for radioactive heavy-ion beams*, Physical Review C: Nuclear Physics 85, 034334 (2012) 12

Fitzgerald M, Khachan J, A 2-D PIC/MC/Vlasov method for electrostatic fusion discharges, Computer Physics Communications 183, 1-4 (2012) 971-979

Flanagan K, Billowes J, Campbell P, Cheal B, Dracoulis G, Forest D, Gardner M, Huikari J, Jokinen A, Marsh B, Moore R, Nieminen A, Penttila H, Thayer H, Tungate G, Aysto J, *Nuclear moments, charge radii and spins of the ground and isomeric states in 175Yb and 177Yb*, **Journal of Physics G: Nuclear and Particle Physics 39**, 125101 (2012) 8

Fletcher N, The sound of music: Order from complexity, Acoustics Australia 40, 3 (2012) 188-193

Fogden A, *Removal of crude oil from kaolinite by water flushing at varying salinity and pH*, **Colloids and Surfaces** A: Physicochemical and Engineering Aspects 402 (2012) 13-23

Fricke T, Smith-Lefebvre N, Abbott R, Adhikari R, Dooley K, Evans M, Fritschel P, Frolov V, Kawabe K, Kissel J, Slagmolen B, Waldman S, *DC readout experiment in Enhanced LIGO*, **Classical and Quantum Gravity 29**, 6 (2012) 1-18

Fruchtman A, Takahashi K, Charles C, Boswell R, A magnetic nozzle calculation of the force on a plasma, Physics of Plasmas 19, 3 (2012) 033507

Fu J, Shen X, Xu Y, Wang G, Nie Q, Lin C, Dai S, Xu T, Wang R, *Structural evolution of Ge2Sb 2Te5 films under the 488 nm laser irradiation*, Materials Letters 88 (2012) 148-151

Gai X, Choi D, Madden S, Yang Z, Wang R, Luther-Davies B, *Supercontinuum generation in the mid-infrared from a dispersion-engineered As2S3 glass rib waveguide*, **Optics Letters 37**, 18 (2012) 3870-3872

Gai X, Choi D, Madden S, Luther-Davies B, He J, Xiong C, Clark A, Collins M, Eggleton B, *Effect of low-Raman window position on correlated photon-pair generation in a chalcogenide Ge11.5As24Se64.5 nanowire*, **Journal of Applied Physics 112**, 12 (2012) 123101

Gai X, Choi D, Madden S, Luther-Davies B, *Polarization-independent chalcogenide glass nanowires with anomalous dispersion for all-optical processing*, **Optics Express 20**, 12 (2012) 13513-13521

Gai X, Luther-Davies B, White T, Photonic crystal nanocavities fabricated from chalcogenide glass fully embedded in an index-matched cladding with a high Q-factor (>750,000), **Optics Express 20**, 14 (2012)

Gai X, Wang R, Xiong C, Steel M, Eggleton B, Luther-Davies B, *Near-zero anomalous dispersion Ge11.5As24Se64.5 glass nanowires for correlated photon pair generation: design and analysis,* **Optics Express 20**, 2 (2012) 776-786

Gamaly E, Vailionis A, Mizeikis V, Yang W, Rode A, Juodkazis S, *Warm dense matter at the bench-top: Fs-laser-induced confined micro-explosion*, **High Energy Density Physics 8**, 1 (2012) 13-17

Gao Y, Wang G, Williams D, Williams S, Evans D, Sevick E, *Non-equilibrium umbrella sampling applied to force spectroscopy of soft matter*, **Journal of Chemical Physics 136**, 5 (2012) 054902/1–5

Garanovich I, Longhi S, Sukhorukov A, Kivshar Y, *Light propagation and localization in modulated photonic lattic*es and waveguides, **Physics Reports: Review Section of Physics Letters 518**, 1-2 (2012) 1-79

Go M, Stricker C, Redman S, Bachor H, Daria V, *Simultaneous multi-site two-photon photostimulation in three dimensions*, Journal of Biophotonics Online (2012) 1-9

Gomes P, Otomar D, Correa T, Canto L, Lubian J, Linares R, Luong D, Dasgupta M, Hinde D, Hussein M, *Complete fusion enhancement and suppression of weakly bound nuclei at near barrier energies*, Journal of Physics G: Nuclear and Particle Physics 39, 11 (2012)

Goossens D, Henderson L, Trevena S, Hudspeth J, Avdeev M, Hester J, *The crystal and magnetic structures of LaCa2Fe3-xMxO8 (M = Al, Ga, In),* Journal of Solid State Chemistry 196 (2012) 238-242

Goossens D, Whitfield R, Studer A, *Optimising Sintering in Metal Injection Moulding Using in situ Neutron Diffraction*, **Materials Science Forum 706-709** (2012) 1737-1742



Gräfe M, Solntsev A, Keil R, Sukhorukov A, Heinrich M, Tünnermann A, Nolte S, Szameit A, Kivshar Y, *Biphoton generation in quadratic waveguide arrays: A classical optical simulation*, **Scientific Reports 2** (2012)

Gredeskul S, Kivshar Y, Asatryan A, Bliokh K, Bliokh Y, Freilikher V, Shadrivov I, Anderson localization in metamaterials and other complex media (Review Article), Fizika Nizkikh Temperatur (Low temperature physics) 38 (2012) 570-602

Grelu P, Akhmediev N, Dissipative solitons for mode-locked lasers, Nature Photonics 6, 2 (2012) 84-92

Grieser M, Litvinov Y, Raabe R, Blaum K, Blumenfeld Y, Butler P, Wenander F, Woods P, Aliotta M, Andreyev A, Dracoulis G, Reed M, *Storage ring at HIE-ISOLDE: Technical design report*, **European Physical Journal - Special Topics 207**, 1 (2012) 1-117

Griffiths A, Notley S, *pH* dependent stability of aqueous suspensions of graphene with adsorbed weakly ionisable cationic polyelectrolyte, Journal of Colloid and Interface Science 369, 1 (2012) 210-215

Gu M, Chrzanowski H, Assad S, Symul T, Modi K, Ralph T, Vedral V, Lam P, *Observing the operational significance of discord consumption*, **Nature Physics 8**, 9 (2012) 671-675

Guan X, Polaron, molecule and pairing in one-dimensional spin-1/2 Fermi gas with an attractive Delta-function interaction, Frontiers of Physics 7, 1 (2012) 8-15

Guan X, Ma Z, One-dimensional multicomponent fermions with δ -function interaction in strong- and weakcoupling limits: Two-component Fermi gas, Physical Review A: Atomic, Molecular and Optical Physics 85, 033632 (2012) 1-9

Guan X, Ma Z, Wilson B, One-dimensional multicomponent fermions with δ -function interaction in strong- and weak-coupling limits: κ -component Fermi gas, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 3 (2012) 10

Guénot D, Klünder K, Arnold C, Kroon D, Dahlström J, Miranda M, Fordell T, Gisselbrecht M, Johnsson P, Mauritsson J, Lindroth E, Maquet A, Taïeb R, L'Huillier A, Kheifets A, *Photoemission-time-delay measurements and calculations close to the 3s-ionization-cross-section minimum in Ar*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 5 (2012) 1-8

Gutman N, de Sterke C, Sukhorukov A, Botten L, *Slow and frozen light in optical waveguides with multiple gratings: Degenerate band edges and stationary inflection points,* **Physical Review A: Atomic, Molecular and Optical Physics 85**, 3 (2012) 0338041-11

Gutman N, Dupree H, Sun Y, Sukhorukov A, de Sterke C, *Frozen and broadband slow light in coupled periodic nanowire waveguides*, **Optics Express 20**, 4 (2012) 3519-3528

Gutman N, Sukhorukov A, Eilenberger F, Martijn de Sterke C, *Bistability suppression and low threshold switching using frozen light at a degenerate band edge waveguide*, **Optics Express 20**, 24 (2012) 27363-27368

Haberl B, Bayu Aji L, Williams J, Bradby J, *The indentation hardness of silicon measured by instrumented indentation: What does it mean?*, Journal of Materials Research 27, 24 (2012) 3066-3072

Hall M, Reginatto M, Savage C, Nonlocal signaling in the configuration space model of quantum-classical interactions, Physical Review A: Atomic, Molecular and Optical Physics 86, 5 (2012) 054101

Han K, Tang N, Ye J, Duan J, Liu Y, Teo K, Shen B, *Spin-polarized two-dimensional electron gas in undoped MgxZn1_xO/ZnO heterostructures*, **Applied Physics Letters 100** (2012) 192105/1-4

Hannam K, Powell D, Shadrivov I, Kivshar Y, *Tuning the nonlinear response of coupled split-ring resonators,* Applied **Physics Letters 100**, 8 (2012)

Heays A, Lewis B, Gibson S, Malone C, Johnson P, Kanik I, Khakoo M, *Tuning out vibrational levels in molecular electron energy-loss spectra*, **Physical Review A: Atomic, Molecular and Optical Physics 85** (2012) 8

Higginbottom D, Sparkes B, Rancic M, Pinel O, Hosseini M, Lam P, Buchler B, *Spatial-mode storage in a gradient-echo memory*, Physical Review A: Atomic, Molecular and Optical Physics 86 (2012) 023801/1-10

Hnatovsky C, Shvedov V, Shostka N, Rode A, Krolikowski W, *Polarization-dependent ablation of silicon using tightly focused femtosecond laser vortex pulses*, **Optics Letters 37**, 2 (2012) 226-228

Hosseini M, Rebic S, Sparkes B, Twamley J, Buchler B, Lam P, *Memory-enhanced noiseless cross-phase modulation*, Light: Science & Applications 1, 2012 (2012) 5

Hosseini M, Sparkes B, Campbell G, Lam P, Buchler B, *Storage and manipulation of light using a Raman gradient*echo process, Journal of Physics B: Atomic, Molecular and Optical Physics 45, 12 (2012) 13

Howard J, Muir J, Glass F, Hicks N, A single-probe-beam double-heterodyne polarimeter-interferometer for plasma Faraday rotation measurements, **Journal of Instrumentation 7** (2012) 9

Hsu M, He Y, Shaddock D, Warrington R, Gray M, *All-digital radio-frequency signal distribution via optical fibers,* **IEEE Photonics Technology Letters 24**, 12 (2012) 1015-1017

Hudson S, Dewar R, Dennis G, Hole M, McGann M, von Nessi G, Lazerson S, *Computation of multi-region relaxed magnetohydrodynamic equilibria*, **Physics of Plasmas 19**, 11 (2012) 112502/1-18

Hudspeth J, Goossens D, Vapour diffusion growth and characterisation of fully deuterated triglycine sulphate (*ND2CD2COOD*)3D2SO4, Journal of Crystal Growth 338, 1 (2012) 177-180

Hughes A, Mayo S, Yang Y, Markley T, Smith S, Sellaiyan S, Uedono A, Hardin S, Muster T, *Using X-ray tomography, PALS and Raman spectroscopy for characterization of inhibitors in epoxy coatings,* **Progress in Organic Coatings 74,** 2012 (2012) 726-733

Hughes R, Lane G, Dracoulis G, Byrne A, Nieminen P, Watanabe H, Carpenter M, Chowdhury P, Janssens R, Kondev F, Lauritsen T, Seweryniak D, Zhu S, *High-spin structure, K isomers, and state mixing in the neutron-rich isotopes 173Tm and 175Tm*, **Physical Review C: Nuclear Physics 86**, 054314 (2012) 22

Hush M, Carvalho A, Hope J, Number-phase Wigner representation for scalable stochastic simulations of controlled quantum systems, Physical Review A: Atomic, Molecular and Optical Physics 85, 2 (2012) 1-13

Hyde S, Schroder-Turk G, *Geometry of interfaces: Topological complexity in biology and materials*, **Interface Fo-cus 2, 5** (2012) 529-538

Impellizzeri G, Napolitani E, Boninelli S, Sullivan J, Roberts J, Buckman S, Ruffell S, Priolo F, Privitera V, *Role of F* on the Electrical Activation of As in Ge, **ECS Journal of Solid State Science and Technology 1**, 3 (2012) 3

Inta R, Bowman D, Scott S, "The "chimera": An off-the-shelf CPU/GPGPU/FPGA hybrid computing platform", International Journal of Reconfigurable Computing 2012 (2012)

Iorsh I, Belov P, Zharov A, Shadrivov I, Kivshar Y, *Nonlinear Tamm states in nanostructured plasmonic metamaterials*, **Physical Review A: Atomic, Molecular and Optical Physics 86,** 2 (2012)

Iorsh I, Poddubny A, Orlov A, Belov P, Kivshar Y, Spontaneous *emission enhancement in metal-dielectric metamaterials*, **Physics Letters A 376**, 3 (2012) 185-187

Iorsh I, Shadrivov I, Belov P, Kivshar Y, *Nonlinear Tamm states in layered metal-dielectric metamaterials,* Physica **Status Solidi: Rapid Research Letters 6**, 1 (2012) 43-45

Ivanov I, Double photoionization of the hydrogen molecule from the viewpoint of the time-delay theory, Physical **Review A: Atomic, Molecular and Optical Physics 86**, 2 (2012) 1-5

Ivanov I, Kheifets A, *Locating the origin of photoelectrons in atomic photoionizaton*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 2 (2012) 1-4

PUBLICATIONS

Ivanov I, Kheifets A, *Time-dependent calculations of double photoionization of the aligned H2 molecule*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 1 (2012) 8

Ivanov I, Kheifets A, Complete characterization of the process of single-photon two-electron ionization of helium, Journal of Physics: Conference Series 388, 2 (2012) 1

Ivanov I, Kheifets A, Serov V, *Attosecond time-delay spectroscopy of the hydrogen molecule,* Physical **Review A: Atomic, Molecular and Optical Physics 86**, 6 (2012) 063422/1-5

Izdebskaya Y, Rebling J, Desyatnikov A, Assanto G, Kivshar Y, All-optical *switching of a signal by a pair of interacting nematicons*, **Optics Express 20**, 22 (2012) 24701-24707

Izdebskaya Y, Rebling J, Desyatnikov A, Kivshar Y, *Observation of vector solitons with hidden vorticity*, **Optics** Letters **37**, 5 (2012) 767-769

Jian P, Pinel O, Fabre C, Lamine B, Treps N, *Real-time displacement measurement immune from atmospheric pa*rameters using optical frequency combs, **Optics Express 20**, 24 (2012) 27133-27146

Jiang N, Parkinson P, Breuer S, Gao Q, Tan H, Wong-Leung J, Jagadish C, *Long minority carrier lifetime in Aucatalyzed GaAs/AlxGa1–xAs core-shell nanowires*, **Applied Physics Letters 101**, 2 (2012) 02311-1 to 02311-4

Johnson B, Villis B, Burgess J, Stavrias N, McCallum J, Charnvanichborikarn S, Wong-Leung J, Jagadish C, Williams J, Dopant effects on the photoluminescence of interstitial-related centers in ion implanted silicon, Journal of Applied Physics 111, 9 (2012) 094910/1-8

Jolley G, Fu L, Lu H, Tan H, Jagadish C, *The role of intersubband optical transitions on the electrical properties of InGaAs/GaAs quantum dot solar cells,* **Progress in Photovoltaics: Research and Applications** (2012)

Jolley G, McKerracher I, Fu L, Tan H, Jagadish C, *The conduction band absorption spectrum of interdiffused In-GaAs/GaAs quantum dot infrared photodetectors*, Journal of Applied Physics 111 (2012)

Jovic D, Belic M, Kivshar Y, Denz C, *Disorder-induced localization of light near edges of nonlinear photonic lattic*es, **Optics Communications 285**, 3 (2012) 352-355

Joyce H, Wong-Leung J, Yong C, Docherty C, Paiman S, Gao Q, Tan H, Jagadish C, Lloyd-Hughes J, Herz L, Johnston M, Ultralow surface recombination velocity in InP nanowires probed by terahertz spectroscopy, Nano Letters 12, 10 (2012) 5325-5330

Kalinowski K, Roedig P, Sheng Y, Ayoub M, Imbrock J, Denz C, Krolikowski W, Enhanced Cerenkov secondharmonic emission in nonlinear photonic structures, **Optics Letters 37**, 10 (2012) 1832-1834

Kalinowski K, Roppo V, Łukasiewicz T, Swirkowicz M, Sheng Y, Krolikowski W, *Parametric wave interaction in one -dimensional nonlinear photonic crystal with randomized distribution of second-order nonlinearity*, **Applied Phys-ics B: Lasers and Optics 109**, 4 (2012) 557-566

Kang J, Gao Q, Parkinson P, Joyce H, Tan H, Jagadish C, Guo Y, Xu H, Zou J, Kim Y, *Precursor flow rate manipulation for the controlled fabrication of twin-free GaAs nanowires on silicon substrates*, **Nanotechnology 23**, 41 (2012) 1-11

Kapitanova P, Slobozhnanyuk A, Shadrivov I, Belov P, Kivshar Y, *Competing nonlinearities with metamaterials,* **Applied Physics Letters 101**, 23 (2012) 2319041-4

Karouta F, Vora K, Tian J, Jagadish C, *Structural, Compositional and Optical properties of PECVD silicon nitride layers,* Journal of Physics D: Applied Physics 45, 44 (2012) 1-10

Kato H, Anzai K, Ishihara T, Hoshino M, Blanco E, Garcia G, Limao-Vieira P, Brunger M, Buckman S, Tanaka H, *A* study of electron interactions with silicon tetrafluoride: Elastic scattering and vibrational excitation cross sections, Journal of Physics B: Atomic, Molecular and Optical Physics 45, 9 (2012) [9]

Kedziora D, Ankiewicz A, Akhmediev N, *Triangular rogue wave cascades*, **Physical Review E-Statistical**, **Nonlinear and Soft Matter Physics 86**, 5 (2012) 9

Kedziora D, Ankiewicz A, Akhmediev N, Second-order nonlinear Schrödinger equation breather solutions in the degenerate and rogue wave limits, Physical Review E-Statistical, Nonlinear and Soft Matter Physics 85, 6 (2012) 9

Kheifets A, Fursa D, Bray I, Colgan J, Pindzola M, *Differential cross-sections for the double photoionization of lithium*, Journal of Physics: Conference Series 388, 2 (2012) 1

Kheifets A, Ivanov I, Bray I, *Atomic photoionization: When does it actually begin?*, Journal of Physics: Conference Series 388, 3 (2012) 1

Kibedi T, Trzhaskovskaya M, Gupta M, Stuchbery A, *Conversion coefficients for superheavy elements*, Atomic Data and Nuclear Data Tables 98 (2012) 313-355

Kibler B, Fatome J, Finot C, Millot G, Genty G, Wetzel B, Akhmediev N, Dias F, Dudley J, *Observation of Kuznetsov* -*Ma soliton dynamics in optical fibre*, **Scientific Reports 2** (2012) 1-5

Killoran N, Hosseini M, Buchler B, Lam P, Lutkenhaus N, *Quantum benchmarking with realistic states of light,* **Physical Review A: Atomic, Molecular and Optical Physics 86,** 2 (2012)

Kim J, Moon S, Kim Y, Chen Z, Zou J, Choi D, Joyce H, Gao Q, Tan H, Jagadish C, *Taper-free and kinked germanium nanowires grown on silicon via purging and the two-temperature process*, **Nanotechnology 23**, 11 (2012) 115603

Kim J, Moon S, Yoon H, Jung J, Kim Y, Chen Z, Zou J, Choi D, Joyce H, Gao Q, Tan H, Jagadish C, *Taper-free and Vertically Oriented Ge Nanowires on Ge/Si Substrates Grown by a Two-Temperature Process*, Crystal Growth & Design 12, 1 (2012) 135-141

Kim S, Das M, Seismic Waveguide of Metamaterials, Modern Physics Letters B 26, 17 (2012) 8

Kingston A, Myers G, Varslot T, *X-ray beam hardening correction by minimizing reprojection distance*, **Proceed-ings of SPIE - International Society for Optical Engineering 8506** (2012) 85061D 1-10

Klein A, Minovich A, Steinert M, Janunts N, Tunnermann A, Neshev D, Kivshar Y, Pertsch T, *Controlling plasmonic hot spots by interfering airy beams*, **Optics Letters 37**, 16 (2012) 3402-3404

Kline D, Teneva L, Schneider K, Miard T, Chai A, Marker M, Headley K, Opdyke B, Nash M, Valetich M, Caves J, Russell B, Connell S, Kirkwood B, Brewer P, *A short-term in situ CO2 enrichment experiment on Heron Island (GBR)*, Scientific Reports 2, article no 413 (2012)

Kong L, Uedono A, Smith S, Yamashita Y, Chironi I, Synthesis of silica nanoparticles using oil-in-water emulsion and the porosity analysis, Journal of Sol-Gel Science and Technology 64, 2 (2012) 309-314

Krasnok A, Miroshnichenko A, Belov P, Kivshar Y, *All-dielectric optical nanoantennas*, **Optics Express 20**, 18 (2012) 20599-20604

Kruk S, Powell D, Minovich A, Neshev D, Kivshar Y, *Spatial dispersion of multilayer fishnet metamaterials*, **Optics Express 20**, 14 (2012) 15100-15105

Kumar M, Fogden A, Senden T, Knackstedt M, *Investigation of pore-scale mixed wettability*, **SPE Journal 17**, 1 (2012) 20-30

Kumbartzki G, Benczer-Koller N, Torres D, Manning B, O'Malley P, Sharon Y, Zamick L, Gross C, Radford D, Robinson S, Allmond J, Stuchbery A, Speidel K, Stone N, Bingham C, *Transient field g factor and mean-life measurements with a rare isotope beam of 126Sn*, **Physical Review C: Nuclear Physics 86**, 034319 (2012) 6

Kuznetsov A, Miroshnichenko A, Fu Y, Zhang J, Luk-yanchuk B, Magnetic light, Scientific Reports 2 (2012)



Lafleur T, Boswell R, *Particle-in-cell simulations of hollow cathode enhanced capacitively coupled radio frequency discharges*, **Physics of Plasmas 19**, 2 (2012) 023508/1-12

Lafleur T, Boswell R, *Particle-in-cell simulations of ambipolar and nonambipolar diffusion in magnetized plasmas*, **Physics of Plasmas 19**, 5 (2012) 053505/1-7

Lafleur T, Boswell R, Booth J, Enhanced sheath heating in capacitively coupled discharges due to non-sinusoidal voltage waveforms., Applied Physics Letters 100, 19 (2012) 194101/1-4

Lam T, Gray M, Shaddock D, McClelland D, Chow J, *Subfrequency noise signal extraction in fiber-optic strain sensusing postprocessing*, **Optics Letters 37**, 11 (2012) 2169-2171

Lapin M, Shadrivov I, Kivshar Y, *Wide-band negative permeability of nonlinear metamaterials*, **Scientific Reports 2**, 412 (2012) 1-4

Lapin M, Shadrivov I, Powell D, Kivshar Y, Magnetoelastic metamaterials, Nature Materials 11, 1 (2012) 30-33

Lapshina N, Noskov R, Kivshar Y, *Nanoradar based on nonlinear dimer nanoantenna*, **Optics Letters 37**, 18 (2012) 3921-3923

Lashkin V, Desyatnikov A, Ostrovskaya E, Kivshar Y, *Azimuthal vortex clusters in Bose-Einstein condensates*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 1 (2012)

Lecaplain C, Grelu P, Soto-Crespo J, Akhmediev N, *Dissipative Rogue Waves Generated by Chaotic Pulse Bunching in a Mode-Locked Laser*, **Physical Review Letters 108**, 23 (2012) 233901 1-5

Lee B, Kibedi T, Stuchbery A, Robertson K, *Atomic Radiations in the Decay of Medical Radioisotopes: A Physics Perspective*, **Computational and Mathematical Methods in Medicine 2012**, 651475 (2012) 14

Lee J, Guan X, del Campo A, Batchelor M, *Asymptotic Bethe-ansatz solution for one-dimensional SU(2) spinor bosons with finite-range Gaussian interactions*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 1 (2012) 013629,1-13

Lee J, Guan X, Sakai K, Batchelor M, *Thermodynamics, spin-charge separation, and correlation functions of spin-*1/2 fermions with repulsive interaction, **Physical Review B: Condensed Matter and Materials 85**, 8 (2012)

Leigh A, Sevanto S, Ball M, Close J, Ellsworth D, Knight C, Nicotra A, Vogel S, *Do thick leaves avoid thermal dam*age in critically low wind speeds?, New Phytologist 194, 2 (2012) 477-487

Lemaitre M, Tongay S, Wang Z, Venkatachalam D, Fridmann J, Gila B, Hebard A, Ren F, Elliman R, Appleton B, *Low-temperature, site selective graphitization of SiC via ion implantation and pulsed laser annealing*, **Applied Physics Letters 100**, 19 (2012) 193105,1-4

Leykam D, Desyatnikov A, *Vortex switching with discrete multivortex solitons*, Physical Review A: Atomic, Molecular and Optical Physics 86, 4 (2012) 043812 1-9

Leykam D, Bahat Treidel O, Desyatnikov A, *Pseudospin and nonlinear conical diffraction in Lieb lattices*, **Physical Review A: Atomic, Molecular and Optical Physics 86,** 3 (2012)

Li C, Xie Q, *Finite-superposition solutions for surface states in a type of photonic superlattice,* **Physical Review A: Atomic, Molecular and Optical Physics 85**, 6 (2012) 063802 1-6

Li L, Guo Y, Cui X, Zheng R, Ohtani K, Kong C, Ceguerra A, Moody M, Ye J, Tan H, Jagadish C, Liu H, Stampfl C, Ohno H, Ringer S, Matsukura F, *Magnetism of Co-doped ZnO epitaxially grown on a ZnO substrate*, **Physical Review B: Condensed Matter and Materials 85,** 17 (2012) 1-8

Li Z, Hattori H, Parkinson P, Tian J, Fu L, Tan H, Jagadish C, *A plasmonic staircase nano-antenna device with strong electric field enhancement for surface enhanced Raman scattering (SERS) applications,* **Journal of Physics D: Applied Physics 45** (2012) 1-5 Lin C, DuRietz R, Hinde D, Dasgupta M, Thomas R, Brown M, Evers M, Gasques L, Rodriguez M, *Systematic behavior of mass distributions in 48Ti-induced fission at near-barrier energies*, **Physical Review C: Nuclear Physics 85**, 014611 (2012) 1-7

Liu H, Chaudhary D, Roberts J, Weed R, Sullivan J, Buckman S, *The interaction in sorbitol-plasticized starch bi*onanocomposites via positron annihilation lifetime spectroscopy and small angle X-ray scattering, **Carbohydrate Polymers 88** (2012) 1172-1176

Liu M, Powell D, Shadrivov I, Chiral meta-atoms rotated by light, Applied Physics Letters 101, 3 (2012) 0311051-4

Liu M, Powell D, Shadrivov I, Kivshar Y, *Optical activity and coupling in twisted dimer meta-atoms*, **Applied Physics Letters 100**, 11 (2012)

Liu M, Song Y, Zhang Y, Wang X, Jin C, *Mode Evolution and Transmission Suppression in a Perforated Ultrathin Metallic Film with a Triangular Array of Holes*, **Plasmonics 7**, 3 (2012) 397-410

Liu W, Miroshnichenko A, Neshev D, Kivshar Y, *Broadband unidirectional scattering by magneto-electric core*shell nanoparticles, **ACS Nano 6**, 6 (2012) 5489-5497

Liu W, Miroshnichenko A, Neshev D, Kivshar Y, *Polarization-independent Fano resonances in arrays of core-shell nanoparticles*, **Physical Review B: Condensed Matter and Materials 86**, 8 (2012)

Lowke J, Smith D, Nelson K, Crompton R, Murphy A, *Birth of ball lightning*, Journal of Geophysical Research: Space Physics / Atmospheres 117, 19 (2012)

Lu H, Mokkapati S, Fu L, Jolley G, Tan H, Jagadish C, *Plasmonic quantum dot solar cells for enhanced infrared re*sponse, **Applied Physics Letters 100**, 103505 (2012) 1 - 4

Lu J, Zhu M, Long J, Zhao W, Senden T, Jia L, Qiao T, *The earliest known stem-tetrapod from the Lower Devonian of China*, **Nature Communications 3**, article no 1160 (2012) 1-7

Luk-yanchuk B, Miroshnichenko A, Tribelsky M, Kivshar Y, Khokhlov A, *Paradoxes in laser heating of plasmonic nanoparticles*, **New Journal of Physics 14** (2012)

Ma S, Howard J, Blackwell B, Thapar N, *Measurements of electron density and temperature in the H-1 heliac plasma by helium line intensity ratios*, **Review of Scientific Instruments 83**, 3 (2012) 033102-1-7

Machacek J, Boadle R, Buckman S, Sullivan J, Search for positron quasibound states in the doubly excited region of the helium atom, Physical Review A: Atomic, Molecular and Optical Physics 86, 6 (2012) 3

Madadi M, Christy A, *A modified coherent potential approximation: Grain-contact moduli and coordinationnumber effect*, **Advances in Geophysics 77**, 3 (2012) WA141-WA148

Madden S, Vu K, *High-Performance Integrated Optics with Tellurite Glasses: Status and Prospects*, **IEEE Transactions on Automatic Control 3**, 4 (2012) 289-298

Maksymov I, Davoyan A, Miroshnichenko A, Simovski C, Belov P, Kivshar Y, *Multifrequency tapered plasmonic nanoantennas*, **Optics Communications 285**, 5 (2012) 821-824

Maksymov I, Ferre-Borrull J, Pallares J, Marsal L, *Photonic stop bands in quasi-random nanoporous anodic alumina structures*, **Photonics and Nanostructures: Fundamentals and Applications 10**, 4 (2012) 459-462

Maksymov I, Miroshnichenko A, Kivshar Y, *Plasmonic nanoantennas for efficient control of polarizationentangled photon pairs*, **Physical Review A: Atomic, Molecular and Optical Physics 86**, 1 (2012)

Maksymov I, Miroshnichenko A, Kivshar Y, *Actively tunable bistable optical Yagi-Uda nanoantenna*, **Optics Express 20**, 8 (2012) 8929-8938

Maksymov I, Staude I, Miroshnichenko A, Kivshar Y, *Optical Yagi-Uda nanoantennas*, Journal of Nanophotonics 1 (2012) 65-81



Mandt K, Gell D, Perry M, Waite J, Crary F, Young D, Magee B, Westlake J, Cravens T, Kasprzak W, Miller G, Wahlund J, Agren K, Edberg N, Heays A, Lewis B, Gibson S, de la Haye V, Liang M, *Ion densities and composition of Titan's upper atmosphere derived from the Cassini Ion Neutral Mass Spectrometer: Analysis methods and comparison of measured ion densities to photochemical model simulations, Journal of Geophysical Research B: Solid Earth 117, 10 (2012) E10006, 1-22*

Marathe R, Turner M, Fogden A, *Pore-scale distribution of crude oil wettability in carbonate rocks*, **Energy and Fuels 26**, 10 (2012) 6268-6281

Maucher F, Krolikowski W, Skupin S, *Stability of solitary waves in random nonlocal nonlinear media*, Physical Review A: Atomic, Molecular and Optical Physics 85, 6 (2012) 063803

McAuslan D, Bartholomew J, Sellars M, Longdell J, *Reducing decoherence in optical and spin transitions in rareearth-metal-ion-doped materials*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 3 (2012) 032339 1-9

McClements K, Hole M, Toroidal ripple transport of beam ions in the mega-ampère spherical tokamak, Physics of Plasmas 19, 7 (2012) 072514

McEachran R, Vos M, Large-angle scattering of energetic electrons from Xe: A combined theoretical and experimental approach, Physical Review A: Atomic, Molecular and Optical Physics 85, 3 (2012) 8

McEachran R, Sullivan J, Buckman S, Brunger M, Fuss M, Munoz A, Blanco F, White R, Petrovic Z, Limao-Vieira P, Garcia G, *Modelling single positron tracks in Ar*, Journal of Physics B: Atomic, Molecular and Optical Physics 45 (2012) 9

McKemmish L, Kedziora D, White G, Hush N, Reimers J, *Frequency-based quantum computers from a Chemist's perspective,* **Australian Journal of Chemistry 65,** 5 (2012) 512-519

McKerracher I, Fu L, Tan H, Jagadish C, Intermixing of InGaAs/GaAs quantum wells and quantum dots using sputter-deposited silicon oxynitride capping layers, Journal of Applied Physics 112, 11 (2012) 1-11

McKinley A, White T, Maksymov I, Catchpole K, *The analytical basis for the resonances and anti-resonances of loop antennas and meta-material ring resonators*, **Journal of Applied Physics 112**, 9 (2012)

McRae T, Hsu M, Freund C, Shaddock D, Herrmann J, Gray M, *Linearization and minimization of cyclic error with heterodyne laser interferometry*, **Optics Letters 37**, 13 (2012) 2448-2450

Medda L, Barse B, Cugia F, Bostrom M, Parsons D, Ninham B, Monduzzi M, Salis A, *Hofmeister challenges: Ion binding and charge of the BSA protein as explicit examples*, Langmuir 28, 47 (2012) 16355-16363

Medek D, Kljakovic M, Fox I, Pretty D, Prebble M, *Hay Fever in a Changing Climate: Linking an Internet-Based Diary with Environmental Data,* **EcoHealth** Published online 27/10/2012 (2012)

Menzies D, Gengenbach T, Forsythe J, Birbilis N, Johnson G, Charles C, McFarland G, Williams R, Fong C, Leech P, Muir B, One step multifunctional micropatterning of surfaces using asymmetric glow discharge plasma polymerization, **Chemical Communications 48**, 13 (2012) 1907-1909

Merchel S, Bremser W, Akhmadaliev S, Arnold M, Aumaitre G, Bourles D, Braucher R, Caffee M, Christl M, Fifield K, Finkel R, Freeman S, Tims S, Wallner A, *Quality assurance in accelerator mass spectrometry: Results from an international round-robin exercise for 10Be*, **Nuclear Instruments and Methods in Physics Research: Section B 289** (2012) 68-73

Miller J, Ngo S, Mullavey A, Slagmolen B, Shaddock D, McClelland D, *Control and tuning of a suspended Fabry-Perot cavity using digitally enhanced heterodyne interferometry*, **Optics Letters 37**, 23 (2012) 4952-4954

Minovich A, Farnell J, Neshev D, McKerracher I, Karouta F, Tian J, Powell D, Shadrivov I, Tan H, Jagadish C, Kivshar Y, *Liquid crystal based nonlinear fishnet metamaterials*, **Applied Physics Letters 100**, 12 (2012) 121113-1-4

Miroshnichenko A, Kivshar Y, Fano resonances in all-dielectric oligomers, Nano Letters 12, 12 (2012) 6459-6463

Miroshnichenko A, Liu W, Neshev D, Kivshar Y, Kuznetsov A, Fu Y, Luk'yanchuk B, *Magnetic Light: Optical mag*netism of dielectric nanoparticles, **Optics and Photonics News 23**, 12 (2012) 35

Miroshnichenko A, Luk'yanchuk B, Maier S, Kivshar Y, *Optically induced interaction of magnetic moments in hybrid metamaterials*, **ACS Nano 6**, 1 (2012) 837-842

Moghaddam M, De Campo L, Kirby N, Drummond C, *Chelating DTPA amphiphiles: Ion-tunable self-assembly structures and gadolinium complexes*, **Physical Chemistry Chemical Physics 14**, 37 (2012) 12854-12862

Mokkapati S, Catchpole K, Nanophotonic light trapping in solar cells, Journal of Applied Physics 112 (2012)

Mokkapati S, Saxena D, Jiang N, Parkinson P, Wong-Leung J, Gao Q, Tan H, Jagadish C, Polarization Tunable, Multicolor Emission from Core-Shell Photonic III-V Semiconductor Nanowires, Nano Letters 12, 12 (2012) 6428-6431

Molina M, Miroshnichenko A, Kivshar Y, *Surface bound states in the continuum*, **Physical Review Letters 108**, 7 (2012)

Montazeri M, Jackson H, Smith L, Yarrison-Rice J, Kang J, Gao Q, Tan H, Jagadish C, *Transient Rayleigh scattering:* A new probe of picosecond carrier dynamics in a single semiconductor nanowire, **Nano Letters 12**, 10 (2012) 5389 -5395

Morales R, Di Matteo T, Gramatica R, Aste T, *Dynamical generalized Hurst exponent as a tool to monitor unstable periods in financial time series*, **Physica A: Statistical mechanics and its applications 391**, 11 (2012) 3180-3189

Mortemousque P, Sekiguchi T, Culan C, Vlasenko M, Elliman R, Vlasenko L, Itoh K, *Spin dependent recombination* based magnetic resonance spectroscopy of bismuth donor spins in silicon at low magnetic fields, **Applied Physics** Letters **101**, 8 (2012) 082409

Mullavey A, Slagmolen B, Miller J, Evans M, Fritschel P, Sigg D, Waldman S, Shaddock D, McClelland D, *Arm-length stabilisation for interferometric gravitational-wave detectors using frequency-doubled auxiliary lasers,* **Biomedical Optics Express 20**, 1 (2012) 81-89

Myers G, Varslot T, Kingston A, Herring A, Sheppard A, *Ground-truth verification of dynamic x-ray microtomography images of fluid displacement*, **Proceedings of SPIE - International Society for Optical Engineering 8506** (2012) 85060P

Nachtrab S, Kapfer S, Rietzel D, Madadi M, Drummer D, Arns C, Kraynik A, Schroeder-Turk G, Mecke K, *Tuning* elasticity of open-cell solid foams and bone scaffolds via randomized vertex connectivity, Advanced Engineering Materials 14, 1-Feb (2012) 120-124

Negri A, Niello J, Wallner A, Arazi A, Steier P, *Iodine-129 in animal thyroids from Argentina*, Science of the Total Environment 430 (2012) 231-236

Negri A, Niello J, Wallner A, Arazi A, Steier P, *Relationship between 129I and 127I contents in bovine thyroid glands from Argentina*, Nuclear Instruments and Methods in Physics Research: Section B 294, 2013 (2012) 652-655

Ni Y, Gao L, Miroshnichenko A, Qiu C, *Non-Rayleigh scattering behavior for anisotropic Rayleigh particles*, **Optics** Letters **37**, 16 (2012) 3390-3392

Nie J, Wood P, Nicholls C, Predicting the fate of binary red giants using the observed sequence E star population: Binary planetary nebula nuclei and post-RGB stars, **Monthly Notices of the Royal Astronomical Society 423**, 3 (2012) 2764-2780

Noh T, Yoon Y, Lee S, Choi D, Lim S, *Highly angle-tolerant spectral filter based on an etalon resonator incorporating a high index cavity,* **Journal of the Optical Society of Korea 16**, 3 (2012) 299-304



Noschang Kuhn C, Guan X, Foerster A, Batchelor M, Universality class of quantum criticality for strongly repulsive spin-1 bosons with antiferromagnetic spin-exchange interaction, Physical Review A: Atomic, Molecular and Optical Physics 85, 4 (2012)

Noschang Kuhn C, Guan X, Foerster A, Batchelor M, *Quantum criticality of spin-1 bosons in a one-dimensional harmonic trap*, Physical Review A: Atomic, Molecular and Optical Physics 86, 011605 (2012) 4

Noskov R, Belov P, Kivshar Y, Subwavelength modulational instability and plasmon oscillons in nanoparticle arrays, Physical Review Letters 108, 9 (2012) 093901 1-5

Noskov R, Belov P, Kivshar Y, Subwavelength plasmonic kinks in arrays of metallic nanoparticles, **Optics Express 20**, 3 (2012) 2733-2739

Noskov R, Krasnok A, Kivshar Y, *Nonlinear metal-dielectric nanoantennas for light switching and routing*, **New Journal of Physics 14** (2012)

Notley S, *Highly concentrated aqueous suspensions of graphene through ultrasonic exfoliation with continuous surfactant addition*, **Langmuir 28**, 40 (2012) 14110-14113

Notley S, Adsorption of nonionic surfactants with ethylene oxide headgroup chemistry at the titania-water interface, Journal of Physical Chemistry B 116, 20 (2012) 6059-6065

Notley S, Adsorption of polyelectrolyte modified graphene to silica surfaces: Monolayers and multilayers, Journal of Colloid and Interface Science 375, 1 (2012) 35-40

Notley S, Norgren M, Study of thin films of kraft lignin and two DHPs by means of single-molecule force spectroscopy (SMFS), Holzforschung 66, 5 (2012) 615-622

Oates T, Dastmalchi B, Isic G, Tollabimazraehno S, Helgert C, Pertsch T, Kley E, Verschuuren M, Bergmair I, Hingerl K, Hinrichs K, *Oblique incidence ellipsometric characterization and the substrate dependence of visible frequency fishnet metamaterials*, **Optics Express 20**, 10 (2012) 11166-11177

Orchard M, Kohonen M, Humphries S, *The influence of surface energy on the self-cleaning of insect adhesive devices*, Journal of Experimental Biology 215, 2 (2012) 279-286

Ostrovskaya E, Abdullaev J, Desyatnikov A, Fraser M, Kivshar Y, *Dissipative solitons and vortices in polariton Bose* -*Einstein condensates*, **Physical Review A: Atomic, Molecular and Optical Physics 86**, 1 (2012)

Ott U, Besmehn A, Farouqi K, Hallmann O, Hoppe P, Kratz K, Melber K, Wallner A, *New attempts to understand nanodiamond stardust*, **Publications of the Astronomical Society of Australia 29** (2012) 90-97

Palihawadana P, Sullivan J, Buckman S, Brunger M, *Electron scattering from pyrazine: Elastic differential and inte*gral cross sections, Journal of Chemical Physics 137, 20 (2012) 7

Pant R, Byrnes A, Poulton C, Li E, Choi D, Madden S, Luther-Davies B, Eggleton B, *Photonic-chip-based tunable slow and fast light via stimulated Brillouin scattering*, **Optics Letters 35**, 5 (2012) 969-971

Parkinson P, Dodson C, Joyce H, Bertness K, Sanford N, Herz L, Johnston M, *Noncontact measurement of charge carrier lifetime and mobility in GaN nanowires*, **Nano Letters 12**, 9 (2012) 4600-4604

Parkinson P, Jiang N, Gao Q, Tan H, Jagadish C, *Direct-write non-linear photolithography for semiconductor nanowire characterization*, **Nanotechnology 23**, 33 (2012) 1-5

Parsons D, Ninham B, Nonelectrostatic ionic forces between dissimilar surfaces: A mechanism for colloid separation, Journal of Physical Chemistry C 116, 14 (2012) 7782-7792

Persans P, Berry N, Recht D, Hutchinson D, Peterson H, Clark J, Charnvanichborikarn S, Williams J, Di Franzo A, Aziz M, Warrender J, *Photocarrier lifetime and transport in silicon supersaturated with sulphur*, **Applied Physics Letters 101**, 11 (2012)

Peruzzi N, Ninham B, Lo Nostro P, Baglioni P, *Hofmeister phenomena in nonaqueous media: The solubility of electrolytes in ethylene carbonate,* **Journal of Physical Chemistry B 116**, 49 (2012) 14398-14405

Petraglia A, Sabbarese C, De Cesare M, De Cesare N, Quinto F, Terrasi F, D'Onofrio A, Steier P, Fifield K, Esposito A, *Assessment of the radiological impact of a decommissioned nuclear power plant in Italy*, **Radioprotection 47**, 2 (2012) 285-297

Poddubny A, Belov P, Ginzburg P, Zayats A, Kivshar Y, *Microscopic model of Purcell enhancement in hyperbolic metamaterials*, **Physical Review B 86**, 3 (2012)

Poddubny A, Ginzburg P, Belov P, Zayats A, Kivshar Y, *Tailoring and enhancing spontaneous two-photon emission using resonant plasmonic nanostructures*, **Physical Review A: Atomic, Molecular and Optical Physics 86**, 3 (2012) 033826 1-5

Poddubny A, Rybin M, Limonov M, Kivshar Y, *Fano interference governs wave transport in disordered systems,* **Nature Communications 3** (2012)

Poldy R, Buchler B, Altin P, Robins N, Close J, *Feasibility of squeezing measurements with cavity-based atom detection*, Physical Review A: Atomic, Molecular and Optical Physics 86, 4 (2012) 1-9

Potemkin A, Poddubny A, Belov P, Kivshar Y, *Green function for hyperbolic media*, **Physical Review A: Atomic**, **Molecular and Optical Physics 86**, 2 (2012)

Pozzi F, Di Matteo T, Aste T, *Exponential smoothing weighted correlations*, **European Physical Journal B 85**, 6 (2012)

Reed M, Walker P, Cullen I, Litvinov Y, Shubina D, Dracoulis G, Blaum K, Bosch F, Brandau C, Carroll J, Cullen D, Deo A, Detwiler B, Dimopoulou C, Dong G, Farinon F, Geissel H, Haettner E, Heil M, Kempley R, Knobel R, Kozhuharov C, Kurcewicz J, Kuzminchuk N, Litvinov S, Liu Z, Mao R, Nociforo C, Nolden F, Plass W, Podolyak Z, Prochazka A, Scheidenberger C, Steck M, Stohlker T, Sun B, Swan T, Trees G, Weick H, Winckler N, Winkler M, Woods P, Xu F, Yamaguchi T, *Long-lived isomers in neutron-rich Z=72 76 nuclides*, **Physical Review C: Nuclear Physics 86**, 5 (2012)

Ren Q, Lu J, Tan H, Wu S, Sun L, Zhang W, Xie W, Sun Z, Zhu Y, Jagadish C, Shen S, Chen Z, *Spin-resolved purcell effect in a quantum dot microcavity system*, **Nano Letters 12**, 7 (2012) 3455-3459

Carvalho A, Hush M, James M, *Cavity driven by a single photon: Conditional dynamics and nonlinear phase shift,* **Physical Review A: Atomic, Molecular and Optical Physics 86**, 023806 (2012) 023806-1 to 023806-6

Ridout D, Non-chiral logarithmic couplings for the Virasoro algebra, Journal of Physics A: Mathematical and Theoretical 45, 25 (2012)

Riggs P, What do we feel when we 'feel' time 'passing'?, Journal of Consciousness Exploration & Research 3, 9 (2012) 1064-1073

Robson B, Kenneth James Le Couteur 1920-2011, Historical Records of Australian Science 23, 2 (2012) 176-186

Rodriguez M, Afra B, Trautmann C, Toulemonde M, Bierschenk T, Leslie J, Giulian R, Kirby N, Kluth P, *Morphology* of swift heavy ion tracks in metallic glasses, Journal of Non-crystalline Solids 358, 2011 (2012) 571-576

Roppo V, Vincenti M, de Ceglia C, Scalora M, *Deep-subwavelength waveguiding via inhomogeneous secondharmonic generation*, **Optics Letters 37**, 15 (2012) 3093-3095

Rosanov N, Vysotina N, Shatsev A, Desyatnikov A, Kivshar Y, *Knotted solitons in nonlinear magnetic metamaterials*, **Physical Review Letters 108**, 13 (2012)

Rosanov N, Vysotina N, Shatsev A, Desyatnikov A, Shadrivov I, Noskov R, Kivshar Y, *Discrete switching waves and dissipative solitons in the coherently excited nanostructures and metamaterials*, Scientific and Technical Journal of Information Technologies, Mechanics and Optics 4, 80 (2012)



Rozanov N, Fedorov S, Savel'ev R, Sukhorukov A, Kivshar Y, *Band structure and broadband compensation of ab*sorption by amplification in layered optical metamaterials, **Journal of Experimental and Theoretical Physics 114**, 5 (2012) 782-791

Rudawski N, Darby B, Yates B, Jones K, Elliman R, Volinsky A, *Nanostructured ion beam-modified Ge films for high capacity Li ion battery anodes*, **Applied Physics Letters 100**, 8 (2012)

Saadatfar M, Mukherjee M, Madadi M, Schroder-Turk G, Garcia-Moreno F, Schaller F, Hutzler S, Sheppard A, Banhart J, Ramamurty U, *Structure and deformation correlation of closed-cell aluminium foam subject to uniaxial compression*, **Acta Materialia 60**, 8 (2012) 3604-3615

Saadatfar M, Sheppard A, Senden T, Kabla A, *Mapping forces in a 3D elastic assembly of grains*, Journal of the Mechanics and Physics of Solids 60 (2012) 55-66

Sahu G, Lenka H, Mahapatra D, Rout B, Das M, *Low-temperature UV photoluminescence of ion beam synthesized Si nanoclusters embedded in Si*, Advances in Natural Sciences: Nanoscience and Nanotechnology 3, 2 (2012) 4

Salgueiro J, Kivshar Y, *Nonlinear couplers with tapered plasmonic waveguides*, **Optics Express 20**, 9 (2012) 9403-9408

Salgueiro J, Kivshar Y, *Nonlinear couplers based on plasmonic waveguides*, **Optica Pura y Aplicada 45**, 2 (2012) 163-168

Salis A, Cugia F, Parsons D, Ninham B, Monduzzi M, *Hofmeister series reversal for lysozyme by change in pH and salt concentration: Insights from electrophoretic mobility measurements,* **Physical Chemistry Chemical Physics 14**, 13 (2012) 4343-4346

Sane S, Bennetts S, Debs J, Noschang Kuhn C, McDonald G, Altin P, Close J, Robins N, *11 W narrow linewidth laser source at 780nm for laser cooling and manipulation of Rubidium*, **Optics Express 20**, 8 (2012) 8915-8919

Santos M, Terra Cunha T, Chaves R, Carvalho A, *Quantum computing with incoherent resources and quantum jumps*, **Physical Review Letters 108**, 17 (2012) 1-5

Sanz A, Fuss M, Roldan A, Oller J, Blanco F, Limao-Vieira P, Brunger M, Buckman S, Garcia G, *Modelling low ener*gy electron and positron tracks for biomedical applications, **Journal of Physics: Conference Series 388**, 5 (2012) 1

Savage C, Causality in classical electrodynamics, The Physics Teacher 50 (2012) 201-203

Savin A, Kivshar Y, Transport of fullerene molecules along graphene nanoribbons, Scientific Reports 2 (2012)

Savin A, Kivshar Y, *Nonlinear breatherlike localized modes in C60 nanocrystals*, **Physical Review B: Condensed** Matter and Materials 85, 12 (2012)

Saxena D, Mokkapati S, Jagadish C, Semiconductor Nanolasers, IEEE Photonics Journal 4, 2 (2012) 582-585

Schiek R, Solntsev A, Neshev D, *Temporal dynamics of all-optical switching in quadratic nonlinear directional couplers*, **Applied Physics Letters 100**, 11 (2012) 1111171-4

Seddon J, Lohse D, Ducker W, Craig V, A deliberation on nanobubbles at surfaces and in bulk, ChemPhysChem 13, 8 (2012) 2179-2187

Serov V, Ivanov I, Kheifets A, *Single-photon double ionization of H2 molecule away from equilibrium: A showcase of two-centre electron interference*, **Physical Review A: Atomic, Molecular and Optical Physics 86**, 2 (2012) 4

Shadrivov I, Pure nonlinear optical activity in metamaterials, Applied Physics Letters 101, 4 (2012) 0419111-4

Shadrivov I, Kapitanova P, Maslovski S, Kivshar Y, *Metamaterials controlled with light*, **Physical Review Letters 109**, 8 (2012)

Shaebani M, Madadi M, Luding S, Wolf D, *Influence of polydispersity on micromechanics of granular materials,* **Physical Review E 85,** 1 (2012) 0113011-12

Shalav A, Bullock J, Anderson P, Ruffell S, White J, Elliman R, *The Mechanical and Photochemical Properties of Titania Coated Silica Nanowires*, ECS Journal of Solid State Science and Technology 1, 5 (2012) Q114-Q118

Shalav A, Venkatachalam D, Elliman R, *Fabrication of coaxial nanawire heterostructures: SiOx nanowires with conformal TiO2 coatings*, **Applied Physics A: Materials Science and Processing 107**, 3 (2012)

Shalav A, Wong S, Ruffell S, Elliman R, Arrays of Au nanoparticles on Si formed by nanoindentation and a simple thermal/wipe-off technique, Materials Science Forum 700 (2012) 141-144

Shats M, Xia H, Byrne D, *Turbulence in thick layers*, International Journal of Modern Physics: Conference Series **19** (2012)

Shats M, Xia H, Punzmann H, *Parametrically Excited Water Surface Ripples as Ensembles of Oscillons*, **Physical Review Letters 108**, 3 (2012) 034502 5

Sheard B, Heinzel G, Danzmann K, Shaddock D, Klipstein W, Folkner W, *Intersatellite laser ranging instrument for the GRACE follow-on mission*, Journal of Geodesy 86, 12 (2012) 1083-1095

Shen M, Zheng J, Kong Q, Lin Y, Jeng C, Lee R, Krolikowski W, *Stabilization of counter-rotating vortex pairs in nonlocal media*, Physical Review A: Atomic, Molecular and Optical Physics 86, 1 (2012)

Shen Y, Liu M, Li J, Chen X, Xu H, Zhu Q, Wang X, Jin C, *Extraordinary transmission of three-dimensional crescent-like holes arrays*, **Plasmonics 7** (2012) 221-227

Shen Y, Liu M, Wang Q, Zhan P, Wang Z, Zhu Q, Chen X, Jiang S, Wang X, Jin C, Fabrication of non-planar silver nano-arc-gap arrays, Nanoscale (2012) 3

Sheng Y, Kong Q, Roppo V, Kalinowski K, Wang Q, Cojocaru C, Krolikowski W, *Theoretical study of Cerenkov-type second-harmonic generation in periodically poled ferroelectric crystals*, **Journal of the Optical Society of America B 29**, 3 (2012) 312-318

Sheng Y, Kong Q, Wang W, Kalinowski K, Krolikowski W, *Theoretical investigations of nonlinear Raman-Nath diffraction in the frequency doubling process*, Journal of Physics B: Atomic, Molecular and Optical Physics 45, 5 (2012) 055401

Sheng Y, Ma D, Ren M, Chen B, Roppo V, Li Z, Koynov K, Krolikowski W, *Broadband cascading of second-order nonlinearity in randomized nonlinear photonic crystal*, *Journal of Physics D: Applied Physics* **45**, 36 (2012)

Sheng Y, Roppo V, Kalinowski K, Krolikowski W, *Role of a localized modulation of chi((2)) in Cerenkov second*harmonic generation in nonlinear bulk medium, **Optics Letters 37,** 18 (2012) 3864-3866

Sheng Y, Roppo V, Ren M, Kalinowski K, Cojocaru C, Trull J, Li Z, Koynov K, Krolikowski W, *Multi-directional Čeren*kov second harmonic generation in two-dimensional nonlinear photonic crystal, **Optics Express 20**, 4 (2012) 3948-3953

Shi Y, Xu F, Walker P, Dracoulis G, *Superdeformed multi-quasiparticle high-K states and possible isomers in Pb and Po isotopes*, **Physical Review C: Nuclear Physics 85**, 064304 (2012) 9

Shishkin I, Samusev K, Rybin M, Limonov M, Kivshar Y, Gaidukeviciute A, Kiyan R, Chichkov B, *Glassy nanostructures fabricated by the direct laser writing method*, **Physics of the solid state 54**, 10 (2012) 1975-1980

Shishkin I, Samusev K, Rybin M, Limonov M, Kivshar Y, Gaidukeviciute A, Kiyan R, Chichkov B, *Inverted yablo-novite fabricated by the direct laser writing method and its photonic structure*, **Journal of Experimental and Theo-retical Physics Letters 95**, 9 (2012) 457-461

Shvedov V, Hnatovsky C, Eckerskorn N, Rode A, Krolikowski W, *Polarization-sensitive photophoresis*, **Applied Physics Letters 101**, 5 (2012) 0511061-3

PUBLICATIONS

Shvedov V, Hnatovsky C, Shostka N, Rode A, Krolikowski W, *Optical manipulation of particle ensembles in air*, **Optics Letters 37**, 11 (2012) 1934-1936

Simenel C, Nuclear quantum many-body dynamics, European Physical Journal A (EPJ A direct) 48, 152 (2012) 49

Simenel C, Hinde D, DuRietz R, Dasgupta M, Evers M, Lin C, Luong D, Wakhle A, *Influence of entrance-channel magicity and isospin on quasi-fission*, **Physics Letters B 710** (2012) 607-611

Simovski C, Belov P, Atrashchenko V, Kivshar Y, Wire metamaterials: physics and applications, Advanced Materials 24 (2012) 4229-4248

Slobozhanyuk A, Kapitanova P, Shadrivov I, Belov P, Kivshar Y, *Metamaterials with tunable nonlinearity*, Journal of Experimental and Theoretical Physics Letters 95, 12 (2012) 613-617

Solntsev A, Sukhorukov A, Combined frequency conversion and pulse compression in nonlinear tapered waveguides

Optics Letters 37, 4 (2012) 446-448

Solntsev A, Sukhorukov A, Neshev D, Kivshar Y, *Photon-pair generation in arrays of cubic nonlinear waveguides,* **Optics Express 20,** 24 (2012) 27441-27446

Solntsev A, Sukhorukov A, Neshev D, Kivshar Y, *Spontaneous parametric down-conversion and quantum walks in arrays of quadratic nonlinear waveguides*, **Physical Review Letters 108**, 2 (2012) 1-5

Song W, Di Matteo T, Aste T, *Building complex networks with Platonic solids*, **Physical Review E-Statistical**, **Non-linear and Soft Matter Physics 85**, 4 (2012) 046115-1-12

Song W, Di Matteo T, Aste T, *Hierarchical information clustering by means of topologically embedded graphs,* **PLOS ONE** (Public Library of Science) 7, 3 (2012) 1-14

Soto-Crespo J, Ankiewicz A, Devine N, Akhmediev N, *Modulation instability, Cherenkov radiation, and Fermi-Pasta-Ulam recurrence*, Journal of the Optical Society of America B 29, 8 (2012) 1930-1936

Sparkes B, Hosseini M, Higginbottom D, Campbell G, Lam P, Buchler B, Cairns C, *Precision spectral manipulation: a demonstration using a coherent optical memory*, **Physical Review X 2** (2012) 021011

Sprouster D, Ridgway M, *Ion Beam Formation and Modification of Cobalt Nanoparticles*, **Applied Sciences 2**, 2 (2012) 396-442

Staude I, Maksymov I, Decker M, Miroshnichenko A, Neshev D, Jagadish C, Kivshar Y, Broadband scattering by tapered nanoantennas, Physica Status Solidi: Rapid Research Letters 6, 12 (2012) 466-468

Stefszky M, Mow-Lowry C, Chua S, Shaddock D, Buchler B, Lam P, Vahlbruch H, Khalaidovski A, Schnabel R, McClelland D, *Balanced homodyne detection of optical quantum states at audio-band frequencies and below*, **Classical and Quantum Gravity 29**, 14 (2012) 1-14

Stochino A, Arai K, Adhikari R, *Technique for in situ measurement of free spectral range and transverse mode spacing of optical cavities*, **Applied Optics 51**, 27 (2012) 6571-6577

Stuchbery A, Free-ion hyperfine fields and magnetic-moment measurements on radioactive beams: progress and outlook, **Hyperfine Interactions** (2012)

Suchkov S, Dmitriev S, Malomed B, Kivshar Y, *Wave scattering on a domain wall in a chain of PT-symmetric couplers*, Physical Review A: Atomic, Molecular and Optical Physics 85, 3 (2012) 033825 1-6

Suchkov S, Sukhorukov A, Dmitriev S, Kivshar Y, *Scattering of the discrete solitons on the PT-symmetric defects*, **Europhysics Letters 100**, 5 (2012)

Sukhorukov A, Dmitriev S, Suchkov S, Kivshar Y, *Nonlocality in PT -symmetric waveguide arrays with gain and loss*, **Optics Letters 37**, 11 (2012) 2148-2150

Sullivan J, Machacek J, Buckman S, Bray I, *Comment on "Semiempirical potentials for positron scattering by atoms"*, **Physical Review A: Atomic, Molecular and Optical Physics 85** (2012) 036702,1-3

Sun M, Joyce H, Gao Q, Tan H, Jagadish C, Ning C, Removal of Surface States and Recovery of Band-Edge Emission in InAs Nanowires through Surface Passivation, Nano Letters 12 (2012) 3378-3384

Sun Y, White T, Sukhorukov A, *Slow-light enhanced optical forces between longitudinally shifted photonic-crystal nanowire waveguides*, **Optics Letters 37**, 5 (2012) 785-787

Sutton A, Gerberding O, Heinzel G, Shaddock D, *Digitally enhanced homodyne interferometry*, **Optics Express 20**, 20 (2012) 22195-22207

Swan T, Walker P, Podolyak Z, Reed M, Dracoulis G, Lane G, Kibedi T, Smith M, *Hindered decays from a non-yrast four-quasiparticle isomer in 164Er*, **Physical Review C: Nuclear Physics 86**, 4 (2012) 044307 1-6

Swan T, Walker P, Podolyak Z, Reed M, Dracoulis G, Lane G, Kibedi T, Smith M, *Discovery of isomers in dysprosium, holmium, and erbium isotopes with N = 94 to 97,* **Physical Review C: Nuclear Physics 85**, 024313 (2012) 1-11

Szigeti S, Debs J, Hope J, Robins N, Close J, *Why momentum width matters for atom interferometry with Bragg pulses*, **New Journal of Physics 14** (2012) 1-23

Takahashi K, Charles C, Boswell R, *Current-Free Double Layer in Magnetically Expanding RF Plasmas*, Journal of Plasma and Fusion Research 88, 4 (2012) 220-227

Takahashi K, Charles C, Boswell R, *Current-Free Double Layer in Magnetically Expanding RF Plasmas*, Journal of Plasma and Fusion Research 88, 4 (2012) 2 2 0 - 2 2 7

Takahashi K, Lafleur T, Charles C, Alexander P, Boswell R, *Axial force imparted by a current-free magnetically expanding plasma*, **Physics of Plasmas 19**, 8 (2012) 083509

Terhalle B, Desyatnikov A, Neshev D, Krolikowski W, Denz C, Kivshar Y, *Effect of nonlinearity on dynamic diffraction and interband coupling in two-dimensional hexagonal photonic lattices,* **Physical Review A: Atomic, Molecular and Optical Physics 86,** 013821 (2012) 1-5

Tims S, Fifield K, Hancock G, Lal R, Hoo W, *Plutonium isotope measurements from across continental Australia,* **Nuclear Instruments and Methods in Physics Research: Section B 294,** 2013 (2012) 636-641

Tosic S, Pejcev V, Sevic D, McEachran R, Stauffer A, Marinkovic B, *Absolute differential cross sections for electron excitation of silver at small scattering angles*, **Nuclear Instruments and Methods in Physics Research: Section B 279** (2012) 53-57

Tribelsky M, Miroshnichenko A, Kivshar Y, *Unconventional Fano resonances in light scattering by small particles,* **Europhysics Letters 97,** 4 (2012)

Trinajstic K, Long J, Johanson Z, Young G, Senden T, *New morphological information on the ptyctodontid fishes* (*Placodermi, Ptyctodontida*) from Western Australia, Journal of Vertebrate Paleontology 32, 4 (2012) 757-780

Varslot T, Kingston A, Myers G, Sheppard A, *Considerations for high-magnification high-cone-angle helical micro-CT*, **Proceedings of SPIE - International Society for Optical Engineering 8506** (2012) 850614 1-10

Vasser W, Cohen-Tannoudji C, Leduc M, Boiron D, Westbrook C, Truscott A, Baldwin K, Birk G, Cancio P, Trippenbach M, Cold and trapped metastable noble gases, **Reviews of Modern Physics 84,** 1 (2012) 40

Vines L, Wong-Leung J, Jagadish C, Quemener V, Monakhov E, Svensson B, Acceptor-like deep level defects in ion -implanted ZnO, Applied Physics Letters 100, 21 (2012)

Vines L, Wong-Leung J, Jagadish C, Monakhov E, Svensson B, *Ion implantation induced defects in ZnO*, **Physica B 407** (2012) 1471-1484



von Nessi G, On the Regularity of Optimal Transportation Potentials on Round Spheres, Acta Applicandae Mathematicae Online (2012)

von Nessi G, Hole M, Svensson J, Appel L, Evidence cross-validation and Bayesian inference of MAST plasma equilibria, Physics of Plasmas 19, 1 (2012) 10

Wade A, McKenzie K, Chen Y, Shaddock D, Chow J, McClelland D, *Polarization speed meter for gravitational-wave detection*, **Physical Review D-Particles**, **Fields**, **Gravitation and Cosmology 86**, 6 (2012) 1-8

Wallace W, Pullen M, Laban D, Palmer A, Hanne G, Grum-Grzhimailo A, Abeln B, Bartschat K, Weflen D, Ivanov I, Kheifets A, Quiney H, Litvinyuk I, Sang R, Kielpinski D, *Above-threshold ionization in atomic hydrogen using intense, few-cycle laser pulses,* Journal of Physics: Conference Series 388, 3 (2012) 1

Wallner A, Buczak K, Dillmann I, Feige J, Kappeler F, Korschinek G, Lederer C, Mengoni A, Ott U, Paul M, Schatzel G, Steier P, Trautvetter H, AMS Applications in Nuclear Astrophysics: New Results for 13C(n,g)14C and 14N(n,p) 14C, Publications of the Astronomical Society of Australia 29, 2 (2012) 115-120

Wallner A, Melber K, Merchel S, Ott U, Forstner O, Golser R, Kutschera W, Priller A, Steier P, *Stable platinum isotope measurements in presolar nanodiamonds by TEAMS*, Nuclear Instruments and Methods in Physics Research: Section B 294, 2013 (2012) 496-502

Walsh R, Howard S, Nelson A, Skinner W, Liu G, Craig V, *Model surfaces produced by atomic layer deposition*, **Chemistry Letters 41**, 10 (2012) 1247-1249

Walsh R, Nelson A, Skinner W, Parsons D, Craig V, *Direct Measurement of van der Waals and Diffuse Double-Layer Forces between Titanium Dioxide Surfaces Produced by Atomic Layer Deposition,* **Journal of Physical Chemistry C 116,** 14 (2012) 7838-7847

Wang G, Nie Q, Shen X, Wang R, Wu L, Fu J, Xu T, Dai S, *Phase change behaviors of Zn-doped Ge 2Sb 2Te 5 films* **Applied Physics Letters 101,** 5 (2012) 0519061-5

Wang G, Nie Q, Shen X, Wang R, Wu L, Lv Y, Fu J, Xu T, Dai S, *Advantages of Zn1.25Sb2Te 3 material for phase change memory*, **Materials Letters 87** (2012) 135-138

Wang G, Shen X, Nie Q, Chen F, Wang X, Fu J, Chen Y, Xu T, Dai S, Zhang W, Wang R, *Te-based chalcogenide films* with high thermal stability for phase change memory, **Journal of Applied Physics 111**, 9 (2012)

Wang G, Shen X, Nie Q, Wang R, Wu L, Lv Y, Chen F, Fu J, Dai S, Li J, *Improved thermal and electrical properties of Al-doped Ge2Sb2Te5 films for phase-change random access memory*, **Journal of Physics D: Applied Physics 45**, 37 (2012)

Wang R, Kaban I, Jovari P, Luther-Davies B, Mattern N, Eckert J, *Structural investigations of Ge5AsxSe95-x and Ge15AsxSe85-x glasses using x-ray diffraction and extended x-ray fine structure spectroscopy*, **Journal of Physics:** Condensed Matter 24, 38 (2012)

Wang T, Liu G, Zhang G, Craig V, Insights into ion specificity in water-methanol mixtures via the reentrant behavior of polymer, Langmuir 28, 3 (2012) 1893-1899

Ward D, Macchiavelli A, Clark R, Cline D, Cromaz M, Deleplanque M, Diamond R, Fallon P, Gorgen A, Hayes A, Lane G, Lee I, Nakatsukasa T, Schmidt G, Stephens F, Svensson C, Teng R, Vetter K, Wu C, *Band structure of 235U*, **Physical Review C: Nuclear Physics 86**, 6 (2012)

Wegener M, McIntyre T, McGrath D, Savage C, Williamson M, *Developing a virtual physics world*, Australasian Journal of Educational Technology 28, 3 (2012) 504-521

West P, Cifuentes M, Schwich T, Randles M, Morrall J, Kulasekera E, Petrie S, Stranger R, Humphrey M, *Syntheses* and spectroscopic, structural, electrochemical, spectroelectrochemical, and theoretical studies of osmium(II) mono- and bis-alkynyl complexes, **Inorganic Chemistry 51**, 20 (2012) 10495-10502

White T, Sukhorukov A, *Transition from slow and frozen to superluminal and backward light through loss or gain in dispersion-engineered waveguides*, **Physical Review A: Atomic, Molecular and Optical Physics 85**, 4 (2012) 6

Wilkins D, De Deckker P, Fifield K, Gouramanis C, Olley J, *Comparative optical and radiocarbon dating of laminated Holocene sediments in two maar lakes: Lake Keilambete and Lake Gnotuk, south-western Victoria, Australia* **Quaternary Geochronology 9** (2012) 3-15

Williams E, Tickner J, *Efficient Monte Carlo simulation of coincidence effects in radioisotope decays including* γ - γ *angular correlations*, **Computer Physics Communications 183**, 9 (2012) 1869-1876

Wu R, Judge D, Tsai M, Lin Y, Yih T, Lo J, Fung H, Lee Y, Lewis B, Heays A, Gibson S, *Experimental verification of* strong rotational dependence of fluorescence and predissociation yield in the $b1\Pi u(v = 1)$ level of 14N2, Journal of Chemical Physics 136, 044301 (2012) 3

Xia H, Shats M, *Propagating solitons generated by localized perturbations on the surface of deep water*, **Physical Review E 85,** 2 (2012) 026313

Xia H, Shats M, *Structure formation in spectrally condensed turbulence*, International Journal of Modern Physics: Conference Series 19 (2012)

Xia H, Lu S, Li T, Parkinson P, Liao Z, Liu F, Lu W, Hu W, Chen P, Xu H, Zou J, Jagadish C, *Distinct Photocurrent Response of Individual GaAs Nanowires Induced by n-Type Doping*, **ACS Nano 6**, 7 (2012) 6005-6013

Xia H, Maimbourg T, Punzmann H, Shats M, Oscillon dynamics and rogue wave generation in faraday surface ripples

Physical Review Letters 109, 11 (2012) 1-5

Xu H, Guo Y, Sun W, Liao Z, Burgess T, Lu H, Gao Q, Tan H, Jagadish C, Zou J, *Quantitative study of GaAs nan*owires catalyzed by Au film of different thicknesses, **Nanoscale Research Letters 7,** 1 (2012) 1-6

Xu H, Wang Y, Guo Y, Liao Z, Gao Q, Tan H, Jagadish C, Zou J, *Defect-Free <110> zinc-blende structured InAs nan-owires catalyzed by palladium*, **Nano Letters 12**, 11 (2012) 5744-5749

Xu H, Wang Y, Guo Y, Liao Z, Gao Q, Jiang N, Tan H, Jagadish C, Zou J, *High-Density, Defect-Free, and Taper-Restrained Epitaxial GaAs Nanowires Induced from Annealed Au Thin Films,* Crystal Growth & Design 12, 4 (2012) 2018-2022

Xu Y, Miroshnichenko A, Nonlinear Mach-Zehnder-Fano interferometer, Europhysics Letters 97, 4 (2012)

Xu Y, Miroshnichenko A, Desyatnikov A, *Optical vortices at Fano resonances*, **Optics Letters 37**, 23 (2012) 4985-4987

Yan K, Wang R, Vu K, Madden S, Belay K, Elliman R, Luther-Davies B, *Photoluminescence in Er-doped Ge-As-Se chalcogenide thin films*, **Optical Materials Express 2**, 9 (2012) 1270-1277

Yang Y, Shalav A, Kim T, Elliman R, *The effect of annealing temperature, residual O2 partial pressure, and ambient lfow rate on teh growth of SiOx nanowires,* **Applied Physics A: Materials Science and Processing 107,** 4 (2012) 885-890

Yates B, Darby B, Elliman R, Jones K, *Role of Nucleation sites on the formation of nanoporus Ge*, **Applied Physics** Letters 101, 13 (2012) 131907-1 - 131907-4

Ye J, Lim S, Bosman M, Gu S, Zheng Y, Tan H, Jagadish C, Sun X, Teo K, Spin-polarized Wide Electron Slabs in Functionally Graded Polar Oxide Heterostructures, Scientific Reports 2 (2012)

Ye J, Parkinson P, Ren F, Gu S, Tan H, Jagadish C, Raman probing of competitive laser heating and local recrystallization effect in ZnO nanocrystals, **Biomedical Optics Express 20**, 21 (2012) 23281-23289

Yin X, Guan X, Zhang Y, Chen S, *Quantum criticality of a one-dimensional Bose-Fermi mixture*, **Physical Review A: Atomic, Molecular and Optical Physics 85,** 013608 (2012) 1-7



Yong C, Joyce H, Lloyd-Hughes J, Gao Q, Tan H, Jagadish C, Johnston M, Herz L, Ultrafast Dynamics of Exciton Formation in Semiconductor Nanowires, Small 8, 11 (2012) 1725-1731

Yong C, Noori K, Gao Q, Joyce H, Tan H, Jagadish C, Giustino F, Johnston M, Herz L, *Strong Carrier Lifetime Enhancement in GaAs Nanowires coated with Semiconducting Polymer*, **Nano Letters 12**, 12 (2012) 6293-6301

Yoshida Z, Dewar R, Helical bifurcation and tearing mode in a plasma-a description based on Casimir foliation, Journal of Physics A: Mathematical and Theoretical 45, 36 (2012) 365502

Yuan C, Xu B, Lei W, Strain-induced direct band gap LaAlO3 nanocrystals, Materials Letters 68 (2012) 392-394

Zhang L, Qi Q, Shi L, O'Connor D, King B, Kisi E, Venkatachalam D, *Damage tolerance of Ti3SiC2 to high energy iodine irradiation*, **Applied Surface Science 258** (2012) 6281-6287

Zharova N, Shadrivov I, Zharov A, Kivshar Y, *Nonlinear control of invisibility cloaking*, **Optics Express 20**, 14 (2012) 14954-14959

Zheludev N, Kivshar Y, From metamaterials to metadevices, Nature Materials 11 (2012) 917-924

Zhu G, Gu S, Zhu S, Huang S, Gu R, Ye J, Zheng Y, *Optimization study of metal-organic chemical vapour deposition of ZnO on sapphire substrate*, **Journal of Crystal Growth 349** (2012) 6-11

Zuber K, Merkens K, Frölich K, Murphy P, Wong-Leung J, Evans D, Anderson-like localization in ultrathin nanocomposite alloy films on polymeric substrates, Scripta Materialia 67, 10 (2012) 866-869

Patent granted

(1 publications)

Stephens R, Recombinant human urokinase receptor (2012)

Conference paper

(192 publications)

Abiona A, Kemp W, Williams E, Timmers H, *Clean recoil implantation of the 100Pd/Rh TDPAC probe using a sole-noidal separator*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 03001-p.1-03001-p.4

Ameruddin A, Tan H, Fonseka H, Gao Q, Wong-Leung J, Parkinson P, Breuer S, Jagadish C, Influence of growth temperature and V/III ratio on Au-assisted InxGa1-xAs nanowires, Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD 2012) (2012) 37-38

Antonosyan D, Sukhorukov A, Kivshar Y, *Effect of loss on photon-pair generation and correlations in nonlinear waveguide arrays*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Aritomo Y, Hinde D, Wakhle A, DuRietz R, Dasgupta M, Hagino K, Chiba S, Nishio K, *Dynamical approach to fusion -fission process in superheavy mass region*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 05001-p.1-05001-p.4

Batalov A, Beha K, Manson N, Bratschitsch R, Leitenstorfer A, *Charge switching dynamics and optimal excitation wavelength of single NV centers in ultrapure diamond*, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012) 1-2

Bayu Aji L, Ruffell S, Haberl B, Wong S, Bradby J, Williams J, Structural Relaxation of Ion-implanted Amorphous Silicon

Australian Institute of Physics Congress (AIP 2012) (2012)

Bennet F, Conan R, D'Orgeville C, Dawson M, Price I, Rigaut F, *Adaptive optics for laser space debris removal*, Adaptive Optics Systems III (2012) 8447441-6

Breuer S, Karouta F, Tan H, Jagadish C, *MOCVD growth of GaAs nanowires using Ga droplets*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 39-40

Burgess T, Du S, Gault B, Gao Q, Tan H, Zheng R, Jagadish C, *Quantification of the zinc dopant concentration in GaAs nanowires*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 41-42

Byrnes A, Pant R, Poulton C, Li E, Choi D, Madden S, Luther-Davies B, Eggleton B, On-chip, tunable, narrowbandpass microwave photonic filter using stimulated Brillouin scattering (SBS), Conference on Lasers and Electro-Optics (CLEO 2012) (2012) 1-2

Caradonna P, Makochekanwa C, Jones A, Machacek J, Sullivan J, Buckman S, *A search for Wigner cusps and reso*nances in positron scattering by atoms and molecules, **International Conference on Photonic, Electronic and Atomic Collisions** (ICPEAC 2011) (2012) 1

Carrad D, Burke A, Waddington D, Lyttleton R, Tan H, Reece P, Klochan O, Hamilton A, Rai A, Reuter D, Wieck A, Micolich A, *The Origin of Gate Hysteresis in p-type Si-doped AlGaAs/GaAs Heterostructures*, Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD 2012) (2012) 9-10

Carter I, Brown M, Dasgupta M, Hinde D, Evers M, Luong D, Wakhle A, Williams E, Determination of the angular distribution of evaporation residues following transmission through the superconducting solenoidal separator SOLITAIRE

Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012 (2012) 05003 p.1-p.4

Chan K, Ye J, Parkinson P, Monakhov E, Johansen K, Vines L, Svensson B, Jagadish C, Wong-Leung J, *Structural* and Optical properties of H implanted ZnO, Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD 2012) (2012) 219-220

Choi D, Gai X, Madden S, Wang R, Luther-Davies B, Silver-doped arsenic selenide (Ag-As2Se3) waveguides for compact nonlinear optical devices, IEEE Photonics Conference (IPC 2012) (2012) 788-789

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, Marx J, Searches for inspiral gravitational waves associated with short gamma-ray bursts in LIGO's fifth and Virgo's first science run, Marcel Grossmann Meeting on General Relativity 2009 (2012) 1689-1691

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Guidi G, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, *LIGO and Virgo gravitational waves data analysis*, Marcel Grossmann Meeting on General Relativity 2009 (2012) 1701-1711

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Luck H, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, *The upgrade of GEO 600*, **Marcel Grossmann Meeting on General Relativity 2009** (2012) 1726-1728

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Hammond G, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, *Progress on the monolithic suspension for advanced LIGO*, Marcel Grossmann Meeting on General Relativity 2009 (2012) 1723-1725

Chow J, Chua S, Inta R, Lam P, McClelland D, Miller J, Mow-Lowry C, Mullavey A, Nguyen T, Scott S, Shaddock D, Slagmolen B, Stefszky M, Wade A, Melissinos A, Abadie J, Abbott B, Abbott R, Adhikari R, Bork R, Coyne D, Heefner J, Heptonstall A, Mailand K, *The effect of the tides on the LIGO interferometers*, Marcel Grossmann Meeting on General Relativity 2009 (2012) 1718-1720


Chshelokova A, Kapitanova P, Poddubny A, Belov P, Kivshar Y, *Modeling of hyperbolic metamaterials with twodimensional transmission lines*, **European Microwave Conference** (EuMC 2012) Part of European Microwave Week (EuMW 2012) (2012) 1218-1220

Chshelokova A, Kapitanova P, Poddubny A, Belov P, Kivshar Y, *Hyperbolic metamaterials realized with twodimensional transmission lines*, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 645-647

Ciret C, Coda V, Rangelov A, Neshev D, Montemezzani G, Achromatic and reconfigurable adiabatic light transfer in photoinduced waveguides, European Optical Society Annual Meeting (EOSAM 2012) (2012)

Cook K, Luong D, Williams E, *Nuclear Physics Solutions to the Primordial Lithium Problem*, Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012 (2012) 05004 p.1-p.4

Danchev M, Rainovski G, Pietralla N, Gargano A, Covello A, Baktash C, Beene J, Bingham C, Galindo-Uribarra A, Gladnishki K, Gross C, Ponomarev V, Radford D, Riedinger L, Scheck M, Stuchbery A, Wambach J, Yu C, Zamfir N, *One-phonon isovector 2+1,MS state in the neutron rich nucleus 132Te,* **International School on Nuclear Physics, Neutron Physics and Applications 2011** (2012)

Dasgupta M, Luong D, Hinde D, Rafiei R, Evers M, DuRietz R, *Time-scales and Mechanisms of Breakup Influencing Fusion*, Latin American Symposium on Nuclear Physics and Applications 2011 (2012) 81-88

Decker M, Kremers C, Minovich A, Miroshnichenko A, Tan H, Chigrin D, Neshev D, Jagadish C, Kivshar Y, *Tuning magnetic metamaterials with liquid crystals*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Decker M, Minovich A, Kremers C, Miroshnichenko A, Tan H, Chigrin D, Neshev D, Jagadish C, Kivshar Y, *Liquid* crystal infiltrated optical magnetic metamaterials, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 813-815

Decker M, Staude I, Shishkin I, Samusev K, Parkinson P, Sreenivasan V, Minovich A, Miroshnichenko A, Zvyagin A, Jagadish C, Neshev D, Kivshar Y, *Photoluminescence enhancement in magnetic quantum-dot metamaterials* **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Derluyn H, Griffa M, Mannes D, Jerjen I, Dewanckele J, Vontobel P, Sheppard A, Boone M, Derome D, Cnudde V, Lehmann E, Carmeliet J, *Probing salt crystalliztion damage mechanisms in porous limestone with neutron radiog-raphy and x-ray tomography*, **International Building Physics Conference** (IBPC 2012) (2012) 95-102

Deshmukh S, Haberl B, Williams J, Bradby J, *Deformation of Amorphous Germanium by Nanoindentation*, Australian Institute of Physics Congress (AIP 2012) (2012)

Dogra R, Sharma A, Byrne A, Ridgway M, *Evolution of Palladium Related Defects in Silicon*, **Solid State Physics Symposium** (DAE-SSPS 2012) (2012) 1033-1034

Dracoulis G, Lane G, Byrne A, Watanabe H, Hughes R, Palalani N, Kondev F, Carpenter M, Seweryniak D, Zhu Y, Janssens R, Lister C, Lauritsen T, Chowdhury P, Shi Y, Xu F, *Isomers and alignments in 191Ir and 1920s* **Rutherford Centennial Conference on Nuclear Physics** (2012) 6

Elliman R, Nawaz M, Venkatachalam D, Kim T, Belay K, Karouta F, *Resistive Switching on High-K dielectircs for Non-volatile Memory Applications*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 121-122

Erkintalo M, Hammani K, Kibler B, Finot C, Akhmediev N, Dudley J, Genty G, *Higher-order modulation instability in fiber optics*, International Conference on Transparent Optical Networks (ICTON 2012) (2012) 1-4

Evers M, Dasgupta M, Hinde D, Simenel C, *Sub-barrier transfer in 16O+208Pb and 32S+208Pb and its role in understanding the suppression of fusion*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 05005 p.1-p.4 Feali M, Pinczewski W, Cinar Y, Arns C, Arns J, Francois N, Turner M, Senden T, Knackstedt M, *Qualitative and quantitative analysis of three-phase distributions of oil, water and gas in Bentheimer sandstone using micro-CT imaging,* **SPE Latin American and Caribbean Petroleum Engineering Conference** (LACPEC 2012) (2012) 154-161

Fonseka H, Tan H, Kang J, Paiman S, Gao Q, Parkinson P, Jagadish C, *Growth of InP Nanowires on Silicon Using a Thin Buffer Layer*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 43-44

Gai X, Luther-Davies B, White T, *High-Q (>750,000) photonic crystal nanocavities fabricated from chalcogenide glass fully embedded in an index-matched cladding,* **SPIE Photonics Europe Conference 2012** (2012) 1-7

Gao Q, Tan H, Fu L, Parkinson P, Breuer S, Wong-Leung J, Jagadish C, *InP Nanowires Grown by SA-MOVPE* **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 45-46

Ginzburg P, Poddubny A, Belov P, Zayats A, Kivshar Y, *Purcell factor engineering in plasmonic nanostructures for the enhanced generation of energy-time entangled states,* **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 399-401

Go M, Stricker C, Redman S, Bachor H, Daria V, *Patterned illumination for analyzing neuronal function in 3D*, **Biophotonics: Photonic Solutions for Better Health Care Conference** (2012) 842703/1-6

Grafe M, Solntsev A, Keil R, Tunnermann A, Nolte S, Szameit A, Sukhorukov A, Kivshar Y, *Classical optical simulation of bi-photon generation in quadratic waveguide arrays*, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012)

Gray M, McRae T, Hsu M, Herrmann J, Shaddock D, A digital phasemeter for precision length measurements, **Conference on Lasers and Electro-Optics (**CLEO 2012) (2012)

Guo Y, Zou J, Burgess T, Gao Q, Tan H, Jagadish C, *Shell formation in InGaAs Nanowires Driven by Lattice Latching and Polarity Effect*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 51-52

Haberl B, Bradby J, Williams J, *Measuring the Hardness of Silicon*, Australian Institute of Physics Congress (AIP 2012) (2012)

Haberl B, Guthrie M, Williams J, Bradby J, A New Crystalline Phase of Silicon Formed from Indentation-Induced High-Pressure Phases, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Hall C, Richards G, Tollerud J, Tan H, Jagadish C, Koike K, Sasa S, Inoue M, Yano M, Davis J, *Diffusion and Population Dynamics of Excitons in c-axis grown ZnO Quantum Wells*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 59-60

Hannam K, Powell D, Shadrivov I, Kivshar Y, *Wideband optical activity in coupled chiral meta-atoms*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Helgert C, Decker M, Kruk S, Pertsch T, Jagadish C, Neshev D, Kivshar Y, *Magnetic quasi-crystal metamaterials* Australian Institute of Physics Congress (AIP 2012) (2012) 1

Hinde D, Dasgupta M, Rodriguez M, Rafiei R, Brown M, Horsley A, Carter I, Kibedi T, Lobanov N, Weisser D, Evers M, Lane G, Luong D, Wakhle A, Williams E, *Applications of a 6.5T Superconduction Solenoidal Separator*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 1-4

Hinde D, Dasgupta M, Rodriguez M, Rafiei R, Brown M, Horsley A, Carter I, Kibedi T, Lobanov N, Weisser D, Evers M, Lane G, Luong D, Wakhle A, Williams E, *Applications of a 6.5T Superconducting Solenoidal Separator*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 05006 p.1-p.4

Hinde D, DuRietz R, Simenel C, Dasgupta M, Wakhle A, Evers M, Luong D, *Effects of Nuclear Structure in Heavy Element Formation Dynamics*, Latin American Symposium on Nuclear Physics and Applications 2011 (2012) 65-72



Hohn P, Scott S, *Conformal formulation of cosmological futures*, Marcel Grossmann Meeting on General Relativity 2009 (2012) 1803-1804

Howard J, Chung J, Spatial heterodyne Stokes vector imaging of the motional Stark-Zeeman multiplet, **Topical Conference on High-Temperature Plasma Diagnostics 2012** (2012)

Iorsh I, Belov P, Shadrivov I, Zharov A, Kivshar Y, *Linear and nonlinear Tamm surface modes in layered metaldielectric metamaterials*, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 47-49

Izdebskaya Y, Desyatnikov A, Kivshar Y, *Transformation of higher-order spatial solitons in nematic liquid crystals* **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Jeffery C, Smith S, Asad A, Chan S, Price R, *Routine production of copper-64 using 11.7MeV protons*, International Workshop on Targetry and Target Chemistry (WTTC 2012) (2012) 84-90

Jiang N, Parkinson P, Gao Q, Wong-Leung J, Breuer S, Tan H, Jagadish C, *Improvement of Minority Carrier Lifetime in GaAs/AlxGal1-xAs Core-Shell Nanowires*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 33-34

Johnson B, Stavrias N, Haberl B, Bayu Aji L, Bradby J, McCallum J, Williams J, *Raman study on the phase transformations of the meta-stable phases of Si induced by indentation*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 89-90

Kapitanova P, Filonov D, Slobozhanyuk A, Voroshilov P, Shadrivov I, Maslovski S, Belov P, Kivshar Y, *Light-tunable metamaterial mirror*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Kapitanova P, Filonov D, Slobozhanyuk A, Voroshilov P, Shadrivov I, Maslovski S, Belov P, Kivshar Y, *Tuning nonlinear metamaterials with light*, **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 264-266

Kapitanova P, Maslovski S, Shadrivov I, Voroshilov P, Filonov D, Belov P, Kivshar Y, *Light-controllable magnetic metamaterials based on loaded split-ring resonators*, **Joint IEEE International Symposium on Antenna 2012** (2012)

Khalili A, Arns C, Arns J, Hussain F, Cinar Y, Pinczewski W, Latham S, Funk J, *Permeability upscaling for carbonates* from the pore-scale using multi-scale Xray-CT images, **SPE/EAGE European Unconventional Resources Conference and Exhibition 2012** (2012) 606-622

Khodasevych I, Shadrivov I, Powell D, Rowe W, Mitchell A, *Switchable graded index microwave metamaterial lens design using pneumatic actuation*, **Asia-Pacific Microwave Conference** (APMC 2012) (2012) 451-453

Khodasevych I, Shadrivov I, Powell D, Rowe W, Mitchell A, *Nonlinear magnetoelastic metamaterial using gravitational restoring force,* **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 113-115

Kibedi T, Stuchbery A, Dracoulis G, Robertson K, *Towards the pair spectroscopy of the Hoyle state in 12C*, Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012 (2012) 06001 p.1-p.4

Kim T, Belay K, Llewellyn D, Elliman R, Choi D, Luther-Davies B, *Strain Relaxation behaviour in Germanium-oninsulator fabricated by Ion Implantation*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 167-168

Kivshar Y, Light control in nanophotonics structures and metamaterials, European Optical Society Annual Meeting (EOSAM 2012) (2012)

Klein A, Minovich A, Janunts N, Neshev D, Tunnermann A, Kivshar Y, Pertsch T, *Interference of Airy surface plasmons*, **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 609 -611 Kluth P, Afra B, Rodriguez M, Lang M, Trautmann C, Ewing R, *Morphology and annealing kinetics of ion tracks in minerals*, Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012 (2012)

Knackstedt M, Golab A, Carnerup A, Senden T, Butcher A, Benedictus A, Riepe L, *Multi-scale formation evaluation of tight gas resources*, International Petroleum Technology Conference 2012 (2012) 2273-2281

Kruk S, Helgert C, Decker M, Staude I, Etrich C, Menzel C, Rockstuhl C, Jagadish C, Pertsch T, Neshev D, Kivshar Y *Quasicrystalline metamaterials*, **Frontiers in Optics 2012 (**2012)

Kruk S, Minovich A, Farnell J, McKerracher I, Karouta F, Tian J, Powell D, Shadrivov I, Tan H, Jagadish C, Neshev D, Kivshar Y, *Tunable and nonlinear fishnet metamaterials based on liquid crystal infiltration*, **Metamaterials: Fundamentals and Applications V** (2012) 8455201-10

Kruk S, Powell D, Minovich A, Neshev D, Kivshar Y, *Multilayer fishnet metal-dielectric structures as magnetic hyperbolic metamaterials*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Kruk S, Powell D, Minovich A, Neshev D, Kivshar Y, *Multi-layer fishnet metamaterials as magnetic hyperbolic media*, **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 627-629

Kruk S, Powell D, Minovich A, Neshev D, Kivshar Y, *Topology of iso-frequency surfaces of multilayer fishnet metamaterials*, **Frontiers in Optics 2012** (2012)

Kuznetsov A, Miroshnichenko A, Fu Y, Luk'yanchuk B, *Magnetic response of silicon nanoparticles in the visible spectral range*, **European Optical Society Annual Meeting** (EOSAM 2012) (2012)

Lal R, Fifield K, Tims S, Wasson R, Howe D, *A study of soil formation rates using 10Be in the wet-dry tropics of northern Australia*, Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012 (2012) 01001-p.1-01001-p.5

Lapine M, Krylova A, McPhedran R, Poulton C, Belov P, Kivshar Y, *Anisotropic metamaterials with broadband diamagnetic response*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Lavrinenko A, Andryieuski A, Ha S, Sukhorukov A, Kivshar Y, *Bloch-mode analysis for effective parameters restoration,* **International Workshop on Theoretical and Computational Nano-Photonics** (TaCoNa-Photonics 2012) (2012) 140-142

Lee B, Kibedi T, Stuchbery A, Robertson K, *Atomic Radiation in Nuclear Decay*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 04003-p.1-04003-p.5

Lee A, Lane G, Dracoulis G, Macchiavelli A, Fallon P, Clark R, Xu F, Dong D, *Observation of new h9/2 and h11/2 bands in 187Tl*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 06002 p.1-p.4

Lee Y, Li Z, Fu L, Parkinson P, Vora K, Tan H, Jagadish C, *Improved GaAs Nanorwire solar Cells Using AlGaAs for Surface Passivation*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 131-132

Lei W, Parkinson P, Tan H, Jagadish C, *Drop epitaxy of strain-free GaAs/AlGaAs quantum molecules for optoelectronic applications*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 53-54

Leykam D, Bahat Treidel O, Desyatnikov A, *Nonlinear conical diffraction in photonic lieb lattices*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Li Z, Hattori H, Karouta F, Tian J, Parkinson P, Fu L, Tan H, Jagadish C, *Coupling of light from microdisk lasters to nano-antennas with nano-tapers*, **IEEE Photonics Conference** (IPC 2012) (2012) 889-890

Linnarsson M, Wong-Leung J, Hallen A, Khartsev S, Grishin A, *Mn implantation for new applications of 4H-SiC*, **International Conference on Silicon Carbide and Related Materials** (ICSCRM 2011) (2012) 221-224

PUBLICATIONS

Liu M, Powell D, Shadrivov I, *Light-driven chiral meta-atoms*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Liu M, Powell D, Shadrivov I, Kivshar Y, *Hybridisation in coupled-dipole chiral meta-atoms*, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 327-329

Liu W, Miroshnichenko A, Neshev D, Kivshar Y, *Polarization-independent Fano resonances in one dimensional arrays of core-shell nanospheres*, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012)

Lu H, Fu L, Jolley G, Tan H, Jagadish C, *Improved performance of InGaAs/GaAs Quantum Dot Solar Cells using Simodulation doping*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 127-128

Luong D, Hinde D, Dasgupta M, Evers M, Rafiei R, DuRietz R, *Reconstructing breakup at sub-barrier energies,* Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012 (2012) 05007 p.1-p.4

Lysevych M, Tan H, Karouta F, Fu L, Jagadish C, *Reduction of Gain-Saturation in Merged Beam Lasers,* Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD 2012) (2012) 189-190

Machacek J, Palihawadana P, Makochekanwa C, Sullivan J, Brunger M, Buckman S, *Trends in positron scattering from biomolecules*, International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC 2011) (2012)

Makochekanwa C, Machacek J, Jones A, Caradonna P, Slaughter D, McEachran R, Sullivan J, Buckman S, Fursa D, Bray I, Stauffer A, *Low energy positron scattering from krypton and xenon*, International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC 2011) (2012)

Maksymov I, Miroshnichenko A, Kivshar Y, *Tunable Yagi-Uda-type plasmonic nanoantennas: implications for na*noscale optical sensing, Asia Pacific Optical Sensors Conference 2012 (2012) 7

Maksymov I, Miroshnichenko A, Kivshar Y, *Efficient control of polarization-entangled photon pairs with plas*monic nanoantennas, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Maksymov I, Staude I, Miroshnichenko A, Decker M, Tan H, Neshev D, Jagadish C, Kivshar Y, Arrayed nanoantennas for efficient broadband unidirectional emission enhancement, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012) 1-2

Mangalampalli S, Bradby J, Williams J, Controlled Temperature Indentation of Si to Investigate the Phase Transformations, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Margerin V, Lane G, Dracoulis G, Palalani N, Smith M, *Levels in 210Fr and the decay of a high-spin, multi-particle isomer*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 06003 p.1-p.4

Minovich A, Farnell J, Neshev D, McKerracher I, Karouta F, Tian J, Powell D, Shadrivov I, Tan H, Jagadish C, Kivshar Y

Nonlinear fishnet metamaterials based on liquid crystal infiltration, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012) 1-2

Minovich A, Farnell J, Neshev D, McKerracher I, Karouta F, Tian J, Powell D, Shadrivov I, Tan H, Jagadish C, Kivshar Y

Nonlinear effects in liquid-crystal-infiltrated fishnet metamaterials, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 828-830

Minovich A, Klein A, Janunts N, Neshev D, Kivshar Y, Pertsch T, *Collision of non-diffracting airy surface plasmons,* **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Minovich A, Klein A, Steinert M, Janunts N, Tunnermann A, Bleckmann F, Linden S, Pertsch T, Neshev D, Kivshar Y Non-diffracting airy surface plasmons: generation, manipulations, and interference, **Frontiers in Optics 2012** (2012) Miroshnichenko A, *Magnetic response of dielectric nanostructures: theory and applications*, **Photonics Global Conference** (PGC 2012) (2012)

Mizeikis V, Vailionis A, Gamaly E, Yang W, Rode A, Juodkazis S, *Synthesis of super-dense phase of aluminum under extreme pressure and temperature conditions created by femtosecond laser pulses in sapphire*, **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics Conference 2012** (2012) 82490A1-12

Mokkapati S, Lu H, Turner S, Fu L, Tan H, Jagadish C, *Plasmonics for III-V semiconductor solar cells*, **IEEE Photonics Conference** (IPC 2012) (2012) 56-57

Mokkapati S, Saxena D, Gao Q, Tan H, Jagadish C, *Effect of plasmonic nanoparticles on the quantum efficiency of Ill-V semiconductor nanorwire emitters*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 47-48

Montazeri M, Wade A, Fickenscher M, Jackson H, Smith L, Yarrison-Rice J, Gao Q, Tan H, Jagadish C, *Photomodulated Rayleigh scattering from single semiconductor nanowires*, **Materials Research Society Fall Meeting 2011** (2012) 11-16

Nagumo K, Nitta Y, Hoshino M, Sullivan J, Tanaka H, Nagashima Y, *Magnetic field-free measurements of the total cross sections for positron-neon and positron-argon scattering*, International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC 2011) (2012)

Neshev D, *Functional metamaterials and plasmonic structures*, **International Conference on Optical MEMS and** Nanophotonics 2012 (2012) 7-8

Noskov R, Belov P, Kivshar Y, Subwavelength plasmonic kinks, solitons, and oscillons in arrays of nonlinear metallic nanoparticles, Nonlinear Optics and Applications Conference 2012 (2012) 84340G1-11

Noskov R, Belov P, Kivshar Y, *Oscillons, solitons, and domain walls in arrays of nonlinear plasmonic nanoparticles* International Congress on Advanced Electromagnetic Materials in Microwaves and Optics **2012** (2012) 86-88

Orlov A, Chebykin A, Iorsh I, Poddubny A, Voroshilov P, Kivshar Y, Belov P, *Purcell effect, surface modes and non-locality in hyperbolic metamaterials*, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012) 1-2

Palalani N, Lane G, Dracoulis G, Kondev F, Byrne A, Carpenter M, Chiara C, Chowdhury P, Hughes R, Janssens R, Lauritsen T, Lister C, McCutchan E, Seweryniak D, Stefanescu I, Watanabe H, Zhu S, *Decay of a three-quasiparticle isomer in the neutron-rich nucleus 183Ta*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 06004 p.1-p.4

Palihawadana P, Machacek J, Makochekanwa C, Sullivan J, Brunger M, Winstead C, McKoy V, Garcia G, Blanco F, Buckman S, *Electron and positron scattering from pyrimidine*, International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC 2011) (2012)

Pant R, Byrnes A, Poulton C, Li E, Choi D, Madden S, Luther-Davies B, Eggleton B, *Photonic-chip-based tunable slow and fast light via stimulated Brillouin scattering*, **SPIE Photonics Europe Conference 2012** (2012) 1-5

Paquot Y, Schroder J, van Erps J, Vo T, Pelusi M, Madden S, Luther-Davies B, Eggleton B, *Multi-order, automatic dispersion compensation for 1.28 Terabaud signals*, **Nonlinear Optics and Applications Conference 2012** (2012) 8434011-8

Parkinson P, Peng K, Jiang N, Gao Q, Tan H, Jagadish C, *Non-linear direct-write lithography for semiconductor nanowire characterisation*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 135-136

Parkinson P, Wang H, Gao Q, Tan H, Jagadish C, *Picosecond carrier lifetime measurements on a single GaAs nanowire,* **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012)

Poddubny A, Belov P, Ginzburg P, Zayats A, Kivshar Y, *Purcell effect in hyperbolic media*, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 432-434



Powell D, *Linear and nonlinear coupling in metamaterials*, International Conference on Electromagnetics in Advanced Applications (ICEAA 2012) (2012) 428-429

Powell D, Maslovski S, Kivshar Y, *Hybridisation theory for metamaterials on a substrate*, **Frontiers in Optics 2012** (2012)

Pyke D, Elliman R, McCallum J, Activation energy and blistering rate in hydrogen-implanted semiconductors, Materials Research Society Fall Meeting 2011 (2012) 79-84

Qajar J, Francois N, Arns C, *Micro-tomographic characterization of dissolution-induced local porosity changes including fines migration in carbonate rock*, **SPE EOR Conference at Oil and Gas West Asia - EOR: Building Towards Sustainable Growth 2012** (2012) 117-134

Rainovski G, Danchev M, Pietralla N, Gargano A, Covello A, Baktash C, Beene J, Bingham C, Galindo-Uribarra A, Gladnishki K, Gross C, Ponomarev V, Radford D, Riedinger L, Scheck M, Stuchbery A, Wambach J, Yu C, Zamfir N, *On the origin of low-lying M1 strength in even-even nuclei*, **Rutherford Centennial Conference on Nuclear Physics** (2012)

Reed M, Walker P, Cullen I, Litvinov Y, Blaum K, Bosch F, Brandau C, Carroll J, Cullen D, Deo A, Detwiler B, Dimopoulou C, Dracoulis G, Farinon F, Geissel H, Haettner E, Heil M, Kempley R, Knobel R, Kozhuharov C, Kurcewicz J, Kuzminchuk N, Litvinov S, Liu Z, Mao R, Nociforo C, Nolden F, Plass W, Prochazka A, Scheidenberger C, Shubina D, Steck M, Stohlker T, Sun B, Swan T, Trees G, Weick H, Winckler N, Winkler M, Woods P, Yamaguchi T, *Technique for Resolving Low-lying Isomers in the Experimental Storage Ring (ESR) and the Occurrence of an Isomeric State in 192Re*, **Rutherford Centennial Conference on Nuclear Physics** (2012) 1-5

Reginatto M, Hall M, *Quantum theory from the geometry of evolving probabilities*, International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering **2011** (2012) 96-103

Ren Y, Weber K, Karouta F, Vora K, Liang W, *Charge trapping and storage in SiNx thin films deposited with Oxford PlasmaLab 100 system*, **IEEE Photovoltaic Specialists Conference** (PVSC 2012) (2012) 1094-1097

Rodriguez M, Trautmann C, Toulemonde M, Afra B, Bierschenk T, Giulian R, Kirby N, Kluth P, *Modification of Fe-B* based metallic glasses using swift heavy ions, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012)

Rosanov N, Shatsev A, Vyssotina N, Desyatnikov A, Shadrivov I, Kivshar Y, *Discrete dissipative switching waves* and solitons in 1D-, 2D-, and 3D-nanostructures and metamaterials, **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 83-85

Rybin M, Poddubny A, Limonov M, Kivshar Y, *Fano resonance in layered structures with disorder*, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012 (2012) 439-441

Saadatfar M, Francois N, Arad A, Madadi M, Cruikshank R, Alizadeh M, Sheppard A, Kingston A, Limaye A, Senden T, Knackstedt M, *3D mapping of deformation in an uncosolidated sand: a Micro mechanical study*, **Society of Exploration Geophysicists Annual Meeting** (SEG 2012) (2012) 1-6

Sajewicz P, Fu L, Tan H, Vora K, Jagadish C, *Monolithically integrated multi-section semiconductor laser by selective area quantum well intermixing*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 137-138

Samoc M, Matczyszyn K, Nyk M, Olesiak-Banska J, Wawrzynczyk D, Hanczyc P, Szeremeta J, Wielgus M, Gordel M, Mazur L, Kolkowski R, Straszak B, Cifuentes M, Humphrey M, *Nonlinear absorption and nonlinear refraction: maximizing the merit factors*, **Organic Photonic Materials and Devices Conference 2012 82580** (2012) 82580V/1-8

Savelev R, Shadrivov I, Sukhorukov A, Belov P, Fedorov S, Rosanov N, Kivshar Y, *Gain-induced compensation of losses in metal-dielectric metamaterials*, **International Workshop on Theoretical and Computational Nano-Photonics** (TaCoNa-Photonics 2012) (2012) 161-163 Saxena D, Mokkapati S, Tan H, Jagadish C, *Designing single GaAs nanowire lasers*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 101-102

Schediwy S, He Y, Anstie J, Hsu M, Light P, Wouters M, Hartnet J, Gray M, Warrington R, Orr B, Baldwin K, Aben G, Luiten A, *From Boolardy to Brisbane: Accurate Time and Frequency for the Nation*, Australian Conference on Optical Fibre Technology (ACOFT 2012) (2012)

Shadrivov I, Giant pure nonlinear optical activity, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Shishkin I, Samusev K, Rybin M, Limonov M, Kivshar Y, Gaidukeviciute A, Kiyan R, Chichkov B, *Inverted Yablo-novite-like 3D photonic crystals fabricated by laser nanolithography*, **SPIE Photonic Crystal Materials and Devices Conference 2012** (2012) 84252C1-5

Simenel C, Wakhle A, Avez B, Hinde D, DuRietz R, Dasgupta M, Evers M, Lin C, Luong D, *Effects of nuclear structure on quasi-fission*, International Conference on Nuclear Structure and Related Topics (NSRT 2012) (2012) 7

Slobozhanyuk A, Filonov D, Lapine M, Belov P, Shadrivov I, Kivshar Y, *Nonlinear spiral metamaterials*, Joint IEEE International Symposium on Antenna 2012 (2012)

Slobozhanyuk A, Lapine M, Shadrivov I, Kivshar Y, Belov P, *Novel way for constructing flexible metamaterials with chiral conformational nonlinearity*, **International Congress on Advanced Electromagnetic Materials in Microwaves and Optics 2012** (2012) 822-824

Smith L, Jackson H, Yarrison-Rice J, Jagadish C, *Measuring the Energy Landscape in Single Semiconductor Nanowires*, **WELCOME Scientific Meeting on Hybrid Nanostructures** (2012) 316-320

Solntsev A, Clark A, Setzpfandt F, Collins M, Xiong C, Wu C, Eilenberger F, Schreiber A, Katzschmann F, Schiek R, Sohler W, Mitchell A, Silberhorn C, Eggleton B, Pertsch T, Sukhorukov A, Neshev D, Kivshar Y, *Simultaneous photon-pair generation and quantum walks in a waveguide array*, **Frontiers in Optics 2012** (2012)

Solntsev A, Setzpfandt F, Clark A, Collins M, Xiong C, Wu C, Eilenberger F, Schreiber A, Katzschmann F, Schiek R, Sohler W, Mitchell A, Silberhorn C, Eggleton B, Pertsch T, Sukhorukov A, Neshev D, Kivshar Y, *Controllable photon-pair generation and quantum walks in nonlinear waveguide arrays*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Solntsev A, Setzpfandt F, Wu C, Neshev D, Sukhorukov A, Kivshar Y, Pertsch T, *Observation of spontaneous parametric down conversion in LiNbO3 waveguide arrays*, **Conference on Lasers and Electro-Optics** (CLEO 2012) (2012)

Solntsev A, Sukhorukov A, Collins M, Clark A, Xiong C, Setzpfandt F, Wu C, Eilenberger F, Schiek R, Mitchell A, Eggleton B, Pertsch T, Neshev D, Kivshar Y, *Active quantum circuits: integrated photon pair generation and quantum walks*, Laser Optics 2012 (2012)

Song Y, Zhang P, Tian J, Zhang Z, Tan H, Jagadish C, *High repetition frequency mode-locked semiconductor disk laser*, International Conference on Data Communication Networking, International Conference on e-Business and International Conference on Optical Communication Systems 2012 (2012) 361-364

Sprouster D, Campbell C, Buckman S, Ruffell S, Impellizzeri G, Sullivan J, PALS-based characterisation of defect structures in F-implanted Germanium, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Staude I, Decker M, Ventura M, Jagadish C, Neshev D, Gu M, Kivshar Y, *A novel hybrid fabrication approach for three-dimensional photonic nanostructures*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Staude I, Decker M, Ventura M, Jagadish C, A novel hybrid fabrication approach for three-dimensional photonic nanostructures, **20th Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Staude I, Maksymov I, Decker M, Miroshnichenko A, Neshev D, Jagadish C, Kivshar Y, *Broadband Unidirectional Yagi-Uda Nanoantennas*, **20th Australian Institute of Physics Congress** (AIP 2012) (2012) 1

PUBLICATIONS

Staude I, Maksymov I, Decker M, Miroshnichenko A, Neshev D, Jagadish C, Kivshar Y, *Broadband unidirectional Yagi-Uda nanoatennas*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Staude I, Maksymov I, Decker M, Miroshnichenko A, Neshev D, Jagadish C, Kivshar Y, *Tapered nanoantennas for efficient broadband unidirectional emission enhancement*, **International Congress on Advanced Electromagnetic** Materials in Microwaves and Optics 2012 (2012) 743-745

Staude I, Maksymov I, Decker M, Miroshnichenko A, Neshev D, Jagadish C, Kivshar Y, *Tapered Yagi-Uda nanoan*tennas for broadband unidirectional emission, **Materials Research Society Meeting Fall 2012** (2012)

Stuchbery A, Simple structures in complex nuclei versus complex structures in simple nuclei: a nuclear moments perspective, International School on Nuclear Physics, Neutron Physics and Applications 2011 (2012)

Stuchbery A, A panorama of excited-state g-factor measurements: advancing moment measurements on radioactive beams, **Symposium on Nuclear Physics 2012** (2012) 1-9

Stuchbery A, *Free-ion hyperfine fields and magnetic-moment measurements on radioactive beams*, **Heavy Ion** Accelerator Symposium on Fundamental and Applied Science 2012 (2012) 06005p.1-p.5

Sukhorukov A, Generation and shaping of photon pairs in nonlinear waveguide arrays, Laser Optics 2012 (2012)

Sukhorukov A, *Slow-light enhanced optomechanical interactions in nano-beam waveguides*, **Photonics Global Conference** (PGC 2012) (2012)

Sukhorukov A, Solntsev A, Kruk S, Neshev D, Kivshar Y, *Nonlinear coupled-mode theory for periodic waveguides and metamaterials with loss and gain*, **International Workshop on Theoretical and Computational Nano-Photonics** (TaCoNa-Photonics 2012) (2012) 80-82

Sukhorukov A, Sun Y, White T, Slow-light enhanced optomechanical interactions, Advances in Slow and Fast Light 2012 (2012) 8273171-7

Sun W, Guo Y, Xu H, Liao Z, Zou J, Gao Q, Tan H, Jagadish C, *Unequal P distribution in nanowires and the layer during the growth of GaAsP nanowires on GaAs*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 147-148

Sun Y, Sukhorukov A, Oscillatory instabilities in two-mode nano-cavities with tailored optomechanical potentials, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Sun Y, Sukhorukov A, *Stability and oscillations in two-mode nano-cavities with tailored optomechanical potentials*, **Frontiers in Optics 2012** (2012)

Teniswood C, Roberts D, Howard W, Bradby J, *Structural Properties of Southern Ocean Pteropods*, Australian Institute of Physics Congress (AIP 2012) (2012) 1

Tims S, Fifield K, *Actinides, accelerators and erosion,* **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 01002-p.1-01002-p.4

Tollerud J, Richards G, Tan H, Jagadish C, Davis J, *Demonstration of a stable and flexible coherent multidimen*sional spectroscopy apparatus to study coherent coupling in asymmetric double quantum wells, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 151-152

Tosic S, Pejcev V, Sevic D, Marinkovic B, McEachran R, Stauffer A, *Excitation of silver by electron impact*, International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC 2011) (2012)

Turner S, Mokkapati S, Jolley G, Fu L, Tan H, Jagadish C, *Dielectric Diffraction Gratings for Light-Trapping in In-GaAs-GaAs Quantum Well Solar Cells*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 129-130

Venkatachalam D, Parkinson P, Ruffell S, Elliman R, *Optical imaging of graphene using phase shift interferometry*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Vu K, Madden S, *Tellurium oxide thin film waveguides for integrated photonics*, **International Conference on Advances in the Fusion and Processing of Glass and Symposium 15 - Structure**, **Properties and Photonic Applications of Glasses AFPG-9** (2012) 181-186

Vu K, Madden S, High Gain Waveguide Amplifier and Laser using Erbium Doped Tellurium Oxide Pumped at 980nm, Australian Conference on Optical Fibre Technology (ACOFT 2012) (2012)

Wakhle A, Hinde D, Dasgupta M, DuRietz R, Simenel C, Evers M, Luong D, Rafiei R, *Quasifission and Shell Effects in Reactions Forming 266Sg*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 05008 p.1-p.4

Wallner A, Bichler M, Belgya T, Buczak K, Dillmann I, Forstner O, Golser R, Kappeler F, Klix A, Korschinek G, Krasa A, Kutschera W, Lederer C, Mengoni A, Paul M, Plompen A, Priller A, Semkova V, Steier P, *Nuclear Data from AMS & Nuclear Data for AMS -some examples*, **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 6 01003-p.1 - 01003-p.6

Wang F, Lee W, Toe W, Gao Q, Tan H, Jagadish C, Reece P, *PL Mapping and Optimized Optical Trapping of Nanowires SLM beam shaping*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 29-30

Wang F, Toe W, Hartstone A, Ming Lee W, McGloin D, Gao Q, Tan H, Jagadish C, Reece P, *Mapping optical process in semiconductor nanowires using dynamic optical tweezers*, **Optical Trapping and Optical Micromanipula-tion IX** (2012)

Wang H, Parkinson P, Tian J, Saxena D, Mokkapati S, Gao Q, Prasai P, Fu L, Karouta F, Tan H, Jagadish C, *Optoelectronic properties of GaAs nanowire photodector*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 139-140

Wang R, Choi D, Madden S, Luther-Davies B, *The role of chemical composition and mean coordination number in Ge-As-Se ternary glasses*, International Conference on Advances in the Fusion and Processing of Glass and Symposium 15 - Structure, Properties and Photonic Applications of Glasses AFPG-9 (2012) 233-238

Weber T, Allen S, Howard J, C-III flow measurements with a coherence imaging spectrometer, **Topical Conference** on High-Temperature Plasma Diagnostics **2012** (2012)

Weimann S, Xu Y, Keil R, Miroshnichenko A, Tunnermann A, Nolte S, Sukhorukov A, Szameit A, Kivshar Y, *In-band localized Fano surface states in periodic waveguiding lattices*, **Australian Institute of Physics Congress** (AIP 2012) (2012) 1

Willems van Beveren L, McCallum J, Tan H, Jagadish C, *Progress towards Opto-Electronic Characterization of Indium Phosphide Nanowire Transistors at milli-Kelvin temperatures*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 49-50

Williams E, Cooper N, Bonett-Matiz M, Werner V, Regis J, Rudigier M, Ahn T, Anagnostatou V, Berant Z, Bunce M, Elvers M, Heinz A, Ilie G, Jolie J, Radeck D, Savran D, Smith M, *High-precision excited state lifetime measurements in rare earth nuclei using LaBr3(Ce) detectors,* **Heavy Ion Accelerator Symposium on Fundamental and Applied Science 2012** (2012) 06006 p.1-p.4

Wong S, Bradby J, Williams J, Silicon High-Pressure Phases under High Load Nanoindentation, Australian Institute of Physics Congress (AIP 2012) (2012)

Xu H, Guo Y, Liao Z, Zou J, Gao Q, Tan H, Jagadish C, *Growth of defect-free InAs Nanowires using Pd catalyst* **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 31-32

Ye J, Lim S, Gu S, Tan H, Jagadish C, Teo K, *Magneto-transport Study on the Two Dimensional Electron Gas in* ZnMgO/ZnO Heterostructure Grown by MOVPE, Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD 2012) (2012) 201-202





Yuan X, Tan H, Parkinson P, Wong-Leung J, Breuer S, Gao Q, Jagadish C, *Growth and characterization of GaAx1-xSbx nanowires*, **Conference on Optoelectronic and Microelectronic Materials and Devices** (COMMAD 2012) (2012) 141-142

Zharova N, Shadrivov I, Zharov A, Kivshar Y, *Nonlinear cloaking of nanowires*, International Congress on Advanced Electromagnetic Materials in Microwaves and Optics **2012** (2012) 203-205

Zhong J, Huang Y, Wen G, Sun H, Zhu W, *The design and applications of tunable metamaterials*, International Workshop on Information and Electronics Engineering (IWIEE 2012) (2012) 802-807

Zhong J, Huang Y, Wen G, Sun H, Zhu W, *Tunable dual-band negative refractive index metamaterial consisting of ferrites and SRR-wires*, International Workshop on Information and Electronics Engineering (IWIEE 2012) (2012) 797-801



Astrium SAS

Partner Contribution Australian Space Research Program Stream B: Space Science & Innovation Project Grants

Charles Christine Prof - Boswell Roderick Prof - Laine Robert The Australian Plasma Thruster Project (Round 4) HDLT 1/08/2011-30/06/2013 \$102,000.00

Australian Institute of Nuclear Science and Engineering (AINSE)

Postgraduate Research Award

Hole Matthew Dr - Haskey Shaun Mr - Blackwell Boyd Prof From Stellarator to tokamaks: The effects of 3D structure on Alfven eigenmodes 1/07/2010 - 24/11/2012 \$39,000.00

Hudspeth Jessica Dr - Charles Christine Prof - Corr Cormac Dr - Nelson Andrew *Plasma Deposition Techniques for Proton Exchange Membrane Fuel Cells* 1/07/2009 - 3/02/2012 \$51,402.00

Australian Learning and Teaching Council

Competitive Grants Program

Higgins Denise Ms - Howitt Susan A/Prof - Wilson Anna Dr - Roberts Pamela Ms - Ross Pauline - Akerlind Gerlese - Gill Betty

Teaching Research- Evaluation and Assessment Strategies for Undergraduate Research Experiences (TREASURE) 30/09/2011 - 3/10/2013

\$182,000.00

Australian National University (ANU)

Discovery Translation Fund Ganguly Rana - Howard John Prof - Borg Gerard Dr - Hammond Thomas Dr BushLAN - Distributed Wireless Broadband 21/11/2011 - 24/12/2012 \$24,320.00

Notley Shannon Dr Development and evaluation of an in-vitro nematode permeability assay to discover new classes of anti-nematode drugs 14/11/2011 - 17/12/2012 \$66,210.00

Contribution from Central Funds/Local area

Kivshar Yuri Prof All-optical Technologies Nanophotonics and Metamaterials 1/11/2007 - 31/10/2012 \$1,502,520.00
Buckman Stephen Prof - Sullivan James
ARC Centre of Excellence: Centre for Antimatter-Matter Studies
1/07/2010 - 31/12/2013
\$1,100,000.00

Luther-Davies Barry Prof - Neshev Dragomir Prof - Kivshar Yuri Prof - Madden Steve Dr ARC Centre of Excellence for ultrahigh bandwidth devices for optical systems (CUDOS) (externally led by University of Sydney) 1/01/2011 - 31/12/2017 \$2,695,000.00

Lam Ping Koy Prof - James Matthew Prof - Buchler Benjamin Dr - Symul Thomas Dr - Sellars Matthew Dr - Simmons Michelle Yvonne

ARC Centre of Excellence for Quantum Computation and Communication Technology (QC2T) (externally led by University of New South Wales)

1/01/2011 - 31/12/2015 \$2,457,000.00

McClelland David Prof - Slagmolen Bram Dr - Shaddock Daniel Dr - Shoemaker D - Marx Jay - Munch Jesper - Veitch Peter John - Whitcomb Stanley Ernest - Lazzarini A

Australian Partnership in Advanced LIGO 1/01/2009 - 31/12/2012 \$566,000.00

Jagadish Chennupati Prof - Elliman Robert Prof - Wong-Leung Yin-Yin (Jennifer) Dr - MacDonald Daniel Dr - Williams James Prof

State-of-the-art Hall effect system for detailed electrical characterisation in semiconductors 1/02/2011 - 31/01/2012 \$83,333.00

Shaddock Daniel Dr - McClelland David Prof - Tregoning Paul Dr The GRACE Follow-on mission 1/08/2010 - 30/06/2013 \$360.000.00

Contribution from Research School of Physics & Engineering

Charles Christine Prof - Butcher Harvey Prof - Boswell Roderick Prof - Perren M - Lappas Viaos - Clark Andrew The Australian Plasma Thruster Project (Round 4) HDLT 1/08/2011 - 30/06/2013 \$315,000.00

Australian Research Council (ARC)

2009 Australian Laureate Fellowship

Jagadish Chennupati Prof Nanowire Quantum Structures for Next Generation Optoelectronic 25/11/2009 - 24/11/2014 \$2,753,840.00

Centres of Excellence

Buckman Stephen Prof - Sullivan James ARC Centre of Excellence: Centre for Antimatter-Matter Studies 1/07/2010 - 31/12/2013 \$4,550,000.00

Lam Ping Koy Prof - James Matthew Prof - Buchler Benjamin Dr - Symul Thomas Dr - Sellars Matthew Dr - Simmons Michelle Yvonne

ARC Centre of Excellence for Quantum Computation and Communication Technology (QC2T) (externally led by University of New South Wales)

1/01/2011 - 31/12/2015 \$5,481,875.00

Luther-Davies Barry Prof - Neshev Dragomir Prof - Kivshar Yuri Prof - Madden Steve Dr ARC Centre of Excellence for ultrahigh bandwidth devices for optical systems (CUDOS) (externally led by University of Sydney) 1/01/2011 - 31/12/2017 \$7,700,000.00

2008 Discovery: Project Grant

Ridgway Mark C Prof - Kluth Patrick Dr - Nordlund Kai Tailoring the Shape Size and Orientation of Metal Nanocrystals via Swift Heavy Ion Irradiation 1/06/2008 - 31/12/2012 \$980,000.00

Symul Thomas Dr - Ralph T C Dr - Ralph Timothy Cameron - Sanders Barry Cyril - Schnabel Roman Quantum repeater technologies for continuous variable 1/01/2008 - 31/12/2012 \$766,643.00

Arns Christoph Dr - Adler Pierre Michel - Callaghan Paul T Reactive flow through porous media by micro-imaging 1/01/2008 - 31/12/2012 \$613,000.00

Desyatnikov Anton S Dr Engineering phase and the flow of light in nanophotonics 1/01/2008 - 31/12/2012 \$558,000.00

Hinde David Prof - Dasgupta Mahananda Dr - Freer Martin - Tostevin Jeffrey Allan - Hagino Kouichi Developing and exploiting a beam of exotic neutron halo nuclei: probing quantum coherence and decoherence at the femtoscale 1/01/2008 - 31/12/2012 \$1,063,000.00

2009 Discovery: Project Grant

Choi Duk-Yong Dr - Yoon Euijoon - Kim Yong Monolithic Integration of Silicon Waveguide and Ge1-xSix Photodetector on Silicon-on Insulator Platform for Intra-chip Optical Interconnect 1/06/2009 - 31/12/2012 \$360,000.00

Bradby Jodie A/Prof - Gibson John Murray Understanding structure-property relations in amorphous silicon 1/01/2009 - 31/12/2013 \$735,000.00

2010 Discovery: Project Grant

Shadrivov Ilya Dr Nonlinear metamaterials and transformation optics 6/02/2010 - 31/12/2014 \$700,000.00

Guan Xi-Wen Dr - Batchelor Murray Prof - Liu Wensheng Vincent Quantum many-body systems with higher mathematical symmetries 1/01/2010 - 31/12/2012 \$240,000.00

Bazhanov Vladimir Prof - Bobenko Alexander Quantization of polyhedral surfaces 1/01/2010 - 31/12/2012 \$320,000.00

Bernu Julien Dr - Grangier Philippe - Treps Nicolas Non-Gaussian states and entanglement distillation for Continuous Variable quantum information protocols 1/01/2010 - 31/12/2012 \$340,000.00

Charles Christine Prof Current-free double layers applied to astrophysical objects and space propulsion 1/01/2010 - 31/12/2012 \$185,000.00

Baxter Rodney Prof - Bazhanov Vladimir Prof - Perk Jacques Fundamental mathematical structures in statistical and quantum systems 1/01/2010 - 31/12/2012 \$305,000.00

Kivshar Yuri Prof - Desyatnikov Anton S Dr - Assanto Gaetano Photonic routing with liquid crystals 1/01/2010 - 31/12/2012 \$345,000.00

Dewar Robert Prof - Hole Matthew Dr - Pinches Simon D - McClements Ken - Sharapov Sergei Burning Plasmas: resolving energetic particle physics for ITER 1/01/2010 - 31/12/2012 \$285,000.00

Kivshar Yuri Prof Nonlinear nanophotonics 1/01/2010 - 31/12/2012 \$405,000.00

Buchler Benjamin Dr - Lam Ping Koy Prof - Furusawa Akira - Sandoghdar Vahid - Aspelmeyer Markus *Quantum Opto-Mechanics with Whispering Gallery Modes in Crystalline Materials* 1/01/2010 - 31/12/2012 \$300,000.00

Luther-Davies Barry Prof Rare Earth doped chalcogenide glass films for on-chip optical amplifiers 1/01/2010 - 31/12/2012 \$365,000.00

McClelland David Prof - Scott Susan M Prof - Mavalvala Nergis - Whitcomb Stanley Ernest - Owen Benjamin - Schnabel Roman

Probing the Universe with gravitational waves: from cutting-edge technology to astronomy 1/01/2010 - 31/12/2012 \$410,000.00

Robins Nicholas Dr - Close John Prof - Oberthaler Markus K - Kasevich Mark A - Aspect Alain Advanced Atomic Sources for Precision Measurement 1/01/2010 - 31/12/2014 \$529,797.00

Neshev Dragomir Prof

Nanoscale nonlinear optics 1/01/2010 - 31/12/2014 \$555,000.00

Ridout David Dr Indecomposable Structure in Representation Theory and Logarithmic Conformal Field Theory 20/09/2010 - 19/06/2015 \$570,000.00

Mokkapati Sudha Dr - Fu Lan Dr High efficiency III-V solar cells based on low-dimensional quantum confined heterostructures 1/08/2010 - 30/12/2012 \$330,000.00

Ye Jiandong Dr Development of high performance wide-bandgap polar oxide electronic and optoelectronic devices 15/06/2010 - 31/12/2014 \$780,000.00

Sheng Yan Dr Optical parametric processes in randomized nonlinear photonic structures 1/03/2010 - 28/02/2013 \$340,000.00

Gao Qiang Dr - Tan Hoe Hark Prof - Johnston Michael B Integration of III-V semiconductor nanowires on silicon platform 1/03/2010 - 28/02/2015 \$740,000.00

2011 Discovery: Project Grant

Dasgupta Mahananda Dr - Hagino Kouichi - Tostevin Jeffrey Allan From coherent to dissipative dynamics in complex quantum systems: Emerging new ideas from precision measurements of nuclear collisions 4/04/2011 - 3/04/2014 \$450,000.00

Izdebskaya Yana Dr All-optical reconfigurable interconnects in nematic liquid crystals 1/04/2011 - 31/03/2014 \$355,000.00

Shaddock Daniel Dr - Miller John Mr - Adhikari Rana - Hild Stefan Enhancing the science reach of second generation interferometric gravitational wave detectors through innovative mirror design and control

1/01/2011 - 31/12/2012 \$295,000.00

Powell David Dr - Shadrivov Ilya Dr - Engheta Nader Functional metamaterials based on chiral structures 1/01/2011 - 31/12/2013 \$475,000.00

Baldwin Kenneth Prof - Orr Brian J - Warrington Richard B - Eyler Edward Using high-resolution lasers to test quantum electrodynamics 1/01/2011 - 31/12/2013 \$240,000.00

Robins Nicholas Dr - Close John Prof - Rasel Ernst - Ertmer Wolfgang *Precision inertial sensing with cold atoms* 1/01/2011 - 31/12/2013 \$340,000.00

Shats Michael Dr - Punzmann Horst Dr - Falkovich Gregory Extreme wave events on the water surface 1/01/2011 - 31/12/2013 \$330,000.00

Craig Vincent Prof - Senden Timothy Prof - Notley Shannon Dr Using light to move molecules – a novel approach to exploring intermolecular forces 1/01/2011 - 31/12/2013 \$365,000.00

Tan Hoe Hark Prof III-V semiconductor nanowire solar cells 1/01/2011 - 31/12/2013 \$556,000.00

Hinde David Prof - Schmidt Karl-Heinz - Liang Junjien Felix Researching the super heavy elements: a quantitative understanding through integrating new reaction time measurements with theoretical models

1/01/2011 - 31/12/2013 \$490,000.00

Parsons Drew Dr - Ninham Barry Prof Hofmeister at Work. Implementation of a paradigm shift in Physical Chemistry 1/01/2011 - 31/12/2013 \$378,000.00

Wang Rongping Dr - Russo Salvy P - Jain Himanshu - Ngai Kia

Understanding and optimizing the microstructure of Ge-As-Se glasses for superior device performance 1/01/2011 - 31/12/2013 \$210,000.00

Hole Matthew Dr Emergence and control of self–organized fusion plasmas: through ITER and beyond 1/01/2011 - 31/12/2013 \$255,000.00

Robins Vanessa Dr - Sheppard Adrian Dr Foundations and advanced algorithms for topological image processing 1/01/2011 - 31/12/2013 \$255,000.00

Kingston Andrew Dr - Varslot Trond Dr - Sheppard Adrian Dr Dynamic tomography: high resolution 4 dimensional process tomography 1/01/2011 - 31/12/2013 \$246,000.00

Hyde Stephen Prof - Mortensen Kell Theory and synthesis of self-assembled polyfunctional supramolecular fibres and associated soft materials 1/01/2011 - 31/12/2013 \$445,000.00

Akhmediev Nail Prof - Ankiewicz Adrian Dr - Taki Majid Rogue waves in oceans and optical fibers 1/01/2011 - 31/12/2013 \$390,000.00

Rode Andrei V Prof - Krolikowski Wieslaw Prof - Padgett Miles Nanometrology of laser-trapped airborne particles 1/01/2011 - 31/12/2013 \$510,000.00

Ruffell Simon Dr - Williams James Prof - Cohen M - Louie Steven - Zettl Alex Narrow band gap silicon: understanding and exploiting this new silicon phase 1/01/2011 - 31/12/2013 \$420,000.00

2011 Discovery: Project Grant - externally led

Bouwknegt Pier (Peter) Prof - Varghese Mathai Supersymmetric Quantum Field Theory Topology and Duality (externally led by University of Adelaide) 1/01/2011 - 31/12/2013 \$185,000.00

2009 Future Fellowships

Craig Vincent Prof Specific Ion effects in non-aqueous solvents. A test for Hofmeister 26/11/2009 - 25/11/2013 \$887,400.00

Lam Ping Koy Prof Quantum Opto-Mechatronics 1/01/2010 - 31/12/2013 \$891,200.00

Hole Matthew Dr Fusion Energy and the Physics of Burning Plasmas 15/02/2010 - 6/01/2014 \$600,600.00

2010 Future Fellowships

Notley Shannon Dr *Tuning adhesion through polymer chain entanglement* 1/08/2011 - 31/07/2015 \$783,126.00

Buchler Benjamin Dr *Memory and light for integrated quantum systems* 7/03/2011 - 6/03/2014 \$577,884.00

Shaddock Daniel Dr Laser Interferometry for Space Science 20/01/2011 - 19/01/2015 \$706,552.00

Truscott Andrew Dr *Observing Einstein-Podolsky-Rosen entanglement with ultracold atomic gases* 6/01/2011 - 5/01/2015 \$692,552.00

Lane Gregory Dr *New directions for nuclear structure research in Australia* 26/05/2011 - 25/05/2015 \$706,552.00

Sukhorukov Andrey Dr Functional nonlinear nanophotonics 31/05/2011 - 30/05/2015 \$580,429.00

Corr Cormac Dr The plasma boundary: A major challenge for fusion science and material technology for ITER and beyond 1/01/2011 - 31/12/2013 \$680,552.00

Sheppard Adrian Dr Testing theories of two-phase flow in porous media through experiment imaging and modelling 1/01/2011 - 31/12/2014 \$773,072.00

2011 Future Fellowships

Choi Duk-Yong Dr A silicon-compatible light source on a silicon-on-insulator platform 16/12/2011 - 15/12/2015 \$714,528.00

Federation Fellowship

Kivshar Yuri Prof All-optical Technologies Nanophotonics and Metamaterials 1/11/2007 - 31/10/2012 \$1,606,210.00

2009 Linkage: Projects

Williams James Prof - Ruffell Simon Dr - Bradby Jodie A/Prof
A novel approach to direct nanopatterning of silicon for advanced phase-changed devices
31/12/2009 - 30/12/2012
\$380,000.00

Elliman Robert Prof - Krause Norbert - Wang Hai Ping Switching mechanisms in nonvolatile resistive memory using high-k dielectrics 1/01/2009 - 31/12/2012 \$200,000.00

2009 Linkage: Infrastructure Equipment Facilities

McClelland David Prof - Slagmolen Bram Dr - Shaddock Daniel Dr - Shoemaker D - Marx Jay - Munch Jesper - Veitch Peter John - Whitcomb Stanley Ernest - Lazzarini A

Australian Partnership in Advanced LIGO 1/01/2009 - 31/12/2012 \$1,800,000.00

2009 Linkage: Projects led by an External Institution

Knackstedt Mark Prof - Hutmacher Dietmar W - Schuetz Michael Andreas - Epari Devakara Rao - Saifzadeh Siamak - Duda Georg

Development and characterization of a technology platform to study the mechanisms of scaffold/BMP augmented large segmental bone healing (externally led by Queensland University of Technology)

1/07/2009 - 30/06/2012 \$36,000.00

2010 Linkage: Projects

Chow Jong Dr - McClelland David Prof - Shaddock Daniel Dr - Collins Michael - Roberts Edward - Gray Malcolm B - Warrington Richard B

Quantum noise limited molecular spectrometry 14/12/2010 - 13/12/2013 \$375,000.00

2011 Linkage: Infrastructure Equipment Facilities

Jagadish Chennupati Prof - Elliman Robert Prof - Wong-Leung Yin-Yin (Jennifer) Dr - MacDonald Daniel Dr - Williams James Prof

State-of-the-art Hall effect system for detailed electrical characterisation in semiconductors 1/02/2011 - 31/01/2012 \$250.000.00

2011 Linkage: Projects led by an External Institution

Baldwin Kenneth Prof - McClelland David Prof - Luiten Andre Nicholas
Creating a National Time and Frequency Network for Australia (externally led by Uni of Western Australia)
24/06/2011 - 24/06/2014
\$30,000.00

Super Science Fellowship

Fifield L Keith Prof - De Deckker Patrick Prof - Ellwood Michael Dr - Fallon Stewart Dr Novel Dating Methods for Marine Sediments of Relevance to Determining Past Climate Changes 4/04/2011 - 31/12/2013 \$556,800.00

Jagadish Chennupati Prof - Kivshar Yuri Prof Nanofabrication of Metamaterials for Next Generation Optical Devices 1/07/2011 - 30/06/2014 \$835,200.00

BP Exploration Operating Company Ltd

Consultancy Senden Timothy Prof Combined Micro CT System - BP Instrument Sale 6/12/2011 - 5/12/2013 \$350.000.00

Commonwealth Department of Defence Defence Science and Technology Organisation (DSTO)

Research Agreement Close John Prof - Robins Nicholas Dr - Altin Paul Dr State of the Art Gravimeter: Thermal Atom Source **CONFIDENTIAL PROJECT** 30/05/2011 - 30/06/2012 \$992,520.00

Dept of Industry Innovation Climate Change Science Research and Tertiary Education (DIICCSRTE)

Australian Space Research Program Stream B: Space Science & Innovation Project Grants

Charles Christine Prof - Butcher Harvey Prof - Boswell Roderick Prof - Perren M - Lappas Viaos - Clark Andrew The Australian Plasma Thruster Project (Round 4) HDLT 1/08/2011 - 30/06/2013 \$3,402,413.00

Shaddock Daniel Dr - McClelland David Prof - Tregoning Paul Dr The GRACE Follow-on mission 1/08/2010 - 30/06/2013 \$4,673,001.00

Education Investment Fund

Jagadish Chennupati Prof Australian National Fabrication Facility EIF -ACT Node Project (externally led by ANFFL) 8/06/2011 - 30/06/2013 \$5,230,000.00

Elliman Robert Prof - Hinde David Prof - Fifield L Keith Prof Heavy Ion Accelerator Education Investment Fund Project 24/12/2009 - 31/03/2014 \$10,000,000.00

Punzmann Horst Dr - Howard John Prof - Blackwell Boyd Prof Plasma Fusion Education Investment Fund Project 24/12/2009 - 31/03/2014 \$4,000,000.00

National Enabling Technologies Strategy

Jagadish Chennupati Prof ANU Australian Research Council Nanotechnology Network (ARCNN) - 2010-2013 1/04/2011 - 31/07/20 \$600,000.00

French-Australian Science and Technology Program

Boswell Roderick Prof - Charles Christine Prof - Corr Cormac Dr - Hudspeth Jessica Dr - Brault Pascal - Caillard A. *Plasma Processing Techniques and Nanotechnology for Proton Exchange Membrane Fuel Cells* 1/04/2010 - 1/07/2012 \$20,000.00

International Science Linkages Competitive Grant

Craig Vincent Prof - Zhang Guangzhao Design Synthesis and Characterization of New Polymeric Antifouling Materials 28/01/2010 - 30/05/2012 \$42,136.00

Howard John Prof - Hole Matthew Dr - Dewar Robert Prof - Blackwell Boyd Prof - Nuehrenberg C. - Martin Richard - Wisse Marco - Svensson Jakob - Appel Lynton C - Scannell Rory - Michael Clive - De Bock Maarten

Model/data fusion: using Bayesian inversion to constrain equilibrium and stability theory of advanced magnetic confinement experiments ahead of the International Thermonuclear Experimental Reactor 27/10/2008 - 31/03/2012

\$395,051.00

NCRIS grant led by External Institution

Senden Timothy Prof - White Timothy Prof

Australian Microscopy and Microanalysis Research Facility (externally led by University of Sydney) 1/09/2007 - 30/09/2012 \$1,004,000.00

Digital Core Research Consortium

Research Grant Senden Timothy Prof - Fogden Andrew Dr - Sheppard Adrian Dr Digital Core Research Consortium 2/07/2006 - 31/12/2015 \$2,701,188.00

Hysitron Inc

Linkage Project Partner Williams James Prof - Ruffell Simon Dr - Bradby Jodie A/Prof *A novel approach to direct nanopatterning of silicon for advanced phase-changed devices* 31/12/2009 - 30/12/2012 \$76,500.00

LAM Research Corporation

Grant Charles Christine Prof - Boswell Roderick Prof Development of a new plasma source for next generation plasma etch processing equipment 1/11/2010 - 20/01/2012 \$438,748.00

National Measurement Institute

Linkage Project partner Chow Jong Dr - McClelland David Prof - Shaddock Daniel Dr - Collins Michael - Roberts Edward - Gray Malcolm B -Warrington Richard B *Quantum noise limited molecular spectrometry* 14/12/2010 - 13/12/2013 \$105,000.00

Silanna Pty Ltd

Linkage Project Partner Elliman Robert Prof - Krause Norbert - Wang Hai Ping *Switching mechanisms in nonvolatile resistive memory using high-k dielectrics* 1/01/2009 - 31/12/2012 \$50,000.00

Sirtex Technology Pty Ltd

Consultancy Senden Timothy Prof Research and Development Consultancy Agreement (Sirtex Technology Pty Ltd) 1/04/2010 - 1/04/2012 \$1,466,643.00

University of Adelaide

LIEF Contribution

McClelland David Prof - Slagmolen Bram Dr - Shaddock Daniel Dr - Shoemaker D - Marx Jay - Munch Jesper - Veitch Peter John - Whitcomb Stanley Ernest - Lazzarini A

Australian Partnership in Advanced LIGO 1/01/2009 - 31/12/201 \$291,000.00

Volkswagen Stiftung

Grant Akhmediev Nail Prof - Hoffman Norbert - Pelinovsky E - Peinke Joachim Extreme Ocean Gravity waves: Analysis and prediction on the basis of breather solutions of nonlinear evolution equations 1/02/2011 - 3/02/2014 \$316,514.03