

EDUCATION



*Professor David McClelland
Deputy Director (Education)*

Professor McClelland is also Head of the Department of Quantum Science, and the Physics Education Centre (PEC), which was established in 2009 to coordinate education across the School.

RSPE saw a variety of changes to the management and organization of its educational programs in 2011. The retirement of Professor Neil Manson, who had served the School in the role of Associate Director (HDR) for more than 20 years, and the stepping down of both Professor Craig Savage as Associate Director (undergraduate) in July and Professor David McClelland as Deputy Director (Education) in November occasioned a significant restructuring of responsibilities. RSPE would like to extend heartfelt thanks to all three for their work. Professor Manson has created a high quality, welcoming environment for postgraduate research students entering the school for more than two decades, and has been an extremely important representative of the School's interests on relevant University-level committees. Profs McClelland and Savage oversaw the creation of the Physics Education Centre, the virtual Centre initially responsible for delivery of the School's undergraduate programs, during the merger of the former Department of Physics with the Research School of Physical Sciences and Engineering to create the new RSPE. Their contribution to both planning and delivery of the undergraduate program in particular will continue to be valued after they relinquish their formal leadership roles.

A/Professor Anna Wilson assumed overall responsibility of the School's undergraduate and graduate education programs as the new Deputy Director (Education), with formal responsibility commencing in January 2012. A new HDR Board of Studies was constituted to deliver strategic planning as well as day-to-day management of the School's postgraduate research-based education activities. On the coursework side of the School's programs, each research department appointed an Education Coordinator, responsible for liaisons between the Physics Education Centre and their home department. Current members of the HDR Board of Studies (BoS) and Departmental Education Coordinators are listed below.

As well as structural changes at the School level, 2011 saw a major overhaul of the University's undergraduate degree structure, with the introduction of a new Major, Specialisation and Minor system to replace the old Majors-only system. Through the Physics Education Centre, RSPE now offers two Majors, in Physics and Theoretical Physics; two specialisations, in Physics and Optics; and a minor in Physics. It is also a major contributor to specialisations in Astrophysics, Geophysics and Mathematical Physics in the College of Physical and Mathematical Sciences, and to the Photonics Major in the College of Engineering and Computer Science.

In education research, A/Professor Anna Wilson was successful in obtaining competitive funding for three national teaching enhancement projects, one based at ANU and two in partnership with the University of Canberra, totaling over \$400,000 over 2011/2. Professor Savage's 2010 Teaching Enhancement Grant collaboration with A/Professor Paul Francis (RSAA/PEC) and Dr Nick Robins (QS), on the use of iPads to enhance student learning, has continued in 2011 with Dr Robins taking a lead role in the transition to 2012. The School (through the Physics

Education Centre) is also a participant in two externally-funded national benchmarking projects.

Recognition for the outstanding contribution of RSPE staff to undergraduate and graduate education continued with three academics nominated for College of Physical and Mathematical Sciences Awards for Teaching Excellence. Professor Andrew Stuchbery, Dr Nick Robins and Dr Xiwen Guan were all highly-deserving nominees who missed out by a whisker and have been encouraged by the College to nominate for Vice-Chancellor's awards.

School staff continue to engage at a local and national level in a variety of educational leadership roles. Professor Wilson participated in the ACARA National Curriculum Consultation Process and, together with academics from the Australian Council of Deans of Science, RMIT, USyd, UTS and UQ, formed a new national Physics Education Network. She also took over the baton of ACT representation on the Australian Institute of Physics Program Accreditation Panel from Professor Hans Bachor (Professor Bachor continues to serve on the panel).

Recent trends of increasing student numbers at the undergraduate level continued with record numbers in the Advanced Physics subjects at first year. In collaboration with first year coordinator Paul Francis and Life Physics convenor Adrian Sheppard, Undergraduate Laboratory Development Officer Mika Kohonen continued to introduce a range of new experiments at first year. Greg Lane introduced two new experiments into PHYS3033 (Nuclear Physics). Andrew Papworth introduced several new experiments at second and third year, and continued his sterling work providing overall management and delivery of the undergraduate laboratory program.

Departmental Education Coordinators

David Williams (AM)

Stephen Gibson (AMPL)

Patrick Kluth (EME)

Matthew Sellars (LP)

Andrew Stuchbery (NP)

Andrei Sukhorukov (NLP)

Cormac Corr (PRL)

Joe Hope (QS)

Vladimir Mangazeev (TP)

HDR Board of Studies

Anna Wilson (Chair)

John Close (Convenor, Strategic Planning)

Wieslaw Krolkowski (Convenor, Student Management)

Fu Lan (Deputy Convenor)

Elena Ostrovskaya (Deputy Convenor)

Undergraduate Year Coordinators

Paul Francis (1st year)

Anna Wilson (2nd year)

Joe Hope (3rd year)

David Williams (Honours)

Coursework program convenors

Anna Wilson (Physics and Theoretical Physics Majors, Physics Specialisation and Physics Minor)

Daniel Shaddock (Optics Specialisation)

Andrew Stuchbery (Master of Nuclear Science)

John Love (Master of Photonics)

Laboratory Coordinators

First year: Mika Kohonen

Second year: Ben Buchler and Anna Wilson

Administrator

Laura Walmsley

STAFF WHO CONTRIBUTED TO TEACHING

Physics Education Centre Lecturers

Undergraduate coursework (years 1-3)

PHYS1001 Foundations of Physics: Craig Savage, Nick Robins

PHYS1101 Advanced Physics I: Paul Francis, Craig Savage

PHYS1004 Life Physics: Adrian Sheppard, Jodie Bradby, Phil Threlfall

PHYS1201 Advanced Physics II: Craig Savage, Paul Francis, Bianca Haberl, Patrick Kluth, John Love

PHYS2013 Quantum Mechanics: Anna Wilson, Andrew Truscott

PHYS2016 Electromagnetism: John Close, Cormac Corr

PHYS2017 Waves and Optics: Ben Buchler, Jong Chow

PHYS2020 Thermal and Statistical Physics: Frank Mills, Raquel Salmeron, Vladimir Mangazeev

PHYS3001 Theoretical Physics: Joe Hope

PHYS3002 Advanced Theoretical Physics: Susan Scott, Joe Hope

PHYS3031 Atomic Physics: Matthew Sellars, Stephen Gibson, Vincent Daria

PHYS3032 Condensed Matter Physics: Darren Goossens, David Williams

PHYS3033 Nuclear Physics: Greg Lane, Cedric Simenel, Maurits Evers

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

PHYS3044/5 Plasma Physics: Cormac Corr

PHYS3051/ENGN4613 Microphotonics, Biophotonics & Nanophotonics: John Love

PHYS3057/ENGN3512 Optical Physics: Daniel Shaddock, Dragomir Neshev

PHYS3058 Work Experience in Photonics: John Love

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

PHYS3070 Physics of the Earth: Hrvoje Tkalčić, 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

Hans Bachor: Science Communication.

Murray Batchelor: Introduction to integrable models in statistical mechanics

Steve Buckman: Scattering

Ron Burman (UWA): Advanced Electromagnetism

Mahananda Dasgupta: Scattering.

Denis Evans (RSC): Non-equilibrium Thermodynamics

Matthew Hole : Electromagnetism

Joe Hope: Quantum Mechanics

Mathew James (CECS): Quantum Measurement

Dragomir Neshev: Nonlinear Physics

Nick Robins: Remote Broadcast Organiser

Susan Scott: General Relativity

Andrey Sukhorukov: Nonlinear Physics

Maarten Vos: Surface Physics

David Williams: Classical Mechanics

David Williams: Motor Vehicle Physics

Stephen Williams (RSC): Thermodynamics

David Williams: Convenor

Graduate coursework**Master of Photonics Courses**

PHYS6500 Optical Physics: Daniel Shaddock, Dragomir Neshev

PHYS6501 Fibre Optic Communication Systems: John Love

PHYS6502 Microphotonics, Biophotonics & Nanophotonics: John Love

PHYS6503 Work Experience in Photonics: John Love

PHYS6504 Semiconductors: Andrew Blakers

PHYS8505 Research Project: John Love

ENGN6624 Solar Electricity

ENGN6626 Digital Communications

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

Physics Education Centre Tutors and Demonstrators**First year**

Rose Ahlefeldt, Boshra Afra, Imam Alam, Scott Bales, Michele Bannister, Thomas Bierschenk, Jessica Brunton, Samuel Dixon, Timothy Duignan, James Farnell, Kate Ferguson, Iain Forsyth, Kim Heenan, Diana James, Ksawery Kalinowski, Emma Kirby, Rajeev Lal, James Leslie, Rashel Li, Benjamin McKinley, Prasanga Palihawadana, Vidya Ramesh, Jason Roberts, Phil Threlfall, Frédéric Vogt, Khu Vu, Danielle Wuchenich,

Second year

Geoff Campbell, Helen Chrzanowski, Kimberley Heenan, Daniel Higginbottom, Mahdi Hosseini, Andrew Manning, Robin Stevenson, Cameron Samuel, Ben Sparkes, Michael Stefszky, Stuart Szigeti, Thanh Nguyen, Greg von Nessi, Joseph Paulraj, Dhruv Saxena, Imam Alam, Andrew Wade

Third year

Tibor Kibedi, Steve Tims, Vincent Margerin, Greg Lane, Nick Riesen, Sandy Box, Jesse Everett, Mohammed Atiq, Richard Barry, Michael Hush, Rose Ahlefeldt, Emma Anderson, Lewis Ryan, Kimberley Heenan

STUDENTS

Honours Students

Anderson, Emma

Adlong, Sarah

Bentley, Christopher

Cain, Callan John

Collin, Gabriel

Higginbottom, Daniel

Hillman, Briana

Horsley, Andrew

Hoschke, Matthew

Lester, Romana

Leykam, Daniel

McNeil, Steven

Ng, Ping Fung

Reid, David

Robertson, Calum

Ross, Joshua

Stock, Graham

Vickers, Byron

Summer Scholars

Bai, Bing

Cairns, Cameron

Chua, Alvin

Churton, Blake

Duignan, Timothy

Farnell, James

Ferguson, Kate

Forsyth, Iain

Henry, Robert Alexander

Kowarsky, Mark

Lee, Boon Quan

Leslie, James

Leykam, Daniel

McNeil, Steven

Milburn, Thomas

Ng, Ping Fung (Davidson)

Pooranachandran, Sathyan

Rajan, Puvanesvari

Sammut, Steven

Somerville, Walter

Teniswood, Clara

Teo, Ming Hao

Thorman, Alex

Wong, Sherman

PhD Students

Abdullaev, Jasur

Abdullatif, Raden

Afra, Boshra

Ahlefeldt, Rose

Alam, Imam

Altin, Paul

Ameruddin, Amira

Armstrong, Seiji

Barry, Richard

Bartholomew, John

Bayu Aji, Leonardus

Beavan, Sarah

Bennet, Francis

Bertram, Jason

Bierschenk, Thomas

Boadle, Roisin

Brown, Michael

Burgess, Timothy

Byrne, David

Caballero Benitez, Santiago

Campbell, Geoff

Caneses, Juan

Caradonna, Peter

Castle, Toen

Chan, Keng

Chang, Lei

Chowdury, Md. Amdadul

Chua, Sheon

Chrzanowski, Helen

Debs, John

Dedrick, James

Deniz, Vivianne

Deshmukh, Sarita

Deshpande, Shriniwas

Dixon, Samuel

Doering, Daniel

Dudalev, Mikhail

Duering, Malte

Duignan, Timothy

East, Michael

Eckerskorn, Niko

Edwards, Michael

Evans, Myfanwy

Ferguson, Katherine

Fonseka, Aruni

Freeman, Darren

Frost, Benjamin

Gai, Qian

Gai, Xin

Garretson, Joshua

Gibson, Ashley

Han, Ting

Hannam, Kirsty

Haskey, Shaun

Hedges, Morgan

Heenan, Kimberley

Hodgman, Sean

Hoo, Wee Teck

Hosseini, Mahdi	McKerracher, Ian	Song, Won-Min
Howard, Shaun	McMurtrie, Roger	Sparkes, Benjamin
Hudspeth, Jessica	Mills, Ruth	Stefszky, Michael
Hush, Michael	Morizur, Jean-François	Stevenson, Robin
Hussain, Zohair	Mow Lowry, Conor	Sun, Yue
Jiang, Nian	Mullavey, Adam	Sutton, Andrew
Jin, Zhe	Nawaz, Muhammad	Szigeti, Stuart
Kalinowski, Ksawery	Nguyen, Thanh	Tattersall, Wade
Kang, Jung-Hyun	Paiman, Suriati	Tayati, Ponlawat
Kedziora, David	Palalani, Nyaladzi	Tenniswood, Clara
Kels, Andrew Paul	Paulraj, Joseph	Thapar, Nandika
Kim, Min-Chul	Poldy, Rachel	Threlfall, Philip
Kruk, Siarhei	Pozzi, Francesco	Turner, Samuel
Lafleur, Trevor	Prasai, Prakash	Valbuena Soler, Johnny
Lal, Rajeev	Palihawadana, Prasanga	Vu, Khu Tri
Lam, Timothy	Premala, Aldowan	Wade, Andrew
Lebedeva, Evgenia	Pyke, Daniel	Wagner, Katherine
Lee, Boon	Rafiei, Ramin	Wakhle, Aditya
Lee, Yu-Heng	Ramesh, Vidya	Walsh, Rick
Lee, Jen Yee	Ramsden, Stuart	Wang, Ting
Leslie, Russell	Rancic, Milos	Weed, Ryan
Lewis, Benjamin	Read, Jesse	Werner, Justin
Liu, Danyu	Riesen, Nicolas	Whitfield, Ross
Liu, Mingkai	Roberts, Jason	Wilson, Brendan
Liu, Wei	Robertson, Kalman	Wong, Sherman
Lu, Hao Feng	Roff'i, Imam	Wu, Ju-Kuei
Luong, Duc Huy	Rogers, Lachlan	Wuchenich, Danielle
Lysevych, Mykhaylo	Samuell, Cameron	Yi, Seong Joon
Machacek, Joshua	Saxena, Dhruv	Yuan, Xiaoming
Manning, Andrew	Sham, Alison	Zhong, Manjin
Margerin, Vincent	Shelly, Sonam	
Marzban, Sara	Smith, Madeleine	
McDonald, Gordon	Smith, Michael	
McGann, Mathew	Solntsev, Alexander	
McKay, Thomas	Song, Tao	