2013 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 2013, we continued to expand our undergraduate research project offerings and expanded the involvement of research staff in the research-led teaching enterprise.

Key staff in PEC continue to make important contributions to our operation. Professor John Close continued as head of the Physics Education Centre and took over as honours convenor. Professor Wieslaw Krolikowski continued in his role as HDR convenor with A/Prof Fu Lan and A/Prof Elena Ostrovskaya as co-convenors. A/Prof Patrick Kluth took over as special topics coordinator with Dr Sudha Mokkapati as 3rd year convenor. Dr Cormac Corr continued as 2nd year coordinator with a major role coordinating the second year lab program, and A/Prof Paul Francis continued as first year coordinator. A/Prof Jodie Bradby continued as PhB convenor.

A substantial number of RSPE staff are involved and active in the Physics Education Centre 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. The 2013 lecturers are listed elsewhere in this report. 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 Physics Education Centre. 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 continued to play an important role in the Physics Education Centre providing information to staff in their local areas and driving the research/teaching culture in the School. The complete list of 2013 education coordinators is also provided elsewhere in this report. Their service in this important role is much appreciated. Similarly, the year convenors (listed at the end of this report) 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 few years, our first-year student numbers have grown markedly. First-year is the only year that has streamed courses. The strong demand for Physics highlights its continued relevance as a discipline in its own right and as an enabling discipline for other fields. The growing numbers in our Foundations Course (PHYS1001), our main-stream first-year physics courses (PHYS1101 and 1201) and our Life Physics course (PHYS1004) put increased demand on our technical support staff. In his role as Head Technical Officer, Mr Andrew Papworth led a very able team of technical and administrative staff. In addition, Mr Papworth continued to lead RSPE’s outreach program. Mr Mika Kohonen provided excellent support and leadership in the first year laboratories with electronic support from Mr Shane Grieves. Mr Papworth was awarded a Director’s Prize for his leadership in outreach.
Physics Education Centre

Physics Education Centre Lecturers

**Undergraduate Coursework**

**PHYS 1001 Foundations of Physics**  
Nick Robins, John Debs

**PHYS1101 Advanced Physics I**  
Paul Francis, Andre Carvalho

**PHYS1004 Life Physics**  
Adrian Sheppard, Jodie Bradby

**PHYS1201 Advanced Physics II**  
Craig Savage, Marcus Doherty, Ben Buchler

**PHYS2013 Quantum Mechanics**  
Craig Savage, Andrew Truscott

**PHYS2020 Thermal Physics**  
Frank Mills, Vladimir Mangazeev, Rachel Salmeron

**PHYS2016 Electricity and Magnetism**  
Cormac Corr, Igor Ivanov

**PHYS2017 Waves and Optics**  
Ben Buchler, Robert Ward

**PHYS3001 Advanced Theoretical 1**  
Joe Hope, Andre Carvalho

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

**PHYS3034 Fluid Mechanics**  
Ross Kerr, Andy Hogg, Yvan Dossmann, Bishakhdatta Gayen (RSES)

**PHYS3057 Optical Physics**  
Dan Shaddock, Dragomir Neshev, Vincent Daria

**PHYS3060 Fibre Optic Communication Systems**  
Jong Chow

**PHYS3041/3044/3045 Special Research Topics**  
Patrick Kluth

**PHYS3002 Advanced Theoretical II**  
Susan Scott, Michael Hush

**PHYS3031 Atomic Physics**  
Matt Sellars, Steve Gibson

**PHYS3032 Condensed Matter Physics**  
Patrick Kluth, Rob Elliman, Jenny Wong-Leung

**PHYS3051/ENGN4613: Microphotons, Biophotonics and Nanophotonics**  
Jong Chow

**PHYS3058 Work Experience in Photonics**  
Jong Chow

**PHYS3060/ENGN4613: Fibre Optic Communications Systems**  
Jong Chow

**PHYS3070 Physics of the Earth**  
Hrvoje Tkalcic and Giampiero Iaffaldano (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:** Stephen 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**  
Jong Chow

**PHYS6502 Microphotons, Biophotonics & Nanophotonics**  
Jong Chow

**PHYS6503 Work Experience in Photonics**  
Jong Chow

**PHYS6504 Semiconductors**  
Andrew Blakers (Engineering)

**PHYS8505 Research Project**  
Jong Chow
Master of Engineering Courses

ENGN6512 Optical Physics
Daniel Shaddock, Dragomir Neshev

ENGN6513 Fibre Optic Communication Systems
Jong Chow

ENGN6613 Microphotronics, Biophotonics & Nanophotonics
Jong Chow

ENGN6625 Power Electronics
Boyd Blackwell

PHYS8013 Principles of Energy Generation and Transformation
Igor Skryabin (Engineering)

Master of Nuclear Science Courses

PHYS8201 Nuclear Fundamentals
Andrew Stuchbery

PHYS8202 Reactor Science
Andrew Stuchbery, Tony Irwin

PHYS8203 Accelerator Science
Matthew Reed

PHYS8204 Nuclear Radiation
Greg Lane

PHYS8205 Nuclear Fuel Cycle
Andrew Stuchbery

PHYS8206 Nuclear Measurement Methods
Greg Lane

Undergraduate Year Coordinators

Paul Francis (1st year)
Cormac Corr (2nd year)
Patrick Kluth (3rd year) and Special Topics Coordinator
James Sullivan/John Close (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 (College)
Karen Nulty
Liudmila Mangos/Karen Scholte

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: Cormac Corr