Education

The Research School of Physics and Engineering provides undergraduate and graduate physics education and supports research and innovation in physics education. In 2010 there were 133 postgraduate (PhD/MPhil) students current during the year, with 932 undergraduate enrolments in courses (Y1 497, Y2 188, Y3 228, Y4 19) and 65 student visitors from external institutions. The school boasts a number of recipients of local and national teaching awards and competitive grants.

The link between research and teaching is critical to the future of the School and the nation. The School has made a major commitment in using its research strength and scale, together with its unique mix of outstanding researchers, teachers and infrastructure, to developing world leading education programs for gifted students that link directly to postgraduate research study. The research and teaching links are not only confined to the Physics discipline but have significant involvement with Engineering in CECS and in other science disciplines in CPMS and CMBE.

Whilst the Department of Quantum Science continued to provide the most teachers, academics from all nine research departments now contribute to the undergraduate teaching program as well as supervising graduate students. A number of areas offer postgraduate coursework degrees.

The Physics Education Centre (PEC) enhances the recruitment of high quality students into physical sciences; increase the education involvement of outstanding researchers in the School, particularly early career researchers; mentor/train outstanding teaching academics for the ANU and other universities from the large base of outstanding academics in the School; facilitate and deepen interaction between researchers and students; provide support and training for secondary teachers, at the national level; increase the number of bids for national teaching and learning grants; and develop innovative teaching methods and materials.

In 2010 Dr Craig Savage lead a team of four year coordinators who ensured the delivery of a well functioning and integrated undergraduate program. Professor Neil Manson continued in his role as Convenor of School's higher degree research program. Reports from these areas can be found on the following pages.

Professor David McClelland, Deputy Director (Education); 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.
### Staff who contributed to teaching in 2010

#### Professors

- Hans Bachor PhD Hannover (until August)
- Pier Bouwknecht MSc Utrecht, PhD Amsterdam, FAIP, FAustMS
- Stephen Buckman BSc PhD Flinders, FAPS, FAIP, FInstP
- John Close PhD Berkeley
- Mahananda Dasgupta MSc Rajasthan, PhD Bombay, FAIP
- George Dracoulis BSc PhD Melbourne
- Denis Evans BSc Sydney, PhD (RSC)
- Keith Fifield, MSc Auckland, PhD Penn
- Ian Jackson BSc UQ, PhD (RSES)
- John Love MA Cambridge, MA DSc Oxford
- Ping Koy Lam BSc Auckland, PhD
- Neil Manson PhD Aberdeen
- Susan Scott BSc Melbourne, PhD Adelaide
- Andrew Stuchbery BSc PhD Melbourne
- David Williams BSc Sydney, PhD Cambridge

#### Senior Fellows / Readers

- Paul Francis BA PhD Cambridge (RSAA)
- Matthew Hole BE PhD Sydney
- Joseph Hope PhD
- Tibor Kibedi, PhD Debrecen
- Craig Savage PhD Waikato
- Matthew Sellars PhD
- Maarten Vos MSc PhD Gröningen

#### Fellows / Senior Lecturers

- Andre Carvalho MSc PhD UFRJ
- Gregory Lane BSc PhD
- Frank Mills BSE Princeton, MS PhD Caltech
- Dragomir Neshev PhD Sofia
- Nicholas Robins BSc PhD
- Stephen Tims BSc PhD Melbourne
- Anna Wilson BSc Bristol, PhD Liverpool

#### Research Fellows / Lecturers

- Tristam Alexander PhD
- Benjamin Buchler PhD
- Cormac Corr PhD Belfast
- Vincent Daria PhD Osaka
- Darren Goossens PhD Monash (RSC)
- Graham Hughes PhD (RSES)
- Patrick Kluth PhD Jülich
- Drew Parsons PhD Moscow
- Simon Ruffell PhD UWO Canada
- Adrian Sheppard BSc Adelaide, PhD
- Thomas Symul PhD CNET LAB
- Arthur Sakellariou BSc PhD Melbourne
- Hrvoje Tkalcic PhD UCB (RSES)

#### Postdoctoral Fellows

- Jong Chow PhD
- Mahyar Madadi PhD
- Trond Varslott PhD NTNU

#### Technical Staff

- Mika Kohonen
- Andrew Papworth
- David Weisser
Undergraduate Studies

Dr Craig Savage
Associate Director (Undergraduate Studies)

2010 was notable for its record first year physics student numbers, the continuing excellence of the later year laboratory programs, and the teaching awards won by several staff members. Other healthy developments included: the increasing range of School staff participating in educational activities, and the healthy numbers in our coursework masters programs: Master of Photonics and Master of Nuclear Science. Drs Darren Goossens and Joe Hope won ANU College of Physical and Mathematical Sciences Awards for Teaching Excellence.

Among the innovations within the Physics Education Centre were the collaborative delivery of the honours electromagnetism course with the University of Western Australia. This program is growing, with Monash University expected to participate in 2011. First year physics explored ways to move beyond the use of clickers in lectures and hence trialed web 2 technology in second semester Advanced Physics. This will expand to a trial of iPads in lectures in 2011.
Postgraduate Studies

The School has 142 postgraduate students (PhD and MPhil) and of those 91 are residents of Australia or New Zealand and 51 are international. 24 students enrolled during 2010 whereas 18 completed their program. In addition there were over 60 visiting students completing part of their higher degree program within the School.

The 2010 J G Crawford prize for the best ANU thesis in the Physical Sciences was awarded to Dr Ivan Garanovich from the Nonlinear Physic Centre for thesis titled *Light control in modulated photonic lattices*. Seiji Armstrong, a student within Department of Quantum Science, was awarded the Australia Asia Prime Minister’s Award to undertake research in Japan. Seiji works within the Quantum Imaging group associated with the ARC Centre for Excellence in Quantum-Atom Optics.

In addition many of the postgraduate students from within the School received awards for best talk or poster at local and international conferences.
ANU Students
(PhD, MPhil, Honours, PhD, ANU Summer Scholars)

Abdullayev, Jasur
Abdullatif, Raden Farzand
Addison-Jones, Jennifer
Afra, Boshra
Ahlefeldt, Rose
Alam, Imam
Anderson, Emma
Anderson, Peter
Altin, Paul
Armstrong, Seiji
Barrido, Jason
Barry, Richard
Barter, Thomas
Bartholomew, John
Bayu, Aji Leonardus
Beavan, Sarah
Bennet, Francis
Bently, Chris
Bertram, Jason
Bierschenk, Thomas
Bimo, Leonardus
Botman, David
Brown, Michael
Burgess, Andrew
Burgess, Timothy
Byrne, David
Byron, Lesa
Caballero-Benitez, Santiago
Canesas, Juan
Campbell, Geoff
Caradonna, Peter
Castle, Loch
Castle, Toen
Chang, Lei
Chang, Wonkeun
Charnvanichborikarn, Supakit
Chen, Anderson
Chrzansowski, Helen
Chong, Wang
Chua, Sheon
Chung, Tam
Collin, Gabriel
Cox, Wesley
Crawford, Duncan
Dann, Rodney
Davoyan, Artur
Debs, John
Dedrick, James
Deniz, Vivianne
Dennis, Graham
Deshmukh, Sarita
Deshpande, Shriniwas
Devine, Natasha
Devlin, Alan
Dixon, Sam
Doering, Daniel
Dong, Yafei
Dudalev, Mikhail
Duering, Malte
Dugne, Julian
East, Michael
Eckerskorn, Niko
Edwards, Michael
Evans, Myfanwy
Evans, Robert
Everett, Jesse
Evers, Maurits
Farrington, Tom
Fraser, Michael
Freeman, Darren
Gai, Xin
Ganesan, Rajesh
Garretson, Joshua
Gayford, Matt
Gibson, Ashley
Gill, Michael
Graham, Anthony
Grosse, Nicolai
Ha, Sangwoo
Haberl, Bianca
Hammoud, Mohamad
Han, Ting
Hannam, Kirsty
Haskey, Shaun
Heays, Alan
Hedges, Morgan
Heenan, Kimberley
Heffernan, Patrick
Herrald, Nick
Hodgman, Sean
Holmes, Ryan
Horsley, Andrew
Hoo, Weeteck
Hosseini, Mahdi
Howard, Shaun
Hua, Quang-Tri
Hudspeth, Jessica
Hush, Michael
Hussain, Zohair
James, Leslie
Jeppesen, Matthew
Jiang, Nian (Jenny)
Jin Zhe (Kim)
Jones, Adric
Joyce, Hannah
Kalinowski, Ksaverry
Kang, Jung-Hyun
Kedziora, David
Kels, Andrew
Kim, Jong
Kim, Tae Hyun
Kim, Min-Chul
King, Eleanor
Kong, Qian
Kowarsky, Mark
Kuffner, Peter
Kumar, Munish
Lade, Steven
Lafleur, Trevor
Lai, Man Chun
Lal, Rajeev
Lam, Timothy
Lane, Michael
Lebedeva, Evgenia
Lee, Jen-Yee
Lee, Boon Albert
Lee, Boon Quan
Lei, Chang
Leslie, Russell
Lewis, Benjamin
Lewis, Peter
Li, Luhua
Lim, Felicity
Liu, Danyu
Liu, Wei
Liu, Ya-Chi
Lu, Haofeng
Luong, Duc Huy
Lysevych, Mykhaylo
Machacek, Joshua
Manning, Andrew
Palihawadana, Prasanga
Marzban, Sara
McDonald, Gordon
Masters, Vanessa
McGann, Mathew
McKerracher, Ian
McMurtrie, Roger
McNeil, Steven
Mills, Ruth
Minovich, Alexander
Morizur, Jean-François
Mow Lowry, Conor
Moylan, Andrew  | Samuel, Cameron  | Valbuena, Johnny  
Mullavey, Adam  | Sammut, Steven   | Vickers, Byron    
Natali, Sonny   | Satterthwaite, Matthew | Vran, Alexander  
Nawaz, Muhammad | Schneider-Kennedy, Stefan | Vu, Khu Tri  
Nguyen, Thanh   | Shelly, Sonam     | Wade, Andrew     
Nicholls, Lachlan| Shilpi, Saini     | Wagner, Katherine| 
Noble, Bill     | Simpson, Mark     | Wakhle, Aditya   
Nolan, Anthony  | Smith, Madeleine  | Walsh, Rick      
Paiman, Suriati | Smith, Michael    | Wang, He         
Painraj, Joseph | Solntsev, Alexander| Wang, Ting      
Pinson, Matthew | Song, Tao         | Wang, Wenji      
Poldy, Rachel    | Song, Won-Min     | Wang, Yu         
Pozzi, Francesco| Sparkes, Benjamin | Weed, Ryan       
Prakash, Prasai | Sprouster, David  | Weekes, Chris    
Prasad, Amrita  | Stefszky, Michael | Werner, Justin   
Pyke, Daniel    | Stevenson, Robin  | Wette, Karl      
Rabeling, David | Summers, Paul     | Whale, Benjamin  
Rafiei, Ramin   | Sun, Yue          | Whitfield, Ross  
Ramesh, Vidya   | Supratman, Vincent| Wong, Sherman    
Ramsden, Stuart | Sutton, Andrew    | Wu, Ju-Kuei      
Rancic, Milos   | Swifte, Joshua    | Wuchenich, Danielle| Xiao, Allan  
Read, Jesse     | Szegeti, Stuart   | Yan, S           
Reid, Nicolai   | Tattersall, Wade  | Yi, Seongjoon    
Roberts, Jason  | Tayati, Ponlawat  | Yu, Jun          
Robertson, Kalman| Teng, Ying Ying  | Yuen, Sebastian  
Rofi'i, Imam    | Teniswood, Clara  | Zhang, Bonnie    
Rogers, Jeffrey | Thapar, Nandika   | Zhong, Manjin (Grace) |
### Visiting Students

*(includes Occupational Trainees and Summer Scholars from external institutions)*

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alizadeh, Mehdi</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>Amuli, Ines</td>
<td>Polytech Clermont-Ferrand, France</td>
</tr>
<tr>
<td>Andersson, Linnea</td>
<td>Stockholm University, Sweden</td>
</tr>
<tr>
<td>Baalrud, Scott</td>
<td>University of Wisconsin-Madison, USA</td>
</tr>
<tr>
<td>Barmaz, David</td>
<td>Ecole Polytechnique Federale de Lausanne, Switzerland</td>
</tr>
<tr>
<td>Carretero-Palacios, Sol</td>
<td>Universidad de Zaragoza, Spain</td>
</tr>
<tr>
<td>Chen, Jiang Bo</td>
<td>Beijing University of Technology, China</td>
</tr>
<tr>
<td>Chen, Kenneth</td>
<td>Chinese University of Hong Kong</td>
</tr>
<tr>
<td>Churton, Blake</td>
<td>University of Sydney</td>
</tr>
<tr>
<td>De Cesar, Mario</td>
<td>Second University of Naples, Italy</td>
</tr>
<tr>
<td>Duignan, Tim</td>
<td>University of Wellington, New Zealand</td>
</tr>
<tr>
<td>Eckerskorn, Niko</td>
<td>University of Bonn, Germany</td>
</tr>
<tr>
<td>Frost, William</td>
<td>University of Canterbury, New Zealand</td>
</tr>
<tr>
<td>Gao, Qian</td>
<td>Shanghai Jiao Tong University</td>
</tr>
<tr>
<td>Ghous, Abid</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>Hansson, Tobias</td>
<td>Chalmers University of Technology, Sweden</td>
</tr>
<tr>
<td>Haslinger, Franz</td>
<td>University of Applied Sciences Regensburg, Germany</td>
</tr>
<tr>
<td>He, Peng</td>
<td>Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td>Henderson, Stuart</td>
<td>University of Strathclyde, United Kingdom</td>
</tr>
<tr>
<td>Hile, Sam</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>Jian, Pu</td>
<td>Ecole Normale Superieure, France</td>
</tr>
<tr>
<td>Johnstone, Shaun</td>
<td>Monash University</td>
</tr>
<tr>
<td>Kedziora, David</td>
<td>University of Sydney</td>
</tr>
<tr>
<td>Kessler, Patrick</td>
<td>Bonn University, Germany</td>
</tr>
<tr>
<td>King, Eleanor</td>
<td>Adelaide University</td>
</tr>
<tr>
<td>Kroezen, Sebastian</td>
<td>Westfälische Wilhelms Universität Münster, Germany</td>
</tr>
<tr>
<td>Lechene, Balthazar</td>
<td>Ecole Polytechnique, France</td>
</tr>
<tr>
<td>Ledingham, Patrick</td>
<td>University of Otago, New Zealand</td>
</tr>
<tr>
<td>Li, King-Fai</td>
<td>California Institute of Technology, USA</td>
</tr>
<tr>
<td>Li, Ziyuan</td>
<td>University of New South Wales (ADFA)</td>
</tr>
<tr>
<td>Ling, Julia</td>
<td>Princeton University, United States</td>
</tr>
<tr>
<td>Lu, Jian</td>
<td>Fudan University, China</td>
</tr>
<tr>
<td>Mahony, Caitlin</td>
<td>University of Melbourne</td>
</tr>
<tr>
<td>Majdi, Saman</td>
<td>Uppsala University, Sweden</td>
</tr>
<tr>
<td>Malik, Anwaar</td>
<td>University of New South Wales (ADFA)</td>
</tr>
<tr>
<td>Margarin, Vincent</td>
<td>ENSEITA, France</td>
</tr>
<tr>
<td>Margenot, Mathieu</td>
<td>University of Orleans, France</td>
</tr>
<tr>
<td>Messing, Maria</td>
<td>Uppsala University, Sweden</td>
</tr>
<tr>
<td>Michl, Matthias</td>
<td>University of Applied Sciences Regensburg, Germany</td>
</tr>
<tr>
<td>Nute, Jonathan</td>
<td>University of Nottingham, United Kingdom</td>
</tr>
<tr>
<td>Palalani, Nyaladzi</td>
<td>University of Botswana, Africa</td>
</tr>
<tr>
<td>Parrain, David</td>
<td>Ecole Normale Superieure, France</td>
</tr>
<tr>
<td>Qajar, Jafar</td>
<td>University of New South Wales</td>
</tr>
<tr>
<td>Qi, Xinyuan</td>
<td>Applied Physics School, China</td>
</tr>
<tr>
<td>Raihan, Rexaur</td>
<td>University of New South Wales (ADFA)</td>
</tr>
<tr>
<td>Reed, Matthew</td>
<td>University of Surrey, United Kingdom</td>
</tr>
<tr>
<td>Saha, Shibu</td>
<td>University of Delhi, India</td>
</tr>
<tr>
<td>Sax, Christian</td>
<td>University of Applied Sciences Regensburg, Germany</td>
</tr>
<tr>
<td>Schroder, Timo</td>
<td>Max Planck Institute, Germany</td>
</tr>
<tr>
<td>Schroeter, Lina</td>
<td>University of New Zealand</td>
</tr>
<tr>
<td>Simpson, Mark</td>
<td>University of Wellington, New Zealand</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Sliski, David</td>
<td>University of Massachusetts, United States</td>
</tr>
<tr>
<td>Stumpp, Stephan</td>
<td>University of Augsburg, Germany</td>
</tr>
<tr>
<td>Sun, Wen</td>
<td>University of Queensland</td>
</tr>
<tr>
<td>Swan, Tom</td>
<td>University of Surrey, United Kingdom</td>
</tr>
<tr>
<td>Sykora, Benedikt</td>
<td>University of Augsburg, Germany</td>
</tr>
<tr>
<td>Terhalle, Bernd</td>
<td>Westfälische Wilhelms Universität Münster, Germany</td>
</tr>
<tr>
<td>Thapar, Nandika</td>
<td>University of Wollongong</td>
</tr>
<tr>
<td>Turner, Sam</td>
<td>University of Wellington, New Zealand</td>
</tr>
<tr>
<td>Uhe, Peter</td>
<td>Monash University</td>
</tr>
<tr>
<td>Villis, Byron</td>
<td>University of Melbourne</td>
</tr>
<tr>
<td>Wagner, Kerstin</td>
<td>University of Augsburg, Germany</td>
</tr>
<tr>
<td>Wang, Wenjie</td>
<td>Nankai University, China</td>
</tr>
<tr>
<td>Yan, Kunlun</td>
<td>Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td>Yu, Hongyi</td>
<td>Chinese Academy of Sciences, China</td>
</tr>
</tbody>
</table>