

GRAD *news*

NEWS FROM THE SOUTH EAST ENGLAND PHYSICS GRADUATE SCHOOL

Issue 5: Summer 2016

Editorial

As we enter the 2016/17 Academic year, we pass the half way point of the HEFCE grant supporting GRADnet and it is time to reflect. Almost all the events we have organised have been well received by the Physics PGR students attending them and well over half of the PGRs in SEPnet have attended at least one event. Students particularly appreciate the residential schools and workshops, especially those with an immediate relevance to their PhD research. We have also learnt that students appreciate the wide range of expert academic speakers and employers from across the region that GRADnet brings to them. Some of the most successful activities have been those proposed and led by students themselves.

Building on this experience, we have developed our biggest programme yet for 2016/17 comprising a mix of academic Physics workshops and student-led conferences; Residential schools with real life industrial content, leadership and professional skills training; targeted professional skills modules and more peer-learning opportunities. Heads of Department are enthusiastic about this programme and committed to supporting your participation in it and its long term continuation.

Dawn Duke and Pam Denicolo developed and piloted many of the activities in the programme. During 2016/17 they will be transitioning delivery to a wider network of trainers. Thanks go to Dawn and Pam for their commitment and hard work getting us to this point in our evolution. I would also like to thank Cristobel Soares-Smith, who continues to field unstintingly all your questions and ensures the smooth operation of GRADnet.



Peter McDonald
GRADnet Director

Student Led Conferences 2017

Following the success of the inaugural event in 2016, attended by over 70 participants, GRADnet recently launched a call for a second round of conferences to be held in Southampton in March 2017. Student led conferences give students the opportunity to propose conference topics and then, in collaboration with a mentor and the GRADnet administrator, to run the events. Funds are available to pay for external invited speakers. Participation is free to SEPnet researchers.



The conferences chosen to run in 2017 are:

A wider context for astronomers. This meeting will take a broadband look at astrophysical processes across the electromagnetic spectrum. The introduction of different features of the spectrum in an astrophysical context will create a foundation for broadband study at different wavebands.

Organisers: *Peter Boorman, Bella Boulderstone and Chris Frohmaier (Southampton)*

Functional scanning probe microscopy techniques is for those interested in surface analysis and nanotechnology characterisation. Basic concepts and different techniques used by researchers working on a wide range of topics including nanomaterials, soft matter, bi-medicine, polymers and magnetism will be explored.

Organisers: *Héctor Corte-León (RHUL) and Alex Browning (Surrey)*

Further details will follow in October 2016. The call for 2018 conferences will be in March 2017.

Working Together to deliver excellence in Physics

GRAD*net*
South East Physics Network

Outline of 2016-17 Training Programme

This year, GRADnet is focussing more strongly on residential workshops in the big research themes of its partner Physics Departments. For 2016/17 we are offering:

- *Planetary Science*
- *Cosmology and Gravitation*
- *Experimental Methods for Condensed Matter Physicists*
- *Quantum Technologies and*
- *NExT workshop for particle physicists.*

For some of these events we will return to the Old Thorns Country Club which offers impressive facilities in the middle of our region. Others will be held at NPL.



Teamwork: the marshmallow challenge at the 2016 GRADnet Winter School

The whole programme kicks off with an *Induction Day* on 26th October in central London. New this year, *Induction* will include a choice of workshops for new PhD students:

- *Introduction to LaTeX*
- *Introduction to Python*
- *Introduction to MATLAB*
- *Getting your research published and*
- *Organising meetings and conferences.*

The Winter School in 2017 focuses entirely on the *2003 NASA Columbia disaster*: a popular case-study element of last year's school. It takes students through exercises in leadership and team-working, skills rated highly by employers.

The 2017 Summer School follows the established pattern of "*What can I do with my PhD?*" – a mix of employer workshops and consultancy challenges. In 2017 it will be hosted once more by NPL.

Summer School

The GRADnet 2016 Summer School "*What can I do with my PhD?*" was held at Herstmonceux Castle from 4-7th July 2016. It was attended by about 50 PhD students from partner universities.



Delegates participated in a broad range of workshops designed to raise awareness of different types of employment open to Physics PhD graduates. This year, workshops were offered by Airbus, NPL, the Home Office Centre for Applied Science and Technology, AkzoNobel, the Met Office and MR Solutions.

The School also included a "*Consultancy Challenge*", a competition where students take on the role of consultants to propose solutions to real life problems encountered by employers. Amec Foster Wheeler, Chomko & Rosier, Observatory Science Centre and InSync Technology set the challenges which students tackled in small teams.

Other activities included: intellectual property; public engagement and outreach in science; a tour of the Observatory Science Centre and, of course, a BBQ!



Developing a response to the Consultancy Challenge

Entrepreneurship Challenge

In early 2016, GRADnet launched its Entrepreneurship in Action Challenge, tailored for Physics PGRs. Elaine Hickmott of EH-Enterprises developed the programme especially for GRADnet.

PGRs were invited to form teams to compete to be the most entrepreneurial physics department in SEPnet. Teams entered from Kent, Portsmouth, QMUL, Southampton, Surrey, and Sussex.

The finalist teams gathered on 13th July to present their business ideas to a panel of industry judges. Neil Phillipson of Outsideology, Simon Bland of Reigate and Banstead Borough Council and Phil Edwards of Weald Technology were all impressed by the quality, credibility and potential of the ideas being showcased.



The Entrepreneurship in Action Challenge finalists from Southampton and Surrey.

The judges commented that it was impressive to see physics PhD students applying their skills to challenges and scenarios outside of their normal environment. They agreed that the creative thinking and entrepreneurial mindset demonstrated by the teams would be an asset to any industry or organisation.

The winning team, who were awarded a cash prize, came from the University of Southampton. The achievements of all the teams were celebrated at the follow-on networking event which brought together the students and local entrepreneurial businesses.

All the teams thoroughly enjoyed the challenge, having learnt a lot about innovation, business and themselves.

Big Data Workshop

Big Data and Numerical Modelling are hot topics at the moment. With STFC consulting on new doctoral training centres in Big Data science, the SEPnet community is meeting in Abingdon in September to co-ordinate a response. Integrating activity in Big Data will offer opportunities for enhanced training in the future.



Lectures on Numerical Modelling at Old Thorns in 2016

SEPnet Scholars

Each year, SEPnet departments award SEPnet Scholarships to selected PhD students. These named scholarships bring a number of benefits, including a top-up to the Research Training Support Grant that award holders can use to support their studies.

Azaria Coupe, a Southampton Scholar, will use her Scholarship to go on a workshop that she could not otherwise attend. She writes:



'As a SEPnet Scholar, I've already had a wealth of opportunities through GRADnet. I led the Southampton team in the GRADnet Entrepreneurship in Action Challenge, which we won, gaining entrepreneurial skills and creating an app that may become a commercial reality. I've met many amazing people at employer events and workshops, making valuable contacts for the future. I encourage more PhD students to get involved.'

Upcoming Events Include:

19 October 2016
“Meet the Employers”
University of
Hertfordshire

26 October 2016
GRADnet Induction
Park Crescent Conf Centre,
London

1 & 29 November 2016
Effective Physics
Researcher , OU Camden

14-15 November 2016
Planetary Science School
NPL, Teddington

16-18 January 2017
Cosmology & Gravitation
School
Old Thorns, Liphook

13-15 February 2017
GRADnet Winter School
Cumberland Lodge,
Berkshire

A full list is available on
the GRADnet VRE:

www.sepnet.ac.uk/vre

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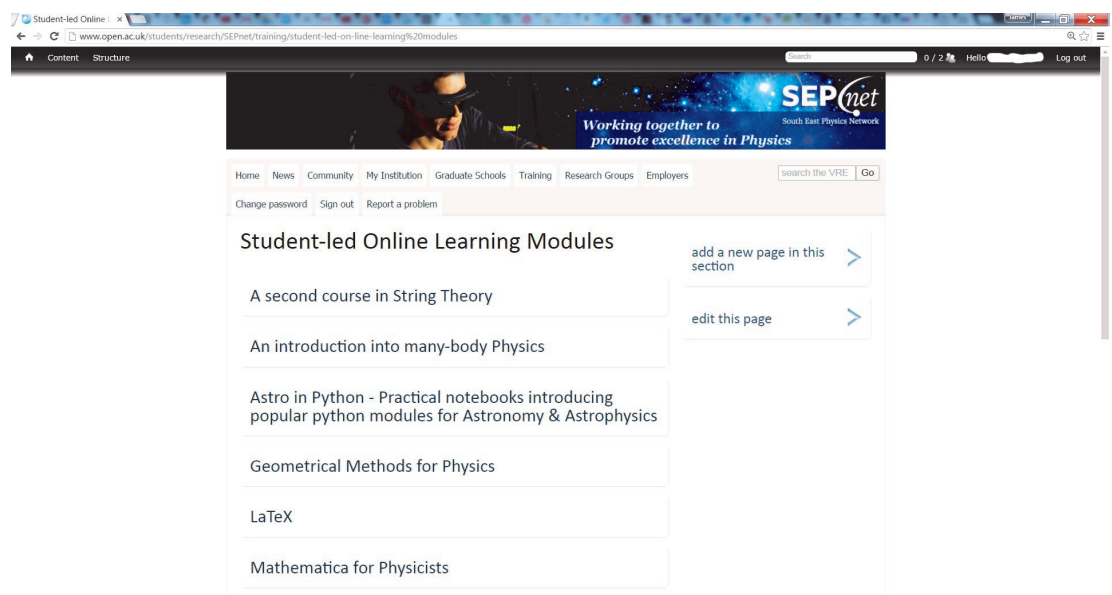
New On-line Learning Modules

Four new on-line learning modules have been created by GRADnet PGR students. This brings the total number of modules now available to 12 . Students have created these modules in response to the phrase: *I wish I had known that when I started my PhD*. The new modules are:

- *Geometrical methods for physicists*
- *Astro in Python- Practical notebooks*
- *An introduction to many body physics and*
- *A second course in string theory.*

Designed to help new PhD students embarking on their research, the presentation style of the courses is very varied. *Astro in Python* is very hands on and leads the reader through a suite of Python modules used by astronomers and astrophysicists presented as Jupyter notebooks that can be viewed in Github. In contrast, *A 2nd Course in String Theory* is a mixture of clearly written notes and recorded videos. From 2015, there are excellent modules on getting started with *LaTeX* and on *The Publication Process* for those new to either of these. Some of the modules can be found on YouTube and are now approaching 1000 hits.

While students prepare modules on a voluntary basis, GRADnet pays them for their work. The next call for new modules will be in November 2016.



A screenshot of the on-line modules homepage to be found on the VRE

Accessing GRADnet

Further details of all GRADnet activities can be found on the GRADnet Virtual Research Environment. All Physics PhD students in the SEPnet region can attend events free of any charge to themselves or their project funding. To learn more and obtain a login visit

www.sepnet.ac.uk/vre and www.sepnet.ac.uk/vrefaqs

