David Charlwood

SEPnet

South East Physics Network **Employability**

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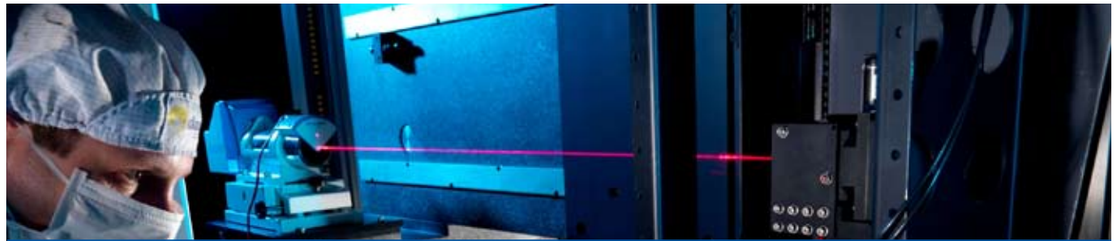
University of Kent · University of Portsmouth · Queen Mary University of London · Royal Holloway University of London · University of Southampton · University of Surrey · University of Sussex



HOW TO MAKE A PHYSICIST: HIGH ENERGY CAREERS IN PHYSICS

From building the coolest gadgets to investigating the heat of the Sun's core, the careers open to physics students are almost limitless.

Courtesy of Diamond Light Source

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PHYSICS AT WORK

There's never been a better time to be a physicist. The broad sweep of physics research – from semiconductors to laser optics, quantum mechanics to nuclear energy – is yielding more and more practical applications. Physics is answering some of society's most pressing questions, and delivering technology for its coolest products.

"My placement at the Rutherford Appleton Laboratory gave me the experience and contacts I needed to secure a year working at CERN."

Thomas Bird, student, University of Southampton

From Blu-ray players and capacitive touch-screens, to high-end particle physics at multinational agencies like CERN, physicists are changing the world we live in.

That means ever greater demand for researchers, designers, engineers, analysts and educators with a physics background.

It also means we need to communicate this incredible knowledge to a wider audience. Physics graduates are needed in schools and universities to thrill new generations with the wonders of the science, as well as in the private sector to explain how its practical application can create commercial opportunities.

Proven value for students

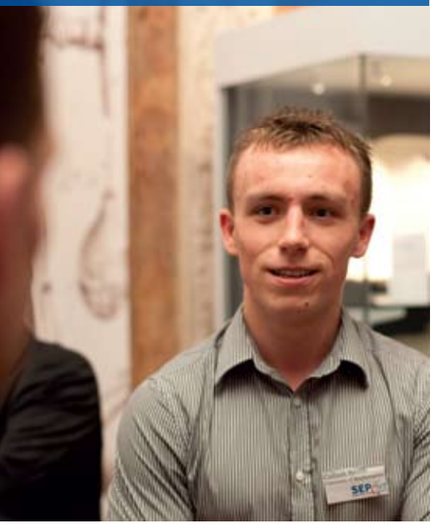
There's no shortage of ways to get involved in physics. And there's almost no limit to the kind of applications for a physics degree – from teaching children about electricity to developing and launching space craft.

It's no wonder that when physics students get into the workplace, they're excited by what they find. SEPnet summer placement students, get to work on real problems and see just how valuable their skills and knowledge can be. They also make great contacts and develop communication and technical skills.

Your chance to get involved

SEPnet summer studentship bursaries are available to undergraduate students at any of the SEPnet partners. This 8 week placement enables students to gain experience applying their physics in the real world. For more information and how to apply, please see our website www.sepnet.ac.uk

PHYSICISTS AT WORK



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Student: Callum Smith, 20, BSc Physics at Southampton

Placement: Technician, Xyratex

Role: Measuring the transmission of infrared light through novel polymer waveguide structures.

Why did you decide to do a placement?
A great way to gain work experience and to improve my CV.

Employer comment:
Callum is a quick learner and I was soon confident enough that he could undertake experimental duties in the lab with little supervision. He's made full use of the knowledge and experience available at Xyratex, tackling and resolving many of the obstacles encountered during his experimental research.

This is a world-leading technology company focused on innovation in R&D. The placement scheme not only helps our graduate recruitment, but also allows us to place resources on less business-critical research, which could have an impact on the wider field of technology in which we operate.

Richard Pitwon, Xyratex

Student: Emma Short, 19, MSci Physics at Royal Holloway, University of London

Placement: Research student, Queen Mary, University of London

Role: Using and editing code to analyse data, draw histograms and obtain event counts. Ultimately to calculate a cross section with lower uncertainty to previous calculations

Why did you decide to do a placement?
- To decide if I wanted to have a career in physics
- To decide if I wanted to do a PhD
- To feel like I've done something useful in my summer
- For work experience

Would you recommend doing a placement?
Yes – it puts you right in a working environment and gives you a good idea of what a job in this field would entail – a good 'try before you buy' approach.

How do you think doing a placement has benefitted you for the future?
- Helped me decide PhD/future careers
- Increased my work experience and confidence in my abilities Prepared me for 3rd / 4th year projects

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Student: Michael Cheesman, 23, MSci Physics at Royal Holloway, University of London

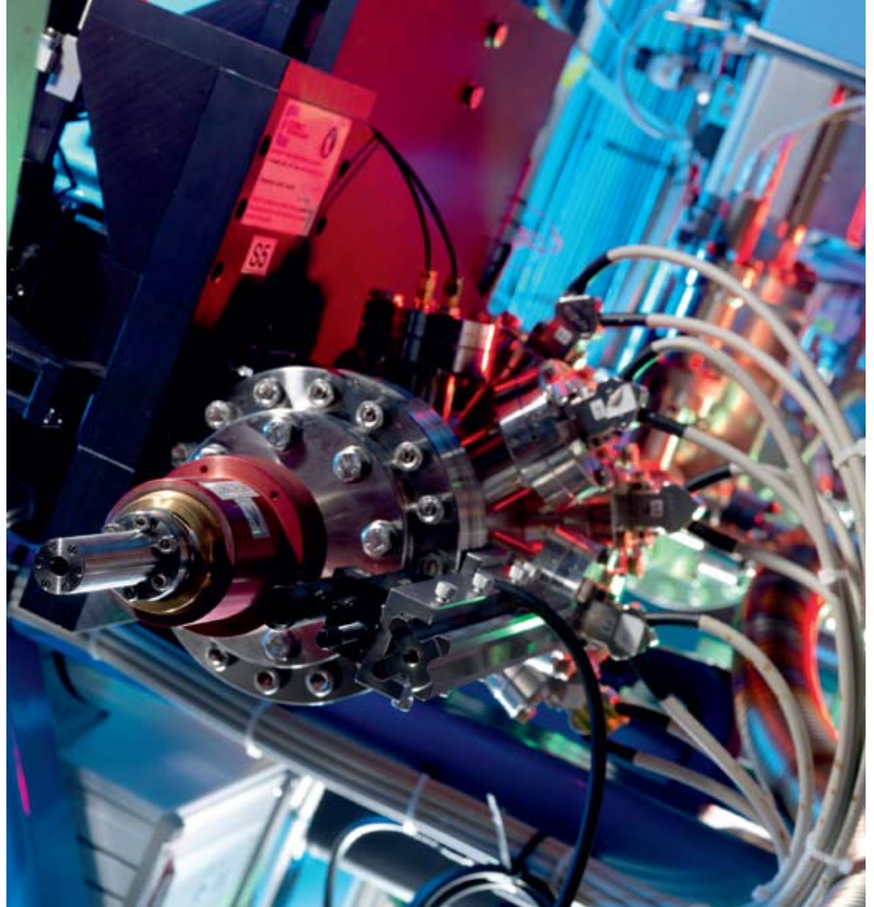
Placement: QinetiQ, Simulation and Training

Michael was offered a job after his placement and now works at QinetiQ

Why did you decide to do a placement?
With the current economic situation, graduating from University and going straight into full time employment is more difficult than ever. I took the placement as the experience I hoped to gain was the best way to make me stand out in the graduate job market. QinetiQ is a world leader in the defence sector, and having the opportunity to work with them before I graduated was fantastic for my CV.

Would you recommend doing a placement?
For me, the SEPnet studentship was amazingly worthwhile and I would recommend it to anyone.

How do you think doing a placement has benefitted you for the future?
After the placement I applied for a job at QinetiQ and was offered a place, ready to start work after I graduated.



Courtesy of Diamond Light Source

Student: Helen Duncan, 24, MPhys at Kent

Placement: NPL Low magnetic field lab with Dr. Hall

Role: Low magnetic field environment for ultra sensitive magnetic sensors

Helen changed from a BSc to an MPhys as a result of her placement

Working to create a very stable very low noise low magnetic field environment to test prototype sensors for the LISA and LISA pathfinder missions

Why did you decide to do a placement?
At the time the placements were made available to the students I had just finished a Lab based on Biot-Savart law and magnetic fields. I really enjoyed the lab and thought it would be a fun way to spend my summer.

"I had to learn power spectral density analysis and the use of windowing data – which is now very helpful for my 3rd year work."

Helen Duncan, student, University of Kent

Student: Charlotte Norris, 20, MSci Physics at Royal Holloway, University of London

Placement: EADS Astrium

Role: Creating a workflow to be used for service level agreement monitoring within a product for the European Space Agency (ESA)

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Why did you decide to do a placement?
To gain experience in a work environment that interests me and to learn new skills that can be used in future work

Would you recommend doing a placement?
Yes. It is an interesting experience and you get to learn new things, especially soft skills.

How do you think doing a placement has benefitted you for the future?
It developed my confidence and other soft skills and I have made contacts for the future.

"My SEPnet placement students will both have papers published from their work. That's really unusual for an undergraduate and will help them stand out from the pack." Dr Alan Drew, supervisor, Queen Mary

Student: Charlie Torrible, 21, BSc Physics at Southampton

Placement: Intech Science Centre & Planetarium

Role: This placement was officially titled "Exhibition Demonstrator", though in reality it was much, much more fulfilling.

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As a group of 3 interns, we began our time at Intech by researching and creating some simple (and hopefully entertaining) table-top experiments that could be demonstrated to the general public.

Over the eight weeks we designed and built more exciting demonstrations (including a 100,000 watt Van Der Graff Generator) and by the end of the placements we were performing our best home-made science experiments on a stage.

Why did you decide to do a placement?
I wanted a worthwhile way to spend the summer after my 2nd year at university studying Physics that would complement my course, look good on my CV, pay my rent and allow me to develop some valuable skills

Would you recommend doing a placement?
Coming from one end of the spectrum where I found it very difficult to talk in front of groups and explain scientific concepts to non-scientists this placement was brilliant for developing confidence and communication skills and I would recommend it to anyone who is more interested in public speaking or business and isn't planning to be a career academic.

"Being a demonstrator at Intech really helped my confidence and now I am much better at giving presentations." Affelia Wibisono, student, Royal Holloway

Employer: Helen Margdis, Principal research scientist at NPL (National Physical Laboratory)

What positions does your company have available for placement students:
Formal 'NPL Academy' scheme to provide one week work experience placements for GCSE/A level students. Otherwise placements via schemes such as SEPnet.

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What do you think is good about taking placement students?
Provides an opportunity to try out ideas that we might not otherwise have time to explore, whilst at the same time giving students a chance to experience what it is like to attack a real scientific problem without a known answer.

What does your job involve?
- Scientific research and development (lasers and optics)
- Writing proposals for new research projects
- Writing papers and giving presentations
- Mentoring more junior scientists
- Member of internal NPL strategic research working group

Please give a brief summary of your career and education history:
State comprehensive school, UG Physics Oxford, DPhil Oxford, Postdoc then lectureship Oxford. Joined NPL as senior research scientist in 1998, promoted to principal research scientist in 2001.

Employer: Grant Crossingham, Director of Symetrica

What positions does your company have available for placement students:
Research physicists – for data analysis and conversion or ideas into working software code

What do you think is good about taking placement students?
It provides interest from soon to be graduates in the company

What does your job involve?
Providing novel new technology to be used in homeland security for the detection and identification of nuclear material

What is the average starting salary at your company?
£30,000

Please give a brief summary of your career and education history:
1st class hons in Physics at Bath University, PhD in Physics at Southampton, started a company which span out of Southampton in 2005 with 5 staff. This has grown to 23 staff in 2010. Currently, I am the chief nuclear scientist on a project to provide the next generation radionuclide identifier to the US government

CONTACT DETAILS

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