

# Regional Physics Day in Abingdon 2020



Abingdon School, Park Rd, Abingdon, OX14 1DE  
Saturday 29 February 2020

This full day of Physics CPD is run, organised and funded by the Institute of Physics with generous support from Abingdon School. Lunch and refreshments are provided.

## Programme

8.50am – 9.20am	<b>Registration, welcome and refreshments</b>
9.20am – 10.00am	Keynote Speaker
10.10am – 11.25am	Session 1 (Workshops 1A – 1F)
11.25am – 11.45pm	<b>Refreshment break and exhibitor stands</b>
11.45pm – 1.00pm	Session 2 (Workshops 2A – 2F)
1.00pm – 2.00pm	Lunch, <b>Exhibitor stands, raffle</b>
2.00pm – 3.15pm	Session 3 (Workshops 3A – 3F)
3.15pm – 3.40pm	<b>Evaluations</b>
4.00 pm	<b>Close</b>

**Choosing your workshops** - Please read all about the workshops before booking online.

## How to Register

Book your place at <http://bit.ly/AbingdonSouthPhysicsCPDday2020>

If you have any problems booking or questions about the day, email [education-south@iop.org](mailto:education-south@iop.org)

Keynote	What is nothing?
<p><b>Professor Frank Close, OBE, FInstP</b></p> <p>What is 'nothing'? What remains when you take all the matter away? Can empty space - a void - exist? This Very Short Introduction explores the science and the history of the elusive void: from Aristotle who insisted that the vacuum was impossible, via the theories of Newton and Einstein, to our very latest discoveries and why they can tell us extraordinary things about the cosmos. Frank Close tells the story of how scientists have explored the elusive void, and the rich discoveries that they have made there. He takes the reader on a lively and accessible history through ancient ideas and cultural superstitions to the frontiers of current research. He describes how scientists discovered that the vacuum is filled with fields; how Newton, Mach, and Einstein grappled with the nature of space and time; and how the mysterious 'aether' that was long ago supposed to permeate the void may now be making a comeback with the latest research into the 'Higgs field'. We now know that the vacuum is far from being empty - it seethes with virtual particles and antiparticles that erupt spontaneously into being, and it also may contain hidden dimensions that we were previously unaware of. These new discoveries may provide answers to some of cosmology's most fundamental questions: what lies outside the universe, and, if there was once nothing, then how did the universe begin?</p> <p><b>Nothing</b> - A very short introduction - Published by Oxford £5.99 on Amazon. Visit website: <a href="https://www2.physics.ox.ac.uk/contacts/people/closefe">https://www2.physics.ox.ac.uk/contacts/people/closefe</a></p>	

Workshop 1 choices		Overview
1A	<p><b>Cloud Chamber Make and Take Make the Most of Dry Ice (DOUBLE LENGTH WORKSHOP 1A + 2A)</b></p> <p><b>Workshop Leaders</b> Glyn Jones-Parry and Darrell Hamilton</p>	<p>Build your own Cloud Chamber, and make good use of the left-over dry ice. This make-and-take will send you home with an excellent Cloud Chamber, and numerous ideas for experiments to do with any spare dry ice in the classroom and in science clubs.</p> <p><b>Note:</b> This workshop is a double session, taking slots 1A and 2A.</p> <p><b>KS 4-5</b></p>
1B	<p><b>Energy, moving forward</b></p> <p><b>Workshop Leader</b> Trevor Plant</p>	<p>This workshop takes you from where you are in your teaching of the new energy curriculum, and moves you forward. It is therefore suitable for all teachers, from newly qualified (or still in training) to experienced physicist.</p> <p><b>KS 3-4</b></p>
1C	<p><b>Using Modelling when teaching Electricity</b></p> <p><b>Workshop Leader</b> Helen Pollard</p>	<p>We'll familiarise with three different models for electric circuits, then discuss when you might use them in the classroom. Comparing the strengths and weaknesses of each model, we'll develop a hierarchy of understanding so that you can plan lessons to track your learners' progress at all levels.</p> <p><b>KS 3-4 (5)</b></p>
1D	<p><b>Isaac Physics</b></p> <p><b>Workshop Leader</b> Kevin Mosedale and Andrew Norman</p>	<p>Isaacphysics.org offers support and activities in physics problem solving to teachers and students from GCSE level upwards. This session covers the basics of setting assignments, looking at results, how to use the data, and ways to embed Isaac Physics in teaching materials by customising boards of questions and embedding links.</p> <p><b>KS 4-5</b></p>
1E	<p><b>Fun Physics Lessons - A Day in the Life of a Reluctant Student</b></p> <p><b>Workshop Leader</b> Theresa Conlon</p>	<p>Teaching various tricky ideas in a different way to help understanding.</p> <p><b>KS 3-4 (5)</b></p>
1F	<p><b>Black Body Radiation (DOUBLE LENGTH WORKSHOP 1F + 2F)</b></p> <p><b>Workshop Leader</b> Isabelle Parkes</p>	<p>What is a black body? Can we make one? How can stars be considered as black bodies? Why are black bodies used in the space industry? In this workshop we will look at the emission and absorption of infra-red radiation, the perfect black body, the intensity and wavelength distribution of emission, stars as black bodies and the use of black bodies in the space industry. This workshop is in collaboration with the Science and Technology Facilities Council's Rutherford Appleton Laboratory (RAL), who will be loaning two of their black bodies for us to see and, very excitingly, hosting a visit to their R100 integration and test facility. This workshop is suited to all those teaching or planning to teach the black body radiation topic in triple GCSE physics.</p> <p><b>Note:</b> This workshop is a double session, taking slots 1F and 2F. It will include a visit to the STFC RAL Space R100 integration and test facility.</p> <p><b>KS 4, Triple Award</b></p>

Workshop 2 choices		Overview
2A	<p><b>Cloud Chamber Make and Take Make the Most of Dry Ice (DOUBLE LENGTH WORKSHOP 1A + 2A)</b></p> <p><b>Workshop Leaders</b> Glyn Jones-Parry and Darrell Hamilton</p>	<p>Second half of double session – Cloud Chamber Make and Take; Make the Most of Dry Ice. <b>See 1A</b> for full description.</p> <p><b>KS 4-5</b></p>
2B	<p><b>Energy, moving forward (REPEAT)</b></p> <p><b>Workshop Leader</b> Trevor Plant</p>	<p>This workshop takes you from where you are in your teaching of the new energy curriculum, and moves you forward. It is therefore suitable for all teachers, from newly qualified (or still in training) to experienced physicist.</p> <p><b>KS 3-4</b></p>
2C	<p><b>Putting #CogSciSci into practice in the physics classroom.</b></p> <p><b>Workshop Leader</b> Liz Nourshargh</p>	<p>Have you seen or heard of #cogscisci on Edutwitter? Are you wondering what all the fuss is about? Do you want to find out more about cognitive science? Would you like to know where to find resources to use in Physics?</p> <p>If the answer to any of these questions is yes, come along to this workshop. We will go through the background to #cogscisci and show you where to find out more about it as well as how to access the wealth of free resources made available by teachers across the country.</p> <p><b>KS 3-5</b></p>
2D	<p><b>What can you do with Balloons</b></p> <p><b>Workshop Leaders</b> Jo Kent and Jem Freeman</p>	<p>Take a look with us at a variety of demonstrations and investigations that use balloons to teach topics in the physics curriculum. Please feel free to bring your own ideas!</p> <p><b>KS 3-5</b></p>
2E	<p><b>Shining a Light on Waves</b></p> <p><b>Workshop Leader</b> Kath Myers</p>	<p>This workshop aims to help teachers navigate practical work for GCSE waves and to add some attention grabbing 'hooks' to their repertoires. Aimed predominantly at GCSE with some stretch and challenge.</p> <p><b>KS 4</b></p>
2F	<p><b>Black Body Radiation (DOUBLE LENGTH WORKSHOP 1F + 2F)</b></p> <p><b>Workshop Leader</b> Isabelle Parkes</p>	<p>Second half of double session – Black Body Radiation. <b>See 1F</b> for full description.</p> <p><b>KS 4 Triple Award</b></p>

Workshop 3 choices		Overview
3A	<p><b>Ideas for teaching forces</b></p> <p><b>Workshop Leader</b> Lewis Matheson</p>	<p>This session looks at some practical ways to teach forces, from introducing them in Year 7 to explaining Newton's Laws at GCSE.</p> <p><b>KS 3-4</b></p>
3B	<p><b>Salad Bowl accelerator make-and-take</b></p>	<p>The 'accelerator bowl' is a model of a particle accelerator that can be used to explain the workings of real machines</p>

	<p><b>Workshop Leader</b> Neal Gupta</p>	<p>like Diamond and the Large Hadron Collider. Although it's a very simple model, by discussing the similarities and differences between this and a real accelerator, we can understand a lot of the Physics involved in these intriguing machines. You will also build a model of a linear accelerator which you can take away.</p> <p><b>KS 4-5</b></p>
3C	<p><b>Using Modelling when teaching Electricity (REPEAT)</b></p> <p><b>Workshop Leader</b> Helen Pollard</p>	<p>We'll familiarise with three different models for electric circuits, then discuss when you might use them in the classroom. Comparing the strengths and weaknesses of each model, we'll develop a hierarchy of understanding so that you can plan lessons to track your learners' progress at all levels.</p> <p><b>KS 3-4(5)</b></p>
3D	<p><b>Understanding and implementing Science capital in your practice</b></p> <p><b>Workshop Leader</b> Shane Clark</p>	<p>"Science capital can be defined as the sum of all the science-related knowledge, attitudes, experiences and resources that an individual builds up through their life. This includes what science they know about, what they think about science, the people they know who have an understanding of science, and the day-to-day engagement they have with science", So, what is your student's science capital? And, how can you improve your student's science capital?</p> <p>In this workshop we will look at how we can 'measure' your student's science capital and use this to develop strategies in your practice to enhance and develop your student's engagement and understanding of science.</p> <p><b>KS 2-5</b></p>
3E	<p><b>Shining a Light on Waves (REPEAT)</b></p> <p><b>Workshop Leader</b> Kath Myers</p>	<p>This workshop aims to help teachers navigate practical work for GCSE waves and to add some attention grabbing 'hooks' to their repertoires. Aimed predominantly at GCSE with some stretch and challenge.</p> <p><b>KS 4</b></p>
3F	<p><b>Great Ideas for innovative Student Projects from SaturdayScience.org</b></p> <p><b>Workshop Leader</b> Neil Downie</p>	<p>We'll see things you've never seen before like Vacuum Bazookas, Molecular Weight Meters, Light Tunnel Sensors or Electric Worms, all of them brimming over with physics. Projects that your students could make - and make better. And we'll look at getting students brainstorming and putting their own innovative ideas into a project.</p> <p><b>Y11 &amp; KS 5</b></p>