

London • Wednesday 28 November • 6.30pm

Faster Fusion: Fact or Fantasy?

Dr Alan Costley, Tokamak Energy

The need for carbon-free sources of energy is well established and fusion power is one possible solution. But experimental fusion devices are large and expensive. In consequence, fusion is taking decades to develop. Recent advances are opening development paths based on much smaller devices, which will be cheaper and faster to build. But are they feasible and will they work? In this talk we explore the answers.

December 2018

Herts • Wednesday 5 December • 7pm

The Role of Drones and Satellites in Land Use and Precision Agriculture

Dr Toby Waine, Cranfield University



Dr Waine will explore how science and technology is revolutionising agricultural engineering with a particular focus on remote sensing from space and drones. From measuring illicit opium production in Afghanistan to undertaking national assessments of vegetation in semi-arid climates, innovative use of remote sensing supports operational methods for vegetation monitoring and provides robust, statistically-based area estimates of land cover and net primary production.

Milton Keynes • Tuesday 11 December • 7.30pm

Recreating the Big Bang with the World's Largest Machine – the LHC at CERN

Prof. David Evans, University of Birmingham

The Large Hadron Collider is the world's most powerful particle accelerator. Protons are smashed together at 0.999,999,991 times the speed of light recreating the violent particle collisions that would have existed less than a billionth of a second after the Big Bang. The physics behind the LHC will be explained.

London • Wednesday 12 December • 6.30pm

Will the Coming Tech Revolution be a Force for Good?

Stephen Pattison, ARM Holdings

A new age of technology is fast approaching. But there are many concerns: Will cyber criminals ransack our bank account? Will robots take our jobs? Will hostile intelligence agencies undermine our politics and flood us with fake news? Stephen Pattison will consider these issues in the context both of what cutting-edge technology can do to help mitigate some of the risks, and what will require a wider policy debate about the ethics of some of the possibilities that the technology will create. His starting point is that the new technology can deliver huge benefits for us: but for those benefits to be realised, we need to have confidence in it. If the internet of things doesn't empower people, it will fail.

January 2019

REMS at Home • Thursday 17 January 2019

Big Data and Artificial Intelligence

Please see the website for further details.

Information

All our lectures are free to all and last about one hour. There is usually 10 to 15 minutes afterwards for the audience to ask questions. **School parties are most welcome but please register numbers beforehand with the relevant venue organiser (see below). All venues are wheelchair accessible.** Details herein are subject to possible alteration – check branch webpages. Any views expressed in here are not necessarily those of the Institute of Physics.

Follow us on:

Twitter @IOPLSE

Facebook www.facebook.com/ioplse

Web iop.org

Venues and timings

Berkshire

Please see website for details of lectures.

Lectures held at 7.30pm in the William Penny Theatre, Recreational Society, West Gate, AWE, Aldermaston, Reading RG7 4PR. The theatre entrance can be found on the A340 Basingstoke to Newbury Road, just before the Heath End Roundabout at Tadley.

Do not use the main gate entrance; the correct gate is signposted as the West Gate or AWE Staff + Deliveries 🚚

For further information email iop.lectures@awe.co.uk

Herts

Lectures usually held at 7pm in the Lindop Building, University of Hertfordshire, College Lane, Hatfield AL10 9AB.

To book a place or for further information on this season's events please contact:

Dr Diane Crann

Email d.crann@herts.ac.uk

Tel 07770 444614

London

At time of printing it is assumed that all London centre lectures will be held at 6.30pm, Franklin Room, Institute of Physics HQ, 80 Portland Place, London W1B 1NT. Refreshments are served from 6pm on the day of the lecture. Please register online to attend lectures. Please check the branch website and events calendar regularly for an update on when talks and events will move to the new IOP building near King's Cross.

Milton Keynes

Lectures held at 7.30pm in the Berrill Lecture Theatre, The Open University, Walton Hall, Milton Keynes MK7 6AA.

There is no need to register. For further information contact:

Prof. Ray Mackintosh

Email raymond.mackintosh@open.ac.uk

Oxford

Lectures held at 6.45pm in the Martin Wood Lecture Theatre, Clarendon Laboratory, Parks Road, University of Oxford OX1 3PU, email iop.oxford@outlook.com
Refreshments are served from 6.30pm. Please register online to attend lectures.

IOP | Institute of Physics
London and South East Branch

London and South East Branch

Public Events – Autumn 2018

October 2018

London • Wednesday 3 October • 6.30pm

Exoplanets and the Nature of Other Worlds

Prof. Didier Queloz, University of Cambridge



The discovery of exoplanets sparked a revolution in astronomy and captured our imagination. Today, about 1,000 such objects have been found. We have learned that planets are common, and that their properties are much more diverse than originally predicted. Their nature remains mysterious. Our solar system is just one solution to nature's problem of making planets. This talk will present the main results of exoplanet work.

Milton Keynes • Tuesday 9 October • 7.30pm

Tracing the Lives of Black Holes:

New Views of the Low-Frequency Radio Sky

Dr Judith Croston, The Open University

The early days of radio astronomy revealed the existence of exotic galaxies producing powerful jets of material travelling immense distances at close to the speed of light. We still have many questions about how these jets are generated by matter falling onto a central black hole, what the jets are made of, and, perhaps most importantly, how they impact their surrounding galaxies and intergalactic space. I will discuss how new radio surveys are revisiting this exotic population of galaxies, and how low-frequency radio observations in particular are providing a new window into their birth, death and sometimes reincarnation.

Herts • Wednesday 10 October • 7pm

Soap Films and Bubbles

Prof. Alan Davies, University of Hertfordshire

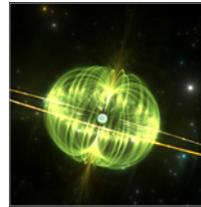


We are all familiar with soap bubbles, indeed who has not enjoyed passing the time by blowing bubbles? But how are they formed? Why are they spherical? What causes the beautiful colours that shimmer in a bubble? To answer these questions, we shall start by describing how soap films form and how they produce bubbles. We shall describe the properties and structure of films and bubbles both static and when they vibrate. The talk will include a variety of practical demonstrations including how soap films may be used to solve problems such as the routing of cable and power lines.

London • Wednesday 17 October • 6.30pm

Intergalactic Magnetism

Dr Jena Meinecke, University of Oxford



The origin of galactic and intergalactic magnetic fields is one of the greatest mysteries facing contemporary astronomy. Meinecke and her team are using the largest laser on Earth, the National Ignition Facility, to explain the origins and evolution of magnetic fields by recreating scaled astrophysical events such as supernovas.

London • Wednesday 31 October • 6.30pm

From Artificial Intelligence to the Quantum Mind

Dr Enrico Prati, CNR, Italy



There is a parallel between Moore's law of semiconductor microelectronics and the current revolution in quantum computing. Deep, or machine, learning already outperforms human abilities for some specialised tasks, but its implementation using quantum-based hardware will enable an even more powerful learning architectures to be developed. TEDx speaker Enrico Prati discusses how the combination of machine learning and quantum hardware might soon emulate human ability with novel and unprecedented capabilities.

November 2018

Herts • Wednesday 7 November • 7pm

Astronomy and Art; Universal Appeal?

Prof. Andrew Newsam, Liverpool John Moores University

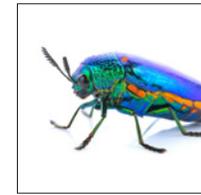


For centuries, science and art went hand in hand, but more recently they seem to have diverged into two distinct "cultures". However, they still have much to gain from each other and in this talk, Andrew will describe some forays by an astronomer into the world of art to try to explore challenging concepts with unsuspecting audiences. From computer music to dance, theatre to gardening shows, and exploring science from gravity and the nature of dark matter, to the physics of breakfast, we will see some ways in which art and science can work together, and also perhaps ask whether the two cultures are really as different as they might at first seem.

Milton Keynes • Tuesday 13 November • 7.30pm

Handedness and the Future of Electronics

Dr Jessica Wade, Imperial College London

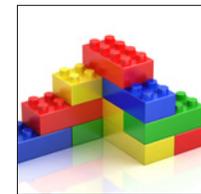


Nanostructures are a fascinating feature of Nature – from butterflies to beetles, when it comes to manipulating molecules we are only just catching up. We will be using small molecules that are left-handed or right-handed as templates for the active layer of organic electronic devices so that they emit circularly polarised light. Circularly polarised light will revolutionise everything from display technology to biological sensors – and I'm going to tell you how!

Oxford • Tuesday 13 November • 6.45pm

Particle Physics Brick by Brick

Dr Ben Still, Queen Mary, University of London



Ben uses LEGO® blocks to create a uniquely visual and clear depiction of the way that our universe is put together and give perfect introduction to the enigmatic and fascinating world of quantum physics. The story starts with the Big Bang, moving along to the constructs and interactions within and among atoms and sub-atomic particles. Each LEGO block represents a different atomic or sub-atomic particle. The different colours and size denote what that particle is and its relationship with the other 'building blocks'. Ben Still is a physicist at the University of London. Alongside his research career, Ben has been an advocate of new methods of communicating physics.

London • Wednesday 14 November • 6.30pm

Branch Dinner Lecture

Solar Water Disinfection:

The Journey From Laboratory Bench-top to African Roof-top

Prof. Kevin McGuigan, Royal College of Surgeons in Ireland, Dublin



Prof. Kevin McGuigan is associate professor of medical physics in the RCSI. For the past 25 years, he has been involved with the development, implementation and evaluation of solar water disinfection (SODIS) as an intervention against waterborne disease for rural communities without sustained access to safe drinking water in low- to middle-income nations throughout Africa and Asia. In this talk, he will explain why often you need more than just a simple scientific solution to a very human problem.

Branch dinner lecture followed by annual LSE branch dinner. Please check the branch events calendar for menu, venue and booking details.