

Monday 5th October 2020

MALVERN • Malvern (venue TBC)

Malvern Festival of Innovation *Launch Lecture*. 7:00pm

Lecture (Title to be confirmed)

Socially-distanced seating and also live-streamed.

For details and to register see www.festival-innovation.com

Thursday 1st October 2020 [webinar]

• Dr Aaron Jones & Dr Sam Cooper, Institute for Gravitational Wave Astronomy, University of Birmingham

Gravitational Waves



Gravitational waves were predicted by Einstein over 100 years ago and can be used to learn about some of the most exotic and difficult to observe objects in our universe, such as neutron stars and black holes. These waves

are now being routinely detected by LIGO and Virgo, kilometre-scale observatories limited in their most sensitive region by fundamental quantum mechanics. Learn about these incredible detectors and how they are revolutionising astronomy with apps that connect microscopic universe vibrations in the cosmos directly to your phone!

Tuesday 10th November 2020 [webinar]

• David Wilkinson, Institute of Physics and Fellow, Nottingham Trent University

To c or not to c - Physics in Science Fiction Writing



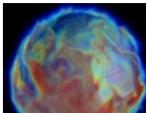
Science fiction has long been divided between authors who try to get all the physics right and those who abandon any pretence at considering real-world science at all. This lecture looks at some of those who tried and considers both how well they did and the

innovative ideas they have come up with for future physics and technology. And of course, there is the perennial question in space-based future fiction – whether faster-than-light travel is permitted. To have $>c$ or $<c$? That is the question...

Wednesday 9th December 2020 [webinar]

• David Cross, Institute of Physics

Physics to the Climate Rescue



Combatting anthropomorphic Climate Change is a multi-disciplinary challenge and there is unlikely to be one 'silver bullet'. Here we showcase some of the ways in which physicists worldwide are contributing to the

solution. Some of these solutions are 'oven-ready' and awaiting implementation, others still require work but whether they aim to reduce fossil fuel use or extract CO₂ from the atmosphere, we are going to need as many tools in our climate control toolbox as we can get!

Thursday 14th January 2021 [webinar or live TBC]

WORCESTER • University of Worcester.

• Professor Marcelle McManus, Director of the Centre for Sustainable & Circular Technologies at the University of Bath

Net Zero by Life Cycle



We need to reduce carbon and meet our net zero targets. But how? What is the best way and how can we know? What will be the impact of novel technologies? Will there be any degree of certainty? This talk considers how we can (and can't) use a life cycle approach to measure carbon emissions - exploring impacts spatially and temporally to provide an optimised system.

Tuesday 9th February 2021

26th Annual Public Science Lecture, Huntingdon Hall.

• Dr Martin Khechara, Associate Professor for STEM, University of Wolverhampton

The Most Dangerous Experiments in Physics



In this highly interactive, definitely ridiculous and probably dangerous science show, Dr Martin Khechara will explore some key principles of physics, including motion, temperature, electricity and magnetism to show the audience some of the best and most spectacular demonstrations that can be carried out on stage.

Thursday 18th February 2021

Joint with  

HEREFORD • Hereford University Centre

• Peter Karney, BEng (Hons), CEng, MIEE
Head of Product Innovation, Digital Catapult Centre, London.

LoCo4Farm: How low power IoT connectivity can enhance Digital Farm Operations



LoCo4Farm represents a joint undertaking between the Digital Catapult and the AgriEpiCentre to explore new opportunities for digitising farm operation through low cost and low power Internet-of-Things technologies. IoT has the potential to help optimise the use of resources such as freshwater, land, energy, pesticides and fertiliser. The project aims to establish a test bed and demonstrator facility at the South West Dairy Development Centre. The talk will cover the areas that have been explored and opportunities this exciting technology could offer.

**For Huntingdon Hall: admission is only by ticket.
These are free from the Box Office from 4th Jan.**

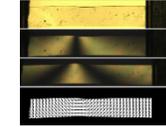
Tuesday 16th March 2021

British Science Week

MALVERN • Malvern St James School

• Professor Helen Gleeson, OBE. Cavendish Professor of Physics and Head of Physics and Astronomy, University of Leeds

A Bit of a Stretch - Liquid Crystal Elastomers



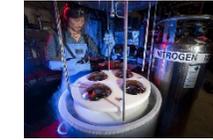
This talk will introduce what these special rubbers - liquid crystal elastomers - are and how they spontaneously change shape, can lift thousands of times their own weight, and how they can even get thicker when stretched, rather than thinner.

Tuesday 20th April 2021

WORCESTER • University of Worcester.

• Dr Teppei Katori, Kings College London

Neutrino Physics: Exploring Matter and Universe



Neutrino physics is one of the most flourishing fields in particle physics. Neutrinos are elementary particles of nature, and scientists found they have mass. This was the topic of the 2015 Nobel prize, and is the only clear evidence for this mass beyond the Standard Model of particle physics. Scientists all over the world study properties of neutrinos or use neutrinos as a new tool to investigate astrophysical objects and fundamental properties of the universe. In this talk Dr Katori will review particle physics and the status of the most exciting neutrino projects in the world.

Wednesday 12th May 2021

WORCESTER • University of Worcester.

• Professor Malcolm Longair, CBE, FRS, FRSE.

9th Astronomer Royal for Scotland; Director of Development and Outreach, Emeritus Jacksonian Professor of Natural Philosophy, Cavendish Laboratory, University of Cambridge.

The Origin of Maxwell's Equations



Maxwell's discovery of the laws of electromagnetism represents one of the key events in the history of physics, resulting in a paradigm shift from Newtonian physics to a Universe dominated by fields. Maxwell's discovery provides the link between the physics of Newton and Einstein. The revolutionary nature of Maxwell's insights will be highlighted.

All lectures start at 19:30 (unless otherwise stated in the programme). We finish by 21:00.

Tuesday 6th October 2020

MALVERN • Virtual event.

(See: www.festival-innovation.com)

Next Generation Innovators

Sponsored by IOP



This is a science event for Years 7 to 9 pupils. There will be demonstrations and lectures.

This event will be live-streamed from 10:00-13:00 and schools can dial-in. Check-out the on-line programme. Registration required. Usually for school parties & Home Educators, anyone can join in this event!

Monday to Saturday 5th - 10th October 2020

MALVERN • Malvern Theatres (TBC. See website above)

Malvern Festival of Innovation



Today we need to innovate more than ever: the way we do business, the way we use resources; the way we live. We need new ideas to stay competitive, new technologies to improve lives,

and new insights to lead the way. Join us to discover what's coming next and to learn how others are innovating.

Including ...

Saturday 10th October - Family Show: Be enlightened and inspired by the Family Show speakers. For tickets see the website.

Saturday 26th June 2021

MALVERN • Priory Park (*bring a picnic!*)

Science in the Park

Sponsored by IOP

Join us for a fun and exciting day exploring the wonders of science and technology. Outdoor activities for all the family.

Venues

Hereford University Centre, Herefordshire and Ludlow College, Folly Lane, Hereford. HR1 1LS.

Huntingdon Hall, Worcester. WR1 3LD.

Box Office: 01905 611427

Malvern St James, Avenue Road, Malvern. WR14 3BA.

Malvern Theatres, Grange Road, Malvern. WR14 3HB.

University of Worcester, St Johns Campus, Worcester. WR2 6AJ. (*Go to Reception in Edward Elgar bldg*)

The **Institute of Physics** is a leading international professional body and learned society, established to promote the advancement and dissemination of physics.

The Institute has a world-wide membership and has a major international presence in:

- scientific publishing and electronic dissemination of physics;
- setting professional standards for physicists and awarding professional qualifications;
- promoting physics through scientific conferences, education and science;
- policy advice.

Details about the various grades of membership and of professional qualifications can be found at

<http://www.iop.org/membership/>

Undergraduates, Trainees and Apprentices can join the IoP as Associate Member.

For further information

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If you have an idea for a topic that you would like to hear about then please get in touch.

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To be included on our mailing list:

Please e-mail: engagement@iop.org

and ask to be included on the **H&W Event email list**

Image credits

Neutrinos: Reider Hahn (Fermilab)

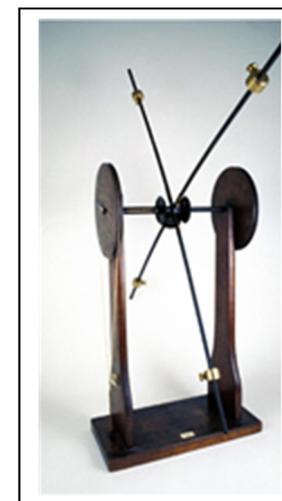
Ligo: NSF/LIGO/Sonoma State University/A. Simonnet

Physics to the Climate Rescue: The Royal Society

All other images courtesy of the speakers.

Hereford & Worcester Events

**Lectures & Outreach
2020/2021**



**The Origin of
Maxwell's Equations**

Maxwell is known as Scotland's Einstein. His discovery of the laws of electromagnetism represents one of the major events in the history of physics.

IMPORTANT ANNOUNCEMENT

The first few talks in the programme will be on-line via webinar. Please check www.events.iop.org and search Midlands for the latest information and registration details. All IoP talks start at 19:30.