IOP Rugby Meeting: The 30th Annual Meeting for Teachers of Physics in Schools & Colleges, Thursday 7 June 2018, Rugby School

Programme

09:30 – 10:45 Registration, coffee and exhibition in the Temple Speech Room

10:45 – 10:55 Welcome in Macready Theatre

10:55 – 11:40 Planetary Physics
Professor Emma Bunce, University of Leicester

11:40 – 12:25 3D Printing in Education
Marcin Poblocki

12:25 – 13:45 Lunch in Sports Centre Café
Exhibition and coffee in Temple Speech Room

13:45 – 14:45 Workshop session 1 in Science Faculty (see below for details)

14:45 – 15:45 Workshop session 2 in Science Faculty

15:45 – 16:00 Thanks to all and refreshments in the Science Faculty Atrium

Workshops

- **Assessment of the new A level Physics Practical Work**, Catherine Witter, AQA and Joanne Avison
- **Gravitational Waves in the Classroom**, Chris North and Brychan Govier, Cardiff University
- **Embedding formative assessment in 11-14 physics teaching**, Mary Whitehouse, University of York
- **Phantoms or Physics - Magic that was physics they didn’t see**, Nuria Munoz Molina, SonS Spain and David Featonby, SonS UK
- **Using smartphones and tablets in the physics classroom**, Alessio Bernardelli, Institute of Physics
- **The use and value of telescopes in schools**, Dr David Boyce, Leicester Grammar School
- **RAF100**, Helen Pollard and Richard Bonella, Institute of Physics
- **Cosmic rays in the classroom**, Dr Paul Roche from Cardiff University
Lectures

**Planetary Physics**  
Professor Emma Bunce, University of Leicester  
Details to follow.

**3D Printing in Education**  
Marcin Poblocki

Marcin Poblocki explores how 3D printing can be used in a school environment to improve practical science and help teachers and technicians to design and make equipment.

Workshops

**Assessment of the new A level physics practical work**  
Catherine Witter, AQA and Joanne Avison

This workshop will showcase how teachers have approached their planning for, assessment of and tracking of the Common Practical Assessment Criteria (CPAC). What is considered to be best practice? What do the lab records of our best students look like? Why is it that some schools and colleges have required support and a follow up monitoring visit? What impact is the endorsement of practical skills having on university offers? This workshop is aimed at supporting you further to signpost good practice in readiness for your monitoring visits going forward.

**Gravitational Waves in the Classroom**  
Chris North, Ogden Science Lecturer & STFC Public Engagement Fellow, Cardiff University and Brychan Govier, Cardiff University

A collection of paper-based and hands-on activities that relate AS and A-level physics to the science and technology behind the detection of gravitational waves. The hands-on resources use equipment that most school physics departments should have, and full instructions and guidelines will be included. Some of the activities are also applicable to GCSE physics.

**Embedding formative assessment in 11-14 physics teaching**  
Mary Whitehouse, University of York

It is recognised that good formative assessment can lead to better learning. This workshop will look at strategies, together with some questions and tasks that can be used to support assessment for learning in 11-14 physics teaching.

**Phantoms or Physics - Magic that was physics they didn't see**  
Nuria Munoz Molina (Science on Stage Spain) and David Featonby (SonS UK)

A selection of old and new "demonstrations" which in times gone by were called magic. From the historical "Peppers Ghost", "Headless Bodies" and holography, to magic (??) lanterns, with a little everyday magic to serve as a stimulus to our classes today!!
Using smartphones and tablets in the physics classroom
Alessio Bernardelli, Institute of Physics

In this workshop we will explore useful apps and techniques to use smartphones and tablets in the physics lab. Although most apps will be free and cross-platform, there might be some exceptions. When that happens we will give alternative apps for Android and iOS devices. This is not a workshop to explore data logging systems on tablets, but it will contain some insights into how to harness your devices' sensors to take physical measurements, as well as using effective and engaging learning and teaching apps for physics. You will be able to take away useful ideas and tools with you ready to use the very next day with your students.

Delegates should bring their own devices and ideally both a smartphone and a tablet.

The use and value of telescopes in schools
Dr David Boyce, Leicester Grammar School

What value is a telescope to a school? Dr Boyce discusses how Leicester Grammar School has brought the astronomy and astrophysics elements of their physics courses to life with practical astronomy masterclasses. With demonstrations of telescopes and astronomical equipment, Dr Boyce will talk through the opportunities and challenges of practical astronomy as an educational tool.

RAF100
Helen Pollard and Richard Bonella, Institute of Physics

In the RAF's centenary year, this workshop will support and enhance the RAF100 Schools programme of history and STEM materials, written by the IOP and Historical Association especially for the occasion. We will introduce all eight activities, with opportunities to trial the practical challenges - both standard and extension materials - designed for use in clubs or lessons. The materials are written for KS3 & 4, but could be simplified for use with younger students, or extended by sixth-formers. Many lend themselves to project work, CREST style. We will also have teacher support materials available for study and discussion, and preview the 'Flexible Lenses' workshop for teachers involved in the project.

Cosmic rays in the classroom
Dr Paul Roche from Cardiff University

This workshop will introduce the science of cosmic rays, and how they can be studied in the classroom. It will touch on aspects of particle physics, astrophysics and experimentation, with some practical demonstrations of desktop equipment. The session will cover:

- an introduction to cosmic rays (what they are, where they come from, what happens when a cosmic ray reaches the Earth's atmosphere, and how they might affect us)
- an introduction to the HiSPARC project (what is it, how schools can get involved, what skills it gives to students)
- examples of data analysis using cosmic ray observations from HiSPARC
- useful advice on how to start using HiSPARC in your school (working with universities that support the project in the UK)