

Tuesday 25th September 2018

Dr Amaury Triaud, University of Birmingham

Discovering exoplanets, in the Quest for Universal Life



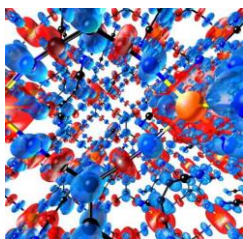
We are now ever closer to gathering scientific evidence that an extra-terrestrial biology exists. Dr Triaud will relate the status of the search for Earth-size planets outside our Solar system particularly looking at the steps and the reasoning

behind searching for such planets around the smallest stars of our Milky Way, choices that led to the discovery of the TRAPPIST-1 planetary system and its seven Earth-size planets. Thanks to its optimal properties, we will soon begin the remote exploration of the alien climates of the TRAPPIST-1 planets, measure the chemical composition of their far-removed atmospheres and start seeking evidence on whether biology has arisen beyond our Solar system.

Tuesday 16th October 2018

Dr Jacob Gavartin, Schrödinger Inc Cambridge

From materials of knowledge to knowledge of materials



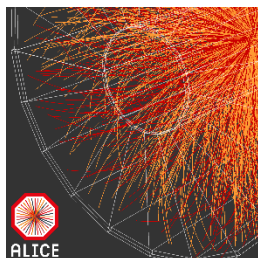
It is not an exaggeration to say that we live in times of unprecedented revolution in materials development. Novel materials with extraordinary properties offering new and improved products appear almost daily. They also change the very fabric of research and development everywhere from food, pharmacy and

textiles to energy generation, spaceships, planes and automobiles. In large part this change is brought about by tremendous achievements in theoretical materials science which became possible with rapid advancements in quantum theory, computer science and computational power. In this lecture Dr Gavartin will discuss the following questions: What key discoveries drive the computational materials science? What stimulates rapid expansion of this seemingly very academic discipline to industrial labs? What are the challenges in science, education and environment that would drive the materials innovation of tomorrow?

Tuesday 20th November 2018

Prof Peter Jones, University of Birmingham

The glue that binds us all



Gluons are the force particles that stick quarks together to form protons and neutrons. Without them there would be no atomic nuclei, no atoms and no life. They are, quite literally, the glue that binds us all. In this talk, Prof Jones will explore the quantum description of forces and the role that gluons play in determining the structure of matter.

Along the way, you will find out if it is possible to melt nuclear matter to form a hot soup of quarks and gluons; how the proton gets its spin; how particle detectors work and whether you would know anything about it, if you were zapped with 7 tera electron volts worth of energy!

Tuesday 11th December 2018

Christmas Lecture

Admission by (free) ticket only

Wendy Sadler MBE, Cardiff University

From Silent night to Slade - Christmas tunes transformed by technology



Before the age of digital recording, families used to sit round the fire and make their own music, but now we can use machines of all kinds to improve the process and help those of us with a less musical ear enjoy the auditory joys of

Christmas music. Join us on a tuneful tail of how technology has transformed the ways we make, record and modify sound. From the basics of how we generate sound with our voices to the way computers - and even phone apps - can help you sing in tune. Join Physics and Music guru, Wendy Sadler for lots of unusual ideas on how you can use some physics to make music at your Christmas party this year.

Tuesday 22nd January 2019

Prof Karen Kirkby, University of Manchester

Proton Therapy – A new option for medical treatment



Proton therapy is a radically new type of radiotherapy. The NHS has invested over £250M in two new clinical treatment centres the first of which will open in Manchester (at the Christie) later in 2018. There has been a lot of hype around proton therapy and while it does offer huge potential there are also scientific and technological challenges that need to be addressed. This talk investigates

the facts and the hype and how the new research room, which is being developed as part of the clinical centre at the Christie Hospital in Manchester, will be used to answer key questions and thereby develop even better treatments for patients.

Tuesday 12th February 2019

Dr Carl Wheldon, University of Birmingham

Physics at the Birmingham cyclotron



Cyclotrons are devices that accelerate charged particles in circular orbits. The Birmingham machine is a Scanditronix MC40 model which is used daily to accelerate beams of hydrogen and helium to produce medical isotopes, develop applications and

study fundamental nuclear physics. The Birmingham cyclotron facility is also unique being the only university based cyclotron in the country. This talk will briefly describe the history of accelerators at Birmingham before elucidating some of the research carried out here.

Tuesday 5th March 2019

Dr Francesco Gonnella, University of Birmingham
Planck's constant



In October 1900, Max Planck was trying to find a physical explanation for the so-called, black body radiation spectrum. After countless attempts, Planck made a "desperate act" denying the continuity of nature laws. Something

which started innocuously as the colour of light from burning coal had developed into a phenomenon with much deeper meaning, setting the grounds for Quantum Mechanics.

This talk will be an attempt to explain Max Planck's deep intuition, through simpler but not less important examples of physical models. In the end we will discuss mind-blowing behaviours of nature, such as the body-wave duality in the double-slit experiment.

Tuesday 26th March 2019

Dr Warrick Ball, University of Birmingham
Asteroseismology: The Sounds of the Stars



Sound gets trapped in stars. This simple fact unlocks the interior of stars for scientific study - we call this study asteroseismology. What we have learned by peering beneath the surface of stars is breathtaking.

Join Dr Ball to listen to the sounds of the stars, discuss what we can learn, and see how we are applying asteroseismology to explore our place in the Galaxy.

Image credits

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<https://static01.nyt.com/images/2006/12/03/books/YAGO600SPAN.jpg>

Image credit for 16th Oct;

<http://www.imperial.ac.uk/computational-materials-science>

Web-links to other useful sites

Astronomy in the City – Astrophysics and Space Research Group, University of Birmingham

<http://www.sr.bham.ac.uk/observatory/astronomyinthecity.php>

Institute of Physics

<http://www.iop.org>

Astronomical Societies

<http://fedastro.org.uk/fas/members/members-a-z/>

For further information

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Venue

University of Birmingham
 School of Physics and Astronomy
 Edgbaston Campus
 B15 2TT
 Poynting Physics Building
 Second Floor
 Large Lecture Theatre

<http://www.birmingham.ac.uk/Documents/university/edgbaston-campus-map.pdf>

Refreshments are available from 7.00pm.

Lectures start at 7:30pm.

We finish by 9:00pm.

They are free and open to all.

Evening Lectures Programme

2018/2019



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SCHOOL OF
PHYSICS AND
ASTRONOMY

Admission Free