

October 2013						
M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November 2013						
M	T	W	T	F	S	S
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December 2013						
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30	31					

January 2014						
M	T	W	T	F	S	S
6	7	8	9	10	11	12
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February 2014						
M	T	W	T	F	S	S
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March 2014						
M	T	W	T	F	S	S
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31						

April 2014						
M	T	W	T	F	S	S
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28	29	30				

May 2014						
M	T	W	T	F	S	S
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5	6	7	8	9	10	11
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26	27	28	29	30	31	

10 October 2013 18:30 SSRC
Solar electricity – a multi-scale challenge
 Prof. Ken Durose

15 October 2013 18:30 BLT
Accelerator magnets – the conventional, the adventurous and the out-and-out crazy!
 Prof. Neil Marks

31 October 2013 18:30 SSRC
Does quantum mechanics play a non-trivial role in biological systems?
 Prof. Peter Weightman

7 November 2013 18:00 BLT
3-Minute Wonder competition
 Details to be confirmed

19 November 2013 18:30 SSRC
Star power: the scientific challenges of creating fusion energy on Earth
 Prof. Howard Wilson

28 November 2013 18:30 BLT
The crystal world
 Prof. Mike Glazer

4 December 2013 14:30 and 18:30 CLT
Space, skydiving and Red Bull Stratos
 Anu Ojha – 14:30 is a sixth-form lecture for schools

6 February 2014 18:30 CLT
The explosions of novae
 Prof. Mike Bode – John Porter Memorial Lecture

27 February 2014 18:30 LMI
Biomaterials in the treatment of vision loss
 Prof. Rachel Williams
 Joint meeting with Liverpool Medical Institution

13 March 2014 18:30 SSRC
Atomic nuclei going pear-shaped
 Prof. Peter Butler

25 March 2014 18:30 BLT
The science of Armageddon
 Jay Tate

1 May 2014 18:30 SSRC
What would you do with 96,000 processors?
 Prof. Terry Hewitt

15 May 2014 18:30 SSRC
The apparatus used for discovering the neutron
 Geoffrey Constable

19 June 2014 TBC
Teachers conference

Key to locations:

CLT = Chadwick Lecture Theatre, Liverpool University (building 207 on university plan).

SSRC = Surface Science Research Centre (building 210 on university plan).

BLT = Barkla Lecture Theatre (building 207 on university plan).

LMI = Liverpool Medical Institution, 114 Mount Pleasant, Liverpool.

For parking arrangements at the university, see www.liv.ac.uk/maps

Welcome to the **Merseyside Branch Programme for 2013 – 2014**. We offer a wide-ranging and exciting programme with talks by scientists who are established leaders in their field. Evening events normally start at 18:30 with tea and coffee available from 18:00. All are welcome. Only school events require advance booking. It would be useful if teachers planning to bring small groups of interested students to evening events would contact one of the branch officers in advance.

More details of the programme can be found at merseyside.iop.org

Solar electricity – a multi-scale challenge

10 October 2013

Prof. Ken Durose

Enough solar energy arrives at the surface of the Earth every 40 minutes to satisfy world energy needs for a year. So what's the problem? This talk explores the future development of solar electricity, explaining why photovoltaic panels are widespread right now, what needs to change for them to become truly sustainable and why the speaker has not got PV panels on his roof.

Accelerator magnets – the conventional, the adventurous and the out-and-out crazy!

15 October 2013

Prof. Neil Marks

Since the invention of the cyclotron – the first circular particle accelerator – magnetic fields have been needed to bend and focus the beams of charged particles, with ever more exotic magnets required. The talk will commence with an overview of the conventional ring magnets used in such accelerators and then take a look at some of the more non-standard designs that are being specified for possible accelerators of the future.

Does quantum mechanics play a non-trivial role in biological systems?

31 October 2013

Prof. Peter Weightman

Physicists have entertained the idea that quantum mechanics plays a non-trivial role in biological processes for more than fifty years. This has been dismissed by biologists due to a lack of experimental evidence. Recently, however, it has been established that photosynthesis exploits quantum mechanical coherence. This lecture will review the evidence for the role of quantum mechanics in biology including the most controversial area of human consciousness.

Star power: the scientific challenges of creating fusion energy on Earth

19 November 2013

Prof. Howard Wilson

Fusion, the process that powers the stars, offers the promise of effectively infinite, carbon-free, safe, economic energy. This talk will discuss the scientific challenges that must be addressed before the first generation of demonstration fusion power plants can be built: challenges that will be addressed at the €16 bn ITER international experimental fusion facility, currently under construction in France.

The crystal world

28 November 2013

Prof. Mike Glazer

Crystals have been objects of mystery and fascination for the last two millennia but people are generally unaware that much of the solid material around us is in fact made up from crystals, including all rocky planets. The importance of crystals lies not just in their beauty and their intrinsic value as gem-stones, but in their practical applications that are at the centre of today's technological society.

Space, skydiving and Red Bull Stratos – the history, physics and engineering challenges of skydiving from the edge of space

4 December 2013

Anu Ojha

On 14 October 2012 a global audience held its breath as Felix Baumgartner leapt from 39 km above New Mexico and became the first person to break the sound barrier with his body. What were the physics and engineering challenges he faced? Was this just a giant leap for sports-drinks marketing or a meaningful breakthrough in space technology? And what's it got to do with space tourism and the dreams of bringing the human space experience to affordable levels?

John Porter Memorial Lecture: The explosions of novae

6 February 2014

Prof. Mike Bode

The appearance of "new stars" in the sky has been noted since ancient times. Only over the last century have we realised that there are several different types and understood (generally!) what causes these titanic stellar explosions.

Biomaterials in the treatment of vision loss

27 February 2014

Prof. Rachel Williams

The loss of sight is debilitating and is becoming an increasing problem as the population ages, resulting in significant loss of independence for the people concerned. Three conditions that fall into this category are age-related macular degeneration (AMD), cataracts and retinal detachments. In each case, biomaterials have a role in various treatment options and developments in the properties of the materials have the potential to lead to improved clinical results.

Atomic nuclei going pear-shaped

13 March 2014

Prof. Peter Butler

Nuclear theory predicts that some atomic nuclei are reflection asymmetric or "pear-shaped". This talk will describe how recent experiments have found evidence for nuclear pears in short-lived nuclei and how they might contribute to our understanding of the matter – antimatter asymmetry in the universe.

The science of Armageddon

25 March 2014

Jay Tate

The Earth has a long and violent history of collisions with extraterrestrial bodies such as asteroids and comets. Massively more destructive than a global nuclear war, this is the hazard that is most likely to precipitate the end of civilisation as we know it. But it is also the only major natural hazard that can be predicted and prevented. Here, Jay will discuss the nature and extent of the Near Earth Object (NEO) hazard, how it can be dealt with and what is currently being done about it.

What would you do with 96,000 processors?

1 May 2014

Prof. Terry Hewitt

The Hartree Centre at Daresbury Laboratory hosts Blue Joule, and the IBM Glue Gene/Q supercomputer, the most powerful computer in the UK. It has more than 96,000 processors. This talk will present the Hartree Centre, Blue Joule, what you can do with it and the justification for spending £30 m on one computer.

The apparatus used for discovering the neutron

15 May 2014

Geoffrey Constable

The discovery of the neutron in 1932 by Dr James Chadwick is world-famous. However, there are gaps concerning what is known about Chadwick's apparatus, which was itself innovative. This lecture fills in some of these gaps, describes the difficulties in making the apparatus work as intended and explains how and by whom such difficulties were overcome.

NEW 3-Minute Wonder competition

The best up-and-coming physicists explain their science against the clock, with the winner going on to the national final.

Watch the website for details.