

SATURDAY MORNING PHYSICS

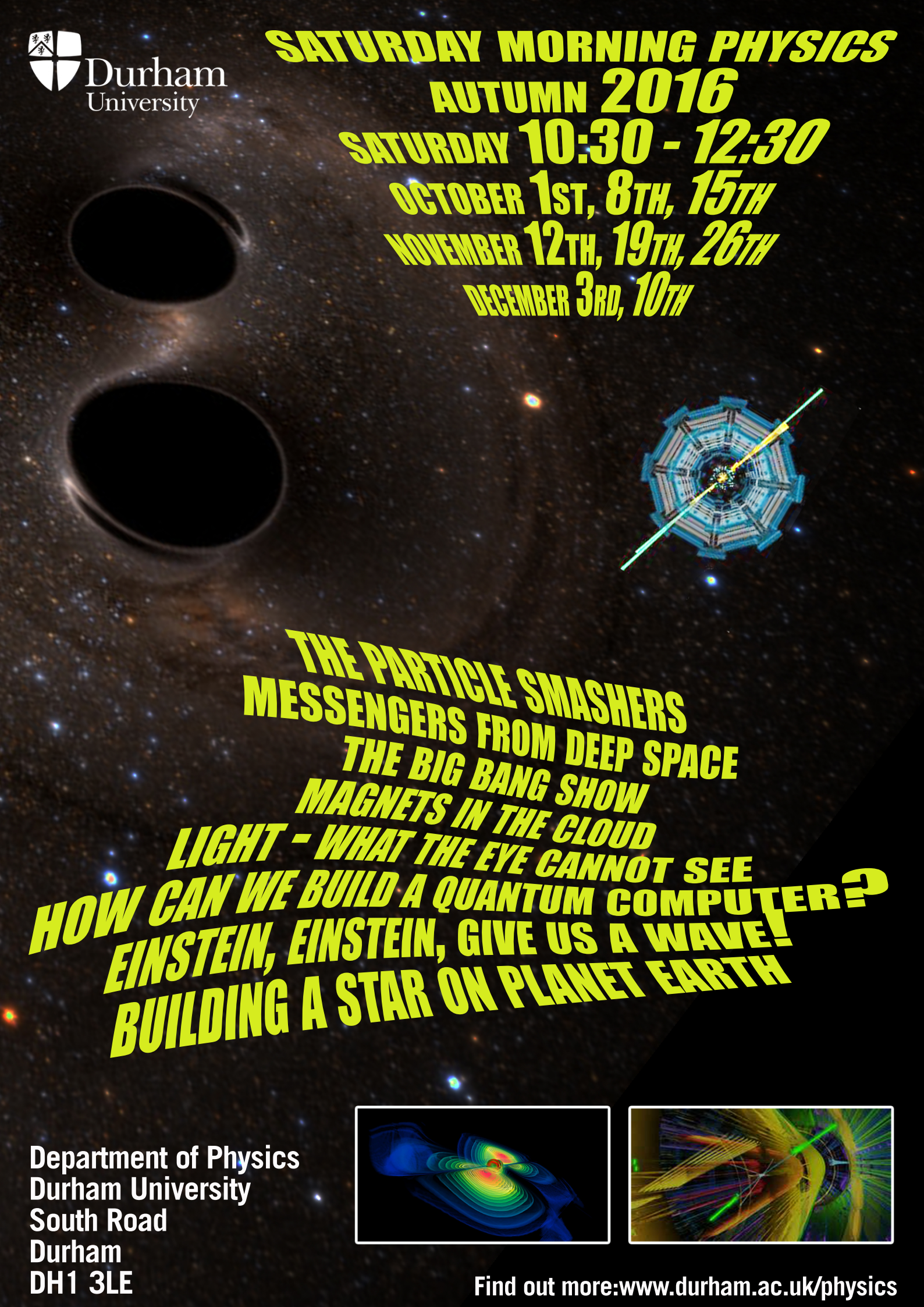
AUTUMN 2016

SATURDAY 10:30 - 12:30

OCTOBER 1ST, 8TH, 15TH

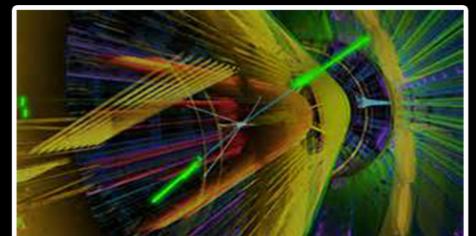
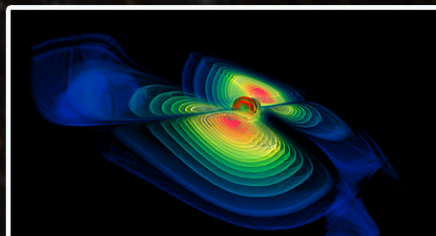
NOVEMBER 12TH, 19TH, 26TH

DECEMBER 3RD, 10TH



**THE PARTICLE SMASHERS
MESSENGERS FROM DEEP SPACE
THE BIG BANG SHOW
MAGNETS IN THE CLOUD
LIGHT - WHAT THE EYE CANNOT SEE
HOW CAN WE BUILD A QUANTUM COMPUTER?
EINSTEIN, EINSTEIN, GIVE US A WAVE!
BUILDING A STAR ON PLANET EARTH**

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Find out more: www.durham.ac.uk/physics



1.10. Prof Nigel Glover: The Particle Smashers

The past years have witnessed an unprecedented increase in our knowledge of the world at the smallest distances and the highest energies. The discovery of the Higgs boson, the last missing piece in what is known as the Standard Model, proves our understanding of the dynamics in the micro-world, a true triumph of the human mind. The talk will focus on this ground-breaking discovery and on what the LHC may have in store for us.

19.11. Prof Gordon Love: Light - what the Eye cannot see

We can all easily see the brightness and colour of light, but it is very difficult (although not impossible) for us to detect whether light is polarized or not with our own eyes. Yet, polarization is a fundamental aspect of light which is crucially important for both a fundamental understanding of photons and from a practical perspective. This lecture will explore polarized light, demonstrate some of its beautiful effects and uses, and explain why understanding it is at the heart of understanding quantum physics.



08.10. Prof Paula Chadwick: Messengers from Deep Space

We spend our lives being bombarded by sub-atomic particles; each second, about five travel through the top of your head! These sub-atomic particles are produced in the Earth's atmosphere by cosmic rays, which are high-energy particles that start out life in deep space. Although cosmic rays were discovered over 100 years ago, their origin remains a mystery. We will look at what cosmic rays are and how we might discover exactly where they come from, and we will see their effects as they pass through the lecture theatre.



26.11. Prof Ifan Hughes: How can we build a quantum computer?

Quantum mechanics is famous for being mysterious and difficult to understand, with Einstein calling some of the features "spooky". A major development in physics this century is the realisation that some of the weirdness can be harnessed to produce a powerful new set of machines – quantum computers. This talk will give a flavour of what these devices are, and how they might be realised.



15.10. Prof Richard Bower: The Big Bang Show

How does the Universe begin? This question has pre-occupied human thought for more than 3000 years. But contemporary cosmologists think they know the answer. We'll explore our place in the Universe, what the Universe is made from and the evidence for the expansion of the Universe. We'll discuss how astronomical and cosmological observations have led to the big bang model in which the Universe is created in a cosmic "big bang", a hot explosion of matter.

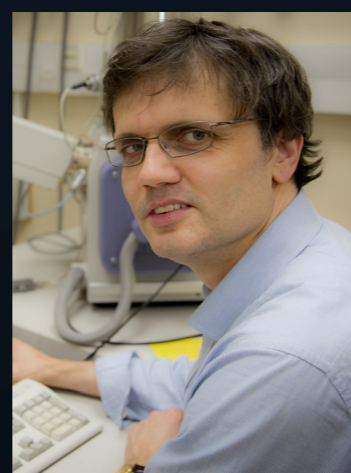
03.12. Dr Pete Edwards: Einstein, Einstein, give us a wave!

One hundred years ago Einstein predicted the existence of gravitational waves on the basis of his General Theory of Relativity. For over 20 years physicists have been trying to catch the first gravity wave without success until earlier this year when the Laser Interferometer Gravitational-Wave Observatory (LIGO) announced that they had recorded the ripples from two black holes colliding. The talk will focus on this historic discovery, the technology behind gravitational wave detectors and how they give us a new way to observe and explore our universe.



12.11. Prof Del Atkinson: Magnets in the Cloud

Information and communication technology is so common in our everyday lives that we rarely think twice about it! Whether it is your FaceBook profile, Twitter posts or any Big Data need, we rely on quick, cheap and robust information storage. For the internet that means storage in the Cloud. But what is this fluffy concept? I will look at the physics of magnetic data storage and how this underpins Cloud-based information storage and talk about research for future data storage.



10.12. Prof Damian Hampshire: Building a Star on Planet Earth

Fusion could provide an almost unlimited supply of energy. In this lecture, we will discuss the road-map for fusion energy as well as the technologically demanding, cryogenically-cooled superconducting magnets that will help fusion energy become a viable technology. In 2026, the international science community expects to produce 'first-plasma' in the ITER fusion tokamak. This nuclear powered machine, that is currently being built in France, will produce for the first time, a man-made star that produces net fusion energy. The lecture is for those teenagers who will help decide whether we should risk the consequences of global warming or give the green light to commercial fusion energy.





All talks take place in the James Duff lecture theatre (PH8) in the Physics Department of Durham University South Road Durham DH1 3LE Limited parking facilities Venues start at 10:30 and last for 2 hours Refreshments will be provided during a coffee break Various hands-on sessions will supplement the talks, including: Robots !!! Ask your Astronaut Fun with Magnets