

YORKSHIRE PHYSICS NEWS

The newsletter of the Yorkshire Branch of the Institute of Physics

Summer 2009



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President unveils plaques

The Yorkshire Branch has a strong tradition of recognising the contribution to science of famous names from our region. In continuation of this, two blue plaques were unveiled by the president of the Institute of Physics, Prof. Jocelyn Bell Burnell DBE, on 16 June. This has not been her only visit to our region (see p3) and we are very grateful for the support that she has shown us. We should celebrate her strong link with our region – she received her secondary education at the Mount School in York.

Current and former members of the branch committee were in attendance at the unveiling of the blue plaque in honour of Thomas Cooke, a famous telescope maker of the 19th century who was born in the village of Allertorpe, near Pocklington. The plaque is located on the wall of Allertorpe Village Hall. Martin Lunn MBE – curator of astronomy at the Yorkshire Museum in York who looks after a historic telescope built by Cooke, which is situated in the Museum Gardens in York – made a short address on Cooke's life and work. The initiative for the plaque came about as a collaboration between our branch, particularly Chris Walker (honorary treasurer) and Allertorpe Parish Council. Around 40 people attended the event and a superb lunch was served in the Allertorpe Village Hall afterwards. We thank the



The blue plaque for Thomas Cooke was unveiled on 16 June.



The unveiling of the blue plaque in honour of Fred Hoyle at Bingley Grammar School.

people of Allertorpe very much for their hospitality.

Later that afternoon, another blue plaque was unveiled at Bingley Grammar School in honour of Sir Fred

Hoyle (1915–2001), the noted physicist and astronomer who was educated there. Hoyle made many important contributions to science including predicting the mechanism by which carbon was formed in stars – the key to life on Earth. He was Plumian professor of astronomy at the University of Cambridge for many years. The initiative for this blue plaque came from Richard de Grijis, our outreach representative. The event was also memorable for the superb tea served in the school, and the help that Hoyle's great-granddaughter gave our president in pulling the unveiling cord. What was striking was how proud the school were to have this memorial by their main entrance in a prominent position. Let's hope that it inspires many generations of youngsters in Bingley to think about studying science.

Got an idea for a story? E-mail pjd113@york.ac.uk

Message from the chair

I was very honoured to have the chance to become chair of the Yorkshire Branch in March. I have learned a great deal from our outgoing chair John Hemingway, who steered our meetings with great skill and diplomacy. As many people will know, John has been a stalwart volunteer to many charitable organisations. In June 2007 he was acclaimed as "UK Graduate Volunteer of the Year". As John liked to point out, though, it was some years since he had graduated. The award was thoroughly deserved for all of the voluntary work and leadership that he has shown in such organisations throughout our region. We thank John wholeheartedly for the contribution he has made to the Yorkshire Branch over the years.

Ian Jones also left our committee at the last AGM held in March. Ian was our honorary treasurer for many years, keeping our finances in very good order. He has been one of the key members of the committee and a supporter of physics in our region and we are very sorry to see him step down. We welcome Dr Chris Walker to this position, who had previously been our webmaster.



The new chair, David Jenkins (right), and outgoing honorary treasurer, Ian Jones, share a joke at the blue plaque unveiling.

Chris has been instrumental in researching the blue plaque for Thomas Cooke and made all of the arrangements for what was a hugely successful day (see p1). Dr Charles Barton joins us as York representative. Currently all of our three key officers are at the University of York. This is administratively convenient but not necessarily as "diverse" as we would like. I am sure that the committee would very much welcome new people coming forward to take on these roles in due course.

Over the last year or so, Dr Maisoon Al-Jawad has served as our Leeds representative. She has helped to repair the

glaring omission of a regular branch lecture programme in Leeds by organising a number of lectures there, including a high-profile one by the cosmologist Prof. Frank Close. She reports on this successful programme on p3. Maisoon is now moving on to a job outside of our region. We wish her well and thank her for her hard work.

We have already had an exciting programme of events this year and it is only halfway through. The change in our committee over the last couple of years has altered the emphasis and I feel that our current committee is concerned primarily with promoting physics in our region and moving forward in a positive way. We would really welcome new members to our committee, perhaps to set up new activities in different parts of our region. Why not have a few lectures or activities in Doncaster, Huddersfield or Scarborough? They don't have to be held in universities – they could be in a school, a public library or a community centre. We would really like to get out there and reach more people – help us to realise our ambition.

David Jenkins, chair

Teachers swap ideas at event

An Institute of Physics Teacher's Day was held in the physics department at the University of York on a very hot and sunny 4 July. The event was organised by Dave Hutchings, our education representative.

The purpose of these events is to provide teachers with an update on contemporary physics and give them the opportunity to exchange ideas and contacts. The event was attended by about 25 teachers and the programme offered a range of different activities, from conventional lectures to practical sessions.

David Jenkins gave a talk "How to read a stellar barcode" about the role of spectroscopy in astronomy and how to build a spectroscope from simple cardboard kit. Jim Matthew and Sarah Thompson, also from the University of York, presented a double-act about chaos in physics. There were also practical sessions led by Dave Hutchings and Chris Butlin (data-loggers).

The day was rounded off with a fun lecture about the physics of computer games by John Purdey from the University of Hull. The feedback indicated that those who participated found that the day was beneficial and that more of this kind of activity would help to support their teaching. We will try to do our best to satisfy this demand and make this into an annual event.

Sheffield physics receives honours

Two physicists from the University of Sheffield have been awarded Institute of Physics medals for their outstanding contributions to their respective research fields. Prof. Gillian Gehring was awarded the Mott Medal for her seminal contributions to magnetism, while Prof. Richard Jones received the Tabor Medal for his innovative work characterising polymer surfaces and thin films, and for his more recent work in nanoscience.

Series starts with a bang

The recently renewed Leeds Lecture Series got off to a great start with a talk by the renowned particle physicist from the University of Oxford Prof. Frank Close OBE. He told the story of nothingness or "the void" taking us on a journey through the frontiers of modern physics exploring physicists' efforts to understand the nature of matter, space and time.

He questioned what could have happened in the moments before the Big Bang, and whether such questions are meaningful. His talk was extremely entertaining and informative and was very popular with local Institute members and sixth-form

students. His talk prompted a lively discussion, which spilled over into a book-signing session for his recent book, *The Void*, after the lecture.

The spring lecture was given by Prof. Athene Donald, fellow of the Royal Society and L'Oreal UNESCO European Laureate For Women In Science. As a physicist working at the interface between the physical and biological sciences, she gave us an interesting perspective of the protein-folding behaviour that underlies many biological processes. She is particularly focused on situations where proteins cease to function in the way that nature

intended: for example in the neurodegenerative diseases of old age, where proteins partially unfold and can stick together. In her lively and accessible talk she introduced the audience to an extremely interesting interdisciplinary area of physics and demonstrated the exciting and meaningful results that can be obtained when researchers in the physical, life and clinical sciences mix freely and share their ideas.

The Leeds Lecture Series will continue to attract large audiences with high-quality, entertaining speakers from diverse areas of physics and we hope to see you at the next lecture in Leeds.

Physics visits the Bradford Mela

The branch provided a Physics in the Field stand at the Bradford Mela on 13–14 June. Physics in the Field is a set of simple experiments such as balloon kebabs and straw oboes. Families receive Marvin and Milo cards with suggestions of activities that can be tried at home. The stall was manned mostly by students from the University of York. We also had some kit to make giant bubbles that you could climb inside provided by Annie Hodgson in the Department of Chemistry at York. Martin Lunn from the Yorkshire Museum brought some information on Arabic astronomy, which proved extremely popular. 600 people attended on the Saturday and more than 300 on the Sunday, which kept the demonstrators extremely busy. We hope to make our participation in this festival an annual event for which we need volunteers. Please contact the chair if you would like to help.

Support group helps teachers

The Teachers Support Group meets once a term to learn more about physics, share ideas, help each other and discuss problems. The Institute can offer workshops, training, hands-on help, ideas and advice.

We meet from 4.30 p.m. to 6.00 p.m. in the physics labs at St Peter's School in York. The session starts with sandwiches, cakes and tea. This is followed by an expert's talk. There is then time for hands-on practical work and advice from teachers.

The next meeting will be towards the end of October and the topic will be vibrations and waves. Previous meetings on the topics of electric circuits and radioactivity were enjoyable and useful. All science teachers, especially non-physics specialists and early-career teachers, are very welcome.

If you are interested contact Andrew Rogerson (tel. 01759 306627, e-mail aw.rogerson@tiscali.co.uk).

Andrew Rogerson

Show accelerates science learning

On 25 June a show called *Accelerate!* was presented to nearly 300 schoolchildren from across the region at St Peter's School in York. The show was designed and delivered by a team of PhD students from the University of Oxford. The theme of the event was accelerators and it was illustrated with a range of eye-catching demonstrations, such as exploding hydrogen balloons and bouncing beach balls. Behind the fun side of the presentation, a clear message about the value of accelerators in science and to our daily lives was put across. The presenters were also excellent and enthusiastic role models for their science.

We are very grateful to David Morris, head of physics



Suzie Sheehy explodes hydrogen balloons in the Accelerate! show.

at St Peter's for hosting this event. We hope that we can use their excellent facilities

as the venue for an annual Institute-supported physics lecture or show in our area.

President gives lecture in Sheffield

The Sheffield section of the Yorkshire Branch was honoured to welcome Prof. Jocelyn Bell Burnell DBE as one of their lecturers. Having the Institute's president as a guest lecturer is a fairly unique event and she was greeted with a record turnout of more than 200 people. The lecture title was "Pulsars and extreme physics" and in it Prof. Burnell described conditions where we encounter densities comparable to the nucleus of the atom, magnetic fields way beyond human capabilities, speeds a large fraction of the speed of light and timing accuracy to match humankind's best. These stars surely stretch our understanding.

The talk was very well received and the branch is most grateful to Prof. Burnell for giving up her valuable time to



Dr John Williams greets Prof. Jocelyn Bell Burnell DBE.

visit us here in Yorkshire, having only relatively recently begun her term as president of the

Institute of Physics. **John Williams**, Sheffield co-ordinator

Check out the branch website for the latest news and events at
<http://yorkshire.iop.org>

Students explore physics

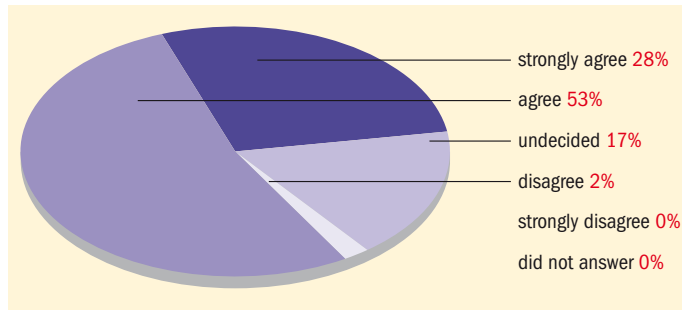
The World of Physics, our two-day event for schools, continues to be a great success with more than 200 schoolchildren attending. This year the event was held at the University of York and responsibility for the organisation lay with the Excellence Hub who put on schools activities in the universities across our region. This allowed the branch to concentrate on the things that we do best i.e. providing high-quality, hands-on workshops.

The University of York Department of Physics provided two workshops about magnetic recording and testing sunscreen with special ultraviolet beads. The philosophy department at York provided a “Philosophy of Physics” session – a new addition to the World of Physics. There was also a workshop on polymers (Leeds) and liquid nitrogen (Hull). Astrophysicists from Sheffield brought a computer-based workshop that tests different models for dark matter in the galaxy. Alex Brabbs, our regional officer, held a workshop on careers.

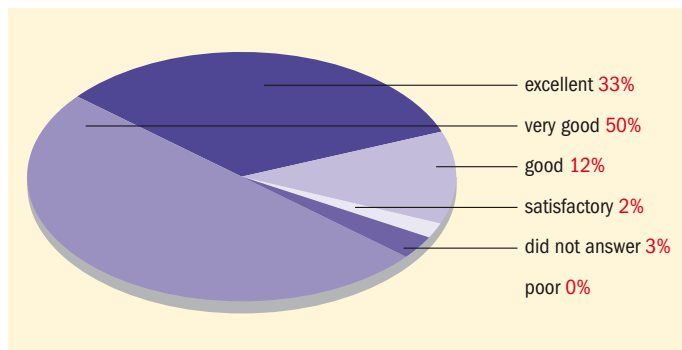
The day kicked off, as last year, with an up-beat, fun show given by TV presenter Marty Jopson. The feedback from the event was very good. It is clear that this event is enormously beneficial and influential, and that it can have a real impact in persuading pupils to study physics further, and also recognising that there are many rewarding careers in physics.

Some of the feedback from pupils included:

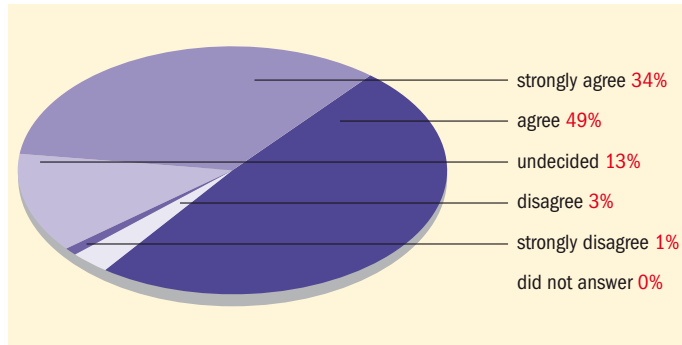
- “It challenged my ideas of the universe.”
- “I have a better understanding of physics and about inventions.”
- “It’s a cool insight into a physics degree.”
- “I have learned information



Question: after attending the event my interest in physics has grown.



Question: overall how would you rate the event?



Question: I have left feeling more positive about university.

about more specific areas.”

- “I had a great insight into physics as a subject at A-level and degree level.”

- “I have learned more about the philosophy of physics and this challenged me to think and respond quickly.”

- “All of the teaching people were friendly, so were the student ambassadors.”

- “It helped me to understand about careers in physics.”

- “I have learned that physics can be fun and not always boring, like at school.”

- “It gave me more opportunities to experience new and extraordinary experiments.”

- “It has improved my interest and understanding of physics.”

- “My interest in physics has grown.”

- “I have learned that physics is awesome.”

Pupils enter the Physics Olympics

The Physics Olympics is a competition for year-8 pupils run at St Peter’s School in York and organised by David Morris, head of physics. This was the third year that the event has run, with 17 schools participating.

All of the schools in York are invited and this year the invitation list was extended so that schools from as far away as Newcastle and Bradford could enter. Last year, nine of the 10 state schools in York entered.

As well as the six tasks that the teams complete, the pupils are introduced to extension ideas that come out of the games and the Fermi quiz (where estimates of physical quantities are made) is a great challenge for them.

This year the Yorkshire Branch sponsored the event. Information from **David Morris**, St Peter’s School

Yorkshire Branch events calendar

We are finalising the programme but you can find up-to-date information on the branch website. There are confirmed lectures in York organised by the Yorkshire Philosophical Society, which are free to all. These events are jointly organised with our branch and tie in with the theme of The International Year of Astronomy 2009.

On the origin of planets

Prof. Michael Woolfson, Department of Physics University of York

Monday 5 October, 7.30 p.m.

Tempest Anderson Hall, Yorkshire Museum, York

How to read a stellar barcode

Dr David Jenkins, Department of Physics, University of York

Monday 19 October, 7.30 p.m.

Tempest Anderson Hall, Yorkshire Museum, York

When galaxies collide

Dr Richard de Grijs, Department of Physics and Astronomy, University of Sheffield

Monday 30 November, 7.30 p.m.

Hospitium, Museum Gardens, York

Got an idea for a branch event?

E-mail your suggestions to pjd113@york.ac.uk