

NEWSLETTER

Issue 25 March 2007

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See <http://lancashire.iop.org> for
details of committee members,
events and how to join the
Lancashire & Cumbria Branch.

Branch nominated for a national SETNET award

Last year we reported that the Lancashire and Cumbria Branch had won a prestigious, occasional SETNET award for its outreach work. Now the Branch has been nominated for another SETNET award in the category of Most Dedicated Organisation!

In a letter from the chief executive of SETNET (the science, engineering, technology and mathematics network set up by the DTI) we have been informed that this

year sees the first ever National Science and Engineering Ambassadors (SEAs) Awards. Teachers have nominated SEAs in three categories: Best Activity, Inspiration, and Support and Development, while the SETPOINTS have made nominations in two further categories: Most Dedicated SEA and Most Dedicated Organisation. Our nomination has come from SETPOINT Lancashire.

Chris Bowdery, as Outreach

Coordinator, has been invited to a lunch reception at the House of Lords on Wednesday 28 February, along with other nominees in this and other categories, to see who will win the awards. We have no idea how many other organizations have been nominated across the country, but by the time you read this the winner will be known. Watch out for further news on the Branch website and possibly by e-mail.

Branch committee

Editor's lines on the leaves

As we go to press, the big news is the nomination of the Branch for a new national SETNET award (see above). Rather like the Oscars (but much more important!), we have to wait for the big ceremony in London to find out whether we have won. No less a venue than the House of Lords will host the event and yours truly gets to go along. You can be sure that I will remember that I am representing all of you and particularly all those who

have worked very hard to spread the fun of physics to schools and the public. Even if we come away without the award, we can feel very honoured to have been nominated.

This issue was meant to feature a report on another grand event at the Savoy in London – the award of the 2007 Institute of Physics Branches Prize to er... me! However, 18 January was a day of horrendous stormy winds and I didn't make it

down to London. In fact my train had not got as far as Lichfield before it had to be towed back to Stafford. Anyway, the presentation will be made on another occasion.

I hope you like the new-look Institute logo and branding which can be seen on this newsletter. This was approved by the Council at its meeting in October 2006. Do let us know what you think.

Chris Bowdery, Editor

1967–2007

Celebrating 40 years of the Lancashire and Cumbria Branch

Visit the branch website at <http://lancashire.iop.org>

Galactic Gig hits the road again

Five performances of the Branch's Galactic Gig roadshow were delivered in December 2006, with the funding provided by an Institute of Physics Public Engagement grant. As regular readers will know, a performance consists of a 35-minute drama followed by hands-on experiments ("workshops") lasting 35–45 minutes for the schoolchildren who make up the audience.

The drama consists of a voyage around the solar system in a spacecraft piloted by an extraterrestrial visitor to Earth called Zubi. He teaches two female Earth students about the planets in return for learning about sound and music from them. Zubi comes from a planet without an atmosphere, so he communicates only by radio waves – which happen to match the mobile phones owned by the girls! Einstein acts as a rap artist narrator who also makes personal appearances on the spaceship.

The workshops allow children to learn about vibrating strings and vibrating plates, to see a van de Graaff generator in action and to see sounds on an oscilloscope projected on a large screen.

About £450 from the £965 grant was used to buy a high-brightness Acer PD125D data projector which is used in the Galactic Gig drama to display the computer screen on the alien spaceship, as well as the backdrop in the first scene. It is also used to display the computer-based oscilloscope in one of the workshops.

A new, improved set for the Galactic Gig drama was built by student volunteers at Lancaster University (Sophie Michel and Katie Turnbull). This two-sided movable wall shows a beach scene on one side and a spaceship interior on the other. Additional help was provided by Steve Bailey, branch secretary.

A new costume for Zubi, the extraterrestrial visitor, was made by another student (Louise Moran). It was decided that it was worth spending a small amount of the grant money on material rather than hire a

GALACTIC GIG EVALUATION					
I am glad I came to this event					
	age 7	age 8	age 9	age 10	age 11
Strongly agree	19	18	26	24	10
Agree	9	11	28	39	9
Disagree	0	1	0	3	0
Strongly disagree	0	0	0	0	0
I learnt something about physics that was worthwhile					
	age 7	age 8	age 9	age 10	age 11
Strongly agree	10	14	22	17	3
Agree	17	15	28	39	12
Disagree	1	0	4	10	4
Strongly disagree	0	1	0	0	0
I feel more positive about physics now than before					
	age 7	age 8	age 9	age 10	age 11
Strongly agree	14	11	24	14	5
Agree	11	10	26	38	8
Disagree	2	9	3	11	4
Strongly disagree	1	0	1	3	2



Appreciating physics on the van de Graaff generator.

costume for each performance.

The hardest problem to overcome was the lack of actors. Two of the original cast had left the group because they had graduated from Lancaster University and moved on. We advertised throughout the branch and two people, one a branch member and another a friend of a member, volunteered. However, circumstances changed and neither of these people were able to commit to Galactic Gig for performances in 2006. Eventually three new actors were found: one postgraduate physicist (Gavin Davies), one undergraduate physicist (Shelley Richardson) and one undergraduate

reading Natural Science (Emma Hodgkins) – all at Lancaster University.

Finally, the computer show of Galactic Gig was revamped with lots of improvements. This was started by Nathan Bradley and Bob Jones and extended by Chris Bowdery. Unlike in 2005, when two laptops were needed to control the pictures and the sound, it is now possible to steer both from a single PC, reducing the number of operators needed at a performance.

The cast

For 2006 the show was manned by four actors plus one operator. However, we had a pool of five actors available.

- **Cynthia** (physics student doing astronomy project): Emma Hodgkins
- **Hermione** (music student and party goer): Ruth Perkins/ Shelley Richardson
- **Einstein** (narrator): Gavin Davies
- **Zubi** (extraterrestrial): Chris Bowdery
- **Equipment operator**: Bob Jones

The first two performances were in the morning and afternoon of Monday 4 December 2006 at North Road Primary School in Carnforth, Lancashire, in the main hall. The morning session was for about 30 children at three local schools, while the afternoon was for about 30 children at North Road. All the arrangements, including transport, were made by Julie Rogerson from Carnforth High School, who promotes science in the area as part of her job.

This was the first outing for Gavin and Emma after only a couple of full rehearsals. The team was very happy with the whole day. The drama went well with only minor problems such as a few lines being forgotten or said in the wrong order. The workshops went very well without any problems and with enthusiastic participation by everyone. Questionnaires were filled in by children at both performances – see table.

The third performance was in the afternoon of Friday 8 December at Saints Mary and Michael Catholic Primary School in Garstang, Lancashire, in a large classroom. Remarkably, 70 children, aged 8–11, squeezed into the room to watch the drama. We split them into two groups to do the workshops. This was the first outing for Shelley and despite the cramped conditions, the drama went very well. The team was delighted with the whole event and the enthusiasm of the children. We were joined by Robyn Halford, a founder member of the Galactic Gig team, for this event in her home village. Questionnaires were again filled in by the children.

The fourth performance was

in the morning of Monday 11 December at Burton Morewood Primary School in Burton-in-Kendal near Carnforth. The main hall was used and about 80 children, aged 7–11, formed the audience. Ruth was back to play Hermione. Questionnaire forms have been received.

The fifth and final performance was in the afternoon of the same day, at Milnthorpe Primary School, Milnthorpe, Cumbria. This venue is not far from Carnforth. (Both venues were arranged by SETPOINT Cumbria which is based in Burton-in-Kendal.) The audience was about 40 children from years 5 and 6. The team gave its best performance to date and the children were again enthusiastic in the workshops.

Grant money was used to hire and fuel up a Transit van for five days to transport the set and equipment. Finally, every school that participated was given a copy of the book *Cosmos: A Field Guide* which cost us £25 each – we gave away a total of seven in all.

Formal evaluation

We used a questionnaire supplied by the Institute to get children to evaluate the show. The results show that almost everyone liked the event, but since it was in school time this is not too surprising! Most attendees learned something they thought was worthwhile. Judging by the written comments, 10- to 11-year-olds (the target age) thought it was a little babyish for them when they watched the show with the younger children, but not if they were on their own! (Galactic Gig was not really aimed at 7- to 8-year-olds, but they enjoyed it.)

There has been a positive impact on children's perception of physics; strongest in the younger children. However this question is ambiguous to interpret – maybe some already liked physics before they came.

We wish to thank the panel of the Public Engagement Grant Scheme for supporting this activity and Caitlin Watson at HQ for all her help and enthusiasm. Thanks to SETPOINTS Cumbria and Lancashire and also Julie Rogerson for practical help in arranging venues.

SETPOINT gets hands-on with Fabulous Physics



Top left: the Custard group from Lancaster University. Top right: Michal Koziel, visiting Polish engineer at Lancaster University, with SETPOINT's Barbara Tigar. Bottom left: the "custard" paddling pool filled with thixotropic fluid (cornflour and water). Bottom right: a group of schoolchildren poised to get messy.

The Institute has an initiative called Physics in Society which provides money through the Public Engagement grant scheme to promote our subject. SETPOINT Lancashire successfully applied for funding for an event in Lancashire on 30 November 2006. Called Fabulous Physics, it took place at the Park Hotel in Charnock Richard with a set of workshops for Key Stage 2 pupils.

Two workshops were provided by first-year physics students from Lancaster University and involved demonstrations with liquid nitrogen and hands-on (actually feet-on) activities with a liquid substance that when hit behaves like a solid. These were very popular, with the latter also

being rather messy as children walked across a paddling pool filled with cornflour and water.

The Branch put on two workshops, one featuring a van de Graaff generator plus a rotating chair and another called "Electricity and the environment", which looked at the power usage of domestic appliances using our power monitor socket, backed up by a Powerpoint presentation.

Another workshop that was provided by a Lancashire engineering ambassador provided hands-on experience with circuit boards.

The day was a great success (although the formal evaluation had not been completed at the time of going to press).

Bob Jones, Louise Moran, John Bradshaw, Michal Koziel and Chris Bowdery were involved with the Branch workshops on the day. Sophie Michel played a big part in recruiting the university students as science and engineering ambassadors.

BRANCH EVENTS

Wednesday 21 March 6.00 p.m.
Diamond Light Source
 Simon Alcock (Diamond Light Source Ltd)
 Cavendish Colloquium Room,
 Lancaster University

Watch this space for further events information.

New funding for scheme to get more physicists into schools

Have you ever considered visiting primary schools to excite young children's interest in physics? Sessions should be fun for the children, explain the numerous basic concepts clearly, support the curriculum and provide support for the teachers. To do this successfully takes careful preparation, which requires far more time than busy people have available.

A team from Sheffield University, under the leadership of Prof. Gillian Gehring, has developed a website of well-tested material that is hosted by the Institute. It has recently been announced that a second round of EPSRC PPE (the Engineering and Physical Sciences Research Council's Partnerships for Public Engagement) funding has been awarded, which will enable the team to provide videos and workshops to help physicists get started.

The site offers presentations



A huddle of children explores the contents of a black bag during a class session on the properties of light.

covering different areas of the curriculum. Each session includes fun activities and games that engage the whole class, as well as novel demonstrations. These are clearly described with details of

the apparatus used and safety notes. Possible misconceptions are explained so that these can be anticipated and corrected. A well-illustrated PowerPoint presentation has also been provided for each session, which

can be freely downloaded.

The site is extensive and includes detailed guidance notes collected from those experienced at going into schools. You can find the site from the home page of the new Institute website (iop.org) by choosing the "Engaging the public" option. The Physicists and Primary Schools Project is listed on the page that appears, as a link at the top of the column on the left.

Do look at the site and if you use the material, the team would like to hear your feedback. If you think that a workshop to discuss the material would be helpful or if you would like more information, please contact Ann Marks (details below).

The Sheffield University team members are Prof. Gillian Gehring, Prof. David Mowbray, Dr Susan Cartwright, Dr Richard de Grijjs, Dr David Lidzey and Ann Marks.

Ann Marks (pips@amarks.co.uk)

Paperclip Physics gets set for 2007

Each year the Branches in the north-west combine to run the Paperclip Physics competition for teams of students in years 10 to 12 (fourth year to lower sixth in old terminology). Their aim is to present to a lay judge (supported by a teacher and a professional physicist) either a principle of physics or the physics behind a household object in five minutes, and using only materials found in a normal household.

This year, even more than usual, the entries are widely spread. We have teams from the Blackburn area, from



The team from Arnold School at last year's Paperclip Physics.

Lancaster and from places in Cumbria. A late change in arrangements will see a branch heat at Lancaster University on Wednesday 7 March. The

top two teams will go through to meet two teams each from Manchester and Merseyside at the grand regional final to be held at the Daresbury Laboratory near Warrington on 28 March. (There is no national final this year.)

Members are more than welcome to come along and enjoy the fun, although for security reasons, if you would like to go to Daresbury, please let me or our honorary secretary know first.

John Bradshaw
Paperclip Physics organiser
(bradshawjm@btinternet.com)

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The deadline for your contributions to the May 2007 issue of this newsletter is

Monday 2 April 2007

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