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Newsletter Editor

At the beginning of this year there were some changes to the membership of the Physics Communicators Group committee. Martyn Bull completed his period as Chairman and has now left the committee to pursue a wider involvement with science communication as a film-maker. David Smith, who was previously the Secretary of the group, was elected as Chair and Chris Sinclair has taken over the role of Secretary. Ceri Brenner has also stepped down from the committee during the reshuffle. Please see the notice of AGM below if you are interested in joining our committee and a big thank you to our departing committee members for their valued contributions to the activities of the PCG.

Communicating Physics Through The Arts

The IOP Physics Communicators Group Summer Meeting 2014

This year's annual summer meeting will be held on Friday 20 June in the Franklin Theatre at the IOP. The meeting has the title 'Communicating Physics Through the Arts' and will ask artists to explore how they use their knowledge of physics during the development of their work and how physics could be communicated to the general public through their work. The meeting will also explore how the arts can be used to help teach physics concepts in schools and colleges.

The meeting is **free** to attend but registration is required using the following link:
<http://bit.ly/1intbCY>

Meeting schedule:

- 13.00 Arrival
- 13.15 **Welcome and live performance: Sax excites non-Newtonian fluids**
Phil Furneaux, Lancaster University; Adrian Pritchard, Artist
- Session 1: Art reinforcing physics*
- 13.30 **Art and Physics in Unorthodox Partnerships**
Dr Pangratios Papacosta, Columbia College Chicago
- Session 2: Artists working with physicist*
- 14.15 **Covariance**
Lyndall Phelps, IOP artist in residence; Dr Ben Still, Queen Mary, U. of L.
- 14.45 Refreshments and networking opportunity
- Session 3: Artists using physics in their work*
- 15.15 **The Luminous and the Grey**
David Batchelor, Artist
- 15.45 **Blind Aesthetics: Representing the Invisible**
Conrad Shawcross, Artist
- 16.15 **Investigating the Nature of Matter using Viscous Substances**
Adrian Pritchard, Artist
- 16.45 Discussion and conclusions

Talk summaries and speaker biographies:**Art and Physics in Unorthodox Partnerships**

Dr Pangratios Papacosta, Columbia College Chicago

Art and physics can be partners in many ways besides the authentication and preservation of artifacts. In education integrating art in the curriculum can reinforce understanding and improve attitudes towards physics. Dr Papacosta, a professor of physics, has been using this method in his teaching for over 25 years. His students also have the option of expressing physics concepts artistically or identify elements of modern physics (relativity, quantum physics or cosmology) – real or metaphorical – in paintings exhibited at the Art Institute of Chicago. This pedagogy stimulates new ways of thinking and strengthens interdisciplinary skills that are essential to innovation. Mass communications remains an underused area for a potential partnership between science and art. Scientists can partner with artists whenever critical science issues are to be communicated to the public. Through their paintings, films, poems, photographs or even dance and drama performances, artists can reach out millions of people with greater impact than hundreds of science articles. More so, through their work artists can also excite the public about the wonders, mysteries and promise of science. The presentation includes examples of all art/physics partnerships mentioned above.

Professor Papacosta earned a PhD in physics and a Master's degree in history of science from the University of London. He taught in London and Florida and since 1987 at Columbia College Chicago, where he coordinates the physics curriculum. His scholarship deals with the history and pedagogy of science, Einstein, Space Exploration and the intersection between Science, Humanities and the Arts. He has published in these areas and presented papers at national and international conferences. His book, *The Splendid Voyage: On New Sciences and New Technologies*, was translated in numerous languages. He served as the President of three academic organizations and he is currently on the Illinois Humanities Council Speakers Bureau and the Editorial Board of the *International Journal of Teaching and Learning*. In 1994 Dr Papacosta received the Columbia College Teacher of the Year award and in 2009 he was elected Fellow of the Institute of Physics of Great Britain.

Dr Papacosta has recently completed a science documentary as part of the Women's History Month celebration, a project driven by his desire to communicate to the public the contributions of a little known woman astronomer whose work was used by great astronomers like Hubble yet she seems to have been ignored by history ONLY because she was a woman. Information about the documentary can be found on the Columbia College Chicago web site, www.colum.edu, by following the 'Women in Science' link.

Covariance

Lyndall Phelps, IOP artist in residence; Dr Ben Still, Queen Mary, U. of L.

Artist Lyndall Phelps and particle physicist Dr Ben Still will discuss their collaboration, which resulted in *Covariance*, their recent installation at the London Canal Museum. *Covariance* was the first in a programme of artists-in-residence commissioned by the Institute of Physics called *Superposition*, which brings together artists and physicists to develop new ideas and artworks. The installation brings together a range of different influences from the function and aesthetics of particle detectors to the way research data is analysed and visualised by physicists. It also references the role of 'female computers' who were responsible for collating data from bubble chambers, an early form of particle detector, and the materials used in historical scientific instruments.

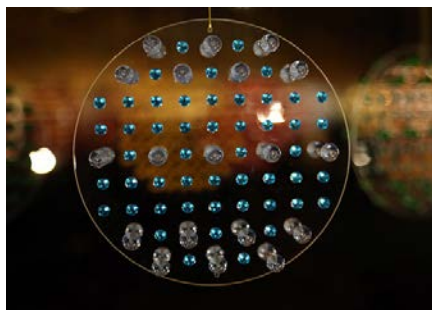
Lyndall Phelps is an installation artist whose work is often site/context specific and strongly process based, relying on research and collaboration with a range of individuals and organisations, whose interest reflect her own. Recent solo exhibitions include *Softkill* at University of Hertfordshire Galleries; *Touch* at Leamington Spa Art Gallery and Museum; *The Pigeon Archive* at Milton Keynes Gallery and *Knit one purl one* at One Canada Square, Canary Wharf, London.

More information about Lyndall's projects can be found here:

www.lyndallphelps.com.

Dr Ben Still is a visiting academic at Queen Mary, University of London, where he worked on the international T2K experiment. He is interested in taking nature apart and stripping it down to its indivisible components, the fundamental particles, to figure out how our Universe today was created and what it is made from. Ben was awarded the IOP Physics Communications

Group's 2012 Physics Communicators Award and the IOP's High Energy Particle Physics Group's 2012 Science in Society Award. These outreach prizes were for a wide range for projects engaging a wide range of audience; from school students with LEGO Physics through to adults and art enthusiasts with Jiggling Atoms and Super-K Sonic Boooom! As part of the T2K experiment Ben had a management role in the experiment's computing and data distribution, while also using various statistical techniques to develop new analysis methods for squeezing more physics out of the experiment's data.



Covariance (2013)

More information about Ben and his work can be found here: www.benstill.com.

The Luminous and the Grey

David Batchelor, Artist

When I stumbled into colour, over twenty years ago, I was surprised that something so utterly familiar was at the same time so unpredictable, so elusive, so resistant to analysis and to language. At first this made me suspicious, but I soon came to realise this is exactly what makes colour so

rich and fascinating. Since the early 1990s I have tried to make colour the subject of my sculptures, paintings, drawings, photographs and writing. I have always been drawn to the luminous, artificial, electro-chemical colours of the city, and in recent work I have become preoccupied with the relationship between these colours and the forms of darkness that often accompany it.

More information about David's work can be found here:

www.davidbatchelor.co.uk/works/3D/.



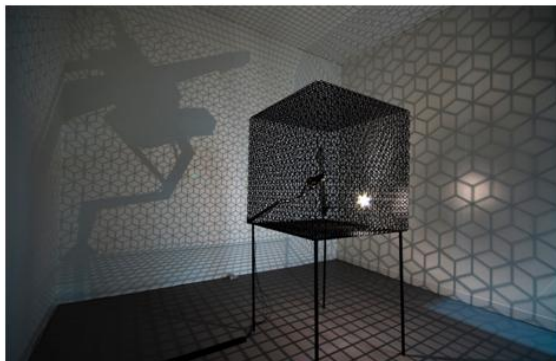
Magic Hour (2004/07)

Blind Aesthetics: Representing the Invisible

Conrad Shawcross, Artist

Conrad will describe his work with light as was exhibited at the Light Show in the Hayward. He will be discussing his work *Slow Arc IV*, 2009, in relation to the scientific and philosophical ideas which informed the piece and in the context of his practice more generally.

More information about Conrad's work can be found here: <http://conradshawcross.com>.



Slow Arc Inside a Cube IV (2009)

Investigating the Nature of Matter using Viscous Substances

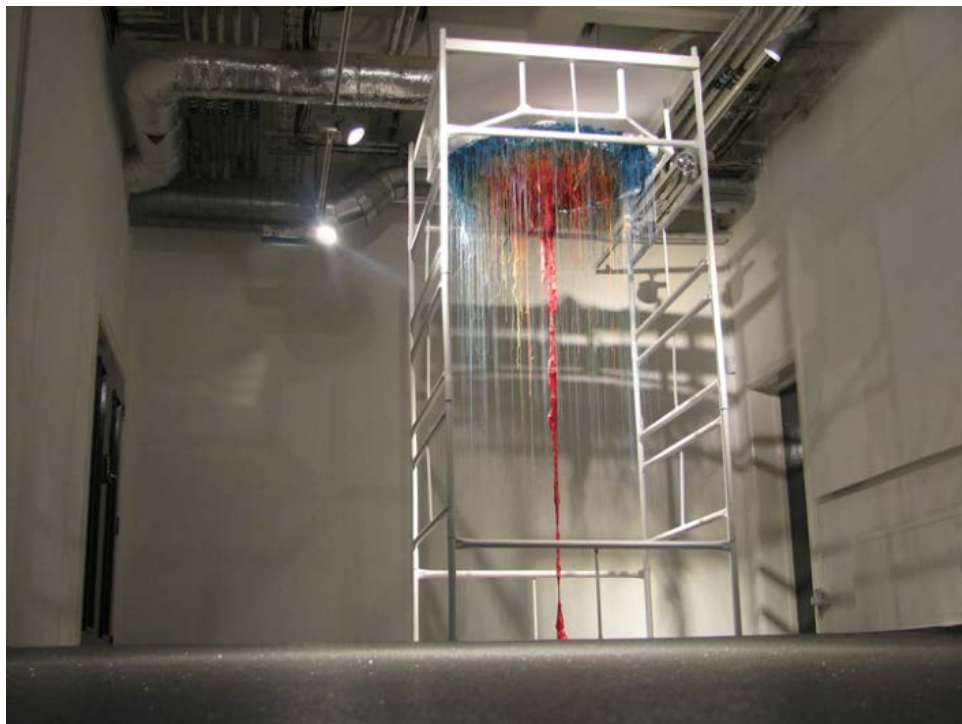
Adrian Pritchard, Artist

Adrian Pritchard “investigates the nature of matter” using “viscous substances” to create timely affects of anticipation and unpredictability. His installations can be regarded as both performance painting and sculptor as the work evolves constantly using gravity itself to spread, stretch and snap fluidic properties. Apparatuses are set up like experimental arenas for events to manifest and unfold.

For the Manchester Science Festival 2012 Adrian developed the *Osmosis Machine* a kinetic art installation which was exhibited at The Royal Exchange Theatre. More recently the work was selected for the Neo Art Prize 2013 and awarded the visitors prize by the general public.

More information about Adrian’s work can be found here:

www.adrianpritchard.com.



Glooptower One (2013)

IOP | Institute of Physics

Physics Communicators Group

Notice Of Annual General Meeting

Notice is hereby given that the Annual General Meeting of the Physics Communicators Group will be held at 11:30am on 20th June 2014 at The Institute of Physics, 76 Portland Place, London, W1B 1NT.

Agenda:

- 1) Apologies for absence
- 2) Chairman's report
- 3) Honorary Secretary's report
- 4) Treasurer's Report
- 5) Election of committee/group officers
- 6) Any other business (please notify the Honorary Secretary in advance)

The Physics Communicators Group is now seeking new committee members and would like to invite nominations for the following posts:

3 x Ordinary Member

The committee normally meets up to four times a year. Its work includes coordinating and running an annual summer meeting with high profile speakers in the world of physics communication, the organisation of the annual Very Early Career Physics Communicator Award competition and award meeting, along with smaller topical meetings and a newsletter.

Nominations should be made on the attached form and submitted to the honorary secretary, Dr Chris Sinclair (christopher.sinclair@ucl.ac.uk) before 20th June 2014.

All grades of membership are eligible for ordinary member posts. You will also need a proposer and seconder, who should also be members of the Institute and members of the group.

Once the nominations have been received an election will be held if necessary.

Nominations to the Physics Communicators Group Committee

Nominations should be sent to the honorary secretary to arrive no later than 20.06.14

Dr Chris Sinclair

christopher.sinclair@ucl.ac.uk

Committee post

.....
(e.g. chair, honorary secretary, treasurer, ordinary member)

Nominee

Name	
IOP membership number and membership grade	
Signature	

Proposer

Name	
IOP membership number	

Secunder

Name	
IOP membership number	

Notes

Only members of the group shall be eligible for membership of the committee (including the group officers).

In accordance with the By-Laws of the Institute the majority of the ordinary members of the committee must be Corporate Members, or Associate Members of the Institute unless Council otherwise determines. Officers of the group must be Corporate Members of the Institute unless Council otherwise determines.

The proposer must also be Corporate Members of the Institute.

Honorary officers and ordinary members shall (normally) be elected for a period of no more than three years.

2013 Award Meeting Review

*Edited by David Smith – Chair
Adapted from the [IOP News](#) website*

Our 2013 Physics Communicators Group Award Meeting was held last November, the overall winner from the four shortlisted finalists being Jessamyn Fairfield, a postdoc at Trinity College Dublin who helped to create a physics campaign on the city's light railway. The three other finalists were: Chris Clarke, Dave Farmer and Sam Gregson



Jessamyn Fairfield and Fran Scott

Jessamyn impressed judges with her enthusiasm and her commitment to finding funders for the eight-week advertising campaign on the Dublin Area Rapid Transit (DART) as well as her ability to explain complex ideas through blogs and other outlets. She was presented her £250 cash prize by television communicator Fran Scott.

All four finalists gave presentations during the event at the IOP. Following these presentations, the winner was announced and all were presented with certificates on behalf of the IOP Physics Communicators Group, which organised the awards.

Chris Clarke, a freelance science communicator who did an integrated master's and a science communication master's at Imperial College London, described his involvement in a wide range of outreach activities, writing and broadcasting.

Dave Farmer, a PhD student at the University of Nottingham, gave a talk about his numerous demonstrations and lectures, and his strategy of being a "stealth physicist" helping to overturn stereotypes of scientists.

Sam Gregson, a PhD student at the University of Cambridge and an affiliated particle physicist at CERN, spoke about his involvement in outreach through comedy, including organising a stand-up night at CERN, and contributing to BBC radio and television programmes.



The four 2013 finalists

In her presentation, Jessamyn Fairfield said she tried to explain advanced physics concepts in simple language. With some creative thought about how to communicate ideas, it was possible to convey difficult material even to those with no maths background, she said.

After her award was announced, Jessamyn said: "I am very excited and surprised. Science communication can be undervalued by the research community but it's really important because that's how you get more scientists and people who are scientifically literate. In my career I want to have a dual focus on research and outreach. This award means that when I go for permanent positions I will be able to demonstrate credibility in science communication."



Award meeting discussions

As one of the judges, Fran Scott gave feedback to each of the finalists before presenting the prize. In her keynote talk, she described her career in science communication on television, particularly to children, through programmes such as Absolute Genius with Dick and Dom.

She said: "I strongly believe that science itself is not difficult but it's sometimes presented in a way that makes it overcomplicated. It's so easy for children to say 'I am not brainy enough to do science', and that's because they're scared." Her aim was to remove that sense of intimidation and to build on familiar concepts to engage young audiences.

For information about this year's award and further thoughts of some of the 2013 finalists continue reading this newsletter!



Fran Scott



Award meeting discussions

2014 Early Career Physics Communicator Award

Applications now open!

The 2014 Early Career Physics Communicator Award will be officially launched at our summer meeting in June and once again we invite applications from people at the start of their careers in physics who have undertaken activities that support and encourage excellent communication of physics. Applicants do not need to be a member of the IOP, but should be one of the following:

- An undergraduate physicist;
- A person involved in an appropriate postgraduate study within a few years of a degree qualification (not more than 5 years);
- A person working as a physicist in UK or Eire within the first 5 years of their physics career.

The Prize

The award seeks to recognise excellence in communication skills of physicists who are at the beginning of a career in physics. The winner will receive £250 and an award certificate at an IOP Physics Communicators Group event to be held at the IOP on Tuesday 25th November 2014.

Application

Applicants should submit a report of their communication activities, no more than 1500 words long, including brief details of their academic physics work or study, evidence of communication activities undertaken to encourage others in physics appreciation or the general understanding of physics, and the names and contact details of two referees with close knowledge of the applicants work and/or their communication activities. The report should be submitted along with an application form (available from our group web page) and a CV by email to the Physics Communicators Group secretary, Chris Sinclair:

christopher.sinclair@ucl.ac.uk, **before the deadline of 4th October 2014.**

Please note:

Any person wishing to nominate another for the prize must enclose the written consent of the nominee. At the award ceremony those shortlisted will be expected to give a short presentation (no more than 10 minutes) after which the winner will be announced. Shortlisted candidates must be prepared to be interviewed by the IOP and appear on IOP websites and within IOP publications.

For full details about the award and to download an application form, please visit our Physics Communicators Group award web page here:

http://www.iop.org/activity/groups/subject/physcom/prize/page_50554.html.

Tell Me Why I Should Care

Jessamyn Fairfield – 2013 Early Career Physics Communicator Award Winner

I've always found science fascinating as a lens for understanding the world and appreciating its beauty. But in science and engineering, and especially my field of physics, there's also an inherent tension. On the one hand, there is the beauty and awe that science help illuminate, and the excitement of increasing your own realm of knowledge, or even pushing the boundaries of the knowledge of mankind. Everyone who is curious about the world can connect to that view of science. But on the other hand, there's often an elitism in science, an idea that it's a hierarchy, with scientists at the top as gatekeepers of truth. This view is encouraged by the media at times and even by some physicists.

When I tell people I'm a physicist, a lot of times they tell me a story about the one bad physics teacher they had, who ruined all of science for them. I sympathize, because my first physics teacher was not stellar. But it's not as if bad English teachers ruin reading and writing for anyone. "If it weren't for that middle school teacher harping on verb tenses all the time, I would probably be a Proust scholar by now, but as it is I don't even remember how to read." But culturally, communication and language and the arts derived from those things are considered fundamental, in a way that science and math used to be but no longer are. When you put something up on a pedestal, it gains status but loses accessibility.

But scientific ideas are not out of reach for a layperson. There's no insurmountable barrier. Math is a great language for explaining science, if you know how to speak it, but actual language also does the trick! You just have to be willing to think about the best way to use it. That's why I was so excited to be involved with DART of Physics, a project that ran last fall to put physics in ad space on the commuter rail line in Dublin. It was a fascinating challenge to figure out how to briefly state and then explain interesting physics facts, like that most light is invisible or that we're all made of stardust. We also put together longer written and visual explanations linked online. Sometimes the first way we thought of to explain a concept didn't click with our test readers, and we had to start over. But it was worth the effort we put in, for the high level of engagement we got when DART of Physics went live!

I've heard it said that you can't teach someone physics, you can only help them to learn it for themselves. Each person comes to understand concepts, whether it's particle-wave duality or mind-body duality, on their own terms. If someone asks me to help them find those terms for a concept I think I understand, I can't make the leaps for them or even fully know their particular background, but I can try different approaches to see what clicks. And helping someone else understand physics expands and reforms my own understanding as well.

Science You Can Sip

Chris Clarke – 2013 Early Career Physics Communicator Award Finalist

The Great British pub – for countless generations a place for joyful consumption and excess, mingled with just the right amount of debauchery and sin. A cornerstone of social culture and a place where the human race mysteriously becomes profoundly wise in everything from politics to cosmology.

In dimly lit bars across the country both young and old nod sagely over many a tasty beverage as they contemplate the big questions: ‘Is the universe infinite?’, ‘Is reality the same for every individual?’ And: ‘Who the hell has been drinking my pint?’

If anything goes to show how much we love a bit of intellectual and spiritual enlightenment down the local, it’s got to be the British Pub Quiz. Ever since the pioneering quizzes of the 1970’s, our pub landlords now host over 22,000 regular weekly engagements of searing wit and tactical toilet breaks. Here we not only bask in the spirit of beery competition, but we exchange knowledge (or lack thereof) for the sake of entertainment and good humoured humiliation.

And this is where it gets interesting: Entertainment and exchange of knowledge in a setting whose foundations are social and cultural interaction? In communication terms I’d call that a ‘slam-dunk’.

Science communication is now more hands-on and engagement friendly than it has ever been before. In a world where Public Engagement of Science and Technology (PEST) reigns supreme, the big goal of science is to integrate itself with wider culture. In other words, find out what makes the public tick and be open about what makes science itself tick.

While events with a focus on brining scientists and the public together are nothing new, finding a safe common ground can be a little tricky. But what if you’ve had a terrible week at the office and Bill stole your stapler? You go for some well-earned social time and plot how to slip laxatives into Bill’s tea. And what if a perfect experimental setup is giving results that make you and your perfect theory look moronic? You wash it away and convince yourself the experiment is rubbish and you are special. Let’s face it; most of us are heading to the same place – the Great Watering Hole.

Since we’re probably all heading there anyway to sit at our respective tables and shed the weight of the world, the pub could be the most common ground we have. Plus with almost 50,000 pubs in the UK we’re certainly not going to be short of venues!

Popular culture it seems has given birth to an entity where a universal thirst for knowledge, relaxation, entertainment and beer can all be found in one place. Maybe the time has come for science communicators to get themselves to that place and maybe have a packet of pork scratchings while they're at it?

Even as I write this I know that a few brave pioneers are out there right now testing the waters and enjoying the accompanying lemon wedge. Initiatives such as *Pint of Science*, *Bright Club* and *Science Slam* are just some of those out there that have latched on to the natural environment of communication facilitated by the pub.

For now things seem to be going well for these groups and I myself have enjoyed many a casual drink and enjoyable evening of sciencey goodness at their hands. Personally I do not doubt for a second that the pub environment is helping matters, but there is still one thing to remember. Even with the greatest venue, the most scintillating subject and enough smoke and flashing lights to top the Eurovision Song Contest; none of this happens without those people involved.

To end with therefore I would like to raise a glass to all those crazy individuals with the drive and creativity to do something innovative and exciting with science. If we can all strive to inject a bit of the unknown into our efforts to talk science, I do not doubt the experience of our audiences and indeed ourselves will be all the better for it. CHEERS!

Science Centres

John Dore - Newsletter Editor

There is a wide range of organisations that are actively engaged in promoting science to the general public. One of these organisations that is possibly not widely known is based on the activities of the Association of Science Discovery Centres that are situated in different areas of the country. Michaela Livingstone here explains the way that these regional centres operate and the work currently in progress.

'Explore Your Universe: from Atoms to Astrophysics' was a cutting-edge national strategic science engagement programme developed and delivered by The Association for Science and Discovery Centres (ASDC) in partnership with the Science and Technology Facilities Council (STFC) and other experts.

Over 11 months the project reached 156,800 people with engaging, hands-on experiences of contemporary physical sciences and engineering. Building on the success of this project we will soon be launching phase 2, to welcome more organisations to take part in this highly dynamic network, and continue to reach

for the projects vision 'to inspire a new sense of excitement among young people around the physical sciences by sharing the amazing stories and technologies of STFC'.



Explore Your Universe brings together some of the most fascinating and diverse cutting-edge science in the country with the talents and infrastructure of the nation's largest network of dedicated science engagement organisations who together attract 20 million visitors every year.

To develop the programme, ASDC worked in partnership with engagement experts in this area from The National Space Centre and Jodrell Bank Discovery Centre as well over 70 scientists and engineers. To deliver the programme, ten UK partner science centres and museums were selected, trained, equipped and supported to run the activities with their school and family visitors.

As a central part of the programme, ASDC and partners developed a bespoke, high-quality, modular set of equipment, which included over 50 items ranging from a solar telescope, thermal imaging camera and 'a particle accelerator in a salad bowl' to meteorites, a cloud chamber, a pre-loaded iPad and a piece of the particle detector at CERN. Each of the ten science centres and two STFC facilities received the equipment along with a full training and on-going support programme.

ASDC also set up a bespoke website (www.exploreyouruniverse.org) to host all the resources and social media streams to enhance collaborations. In addition, over 50 scientists and engineers working on STFC science were trained at one-day public engagement academies and linked up with the science centres for meet the expert events.

In their first year of delivery, the ten partner science centres engaged over 122,546 children and adults in exceptional hands-on activities, experiments, schools workshops, public shows, meet the expert sessions and a variety of other events at UK science centres. As part of this, 45,852 people met an expert engineer or scientist, 59,236 took part in the half-hour family show in a science centre, and 9,400 school students aged 10-13 took part in a one hour workshop. In addition, 3,174 school students aged 14-16 spent two hours exploring the latest science in the schools masterclasses, 1,225 teachers and 3,659 young people joined activities with brownies, guides, cubs, scouts.

A further 7,866 people took part in Explore Your Universe activities at two STFC facilities, and 26,468 people took part in the Stargazing and World Space Week Programmes administered by ASDC as part of this partnership - bringing the overall project total to 156,880 people.

Explore Your Universe was fully evaluated by academics at King's College London and the programme was shown to be highly engaging and hugely successful. Overall, the evaluation programme involved 4,895 people including 3,883 students and 369 teachers making it the UK's largest multi-centre study of the impact of informal science learning. The in-depth evaluation results are available on the ASDC website. Some images from the event are given here:

<https://www.dropbox.com/sh/1sks1e5i8hg4wuz/y6ql32gQj9>

Phase 2 will continue to support the existing network, and welcome ten further organisations, to provide training and resources to support high-quality engagement with frontier research, as well as the opportunity to explore approaches to engagement with the physical sciences, reaching wider audiences, increasing STEM careers awareness and building family capital.

Phase 2 will be launched on 1 May 2014 on the ASDC website, www.sciencecentres.org.uk. For further details please email the project manager, Dr Michaela Livingstone (michaela.livingstone@sciencecentres.org.uk). Future events are the 2014 ASDC Marketing Conference – Friday 16th of May at Bristol Science Centre, and the 2014 ASDC National Conference – Wednesday 24th September at The Royal Society.

Feedback

The committee welcomes comments on the activities described above and suggestions for other activities. Please contact the Secretary Chris Sinclair directly (christopher.sinclair@ucl.ac.uk) or through MyIOP (<http://my.iop.org>).

The Group's webpage is: <http://pcom.iop.org>.

The Group's Twitter handle is: @IOPPhysComm

Newsletter

Do you have any news that could be included in our next newsletter? If you would like to include something in future editions of this newsletter please send copy to John Dore (J.C.Dore@kent.ac.uk).

Joining the Group

To join the group please log onto MyIOP (<http://my.iop.org>), navigate to the relevant Network for the Group and select *Sign up for this network*. Alternatively please contact the membership department. All groups are free to join, however to join a group you must first be a member of the Institute. Details of how to join the Institute can be found at www.iop.org.

This newsletter is also available on the web and in larger print sizes.

The contents of this newsletter do not necessarily represent the views or policies of the Institute of Physics, except where explicitly stated.

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