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David Smith

Chair, Physics Communicators Group

Well, it is April already and the year is passing by at a fast pace! In this newsletter you will read all about our November 2014 award meeting, find articles written by the four award finalists and meet our newest committee member. This issue also contains information about our 2015 award, revealing our guest judge and the date for the event, while also giving a behind the scenes peak at what is planned for our 2015 summer meeting.

2014 Award Meeting Review

Adapted from an article on the IOP Blog:
www.iop.org/news/14/nov/page_64566.html

Our physics Communicators Group 2014 Early Career Physics Communicator Award was won by a PhD student who created a dance workshop based on the life cycle of a star.

At the award event held at the IOP on 25th November 2014, Claire Le Cras explained the stages that a massive star can go through from formation to collapse into a black hole to a group of seven young dancers, who then choreographed a dance to portray the sequence of events. The whole process, from Le Cras giving an overview of the star's life cycle and answering questions, to the dancers creating their three-minute dance routine, was accomplished in just three hours.



Claire Le Cras

Claire showed a video of the performance as part of her presentation at the final judging and prize giving for the award. The runners-up, who also gave presentations at the event, were Meriame Berboucha, a second-year undergraduate at Imperial College London, Jasmin Evans, a first-year undergraduate at the University of Central Lancashire, and Michael Hodgson, a PhD student at the University of Surrey.

Each of the finalists were presented with certificates by the judges, the IOP curriculum and diversity manager (pre-19) Clare Thomson, and Prof. Jon Butterworth, a leading physicist at CERN and head of physics and astronomy at University College London, who gave a keynote talk on science communication at the awards ceremony

Prof. Butterworth described the excitement of communicating the discovery of the Higgs boson at CERN, but warned that communication was not always risk-free. "You have to take the rough with the smooth and answer the questions that people are asking," he said, describing how he found social media such as Twitter "enormously useful" in enabling him to get his point across without this being filtered through hostile questions.

Claire was originally from Guernsey and studied for a four-year master's degree at the University of Sussex. She is now in the third year of her PhD at the University of Portsmouth's Institute of Cosmology and Gravitation, where her outreach activities have included work in schools and with the general public at a BBC Stargazing Live event. The dance workshop was her own original project,

she explained. Having trained as a classical dancer between the ages of five and 18, she thought “why not combine my love of storytelling through dance with my passion for physics?”.

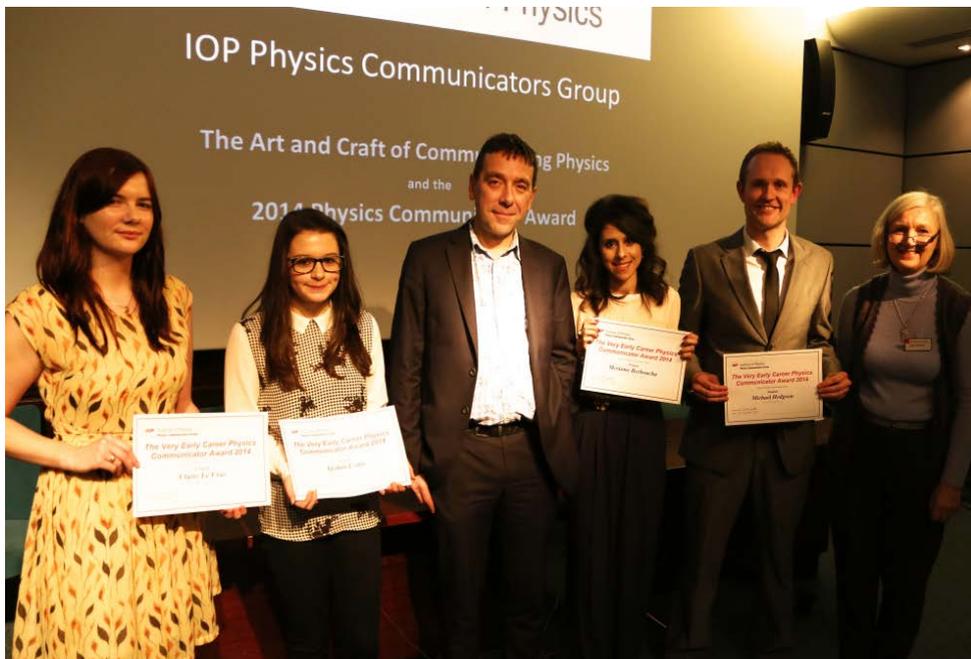


Prof. Jon Butterworth and Claire Le Cras

Claire first explored the idea through participating in the Famelab competition with a dance portraying the differing temperatures of stars. Then she went back to a dance school in Guernsey to work with a group of girls aged 12-17 on the project. The piece was choreographed without music as she did not want to influence the girls' interpretation. Music was added later, and she would also like to add a voiceover so that it could be performed without the need for an astronomer to be on hand to describe the sequence.

Her ideas for expanding the project include creating workshops based on other astronomical phenomena, taking performances to wider audiences and trying to interest professional ballet companies. Thomson said the judges would be interested to see if the project could be scalable in some way.

After receiving the award, Claire said: “It’s absolutely wonderful. I felt as if this project started as a half-baked idea in my head and I was not sure if it was going to work. To get this kind of response is really satisfying and it’s incredible that there are people seeing the value of the work and the possibilities that it has.”



The four finalists with the judges. From left to right: Claire Le Cras, Jasmin Evans, Prof. Jon Butterworth, Meriam Berboucha, Michael Hodgson and Clare Thomson

The 2015 Early Career Physics Communicator Award

Applications now open!

We are delighted to announce our guest judge and keynote speaker for the 2015 award event to be held on **Monday 23rd November** will be **Mark Miodownik**: www.markmiodownik.net.

A review of his recent book 'Stuff Matters: The Strange Stories of the Marvellous Materials that Shape our Man-made World', that won the *Physics World* Book of the Year for 2014, can be found here:

<http://physicsworld.com/cws/article/news/2014/dec/16/physics-worlds-2014-book-of-the-year-honours-materials-that-matter>.



Mark Miodownik

We seek 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 the award event in November.

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, **by Monday 5th October 2015**.

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 provide a short article for a future issue of this newsletter.

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

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

IOP | Institute of Physics

Physics Communicators Group

The Early Career Physics Communicator Award 2015

Recognising excellence in physics communication

Eligibility:

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 appropriate postgraduate study within a few years of a first 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.

Application:

Submission of a report of their communication activities which should be no more than 1500 words long.

Further details and the application form are available by clicking the 'Group Prize' tab at:

www.iop.org/activity/groups/subject/physcom

Application Deadline:

Monday 5th October 2015.

Where:

All entries should be submitted by email to the Physics Communicators Group Secretary, Chris Sinclair:

christopher.sinclair@ucl.ac.uk

Prize:

The winner will receive £250 and an award certificate along with networking opportunities at an IOP Physics Communicators Group event in November.

Award Ceremony:

Four finalists will present their work at the prize final on Monday 23rd November 2015 at IOP, Portland Place, London, W1B 1NT.

The prize will be awarded by materials scientist, engineer, broadcaster and writer, **Mark Miodownik**:

www.markmiodownik.net

Us, Physicists can all be Communicators

Meriam Berboucha – 2014 Early Career Physics Communicator Award Finalist

Coming from a state school I was determined to become a role model for younger students from underprivileged backgrounds. The feelings of doubt and lack of confidence in my ability were present throughout my time at the school as well as in others, but having progressed onto further education regardless of my educational background, I felt a desire to go back and show the younger generation sitting in those classroom seats I used to sit in that they can achieve regardless of their background.

You are all stars you just have to initiate that fusion!

Being the only female in my A-level Physics classes, I, like many other females across the country felt like I didn't belong in this male-dominated field. But I wanted other girls to feel like they belonged and so I set up a Science Club, the first of its kind, at my secondary school. I wanted it to be a field for their creative, scientific minds to grow endlessly where the boundaries set by syllabuses and specifications were non-existent. The students have launched rockets, made hovercraft and discovered the fun side of science.



Meriam Berboucha

I couldn't help but feel that I had more of an impact on the students than the teachers, but I soon came to realise that it wasn't because of me, it was because I shared common ground with the students - we sat in the same classrooms. Undergraduates are an underused resource in the field of physics communication; the small age gap between undergraduates and school student's means that undergraduates have a larger impact on the students, so maybe this

is the way forward with physics communication? – more undergraduates returning to their schools to spread the word about the cool things they learn.

Enthusiasm is definitely contagious so whether you set up your own blog, let students shadow and contact you, become a STEM Ambassador or simply give a talk, make sure your audience knows how much you love your field of work!

So, make your work known, inspire the younger generation and together we can build a better future and who knows what we will discover. To me, Physics communication has its heart where I began... in the classroom.

You can contact Meriame via email at: meriame.berboucha@gmail.com or on Twitter: @MBerboucha. You can learn more about her work at: <http://meriameberboucha.weebly.com>.

Engaging with Everybody

Michael Hodgson – 2014 Early Career Physics Communicator Award Finalist

I have taken a multifaceted approach to communicating science. I've developed and given school based Outreach programs, as well as performing science based stand-up comedy across the UK (under an alias...). Both of these have been hugely rewarding and great communication activities, but in truth I think of science communication as more than just the standard "public engagement", I think of it as communicating science to anyone who isn't me... although at some gigs, it felt like it was just me... Subsequently, I've also been very active in some more non-conventional communication activities.

So for example, this has seen me create and, more importantly, embed a Researcher Forum within my host institution. In many institutions I've often been surprised by the lack of interaction of researchers, both PhD and Postdoctoral, between themselves and between the department as a whole.

PhD's are expected to come to a university as a place of work, but often aren't aware of what's going on or have any say in it. Similarly Postdoctoral researchers don't always feel it appropriate to attend staff meetings, perhaps a hangover of the transition from a PhD.

Subsequently I created the Forum to improve the integration of Researchers and ensure they had a voice. I also tried to improve that voice, by arranging 5-5 presentations at each meeting, so 5 minutes and 5 slides maximum to present their work to a general audience – an essential skill in the professional world.

The Forum initiative proved very successful and is something I have been trying to encourage across institutions as part of my role as a SEPnet Graduate Network student representative. Along with winning a grant to develop an Online

Learning Module for SEPnet (essentially covering career development and employment), I suppose these activities could constitute some of my "academic communication".

However, I have also been actively involved in "industrial communication". Despite the vast majority of students ending up in industry (only 4-8% remain in academia) and a large portion of modern research funding looking for "applications", I generally find this avenue of communication is often overlooked.

As well as consultancy work, I've also operated as an industrial liaison; taking interesting work to companies; helping set up research collaborations; developing employment opportunities for graduates; bringing in research business for the University; and even brokering significant donations of equipment. I even took up the opportunity to convey the transferable skills available in a PhD as part of the Surrey Chambers of Commerce Research Showcase event.

Overall, I have purposely cast a wide net for science communication. I have done this because I believe it is essential to engage everyone with science and not just one particular group. Yes, we want to inspire a generation to study and use the tools of science to solve the problems in the world, but this means nothing unless there is the encouragement of parents and employment from industry. I hope my communication work not only highlights this, but also addresses it.

Michael can be contacted by email at: michael.hodgson@becq.co.uk.

Conquering the Fear of Physics

Jasmin Evans – 2014 Early Career Physics Communicator Award Finalist

Bringing science to life, making it understandable, interesting and hands on, to me, is the most important part of physics outreach and communication. Sharing a passion for your subject and inspiring physicists of the future is invaluable, and it is essential for young people to have positive role models.

When people ask me what I study, physics as an answer always tends to come as a bit of a surprise, people seem to be genuinely afraid of science. It's always "I was rubbish at that at school" or "Isn't that really difficult?" to which my answer is 'I love it...it's challenging'. But we have to ask ourselves, why are people so scared...and more importantly, what can we do to change that?

Lancashire Science Festival is a free event, it runs for local primary and secondary school children for two days and then for family day on a Saturday. I volunteered there this summer with the Jeremiah Horrocks Institute as part of the outreach team, and spent two days demonstrating and explaining a plasma ball. Both children and adults were engrossed by the purple tendrils that stemmed

from inside the glass, the fact that they could put their hand on it without getting an electric shock came as a surprise initially, but when we produced mini lightning with the aid of 2 pence pieces, the questions started to flow.

A way to see electricity in a new light is to add a child as a component in your circuit, they learn about electricity without even realising. When a lightbulb they and their brother or sister is holding, lights up with no battery in sight, just the electricity flowing through them, the grin on their face is incredible. It is this kind of experience that people remember, that sparks their imagination and curiosity, makes them want to find out more.

Outreach is about changing perspectives. From one side, this is the most fascinating subject in the universe; however to someone else it's books, maths, paper and their worst nightmare. So, it's time to try taking a new approach. The technological advances in the past even 20 years have been stunning, now everything is shared online via social media, we get updates to our phones every second of the day, we walk around with more computing power in our back pockets than that which took man to the Moon...so why not share physics in this way? Twitter is a fantastic way to reach out every day, I share news articles, my blog posts, what I'm doing in labs at university and things I think people need to see to appreciate physics.

YouTube is also a great way to communicate science. As part of my State of Ambition: Summer of STEM campaign to get more girls into STEM subjects, I tried my hand at animated videos to explain different physics concepts in a way that would grab the interest of the viewer. They seemed to go down very well, and I think this could also be a success in schools as a revision resource that breaks down a concept and explains it in a way a little differently to a textbook.

If one person goes away from an outreach activity thinking differently about what they have seen, with a sense of wonder and a need to find out more, it has been a complete success. Let the world know how much you love your subject, share it, grow with it and watch the stars shine through as they are illuminated by knowledge and curiosity.

Jasmin can be contacted by email at: jevans7@uclan.ac.uk or on Twitter: @Astro_Jaz.

A Stellar Performance

Claire Le Cras – Winner of the 2014 Early Career Physics Communicator Award

Whenever we move, we communicate things. The movements we select and the way they are put together can clarify the message behind our words or even show a hidden meaning. We, as human beings, are hardwired to understand and interpret these movements, with the smallest hand gesture able to speak volumes.

This medium of communication goes beyond the simple gestures of everyday life. For millennia we have been using movement to tell stories and show feelings through the art of dance. Dance can communicate concepts, ideas, and processes. It can express emotions or be used to share experiences, memories, and dreams. Dance can tell a story without anything being said.

I have been passionate about dance and its way of expressing information and emotion from a young age, training as a dancer for many years. At the same time, I have always had a desire to explain the world around me and have marvelled at the wonders of science, particularly astrophysics. It is these two passions that led me to create a new and unique outreach activity as part of the SEPnet (South East Physics Network) public engagement course, combining physics and dance to tell the story of a star's life.

For this project, The Dance of Stars, I set up a workshop with a group of 7 dancers (aged 12-17) from the Avril Earl Dance and Theatre Arts Centre in Guernsey. In this workshop I explained the different stages of a massive star's life cycle. This started with the star forming from a cloud of gas, before evolving through several burning stages, and exploding in a supernova, leaving behind a black hole. Using this information the dancers worked as a group to choreograph a routine showing the different stages through dance and other movement.

The workshop was filmed and the footage edited into a short video of the final routine, which expresses the key concepts in a new and unique manner. Music was added during the editing process to reflect the tone of the dancers' routine, along with a voice-over explaining some of the physics involved in the different stages. The resulting video can be viewed here:

www.port.ac.uk/uopnews/2014/12/05/student-wins-award-with-unusual-dance-video.

Working with the dancers enabled me to interact with a different audience to that which is common in science communication, an audience not necessarily interested in science at all. This provided a new perspective on the information, a complementary approach, which may be more accessible to those who do not understand the language of science.

There may be some who will be sceptical about combining physics and dance, so I shall leave you with this quote from Dr Mae Jemison; an American physician, NASA astronaut, the first African American woman to travel to space, and a dancer.

“Many people do not see a connection between science and dance, but I consider them both to be expressions of the boundless creativity that people have to share with one another. The arts and science are avatars of human creativity.”

Mae Jemison’s full TED talk, Teach arts and sciences together, can be found at: www.ted.com/talks/mae_jemison_on_teaching_arts_and_sciences_together?language=en.

Claire can be contacted by email at: claire.lecras@port.ac.uk.

Summer Meeting 2015 advance notice!

This year the chosen theme for our summer meeting is ‘Physics in Public Spaces’ and the meeting will take place at the IOP on **Tuesday 23rd June**. We are currently contacting potential speakers and putting the programme for the event together and we are pleased to announce that one of our speakers this year will be Dr Harry Cliff from the Science Museum who will be talking about the recent ‘Collider’ exhibition as a case study to look at how museum exhibitions are developed and how professional physicists can contribute to the process:

www.sciencemuseum.org.uk/visitmuseum/Plan_your_visit/exhibitions/collider.aspx.

Keep an eye on our MyIOP group web page for further details about this event that will be revealed over the coming weeks.

Committee Changes

One new member and a call for more!

During 2014 we were delighted to welcome one new member to the committee at our 20th June Annual General Meeting, Dr Laura Harkness-Brennan. In her own words:

I am the newest member of the IOP Physics Communicators Group and I joined in June 2014. My day job is a nuclear physics lecturer at the University of Liverpool. This involves teaching undergraduate and postgraduate students, as well as carrying out research and supervising PhD students. My research interests are the development of radiation detector systems for nuclear physics experiments, medical imaging and nuclear decommissioning. I find this a really

exciting challenge and particularly enjoy the opportunity to work with people from many different research fields. I first became engaged in this type of research during my PhD, when I designed a prototype medical imaging system as part of a £1.2 million research project. This system has since been manufactured and is going through pre-clinical trials at the University of Liverpool. We hope that this type of technology could be used to improve detection of cancer and the diagnosis of neurological conditions.



Dr Laura Harkness-Brennan

I have been interested in physics communication for a long time now, especially as a means to engage those who are under-represented in typical physics careers. I have therefore spent a lot of time talking to pupils at school, and giving talks about my research in public lectures. I particularly enjoy the opportunity to act as a role model for young women who may be considering a career in science. My impact in research and in widening participation led to me receiving the Shell and Institute of Physics Very Early Career Award, which was awarded by the Women in Physics group.

Outside of physics, I can usually be found either playing hockey, listening to music and taking my miniature dachshund out for walks on the beach. I also like to travel, and am fortunate that my career allows me to visit lots of countries for physics experiments and conferences. Of all the places I have travelled, Japan is my favourite.

I look forward to lots of exciting times with the IOP Physics Communicators Group and would encourage anyone thinking of joining the committee to do so!

If you are interested in joining our committee and contributing to our activities, do let us know. We can be contacted using the details in the 'Feedback' section at the end of this newsletter.

Obituary

This is the first issue of our group newsletter to be released since we heard the news that our former committee member Robert Round sadly passed away and we take this opportunity to acknowledge his contributions to the group and the wider physics community.

Robert joined the Physics Communicators Group committee following the group's inaugural meeting and AGM held in September 2009 and remained a member of the group through to his passing in 2014.

For those of us who had the pleasure of meeting him he was a strong believer in the communication of physics to all and taught physics principles to students with no formal physics education on various courses in the Engineering Department at Staffordshire University.

He is survived by his wife Gill and his children Janine and Adam.

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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