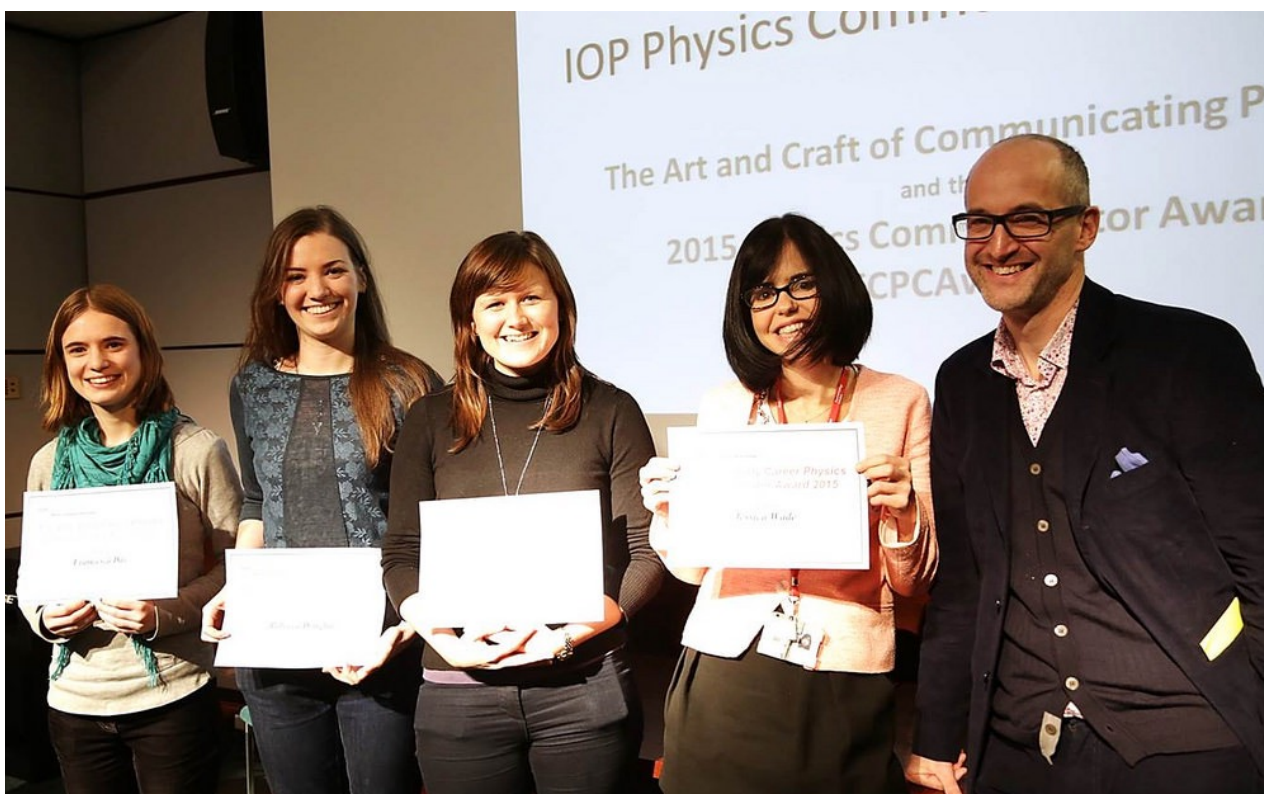


IOP | Institute of Physics Physics Communicators Group

- ▶ Early Career Physics Communicator Award Finalists
- ▶ The ASE Conference: In Summary
- ▶ Q & A with Harry Cliff
- ▶ Bias and Equity in Physics
- ▶ Thanks to John Dore and Ann Marks
- ▶ Creative Physics Communication



Early Career Physics Communicator Award Finalists

Over the summer and autumn of 2015, the Physics Communicators Group accepted applications for the annual Early Career Physics Communicator Award. In November 2015, four finalists were selected and invited to give a presentation to a public audience at the IOP, where a panel of judges selected the overall winner. The judges comprised of Professor Mark Miodownik, materials scientist and author of [Stuff Matters](#),

The four finalists with guest judge last year. From left to right: Francesca Day, Rebecca Douglas, Rebecca Smethurst, Jessica Wade and Mark Miodownik.

Manisha Laloo, IOP Public Engagement Manager, and the Physics Communicators Group chair, Dr David Smith. The judging was close, but in the end a winner was chosen.

Congratulations to Jessica Wade, winner of the 2015 Early Career Physics Communicator Award.

Below, two of the finalists explain how they communicate physics to a variety of audiences. In the next newsletter, we'll hear from the remaining two finalists.

Information on the 2016 award will be announced later in the year.

Francesca Day

I am a science comedian, taking comedy about particle physics, quantum field theory and the Higgs boson apocalypse to pubs, theatres and science festivals. I also sneak science into mainstream stand-up comedy gigs. Science comedy is a valuable addition to the tapestry of science communication and public engagement.

My primary goal is entertainment. Introducing some amazing physics is incredibly important, but is secondary to creating a great night. Fortunately, the two goals are not in conflict with one another. The focus on comedy and entertainment creates a very different atmosphere to many other science talks and shows. I rarely use anything but a mike, and the rate of science facts per minute is probably lower than in a more traditional public engagement talk. In fact, I rarely aim to deliver “facts” at all, but focus instead on how science works and the key concepts of fundamental physics. The comedy format lends itself well to ideas such as quantum field theory which are quite abstract and surreal at a first glance (and indeed at a hundredth glance!).



Francesca Day, PhD student in particle physics at the University of Oxford

With science comedy, I hope to attract audiences for whom the idea of learning some science after work would not normally appeal. Based on audience responses and feedback so far, I believe science comedy has the potential to engage audiences with the more abstract concepts in physics. For example, some of my shows focus on “Physics Fan Fiction” as a metaphor for theoretical particle physics – a funny and intuitive way to communicate a hard concept. (You can read more about this in the Lateral Thoughts section of the January 2016 edition of Physics World.)

This year I am planning a science comedy show at the Edinburgh Fringe Festival. Planning and writing a full length show is an enjoyable challenge, and will allow me to build up more complex ideas and narratives. Examples of my work can be found on [YouTube](#) and the [Oxford Scibar website](#).

Jessica Wade (Winner)

Hi! I'm a final year PhD student in the Department of Physics and the Centre for Plastic Electronics at Imperial College London. My research efforts are concentrated on controlling molecular orientation and nano-analysis of carbon based ('organic') semiconductors. One of my main interests is the stability of organic solar cells, and a list of my publications can be found [here](#). Alongside the world of academia, I'm committed to increasing the recruitment and retention of women in science. At Imperial, I'm lucky enough to sit on the Physics Department Juno Transparency and Opportunity Committee for Diversity, and nationally I also sit on the [Women in Science and Engineering \(WISE\)](#) Young Women's Board. I've also been able to secure big grants to send female postgraduates on training courses.



Jessica Wade, PhD student at Imperial College London

I've spent my PhD teaching first-year undergrads, visiting schools as an Imperial College Outreach and STEMNet Ambassador, and creating the Imperial College Women in Physics (IC WiP) community. On average I visit 1 - 2 schools per week, and have delivered physics university extension programmes to a series of sixth forms in East London. With the help of the outreach team, I've arranged exciting events for girls on campus, ranging from work-experience to open-days and scientific workshops. In the late summer of 2015, I worked with [Greenlight4Girls](#) and invited 200 girls to the Blackett Laboratory for 18 industry and academic-led workshops, and a couple of months later another 200 for a panel discussion on 'Routes to STEM' with the [STEMettes](#). In early January 2016 I'm working with Jessica Rowson and Jess Hamer to create a conference for Year 12 Girls in Physics.

But my efforts aren't going unnoticed – in 2015 I won the competition, [I'm a scientist, get me out of here!](#) and the IOP Early Career Physics Communicator prize!

Akin to all modern day science communicators, I blog about my experiences in and out of the lab on the [Making Physics Fun website](#).

The ASE Conference: In Summary

by Steven Simpson

To some people the Association for Science Education (ASE) conference is a well-established tradition, with some delegates having attended every conference for the last 30 years. Here's a brief summary of this year's event for those of you who missed out on the 2016 edition, which took place at the University of Birmingham from 6 - 9 January.

The main attendees of the conference are science teachers and trainee teachers, both primary and secondary. However, the conference also attracts a lot of interest from *anyone* who is involved with science education. Examples include learned societies, freelance communicators, school governors, PhD students, and prospective teachers.

Attendees get to discover resources, enhance subject knowledge, share teaching approaches and, potentially most importantly, make new contacts in the education landscape.

Over the four days there are a great number of events, networking opportunities and an exhibition featuring essentially every organisation related to science education. Even the Perimeter Institute for Theoretical Physics had made the trip from Canada to have a stand in the exhibition and to give a number of talks.

Attending the conference is a paid gig where exact prices depend upon the number of days you attend, but entrance to the exhibition is free.

The ASE conference moves around and there are also specific regional ones. Next year's conference will be held at the University of Reading, from 4 - 7 January. You can find more details on [their website](#).

Q & A with Harry Cliff

by Sam Illingworth

What is your job?

My official job title is 'Science Museum Fellow of Modern Science', which I think may be the only job title that starts and ends with the word 'science'... I'm a particle physicist doing research at the LHC and Cambridge and am also the in-house physicist at the Science Museum.

What does this involve (in ten words or less)?

Searching for fundamental particles and curating exhibitions. Not necessarily at the same time!

What is your physics background?

I'm a particle physicist. I started my PhD just as the LHC (Large Hadron Collider) was coming online, so was in the lucky position of being one of the first people to get to work on real collision data. I look for signs of new physics beyond the Standard Model by making very precise measurements of interactions involving bottom quarks.



Harry Cliff, Science Museum Fellow and particle physicist at the University of Cambridge.

What is your proudest physics-related achievement to date?

I made one of the first measurements to come out of LHCb in 2010, which was incredibly exciting. I also came up with an original way of correcting biases introduced by the way we sift the data to find the particles we are interested in. It's a bit technical and niche but it gave me a lot of satisfaction.

How important do you think outreach and public engagement are in your role?

Well, half my job is public engagement so hugely! One thing I think people sometimes miss is how doing outreach can actually benefit your research. I've learned a huge amount about physics from having to communicate it – it forces you to think clearly when you have to explain something.

What is the biggest challenge that physicists face in communicating their subject?

I actually think physics is a gift of a subject when it comes to outreach. The fundamental building blocks of matter, gigantic particle accelerators, spectacular astronomical imagery – what more could you ask for? If you can overcome some people's initial fear that they won't understand it or that it's not for them, then you're away.

Do you have advice for any physicists wanting to get more involved in outreach and public engagement?

Do it. There are loads of opportunities to get involved. School talks and open days are a great way to get a feel for what kind of activities you are best suited for, and it should give you a big boost in enthusiasm for your own work when you see how people respond to it.

Which social media platform do you find to be the most effective for communicating physics, and why?

I use twitter (@harryvcliff if you'd like to follow me) a fair bit. It's a great way to share little things of interest that you come across during the working day, articles, talks and so on. And also a good way of keeping in touch with what other scientists are up to.

Where can people find out more about your work?

Take a look at my website harrycliff.co.uk or follow me on twitter [@harryvcliff](https://twitter.com/harryvcliff).

Who is your favourite physicist (living or dead), and why?

I'm going to cheat and pick two. Paul Dirac for the incredible feat of predicting the existence of antimatter using theory alone. There's something almost magical about that. Richard Feynman for sheer inspiration. Whenever I need bucking up I watch the hour-long Feynman interview – The Pleasure of Finding Things Out.

Bias and Equity in Physics

by Steven Simpson

One of the topics at the ASE conference (see above) was addressing issues of gender imbalance in physics. It's a very important topic, and one which deserves discussion, but there are some

issues that we aren't even aware of. This is the unconscious bias; by definition we aren't aware of it, but there are ways to address it.

At the ASE conference, Carol Davenport represented [Think Physics](#) in a talk called *Gender Equity in Science*. The talk highlighted findings from the [ASPIRES](#) and [Opening Doors](#) reports, by Kings College London and the IOP respectively, and detailed how these findings relate to gender and the teaching of physics. The concluding remarks were:

- “Society values play a large part in the attitudes and performance of students”; and
- “To have a realistic impact, gender imbalance needs to be tackled at whole school level, and across all subjects”.

Implementing these recommendations will require a great deal of work, especially given the fact that some of us, if not all of us, possess an unconscious bias.

An unconscious bias in communicating physics can be commonplace. For example, one that Alan Sugar seems to regularly have in the Apprentice is where he likes the contestants who remind him of a younger version of himself.

The problem with an unconscious bias is that it is something we inherently do without realising. This makes it even harder to address. However, recent work by the Royal Society has produced a short video on the matter of unconscious bias and how to minimise it.

The key points in the Royal Society video, [Understanding unconscious bias](#), are:

- Deliberately slow down decision making;
- Reconsidering reasons for decisions;
- Question cultural stereotype; and
- Monitor each other for unconscious bias.

The video can be seen on the [Royal Society YouTube channel](#), with further information on diversity and equality available from [Advisory, Conciliation and Arbitration Service](#) and [Equality and Human Rights Commission](#).

Thanks to John Dore and Ann Marks

by David Smith

With the start of a new year and the dawn of our new Physics Communicators Group newsletter format we also have two long term committee members stepping down from the committee to pursue other interests.

I would like to take this opportunity on behalf of the Physics Communicators Group committee and the broader group membership to thank Ann Marks and John Dore for their contributions to the work of the group while they were members of the committee. Ann Marks joined the committee during its first year back in 2009 and her wealth of experience and contacts in the field

of physics communication has been a valuable asset to the work of the group. John Dore joined the committee in summer 2011 and held the role of newsletter editor from issue 9 released in March 2012 through to issue 14 released in October last year.

We hope to see Ann and John at future group events and wish them all the best with their future endeavours!

Creative Physics Communication

This section of the newsletter is dedicated to celebrating the creativity in physics communication.

This week we bring you **Diagrams**, a music video by Sam Genders, celebrating 100 years of general relativity

If you have anything that you would like to share, then please get in touch!



Still taken from the general relativity video by Sam Genders on [YouTube](#).

What's on

- ▶ **Natural History Museum: Otherworlds exhibition** 22 January - 15 May
- ▶ **The Royal Society: Summer Science Exhibition schools registration** Throughout February
- ▶ **Brighton Science Festival 2** – 28 February
- ▶ **Glasgow Science Centre: How will we power the UK in the future?** 9 February
- ▶ **Northern Ireland Science Festival** 18 – 28 February
- ▶ **SMASHfestUK** 18 – 20 February
- ▶ **Strathearn Science Festival** 20 – 28 February
- ▶ **Science Showoff 5.5 - New talent night** 22 February
- ▶ **The Royal Society: Are you sure? Uncertainty and us** 22 February
- ▶ **The Royal Society: The monster at the heart of our galaxy** 1 March
- ▶ **British Science Week 2016** 11 – 20 March
- ▶ **MOSI: Evaporation exhibition** Until 15 May

Contact us

Interact with the group through the [group webpage](#) or through Twitter [@IOPPhysComm](#).

If you would like to include something in future editions of this newsletter, please contact committee members, Dr Sam Illingworth (S.Illingworth@mmu.ac.uk) or Steven Simpson (Steven.Simpson@royalsociety.org).

To give feedback comments or suggestions for the group in general, please contact the group secretary, Chris Sinclair (Christopher.Sinclair@ucl.ac.uk) or message through [MyIOP](#).

To join the group, please log onto [MyIOP](#) to become a group member. Joining the group is free, but you do need to be a member of the IOP.

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. The Institute of Physics, 76 Portland Place, W1B 1NT, UK. Tel: 020 7470 4800. Fax: 020 7470 4848.