

# The Institute of Physics Strategy 2015–19

For physics • For physicists • For all





# A new strategy for a new era

Times change, and any organisation that wants to stay relevant and effective must change with them.

In many respects, the landscape is better for physics now than it was when we launched our previous strategy. 2014's Research Excellence Framework has demonstrated the high quality and large impact of physics research; frequent appearances on TV demonstrate how popular the field has become among the public; and numbers of A-level students are once again on the up after a previous lengthy decline. In other areas we face more challenges, with, for example, pressure on government funding that the economic environment has created and the potential threat this poses to research budgets. There is also the imperative for such investments to be seen to pay back.

Such changes require us to refine the work that we do at the Institute of Physics (IOP) in order to have the greatest impact for physics, while ensuring that physics delivers on its potential to benefit society. This booklet sets out the new strategy through which we will strive to achieve our goals over the five years from 2015 to 2019, dividing our activities into five themes: Education, Economy, Society, Discovery and Community. To deliver this strategy, we must remain a trusted and respected organisation, and one with which people will want to work.

We will not, however, be able to do it alone. We will continue to rely heavily on our committed and engaged membership community, and we will need to significantly grow and develop our strategic partnerships. We will be an organisation that is easy to work with and that others look to collaborate with because of the value we deliver. We will work to rationalise and bring communities together to help focus often-limited resources and to achieve more through a joined-up approach to the things that we and our partners want to achieve.

By the end of the period over which this strategy applies, we will once again inevitably have to adapt to changes in the external environment. We hope that, through the efforts outlined here, we will find it an even better climate for physics than the one we enjoy today.

**Dr Frances Saunders CB FEng FInstP**  
President of the Institute of Physics

**Professor Paul Hardaker CMet FRMetS FInstP**  
Chief Executive of the Institute of Physics

**Education:** Make access to high-quality physics education open to all

Everyone will have the opportunity to choose to study physics, and those that do will have access to high-quality education and well-informed choices about careers.

**Economy:** Position businesses to actively exploit new physics-based research

Physics will be recognised for the contribution it makes to the economy, and businesses will have access to a highly qualified and skilled workforce and, whether large or small, have an understanding of how they can actively exploit new and emerging physics-based research.

**Society:** Engage people's interest in physics and showcase its value to society

We will work to widen participation in, and enjoyment of, physics and to raise the appreciation of the important role that physics plays in our culture and society.

**Discovery:** Strengthen our core discipline while breaking traditional boundaries

We will work to strengthen our core discipline and promote the international nature of physics, and we will encourage and support those who look to collaborate with others across traditional boundaries.

**Community:** Increase member participation in our programme of activities

Our membership will be engaged and inspired by what we do and we will be an organisation that people want to join and collaborate with.



For physics • For physicists • For all

## Our purpose

We are a **membership organisation** for all of those who share our passion for physics, and a trusted and valued voice of the physics community.

**We inspire people** to develop their interest in physics, whether **in the classroom, in colleges and universities, in businesses, or at home**. We encourage and support the development of a **world-class physics education** that is **available to all**; we open up opportunities to **choose a career using physics**, and we enhance the **level and quality of continuing professional development** in the workplace, **setting the standards** that physics professionals should attain.

**We bring together the physics community to share its knowledge and advance their thinking**, and to play our part in **ensuring the strength of the core discipline**. We help to create a stimulating environment that encourages physicists to **work across traditional boundaries** and in which innovation can thrive.

We recognise and **celebrate members of the physics community** who have made a real difference through their work and **showcase the contribution that physics makes to our economy, to our everyday lives** and towards tackling some of the biggest challenges we face in society.

## Our values

Our values are an expression of what we believe in and how we behave as an organisation.

- We do what we do with **integrity, openness** and with a **respect for others**.
- We are objective and **informed by evidence**. We strive to continually improve quality, and **excellence underpins** all that we do.
- We look for opportunities to **exploit the talent** we have within our organisation. We are **supportive to each other** in all that we do and we foster team-working across the organisation.
- **Strategic partnerships are central to our success**, and we celebrate the opportunities that come from working together with other organisations.
- We are **approachable**, easy and **rewarding to work with**, and always **open to new ideas** and new ways of working.
- We believe in the **equality of opportunity** for all and we will **confront barriers to inclusiveness** and participation wherever we encounter them.

Everyone will have the opportunity to choose to study physics, and those that do will have access to high-quality education and well-informed choices about future careers.

**To achieve this we will:**

- Increase the proportion of 16–19-year-olds studying physics, and, within that, increase the proportion of girls;
- Develop a community-led, evidence-informed curriculum and assessment framework for all age groups;
- Be recognised for having fostered an environment where research into pedagogy in further and higher education can thrive and for our leadership in sharing best practice.

Stepping stones to strategy...



*A Stimulating Physics Network event*

**Teacher recruitment**

We already administer teacher-training scholarships, run recruitment events to promote the teaching profession, and support new teachers through mentoring, but the long-standing shortage of specialist physics teachers remains a significant challenge. We will continue to improve recruitment and retention of specialist physics teachers, as part of our work to increase the number studying physics, until the shortage is overcome.

**Girls in Physics**

We are working to address the under-representation of girls in physics at post-16. For the past 25 years, only around a fifth of students studying physics at 16- to 19-years-old have been girls. Our research has looked at the causes of this and action has now started through a range of pilot programmes to better engage girls with physics in the classroom and beyond.

Physics will be recognised for the contribution it makes to the economy, and businesses will have access to a highly qualified and skilled workforce and, whether large or small, have an understanding of how they can actively exploit new and emerging physics-based research.

**To achieve this we will:**

- Enable businesses to increase their information exchange on both key foundation areas of physics and in new and emerging physics-based research and technologies by providing a recognised and valued link between businesses and the research base;
- Ensure that government has relevant and focused evidence on the value of physics, and more widely STEM, to the economy in order for them to make informed funding decisions;
- Ensure that schools and universities have resources that showcase the benefits that studying physics offers for future careers, and that focus on breaking down barriers to inclusivity and opportunity.

Stepping stones to strategy...



*Innovation Award winners with the Minister for Intellectual Property and the IOP's President*

**Physics in the Economy reports**

We have published regular reports highlighting the value that physics brings to the economies of the UK as a whole, Ireland, Northern Ireland, Scotland and Wales. The latest showed that physics-based business directly contributes to 8.5% of the UK's economic output and 5.9% of that of Ireland's.

**Innovation Awards**

Our Innovation Awards recognise and celebrate companies in the UK and Ireland that have successfully addressed a commercial need through physics-based innovation. Winners are presented with their trophies at a high-profile event, involving leading politicians, and supported by a range of promotional activities.

We will work to widen participation in, and enjoyment of, physics and to raise the appreciation of the important role that physics plays in our culture and society. We will be respected as a trusted and influential voice in evidence-based policymaking on issues of importance to society.

**To achieve this we will:**

- Establish respected and trusted advocacy groups to deliver a more focused and rounded policy programme that is strongly connected with our target audiences;
- Increase participation in our outreach activities, with a greater focus on building science capital and in showcasing the value of physics to society;
- Establish a sustainable, externally funded international programme of capacity building in those developing countries where there are clear partnership opportunities.

Stepping stones to strategy...



*The first Superposition art installation on display at the London Canal Museum*

**Superposition**

Our artist-in-residence programme brings physics and art together. In 2013, a piece of artwork produced by Lyndall Phelps and inspired by particle physicist Dr Ben Still was installed in the London Canal Museum. It attracted rave reviews, national news coverage and introduced many uninitiated visitors to the beauty of physics.

**Tanzanian Young Scientist Competition**

Laurie Mansfield, one of IOP's co-ordinators of work supporting physics education in Africa, was among the judges for the first ever Tanzania Young Scientist Competition. The event, which is now in its fourth year, was modelled on the BT Young Scientist event in Ireland, founded by the Rev. Dr Tom Burke and Dr Tony Scott, a former Honorary Treasurer of the IOP, in January 1965.

We will recognise excellence in research, we will support physicists, particularly those in early career, to help them achieve their full potential, and we will have a world-class reputation for our work in publishing research. We will work to strengthen our core discipline and promote the international nature of physics, and we will encourage and support those who look to collaborate with others across traditional boundaries.

**To achieve this we will:**

- Focus more on supporting and championing careers for physicists by providing opportunities for them to broaden their professional development and maximise their potential;
- Work with IOP Groups to deliver a programme that is strongly focused on developing the core discipline, and that involves collaborations across discipline boundaries and in new emerging areas of discovery;
- Deliver a broad-ranging programme of journals, books, magazines and conference proceedings that provides outstanding service to authors and readers, and value for money to libraries and publishing partners.

Stepping stones to strategy...



*Bringing physicists together at ESOF 2014*

**IOP's Groups**

We have around 50 Groups covering specialist areas across physics and in our profession. Groups' activities are driven by their members and might include organising conferences, granting bursaries, and awarding prizes in their area of physics.

**IOP Publishing's move into ebooks**

Our successful publishing house, IOP Publishing, is developing an essential collection of physics ebooks, with material aimed at all levels from undergraduates to established experts. Book content can be found alongside an extensive journal portfolio on IOP Publishing's integrated platform, IOPscience.

Our membership will be engaged and inspired by what we do and we will be an organisation that people want to join and to collaborate with.

**To achieve this we will:**

- Increase the number of members, from across the demographic, who are participating in an Institute activity, strongly supported by representatives in the Nations and from our Branches and subject Groups;
- Establish a professional accreditation process for technicians with a strong basis in physics, and for those from further education who provide physics-based training and development programmes;
- Increase both early career and teacher membership, and have a Fellowship that more closely reflects the wider membership demographic.

Stepping stones to strategy...



*Early Career Woman Award winner*

**Early Career Woman and Early Career Communicator Awards**

Our Women in Physics Group and our Physics Communicators Group run an annual award scheme that seeks to celebrate significant contributions to physics at an early stage in members' careers. These awards are part of a broader programme that seeks to recognise excellence from across our community.

**New IOP Centres and Branches**

New IOP Centres have been developed in cities such as Derby, Norwich, Hereford and Worcester to provide a focus for activity, such as local lecture programmes and career events.

Physics-based industries contribute  
£77 bn of Gross Value Added to  
the economy

*Deloitte*

We need a new enlightenment...  
we need more funding for science, we need  
greater engagement with the public and a  
society comfortable with science

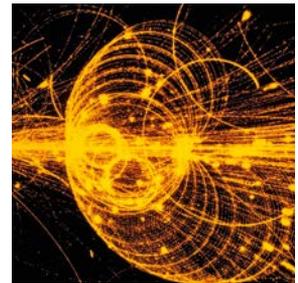
*The Royal Society*

72% of people agree that it is important  
to know about science in their daily lives

*Ipsos Mori, Social Research Institute*

There is an urgent need to improve the  
supply of STEM-skilled people if  
economic growth is not to be held back

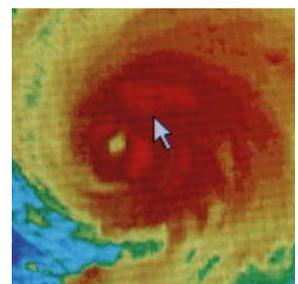
*The Confederation of British Industry (CBI)*



*Particle tracks: Understanding the building blocks of nature*



*Fibre optics: Connecting the world*

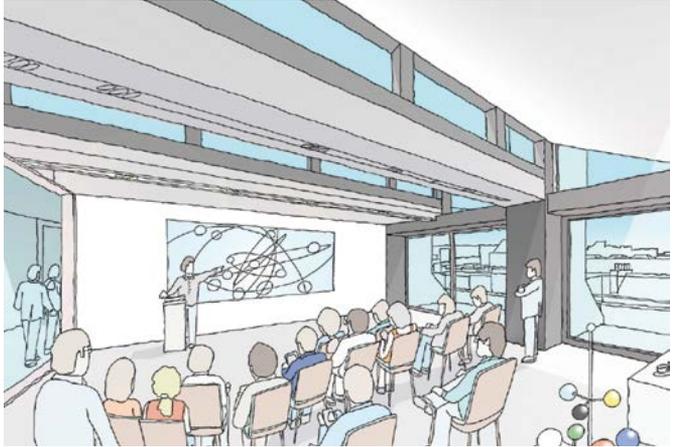


*Predicting the track of a hurricane: Protecting people and their homes from severe weather*



## A home for our physicists

An important part of delivering this strategy is the move of IOP into its new home, based in the King's Cross area of London. The new building will be a true base for physicists from across our community and a stage from which to promote the value and relevance of physics to the economy and to public life.



## Measuring our success

The themes we have chosen for our five-year strategy reflect our belief that we can make substantive and measurable change over that time period. Each theme has three outcomes with which we expect to deliver a step change. These themes and outcomes will drive the focus of our business plan and the framework through which we will measure our performance.

With our Community theme, for example, we will determine our level of success against our target to see at least 25% of our membership (some 12,500 members) meaningfully participate in an IOP activity each year of the plan. With our Society theme, we aspire to have increased participation in our outreach activities to one million people a year from current levels of about 100,000 each year. That will only be achievable by changing the nature of the work that we do.

So, a further example, is our intent to increase the proportion of 16–19-year-olds studying physics by 10% against a 2014 baseline and our plan to increase the proportion of girls studying physics post-16 from 21% to 30% in the UK and Ireland over the five-year period. These are ambitious but, we believe, achievable targets.

There is also a selection of headline projects, such as developing a community-led and evidence-informed curriculum and assessment framework for school education, and the launch of a new professional accreditation process for technicians and further education providers, which move the IOP into new and exciting territory.

Our strategy is a living document. We will review and, if required, refresh it each year, and we very much look forward to reporting on our progress as we see evidence of the changes we are committed to delivering.



We want to hear from you.

Let us know what you think.

**Join in and help deliver our strategy.**

E-mail **physics@iop.org**, find us on Twitter **@physicsnews**  
or write to us using our postal address information  
that can be found on the back cover.

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Registered charity number 293851 (England & Wales) and SC040092 (Scotland)