

# Annual Report 2018

---

# Contents

Foreword 01

IOP's year in numbers 04

Regional activities 05

Community 07

Discovery 11

2018 Award winners 14

Society 19

Economy 23

Education 27

Looking forward 29

Public benefit 30

Governance 31

Our subsidiaries 38

Financial review 39

Financial statements 47

# Foreword

In 2004, Stephen Hawking, who sadly passed away in March 2018, gave an interview to *The New York Times*. In it the man who would later advise us to “look to the stars and not down at our feet”, was asked what he believed commercial success looked like for him. Professor Hawking’s response? He said, “I want my books to be sold in airport bookstalls”.

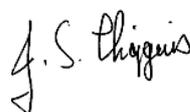
It was characteristic of the wry humour for which Professor Hawking was known, but tucked amongst the witticism lay a more significant philosophy. A belief that there is no good reason why physics should not occupy the same bookshelf as a cricketer’s autobiography, or a brief history of bicycles. That the question of why humans exist and how we came to be here so profoundly impacts every one of us, that access to such information is a right, not a privilege.

This is a philosophy that is at the heart of the work of the Institute of Physics and has remained a focus during 2018. It is a key part of our mission to make physics accessible as a subject, demystified as a career choice, and demonstrable in its socio-economic impact. This has been the last year of a strategy that was launched in 2014 – a strategy that put social impact at its heart.

Five years later, the IOP can look back with some satisfaction at what has been achieved and look forward to building on the groundwork that this strategy has laid. The IOP’s work has played a key role in encouraging more girls to study physics post-16 and to recruit more physics teachers.

Furthermore the impact of physics-based businesses and technology on our economy has been recognised in the government’s industrial strategy. We have promoted technical careers as an alternative to traditional academic routes and facilitated resource exchange between research centres and businesses. Our members are throwing stones at glass ceilings and turning stereotypes on their head, proving that there is no one size fits all physicist.

If this foreword began with the words of the late Stephen Hawking, one of our great male physicists; it seems fitting to finish with the actions of one of our greatest female physicists, Jocelyn Bell Burnell. In 2018, Professor Bell Burnell won the Breakthrough prize in fundamental physics for her discovery of radio pulsars and, more widely, her scientific leadership. Our former President has donated the £2.3 million Breakthrough prize money to create a fund so that those who are under-represented in physics can take their first steps to becoming a physics researcher. Such representation matters. The physics community is a better place for the greater variety of people within it. For the IOP, it is more important than ever that we keep pushing the boundaries of our discipline and at the same time create room for more diverse voices. For it is within that space, that we will find the stars.



**Professor Dame Julia Higgins**  
DBE FRS FEng HonFInstP CPhys

**Institute of Physics,  
Caledonian Road**





---

# IOP's year in numbers

---

**132 teaching scholarships awarded**

---

**142 schools are part of our Future Physics Leaders programme**

---

**50 lead schools and 420 partner schools in our Stimulating Physics Network**

---

**25% of all secondary schools in the UK and Ireland are affiliated with IOP**

---

**2,279 students signed up to our A-level, higher or equivalent science newsletter**

---

**282 public engagement events run nationally**

---

**1 new IOP home in London's King's Cross**

---

**28 Campus ambassadors**

---

**40 recruitment events for teachers' scholarships**

---

**142 Award nominations received**

---

**45% IOP Award winners were women**

---

**51 special interest groups**

---

**120 travel bursaries delivered**

---

**23,045 members**

---

**46 conferences delivered**

---

**1 specially commissioned installation about time in our gallery**

---

**432,500 people reached through outreach and engagement**

---

**65,000 teacher-hours have been delivered by our education work**

---

**6,618 institutions whose scientists made use of IOP Publishing's research publications**

---

**30% growth in journal articles published on an open access basis**

---

**40,327 conference proceedings articles published, 77% growth on 2017**

---

**5,000,000 downloads from the *New Journal of Physics***

---

**117 new ebooks published and more than 1 million chapters downloaded by readers**

---

**20 Publishing Academy workshops in 9 countries for early career researchers**

# Regional activities





# Community

**1,400 people took part in our first LGBT+ experience members survey in physical sciences**

**Income: £1,964,000**

**Expenditure: £4,494,000**

It is the creativity, insight and imagination of our members that characterises our physics community as unique. From international prizes to ticking the box and choosing to study physics, our role is to represent our members' interests at all stages of their careers. Our members are students, apprentices, business leaders, technicians, academics; together we are advancing science, education, community development and diversity through our impactful events, outreach and policy work. We are a membership organisation first and foremost; as such it is imperative that we maintain a personalised level of support and a bespoke member offer.

In 2018, we revealed two initiatives for our community. We launched Member Stories, a new campaign showing our members describing, in their own words, who they are and how they got to where they are. This campaign highlights how the IOP supports its members through career advice, subject accreditation, events and, most importantly, a connection to an active science community. The campaign is a series of videos and written stories that showcase how our members have used physics and its applications to transform our lives and our society. These videos have been viewed 37,000 times on social media and are a foundational step

**Our Fellowship marketing campaign won 'best integrated marketing campaign' for encouraging more fellowship applications at MemCom 2018**

in creating a community that people can see themselves reflected in. These individual stories demonstrate the diversity of our members' experiences and offer personalised insight into how members feel the IOP has supported them.

In particular, these stories highlight the value of technical careers, a career path the IOP has taken significant steps to support this year by securing the licenses to offer RSciTech, RSci, EngTech and IEng accreditations. The ability of the IOP to offer these qualifications develops the quality of our member offer, which is mirrored in the vibrancy of our members' stories. Additionally, the Member Stories series cements the membership restructure that took place last year and spotlights how the IOP is able to tailor its member support across different sectors and experience levels.

Our pursuit of this individualised member experience has culminated in the launch and ongoing development of our new digital hub called Connect. We wanted to create a digital hub that had a more contemporary design that was reflective of our outlook as a modern organisation. We have started to develop Connect as a replacement for MyIOP through which members can engage more fully with content, letting them pick and choose what sort of features and stories they would like to see on their newsfeed. Over time Connect will expand to other audiences including the public.

Our digital vision is to provide a place for people to engage and explore all the services offered by IOP. Members can find the internationally renowned journalism of Physics World alongside events programmes, IOP publications, news and events of personal interest to members. Throughout the soft launch, we have been collecting feedback to help us improve the content. Users reported that it is easy to navigate, more modern and more streamlined, with almost 67% of users saying that they liked the new hub. We envisage that, over time, more and more options for personalisation will be added to the website, feeding into Connect to create a powerful, inclusive tool for people to communicate with each other and seek out their own interests.

The launch of IOP Connect demonstrates how we have significantly developed our digital offering to support our core engagement (such as special interest groups, branch events and volunteering opportunities).

### **Community highlight: King's Cross building**

The new building has been designed to showcase physics in action. It has state of the art ground source heat pumps, an innovative building management system and green roof. A cloud chamber and Li-Fi (an optical wireless communication system) have also been installed so that people can see physics and innovation in action. A cosmic ray detector was assembled by local students and was installed on our roof. The data from the detector is fed into the HiSparc network which allows students to measure and analyse cosmic rays.

We have a public gallery, two lecture theatres and meeting spaces. These spaces are enabling us to host events and activities for our physics community and the public. Digital screens and AV equipment have been installed throughout the building so that we can share the national and international work of the IOP in the London office, and share the activities hosted in the building more widely.

**Being a member makes me feel part of the wider physics community. You have access to a wealth of material online; you can apply for travel grants; you get Physics World delivered to you; and you can join any number of special interest groups.**

**Dervesh, Member**



**King's Cross  
building**



# Discovery

**30% of IOP Awards medals are now named after female scientists**

**9% growth in published research articles in 2018, with 30% growth in open access articles**

**Income: £60,648,000**  
**Expenditure: £47,809,000**

We believe that physics research benefits from collaborative work between business and academia. Our members include industry leaders across all sectors, and we will continue to champion the important role that physics plays in the economy and broader society.

A key part of the Institute's work is its role in facilitating groups and subsequent collaboration between them. Groups are a series of member-led networks that develop research and allow like-minded members to connect with people of similar interests. Bringing people across both academia and industry together uses physics to solve industry challenges, and reinforces physics as an important discipline outside of the classroom and in real world environments. Around a quarter of our members participate in a group and groups proactively deliver an exciting and varied programme of events throughout the year. From a group for our Early Career Members, to the Liquid and Complex Fluids Group or the Medical Physics Group; the variety of groups available for our members to join is representative of the diversity of our community. In 2018, Groups ran 121 events, with an increase in attendees of over 10% from the previous year. Groups such as the Business Innovation and Growth Group connect large

**Launch of Photonics Report on the International Day of Light 2018 showcasing the value of this sector to the economy**

businesses like Leonardo, PepsiCo and Airbus to high growth SME's and start-ups. They are a valuable platform to create knowledge exchange and support technological development.

The work of these groups is further supported by the development of Physics Insights. This is our ambitious and ongoing project to compile a data map of the physics landscape in the UK and Ireland. Such a map includes data on funding, collaborations, patents and publications brought together to assist the physics community. Our aim is to create a research tool that will support our work with the physics community. The team behind the project was expanded and the technical approach behind the data adapted. We have also grown the number of external data sources that we are analysing as well as harnessing our own IOP membership data to create a number of bespoke visualisations. These visualisations have fed into a number of reports for internal and external users on how physics can be used to increase productivity and competitiveness within certain industries. We anticipate that we will use this data in support of our work in science after Brexit, the UK's comprehensive spending review and the development of a funding roadmap for UK and Irish physics.

IOP Publishing Ltd (IOPP) is a leading publisher in physics, physical sciences, astronomy and

mathematics, providing publishing services to the worldwide scientific community through its journals, books, magazines, conference series and web sites and its services to other scientific societies and research organisations.

IOPP had another strong year in 2018. We relaunched the Physics World news websites and published more journal articles, books, conference proceedings and news items than in 2017. We also reduced the time taken for the peer review of journal articles and from submission to online publication. The satisfaction levels of authors and reviewers improved further still, supported by the continuing development of its Publishing Support site and the launch of its 'Track my article' service which was used more than 221,000 times in its first seven months. Several major publishing partners renewed their agreements with IOPP, including the American Astronomical Society and the Japanese Society of Applied Physics, both through to 2025.

IOPP's published articles grew across all titles by 9% in 2018 and the number of open access articles published in our journals increased by more than 30%. This was supported by the launch of nine new journals including four new open access titles. IOPP published a record 117 books in 2018, an increase of 75%, and more than 40,000 conference proceeding articles, a 77% increase on 2017.

### **Discovery highlight: IOP Awards**

- **142 nominations were received**
- **25% of total nominations were for female physicists: 7, 13 and 16 nominations for Gold, Silver Subject and Bronze Early Career medals respectively. This maintains a substantial increase on statistics prior to the 2015 Awards Review, where as the previous high of 13% was in 2006**
- **45% of the winners of 2018 IOP Awards are women (10 out of 22)**

IOP Awards recognise teams and individuals who have made a substantial contribution to the development of physics in the UK or Ireland. It is our aim to identify and honour those people and teams who are making remarkable contributions to physics, and to encourage younger members of our community to greater success in the future.

Our medal portfolio spans all areas of physics, as well as contributions made to physics outreach, physics education, the application of physics and physics-based technologies. In 2018 we continued to expand the portfolio to reflect the breadth of community endeavour with the introduction of an additional five medals, and we now have over a third of our medals named in honour of female scientists.

In 2018, we were delighted that the physics community continued to recognise the excellent work being carried out in the field, submitting 142 high quality nominations from all corners of our community. 35 women were nominated, and 45% of the winners were female. We also saw significant engagement from the nations and regions, with nominations for people working in 57 different institutions from across the UK and Ireland.

Our Business Innovation Awards celebrate companies in the UK and Ireland that have built success on the innovative application of physics – companies that have generated profit, secured jobs and improved efficiency across a range of sectors, from oil and gas to renewable energy, medical technologies to high-tech manufacturing. Now in the seventh year of these awards, 46 companies have been awarded and our aims are to include additional awards which will celebrate and benefit this part of the community.

Further information about all our awards can be found at [www.iop.org/about/awards](http://www.iop.org/about/awards).



**IOP Awards**

# 2018 Award winners

## Award **The President's medal**

Recipient **Professor William George Stirling**

For services to physics, especially in the application of X-ray and neutron scattering, and, in particular, for his contributions at the European Synchrotron Radiation Facility (ESRF), and at the Institut Laue-Langevin (ILL), the French-German-British high-flux reactor centre, both in Grenoble.

## Award **Phillips Award**

Recipient **Professor Stuart Palmer**

For leadership and influence at IOP – crucial to steering the Institute through a change of CEO, a major reorganisation of structures and finance and the critical decision to move from Portland Place to the new building in King's Cross. For commitment and service to the Institute spanning three decades.

## Award **Phillips Award**

Recipient **Professor Nicola Wilkin**

For dedicated time and effort in championing the work of the IOP nationally and internationally – at events, workshops and conferences – and as an ambassador for equality throughout the physics community.

## Award **Honorary Fellowship**

Recipient **Professor Sheila Rowan**

For her sustained, innovative and key contributions towards the discovery of gravitational radiation over the last 27 years, including her work at Glasgow and Stanford Universities, which contributed to a significant improvement in the sensitivity of the Laser Interferometer Gravitational-Wave Observatory (LIGO) and other detectors.

## Award **Honorary Fellowship**

Recipient **Professor Roy Sambles**

For his contributions as a scientist encompassing both pure and applied physics and as a superb ambassador for physics

through extensive outreach activities, and for his significant contribution to the science community as an outstanding President of the IOP.

## Award **Honorary Fellowship**

Recipient **Sir Peter Williams**

For his outstanding contribution to business in physics-based technology commercialisation, his major contribution to the field of physics education and his considerable services to the IOP.

## Award **Isaac Newton**

Recipient **Professor Paul Corkum**

For his outstanding contributions to experimental physics and to attosecond science – from the femtosecond scale of the motion of atoms within molecules, to the ultimate attosecond scale of the motion of electrons within atoms – and for pioneering work which has led to the first-ever experimental image of a molecular orbital and the first-ever space-time image of an attosecond pulse.

## Award **Max Born**

Recipient **Professor Michael Coey**

For the understanding and description of the magnetic properties of novel magnetic materials, including amorphous alloys, magnetic oxides, half-metals and hard magnetic materials, and for pioneering their use in devices.

## Award **Fernand Holweck**

Recipient **Dr Marina Galand**

For her outstanding contribution to the understanding and assessment of the response of planetary atmospheres to energy sources in the Solar System and beyond.

## Award **Giuseppe Occhialini**

Recipient **Professor Elena Pian**

For her work of first detection, with the ESO Very Large Telescope equipped with

the X-shooter spectrograph, of r-process nucleosynthesis in the optical/infrared counterpart of a gravitational radiation signal due to a binary neutron star merger.

Award **Paul Dirac**

Recipient **Professor John Chalker**

For his pioneering, deep and distinctive contributions to condensed-matter theory, particularly in the quantum Hall effect, and to geometrically frustrated magnets.

Award **Michael Faraday**

Recipient **Professor Jennifer Thomas**

For her outstanding investigations into the physics of neutrino oscillations, in particular her leadership of the MINOS/MINOS+ long-baseline neutrino oscillation experiment.

Award **Richard Glazebrook**

Recipient **Professor Michele Dougherty**

For her scientific leadership of the Cassini magnetic field instrument at Saturn and the European Space Agency (ESA) JUICE study team, leading to mission selection to explore the environs of Jupiter.

Award **Katharine Burr Blodgett**

Recipient **Dr Michael Begg and Dr James Ramage**

For the transformation of Tesla Engineering Ltd from a manufacturer of conventional magnets for particle accelerators into a world leader of magnets for high-energy physics, MRI and oncology equipment.

Award **Lawrence Bragg**

Recipient **Professor Bobby Acharya**

For his contributions as the driver of several projects to teach and promote physics in the developing world, with the ultimate aim of developing sustainable physics research in those countries.

Award **William Thomson, Lord Kelvin**

Recipient **Dr Helen Czerski**

For her contributions to championing the physics of everyday life to a worldwide audience of millions through TV programmes, a popular science book, newspaper columns, and public talks.

Award **John William Strutt, Lord Rayleigh**

Recipient **Dr Owen Saxton**

For his contributions to the Gerchberg-Saxton computer algorithm, decades ahead of its time but now prevalent in phase retrieval, and for his foundational image processing programs, still influential in front line electron microscopy.

Award **Fred Hoyle**

Recipient **Professor Hiranya Peiris**

For her leading contributions to understanding the origin and evolution of cosmic structure, by pioneering an interdisciplinary approach that combines theoretical, statistical and observational cosmology, astrophysics, numerical relativity and theoretical physics.

Award **James Chadwick**

Recipient **Professor Stefan Söldner-Rembold**

For his contributions to pioneering experimental work in high-energy particle physics and his international leadership in Higgs and neutrino physics.

Award **Rosalind Franklin**

Recipient **Professor Molly Stevens**

For her contributions to ground-breaking and influential advances in the engineering of bioinspired materials for regenerative medicine and biosensing applications – and their translation into industrial development and medical deployment.

Award **Dennis Gabor**

Recipient **Dr Nils Hempler**

For his role in founding M Squared Innovation, forming global partnerships, commercialising cutting-edge science in quantum, biophotonics and sensing – and helping to establish new companies to develop products for societal benefit.

Award **James Joule**

Recipient **Professor Ravi Silva**

For his distinguished contributions to the development of carbon nanomaterials for use in cross-disciplinary advanced technology applications relevant to materials, optoelectronics and sustainable energy.

Award **Lise Meitner**

Recipient **Dr Eilish McLoughlin**

For her leadership of large-scale national initiatives that widen participation in physics in Ireland through formal and informal actions, including Physics Busking, Science on Stage and Improving Gender Balance.

Award **Nevill Mott**

Recipient **Professor Laura Herz**

For her ground-breaking research on the fundamental mechanisms underpinning light harvesting, energy conversion and charge conduction in semiconducting materials.

Award **David Tabor**

Recipient **Professor Adrian Sutton**

For his definitive contributions to the nanophysics of interfaces in crystalline materials, atomic and electronic structures of surfaces, dislocations and kinks, current-induced mechanical instabilities in nanowires, and dislocation elastodynamics during shock loading.

Award **Thomas Young**

Recipient **Professor Dieter Jaksch**

For his contributions to theoretical proposals enabling the study of non-equilibrium quantum many-body dynamics with unprecedented microscopic control in ultra-cold atoms, and establishing them as a quantum technologies platform.

Award **James Clerk Maxwell**

Recipient **Dr Hannah Price**

For her important contributions to the nascent fields of topological atomic and optical physics, including collaboration with world-leading experimental groups in their observation of new effects.

Award **Henry Moseley**

Recipient **Dr Samuel Stranks**

For his work in pioneering the understanding of the photoexcited states in metal halide perovskite semiconductor materials as used in efficient solar cells, including their diffusion, collection and recombination.

Award **Clifford Paterson**

Recipient **Dr Richard Bowman**

For his contributions to optical microscopy, in particular to experiment automation and the creation of globally accessible, open-source hardware.

Award **Jocelyn Bell Burnell**

Recipient **Dr Carmen Palacios-Berraquero**

For discovering and patenting a method to create single-photon emitting sites in atomically-thin materials deterministically – and for using a 2-dimensional device to all-electrically induce quantum emission from these sites.

Award **Daphne Jackson**

Recipient **Dr Jessica Wade**

For acting as an internationally-recognised ambassador for STEM, enhancing engagement across a wide range of demographics, through sustained and stimulating community engagement and outreach.

Award **Juno Champion**

Recipient **School of Physics,  
University of Exeter**

Award **Teacher of Physics England**

**Overall Progression**

Recipient **Kevin Mosedale**

Kevin's unashamed interest in even the most esoteric of physics problems inspires all students who come into contact with him. He is admired and respected by teachers across the school, and within physics he is valued as a team player who injects wry humour and wisdom into the department. He incorporates an eclectic range of outside interests into the classroom, from homemade instruments (the hoseophone) to enthusing students with his interest in pylons. Kevin is actively involved in all aspects of the school's life, from giving a fascinating talk on Shakespeare's astronomical knowledge to refereeing school rugby matches.

Award **Teacher of Physics England**

**Girls Only Progression**

Recipient **Edith Goakes**

Edith ignites within the young women she teaches an unabashed passion for all things physics. Her teaching style, both energetic and inclusive, makes space within the classroom

for independent intellectual discovery. She spearheaded the school-wide Science, Technology, Engineering, Art and Math (STEAM) initiative, designing and fundraising for a new STEAM room. Collaborating with other departments across the school, Edith has led on cross-departmental projects such as building prosthetic limbs with Design Technology and simulating an earthquake with Geography. As a result of Edith's drive and enthusiasm, students are now making cross-discipline connections with a sense of wonder and curiosity.

**Award Teacher of Physics England  
Relative Attainment**

**Recipient Andrew Notley**

Andrew is an inspiring teacher – his enthusiasm and commitment to his students is evident in the time he gives to them outside of lessons, providing additional academic support and mentorship. Keen to encourage students to study physics at university, Andrew works tirelessly to promote work placement opportunities and careers advice, including supporting students with gaining work placements in CERN. He is an integral member of a hardworking and committed department and takes great pride in developing the skills of both students and colleagues. Andrew has taken a lead role in mentoring the non-physics specialist members of the department to teach engaging and effective lessons.

**Award Teacher of Physics England  
Progression to A-level**

**Recipient Sam Skinner**

Sam is a driven and energetic physics teacher whose enthusiasm for physics is infectious. There is rarely a dull moment in his classroom and students of all abilities have been able to access not only the curriculum but also their understanding of the world of physics beyond the classroom. In his position as head of department, he has overseen and orchestrated the growth in popularity of physics at his school, with record numbers taking the subject to A-level. The department has led training courses for teachers wishing to train in a second subject as well as joined extracurricular trips to CERN and Berlin.

**Award Teacher of Physics Ireland**

**Recipient David Hobson**

David is a true educator who believes in the holistic value of education and contextualises physics. He has successfully raised and maintained the uptake of senior physics and consistently supports his colleagues, helping those whose specialism is not physics to teach the subject. As a Year Head he has provided pastoral guidance to students, while in teaching he has always been willing to give students extra support to ensure their understanding. He has contributed to conferences, meetings and projects, fulfilling a great need in Irish education by giving accurate, timely and helpful advice. Not only is David highly respected in his own school, he is held in high regard in the wider education community.

**Award Teacher of Physics Scotland**

**Recipient Michael Murray**

Michael strongly believes that teachers should be facilitators, putting students in control of their own learning. His quirky and humorous approach makes lessons enjoyable while he strives to continually improve his own teaching by incorporating new ideas. Keen to inspire the next generation of physics teachers, Michael is a friendly and supportive mentor. He has contributed to the wider education community in a number of ways, from his work to support staff in delivering the science curriculum in local primary schools, to educating future physics teachers on the University of the West of Scotland PGDE course.

**Award Teacher of Physics Wales**

**Recipient Cerys Corbett**

Cerys creates a friendly learning environment in which students are both supported and challenged. As a non-physics specialist, driven by her desire to benefit and motivate her students she strives to improve her subject knowledge and pedagogy. Her lessons challenge and inspire her students and have led to significant improvements in the department's GCSE results. She is an excellent role model, developing girls' interest in physics and promoting STEM subjects. For the last seven years she has devoted many hours to running the Engineering Education Scheme Wales project for post-16 students. She encapsulates the notion of physics for all.



# Society

**In Northern Ireland, our 45 strong troupe Physics Busking volunteers put on shows over 150 days reaching an audience of approximately 98,000**

**Income: £125,000**

**Expenditure: £1,109,000**

Physics is woven through the fabric of our society, and through an active combination of creative public engagement and evidence-based policy making we endeavour to tell the story of physics as we know it to wider society. We see physics as the subject that took mankind to the moon and gave us the technology to order a taxi from our pockets. Our policy and engagement work strives to make physics accessible, engaging and most importantly, visible to all.

This year saw the launch of our report *Why not physics: A snapshot of girls' uptake at physics A-level*; a follow up to a report published in 2014 examining why so few girls take physics in sixth form. The report was launched at a major event in central London and featured a roundtable discussion from industry leaders and science communicators chaired by our President, Professor Dame Julia Higgins. The launch was reported in a number of media outlets including being on the front page of the BBC news website, and featured on BBC Radio 4's flagship programme World At One. There was national media exposure and a trending hashtag.

The report, which looked just at English schools, concluded that whilst there had been a 6% increase in the number of girls taking physics A-level, 44% of schools are still not

**Launch of the *Why not physics: A snapshot of girls' uptake at physics A-level* report which received national media attention**

putting forward any girls for the subject after GCSE. Our experience is that this is reflected across the UK and Ireland. Thus there is still a significant amount of work to be done to address the gender bias facing girls in STEM subjects. The publication of the report reignited the conversation around getting girls into STEM and was an organisational highlight for the year. Its success is demonstrative of the IOP's commitment to high profile policy making and effectiveness in bringing important issues surrounding physics to national attention.

We also deliver extensive outreach and engagement activity. We work hard to get the public enthused and excited by everything physics has to offer. We want to encourage people to see physics as a subject open to everyone and a positive option for career and study.

To this end, both our Northern Ireland and Scotland branches are closely involved with running, respectively, the Northern Ireland Science Festival and the Scottish Festival of Physics, held in Edinburgh. The Northern Ireland Science Festival had around 150 events running over 10 days in February 2018. The festival featured an eclectic mix of art, drama, comedy, debates and history; all infused with science. A particular physics highlight in the festival was Wild Weather. This event featured Dr Helen Czerski, physicist and BBC presenter,

BBC weather presenter Geoff Maskell, and Professor Peter Thorne, climatologist and lead author on the recent IPCC Climate Report.

In Scotland, our regional branch held the Festival of Physics; a 3 day programme of lectures, demonstrations and workshops. The theme for 2018 was Time, with the programme of lectures and events revolving around this theme. Interpretations of how time and science interact were fascinating and varied. There were formal lecture events examining the history of time as well as cooking classes and ceilidh dances. This year almost 4,000 people attended and the feedback from our audience was very positive.

Our role in events such as the Festival of Physics and the Northern Ireland Science festival cement the IOP as an active convenor of creative, hands-on public engagement with the ability to reach and connect with thousands of people. We believe that science communication should not be restricted to lecture theatres, and that a cross-disciplinary approach that combines art, history and technology helps people think about how physics affects their day-to-day lives. This approach, combined with elements of our policy helps raise the profile of physics in society and tackle the negative stereotypes that affect both physics and physicists.

### **Society highlight: International work in Tanzania**

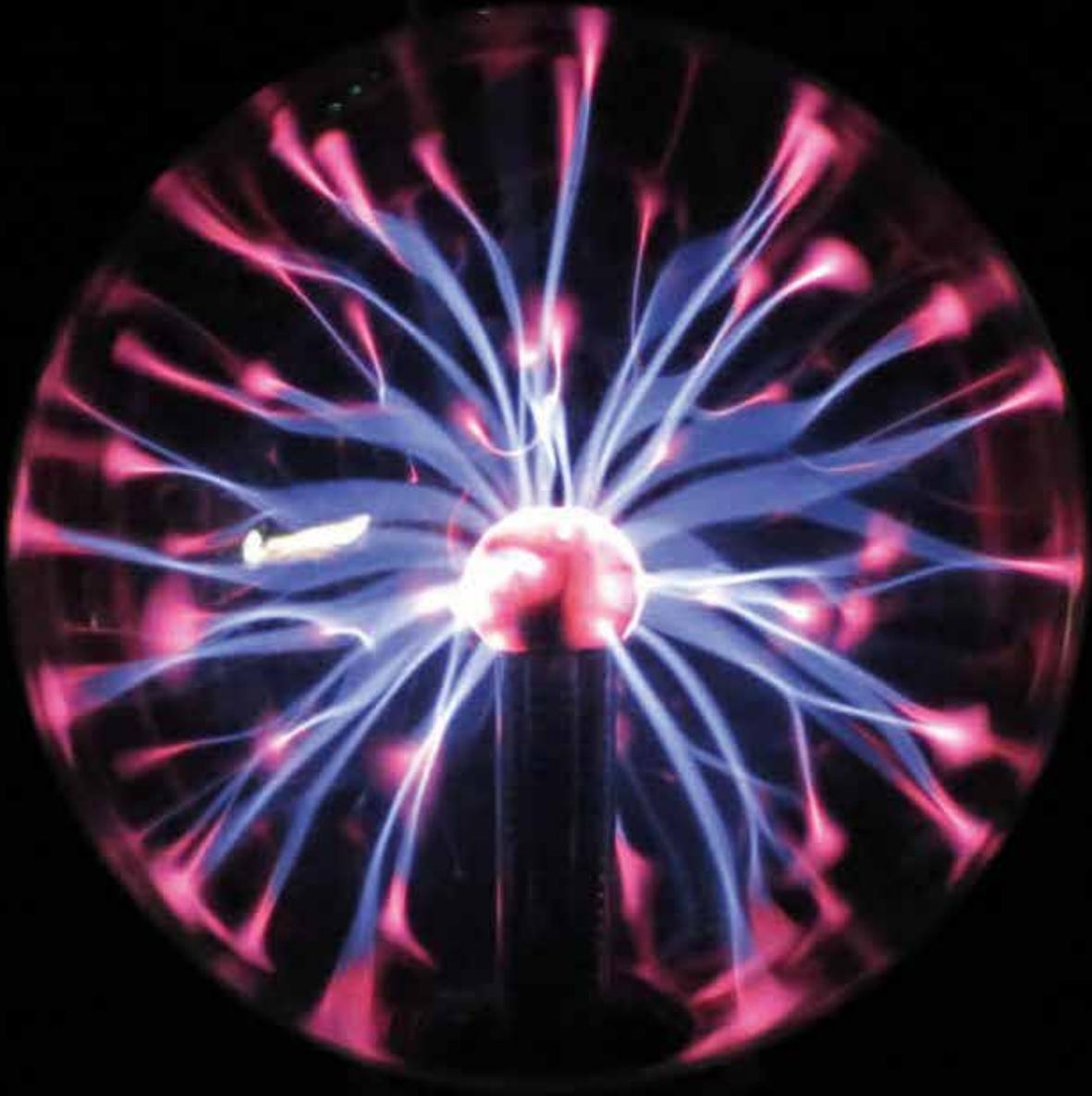
- The Future STEM Business Leaders programme supports secondary school students in Tanzania to apply their education in science to solve local problems, through the creation of science-based business
- In 2018, five schools from Dar es Salaam, a total of 50 students, were involved in the programme
- The programme is driven by partners in Tanzania including the Tanzanian Physical Society, the University of Dar es Salaam, the Dar Teknohama Business Incubator and several businesses throughout Tanzania
- In the near future, our aims are to increase the number of schools involved and develop a teacher CPD programme to provide continuous support to participating schools

**I have most valued the IOP's representative and conveying power inside politics. I have been impressed by the work the Institute does in policy making, it has articulated the voice of physics well in Whitehall and made sure that physics is seen as a crucial subject for the UK.**

**Alan, Fellow**



**International  
work in Tanzania**



# Economy

**We launched our new business start-up award to recognise companies which have been incorporated for less than five years and have a great physics business idea**

**Income: £8,000**  
**Expenditure: £459,000**

We recognise the value of physics-based technology to the UK and Irish economies and try to link businesses up with the appropriate resources. The UK government's Industrial Strategy makes clear the value of STEM subjects to the productivity and competitiveness of the economy. There is a well-evidenced need to maintain a highly qualified and skilled workforce and provide a link between physics-based research and technologies. Physics-based businesses add £177bn in gross value to the economy driving productivity and growth. This represents a 16% share of the entire business economy in the UK and Ireland. These figures demonstrate that the effects of physics-based technology are not just being scrawled across University blackboards, but are playing out in a real time contribution to businesses and the economy in UK and Ireland.

A vital way that we recognise the contribution of physics-based businesses to the economy, and highlight the ground-breaking technology that is being developed here in the UK and Ireland, is through our annual Business Awards. The IOP's business awards recognise the work of these organisations and celebrate their achievements. These awards bolster the reputation of the UK and Ireland as the home of world-leading institutions and pioneering

**We held skills and the economy events at the Senedd, Holyrood and Stormont**

businesses. There are two types of award, the Business Innovation Award and the Business Start-up Award. These awards aim to celebrate great business ideas that use physics to deliver economic or social impact.

Winners are invited to a parliamentary reception to display their innovations; this reception is also a networking event attended by leaders in business and members of parliament.

This year the winners of the innovation award were EndoMag, Innovative Physics, Leonardo, Plastipack, PepsiCo and Sonobex. The winners of the Business Start-up Award were Causeway Sensors, Creavo Medical Technologies, Lynkeos, ONI, Stream Bio and York Instruments. Their products range from radiation imaging systems and nanotechnology that can detect pathogens to desktop-sized super-resolution microscopes; these companies are demonstrative of the crossover between first-class physics research and the active impact of physics in technology.

Our business awards have been an annual highlight of the IOP's calendar since 2012 and have been sponsored by Alok Sharma MP, the UK's Minister of State for Employment. It's a prestigious event that raises the profile and importance of physics-based businesses and maintains influential links with parliament and Members of Parliament.

It is the IOP's work with UK government that allows us to represent our members and raise the profile of physics with relevant stakeholders at a national level. Significantly in the last year, the IOP has held a seat on the UK government's high level strategic working group on science, innovation and Brexit. This has resulted in direct engagement with the Minister of State for Universities, Science, Research and Innovation, the Parliamentary Under Secretary of State for Exiting the European Union, the Home Secretary, the Secretary of State for Business, Energy and Industrial Strategy and the Secretary of State for Digital, Culture, Media and Sport. This ensures discussion of high level issues such as access to EU funding, movement of people and access to important science facilities after the UK has left the European Union. We know that these issues will directly affect our members and it is critical we endeavour to ensure the best outcome for our community.

We are also seen by the UK Parliament as a valuable authority on physics-based technology. This year, the IOP was invited to give evidence to the House of Commons Science and Technology Committee on the importance of investing in the UK's world-leading quantum technology programmes.

Quantum technologies have the potential to transform modern life, promising revolutionary new products and services in fields such as communications, infrastructure and healthcare. The Government Office for Science and the UK quantum technology community estimate that this second 'quantum revolution' could bring significant benefits to the UK economy, potentially leading to the development of a sector comparable in size to the consumer electronics sector and creating thousands of high-value UK jobs. IOP's submission to Parliament assisted in the confirmation of funding for the programme which happened in the autumn of 2018.

Our connections across academic, business and government position the organisation as an important influencer in science policy and facilitator of cross sector communication. As the UK prepares to leave the European Union our role representing our communities' interests and advocating the vital role of physics for our economy and society will be more important than ever.



**Economy highlight:  
Business awards**

---

**It is a huge honour for our surgical guidance platform to be recognised for its innovative impact on oncology by the prestigious IOP.**

Dr Eric Mayes, CEO, Endomag

---

**This highly prestigious award will help raise awareness to current and potential customers worldwide about what our innovations can achieve.**

Mike Anderson, CEO, Innovative Physics

---

**We are delighted to win an IOP startup award. This is great validation as we apply ground-breaking nanotechnology to healthcare.**

Bob Pollard, CEO, Causeway Sensors

---

**ONI is delighted to receive this award in recognition of its efforts to make super-resolution microscopy available to everyone.**

Bo Jing, Founder and CEO, ONI

---

**This prestigious IOP award shows to our customers and our people we have the knowledge to inspire and innovate.**

Peter Adlington, Managing Director, Plastipack Ltd

---

**Sonobex are extremely honoured to receive the prestigious IOP Business Innovation Award. It is a great recognition of the team's hard work and dedication.**

Dr Daniel Elford, Chief Technology Officer, Sonobex

---

**This award brings great exposure for Stream's novel CPN™ technology and the fantastic opportunity to learn from the best minds in physics innovation.**

Andy Chaloner, CEO, Stream Bio

---

**PepsiCo is honoured to be recognised by IOP for the advanced application of soft matter physics to create breakthroughs in extruded snack innovation.**

Dr Mehmood Khan, Vice Chairman and CSO, PepsiCo

---

**Winning the IOP Business Innovation Award recognises the investment by Leonardo into state of the art physics based products.**

Audrey Black, Vice President of Advanced Targeting, Leonardo MW

---

**The IOP award represents a great honour for York Instruments, and is testament to dedication of our talented physics team.**

Gordon Baltzer, CEO, York Instruments



# Education

**Our Stimulating Physics Network has been switching to a lead schools model to provide continual professional development (CPD) for teachers with support from a professional practice group and regional education managers**

**Income: £4,399,000**

**Expenditure: £9,155,000**

Our work in education revolves around two key questions, how can we get more people to be as passionate about physics as we are and how can we translate that intellectual curiosity into a tangible output? We want more people to study physics at school, in technical training programmes and university, and to be confident in choosing physics-based careers. Our approach to these questions is multi-faceted, from recruiting more teachers, supporting teachers in the classroom with improved training and classroom resources, and to ensuring routes into physics careers across a variety of sectors are more transparent for students.

An increasingly important way that we address both these questions is by tackling the gender gap in physics. In 2018, girls still only made up 22.5% of the physics A-level intake, and 27.5% of the Scottish Highers and Irish Leaving Certificate intake. Removing the barriers which discourage girls from studying physics after 16 is important not just to achieve gender parity but also to address vital skills needs within the STEM sector and keep the UK and Ireland economies competitive. The launch of our major report this year, evaluating the number of girls

**Organised two technical careers fairs for apprentices to demonstrate alternative routes in physics-based careers**

taking physics A-level, forms part of a significant body of policy and education work that takes a ‘whole school’ approach to tackling unconscious gender bias. This approach was first conceived in a pilot project funded by the Drayson Foundation, which saw a threefold increase in the number of girls taking physics A-level in our pilot schools between 2014 and 2016.

As a result of the success of our Drayson Pilot, a programme addressing gender bias in schools has been rolled out. In keeping with this, 2018 saw the culmination of the 3 year pilot project, *Improving Gender Balance Scotland* which established interventions in early learning and childcare centres, primary and secondary schools to create long term cultural change in regards to gender stereotypes. Practitioners perceived raised aspirations within the girls they worked with, particularly in relation to STEM subjects. The pilot was so successful that Education Scotland have taken the project in house and have significantly expanded it. This sort of success – running a pilot that is then rolled out – and the continued influence of our reports we have published has established the IOP as a leading organisation in addressing gender imbalance in physics and tackling the stereotypes that negatively affect both boys and girls in schools.

In addition to our work targeting gender bias in schools, the IOP also runs several other influential programmes to support physics teachers and their students. Over 1,500 physics or science departments are affiliated to the IOP which represents about 25% of all secondary schools in the UK and Ireland. This is an important achievement for our education team and cements the IOP as a major pillar of support within the science teaching community. In the schools that we are partnered with, we are having demonstrable impact on the students that we support.

We continued our work in partnership with the Department for Education to improve attainment at GCSE and uptake of physics at A-level.

These statistics speak volumes about the positive impact our education work has not only on the resources and support available to teachers and students; but also how these programmes work to change perceptions and misconceptions around physics.



**As an aspiring physicist, I saw membership as a good way of preparing me for life after university, providing access to conferences, bursaries and career resources.**

Emily, Member

---

# Looking forward

In preparing for our next five years, we have listened to our members and leading figures from inside and outside of our community and have identified three urgent priorities that we must tackle head-on. They are:

## **Diversity and skills**

Physics has a diversity issue, often driven by deep-seated stereotypes, and faces acute shortages of skills. We must ensure our profession better reflects the diversity of our society and gives all young people, no matter their background or where they live, the opportunities afforded by a world class physics education and training system. Not only must we ensure that individuals can thrive in a supportive educational and working environment, we must invest in critical skills and close the growing STEM skills gap.

## **Unlocking capability**

We are on the cusp of a new industrial era, powered by science, technology and engineering. To make sure the UK and Ireland are able to realise the full societal and economic benefits of this scientifically inspired revolution, our STEM community needs to be world-leading. That means strengthening our research and innovation ecosystem and building more productive ties between universities, research institutes, businesses and government. Our community is closely intertwined with international networks, infrastructures, facilities and investment streams so, to stay at the forefront of scientific discovery and innovation, we must ensure that we have a strong presence in international networks, partnerships and programmes, and that we remain open and attractive to talented researchers and innovators.

## **Public dialogue**

In a mature and healthy democracy, every person in the country, from every walk of life, should be able to participate in well-informed discussion about the choices and challenges that affect us all. We want to make sure that the physics of everyday life is appreciated and that people can participate in informed debates about public funding and policy issues like new treatments and diagnostics in healthcare, decarbonising our economies and cybersecurity, recognising the important role that physics will play in these.

**The challenges that these priorities present will form an important motivation for our new five year strategy which we will launch in 2019.**

---

# Public benefit

The Institute of Physics is the national physical society for the UK and Ireland. The object of the Institute, as stated in our Royal Charter, is to promote the advancement and dissemination of knowledge and education in the science of physics, pure and applied, for the benefit of the public and the members of the Institute.

The trustees confirm that they have referred to the Charity Commission and OSCR's guidance on public benefit when reviewing the Institute's aims and objectives and in planning future activities. The Institute meets the public benefit test in the following ways:

- Advancement of education
- Advancement of science
- Advancement of community development
- The promotion of equality and diversity

The Institute works to advance physics research, application and education, and engages with policy makers and the public to develop awareness and understanding of physics. The public benefit which our many and varied activities provide can be summarised as follows:

- Through our support for teachers and curriculum development, by improving the continuing professional development of teachers and its relation to the quality of teaching of physics in schools, and the diversity of students who are able to access the many benefits of a high-quality physics education
- Through the publication of journals, ebooks, magazines and websites, and the organisation of scientific meetings and conferences, by enabling the dissemination of high-quality physics research, so that researchers and research organisations are able to reach the widest possible audience and benefit from the latest developments in physics research

- By connecting physicists across all sectors to promote the application of physics and drive innovation and development of new technologies for the benefit of the economy and wider society
- By organising an exciting programme of activities and events to engage the public and raise awareness of physics, its impact on society and addressing the big challenges and the opportunities it provides for everyone
- By ensuring the competence and ethical commitment of those practising as physicists and engineers (with a physics background) through professional standards and support for continuing professional development
- Through our diversity programme, which aims to cultivate an inclusive, sustainable, diverse and vibrant physics community; promoting best practice that breaks down barriers to inclusion regardless of gender, ethnicity, disability and socio-economic status

Provisions are in place for those who might see fees as a barrier to membership. We have concessionary rates for those whose earnings are less than £20,000 per annum, and Undergraduates, Trainees and Apprentices can join for £15. As part of our commitment to supporting scientific research globally, we participate in a number of programmes that offer several ways for researchers in developing countries to gain access to our journals for little or no cost. Private benefits, where they occur, are incidental and mainly consist of prizes for exceptional scientific or education achievements.

# Governance

The Institute of Physics' current incarnation was established by Royal Charter dated 17 September 1970. The Royal Charter is supplemented by bylaws and regulations. The Institute is a charity registered in both England & Wales (no. 293851) and in Scotland (no. SC040092), and is therefore regulated by both the Charity Commission for England and Wales (CCEW) and the Scottish Charity Regulator (OSCR). The CCEW is the Institute's lead regulator. The members of Council are the trustees of the charity.

The Institute's registered office is  
37 Caledonian Road, London, N1 9BU.

## The Council (board of trustees)

As set out in the Royal Charter, the Institute is governed by the Council, which consists of 18 trustees elected from, and by, the membership; and up to three co-opted trustees who are appointed by the Council itself. The Council has the ultimate responsibility for directing the affairs of the Institute, ensuring that it is solvent, well-run and delivering the charitable outcomes for the benefit of the public for which it has been set up. The Council sets and monitors the Institute's strategy which delivers these charitable outcomes.

Of the elected Council members, there are four senior officers and four vice-presidents. The senior officers are the President, President-elect, Honorary Secretary and Honorary Treasurer. There are currently four Vice-Presidents, for business, education, membership, and science and innovation. There are ten additional Council members each of whom will normally serve on or chair one of the Council's committees. Certain Council members have lead responsibilities for important cross-cutting areas such as diversity, audit & risk, and our international programme. Co-opted Council members are appointed as required to cover areas of specific expertise.

The Council currently meets four times a year, normally in January, April, July and November. All Council members give their time voluntarily and are not remunerated for their work on behalf of the Institute beyond the reimbursement of reasonable expenses.

## Elections to Council

The rules governing the election of Council members are set out in the bylaws. At the start of each calendar year, the Council confirms the number of vacancies that will arise that year. With delegated powers from the Council, the Nominations Committee then evaluates the balance of skills, knowledge, experience and diversity of Council members, and, in the light of this evaluation, prepares a description of the role and capabilities required for each particular vacancy on the Council. A notice of vacancies along with role descriptions is published and all members are eligible to nominate themselves.

The Nominations Committee then assesses the nominations received from members to confirm eligibility and that candidates meet the requirements laid out in the role descriptions. Where there is more than one nomination for any vacancy then a ballot takes place. Where there is only one nomination for any vacancy that nominee is deemed elected.

Council members serve four year terms, with the exception of co-opted members who are appointed annually for a maximum of three years. The President serves a two-year term plus two years immediately preceding that as President-elect. The Honorary Treasurer and the Honorary Secretary are eligible for election to a second four-year term.

### **Induction and training of Council members**

Formal induction is given to all new Council members who are invited to attend meetings with Institute staff and advisers as part of the induction process. Council members are encouraged to attend recommended external training courses for charity trustees.

Trustees have a legal duty to avoid conflicts of interest so that they can focus exclusively on the best interests of the Institute.

The Institute maintains a register of Council members' interests, which is updated annually by trustees and as any changes are reported. Procedures are in place for managing conflicts of interest that may arise during Council meetings.

### **Statement of trustees' responsibilities**

Council members (who are the trustees of the Institute) are responsible for preparing the Trustees' Annual Report and the financial statements in accordance with applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

The law applicable to charities in England and Wales and in Scotland requires the trustees to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the charity and the group, and of the incoming resources and application of resources of the charity and the group for that period.

In preparing these financial statements, the trustees are required to:

- Select suitable accounting policies and then apply them consistently
- Observe the methods and principles in the Charities SORP
- Make judgments and estimates that are reasonable and prudent
- State whether applicable accounting standards, comprising FRS 102, have been followed, subject to any material departures disclosed and explained in the financial statements
- Prepare the financial statements on the going concern basis unless it is inappropriate to presume that the charity will continue in business

The trustees are responsible for keeping proper accounting records that disclose with reasonable accuracy at any time the financial position of the charity and enable them to ensure that the financial statements comply with the Charities Act 2011, the Charity (Accounts and Reports) Regulations 2008. They are also responsible for safeguarding the assets of the charity and the group, and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The trustees are responsible for the maintenance and integrity of the charity and financial information included on the charity's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

## Council members in 2018

### President

Professor Dame Julia Higgins  
DBE FRS FEng HonFInstP  
CPhys

### President-elect

Jonathan Flint CBE  
FEng FInstP

### Honorary Secretary

Professor Brian Fulton  
FInstP CPhys

### Honorary Treasurer

Professor Julian Jones OBE  
FRSE FInstP CPhys

### Vice-President, Science & Innovation

Professor Sarah Thompson  
MBE FInstP CPhys

### Vice-President, Education

Dr Carol Davenport FInstP  
CPhys CSciTeach

### Vice-President, Business

Dr James McKenzie FInstP  
CEng CPhys

### Vice-President, Membership

Dr Mark Telling FInstP CPhys

### Members

Dr Tariq Ali FInstP CPhys  
*From 1 Oct 2018*

Dr David Boyce FInstP CPhys  
*From 1 Oct 2018*

Professor Lesley Cohen  
FInstP CPhys  
*Until 2 May 2019*

Professor Wendy Flavell  
FInstP Cphys

Dr June McCombie  
FInstP CPhys

Professor Kevin McGuigan  
FRSC FInstP  
*Until 30 Sept 2018*

Professor Angela  
Newing FInstP  
*Until 30 Sept 2018*

Dr Becky Parker MBE  
Hon FInstP CPhys

Deborah Phelps MInstP

Neil Thomson FInstP CPhys

Professor Anne Tropper  
FInstP CPhys

Dr Tamara Cleford MInstP  
CEng CPhys  
*From 1 Oct 2018*

Mark Wrigley FInstP  
*Until 30 Sept 2018*

Dr Peter van der Burgt  
*From 2 May 2019*

### Co-opted Members

Professor Jim Al-Khalili OBE  
FRS FInstP

Dr Trevor Cross FInstP  
*Until 30 Sept 2018*

Dr Lisa Jardine-Wright  
MInstP CPhys  
*Until 30 Sept 2018*

## Committees

The Council has a number of standing committees with delegated powers, thus ensuring that the required time and attention is applied to overseeing specific areas of interest. The terms of reference, delegated powers and membership of these committees are set by the Council. Committee membership is not limited to Council members, thus allowing for both wider representation from the membership and receipt of specialist external advice where appropriate.

Standing committees are also empowered to set up sub-committees or their own mechanisms for wider consultation. The terms of reference, delegated powers and membership of sub-committees are normally set by the parent committee. The standing committees as of 31 December 2018 were:

- Audit & Risk Committee
- Awards Committee
- Diversity & Inclusion Committee
- Disciplinary Committee (ad hoc)
- Education Committee
- Honorary Fellows Committee
- Membership Committee
- Nominations Committee
- Remuneration Committee
- Resources Committee
- Science & Innovation Committee
- Senior Officers' Committee

## Management and staffing

The day-to-day management of the Institute and its activities is delegated to the group's Chief Executive Officer (CEO), supported by a senior management team known as the Executive Board and the Managing Directors of the Institute's subsidiary companies. Overall, across the group, the CEO leads a staff that at 31 December 2018 totalled 556.

The day-to-day management of publishing activities is delegated to the Managing Director of IOP Publishing Ltd, one of the Institute's subsidiary companies. IOP Publishing Ltd has its own board of directors and several international subsidiary companies that support the delivery of the Institute's publishing programme. The day-to-day management

of IOP Enterprises Ltd is delegated to the Managing Director of IOP Enterprises. IOP Enterprises Ltd also has its own board of directors. The Institute's senior management team in 2018 was:

### Group Chief Executive Officer

Professor Paul Hardaker FInstP  
FRMetS CMet

### Chief Financial Officer

Michael Bray FCMA

### Chief Operating Officer

Rachel Youngman

### Director, Policy & Public Affairs

Tony McBride

### Managing Director, IOP Publishing Ltd

Steven Hall

## Our commitment to diversity and inclusion

Integrity and openness are at the heart of everything that we do. We believe firmly in equality of opportunity for all, confronting barriers to inclusiveness and participation wherever we encounter them. These core values are an expression of what we believe in and how we behave as an organisation.

Our diversity programme has four strategic goals which link directly to the Institute's wider strategy:

- Championing diversity and inclusion across the STEM community
- Building capacity on diversity and inclusion within the Institute's activities and governance
- Promoting wider participation in physics education and careers at all levels
- Ensuring we have an inclusive working environment where all staff respect and value each other

We evaluate how we implement our diversity policies through our Diversity & Inclusion Committee, which reports directly to the Council. The Institute was amongst the first signatories of the Royal Academy of Engineering Diversity Concordat and the Science Council Declaration on Diversity, Equality and Inclusion and we continue to take a visible role in delivering on our commitments. We recognise that we need to ensure that there are no barriers to participation in any of our activities. We build partnerships internally to work with our own colleagues and members to ensure that all that we deliver is truly inclusive.

Over the last decade we have built a robust and substantial evidence base to inform our programme of work across gender, ethnicity, disability and socio-economic background. We have delivered projects and publications that continue to lead the way in spreading good practice and making a significant contribution to the body of research available to the STEM community.

### **Annual General Meeting**

Each year the Institute holds an Annual General Meeting, the rules of which are set out in the bylaws and regulations, at which all members are entitled to attend and vote. Membership fees, any changes to the bylaws and the appointment of the auditors are approved by the membership at the Annual General Meeting.

### **Risk management**

The Executive team are responsible for ensuring that proper arrangements are in place for adequate risk management and control. The Audit & Risk Committee provides an assurance role to Council on these matters and has the following remit to:

- Review major areas of risk for the Institute and its subsidiary companies and ensure processes exist to manage risk in these areas
- Ensure risk management, internal audit and external audit processes are administered effectively
- Highlight any areas of high risk and/or any anomalies brought to light through the audit process
- Be available to whistle blowers regarding risk areas or audit anomalies who are not satisfied with the outcomes of the normal management processes

The Institute maintains a register of significant risks and maintains systems to control and manage them. The Audit & Risk Committee reviews the risk register along with the plans and processes in place to manage and mitigate major risks. The Council receives a report from the Audit & Risk Committee after each of its meetings along with a risk management report. Our key risks for the year and the related mitigation strategies are set out below.

## Main risks, potential consequences and mitigations

Risk description	Risk consequence	Further to current controls, actions to mitigate
Not able to achieve our income diversification targets set by Council.	Unable to support full strategy with potential funding shortfall.	The Business Development Group regularly reviews the performance of the funding pipeline against the target and reviews the range of funders and the suitability of this income.
Delays with the King's Cross building resulting in additional costs and limitations on the London events programme.	Delayed occupation and the impact that would have on the events scheduled for autumn 2018.	<p>Clear contractual terms in place, with identified penalty clauses.</p> <p>Escrow agreement in place from which funds can be drawn if problems occur with party-walls.</p> <p>Monthly project board meetings which include regular and significant review of work packages with contractors, and cashflow and financial contingency planning.</p> <p><i>This risk was resolved during the year with the completion of the building project on time and to budget.</i></p>
Imposition of open access mandates which are financially unsustainable for learned society publishers.	Reduction in charity Gift Aid to IOP.	<p>Engage with funders, institutions and researchers to ensure that open access publication can continue to grow, while enabling rigorous peer review and fast and effective services to authors and readers.</p> <p>Continue to invest in open access publications and institutional open access agreements.</p>
Government funding for our education work currently comes to an end in March 2019.	The Stimulating Physics Network funds a large slice of our Education work. Without this income our activity in this area would not continue.	<p>The new Professional Practice Group will embed physics teacher CPD into schools to make it more sustainable and less dependent on a single funding source.</p> <p>This remains a priority for our fundraising programme.</p>
Failure to adequately manage succession planning.	Loss of institutional knowledge and expertise leading to inefficient management of the Institute.	<p>The Executive team have created a new role of Head of People &amp; Organisational Development. This role will have responsibility for succession planning as an integrated part of our people development plan.</p> <p>A management development training programme is underway with support from external development coaches.</p>

### Gender-pay gap reporting

The Equality Act 2010 (Gender Pay Gap Information) Regulations 2017 for private and voluntary-sector employers came into force in April 2017. The Institute has made a commitment to addressing diversity within the physics community as well as ensuring the success of our work relies on its ability to recruit, nurture and retain the richest mix of talent. There are a number of internal mechanisms the Institute uses to support the achievement of balance in the workforce. All jobs are evaluated through a non-gender influenced job evaluation process by a group of trained in-house assessors.

Within the Institute there is a statutory requirement for IOP Publishing Ltd to make a gender pay gap declaration. In IOP Publishing, on the snapshot date of 5 April 2018, women earned 84p for every £1 that men earned when comparing median hourly wages. Women's median hourly wage is 15.5% lower than men's. When comparing mean hourly wages, women's mean hourly wage is 18.9% lower than men's.

	Mean	Median
<b>Female</b>	£17.23	£15.72
<b>Male</b>	£21.26	£18.60
<b>Pay gap</b>	18.9%	15.5%

The IOP does not have a statutory requirement to report on gender pay, but as part of our commitment to gender equality, we have undertaken the assessment and will make a voluntary declaration. The average hourly rate in April 2018 was 4.9% lower for women based on mean hourly earnings and 6.3% lower based on median hourly earnings.

	Mean	Median
<b>Female</b>	£20.12	£19.79
<b>Male</b>	£21.16	£21.12
<b>Pay gap</b>	4.9%	6.3%

### Slavery and human trafficking

The Institute is committed to prohibiting modern slavery and human trafficking in any part of our businesses, including in our supply chains. The Institute has a diverse supply chain, including suppliers of IT, print and editorial services, office equipment, catering services, and accommodation and venue facilities.

Our Anti-Slavery and Human Trafficking Policy reflects our commitment to acting ethically and with integrity in all of our business relationships and to implementing and enforcing effective systems and controls to prohibit slavery and human trafficking in our supply chains and business. We have a zero tolerance approach to slavery and human trafficking. To ensure that those companies in our supply chains comply with these values, we require that all relevant suppliers are issued with, and agree to comply with, our Anti-Slavery and Human Trafficking Policy and that appropriate obligations are included in our contracts with them. These obligations allow us to secure assurances that those suppliers have appropriate measures in place in relation to their own business and supply chains and commit to complying with all relevant legislation and codes of practice.

Our full anti-slavery and human trafficking statement can viewed at [www.iop.org](http://www.iop.org).

---

# Our subsidiaries

The Institute has nine subsidiary companies, of which eight currently carry out trading on its behalf. To ensure clarity and appropriate governance, there are a number of agreements in place that define and describe the provision of inter-group services.

There are three main subsidiary companies:

## **IOP Publishing Ltd (commonly known as IOPP)**

IOPP is a wholly owned subsidiary of the Institute and has its registered office at Temple Circus in Bristol. The principal activity of IOPP is the publication and distribution of high-quality scientific journals, books, conference proceedings and magazines.

## **IOP Publishing Inc**

IOP Publishing Inc is a not-for-profit corporation of which the Institute is the sole corporate member. It is incorporated in the USA with its principal place of business at 190 North Independence Mall West, Suite 601, Philadelphia. The principal activity of IOP Publishing Inc is the sale and distribution of scientific journals and magazines.

## **IOP Enterprises Ltd (commonly known as IOPE)**

IOPE is a wholly owned subsidiary of the Institute and has its registered office at the Institute's headquarters in London. Its principal activity is to promote the use of the events and to organise exhibitions, courses and conferences.

Two of these companies have second-tier subsidiary companies of their own:

### *IOP Business Publishing Inc (a subsidiary of IOP Publishing Inc)*

IOP Business Publishing Inc is a wholly owned subsidiary of IOP Publishing Inc. It is incorporated in the USA with its principal place of business at 190 North Independence Mall West, Suite 601, Philadelphia. The principal activity of IOP Business Publishing Inc is to provide advertising-sales services.

### *IOP Educational Publishing Ltd (a subsidiary of IOP Publishing Ltd)*

IOP Educational Publishing Ltd is a wholly owned subsidiary of IOP Publishing Ltd and has its registered office at Temple Circus in Bristol. The company is currently dormant and is not trading.

### *IOP Publishing Consultants (Beijing) Co. Ltd (a subsidiary of IOP Publishing Ltd)*

IOP Publishing Consultants (Beijing) Co. Ltd is a wholly owned subsidiary of IOP Publishing Ltd with its registered office at Room 1804, The Exchange Beijing, B-118 Jianguo Road, Chaoyang District, Beijing 100022, China. The principal activity of IOP Publishing Consultants (Beijing) Co. Ltd is to provide services to IOP Publishing Ltd, including publishing consulting, electronic technology consulting, business consulting, market information consulting and corporate management consulting.

### *Turpion Ltd (a subsidiary of IOP Publishing Ltd)*

Turpion Ltd is a wholly owned subsidiary of IOP Publishing Ltd with its registered office at Temple Circus in Bristol. The principal activity of Turpion Ltd is publishing English translations of leading Russian scientific journals. Additionally, Turpion Ltd has a wholly-owned subsidiary in Russia – Turpion-Moscow Ltd.

### *IOP Marketing and Promotion Services Private Ltd (a subsidiary of IOP and IOP Publishing Ltd)*

IOP Marketing and Promotion Services Private Ltd is 99.9% owned by IOP Publishing Ltd with the remaining 0.01% of share capital owned by IOP. The company was incorporated in India in January 2016, with its registered office at SF-6, Golden Enclave, 184 P H Road, Chennai, India. The principal activity of the company is promotion and marketing services to IOP Publishing Ltd.

# Financial review

## Financial statements

The financial statements for the year ended 31 December 2018 are set out on pages 47 to 75. They were prepared by applying accounting policies in accordance with UK Generally Accepted Accounting Practice, and comply with the Statement of Recommended Practice, Accounting and Reporting by Charities SORP (FRS 102).

## Financial review

Some 87% (2017: 73%) of the group's incoming resources are generated from the activities of its trading subsidiary, IOP Publishing Ltd. Other sources of income include income from members either as membership fees or for additional services and grants from government and other grant-awarding bodies.

Total incoming resources in the year for the group were £72.3m (2017: £65.8m), an increase of £6.5m or 10% on 2017. Discovery income increased by £3.4m on 2017 to £60.6m, with a strong 2018 for IOP Publishing Ltd despite continuing challenges in certain academic library markets. Donations and legacies increased to £2.8m in 2018 primarily from the donation of Professor Dame Jocelyn Bell Burnell's award prize in the year. Income from other charitable activities remained broadly flat against 2017, with Education income increasing by £0.7m to £4.4m in 2018, due to a full year of the Future Physics Leaders project.

Further commentary on the activities of IOP Publishing Ltd is shown below.

Total resources expended have increased in the year, primarily due to an increase in Discovery and Education expenditure. Total expenditure for the group was £65.0m (2017: £59.2m), an increase of £5.8m or 10%.

Further details are included in the Consolidated Statement of Financial Activities on page 47. The Institute's balance sheet is included on page 49. The Institute considers incoming resources, Gift Aid remitted from its subsidiaries and expenditure to be key performance indicators.

Debtors have increased from £12.2m to £15.2m at 31 December 2018, primarily due to the equivalent increase in debtors within IOP Publishing Ltd. This is a result of the timing of sales.

Deferred revenue remains a key balance and has increased by £2.2m to £14.6m (2017: £12.4m), driven by the timing of cash transactions. Deferred membership renewals for 2019 within the Institute have remained flat to 2018.

The cash and short-term investment position remains strong, with a decrease from £17.0m at 31 December 2017 to £15.1m at 31 December 2018 representing a healthy cash balance considering the investment the Institute has made in the new building in King's Cross. Further details on capital additions are given in note 15.

Purchases of fixed assets and intangible assets made during the year totalled £12.4m and mainly related to spend in respect of the new office at King's Cross. This expenditure was funded by cash generated from operating activities of £2.7m, together with the sale of £10.7m of current investments. We continue to use our operating surplus, alongside careful cash management, to meet the ongoing liabilities of the Institute.

The Institute's defined benefit pension deficit decreased by £13.2m to £5.4m (2017: £18.6m), as assets in the Institute of Physics Retirement Benefit Plan (1975) grew by £2.7m and the estimated present value of liabilities decreased by £10.6m to £89.8m.

The scheme's last triennial revaluation was at 31 December 2016 and a deficit elimination plan was agreed at that time with the scheme's trustees. The next triennial revaluation will be undertaken as at 31 December 2019. Further details are given in note 23 of the financial statements.

The trustees have concluded that the group is a going concern and these financial statements have therefore been prepared on that basis. The strong performance of the group in 2018 and the positive net asset position at the end of 2018, excluding the defined-benefit pension deficit, support the trustees' conclusion.

### Trading subsidiaries

#### IOP Publishing Ltd (IOPP)

The turnover for the year to 31 December 2018 was £62.6m (2017: £58.7m) which reflects an increase on 2017 driven by the continued growth in our core journals business. IOP Publishing Ltd (IOPP) has no irrevocable commitment at 31 December 2018 to make a gift aid payment to the Institute of Physics, the ultimate controlling entity (2017: £14.2m). As the publishing arm of the Institute, IOPP's role is to provide high-quality publishing services to the global scientific community, helping researchers to communicate their work effectively. IOPP also gift aids its net distributable profit to the Institute, enabling the latter to fulfil its wider mission.

#### IOP Enterprises Ltd (IOPE)

There was no turnover for the year ending 31 December 2018 (2017: £90k). This is as a result of the Institute vacating 76 Portland Place in March 2014 ahead of the move to new premises in 2018, the trading activities of IOPE have therefore ceased because of reduced space available for rental.

### Reserves and investment

The Charter and Bylaws confer power on the Institute to maintain income reserves. The Council reviews at least annually both the Institute's continuing need for reserves and their appropriate level. The reserves policy set out below is based on, and is consistent with, guidelines on the subject issued by the Charity Commission.

The strategic reasons for the Institute to retain reserves, rather than simply spend all of its income as it arises, are, as stated in its Investment Policy:

- To be able to make short- and medium-term expenditure commitments without the risk of short-term fluctuations in income forcing reduction in, or cancellation of, planned activity
- To reduce the level of dependence on income from publishing
- In the event of a material and sustained fall in income from other sources, to provide sufficient reserves to enable the Institute to make the changes in its organisation and activities necessary to respond to this in an orderly and planned way

The overall investment objectives of the Institute are to achieve a minimum net total return of 12 month LIBOR (London Interbank Offered Rate) +3.5%, after payment of fees over rolling three-year periods, using a diversified strategic asset allocation approach to minimise the risk for this level of return.

During the year, the investment portfolio held by the Institute generated an unrealised loss to the group of £1.0m and a realised loss of £0.1m (2017: unrealised loss of £0.1m). The Institute actively manages its investment portfolio and divested net £7.1m from investments during the year decreasing the total market value of investments held by the Group from £28.9m as at 31 December 2017 to £20.6m as at 31 December 2018.

After a review in 2014, the Council has considered the level of reserves appropriate to meet the above purposes and has determined that total free reserves should ideally be of the order of one and a half to two years of planned expenditure, excluding projects funded by external grants or fees (on the basis that fee-based activities such as conferences would not continue if no attendees were attracted).

Free reserves are the carrying balance of the additional sums set aside from the operational surplus of the group each year as an investment of cash in a balanced portfolio of assets balancing risk and reward in accordance with the requirements of the Institute.

The required level of reserves on 31 December 2018 based on the current long-term plan, as modified by the 2018 budget, is between approximately £17.0m – 22.7m (2017: £16.9m – 22.5m). The current level of free reserves as represented by the Institute's investments is £20.6m (2017: £28.9m), which is deemed appropriate given the Institute's commitments over the following 12 months.

The balances on the individual funds of the Institute at 31 December 2018 are considered adequate to meet their respective commitments.

### **Ethical investment policy**

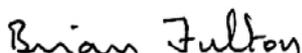
The Institute is a charity established with the objective of promoting the advancement and dissemination of a knowledge of, and education in, the science of physics, both pure and applied.

The trustees would not want the investment decisions of the Institute to result in activities that compromise this objective. In the event that the trustees consider that any particular classes of investment choices conflict with this objective, they will provide a written list of such classes, or specific investments, to the investment managers and will require them to take such steps as are practicable and cost-effective so as not to invest in these areas.

### **Auditors**

All of the current trustees have taken all of the steps necessary to make themselves aware of any information needed by the charity's auditors for the purpose of their audit and to establish that the auditors are aware of that information. The trustees are not aware of any relevant audit information of which the auditors are unaware.

By order of Council



**Professor Brian Fulton FInstP CPhys**  
Honorary Secretary



**Professor Julian Jones OBE FRSE FInstP CPhys**  
Honorary Treasurer

**It is the IOP's support for innovation that makes it so important for me. If you are interested in bringing new technologies to market, you can be sure the IOP will offer the professional support and trusted guidance that is essential when running a business.**

Arnab, Fellow



---

# Independent auditors' report to the trustees of the Institute of Physics

## Report on the audit of the financial statements

### Opinion

In our opinion, the Institute of Physics' group financial statements and parent charity financial statements ("the financial statements"):

- Give a true and fair view of the state of the group's and of the parent charity's affairs as at 31 December 2018 and of the group's and parent charity's incoming resources and application of resources, and of the group's cash flows, for the year then ended;
- Have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland", and applicable law); and
- Have been prepared in accordance with the requirements of the Charities Act 2011 and Regulation 15 of The Charities (Accounts and Reports) Regulations 2008.

We have audited the financial statements, included within the Annual Report (the "Annual Report"), which comprise: the group and parent charity Balance Sheets as at 31 December 2018; the Consolidated Statement of Financial Activities incorporating a consolidated income and expenditure account; the parent Charity Statement of Financial Activities incorporating an income and expenditure account; and the Consolidated Statement of Cash Flows for the year then ended; and the notes to the financial statements, which include a description of the significant accounting policies.

### Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)") and applicable law.

Our responsibilities under ISAs (UK) are further described in the Auditors' responsibilities for the audit of the financial statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### Independence

We remained independent of the group in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, which includes the FRC's Ethical Standard and we have fulfilled our other ethical responsibilities in accordance with these requirements.

### Conclusions relating to going concern

ISAs (UK) require us to report to you when:

- The trustees' use of the going concern basis of accounting in the preparation of the financial statements is not appropriate; or
- The trustees have not disclosed in the financial statements any identified material uncertainties that may cast significant doubt about the group's and parent charity's ability to continue to adopt the going concern basis of accounting for a period of at least twelve months from the date when the financial statements are authorised for issue.

We have nothing to report in respect of the above matters. However, because not all future events or conditions can be predicted, this statement is not a guarantee as to the group's and parent charity's ability to continue as a going concern. For example, the terms on which the United Kingdom may withdraw from the European Union are not clear, and it is difficult to evaluate all of the potential implications on the group or parent charity's trade, customers, suppliers and the wider economy.

### **Reporting on other information**

The other information comprises all of the information in the Annual Report other than the financial statements and our auditors' report thereon. The trustees are responsible for the other information. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or any form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report based on these responsibilities.

Based on the responsibilities described above and our work undertaken in the course of the audit, ISAs (UK) require us also to report certain opinions and matters as described below.

### **Trustees' Report**

Under the Charities Act 2011 we are required to report to you if, in our opinion the information given in the Trustees' Annual Report is inconsistent in any material respect with the financial statements. We have no exceptions to report arising from this responsibility.

## **Responsibilities for the financial statements and the audit**

### **Responsibilities of the Trustees for the financial statements**

As explained more fully in the Statement of Trustees' Responsibilities set out on page 32, the trustees are responsible for the preparation of the financial statements in accordance with the applicable framework and for being satisfied that they give a true and fair view. The trustees are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the trustees are responsible for assessing the group's and parent charity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the trustees either intend to liquidate the group and parent charity or to cease operations, or have no realistic alternative but to do so.

### **Auditors' responsibilities for the audit of the financial statements**

We are eligible to act and have been appointed as auditors under section 144 of the Charities Act 2011 and report in accordance with the Act and relevant regulations made or having effect thereunder.

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: [www.frc.org.uk/auditorsresponsibilities](http://www.frc.org.uk/auditorsresponsibilities). This description forms part of our auditors' report.

#### **Use of this report**

This report, including the opinions, has been prepared for and only for the charity's trustees as a body in accordance with section 151 of the Charities Act 2011 and regulations made under section 154 of that Act (Part 4 of The Charities (Accounts and Reports) Regulations 2008) and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

#### **Other required reporting**

##### **Charities Act 2011 exception reporting**

Under the Charities Act 2011 we are required to report to you if, in our opinion:

- We have not received all the information and explanations we require for our audit; or
- Sufficient accounting records have not been kept by the parent charity; or
- The parent charity financial statements are not in agreement with the accounting records and returns.

We have no exceptions to report arising from this responsibility.



##### **PricewaterhouseCoopers LLP**

Chartered Accountants and  
Statutory Auditors Bristol  
24 July 2019

## Consolidated Statement of Financial Activities incorporating a consolidated income and expenditure account for the year ended 31 December 2018

		2018	2018	2018	2017
	Note	Restricted	Unrestricted	Total	Total
		£'000	£'000	£'000	£'000
<b>Income from:</b>					
Donations and legacies	3	2,328	437	2,765	19
Charitable activities:					
Community		-	1,964	1,964	2,150
Discovery		8	60,640	60,648	57,204
Economy		-	8	8	-
Education		432	3,967	4,399	3,698
Society		34	91	125	188
Other trading activities		-	1,845	1,845	1,734
Investments	6	-	551	551	840
Total income	3 & 5	2,802	69,503	72,305	65,833
<b>Expenditure on:</b>					
Raising funds		-	(134)	(134)	(173)
Charitable activities:					
Community	7	-	(4,494)	(4,494)	(3,665)
Discovery	7	(3)	(47,806)	(47,809)	(45,482)
Economy	7	-	(459)	(459)	(423)
Education	7	(753)	(8,402)	(9,155)	(7,278)
Society	7	(37)	(1,072)	(1,109)	(1,180)
Other		-	(1,858)	(1,858)	(951)
Total expenditure	4	(793)	(64,225)	(65,018)	(59,152)
Net losses on investments	17	-	(1,191)	(1,191)	(78)
<b>Net income</b>		2,009	4,087	6,096	6,603
<b>Other recognised gains / (losses)</b>					
Actuarial gains on defined benefit pension scheme	23	-	7,857	7,857	11,855
Exchange difference on retranslation of net assets of subsidiary undertakings		-	233	233	(295)
<b>Net movement in funds</b>		2,009	12,177	14,186	18,163
Fund balances brought forward		834	41,057	41,891	23,728
<b>Fund balances carried forward</b>	22	2,843	53,234	56,077	41,891

The Statement of Financial Activities includes all gains and losses recognised in the year. All amounts relate to continuing activities. The notes on pages 51 to 75 form part of these financial statements.

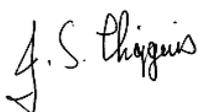
## Charity Statement of Financial Activities incorporating an income and expenditure account for the year ended 31 December 2018

		2018	2018	2018	2017
	Note	Restricted	Unrestricted	Total	Total
		£'000	£'000	£'000	£'000
<b>Income from:</b>					
Donations and legacies	<b>3</b>	2,328	437	<b>2,765</b>	19
Charitable activities:					
Community		-	1,964	<b>1,964</b>	2,150
Discovery		8	1,061	<b>1,069</b>	15,592
Economy		-	8	<b>8</b>	-
Education		432	3,967	<b>4,399</b>	3,698
Society		34	91	<b>125</b>	188
Other trading activities		-	-	-	30
Investments		-	1,396	<b>1,396</b>	1,671
Total income		2,802	8,924	<b>11,726</b>	23,348
<b>Expenditure on:</b>					
Raising funds		-	(134)	<b>(134)</b>	(173)
Charitable activities:					
Community		-	(4,580)	<b>(4,580)</b>	(3,758)
Discovery		(3)	(3,209)	<b>(3,212)</b>	(3,343)
Economy		-	(467)	<b>(467)</b>	(434)
Education		(753)	(8,552)	<b>(9,305)</b>	(7,451)
Society		(37)	(1,091)	<b>(1,128)</b>	(1,209)
Other		-	(1,858)	<b>(1,858)</b>	(951)
Total expenditure		(793)	(19,891)	<b>(20,684)</b>	(17,319)
Net losses on investments	<b>17</b>	-	(1,191)	<b>(1,191)</b>	(78)
<b>Net income / (expenditure)</b>		2,009	(12,158)	<b>(10,149)</b>	5,951
<b>Other recognised gains</b>					
Actuarial gains on defined benefit pension scheme	<b>23</b>	-	7,857	<b>7,857</b>	11,855
<b>Net movement in funds</b>		2,009	(4,301)	<b>(2,292)</b>	17,806
Fund balances brought forward		834	40,283	<b>41,117</b>	23,311
<b>Fund balances carried forward</b>	<b>22</b>	2,843	35,982	<b>38,825</b>	41,117

## Balance Sheet at 31 December 2018

	Note	Group 2018 £'000	Group 2017 £'000	Charity 2018 £'000	Charity 2017 £'000
<b>Fixed assets</b>					
Intangible assets	14	3,049	2,852	-	-
Tangible assets	15	33,574	23,453	32,479	22,269
Investments in subsidiary undertakings	16	-	-	3,001	3,001
Investments	17	20,609	28,945	20,609	28,945
		57,232	55,250	56,089	54,215
<b>Current assets</b>					
Debtors	18	15,180	12,160	1,619	1,824
Cash at bank and in hand		15,133	17,000	5,801	6,662
		30,313	29,160	7,420	8,486
<b>Creditors: amounts falling due within one year</b>	19	(25,330)	(23,170)	(18,546)	(2,235)
<b>Net current assets / (liabilities)</b>		4,983	5,990	(11,126)	6,251
<b>Provisions for liabilities</b>	21	(783)	(760)	(783)	(760)
<b>Defined Benefit Pension scheme deficit</b>	23	(5,355)	(18,589)	(5,355)	(18,589)
<b>Net Assets</b>		56,077	41,891	38,825	41,117
<b>Restricted funds</b>					
Restricted funds	22	2,843	834	2,843	834
<b>Unrestricted funds</b>					
General fund	22	58,589	59,646	41,337	58,872
Pension reserve	23	(5,355)	(18,589)	(5,355)	(18,589)
Total unrestricted funds		53,234	41,057	35,982	40,283
<b>Total charity funds</b>		56,077	41,891	38,825	41,117

These financial statements were approved by Council and authorised for issue on 24 July 2019 and were signed on its behalf by:



**Professor Dame Julia Higgins DBE FRS  
FREng HonFInstP CPhys  
President**



**Professor Julian Jones OBE FRSE FInstP CPhys  
Honorary Treasurer**

The notes on pages 51 to 75 form part of these financial statements.

## Consolidated Statement of Cash Flows for the year ended 31 December 2018

	2018	2017
	£'000	£'000
<b>Cash flows from operating activities</b>		
<b>Net income for the year</b>	<b>6,096</b>	6,603
Adjustments for:		
Depreciation and amortisation of fixed assets and intangible assets	2,083	1,680
Loss on disposal of fixed assets	21	61
Net fair value losses recognised in profit or loss	-	(1,580)
Losses on investments	1,191	78
Net interest receivable	(6)	(19)
Dividend income from fixed and current investments	(471)	(733)
Difference between net pension expense and cash contribution	(5,377)	(693)
(Increase) / decrease in trade and other debtors	(3,020)	1,646
Increase / (decrease) in trade and other creditors	2,160	(4,116)
Increase in provisions	23	22
<b>Net cash provided by operating activities</b>	<b>2,700</b>	<b>2,949</b>
<b>Cash flows from investing activities</b>		
Purchases of fixed assets and intangible assets	(12,422)	(6,086)
Interest received	6	19
Dividends received on fixed and current asset investments	471	733
Purchase of current asset investments	(3,600)	(14,300)
Sale of current asset investments	10,745	9,727
<b>Net cash used in investing activities</b>	<b>(4,800)</b>	<b>(9,907)</b>
<b>Net decrease in cash and cash equivalents</b>	<b>(2,100)</b>	<b>(6,958)</b>
Cash and cash equivalents at beginning of year	17,000	24,253
Foreign exchange gains / (losses)	233	(295)
<b>Cash and cash equivalents at end of year</b>	<b>15,133</b>	<b>17,000</b>
<b>Cash and cash equivalents comprise</b>		
Cash at bank and in hand	15,133	17,000
	<b>15,133</b>	<b>17,000</b>

The notes on pages 51 to 75 form part of these financial statements.

## Notes forming part of the financial statements for the year ended 31 December 2018

### 1. Accounting policies

The Institute of Physics is a corporate body governed by a Royal Charter and bylaws. It was established in its current form by Royal Charter dated 17 September 1970. The Royal Charter is supplemented by bylaws and regulations.

The Institute is a charity registered in both England & Wales (no. 293851) and in Scotland (no. SC040092). The members of Council are the trustees of the Charity. The Institute's registered office is 37 Caledonian Road, London N1 9BU.

The Institute of Physics is a Public Benefit Entity under FRS 102. The financial statements have been prepared in accordance with applicable charity law and in accordance with FRS 102 "The Financial Reporting Standard applicable in the United Kingdom and Republic of Ireland" ("FRS 102"), and with Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their financial statements in accordance with FRS 102 (effective 1 January 2015) ("Charities SORP FRS 102").

The financial statements have been prepared on the historical cost basis except for the modification to a fair value basis for certain investments, investment properties and financial instruments as specified in the accounting policies below.

The preparation of financial statements in compliance with FRS 102 requires the use of certain critical accounting estimates. It also requires the Group's management to exercise judgement in applying the Group's accounting policies (see note 2).

#### Going concern

Trustees continue to monitor the principal markets in which it operates and they have prepared forecasts and projections for the charity. These projections demonstrate the charity's ability to meet its obligations as they fall due. The Trustees therefore consider it appropriate to prepare the financial statements on a going concern basis.

#### Parent entity disclosure exemptions

In preparing the individual financial statements of the Institute of Physics advantage has been taken of the following disclosure exemption available in FRS 102:

- No cash flow statement has been prepared for the parent charity; and
- No disclosure has been given for the aggregate remuneration of the key management personnel of the parent charity because their remuneration is included in the totals for the group as a whole.

#### Basis of consolidation

The consolidated financial statements incorporate the results of the Institute of Physics and all its subsidiary undertakings as at 31 December 2018 using the acquisition method of accounting. Under this method, the results of subsidiary undertakings acquired or disposed of during the year are included in the consolidated Statement of Financial Activities from the effective date of acquisition or up to the effective date of disposal. All intra-group transactions, balances, income and expenses are eliminated in full on consolidation.

The consolidated financial statements incorporate the results of business combinations using the purchase method. In the Statement of Financial Position, the acquiree's identifiable assets and liabilities are initially recognised at their fair values at the acquisition date. The results of acquired operations are included in the consolidated Statement of Financial Activities from the date on which control is gained.

The Institute of Physics has a network of member-led branches. The income and expenditure of these branches is accounted for as part of the charity's own financial statements.

#### Business combinations

Acquisitions of subsidiaries and businesses are accounted for using the purchase method.

## 1. Accounting policies (continued)

The cost of the business combination is measured at the aggregate of the fair values at the date of exchange of assets given, liabilities incurred or assumed, and equity instruments issued by the group in exchange for control of the acquiree plus costs directly attributable to the business combination. Any excess of the cost of the business combination over the fair value of the identifiable assets and liabilities is recognised as goodwill.

### Income

Membership income is recognised when received and attributed to the financial years to which it relates. Sundry income is recognised when received. Income from production of in-house and external partner journals with a majority of the income received in advance is recognised in line with the fair value of content delivered. Other income streams include fees received for publishing articles, ebooks and advertising recognised upon publication, sales of access to historic archives recognised upon invoice, when permanent access is granted and contract management fees recognised on invoice.

### Gift aid income

The Institute of Physics receives payments from its subsidiaries under the gift aid scheme. Gift aid income is recognised in the charity's Statement of Financial Activities when the subsidiary has made an irrecoverable commitment to pay the taxable profits to the charity. The charity previously had a gift aid covenant in place with IOP Publishing Ltd (IOPP). As there was a legal obligation in place for IOPP to make the gift aid payment, it was recognised in the charity in the year that the profit arose. At the reporting date there was no legal obligation in place for IOPP to make this payment. The payment is, however, expected to be made within nine months of the end of the reporting date.

### Government grants receivable

Grants are accounted for under the accruals model as permitted by FRS 102. Grants of a revenue nature are recognised in the Statement of Financial Activities in the same period as the related expenditure.

### Resources expended

All expenditure is accounted for on an accruals basis and has been classified under headings that aggregate all costs related to the relevant category. Where costs cannot be directly attributed to particular headings they have been allocated to activities on a basis consistent with use of the resources.

Support costs are those functions that assist the work of the charity but do not directly undertake charitable activities. Support costs include general management, payroll administration, information technology, human resources, financing and governance costs. These costs are allocated across the expenditure on charitable activities. The basis of the cost allocation has been explained in note 8 to the financial statements.

### Intangible fixed assets – goodwill

Goodwill represents the excess of the cost of a business combination over the fair value of the group's share of the net identifiable assets of the acquired subsidiary at the date of acquisition. Goodwill on acquisition of subsidiaries is included in Intangible assets. Goodwill is carried at cost less accumulated amortisation and accumulated impairment losses. Goodwill amortisation is calculated by applying the straight-line method to its estimated useful life as follows:

- Goodwill on acquisition of subsidiaries:  
5 years

### Intangible fixed assets – software

Internally generated software assets are stated at cost and depreciated over four years.

### Tangible fixed assets

Tangible fixed assets are stated at cost or valuation, net of depreciation and any provision for impairment.

Assets with a value of less than £500 are not capitalised.

## 1. Accounting policies (continued)

### Depreciation

Depreciation is provided to write off the cost or valuation less the estimated residual value of tangible fixed assets by equal instalments over their estimated useful economic lives as follows:

- Freehold property: 25 years
- Office machinery: 4–5 years
- Fixtures and fittings: 4–10 years
- Computers: 3–4 years

The value of leasehold property is amortised over the remaining periods of the relevant leases.

Temple Circus, Bristol (expires 2021)

### Investment properties

Investment properties owned by the group are held at fair value, which is determined annually and is derived from current market rents, investment property yields and published capital value growth indices of comparable real estate. Changes in fair value of investment properties are recognised in profit or loss, within 'Other recognised gains/losses' in the Statement of Financial Activities.

No depreciation is provided on investment properties.

### Valuation of investments

Investments in subsidiaries are measured at cost less accumulated impairment in the individual charity financial statements.

Other investments in listed company shares are included in the balance sheet at the market value of the individual unitised holdings. Gains and losses are recognised in profit or loss, within 'Net income/expenditure' in the Statement of Financial Activities.

### Debtors

Trade and other debtors are recognised at transaction price, less any impairment. Prepayments are valued at the amount prepaid net of any trade discounts due.

### Liquid resources

For the purposes of the cash flow statement, liquid resources are defined as current asset investments, which is cash held in short term deposit accounts for investment purposes. These are not considered to be cash because they are not accessible penalty free within one working day.

### Cash

Cash includes cash in hand and deposits repayable on demand with any qualifying institution less overdrafts from any qualifying financial institution repayable on demand. Deposits are repayable on demand if they can be withdrawn at any time without notice and without penalty, or if a maturity or period of notice of not more than 24 hours or one working day has been agreed. Cash includes deposits denominated in foreign currencies.

### Creditors

Short term trade creditors are measured at the transaction price. Other financial liabilities are measured initially at amortised cost and subsequently at amortised cost less impairment.

### Provisions

Provisions are recognised when the group has a present obligation, legal or constructive, as a result of a past event, it is probable that the group will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The group recognises a provision for annual leave accrued by employees as a result of services rendered in the current period, and which employees are entitled to carry forward and use in the following financial year. The provision is measured at the undiscounted salary cost payable for the period of absence that has been accrued.

### Financial instruments

Financial instruments are classified and accounted for according to the substance of the contractual arrangement, as financial assets, financial liabilities or equity instruments.

## 1. Accounting policies (continued)

An equity instrument is any contract that evidences a residual interest in an asset of the company after deducting all of its liabilities. Financial instruments are measured at amortised cost or fair value depending on the nature of the underlying arrangement.

### Derivative financial instruments

Derivative financial instruments are recognised at fair value with any gains or losses being recognised in profit or loss, within 'Net income/expenditure' in the Statement of Financial Activities.

### Fund accounting

General funds are unrestricted funds which are available for use at the discretion of the trustees in furtherance of the objectives of the charity and which have not been designated for other purposes.

Restricted funds are funds which are to be used in accordance with specific restrictions imposed by the donors.

### Pension costs – Institute of Physics Retirement Benefits Plan 1975

The Institute operates the Institute of Physics Retirement Benefits Plan 1975 providing pension benefits based on final pensionable pay. This scheme was closed to new members on 31 December 2001. The assets of the scheme are held separately from those of the group in an independently administered fund. This defined benefit scheme is accounted for in accordance with FRS 102. The service cost of pension provision relating to the year, together with the cost of any benefits relating to past service if the benefits have vested, is charged to the Statement of Financial Activities. A charge equal to the increase in the present value of the scheme liabilities (because the benefits are closer to settlement) and a credit equivalent to the group's long term expected return on assets (based on the market value of the scheme assets at the start of the year), are also included in the Statement of Financial Activities.

The difference between the market value of the assets of the scheme and the present value of the accrued pension liabilities is shown as an asset or liability on the balance sheet. Any differences between the actual and expected return on assets during the year are recognised in the Statement of Financial Activities along with differences arising from experience or assumption changes. The defined benefit pension expense recognised in the Statement of Financial Activities is allocated to expenditure on charitable activities in proportion with the expenditure on these activities. The defined benefit pension expense is recognised in unrestricted funds.

### Pension costs – Institute of Physics Group Personal Pension Schemes

The group operates two group personal pension schemes. They are both defined contribution pension schemes with assets held in the names of the individual members.

The first was established from 1 January 2002 and is managed by Aviva. This scheme closed to new members on 31 January 2014. For those members of staff who are members of this scheme, the Institute contributes 2-18% of basic salary.

The second was established from 1 February 2014 and is managed by Aviva. For those members of staff who choose to join the scheme the Institute contributes 2-12% of basic salary.

Contributions to the group's defined contribution pension schemes are charged to the Statement of Financial Activities in the year in which they become payable.

### Foreign currencies

*Functional currency and presentation currency*  
The individual financial statements of each group entity are presented in the currency of the primary economic environment in which the entity operates (the 'functional currency'). The consolidated financial statements are presented in Sterling, which is the charity's and the group's presentation currency.

## 1. Accounting policies (continued)

### *Transactions and balances*

In preparing the financial statements of the individual entities, transactions in currencies other than the functional currency of the individual entity are recognised at the spot rate at the dates of the transactions or at an average rate where this rate approximates the actual rate at the date of the transaction. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated. Foreign exchange differences that arise are recognised in profit or loss, within 'Net income/ expenditure' in the Statement of Financial Activities.

### *Translation of group companies*

For the purpose of presenting consolidated financial statements, the assets and liabilities of the group's foreign operations are translated from their functional currency to Sterling using the exchange rate ruling on the balance sheet date. Income and expenses are translated using an average rate for the period, unless exchange rates fluctuated significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising on translation of group companies are recognised within 'Other recognised gains/losses' in the Statement of Financial Activities.

### **Operating leases**

Rentals payable under operating leases are charged to the Statement of Financial Activities on a straight-line basis over the terms of the leases.

Rental income receivable under operating leases with a third party is recognised in the Statement of Financial Activities on a straight-line basis over the terms of the leases.

The group has taken advantage of the transitional relief available for lease incentives, such that where a lease commenced before the date of transition to FRS 102, the remaining benefit of the lease incentive may continue to be recognised in accordance with previous UK GAAP.

## 2. Significant judgements and estimates

Preparation of the financial statements requires the Executive Board and Senior Management Team to make significant judgements and estimates. The items in the financial statements where these judgements and estimates have been made include:

### **Leases**

The key judgement is whether leases entered into by the group either as lessor or lessee are operating leases or finance leases. The conclusion depends on an assessment of whether the risks and rewards of ownership have been transferred from the lessor to the lessee on a lease by lease basis.

### **Investment property**

The investment property is revalued annually. The valuation uses market rental values and yields, but as each property is unique, a certain degree of judgement is required and the value can only reliably be tested in the market itself.

### **Revenue recognition**

Income from production of in-house and external partner journals with a majority of the income received in advance is recognised in line with the fair value of content delivered. Judgement is required in the recognition of revenue where contracts with customers span multiple years.

### **Defined benefit pension scheme valuation**

Valuation of the assets and liabilities of the group defined benefit pension scheme are performed by a professional actuary.

### 3. Income: comparatives by fund

		2018	2018	2018	2017	2017	2017
	Note	Restricted	Unrestricted	Total	Restricted	Unrestricted	Total
		£'000	£'000	£'000	£'000	£'000	£'000
<b>Income from:</b>							
Donations and legacies		2,328	437	<b>2,765</b>	19	-	<b>19</b>
Charitable activities:							
Community		-	1,964	<b>1,964</b>	-	2,150	<b>2,150</b>
Discovery		8	60,640	<b>60,648</b>	60	57,144	<b>57,204</b>
Economy		-	8	<b>8</b>	-	-	<b>-</b>
Education		432	3,967	<b>4,399</b>	600	3,098	<b>3,698</b>
Society		34	91	<b>125</b>	12	176	<b>188</b>
Other trading activities		-	1,845	<b>1,845</b>	-	1,734	<b>1,734</b>
Investments	<b>6</b>	-	551	<b>551</b>	-	840	<b>840</b>
<b>Total income</b>	<b>5</b>	<b>2,802</b>	<b>69,503</b>	<b>72,305</b>	<b>691</b>	<b>65,142</b>	<b>65,833</b>

Included within the donations and legacies figure is the £2.3m donation from Professor Dame Jocelyn Bell Burnell.

### 4. Expenditure: comparatives by fund

		2018	2018	2018	2017	2017	2017
	Note	Restricted	Unrestricted	Total	Restricted	Unrestricted	Total
		£'000	£'000	£'000	£'000	£'000	£'000
<b>Expenditure on:</b>							
Raising funds		-	(134)	<b>(134)</b>	-	(173)	<b>(173)</b>
Charitable activities:							
Community	<b>7</b>	-	(4,494)	<b>(4,494)</b>	-	(3,665)	<b>(3,665)</b>
Discovery	<b>7</b>	(3)	(47,806)	<b>(47,809)</b>	(32)	(45,450)	<b>(45,482)</b>
Economy	<b>7</b>	-	(459)	<b>(459)</b>	-	(423)	<b>(423)</b>
Education	<b>7</b>	(753)	(8,402)	<b>(9,155)</b>	(507)	(6,771)	<b>(7,278)</b>
Society	<b>7</b>	(37)	(1,072)	<b>(1,109)</b>	(33)	(1,147)	<b>(1,180)</b>
Other		-	(1,858)	<b>(1,858)</b>	-	(951)	<b>(951)</b>
<b>Total expenditure</b>		<b>(793)</b>	<b>(64,225)</b>	<b>(65,018)</b>	<b>(572)</b>	<b>(58,580)</b>	<b>(59,152)</b>

## 5. Analysis of incoming resources

	2018	2017
	£'000	£'000
<b>By geographical market</b>		
Europe, Middle East and Africa	<b>30,528</b>	26,571
The Americas	<b>28,188</b>	26,292
Asia Pacific	<b>13,589</b>	12,970
<b>Total</b>	<b>72,305</b>	65,833
<b>By class of business</b>	<b>£'000</b>	£'000
Publishing operations	<b>61,588</b>	57,722
Charitable activities	<b>8,281</b>	5,887
Membership income	<b>1,445</b>	1,365
Other	<b>991</b>	859
<b>Total</b>	<b>72,305</b>	65,833

## 6. Investment income

	2018	2017
	£'000	£'000
Interest from listed investments	<b>471</b>	733
Property rental income	<b>74</b>	88
Interest from cash and short term investments	<b>6</b>	19
<b>Total</b>	<b>551</b>	840

Group investment income of £551k is lower than the Charity's investment income due to the elimination of intercompany rent recharged in respect of Temple Circus.

## 7. Expenditure on charitable activities

	Activities undertaken directly	Grant funding activities	Support costs	2018	2017
	£'000	£'000	£'000	£'000	£'000
Community	1,832	-	2,662	<b>4,494</b>	3,665
Discovery	46,496	-	1,313	<b>47,809</b>	45,482
Economy	155	-	304	<b>459</b>	423
Education	5,846	69	3,240	<b>9,155</b>	7,278
Society	523	-	586	<b>1,109</b>	1,180
<b>Total</b>	<b>54,852</b>	<b>69</b>	<b>8,105</b>	<b>63,026</b>	<b>58,028</b>

Grant funding represents 124 (2017: 151) STFC grants made to schools to help them run physics and astronomy related activities.

## 8. Analysis of governance and support costs

Included within expenditure on charitable activities are governance and support costs amounting to £8,105k (2017: £7,766k). These are analysed as:

	Management costs (directorates and staff)	Central costs (IT, HR, facilities)	Finance costs	2018	2017
	£'000	£'000	£'000	£'000	£'000
Community	1,693	804	165	<b>2,662</b>	2,067
Discovery	745	488	80	<b>1,313</b>	1,362
Economy	205	82	17	<b>304</b>	318
Education	1,435	1,498	307	<b>3,240</b>	3,302
Society	367	182	37	<b>586</b>	717
<b>Total</b>	<b>4,445</b>	<b>3,054</b>	<b>606</b>	<b>8,105</b>	<b>7,766</b>

Analysis of governance costs:

	2018	2017
	£'000	£'000
Fees payable to the charity's auditors for the audit of the charity's annual financial statements	<b>43</b>	30
Fees payable to the charity's auditor for other services:		
The audit of the charity's subsidiaries pursuant to legislation	<b>54</b>	45
Other services	<b>10</b>	15
Other taxation services	<b>66</b>	43
	<b>173</b>	133

## 9. Staff

	2018	2017
	£'000	£'000
Wages and salaries	<b>23,090</b>	21,625
Social security costs	<b>1,975</b>	1,908
Pension costs	<b>2,361</b>	2,313
Redundancy and severance costs	<b>200</b>	427
	<b>27,626</b>	26,273

The number of employees earning more than £60,000 including bonuses (excluding employer pension contributions) per year can be analysed in the following bands:

	2018	2017
£60,000 – £69,999	<b>16</b>	16
£70,000 – £79,999	<b>11</b>	13
£80,000 – £89,999	<b>11</b>	7
£90,000 – £99,999	<b>5</b>	5
£100,000 – £109,999	<b>3</b>	2
£110,000 – £119,999	<b>2</b>	1
£120,000 – £129,999	-	4
£130,000 – £139,999	<b>2</b>	-
£140,000 – £149,999*	<b>2</b>	1
£150,000 – £159,999	<b>2</b>	2
£160,000 – £169,999	<b>1</b>	2
£170,000 – £179,999	<b>1</b>	2
£180,000 – £189,999	-	-
£190,000 – £199,999	<b>1</b>	-
£200,000 – £209,999	<b>1</b>	1
£210,000 – £219,999	<b>1</b>	1
£220,000 – £229,999	<b>1</b>	-
£230,000 – £239,999	-	-
£280,000 – £289,999	-	-
£330,000 – £339,000	<b>1</b>	-
£350,000 – £359,000	-	1

\* This banding includes the remuneration of the Group Chief Executive Officer.

The above banding includes 37 (2017: 45) staff for whom retirement benefits are accruing under defined contribution schemes and 9 (2017: 9) staff for whom retirement benefits are accruing under defined benefit schemes. Contributions by the group for the year for the above employees to defined contribution schemes amounted to £436k (2017: £540k). 25 staff included above (2017: 19) are paid in foreign currencies and their earnings are subject to foreign exchange fluctuations when translating from the base currency to £. Additional information on the total remuneration package of employees earning over £60,000 per year is shown below.

## 9. Staff (continued)

Salary and Compensation	Bonus and commission	Non pensionable allowances and other benefits	Employer Pension Contribution	2018	2017
£60,000 - £64,999	-	-	£5,000 - £14,999	1	-
£65,000 - £69,999	-	-	£5,000 - £14,999	1	1
£70,000 - £74,999	-	-	£5,000 - £14,999	1	2
£75,000 - £79,999	-	-	£5,000 - £14,999	-	1
£80,000 - £84,999	-	-	£5,000 - £14,999	-	1
£125,000 - £129,999	-	-	£20,000 - £24,999	-	1
£140,000 - £144,999*	-	-	£25,000 - £29,999	1	-

\* This banding includes the remuneration of the Group Chief Executive Officer.

### Institute of Physics – Group

Within the trading subsidiaries of the Institute of Physics group (IOP Enterprises Ltd, IOP Publishing Ltd, IOP Educational Publishing Ltd, Turpion Ltd, Turpion-Moscow Ltd, IOP Publishing Inc, IOP Business Publishing Inc, IOP Publishing Consultants (Beijing) Co Ltd, IOP Marketing and Promotion Services Private Ltd), some staff, dependant on role, have contractual performance based incentives linked to the subsidiaries revenue or profit growth. Staff may also receive non pensionable allowances and medical benefits in addition to employer pension contributions.

UK employer pension contributions are made at a maximum of 18% of pensionable salary. The average number of full time equivalent employees during the year was:

	2018	2017
<b>Charitable work:</b>		
Institute of Physics	110	96
<b>Business operations:</b>		
IOP Publishing Ltd	234	237
IOP Publishing Inc	32	39
Turpion-Moscow Ltd	3	8
IOP Publishing Consultants (Beijing) Co Ltd	7	9
IOP Marketing and Promotion Services	2	2
Private Ltd		
<b>Management and administration:</b>		
Institute of Physics	27	25
IOP Publishing Ltd	108	109
	<b>523</b>	525

The full time equivalent employees as at 31 December 2018 was 556 (2017: 508).

## 10. Key management personnel remuneration

Key management personnel include all members of Council. The President, honorary officers and members of Council give their time to the Institute on a voluntary basis and are paid no remuneration for this work. They are reimbursed the actual costs of travel and subsistence necessarily incurred on the official business of the Institute and/or its subsidiaries. In the year to 31 December 2018 total expenses incurred and reimbursed to 21 trustees (2017: 27) were £23k (2017: £45k).

Remunerated key management personnel include the members of the Institute of Physics senior management team and directors of the Institute's subsidiary companies. The Group Chief Executive Officer and the Chief Financial Officer perform group roles across all entities within the IOP Group. The Group Chief Executive Officer and the Chief Financial Officer form part of the Institute of Physics senior management team which also includes the Chief Operating Officer; The Director of Policy and Public Affairs; and Managing Director, IOP Publishing Ltd. All members of the senior management team are remunerated by the Institute of Physics with the exception of the Managing Director of IOP Publishing Ltd.

In addition to the members of the Institute's senior management team, remunerated key management personnel comprise:

<b>IOP Publishing Ltd</b>	<b>IOP Enterprises Ltd</b>
Commercial Director	Managing Director
Finance Director	
IT Director	<b>IOP Publishing Inc</b>
Publishing Director	Managing Director

The total compensation paid to key management personnel for services provided to the group was £1,740k (2017: £2,056k). This includes all remuneration, salary, benefits, bonuses and commission, employer's pension contributions, employer's national insurance contributions and any compensation payments made.

## 11. Physics World

During the year the Institute contributed £266k (2017: £266k) to IOP Publishing Ltd towards the cost of copies of Physics World supplied to members, and £68k (2017: £68k) towards the cost of copies of Physics Education supplied to the Institute's affiliated schools programme.

## 12. Taxation

As a registered charity, the Institute is not liable to taxation on the net revenue from its charitable activities. The subsidiary companies make qualifying donations of taxable profit to the Institute of Physics.

## 13. Irrecoverable VAT

There is a group VAT registration for the Institute of Physics and its subsidiaries. The VAT group is partly exempt and, because of this, there are restrictions on the amount of VAT recoverable.

## 14. Intangible assets

	IT assets	Goodwill on consolidation	Trademarks	Total
	£'000	£'000	£'000	£'000
<i>Cost or valuation</i>				
At 31 December 2017	8,181	126	180	8,487
Additions	1,327	-	-	1,327
<b>At 31 December 2018</b>	<b>9,508</b>	<b>126</b>	<b>180</b>	<b>9,814</b>
<b>Accumulated amortisation</b>				
At 31 December 2017	(5,585)	(50)	-	(5,635)
Provision for the year	(1,094)	-	(36)	(1,130)
<b>At 31 December 2018</b>	<b>(6,679)</b>	<b>(50)</b>	<b>(36)</b>	<b>(6,765)</b>
<i>Net book value</i>				
<b>At 31 December 2018</b>	<b>2,829</b>	<b>76</b>	<b>144</b>	<b>3,049</b>
At 31 December 2017	2,596	76	180	2,852

The group previously had an investment in a joint venture, Turpion Ltd, which was held directly by IOP Publishing Ltd, itself a wholly owned subsidiary of the Institute of Physics. On 1 December 2015, IOP Publishing Ltd purchased the remaining 50% of Turpion Ltd bringing IOP Publishing Ltd's shareholding to 100%. The balance stated above represents the goodwill arising on this acquisition.

### Assets in the course of construction

Included in IT assets are £312k (2017: £297k) of assets in the course of construction which relate to the elements of the implementation of new IT systems which are ongoing. These assets are not being depreciated. These assets will begin to be depreciated upon being brought into use.

## 15. Tangible fixed assets

Institute of Physics – Group	Investment property	Freehold property	Short leasehold property	Fixtures and fittings	Total
	£'000	£'000	£'000	£'000	£'000
<i>Cost or valuation</i>					
At 31 December 2017	2,547	18,851	2,395	6,522	<b>30,315</b>
Additions	-	10,684	36	375	<b>11,095</b>
Disposals	-	-	-	(913)	<b>(913)</b>
<b>At 31 December 2018</b>	<b>2,547</b>	<b>29,535</b>	<b>2,431</b>	<b>5,984</b>	<b>40,497</b>
<i>Accumulated depreciation</i>					
At 31 December 2017	-	-	(1,625)	(5,237)	<b>(6,862)</b>
Charge for the year	-	(193)	(250)	(510)	<b>(953)</b>
Disposals	-	-	-	892	<b>892</b>
<b>At 31 December 2018</b>	<b>-</b>	<b>(193)</b>	<b>(1,875)</b>	<b>(4,855)</b>	<b>(6,923)</b>
<i>Net book value</i>					
<b>At 31 December 2018</b>	<b>2,547</b>	<b>29,342</b>	<b>556</b>	<b>1,129</b>	<b>33,574</b>
At 31 December 2017	2,547	18,851	770	1,285	23,453

Institute of Physics – Charity	Investment property	Freehold property	Short leasehold property	Fixtures and equipment	Total
	£'000	£'000	£'000	£'000	£'000
<i>Cost or valuation</i>					
At 31 December 2017	2,547	18,851	2,362	1,732	<b>25,492</b>
Additions	-	10,684	-	33	<b>10,717</b>
<b>At 31 December 2018</b>	<b>2,547</b>	<b>29,535</b>	<b>2,362</b>	<b>1,765</b>	<b>36,209</b>
<i>Accumulated depreciation</i>					
At 31 December 2017	-	-	(1,601)	(1,622)	<b>(3,223)</b>
Charge for the year	-	(193)	(236)	(78)	<b>(507)</b>
<b>At 31 December 2018</b>	<b>-</b>	<b>(193)</b>	<b>(1,837)</b>	<b>(1,700)</b>	<b>(3,730)</b>
<i>Net book value</i>					
<b>At 31 December 2018</b>	<b>2,547</b>	<b>29,342</b>	<b>525</b>	<b>65</b>	<b>32,479</b>
At 31 December 2017	2,547	18,851	761	110	22,269

## 15. Tangible fixed assets (continued)

### Investment property

During the year ended 31 December 2015, the Institute purchased a new freehold property. This property is currently being held for its investment potential and it has therefore been classified as an investment property. The investment property forms part of an integrated plan for the use of the new site in London, therefore it has been included within tangible fixed assets in the financial statements.

The investment property is valued annually on 31 December at fair value. As permitted by FRS 102, the valuation as at 31 December 2018 was undertaken internally by the trustees. The valuation was based on capital value growth indices published by commercial real estate services firms, but as each property is unique, a certain degree of judgement is required and the value can only reliably be tested in the market itself.

As a result of this valuation, no change in valuation was considered necessary (2017: no change).

### Assets in the course of construction

During the year ended 31 December 2013, the Institute purchased a new freehold property. The property has now been brought into use, therefore for 2018 there are no freehold property assets in the course of construction which are not being depreciated (2017: £18.85m).

## 16. Investments in subsidiary undertakings

Institute of Physics – Charity	Subsidiary undertakings
	<b>£'000</b>
<i>Cost and net book value</i>	
At 1 January 2018 and 31 December 2018	<b>3,001</b>

The Institute's subsidiary undertakings at 31 December 2018 were as follows:

Name	Country of incorporation / registration	Class of shares held	Percentage held	Nature of business	Year end
<i>Subsidiary undertakings</i>					
IOP Publishing Ltd	UK	Ordinary	100%	Publishing	31 Dec 2018
IOP Enterprises Ltd	UK	Ordinary	100%	Non-publishing commercial enterprises	31 Dec 2018
IOP Educational Publishing Ltd	UK	Ordinary	100% *	Dormant	31 Dec 2018
IOP Publishing Inc	USA	Ordinary	100%	Publishing	31 Dec 2018
IOP Business Publishing Inc	USA	Ordinary	100% ^	Publishing	31 Dec 2018
IOP Publishing Consultants (Beijing) Co Ltd	China	Ordinary	100% *	Publishing consulting	31 Dec 2018
Turpion Ltd	UK	Ordinary	100% *	Publishing	31 Dec 2018
Turpion–Moscow Ltd	Russia	Ordinary	100% +	Publishing	31 Dec 2018
IOP Marketing and Promotion Services Private Ltd	India	Ordinary	100% -	Publishing	31 Mar 2019

## 16. Investments in subsidiary undertakings (continued)

\* The investments in IOP Educational Publishing Ltd, IOP Publishing Consultants (Beijing) Co Ltd and Turpion Ltd are held directly by IOP Publishing Ltd.

+ The investment in Turpion-Moscow Ltd is held directly by Turpion Ltd.

^ The investment in IOP Business Publishing Inc is held directly by IOP Publishing Inc.

- The investment in IOP Marketing and Promotion Services Private Ltd is 0.01% owned by IOP and 99.99% by IOP Publishing Ltd.

Address of IOP Publishing Ltd is Temple Circus House, Temple Way, Bristol BS1 6HG. Address of IOP Publishing Inc is 190 N. Independence Mall West Suite 601 Philadelphia, PA 19106 USA.

Details of the net assets, turnover, expenditure and profit for the year of IOP Publishing Ltd, IOP Enterprises Ltd, IOP Publishing Inc, IOP Business Publishing Inc, IOP Publishing Consultants (Beijing) Co Ltd, Turpion Ltd and IOP Marketing and Promotion Services Private Ltd are as follows:

	Company Number	Net assets / (liabilities)	Turnover	Expenditure	Profit
		2018	2018	2018	2018
		£'000	£'000	£'000	£'000
IOP Publishing Ltd	00467514	15,702	62,604	(47,034)	15,570
IOP Enterprises Ltd	03471563	1	-	-	-
IOP Publishing Inc	26-2659520	5,384	4,619	(4,029)	590
IOP Business Publishing Inc	26-2301131	1,000	221	(203)	18
IOP Publishing Consultants (Beijing) Co Ltd	No.05292	169	1,051	(1,019)	32
Turpion Ltd	02463452	456	2,457	(2,251)	206
IOP Marketing and Promotion Services Private Ltd	U74999TN20 16FTC103739	30	141	(122)	19

## 17. Investments

Group and charity	2018	2017
	£'000	£'000
Market value at beginning of the year	28,945	24,450
Purchases in year	3,600	14,300
Disposal proceeds in year	(10,745)	(9,727)
Realised/ unrealised losses	(1,191)	(78)
Market value at end of the year	20,609	28,945
Historical cost	21,712	27,523

No investment management cost was incurred in 2018 or 2017.

## 17. Investments (continued)

The analysis of investments by class is as follows:

Group and charity	2018	2017
	£'000	£'000
Invesco Perpetual	9,306	10,359
LF Ruffer Absolute Return Fund	-	9,478
CCLA COIF Charities Property Fund	5,367	5,307
Vanguard	5,936	3,801
Market value of investments	20,609	28,945

## 18. Debtors

	Group	Group	Charity	Charity
	2018	2017	2018	2017
	£'000	£'000	£'000	£'000
Trade debtors	5,707	3,619	30	73
Other debtors	1,813	1,918	991	1,132
Prepayments and accrued income	7,660	6,623	598	619
	15,180	12,160	1,619	1,824

An impairment loss of £80k (2017: £357k) was recognised in the consolidated Statement of Financial Activities for the year in respect of bad and doubtful trade debtors. No additional impairment loss for 2018 was recognised in the Charity Statement of Financial Activities for the year in respect of bad and doubtful trade debtors (2017: £45k). Included within Other debtors is an amount of £202k (2017: £196k) relating to recoverable Indian withholding tax that is expected to fall due for payment in greater than one year.

## 19. Creditors: amounts falling due within one year

	Group	Group	Charity	Charity
	2018	2017	2018	2017
	£'000	£'000	£'000	£'000
Trade creditors	1,162	792	372	389
Amounts owed to group undertakings	-	-	16,226	101
Other creditors	4,489	5,207	35	370
Other taxes and social security	-	364	-	-
Accruals	5,080	4,411	902	869
Deferred income	14,599	12,396	1,011	506
	<b>25,330</b>	23,170	<b>18,546</b>	2,235

Deferred income represents income received in advance:

	Group	Group	Charity	Charity
	2018	2017	2018	2017
	£'000	£'000	£'000	£'000
Journals subscriptions	13,651	10,956	-	-
Membership subscriptions	524	445	524	442
Other	424	995	487	64
	<b>14,599</b>	12,396	<b>1,011</b>	506

## 20. Financial instruments

The Group's and Charity's financial instruments may be analysed as follows:

	Group	Group	Charity	Charity
	2018	2017	2018	2017
	£'000	£'000	£'000	£'000
<b>Financial assets</b>				
Financial assets measured at fair value through profit or loss	20,609	28,945	20,609	28,945
Financial assets measured at amortised cost	28,983	27,715	7,188	8,293
<b>Financial liabilities</b>				
Financial liabilities measured at amortised cost	(10,731)	(10,410)	(17,535)	(1,729)

Financial assets measured at fair value through profit or loss comprise fixed asset investments in a trading portfolio of listed company shares. Financial assets measured at amortised cost comprise trade debtors, other debtors, amounts owed by group undertakings, current asset investments and cash at bank. Financial liabilities measured at amortised cost comprise trade creditors, other creditors, accruals and amounts owed to group undertakings.

## 21. Provisions for liabilities

	Group	Group	Charity	Charity
	2018	2017	2018	2017
	£'000	£'000	£'000	£'000
Provisions	<b>783</b>	760	<b>783</b>	760

Included within provisions is a provision of £783k (2017: £760k) for costs relating to the exit of leasehold premises which are not expected to crystallise before 2021. The amount payable will be agreed through future negotiation at such point that an exit occurs.

## 22. Movement on reserves

Institute of Physics – Group	General fund	Restricted funds	Pension reserve (deficit)	Total
	£'000	£'000	£'000	£'000
At 1 January 2018	59,646	834	(18,589)	<b>41,891</b>
Incoming resources	63,503	2,802	6,000	<b>72,305</b>
Outgoing resources	(63,602)	(793)	(623)	<b>(65,018)</b>
Realised losses on investment sales during the year	(121)	-	-	<b>(121)</b>
Unrealised losses on investments	(1,070)	-	-	<b>(1,070)</b>
Exchange adjustments	233	-	-	<b>233</b>
Actuarial gains	-	-	7,857	<b>7,857</b>
Balances carried forward	<b>58,589</b>	<b>2,843</b>	<b>(5,355)</b>	<b>56,077</b>

Institute of Physics – Charity	General fund	Restricted funds	Pension deficit	Total
	£'000	£'000	£'000	£'000
At 1 January 2018	58,872	834	(18,589)	<b>41,117</b>
Incoming resources	2,924	2,802	6,000	<b>11,726</b>
Outgoing resources	(19,268)	(793)	(623)	<b>(20,684)</b>
Realised losses on investment sales during the year	(121)	-	-	<b>(121)</b>
Unrealised losses on investments	(1,070)	-	-	<b>(1,070)</b>
Actuarial gains	-	-	7,857	<b>7,857</b>
Balances carried forward	<b>41,337</b>	<b>2,843</b>	<b>(5,355)</b>	<b>38,825</b>

## 22. Movement on reserves (continued)

Group and charity	Balance at 1 Jan 2018	Incoming resources	Resources expended	Balance at 31 Dec 2018
	£'000	£'000	£'000	£'000
<i>Restricted funds</i>				
Prize funds	41	13	-	<b>54</b>
Other funds	793	2,789	(793)	<b>2,789</b>
	834	2,802	(793)	<b>2,843</b>

Restricted funds are held by the Institute and were given to the Institute to spend towards specific projects and purposes. Prize funds are held by the Institute to give out as awards to individuals for their exceptional contribution towards Physics. Other funds are to be spent on specific projects.

### Analysis of net assets by fund

Institute of Physics – Group	General fund	Restricted funds	Pension deficit	Total
	£'000	£'000	£'000	£'000
Intangible fixed assets	3,049	-	-	<b>3,049</b>
Tangible fixed assets	33,574	-	-	<b>33,574</b>
Investments	20,609	-	-	<b>20,609</b>
Current assets	27,470	2,843	-	<b>30,313</b>
Current liabilities	(25,330)	-	-	<b>(25,330)</b>
Non-Current liabilities	(783)	-	(5,355)	<b>(6,138)</b>
Balances carried forward	58,589	2,843	(5,355)	<b>56,077</b>

## 23. Pensions

The group operates three pension schemes.

### Defined benefit pension scheme

The Institute of Physics Retirement Benefits Plan 1975 was closed to new members on 31 December 2001. The Institute continues to support the scheme for those who were members on the effective date of closure.

A group personal pension scheme was established to replace the defined benefit scheme with effect from 1 January 2002. This scheme closed to new members on 31 January 2014 and a new group person pension scheme was established from 1 February 2014. The Institute has also designated a stakeholder pension scheme in compliance with the Pensions Act 1995.

The most recent FRS 102 valuation of the Institute of Physics Retirement Benefits Plan 1975 dated 31 December 2018 showed that the value of the scheme's assets as at that date was £84,425k (2017: £81,743k) and that the actuarial value of those assets represented 94% (2017: 71%) of the benefits that had accrued to members, after allowing for expected future increases in earnings.

## 23. Pensions (continued)

The Institute's and employees' contributions are 18% and 7% respectively. The next triennial valuation is due on 1 January 2020.

The principal actuarial assumptions used by the actuary at the balance sheet date were:

	2018	2017
	%	%
Discount rate	2.90	2.40
<i>Aggregate long-term expected rate of return on assets (net of expenses)</i>		
Inflation (RPI)	3.45	3.40
Inflation (CPI)	2.35	2.30
Future increases in deferred pensions	2.35	2.30
Rate of increase in salaries	3.45	3.40
Rate of increase to pensions in payment:		
Pre 2001 pension	5.00	5.00
2001-2006 pension	3.45	3.40
Post 2006 pension	2.15	2.10
Mortality assumptions:		
Life expectancy of male aged 65 now	22.1	22.3
Life expectancy of male aged 65 in 20 years	23.5	23.7
Life expectancy of female aged 65 now	24.2	24.2
Life expectancy of female aged 65 in 20 years	25.7	25.7

Cash commutation:

- 2018: Members take 75% of their max allowable pension commencement lump sum, with current commutation factors.
- 2017: Members take 75% of their max allowable pension commencement lump sum, with current commutation factors.

Reconciliation of fair value of plan liabilities:

	2018	2017
	£'000	£'000
At the beginning of the year	100,332	105,983
Past service cost	200	-
Interest cost	2,379	2,780
Remeasurement (gains):		
Actuarial gains	(10,729)	(6,274)
Benefits paid	(2,402)	(2,157)
At the end of the year	89,780	100,332

## 23. Pensions (continued)

Changes in the fair value of plan assets:

	2018	2017
	£'000	£'000
At the beginning of the year	81,743	74,846
Interest income	1,956	1,975
Remeasurement (losses)/ gains:		
Return on scheme assets excluding interest	(2,872)	5,581
Contributions by employer	6,000	1,498
Benefits paid including expenses	(2,402)	(2,157)
At the end of the year	84,425	81,743
Actual return on plan assets	(916)	7,556

	2018	2017
	£'000	£'000
Fair value of plan assets	84,425	81,743
Actuarial value of plan liabilities	(89,780)	(100,332)
Net pension scheme liability	(5,355)	(18,589)

Group and charity	2018	2017
	£'000	£'000
Pension liability recognised on the balance sheet	5,355	18,589

Amounts recognised in profit or loss are as follows:

Group and charity	2018	2017
	£'000	£'000
Past service cost	200	-
Net interest cost	423	805
<b>Total</b>	<b>623</b>	<b>805</b>

## 23. Pensions (continued)

### Analysis of actuarial loss recognised within the Statement of Financial Activities gains and losses category

Group and charity	2018	2017
	£'000	£'000
Actual return less interest income included in net interest income	(2,872)	5,581
Changes in assumptions underlying the present value of the scheme liabilities	10,729	6,274
Actuarial gain on defined benefit pension scheme	7,857	11,855

### Composition of plan assets

	2018	2017
	£'000	£'000
Equities	15,841	33,764
Diversified growth funds	20,883	21,236
Annuities	9,080	10,134
Liability Driven Investment funds	26,150	9,418
Corporate bonds	-	3,102
Partners Fund	7,309	3,575
Cash	5,162	514
Total plan assets	84,425	81,743

### Defined contribution pension schemes

The amount recognised in the Statement of Financial Activities as an expense in relation to the group's defined contribution pension schemes is £2,206k (2017: £2,069k). There was no outstanding payable to the schemes at the year end of 2018 and 2017.

## 24. Analysis of changes in net funds

	2018	2017
	£'000	£'000
Decrease in cash and cash equivalents	(2,100)	(6,958)
Exchange translation	233	(295)
<b>Movement in net funds in the year</b>	<b>(1,867)</b>	<b>(7,253)</b>
Net funds brought forward	17,000	24,253
<b>Net funds carried forward</b>	<b>15,133</b>	<b>17,000</b>

## 25. Commitments under operating leases

### Group

The group has minimum lease payments under non-cancellable operating leases as set out below:

	Land and buildings 2018	Land and buildings 2017
	£'000	£'000
Not later than 1 year	1,067	1,303
Later than 1 year and not later than 5 years	1,601	2,741
Later than 5 years	155	272
	2,823	4,316

### Charity

The charity has minimum lease payments under non-cancellable operating leases as set out below:

	Land and buildings 2018	Land and buildings 2017
	£'000	£'000
Not later than 1 year	676	916
Later than 1 year and not later than 5 years	810	1,966
	1,486	2,882

## 26. Amounts receivable under operating leases

The charity has minimum lease payments receivable under non-cancellable operating leases as set out below:

	Land and buildings 2018	Land and buildings 2017
	£'000	£'000
Not later than 1 year	845	845
Later than 1 year and not later than 5 years	1,012	1,857
	1,857	2,702

## 27. Related parties

The following related party transactions took place during the year:

Entity	Sales to IOP	Purchases from IOP	Balance outstanding at year end
	£'000	£'000	£'000
IOP Publishing Ltd	1,404	(1,028)	(16,217)
IOP Enterprises Ltd	-	-	(9)

The transactions noted below are all reported due to the individuals being trustees, directors or key management personnel.

Individual	Related organisation	Role within related organisation	Description of transaction	Amount (£) (purchases by IOP)
Richard Charkin	Amphio Ltd	Director	Purchase of digital services by IOP	116,667
Jim Al-Khalili	British Science Association	President	Event sponsorship fee	13,200
	Campaign for Science and Engineering in the UK	Board member	Membership fee	3,000
Julia Higgins	Imperial College London	Council Member	Conference and events payments	3,324
			Provision of grants and bursaries	1,550
James McKenzie	Photonstar LED Ltd	CEO	Purchase of building items	17,515
	Photonstar Technology Ltd	CEO	Purchase of building items	3,600
Paul Hardaker	Sense About Science	Chair of the board	Annual partnership with voice of young science Ireland	833
Jonathan Flint	The Oxford Trust	Member of the board of trustees	Sponsorship of Young Scientist of the Year	240
Brian Fulton	University of York	Dean of Faculty of Sciences & member of University Executive Committee	Conference and events payments	9,946
Sarah Thompson		Member of planning committee		
Brian Fulton	University of York	Dean of Faculty of Sciences & member of University Executive Committee	Payments of grants and prizes	200
Sarah Thompson		Member of planning committee		

## 27. Related parties (continued)

Individual	Related organisation	Role within related organisation	Description of transaction	Amount (£) (sales by IOPP)
Brian Fulton	University of York	Dean of Faculty of Sciences & member of University Executive Committee	Sales from IOP Publishing Ltd	13,736
Sarah Thompson		Member of planning committee		
Julian Jones	Heriot-Watt University	Vice Principal	Sales from IOP Publishing Ltd	12,192

The charity did not receive any donations with conditions from the trustees or other related party (2017: nil).

No individual listed above was involved in any way with decisions related to, or taken on, the Institute's expenditure with these related organisations.







**The IOP has made me a confident public speaker, a well-connected researcher and an incredibly proud physicist.**

Jessica, Member

