

# The Institute of Physics Annual Report 2016

Trustees' report and financial statements for the year ended  
31 December 2016

<b>Contents</b>	<b>Page</b>
Honorary Secretary's foreword	2
Structure, governance and management	4
Achievements and performance	11
IOP awards	30
Subsidiary companies	33
Financial review	36
Independent auditor's report	39
Consolidated Statement of Financial Activities	41
Charity Statement of Financial Activities	42
Balance sheet	43
Consolidated cash flow statement	44
Notes forming part of the financial statements	45

This is the trustees' annual report and financial statements for the year ended 31 December 2016 for the Institute of Physics. The trustees have prepared this report in accordance with the Institute's Royal Charter and Bylaws, the Charities Act 2011 and the Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with FRS 102.

## HONORARY SECRETARY'S FOREWORD



2016 was the second year of our five year strategy and we have continued to make progress in delivering work across the themes of Education, Economy, Society, Discovery and Community.

We have placed a strong emphasis on finding innovative ways to increase the opportunities for the physics community to participate and engage with us and, most importantly, with each other. And they have been at the heart of helping with this work.

As the routes through education and into employment change we are delighted to see that what we define as our community is broadening. Our membership now spans those studying physics in the classroom or in apprenticeships, those in business, in higher education, and increasingly those in further education and technical roles. We are pleased to see the continuing increase in interest in physics by the general public who are inspired by the fundamental discoveries and from learning more about the role it plays in our everyday lives.

Driven by a desire to be more inclusive and to provide clearly defined benefits and progression for physicists at all stages in their careers, in 2016 we embarked on an extensive consultation with members on plans to change our membership structure. We worked closely with members in the Nations and with our Branches to help us understand the value they place on membership. As I write this foreword our members are voting on those changes. It has been very enjoyable to be involved in this work and I hope my successor will be able to report positive progress in next year's annual review.

At the start of 2016, we were honoured that HRH The Duke of York officially marked the end the International Year of Light (IYOL) at an evening reception at the Royal Society. IYOL, which the Institute led in the UK, had done something extraordinary in bringing together diverse groups of people who were using, studying, teaching about or had built businesses using light. The learning from our leadership role has enabled us to use a similar model as we move to an annual themed programme of public engagement across the UK and Ireland with the first theme in 2018 already planned to be on Time.

Throughout the year, we had occasions to celebrate the work of our members. In February the Laser Interferometry Gravitational-wave Observatory (LIGO) announced the detection of gravitational waves, a century after they had been predicted by Albert Einstein. We are enormously proud of our many members who were leading participants in this momentous discovery.

The dissemination of new physics knowledge remains a key part of our work and through the international leadership of IOP Publishing we have seen further growth in our open access publishing. Our new electronic book programme has made excellent progress, publishing 62 titles in 2016, supported by partnerships with the Institute of Physics in Engineering and Medicine, the American Astronomical Society and more recently with the Biophysical Society.

At a time when the UK's relationships with other parts of the world have been so much in focus, our international work continues to be a priority. In collaboration with our sister societies, we continue to ensure that physics is represented at the highest levels in both the UK and Europe as our international landscape changes and as we move to a new structure for the way we plan, organise and fund our research and innovation. This year we were also delighted to host the world-renowned nuclear physicist Dr Dinesh Srivastava who delivered the Homi Bhabba lectures, an exchange programme between the Institute and the Indian Physics Association. Farther afield, our capacity building programme to encourage new entrepreneurs took place in Tanzania in partnership with the University of Dar es Salaam and this is now also being delivered in schools.

We look forward to opening our new building in Kings Cross in the summer of 2018. We are working closely with the local community including schools, businesses and community groups as we plan our move, and we very much look forward to welcoming the physics community to our building. We have never had such an opportunity to showcase the best of physics from around the UK and Ireland and to use the discussions around our gallery programme to strengthen the co-ordination and collaboration across our Nations and Branches.

This is my last foreword as Honorary Secretary so for the final time, and on behalf of all of the Council of Trustees, I would like to thank all the members of staff and volunteers who continue to work so tirelessly for the Institute and to support physics and our community of physicists. I look forward to continuing to read about the future successes of our organisation in the coming years.



**Professor Stuart Palmer FEng CPhys FInstP  
Honorary Secretary**



Professor Jim Al-Khalili gives a presentation at the closing ceremony for the International Year of Light.

## STRUCTURE, GOVERNANCE AND MANAGEMENT

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 76 Portland Place London, W1B 1NT.

### Council (board of trustees)

As set out in the Royal Charter, the Institute is governed by Council, which consists of 18 trustees elected from, and by, the corporate membership; and up to three co-opted trustees who are appointed by Council itself. The Institute's Council is its board of trustees and Council members are the trustees of the charity.

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. 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 ordinary Council members each of whom will normally serve on or chair one of the Institute's committees. Certain Council members have lead responsibilities for important cross-cutting areas such as diversity, audit and risk, and our international programmes. Co-opted Council members are appointed as required to cover areas of specific expertise.

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

The Nominations Committee then assesses the nominations received from members and draws up a shortlist of those who meet the necessary skills and expertise for each vacancy. Where there is more than one nomination for any vacancy then a ballot takes place. Where there is only one nomination for any vacancy then a ballot is not required and 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 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.

## Council Members in 2016

President	Professor Roy Sambles FRS CPhys FInstP	
President-elect	Professor Dame Julia Higgins DBE FRS FREng CPhys Hon.FInstP	
Honorary Secretary	Professor Stuart Palmer FREng CPhys FInstP	
Honorary Treasurer	Professor Julian Jones OBE FRSE CPhys FInstP	
Vice-President, Science & Innovation	Professor Sarah Thompson MBE CPhys FInstP	
Vice-President, Education	Philip Britton MBE CPhys FInstP Dr Carol Davenport CSciTeach CPhys FInstP	Until 30 Sep 2016 From 1 Oct 2016
Vice-President, Business	Professor Alison McMillan CPhys FInstP Dr James McKenzie MIOd CEng CPhys MInstP	Until 30 Sep 2016 From 1 Oct 2016
Vice-President, Membership	Dr Mike Worboys CEng CPhys FInstP	
Ordinary Members	Professor Lesley Cohen CPhys FInstP Dr Trevor Cross FInstP Professor Michael Duncan FInstP Dr Barbara Gabrys CPhys FInstP Dr Lisa Jardine-Wright CPhys MInstP Professor Kevin McGuigan FRSC FInstP Professor Angela Newing FInstP Dr Becky Parker MBE CPhys Hon.FInstP Deborah Phelps MInstP Neil Thomson CPhys FInstP Mark Wrigley MInstP Professor John Zamecki CPhys FInstP	From 1 Oct 2016       From 1 Oct 2016

## Committees

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 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 2016 were:

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

## Annual General Meeting

Each year the Institute holds an Annual General Meeting, the rules of which are set out in the bylaws and regulations, and which all corporate members are entitled to attend. Corporate members are those individual members of the Institute who have voting rights at general meetings and for the election of Council members and are composed of honorary fellows (Hon.FInstP), fellows (FInstP) and members (MInstP). Membership fees and any changes to the bylaws are approved by the membership at the Annual General Meeting.

## Management and staffing

The day-to-day management of the Institute and its activities is delegated to the group's chief executive officer, 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 chief executive leads a staff that at 31 December 2016 totalled 607 people (559 FTE).

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 IOP's senior management team in 2016 was:

Professor Paul Hardaker CMet FInstP FRMetS	Group Chief Executive Officer
Michael Bray FCMA	Chief Financial Officer
Rachel Youngman	Chief Operating Officer
Philip Diamond CPhys Hon.FInstP	Associate Director, Policy, Programmes & Performance
Steven Hall	Managing Director, IOP Publishing Ltd

## Our members

We continue to rely heavily on our committed and engaged membership. Membership of the Institute is for everyone with an interest in physics and its future. Our members are diverse and follow all kinds of different careers from academic research to high-value manufacturing and engineering, and from finance to nuclear new-build and decommissioning.

By joining, members become an integral part of the community working for physics. On an individual level, membership expands knowledge, develops networks and enhances professional reputation. The Institute offers a variety of membership options and further information about our membership categories and benefits can be found at [iop.org/membership](http://iop.org/membership).

All IOP members have the opportunity to get involved in the Institute's activities through our national and regional branches or through specialist subject-interest groups. The Institute could not achieve its charitable objectives without the commitment and hard work of our members, many of whom give freely of their time to act as committee members and volunteers to support our events and activities. The Institute wishes to thank all those who have supported it over the past year. Membership at the end of 2016 totalled 40,855.

### 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).

Charity law requires the Council to prepare financial statements for each financial year (which for IOP is the calendar year), which show a true and fair view of the state of affairs of the group and the Institute at the end of the year and of the financial activities of the group during the year. In preparing those financial statements, Council is required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable accounting standards and statements of recommended practice 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 and the group will continue in operation.

Financial statements are published on the Institute's website in accordance with legislation in the United Kingdom governing the preparation and dissemination of financial statements, which may vary from legislation in other jurisdictions. The maintenance and integrity of the charity's website is the responsibility of the trustees. The trustees' responsibility also extends to the ongoing integrity of the financial statements contained therein.

Council is required to act in accordance with the Royal Charter and bylaws of the Institute of Physics within the framework of charity and trust law. It is responsible for keeping proper accounting records that disclose with reasonable accuracy at any time the financial position of the group and the Institute and that enable them to ensure that the financial statements comply with the Charities Act 2011 and accord with applicable accounting standards, including Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with FRS 102. It is also responsible for safeguarding the assets of the group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

### Our commitment to diversity and inclusion

Integrity and openness are at the heart of everything that we do and 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 manage our approach to diversity through our Diversity & Inclusion and Education committees, which report directly to Council, and by employing a dedicated staff to deliver a programme of activities around the major issues of diversity in physics.

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 have led, and continue to lead the way, in spreading good practice and making a significant contribution to the body of research available to the STEM community.

In 2016 we published our report "What does a physicist look like?", a summary of an anonymous survey of our membership which provided valuable information that will help us to continue our commitment to make our services accessible to all, and to implement policies and practises that are fair, inclusive and effective.

In 2016 we reviewed our awards portfolio and nomination processes which resulted in four times as many nominations for female physicists than in previous years.

## Risk management

Council is responsible for ensuring that proper arrangements are in place for adequate risk management and control. The Audit and Risk Committee advises Council on these matters and has the following remit, to:

- review major areas of risk for the Institute and its subsidiary companies and to 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 whistleblowers regarding risk areas or audit anomalies who are not satisfied with the outcomes of the normal management processes.

The Chief Financial Officer has operational responsibility for the management of risk, compliance with legislation, data protection, business continuity, insurance, internal controls and managing the in-house internal audit process.

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.

Council receives a report from the Audit & Risk Committee after each of its meetings along with a risk management report. Council also has an annual review of risk as a standing agenda item.

## Main risks, potential consequences and mitigations

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Risk:	IOP Publishing Ltd suffers a material and prolonged decline in net profit with a knock-on reduction in gift aid to the Institute – resulting in a potential reduction or cessation of some IOP activities.
Mitigation:	An expanded business-development team has been created to focus on diversifying income streams. There is a centralised contingency to manage the impact of any year-to-year reduction in gift aid on IOP's programmes of work. The Institute also maintains a Reserve Investment Fund to draw from in the event of a significant decrease in Publishing gift aid.

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Risk:	Delays to the property relocation project result in potential project overspend and a failure to achieve occupation of the new premises in King's Cross within the planned timeline.
Mitigation:	A Relocation Project Board has governance and oversight of the property project and closely monitors the timeline, budget, cash flow and property risk register.
Risk:	Failure to achieve the required level of income/funding from diversification activities (such as fundraising) results in an inability to support the full ambition of strategy.
Mitigation:	An experienced head of development has been recruited to lead on diversifying income. A pipeline plan has been developed to match IOP programmes and projects with potential donors and funders over the lifetime of the strategy. A new customer relationship management system has been implemented to assist with strengthening stakeholder and funder relations.
Risk:	Adverse market conditions could lead to a reduction in the value of the general investment fund with an impact on the Institute's ability to deliver its longer-term strategic plans.
Mitigation:	A new investment and reserves policy has been introduced, which has been built bottom-up and is driven more closely by the needs and risks of the strategic plan.
Risk:	An inability to meet potential increased liabilities for the defined benefit pension fund from operational budgets could result in a possible requirement to call upon the reserves.
Mitigation:	The DB pension fund has been closed to new entrants since 2002 and was closed to future accruals from June 2015. A plan to achieve self-sufficiency was agreed with the pension trustees in 2015. Following the draft results of the 2016 triennial valuation, that plan and the associated contributions from the Institute are expected to be reaffirmed later in 2017 once the triennial valuation is finalised.
Risk:	Member or staff personal details are lost because of human error or cyber-attack, resulting in an Information Commissioner's Office investigation, reputational damage and financial penalties.
Mitigation:	Staff are provided with data protection advice and training by the legal and compliance team and notified of any potential threats as they arise. IT security controls have been put in place and were reviewed in 2015 by the Audit & Risk Committee.
Risk:	Reputational damage and financial penalties arising from litigation or breach of legislation.
Mitigation:	Staff are provided with advice and training by the legal and compliance team on areas such as health and safety, data protection, and bribery and corruption. The guidance and processes in place to support staff and volunteers delivering IOP events are reviewed regularly.

## 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 of Physics will carry out gender pay reporting in 2017 and publish the results of the analysis on our website. We will use these results to identify:

- differences in the average pay between men and women;
- the proportion of men and women in the each quartile of the organisation; and
- the proportion of men and women receiving a bonus.

Any underlying cause for any gender pay gap will be analysed and suitable steps taken to minimise it.

## Slavery and human trafficking

The Institute is committed to prohibiting modern slavery and human trafficking in our supply chains and in any part of our businesses. The IOP group has a diverse supply chain, including suppliers of IT, print and editorial services, office equipment, catering services, and accommodation and venue facilities. These suppliers are located across the globe, with some located in countries which have a high estimated prevalence of modern slavery as measured by the Global Slavery Index 2016.

During 2016, we have undertaken activities on a group-wide basis to identify and mitigate the risk of slavery or human trafficking occurring in the IOP group's supply chains. These have included:

- identifying and assessing potential risk areas in our supply chains, in particular for those suppliers in countries with a high estimated prevalence of modern slavery;
- reviewing our current relevant procedures;
- preparing an Anti-Slavery and Human Trafficking Policy for use internally and with suppliers;
- reviewing our processes to protect whistle-blowers in relation to issues regarding slavery and human trafficking.

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 will 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.

In 2017 we will roll out training on anti-slavery and human trafficking to relevant employees and continue to issue our policy to all relevant suppliers and all staff, and monitor compliance.

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

## ACHIEVEMENTS AND PERFORMANCE

### Our purpose

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

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

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

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

### Our values

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

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

### The strategy for 2015–2019

We are now midway through our 2015-2019 strategy which was launched two years ago following extensive consultation with members, stakeholders and partner organisation. The strategy is the focus for the Institute of Physics in order to have the greatest impact for physics, for the economy and for society.

The strategic plan, through which we strive to achieve our goals over the five years, divides our activities into five themes:

- **Education:** Make access to high-quality physics education open to all.
- **Economy:** Position businesses to actively exploit new physics-based research.
- **Society:** Engage people's interest in physics and showcase its value to society.
- **Discovery:** Strengthen our core discipline while breaking traditional boundaries.
- **Community:** Increase member participation in delivering our programme of activities.

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

## Public benefit

The object of the Institute as stated in the Royal Charter is **to promote the advancement and dissemination of a knowledge of and education in the science of physics, pure and applied, for the benefit of the public and the members of the Institute.**

As a charity the Institute must have purposes all of which are exclusively charitable (as defined by the Charities Act 2011) and are for the public benefit. The Institute meets the public benefit test in the following ways:

- Advancement of education
- Advancement of science
- Advancement of community development

The trustees confirm that they have referred to the Charity Commission's guidance on public benefit when reviewing the Institute's aims and objectives and in planning future activities. 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 on low incomes. Our membership fees are reduced or waived for students and for those from developing countries. 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.

More details of many of the specific activities undertaken by the Institute to carry out its charitable purposes for the public benefit are set out in the following section on achievements and performance during the year.



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

To achieve this we will:

- ➔ Increase the proportion of 16- to 19-year olds studying physics, and, within that, increase the proportion of girls

In 2016 we said we would:

**Increase the number of suitable applicants to physics initial teacher education courses and continue to build links with physics teachers through the scholarship initiatives**

We continued to manage the IOP Initial Teacher Training Scholarships on behalf of the Department for Education, and 128 scholarships were awarded in the academic year. We continued to run campus events and marketing campaigns to encourage undergraduates and career-changers to consider physics teaching. This successful national recruitment drive resulted in 851 aspiring teachers beginning physics training courses in England – the third highest figure on record.

**Establish a process to obtain better data on the career progression of teachers**

As part of our broader work on relationship management, we have started using the customer relationship management tool Salesforce and have developed the structures and a protocol for recording prospective teachers, scholarship applicants, trainees and existing teachers in our network on our mentoring scheme. We are now working on ways to keep track of those teachers as they enter and move within the school system.



As part of the Stimulating Physics Network, an IOP coach discusses modelling electric circuits with teachers.

**Produce and disseminate resources to raise awareness among teachers, parents and students of the desirability of physics qualifications to employers**

We have updated our careers leaflet for 14- to 16-year-olds and produced versions for the different examination systems in the UK. The leaflets illustrate how people with a physics background are now working in a wide variety of sectors, with each case study highlighting how physics plays a part in the occupation and why it is valued by their employer.

**Use and disseminate, through a report and continuing professional development (CPD), our growing understanding of the factors that affect girls' decisions to take physics**

We ran a number of pilot projects on improving gender balance in England and Scotland, and have published the evaluation of the completed pilots. One of the big findings is that the problem can only be effectively solved with commitment from and training for all the staff in the school – not just the physics and science teachers. We found dramatic increases in the uptake of physics by girls in schools where the whole staff undertook training to address their unconscious gender biases. Based on our findings, we have produced a framework for a gender equity mark and have begun rolling this out to more schools across the UK. We are starting a project in Ireland to support schools in adopting the framework and improving the uptake of physics by girls.

**Develop a coherent offer to teachers that provides support on-line and through in-school CPD in order to improve the quality of physics teaching across the nations**

We were successful in securing a further three years of funding from the Department for Education for the Stimulating Physics Network (SPN) through which we are providing support to a rolling group of about 450 schools. In 2016 we led more than 8,000 teacher days of physics-specific CPD with teachers in England. Within the project, we are developing a new model based on lead schools, which will provide a sustainable structure for school support beyond the end of the government contract. SPN in Wales has continued with funding from the Waterloo Foundation of £6.7k and from the Welsh Government of £147k, and our physics coaches supported nearly 500 teachers in 64 schools.

**In 2017 we will:**

- **Maintain the number of suitable applicants to physics initial teacher education courses through the scholarship programme**
- **Strengthen our mentoring offer to early career teachers**
- **Develop a route for teachers into membership and chartership**
- **Develop an integrated online community hub to support teachers of physics**

 **Develop a community-led, evidence-informed curriculum and assessment framework for all age-groups**

**In 2016 we said we would:**

**Publish and launch an evidence-informed curriculum document for A-level and for GCSE that becomes regarded as the national guideline for the development of curricula and specifications**

We have produced a guidance document for A-level which will be combined with a similar document at GCSE. It has garnered interest among UK exam boards as well as in Singapore where we presented the ideas at an international education conference.

**In 2017 we will:**

- **Produce a guidance document for A-level and GCSE physics based on both the ways of thinking in physics and on some big ideas from its theories, laws and models**

➔ **Be recognised for having fostered an environment where research into pedagogy in further and higher education can thrive and for our leadership in best practice**

**In 2016 we said we would:**

**Support the submission to the Engineering and Physical Sciences Research Council (EPSRC) of at least three research projects investigating physics teaching in higher education so as to open up a funding stream for education research in higher education**

Several proposals have been received and will be submitted for Research Council funding in 2017. Our longer-term aim is to establish a recognised funding programme for pedagogical research in physics that keeps pace with what we see in other countries,

**Run a pilot with physics departments to investigate ways of improving the conceptual understanding of basic physics ideas by physics graduates**

We have put in place the system to distribute, collect and mark the diagnostic tests and to record the results. More than 20 physics departments have taken part so far completing more than 2,900 pre-instruction tests in mechanics or electromagnetism. We are now receiving the post-instruction tests and will analyse the data in the early 2017. Having established the mechanisms for administering the tests, we will work with the departments to investigate the most effective pedagogies.

**In 2017 we will:**

- **Produce a report on the findings of the pilot of the project to improve conceptual understanding of physics at undergraduate level**
- **Publish and launch a report highlighting good practice in inclusive learning in physics higher education**



A masterclass at King's College London for IOP scholars and Stimulating Physics Network mentees who came together to improve their teaching practice on the topic of waves and radiation.



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

To achieve this we will:

- Enable businesses to increase their information exchange on both key foundation areas of physics and in new and emerging physics-based research and technologies by providing a recognised and valued link between businesses and the research base

In 2016 we said we would:

**Run an open innovation project in the food-manufacturing sector that will bring together large, medium and small businesses and world leading academics**

Working with partners from Pepsico, Sheffield Hallam University, Unilever, Jacobs Douwe Egberts, Knowledge Transfer Network and Engineering and Physical Sciences Research Council, we ran an open innovation project in the food-manufacturing sector that engaged representatives from more than 50 large, medium and small businesses as well as world-leading academics. Activities included a summit mapping physics to sector challenges, a health of physics report with recommendations that the sector should be included in the government's industrial strategy, a food-focused Physics World issue to raise profile, a food public engagement event and a two-day topical research meeting with eight fellows proposing the establishment of a new special-interest group in the area.

**Increase recognition of companies in the UK and Ireland that have built success on the innovative application of physics, through our Innovation Awards scheme**

In its fifth year, the Institute's Business Innovation Awards celebrated 10 high-growth businesses that are succeeding through physics-based innovation. This brings the total number of winners to 26. The parliamentary reception was attended by 80 business leaders and MPs. Strong MP engagement resulted in a parliamentary question highlighting the awards and asking how the government plans to support business innovation and growth.



The winners of our Business Innovation Awards at the 2016 parliamentary reception attended by 80 business leaders and MPs.

**In 2017 we will:**

- **Run a third open innovation project with partners in a sector where physics has a role to play in catalysing economic and/or societal impact, by bringing together large, medium and small businesses and world-leading academics**
- **Continue to increase recognition of companies in the UK and Ireland that have built success on the innovative application of physics, through our Business Innovation Awards**

→ **Ensure that government has relevant and focused evidence on the value of physics, and more widely STEM, to the economy in order for them to make informed funding decisions**

**In 2016 we said we would:**

**Publish studies of the economic contributions of physics-based business to the UK and Irish economies**

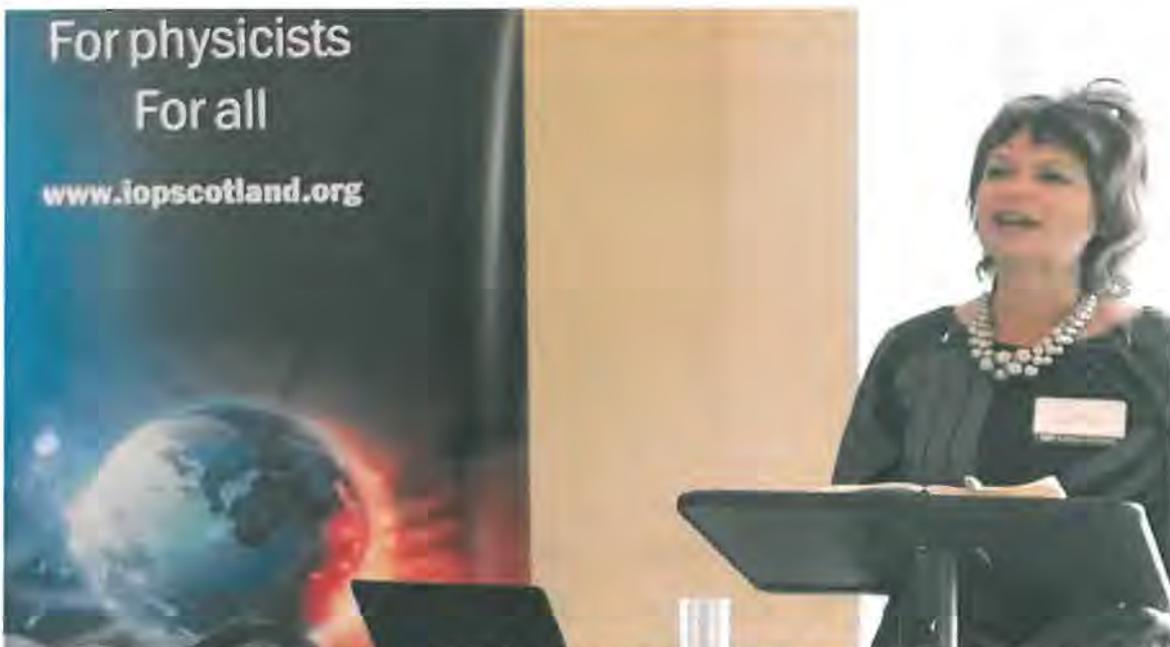
Towards the end of the year we produced the latest update of our regular analyses of the role that physics-based industries have on the economies of the UK and Ireland. These comprehensive studies will form the backbone of our work in 2017.

**Present information during and after the national election campaigns in Northern Ireland, Scotland and Wales on the value of physics and physics-trained workers, and the steps needed to preserve and increase that value**

During the referendum campaign we produced evidence to inform the Brexit debate on the impacts that membership of the European Union has on physics in the UK and devolved nations.

**Provide evidence to ensure that increasing funding for physics research and teaching is part of discussions on economic-growth programmes in Ireland during and after the election campaign**

We increased our efforts to make the case for continued support for public investment in physics. We supplied members and the public with evidence about the impacts of science on their lives and national economies in the run ups to the parliamentary elections in Scotland, Northern Ireland, Wales and Ireland. We worked with the physics community in Ireland to emphasise the importance of responsive mode funding of basic research to Ireland and the Irish economy.



Professor Dame Anne Glover speaking at IOP's town hall meeting in Edinburgh on the impact of Brexit on the health of physics in Scotland.

**In 2017 we will:**

- Highlight the evidence which shows the importance of physics to the economies of the UK, devolved nations, and Ireland, through a series of events and workshops with government ministers and other senior stakeholders
- Produce a clear analysis of the impact on science of the UK's developing new relationship with the EU

➔ Ensure that schools and universities have resources that showcase the benefits that studying physics offers for future careers, and that focus on breaking down barriers to inclusivity and opportunity

**In 2016 we said we would:**

**Produce and disseminate new careers literature to support the careers decisions of students at 18. Produce and trial new transferable-skills careers resources for the classroom**

We worked with our 1,700 affiliated schools to ensure that our updated careers advice booklet is available to 14- to 16-year old students in England. Our website, MyPhysicsCourse, which provides comprehensive information on university physics courses, continued to be popular with prospective physics students and we also produced a new guide to physics courses in Ireland.

**In 2017 we will:**

- Provide secondary schools with resources that promote both the academic and technical routes from physics and challenge stereotypes in subject choice

**myphysicscourse.org** Finding the right degree IOP Institute of Physics Ogden Trust

Home Choose a Uni Find a Course Get Advice About us Contact us

Undergraduate physics degree listings for the UK and Ireland starting in 2017

Search

Subject Combination: All

Within: National Miles of City/Postcode

England  Scotland  Wales   
Northern Ireland  Ireland

**Search Courses**

More search options

**IOP** Institute of Physics  
16-19 membership

Aged between 16 and 19 and studying physics?

**Join the IOP for free**

**Find a Course**  
Find a course that fits your interests

- Physics (as a single subject)
- Theoretical Physics/Physics + Maths
- Physics + Space Sciences
- Physics + year abroad/in industry

More...

**View Uni Map**

Myphysicscourse.org, a popular site for those hoping to continue their study of physics beyond school.



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

To achieve this we will:

- Establish respected and trusted advocacy groups to deliver a more focused and rounded policy programme that is strongly connected with our target audiences

In 2016 we said we would:

**Provide a strong voice for physics in government through the creation of new connections with parliamentarians in the UK and Ireland**

We engaged with more than 100 MPs with the aim of them seeing the work that the IOP does in schools to support physics teachers and improve student progression. This work allowed us to create greater connections still as the broader debate around the UK's new relationship with Europe continued.

**Ensure that policymaking in the UK and Ireland is informed at the highest level by physics knowledge and expertise through the publication of a programme of reports on major national challenges**

The IOP worked with partner organisations to ensure that science – and the benefits that it brings – was central to discussions about the UK's future relationship with Europe. Our programme of reports on the value of physics to the economies of the UK and Ireland addresses the challenge of increasing the UK and Ireland's productivity and the new challenge associated with leaving the EU.

In 2017 we will:

- Develop a programme of set piece reports and events to further engage physics with policymakers in the UK and Ireland
- Produce a suite of data briefs on the current health of physics in the UK and Ireland
- Create a network of parliamentarians, building on constituency-level engagement, to further the aims of physics in parliaments

- Establish a sustainable, externally funded international programme of capacity building in those developing countries where there are clear partnership opportunities

In 2016 we said we would:

**Continue to develop relationships in sub-Saharan Africa, with a particular focus on Tanzania, to offer solutions to the teaching of practical science subjects and the provision of entrepreneurial and vocational skills training to students**

Building on our relations with the physics department at the University of Dar es Salaam, we organised an entrepreneurial workshop for students, scientists and engineers from Dar es Salaam, Dodoma, Arusha and Zanzibar, and established relations with several regional bodies engaged in supporting innovation. The workshop was supported by Springer Nature, the Optical Society of America and the National Physical Laboratory.

As a result of a generous donation, we awarded three grants enabling members to undertake activities supporting the development of STEM in sub-Saharan Africa. The grants were awarded to projects that allowed UK schools to compete with Ethiopian and South African schools to design, build and

launch their own unmanned craft into space using a weather balloon, promoting low-cost computer resources to support STEM education in Mozambique, and support for theoretical molecular physics research at the University of Douala, Cameroon.

The IOP for Africa programme focuses on volunteer-led small-scale practical physics teaching projects. We supported projects with our partners in Ethiopia, Tanzania and South Africa. We also worked with the Tanzanian branch of the African Institute for Mathematical Sciences to develop a concept for a STEM centre of excellence in support of a teaching training college in the Mtwara region of Tanzania.

**Work with international partners to deliver entrepreneurial training programmes in developing and emerging economies that provide tools for local scientists to make positive contributions to their country's economy**

We ran three entrepreneurial workshops in 2016 in Trieste, Italy at the HQ of International Centre for Theoretical Physics; Baroda, India; and Sao Paulo, Brazil. We also ran entrepreneurial sessions for scientists and engineers at the annual meetings of the Chinese Physical Society and the Mexican Physical Society.

**In 2017 we will:**

- **Develop partnerships in Tanzania to offer sustainable solutions to the in-country delivery of STEM skills training to students, scientists and engineers**
- **Work with in-country and international STEM partners to support the development of entrepreneurial skills to enable scientists and engineers from a range of low- and middle-income countries to take ideas to market**



An entrepreneurial workshop was organised at the University of Dar es Salaam.

➔ **Increase participation in our outreach activities, with a greater focus on building science capital and in showcasing the value of physics to society**

**In 2016 we said we would:**

**Develop an outreach toolkit for our branches to build capacity and enable participation in and delivery of outreach activities**

In 2016, we developed content for an outreach toolkit for the IOP Nations and Branches aimed at skilling up our membership in the area of outreach and public engagement. The toolkit is made up of a series of best practice guides and resources, a recipe book of outreach ideas for different audiences and a training offer.

**Engage non-expert public audiences with physics in unexpected public venues and through collaborations**

**Run four high-profile public lectures, as part of our IOP Summer Sessions**

Funding disseminated through the IOP's public engagement grant scheme enabled the broader physics community in the delivery of innovative outreach activities. In 2016, we disseminated £28,000 funding to physicists, artists and community groups to deliver innovative public engagement projects aimed at family and adult audiences.

We also continued to reach new audiences through a portfolio of new and developing public engagement activities. The IOP Summer Sessions ran for its second year with speakers engaging diverse audiences on climate change, nanotechnology, physics and archaeology and gravitational waves. We also collaborated with CERN and the University of Lancaster on the programming for the Physics Pavilion at the WOMAD cultural festival in Wiltshire. Other partnerships included a gastrophysics event as part of the AHRC's Being Human Festival and a second annual collaboration with the Royal Opera House around the art and physics of theatre acoustics.



Professor Martin Hendry demonstrates the nature of space-time during one of IOP's Summer Sessions.

**In 2017 we will:**

- **Support our membership and Nations and Branches in the development and delivery of public engagement activity through the outreach toolkit, rolling out the Summer Sessions series to the nations and regions, and through a volunteering programme that supports and rewards our membership's participation in outreach**
- **Develop content for the IOP's first exhibition on the theme of Time that will extend across the range of outreach and engagement activities organised by members throughout the UK and Ireland**



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



One of our early-career physicists presents to the judges and audience at the national three-minute wonder competition final held at the Royal Institution.

## To deliver this we will:

- ➔ **Deliver a broad-ranging programme of journals, books, magazines and conference proceedings that provides outstanding service to authors and readers, and value for money to libraries and publishing Partners**

### In 2016 we said we would:

#### **Further develop our services to authors, readers, librarians and publishing partners**

During 2016 IOP Publishing (IOPP) initiated a major project to better understand the experience of researchers using its journals and services, as authors, referees and readers. An ongoing survey of researchers in each of these guises is providing a mass of information which will enable IOPP to improve its services to each of them. In 2017 this will include the development of a 'Researcher Hub', bringing together all information for researchers using IOPP's services in a single place.

#### **Build on the initial success of our books programme, expanding it with more titles and new partners**

IOPP published 62 titles in its new books programme in 2016 and signed contracts to publish 90 or more in 2017. It also agreed to launch a book series in partnership with the Biophysical Society, adding to similar agreements with the American Astronomical Society and the Institute of Physics and Engineering in Medicine.

#### **Continue to grow our open access publishing**

2016 saw further growth in open access publishing, with more than 9% of all articles immediately free to read and re-use. The biggest growth came again in the 'hybrid' model, under which individual articles are published on an open access basis in subscription journals, reaching almost 1,200 articles. Much of this growth came from UK authors, facilitated by IOPP's offsetting agreement with UK universities.

### In 2017 we will:

- **Continue the development of our services to authors, readers, librarians and publishing partners**
- **Continue the growth of our open access publishing**
- **Invest further in making research and news in the physical sciences easy to find**

For further information about our publishing activities, please see the IOP Publishing Ltd report on page 34.

- ➔ **Focus more on supporting and championing careers for physicists by providing opportunities for them to broaden their professional development and maximise their potential**

### In 2016 we said we would:

#### **Continue to support graduate students to attend overseas conferences through our travel bursary schemes**

We supported 161 PhD students and early-career researchers to attend academic conferences in 30 countries through our Research Student Conference Fund and the CR Barber bursary scheme, including the 14th International Symposium on Nuclei in the Cosmos in Japan, the 21st International Conference on General Relativity and Gravitation in USA, the 66th Lindau Nobel Laureate Meeting in Germany and the International Conference on High-Entropy Materials in Taiwan.

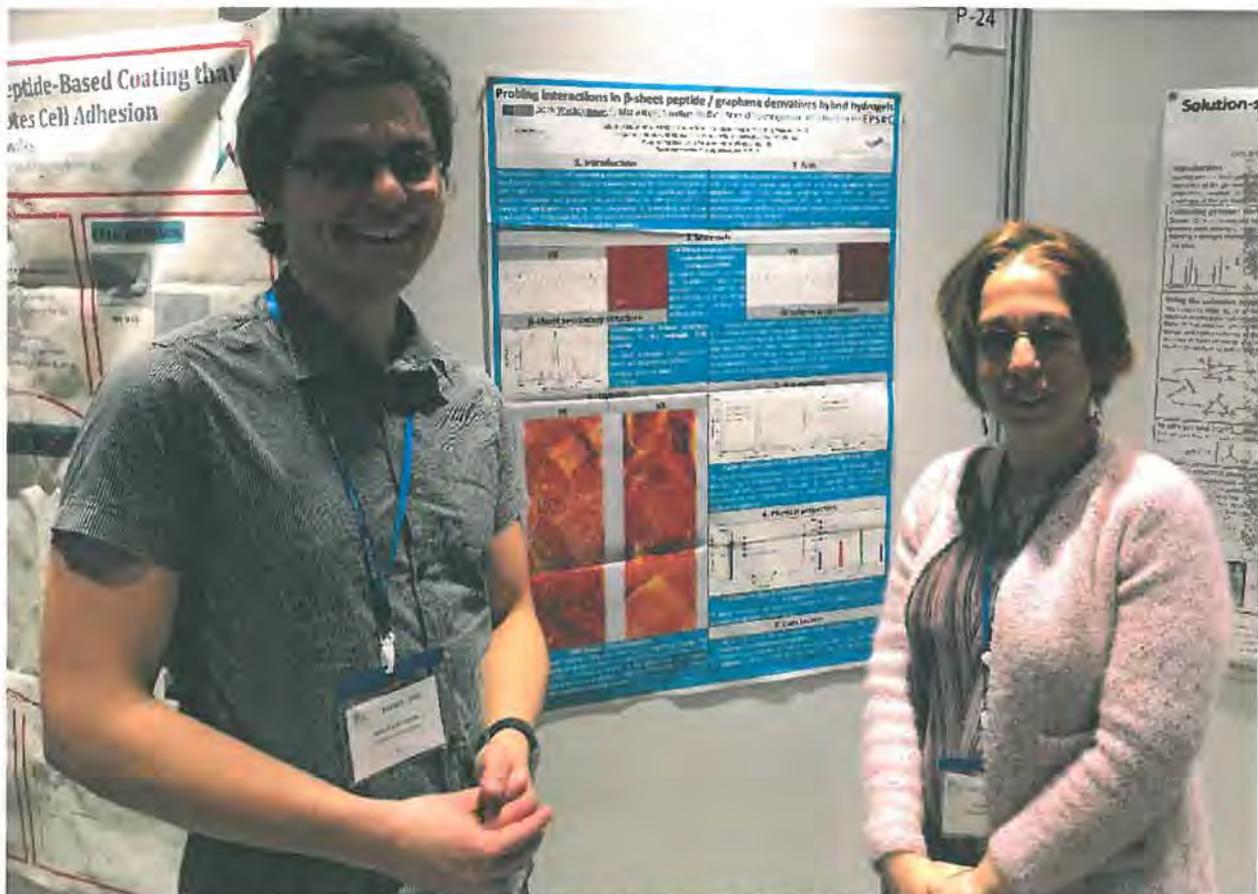
**Launch a new bursary to support early-career researchers in industry and academia and, in the first year, support 20 researchers to attend overseas conferences or visit international facilities**  
We introduced a new bursary scheme – the Early Career Researchers Fund – which aims at supporting early-career researchers operating in industry and academia. So far 16 applicants have been successful, and we expect to increase that number up to 50 in 2017.

**Provide researchers the opportunity to present and network at major pan-scientific events and through bilateral exchange programmes, with national physical societies**

We organised a scientific session on astroparticle physics at the American Association for the Advancement of Science (AAAS) 2016 meeting in Washington, DC jointly with the American Physical Society, and ran a session on the solar remediation of water at the EuroScience Open Forum 2016 meeting in Manchester jointly with the European Physical Society. The 2016 Homi Bhabha lecture, the exchange scheme with the Indian Physics Association, was given by Dr Dinesh Srivastava, a renowned nuclear physicist from the Variable Energy Cyclotron Centre, Kolkata. We supported UK students and academics to participate in a Chinese Academy of Sciences summer school in Beijing on non-equilibrium statistical physics and active matter systems.

**Through our Juno scheme, increase to five the number of major physics-based research institutions committed to gender equality**

Our first company and three new research institutes signed up to our Project Juno award scheme. This now gives a total of 31 physics organisations holding an award under the Juno scheme.



Jacek Wychowanec, a postgraduate student at the University of Manchester, attended the PEPMAT 2016 congress at Universitat Politecnica Catalunya on an IOP bursary.

**In 2017 we will:**

- **Support early-career physicists to organise meetings through a new special-interest group**
- **Engage with a wider range of physics organisations through our Juno scheme**
- **Continue to provide opportunities for researchers to present their work internationally**

→ **Work with IOP groups to deliver a programme that is strongly focused on developing the core discipline, and that involves collaborations across discipline boundaries and in new emerging areas of discovery**

**In 2016 we said we would:**

**Work with our groups to ensure delivery of their programme of meetings and conferences in support of the core discipline and emerging areas at the discipline boundaries**

Together with our groups we organised a total of 30 one-day meetings and 20 multi-day conferences. These events included the successful Neutrino 2016 international conference and the Joint European Magnetic Symposia. Across all events there were more than 4,000 participants – an increase of 95% from 2015.

**Develop a new resource, Physics 2020, a comprehensive data-set of physics research and powerful analysis tools to provide evidenced-based advocacy to research funders on behalf of our community**

As part of our commitment to the health of the discipline, we invested in Physics 2020 – a pilot programme working with members to map out the physics landscape and galvanise action to support the community. In the pilot, we have identified and pulled in data from multiple sources. We have built a series of test visualisations, and converted these into web content allowing us to create a functioning online prototype. We have engaged with members and the wider community to increase our understanding of how we identify and describe UK physics, and how a data tool might be used.

**In 2017 we will:**

- **Continue to work alongside our groups to deliver their programme of meetings and conferences in support of the core discipline, and through the topical research meetings, support events in emerging areas of physics, topics that span multiple groups, or that address current industry challenges**
- **Continue to work with the community to develop Physics 2020 as a comprehensive knowledge-base relating to physics in industry and academia. We will pilot our road-mapping methodology as a means to gather detailed information about specific areas of the discipline, initially focussing on the photonics sector**



The XXVII International Conference on Neutrino Physics and Astrophysics was held in London in July.

## Our Groups

The Institute has 49 member-led groups covering a wide variety of subjects and specialist areas across physics and in our profession. Group activities are driven by their members and include organising conferences, granting bursaries, and awarding prizes in their area of physics. Groups promote interaction between physicists working in industry and research, providing opportunities for networking and a forum for meeting and discussion. The groups are listed at [iop.org/activity/groups](http://iop.org/activity/groups) together with information on their programmes of activity.

### In 2017 we will:

- **Create two more special interest Groups**
- **Ensure greater co-ordination between our Groups, EPS Divisions and Groups, and IUPAP commissions**
- **Reshape our conference services**



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

### To achieve this we will:

- ➔ **Increase the number of members, from across the demographic, who are participating in an Institute activity, strongly supported by representatives in the nations and from our branches and subject groups**

### In 2016 we said we would:

**Improve support to our branches and groups, and provide clearer communication to members in order to enhance member engagement and participation in our activities**

In 2016 the Nations & Branches portal was launched to encourage inter-branch communication, help share ideas and discuss successful and unsuccessful methods of outreach. We also launched the volunteer and member engagement project, to honour those who do so much in the service of the physics community. In the autumn of 2016 we established an LGBT+ network in partnership with the Royal Astronomical Society.

### In 2017 we will:

- **Introduce a new membership structure that is more inclusive with clearer defined benefits and progression at all stages**
- **Introduce a digital platform that enables members of all career stages to engage with all our activities**
- **Ensure clear routes to chartered status for those with a technical education**
- **Provide outreach training for our volunteers through our new digital presence**



A representative selection of members gathered to discuss why membership of the Institute matters to them.

➔ **Increase both early career and teacher membership, and have a fellowship that more closely reflects the wider membership demographic**

**In 2016 we said we would:**

**Engage with the top five physics-based industries to offer them accreditation of their employees**

The IOP now accredits more than 20 graduate training schemes towards Chartered Engineer (CEng) and Chartered Physicist (CPhys). Industries include nuclear power generation and research, defence and national security, mechanical engineering, systems engineering and technology as well as organisations with a general science portfolio. Applications for Chartered Engineer, in particular, are rising.

**Work towards having a membership structure in place (by end of 2017) that recognises the important role of technicians within the physics community and supports their career development**

In 2016 we successfully gained licenses to award Registered Science Technician (RSci Tech) and Registered Scientist (RSci) in recognition of the varied ways in which knowledge and understanding of physics can be developed and applied in the workplace.

We have engaged with a number of bodies that employ and/or train scientific apprentices to better understand how the IOP can develop an appropriate member offer for them. We have developed a more streamlined membership structure to make the organisation more inclusive and open to a broader range of the community.

**In 2017 we will:**

- **Put the new membership structure to a vote of our members and subject to a successful outcome we will implement the changes to the membership categories**

➔ **Establish a professional accreditation process for technicians with a strong basis in physics, and for those from further education who provide physics-based training and development programmes**

**In 2016 we said we would:**

**Explore physicists' perceptions of the IOP membership, by running a series of focus groups and qualitative surveys as part of a process to revise our categories of membership to reflect better the evolving career paths of our community**

A membership survey received more than 2,500 responses from members and prospective members. The responses were overwhelmingly in favour of simplifying our membership structure and making it more inclusive.

**In 2017 we will:**

- **Implement an offer that meets the needs of members at various career stages and supports the recruitment, engagement and retention of members in core groups**
- **Develop fit-for-purpose fellowship processes, criteria and panel assessments that ensure that those who meet the standard are successfully elected irrespective of gender or professional background**
- **Ensure that clear routes are available to chartered status for those with a technical education**

## **Nations and Branches**



**IOP Ireland physics buskers at the Bloom 2016 Festival in Dublin's Phoenix Park.**

The Institute operates locally throughout the UK and Ireland through a very active network of member-led Nations and branches. There are 11 branches in England, some of which have local centres, as well as our Nations: IOP Ireland, IOP Scotland and IOP Wales. Nations and Branches organise programmes of physics-related events such as lectures, meetings and conferences for members and also work locally to promote physics, physics education and public understanding of physics. Our nations are also involved in work with national governments and devolved administrations. The Institute also currently has two international branches, known as chapters, in Finland and in the south-eastern United States.

The Nations and Branches are listed at [iop.org/activity/branches](http://iop.org/activity/branches) together with information on their programmes of activity.



Hosting a Whitehall and Industry Group breakfast briefing on Productivity with Airbus Group and Innovate UK.

## IOP AWARDS

IOP Awards recognise teams and individuals who have made a substantial contribution to the development or reputation of physics in the UK or Ireland. It is our aim to identify and honour 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 2016 we were delighted that the physics community submitted twice as many nominations as in previous years. Nominees came more than 54 organisations, with twice as many nominations for people or teams working in industry and four times as many female nominations. We hope to build on this success in 2017 and see even more nominations from all corners of the community. 2017 promises to be an exciting year as we introduce a revised portfolio of awards. While all of our established medals remain unchanged, we have introduced a number of changes to enable us to recognise and reward remarkable contributions to physics at each career stage in all relevant fields.

Our 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.

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



The 2016 Awards ceremony took place on 29 November.

### 2016 winners

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<b>Newton</b>	Professor Sir Thomas Kibble (Imperial College London) <i>For developing the theory of symmetry-breaking in quantum field theory, which has led to quantitative models for the origin of the masses of elementary particles, together with experimentally verified applications to soliton formation, and models for structure formation in the early universe.</i>
<b>Dirac</b>	Professor Sandu Popescu (University of Bristol) <i>For his fundamental and influential research into nonlocality and his contribution to the foundations of quantum physics.</i>
<b>Faraday</b>	Professor Jenny Nelson (Imperial College London) <i>For her pioneering advances in the science of nanostructured and molecular semiconductor materials.</i>
<b>Glazebrook</b>	Dr Hugh Elliot Montgomery (Thomas Jefferson National Accelerator Facility) <i>For his leadership at the Thomas Jefferson National Accelerator Facility and distinguished research in high-energy physics.</i>

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<b>Swan</b>	Dr Graeme Malcolm (M Squared Lasers) <i>For his role in founding M Squared Lasers, and his contribution to the design and manufacture of transformative award-winning photonics products.</i>
<b>Maxwell</b>	Dr Alexandra Olaya-Castro (University College London) <i>For her contributions to the theory of quantum effects in biomolecular systems – in particular, to the understanding of exciton-vibration interactions and the emergence of nontrivial quantum behaviour in photosynthetic complexes.</i>
<b>Moseley</b>	Dr Jacopo Bertolotti (University of Exeter) <i>For his contributions to the understanding and exploitation of light scattering both in natural and in artificial materials.</i>
<b>Paterson</b>	Professor Malte Gather (University of St Andrews) <i>For inventing a way of generating laser light within live cells and pioneering the application of this concept for the life sciences, and for his work on organic LEDs, which find applications in the display industry and in biophotonics.</i>
<b>Bragg</b>	Stuart Farmer (Robert Gordon's College) <i>For outstanding contributions to enhance both the teaching and the public image of physics, making classroom science more relevant, attractive and visible.</i>
<b>Kelvin</b>	Brady Haran, Professor Michael Merrifield and Professor Philip Moriarty (University of Nottingham) <i>For innovative and effective promotion of the public understanding of physics through the Sixty Symbols video project.</i>
<b>Appleton</b>	Professor Giles Harrison (University of Reading) <i>For his outstanding contributions and leadership in the field of atmospheric electricity, including the discovery of new global-scale atmospheric interactions, and his leading public outreach on the meteorological effects of the solar eclipse of 2015.</i>
<b>Franklin</b>	Professor Raymond E. Goldstein (University of Cambridge and Churchill College Cambridge) <i>For revealing the physical basis for fluid motion in and around active cells and its importance for the evolution of multicellularity, cell differentiation, and the synchronicity of eukaryotic flagella.</i>
<b>Gabor</b>	Professor Martin Dawson (University of Strathclyde) <i>For his vision and leadership in applied photonics, including pioneering contributions to optically pumped semiconductor lasers, diamond photonics and gallium nitride optical microsystems, and for fostering the international development and commercialisation of these technologies.</i>
<b>Hoyle</b>	Professor Sheila Rowan (University of Glasgow) <i>For having devised and implemented a range of refinements in precision laser interferometers, pioneering aspects of the technology of gravitational wave observatories.</i>
<b>Rutherford</b>	Professor John Simpson (STFC Daresbury Laboratory) <i>For his outstanding leadership in the development of new detector technologies and systems for experimental nuclear physics research within the UK and Europe, and for his seminal contributions to our understanding of the structure of atomic nuclei, especially in revealing new properties of nuclei at the limits of angular momentum, deformation, and stability.</i>
<b>Thomson</b>	Professor Jeremy Hutson (University of Durham) <i>For his pioneering work on the theory of ultracold molecules, which has provided fundamental insights into ultracold atomic and molecular collisions and which underpins recent experiments to create molecular quantum gases.</i>
<b>Phillips</b>	Professor Brian Fulton (University of York) and Dr Mark Telling (STFC) <i>For distinguished service to the Institute of Physics.</i>
<b>Born</b>	Professor Christian Pfeleiderer (Technische Universität München) <i>For the discovery of skyrmion lattices in chiral magnets and their manipulation by electric currents.</i> Bilateral award with the Deutsche Physikalische Gesellschaft (German Physical Society)
<b>Holweck</b>	Professor Zoran Hadzibabic (University of Cambridge) <i>For his outstanding experimental achievements in the control of ultracold quantum degenerate gases.</i> Bilateral award with the Société Française de Physique (French Physical Society)

<b>Massey</b>	<p>Professor Raymond Volkas (University of Melbourne)</p> <p><i>For his seminal contributions over approximately 30 years to many areas of "physics beyond the standard model", the field that seeks to uncover new particles and forces, in particular his work on sterile neutrinos, mirror and asymmetric dark matter and the origin of neutrino mass.</i></p> <p>Bilateral award with the Australian Institute of Physics</p>
<b>Occhialini</b>	<p>Professor Carla Andreani (Università degli Studi di Roma "Tor Vergata")</p> <p><i>For her outstanding contributions to novel experimental techniques and methods in neutron spectroscopy and her tireless commitment to fostering the British-Italian collaboration in neutron science.</i></p> <p>Bilateral award with the Società Italiana di Fisica (Italian Physical Society)</p>
<b>Business Innovation Awards</b>	<p>Ikon Science, Jaguar Land Rover, Kromek, The Technology Partnership, Ultra Electronics NCS, Airbus Defence and Space, Aqua Cooling Solutions, e2v, Endomag, and Tesla Engineering</p>

## SUBSIDIARY COMPANIES

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 IOP Publishing Ltd is the publication and distribution of high-quality scientific journals 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 150 South Independence Mall West, Suite 929, 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, catering and room hire facilities at the Institute's headquarters, 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 150 South Independence Mall West, Suite 929, 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 Limited 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 Limited 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 Limited 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 Publishing Ltd)  
IOP Marketing and Promotion Services Private Ltd is a wholly owned subsidiary of IOP Publishing Limited, 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.

## **IOP Publishing Ltd – activities in 2016**

IOP Publishing 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.

IOP Publishing had another strong year in 2016, in spite of continuing challenges in its academic library markets, in particular in Latin America, the Middle East and parts of Asia. Sales revenues from books and journals nonetheless grew and it exceeded its target for Gift Aid to the Institute for the year.

### **Journals**

In its journals publishing IOP Publishing saw growth in both submissions and published articles and it published the first issues of two new specialist journals: Flexible and Printed Electronics and Quantum Science and Technology. 2D Materials, a high-quality specialist journal launched only in 2014, achieved its first Impact Factor in 2016, beginning with a remarkable 9.611, and seeing a huge increase in submissions immediately thereafter.

IOP Publishing also began publication in 2016 of Publications of the Astronomical Society of the Pacific on behalf of its new society partner. Its Editor in Chief, Jeff Magnum of the National Radio Astronomy Observatory, said: "IOP has distinguished itself as the premier publisher in the physical science community. With this new collaboration, PASP will be able to broaden its exposure within the international astrophysical community through IOP's partnerships in rapidly-developing physics communities, such as those in Asia and South America". In addition to taking on publication of PASP IOP Publishing renewed contracts for the publication of seven other partner journals, including those held with the Chinese Academy of Science.

IOP Publishing also launched AAS Nova on behalf of the American Astronomical Society which won the 'Best Health or Education News Site' at the 2016 Drum Online Media Awards.

During 2016 IOP Publishing initiated a major project better to understand the experience of researchers using its journals and services, as authors, referees and readers. An ongoing survey of researchers in each of these guises is providing a mass of information which will enable IOP Publishing to improve its services to each of them. In 2017 this will include the development of a 'Researcher Hub', bringing together all information for researchers using IOP's services in a single place.

### **eBooks**

IOP Publishing published 62 titles in its new ebooks programme in 2016 and signed contracts to publish 90 or more in 2017. It also agreed to launch a ebook series in partnership with the Biophysical Society, adding to similar agreements with the American Astronomical Society and the Institute of Physics and Engineering in Medicine.

### **Technology**

The largest among many projects to be undertaken in 2016 was the launched of 'Accepted Manuscripts' enabling the online publication of accepted manuscripts within 24 hours of acceptance, ahead of formal publication after copy-editing and typesetting services. Publication of the Accepted Manuscripts is especially valued by researchers in fast-moving areas of science, enabling them to establish priority earlier and their articles to be cited more quickly. The complex project touched almost every one of IOP Publishing's systems.

### **Open access**

2016 saw further growth in open access publishing, with more than 9% of all articles immediately free to read and re-use. The biggest growth came again in the 'hybrid' open-access model, under which individual articles are published in subscription journals, reaching almost 1,200 articles. Much of this growth came from UK authors, facilitated by IOP's offsetting agreement with UK universities.

## **IOP Enterprises Ltd – activities in 2016**

As a result of the Institute vacating 76 Portland Place in March 2014 ahead of a move to new premises in King's Cross the trading activities of IOPE remained significantly scaled back in 2016.

Throughout 2016, the IOPE Board has continued to identify opportunities associated with the purchase and development of the Institute's new home, including a new venue business and ways in which IOPE can help the Institute achieve its charitable objectives through the delivery of educational, public engagement and physics-based business innovation programmes.

## FINANCIAL REVIEW

### Financial statements

The financial statements for the year ended 31 December 2016 are set out on pages 41 to 68. They were prepared 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 86% (2015: 88%) of the group's incoming resources are generated from the activities of its trading subsidiary, IOP Publishing Limited. Other sources of income include income from members either as membership fees or for additional services, grants from government and other grant-awarding bodies, and from IOP Enterprises Ltd, another trading subsidiary.

Total incoming resources in the year for the group were £67.4m (2015: £56.9m), an increase of £10.5m or 18.5% on 2015. Discovery income increased by £10.5m on 2015 to £59.7m due to the continued growth of IOP Publishing Ltd's new book programme, increased sales of the IOP Publishing Ltd archive and the impact of favourable foreign exchange rates on the translation of sales remitted in US dollars. Community income increased by £0.4m to £2.1m due to several large conferences held in 2016, including Photon 16, Joint European Magnetic Symposia (JEMS) and XXVII International Conference on Neutrino Physics and Astrophysics. This was offset by a reduction in Education income of £0.4m to £3.3m due to a reduction in funding for Capital Physics resulting in a scaled back project in 2016 & 2017 and a short term reduction in staff costs within the Stimulating Physics Network programme. Further commentary on the activities of IOP Publishing Limited is shown below.

Amounts to be remitted to the Institute by Gift Aid from its subsidiaries in respect of 2016 are £12.8m (2015: £9.7m).

Total resources expended in the year have increased due to increased expenditure within charitable activities, specifically Discovery, Community and Society, offset by a reduction in expenditure within Education. Total expenditure for the group was £63.0m (2015: £53.8m), an increase of £9.2m or 17%.

Further details are included in the Consolidated Statement of Financial Activities on page 41. The group and Institute balance sheet is included on page 43. The Institute considers incoming resources, Gift Aid remitted from its subsidiaries, and expenditure to be key performance indicators.

Debtors have increased from £11.4 m to £13.8m at 31 December 2016. The relative increase is due to an increase in trade debtors and accrued income within IOP Publishing Limited as a result of favourable exchange rates, partly offset by a reduction in other debtors.

Deferred revenue remains a key balance and has increased by £1.4m to £15.6m (2015: £14.2m). This reflects an improvement in the cash collection profile on journal subscriptions throughout 2016 and movements in foreign exchange rates within IOP Publishing Limited. This is offset by a reduction in deferred membership renewals for 2017 within the Institute where payment has been received in 2016.

The cash and short-term investment position remains strong, and has increased from £19.8m at 31 December 2015 to £24.3m at 31 December 2016. The increased balance reflects lower payments made by the group into the Institute's defined benefit pension scheme offset by increased capital additions of £4.4m (2015: £2.3m). Further details on capital additions are given in note 15.

The Institute's defined benefit pension deficit increased by £13.4m to £31.1m (2015: £17.7m). Whilst the assets in the Institute of Physics Retirement Benefit Plan (1975) grew by £11.6m, the estimated present value of liabilities also increased by £25.0m to £106.0m. The key driver for the increase in liability has been a change in assumptions used in the actuarial valuation, most notably the decrease

in discount rate from 3.85% to 2.65%. This has been partly offset by contributions made by the Institute during the year and asset returns being greater than expected.

The scheme's last triennial revaluation was at 1 January 2014 and a deficit elimination plan was agreed at that time with the scheme's trustees. The next triennial revaluation will be undertaken as at 1 January 2017. 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 the going concern basis. The strong performance of the group in 2016 and the improved net asset position at the end of 2016, excluding the defined-benefit pension deficit, support the trustees' conclusion.

## Trading subsidiaries

### IOP Publishing Limited (IOPP)

The turnover for the year to 31 December 2016 was £57.6m (2015: £49.9m) an increase of 15.5% on 2015 due to the growth of the new book programme, increased archive sales and favourable foreign exchange rates as described above. The current year gross profit margin remains largely consistent at 91.1% (2015: 90.7%) with an operating margin for the current year of 20.4% which has increased slightly from the previous year (2015: 19.1%). The company will remit to the Institute of Physics, by Gift Aid, the sum of £11.8m in respect of 2016 (2015: £9.7m).

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)

The turnover for the year to 31 December 2016 was £88k (2015: £118k). The company will remit to the Institute of Physics, by gift aid, the sum of £25k (2015: £48k). As a result of the Institute vacating 76 Portland Place in March 2014 ahead of a move to new premises in 2018 the trading activities of IOPE have consequently been scaled back as a result of reduced space available for rental.

## Reserves and investment

The Charter and Bylaws confer power on the Institute to maintain income reserves. 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; and
- 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 investments held by the Institute generated gains for the group of £2.4m, comprising a realised gain of £0.8m and an unrealised gain of £1.6m (2015: unrealised loss of £0.4m). The realised gain arose as a result of the transfer of investments between schemes held by the Institute. The total market value of investments held by the Group increased from £22.1m as at 31 December 2015 to £24.5m as at 31 December 2016.

After a review in 2014, 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 2017 based on the current long-term plan, as modified by the 2017 budget, is between approximately £21m–28m (2015: £20m–27m). The current level of free reserves as represented by the Institute's investments is £24.5m (2015: £22.1m). On this basis, current reserves are within the required range as defined in the Institute's policy.

### 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, 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.

### Funds

The balances on the individual funds of the Institute at 31 December 2016 are considered adequate to meet their respective commitments.

### Auditors

A resolution to appoint PricewaterhouseCoopers LLP as auditors will be proposed at the next annual general meeting.

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 Stuart Palmer FEng CPhys FInstP  
Honorary Secretary**

76 Portland Place  
London  
W1B 1NT

## **INDEPENDENT AUDITOR'S REPORT TO THE TRUSTEES OF THE INSTITUTE OF PHYSICS**

We have audited the financial statements of The Institute of Physics for the year ended 31 December 2016 which comprise the consolidated and parent charity statement of financial activities, the consolidated and parent balance sheet, the consolidated statement of cash flows and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

This report is made solely to the charity's trustees, as a body, in accordance with the Charities Act 2011 and Charities and Trustee Investment (Scotland) Act 2005. Our audit work has been undertaken so that we might state to the charity's trustees those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charity and the charity's trustees as a body, for our audit work, for this report, or for the opinions we have formed.

### **Respective responsibilities of trustees and auditors**

As explained more fully in the statement of trustees' responsibilities, the trustees are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view.

We have been appointed as auditors under section 144 of the Charities Act 2011 and section 44(1)(c) of the Charities and Trustee Investment (Scotland) Act 2005 and report in accordance with regulations made under those Acts. Our responsibility is to audit and express an opinion on the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Financial Reporting Council's (FRC's) Ethical Standards for Auditors.

### **Scope of the audit of the financial statements**

A description of the scope of an audit of financial statements is provided on the FRC's website at [www.frc.org.uk/auditscopeukprivate](http://www.frc.org.uk/auditscopeukprivate).

### **Opinion on financial statements**

In our opinion the financial statements:

- give a true and fair view of the state of the group's and parent charity's affairs as at 31 December 2016 and of the group's and parent charity's incoming resources and application of resources, including the income and expenditure, for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Charities Act 2011 and Charities and Trustee Investment (Scotland) Act 2005 and regulations 6 and 8 of the Charities Accounts (Scotland) Regulations 2006 (as amended).

**Matters on which we are required to report by exception**

We have nothing to report in respect of the following matters where the Charities Act 2011 and Charities Accounts (Scotland) Regulations 2006 (as amended) requires us to report to you if, in our opinion:

- the information given in the Trustees' report is inconsistent in any material respect with the financial statements; or
- sufficient accounting records have not been kept; or
- the parent charity financial statements are not in agreement with the accounting records and returns; or
- we have not received all the information and explanations we require for our audit.



Don Bawtree (senior statutory auditor)  
For and on behalf of **BDO LLP**, statutory auditor  
Gatwick  
United Kingdom

Date: 14 July 2017

BDO LLP is a limited liability partnership registered in England and Wales (with registered number OC305127).

**CONSOLIDATED STATEMENT OF FINANCIAL ACTIVITIES  
INCORPORATING A CONSOLIDATED INCOME AND EXPENDITURE  
ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 2016**

	Note	2016 Restricted £'000	2016 Unrestricted £'000	2016 Total £'000	2015 Total £'000
<b>Income from:</b>					
Donations and legacies		23	-	23	28
Charitable activities:					
Community		-	2,125	2,125	1,683
Discovery		45	59,605	59,650	49,204
Economy		-	146	146	24
Education		592	2,699	3,291	3,675
Society		40	173	213	111
Other trading activities		-	1,588	1,588	1,689
Investments	6	-	412	412	447
<b>Total income</b>	<b>3 &amp; 5</b>	<b>700</b>	<b>66,748</b>	<b>67,448</b>	<b>56,861</b>
<b>Expenditure on:</b>					
Raising funds		-	(63)	(63)	(70)
Charitable activities:					
Community	7	-	(3,473)	(3,473)	(2,843)
Discovery	7	(69)	(50,778)	(50,847)	(42,505)
Economy	7	-	(790)	(790)	(455)
Education	7	(619)	(5,670)	(6,289)	(7,019)
Society	7	(13)	(1,242)	(1,255)	(826)
Other		-	(287)	(287)	(99)
<b>Total expenditure</b>	<b>4</b>	<b>(701)</b>	<b>(62,303)</b>	<b>(63,004)</b>	<b>(53,817)</b>
Net gains/(losses) on investments	17	-	2,394	2,394	(422)
Net interest in results for the year of joint venture	16	-	-	-	51
<b>Net income / (expenditure)</b>		<b>(1)</b>	<b>6,839</b>	<b>6,838</b>	<b>2,673</b>
<b>Other recognised gains/losses</b>					
Gains/(losses) on revaluation of investment property			151	151	-
Actuarial (losses)/gains on defined benefit pension scheme	23	-	(13,792)	(13,792)	1,387
Exchange difference on retranslation of net assets of subsidiary undertakings		-	591	591	153
<b>Net movement in funds</b>		<b>(1)</b>	<b>(6,211)</b>	<b>(6,212)</b>	<b>4,213</b>
Fund balances brought forward		716	29,224	29,940	25,727
<b>Fund balances carried forward</b>	<b>22</b>	<b>715</b>	<b>23,013</b>	<b>23,728</b>	<b>29,940</b>

The Statement of Financial Activities includes all gains and losses recognised in the year. All amounts relate to continuing activities.

The notes on pages 45 to 68 form part of these financial statements.

**CHARITY STATEMENT OF FINANCIAL ACTIVITIES INCORPORATING AN  
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31  
DECEMBER 2016**

	Note	2016 Restricted £'000	2016 Unrestricted £'000	2016 Total £'000	2015 Total £'000
<b>Income from:</b>					
Donations and legacies		23	-	23	28
Charitable activities:					
Community		-	2,125	2,125	1,683
Discovery		45	13,758	13,803	10,601
Economy		-	146	146	24
Education		592	2,699	3,291	3,675
Society		40	173	213	111
Other trading activities		-	25	25	48
Investments		-	1,255	1,255	1,231
<b>Total income</b>		<b>700</b>	<b>20,181</b>	<b>20,881</b>	<b>17,401</b>
<b>Expenditure on:</b>					
Charitable activities:					
Community		-	(3,626)	(3,626)	(2,946)
Discovery		(69)	(3,645)	(3,714)	(3,568)
Economy		-	(807)	(807)	(472)
Education		(619)	(5,789)	(6,408)	(7,249)
Society		(13)	(1,268)	(1,281)	(856)
Other		-	(321)	(321)	(118)
<b>Total expenditure</b>		<b>(701)</b>	<b>(15,456)</b>	<b>(16,157)</b>	<b>(15,209)</b>
Net gains / (losses) on investments	17	-	2,394	2,394	(422)
<b>Net income / (expenditure)</b>		<b>(1)</b>	<b>7,119</b>	<b>7,118</b>	<b>1,770</b>
<b>Other recognised gains/losses</b>					
Gains/(losses) on revaluation of investment property		-	151	151	-
Actuarial (losses)/gains on defined benefit pension scheme	23	-	(13,792)	(13,792)	1,387
<b>Net movement in funds</b>		<b>(1)</b>	<b>(6,522)</b>	<b>(6,523)</b>	<b>3,157</b>
Fund balances brought forward		716	25,822	26,538	23,381
<b>Fund balances carried forward</b>	22	<b>715</b>	<b>19,300</b>	<b>20,015</b>	<b>26,538</b>

## BALANCE SHEET AT 31 DECEMBER 2016

	Note	Group 2016 £'000	Group 2015 £'000	Charity 2016 £'000	Charity 2015 £'000
<b>Fixed assets</b>					
Intangible assets	14	101	126	-	-
Tangible assets	15	21,859	19,463	18,443	15,745
Investments in subsidiary undertakings	16	-	-	3,001	3,001
Investments	17	24,450	22,056	24,450	22,056
		<u>46,410</u>	<u>41,645</u>	<u>45,894</u>	<u>40,802</u>
<b>Current assets</b>					
Debtors	18	13,806	11,408	1,929	1,457
Current asset investments		1,860	4,508	1,051	2,000
Cash at bank and in hand		22,393	15,309	6,490	6,377
		<u>38,059</u>	<u>31,225</u>	<u>9,470</u>	<u>9,834</u>
<b>Creditors: amounts falling due within one year</b>	19	<u>(28,866)</u>	<u>(24,530)</u>	<u>(3,474)</u>	<u>(5,698)</u>
<b>Net current assets</b>		<b>9,193</b>	<b>6,695</b>	<b>5,996</b>	<b>4,136</b>
<b>Provisions</b>	21	<b>(738)</b>	<b>(716)</b>	<b>(738)</b>	<b>(716)</b>
<b>Pension scheme funding deficit</b>	23	<b>(31,137)</b>	<b>(17,684)</b>	<b>(31,137)</b>	<b>(17,684)</b>
<b>Net Assets</b>		<u><b>23,728</b></u>	<u><b>29,940</b></u>	<u><b>20,015</b></u>	<u><b>26,538</b></u>
<b>Restricted funds</b>					
Restricted funds	22	715	716	715	716
<b>Unrestricted funds</b>					
General fund	22	54,150	46,908	50,437	43,506
Pension reserve	23	(31,137)	(17,684)	(31,137)	(17,684)
Total unrestricted funds		<u>23,013</u>	<u>29,224</u>	<u>19,300</u>	<u>25,822</u>
<b>Total charity funds</b>		<u><b>23,728</b></u>	<u><b>29,940</b></u>	<u><b>20,015</b></u>	<u><b>26,538</b></u>

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



Professor Roy Sambles FRS CPhys FInstP  
President



Professor J D C Jones OBE FRSE FOSA CPhys FInstP  
Honorary Treasurer

The notes on pages 45 to 68 form part of these financial statements.

## CONSOLIDATED STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 31 DECEMBER 2016

	2016 £'000	2015 £'000
<b>Cash flows from operating activities</b>		
<b>Net income (expenditure) for the year</b>	<b>6,838</b>	<b>2,673</b>
Adjustments for:		
Depreciation and amortisation of fixed assets	2,144	2,078
(Profit) / loss on disposal of fixed assets	2	50
Share of profit for the year of equity accounted investments	-	(51)
Net fair value (gains) / losses recognised in profit or loss	1,177	122
(Gains) / losses on investments	(2,394)	422
Net interest payable / (receivable)	(20)	(36)
Dividend income from fixed and current investments	(299)	(268)
Difference between net pension expense and cash contribution	(339)	(4,095)
Decrease / (increase) in trade and other debtors	(2,398)	51
Decrease / (increase) in stocks	-	3
Increase / (decrease) in trade and other creditors	3,151	(492)
Increase / (decrease) in provisions	22	(164)
<b>Net cash provided by (used in) operating activities</b>	<b>7,883</b>	<b>293</b>
<b><i>Net cash generated from operating activities</i></b>	<b>7,883</b>	<b>293</b>
<b>Cash flows from investing activities</b>		
Purchases of tangible fixed assets	(4,542)	(2,330)
Interest received	20	36
Dividends received on fixed and current asset investments	484	317
Purchase of subsidiary undertaking	-	(302)
Cash acquired with subsidiary undertaking	-	2,292
Purchase of current asset investments	(5,200)	(3,400)
Sale of current asset investments	5,200	-
<b><i>Net cash provided by (used in) investing activities</i></b>	<b>(4,038)</b>	<b>(3,387)</b>
<b>Net increase / (decrease) in cash and cash equivalents</b>	3,845	(3,094)
Cash and cash equivalents at beginning of year	19,817	22,758
Foreign exchange gains and losses	591	153
<b>Cash and cash equivalents at end of year</b>	<b>24,253</b>	<b>19,817</b>
<b>Cash and cash equivalents comprise:</b>		
Cash at bank and in hand	22,393	15,309
Current asset investments	1,860	4,508
	<b>24,253</b>	<b>19,817</b>

The notes on pages 45 to 68 form part of these financial statements.

# NOTES FORMING PART OF THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2016

## 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 76 Portland Place London, W1B 1NT.

The Institute of Physics is a Public Benefit Entity under FRS102. 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 accounts 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 2016 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 accounts.

### Business combinations

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

### Joint ventures

An entity is treated as a joint venture where the group holds a long term interest and shares control under a contractual agreement.

In the consolidated financial statements, interests in joint ventures are accounted for using the equity method of accounting. Under this method, an equity investment is initially recognised as the transaction price including transaction costs, and is subsequently adjusted to reflect the investor's share of the profit or loss, other comprehensive income and equity of the joint venture. The consolidated Statement of Financial Activities includes the group's share of the joint venture's operating results, interest, pre-tax results and attributable taxation of such undertakings. In the consolidated balance sheet, the interests in joint venture undertakings are shown as the group's share of the identifiable net assets including any unamortised premium paid on acquisition.

#### **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.

#### **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 accounts.

#### **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

#### **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.

#### **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:

- 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)

The freehold property which was purchased during the year ended 31 December 2013 has not yet been brought into use and is therefore not currently being depreciated.

#### **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 unlisted holdings. Gains and losses are recognised in profit or loss, within 'Net income/expenditure' in the Statement of Financial Activities.

Current asset investments are cash deposits held with qualifying financial institutions for investment purposes, which cannot be withdrawn without penalty or giving notice of more than 24 hours and are not considered to be cash.

**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. 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 10-18% 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.

##### *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

		2016	2016	2016	2015	2015	2015
	Note	Restricted	Unrestricted	Total	Restricted	Unrestricted	Total
		£'000	£'000	£'000	£'000	£'000	£'000
<b>Income from:</b>							
Donations and legacies		23	-	23	28	-	28
Charitable activities:							
Community	6	-	2,125	2,125	-	1,683	1,683
Discovery		45	59,605	59,650	90	49,114	49,204
Economy		-	146	146	-	24	24
Education		592	2,699	3,291	683	2,992	3,675
Society		40	173	213	-	111	111
Other trading activities		-	1,588	1,588	-	1,689	1,689
Investments		-	412	412	-	447	447
<b>Total income</b>	5	<b>700</b>	<b>66,748</b>	<b>67,448</b>	<b>801</b>	<b>56,060</b>	<b>56,861</b>

## 4. Expenditure: comparatives by fund

		2016	2016	2016	2015	2015	2015
	Note	Restricted	Unrestricted	Total	Restricted	Unrestricted	Total
		£'000	£'000	£'000	£'000	£'000	£'000
<b>Expenditure on:</b>							
Raising funds		-	(63)	(63)	-	(70)	(70)
Charitable activities:							
Community	7	-	(3,473)	(3,473)	-	(2,843)	(2,843)
Discovery	7	(69)	(50,778)	(50,847)	(154)	(42,351)	(42,505)
Economy	7	-	(790)	(790)	-	(455)	(455)
Education	7	(619)	(5,670)	(6,289)	(704)	(6,315)	(7,019)
Society	7	(13)	(1,242)	(1,255)	-	(826)	(826)
Other	7	-	(287)	(287)	-	(99)	(99)
<b>Total expenditure</b>		<b>(701)</b>	<b>(62,303)</b>	<b>(63,004)</b>	<b>(858)</b>	<b>(52,959)</b>	<b>(53,817)</b>

## 5. Geographical analysis of incoming resources

	2016 £'000	2015 £'000
Europe, Middle East and Africa	27,223	23,334
The Americas	26,937	22,092
Asia Pacific	13,288	11,435
<b>Total</b>	<b>67,448</b>	<b>56,861</b>

## 6. Investment income

	2016 £'000	2015 £'000
Interest from listed investments	299	268
Property rental income	93	95
Interest from cash and short term investments	20	35
Other	-	49
<b>Total</b>	<b>412</b>	<b>447</b>

## 7. Expenditure on charitable activities

	Activities undertaken directly £'000	Grant funding activities £'000	Support costs £'000	2016 £'000	2015 £'000
Community	1,499	-	1,974	3,473	2,843
Discovery	49,715	-	1,132	50,847	42,505
Economy	255	-	535	790	455
Education	3,667	85	2,537	6,289	7,019
Society	450	-	805	1,255	826
<b>Total</b>	<b>55,586</b>	<b>85</b>	<b>6,983</b>	<b>62,654</b>	<b>53,648</b>

Grant funding represents 157 (2015: 228) 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 £6,984k (2015: £6,527k). These are analysed as:

	Management Costs (Directorate + Staff)	Central Costs (IT, HR, Facilities)	Finance Costs	Total
	£'000	£'000	£'000	£'000
Community	960	729	285	1,974
Discovery	464	480	188	1,132
Economy	310	162	63	535
Education	919	1,163	455	2,537
Society	450	255	100	805
<b>Total</b>	<b>3,103</b>	<b>2,789</b>	<b>1,091</b>	<b>6,983</b>

Management costs (directorate + staff)	IOP charity staff time spent on activity
Central costs (IT, HR, Facilities)	IOP charity staff time spent on activity
Finance costs	IOP charity total costs in the activity

### Analysis of governance costs:

	2016	2015
Fees payable to the charity's auditor for the audit of the charity's annual accounts	31	31
Fees payable to the charity's auditor for other services:		
The audit of the charity's subsidiaries pursuant to legislation	31	32
Other services	20	43
Other taxation services	24	41
	<b>106</b>	<b>147</b>

## 9. Staff

	2016 £'000	2015 £'000
Wages and salaries	21,168	19,463
Social security costs	2,000	1,834
Pension costs	2,324	2,362
Redundancy and severance costs	435	373
	<u>25,927</u>	<u>24,032</u>

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

	2016	2015
£60,000 - £69,999	14	17
£70,000 - £79,999	15	13
£80,000 - £89,999	6	6
£90,000 - £99,999	4	-
£100,000 - £109,999	1	2
£110,000 - £119,999	3	3
£120,000 - £129,999*	2	2
£130,000 - £139,999	-	2
£140,000 - £149,999	1	-
£150,000 - £159,999	-	2
£160,000 - £169,999	2	1
£180,000 - £189,999	1	1
£190,000 - £199,999	1	-
£240,000 - £259,999	1	-
£270,000 - £279,999	1	1
£280,000 - £289,999	1	-

\* This banding includes the remuneration of the Group Chief Executive Officer (2016 and 2015).

The above banding includes 49 (2015: 48) staff for whom retirement benefits are accruing under defined contribution schemes and 9 (2015: 18) 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 £540k (2015: £490k). 13 staff included above (2015: 9) are paid in dollars and their earnings are subject to foreign exchange fluctuations when translating from \$ to £.

## 9. Staff (continued)

Additional information on the total remuneration package of employees earning over £60,000 per year is shown below.

### Institute of Physics - Charity

	Salary and Compensation	Bonus and commission	Non pensionable allowances and other benefits	Employer Pension Contribution	2016	2015
£60,000 - £64,999		-	-	£5,000 - £14,999	1	2
£65,000 - £69,999		-	-	£10,000 - £14,999	-	2
£70,000 - £74,999		-	-	£5,000 - £14,999	2	-
£75,000 - £79,999		-	-	£5,000 - £14,999	2	2
£125,000 - £129,999*		-	-	£20,000 - £24,999	1	1
£135,000 - £139,999^	£35,000 - £39,999		£20,000 - £24,999	-	1	-

\* This banding includes the remuneration of the Group Chief Executive Officer (2016 and 2015).

^ This banding includes a member of key management personnel seconded from IOP Publishing Ltd to the Institute of Physics with effect from 1 January 2016. The bonus and commission payment received by this employee in 2016 relates to a contractual performance based incentive linked to IOP Publishing Ltd in 2015.

### Institute of Physics - Group

Other subsidiary undertakings: 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 Limited.

Within the trading subsidiaries of the Institute of Physics Group, some staff, dependent 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 contributions are made at a maximum of 18% of pensionable salary.

The average number of full time equivalent employees during the year was:

		2016	2015
Charitable work:	- Institute of Physics	122	119
Business operations:	- IOP Publishing Limited	233	230
	- IOP Publishing Inc.	36	40
	- IOP Enterprises Limited	-	-
	- Turpion-Moscow Limited	8	8
	- IOP Publishing Consultants (Beijing) Co Ltd	8	7
Management and administration:	- Institute of Physics	29	24
	- IOP Publishing Limited	106	103
		<b>542</b>	<b>531</b>

The full time equivalent employees as at 31 December 2016 was 559 (2015: 524).

## 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 2016 total expenses incurred and reimbursed to 20 trustees (2015: 24) were £35k (2015: £31k).

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; Associate Director, Policy, Programmes & Performance; 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	
Human Resources Director	<b>IOP Publishing Inc.</b>
IT Director	Managing Director
Publishing Director	
Head of Marketing and B2B*	

\*As director of IOP Business Publishing Inc.

The total compensation paid to key management personnel for services provided to the group was £2,459k (2015: £2,132k). 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 (2015: £266k) to IOP Publishing Limited towards the cost of copies of Physics World supplied to members, and £74k (2015: £70k) 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

<b>Institute of Physics - Group</b>	<b>Goodwill on consolidation £'000</b>
<i>Cost or valuation</i>	
At 1 January 2016	126
Additions	-
<b>At 31 December 2016</b>	<b>126</b>
<i>Amortisation</i>	
At 1 January 2016	-
Provision for the year	(25)
<b>At 31 December 2016</b>	<b>(25)</b>
<i>Net book value</i>	
<b>At 31 December 2016</b>	<b>101</b>
At 31 December 2015	126

The group previously had an investment in a joint venture, Turpion Limited, 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 Limited bringing IOP Publishing Ltd's shareholding to 100%. The balance stated above represents the goodwill arising on this acquisition.

Further information can be found in note 24.

## 15. Tangible fixed assets

	Investment property	Freehold property	Short leasehold property	Fixtures and equipment	Total
	£'000	£'000	£'000	£'000	£'000
<b>Institute of Physics - Group</b>					
<i>Cost or valuation</i>					
At 1 January 2016	2,397	11,738	2,392	12,616	29,143
Additions	-	3,002	5	1,385	4,392
Net gains from fair value adjustment	150	-	-	-	150
Disposals	-	-	-	(295)	(295)
<b>At 31 December 2016</b>	<b>2,547</b>	<b>14,740</b>	<b>2,397</b>	<b>13,706</b>	<b>33,390</b>
<i>Depreciation</i>					
At 1 January 2016	-	-	(1,145)	(8,535)	(9,680)
Charge for the year	-	-	(240)	(1,904)	(2,144)
Disposals	-	-	-	293	293
<b>At 31 December 2016</b>	<b>-</b>	<b>-</b>	<b>(1,385)</b>	<b>(10,146)</b>	<b>(11,531)</b>
<i>Net book value</i>					
<b>At 31 December 2016</b>	<b>2,547</b>	<b>14,740</b>	<b>1,012</b>	<b>3,560</b>	<b>21,859</b>
At 31 December 2015	2,397	11,738	1,247	4,081	19,463
<b>Institute of Physics - Charity</b>					
<i>Cost or valuation</i>					
At 1 January 2016	2,397	11,738	2,362	1,642	18,139
Additions	-	3,002	-	25	3,027
Net gains from fair value adjustment	150	-	-	-	150
<b>At 31 December 2016</b>	<b>2,547</b>	<b>14,740</b>	<b>2,362</b>	<b>1,667</b>	<b>21,316</b>
<i>Depreciation</i>					
At 1 January 2016	-	-	(1,129)	(1,265)	(2,394)
Charge for the year	-	-	(236)	(243)	(479)
<b>At 31 December 2016</b>	<b>-</b>	<b>-</b>	<b>(1,365)</b>	<b>(1,508)</b>	<b>(2,873)</b>
<i>Net book value</i>					
<b>At 31 December 2016</b>	<b>2,547</b>	<b>14,740</b>	<b>997</b>	<b>159</b>	<b>18,443</b>
At 31 December 2015	2,397	11,738	1,233	377	15,745

## 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 2016 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.

The surplus on revaluation of the investment property of £151k has been credited to the Statement of Financial Activities for the year.

In the prior year, no surplus or deficit on revaluation was recognised because the property was purchased in November 2015 at open market value and as the trustees were not aware of any material change in value of the property between the date of acquisition and the balance sheet date, the trustees considered that the valuation as at the acquisition date was a reasonable representation of the fair value as at the balance sheet date.

### Assets in the course of construction

During the year ended 31 December 2013, the Institute purchased a new freehold property. The property has not yet been brought into use, therefore freehold property assets of £14.74m (2015: £11.738m) are in the course of construction and are not being depreciated.

Included in fixtures and equipment of the group are £190k (2015: £388k) and of the Charity are £nil (2015: £nil) 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.

## 16. Fixed asset investments

	Joint ventures £'000
<i>Cost</i>	
At 1 January 2016	-
Disposals	-
<b>At 31 December 2016</b>	<b>-</b>
<i>Share of retained profits</i>	
At 1 January 2016	-
Result for the year	-
Dividends paid	-
<b>At 31 December 2016</b>	<b>-</b>
<i>Net book value</i>	
<b>At 31 December 2016</b>	<b>-</b>
At 31 December 2015	-

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%.

As a result of this change in ownership, the investment in Turpion Ltd is classified as a subsidiary undertaking as at 31 December 2016.

### **Institute of Physics - Charity**

	Subsidiary undertakings £'000
<i>Cost</i>	
At 1 January 2016 and 31 December 2016	<b>3,001</b>

## 16. Fixed asset investments (cont.)

The Institute's subsidiary undertakings at 31 December 2016 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 2016
IOP Enterprises Ltd	UK	Ordinary	100%	Conference venue	31 Dec 2016
IOP Educational Publishing Ltd	UK	Ordinary	100%*	Dormant	31 Dec 2016
IOP Publishing Inc.	USA	Ordinary	100%	Publishing	31 Dec 2016
IOP Business Publishing Inc.	USA	Ordinary	100%^	Publishing	31 Dec 2016
IOP Publishing Consultants (Beijing) Co Ltd	China	Ordinary	100%*	Publishing consulting	31 Dec 2016
Turpion Limited	UK	Ordinary	100%*	Publishing	31 Dec 2016
Turpion-Moscow Ltd	Russia	Ordinary	100%+	Publishing	31 Dec 2016
IOP Marketing and Promotion Services Private Ltd	India	Ordinary	100%~	Publishing	31 Mar 2017

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

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

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

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

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

	Company Number	Net assets / (liabilities)	Turnover	Expenditure	Profit / loss
		2016 £'000	2016 £'000	2016 £'000	2016 £'000
IOP Publishing Limited	00467514	3,660	57,853	(57,853)	-
IOP Enterprises Limited	03471563	1	88	(88)	-
IOP Publishing Inc.	26-2659520	4,224	4,751	(4,751)	-
IOP Business Publishing Inc.	26-2301131	1,055	195	(195)	-
IOP Publishing Consultants (Beijing) Co Ltd	No.05292	126	691	(670)	21
Turpion Ltd	02463452	289	2,447	(2,447)	-
IOP Marketing and Promotion Services Private Ltd	U74999TN2016 FTC103739	9	67	(59)	8

Profit for the year of IOP Publishing Limited, IOP Enterprises Limited, IOP Publishing Inc., IOP Business Publishing Inc., and Turpion Limited are shown after the profits generated by each entity have been distributed by gift aid to IOP.

## 17. Investments

	Group and charity	
	2016	2015
	£'000	£'000
Market value at beginning of the year	22,056	19,078
Purchases in year	5,200	3,400
Disposal proceeds in year	(5,200)	-
Realised / unrealised (losses) / gains	2,394	(422)
Market value at end of the year	<u>24,450</u>	<u>22,056</u>
Historical cost	<u>21,483</u>	<u>20,702</u>

No investment management cost was incurred in 2016 or 2015.

The analysis of investments by class is as follows:

	Group and charity	
	2016	2015
	£'000	£'000
CR Ruffer Absolute Return Fund	19,333	22,056
CCLA COIF Charities Property Fund	5,117	-
Market value of investments	<u>24,450</u>	<u>22,056</u>

## 18. Debtors

	Group	Group	Charity	Charity
	2016	2015	2016	2015
	£'000	£'000	£'000	£'000
Trade debtors	5,231	3,573	109	159
Other debtors	3,049	3,427	1,250	797
Prepayments and accrued income	5,526	4,408	570	501
	<u>13,806</u>	<u>11,408</u>	<u>1,929</u>	<u>1,457</u>

An impairment loss of £277k (2015: £548k) was recognised in the consolidated Statement of Financial Activities for the period in respect of bad and doubtful trade debtors. An impairment loss of £67k (2015: £14k) was recognised in the Charity Statement of Financial Activities for the period in respect of bad and doubtful trade debtors.

Included within Other debtors is an amount of £146k (2015: £110k) 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 2016 £'000	Group 2015 £'000	Charity 2016 £'000	Charity 2015 £'000
Trade creditors	1,271	863	444	269
Amounts owed to group undertakings	-	-	1,005	3,041
Other creditors	5,417	4,394	394	106
Loss in fair value of derivatives	1,580	403	-	-
Other taxes and social security	533	463	-	-
Accruals	4,445	4,187	1,094	1,145
Deferred income	15,620	14,220	537	1,137
	<u>28,866</u>	<u>24,530</u>	<u>3,474</u>	<u>5,698</u>

Deferred income represents income received in advance:

	Group 2016 £'000	Group 2015 £'000	Charity 2016 £'000	Charity 2015 £'000
Journals subscriptions	13,880	12,814	-	-
Membership subscriptions	434	956	434	956
Other	1,306	450	103	181
	<u>15,620</u>	<u>14,220</u>	<u>537</u>	<u>1,137</u>

## 20. Financial instruments

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

	Group 2016 £'000	Group 2015 £'000	Charity 2016 £'000	Charity 2015 £'000
<b>Financial assets</b>				
Financial assets measured at fair value through profit or loss	24,450	22,056	24,450	22,056
Financial assets measured at amortised cost	<u>36,562</u>	<u>29,592</u>	<u>9,992</u>	<u>12,513</u>
<b>Financial liabilities</b>				
Financial liabilities measured at fair value through profit or loss	1,580	403	-	-
Financial liabilities measured at amortised cost	<u>(11,133)</u>	<u>(9,444)</u>	<u>(2,937)</u>	<u>(4,561)</u>

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 stocks, trade debtors, other debtors, amounts owed by joint ventures and group undertakings, current asset investments and cash at bank.

Financial liabilities measured at fair value through profit or loss comprise the loss in fair value of foreign currency exchange contracts.

Financial liabilities measured at amortised cost comprise trade creditors, other creditors, accruals and amounts owed to joint ventures and group undertakings.

## 21. Provisions

	Group 2016 £'000	Group 2015 £'000	Charity 2016 £'000	Charity 2015 £'000
Provisions	<u>738</u>	<u>716</u>	<u>738</u>	<u>716</u>

Included within provisions is a provision of £738k (2015: £716k) 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

	General fund £'000	Restricted funds £'000	Pension reserve (Deficit) £'000	Total £'000
<b>Institute of Physics - Group</b>				
At 1 January 2016	46,908	716	(17,684)	29,940
Incoming resources	65,748	700	1,000	67,448
Outgoing resources	(61,642)	(701)	(661)	(63,004)
Realised gains on investment sales during the year	781	-	-	781
Unrealised gains on investments	1,764	-	-	1,764
Exchange adjustments	591	-	-	591
Actuarial gains / (losses)	-	-	(13,792)	(13,792)
Balances carried forward	<u>54,150</u>	<u>715</u>	<u>(31,137)</u>	<u>23,728</u>

	General fund £'000	Restricted funds £'000	Pension reserve (Deficit) £'000	Total £'000
<b>Institute of Physics - Charity</b>				
At 1 January 2016	43,506	716	(17,684)	26,538
Incoming resources	19,181	700	1,000	20,881
Outgoing resources	(14,795)	(701)	(661)	(16,157)
Realised gains on investment sales during the year	781	-	-	781
Unrealised gains on investments	1,764	-	-	1,764
Actuarial gains / (losses)	-	-	(13,792)	(13,792)
Balances carried forward	<u>50,437</u>	<u>715</u>	<u>(31,137)</u>	<u>20,015</u>

## 22. Movement on reserves (continued)

<b>Group and charity</b>	<b>Balance at 1 Jan 2016</b>	<b>Incoming resources</b>	<b>Resources expended</b>	<b>Balance at 31 Dec 2016</b>
	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>
<i>Restricted funds</i>				
Prize funds	39	-	(1)	38
Other funds	677	700	(700)	677
	<b>716</b>	<b>700</b>	<b>(701)</b>	<b>715</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

<b>Institute of Physics Group</b>	<b>General fund £'000</b>	<b>Restricted funds £'000</b>	<b>Pension reserve (Deficit) £'000</b>	<b>Total £'000</b>
Intangible Fixed Assets	101	-	-	101
Tangible Fixed Assets	21,859	-	-	21,859
Investments	24,450	-	-	24,450
Current Assets	37,344	715	-	38,059
Current Liabilities	(28,866)	-	-	(28,866)
Non-Current Liabilities	(738)	-	(31,137)	(31,875)
Balances carried forward	<b>54,150</b>	<b>715</b>	<b>(31,137)</b>	<b>23,728</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 2015 showed that the value of the scheme's assets as at that date was £74,846k (2015: 63,245k) and that the actuarial value of those assets represented 71% (2015: 78%) of the benefits that had accrued to members, after allowing for expected future increases in earnings.

The Institute's and employees' contributions are 18% and 7% respectively.

The next triennial valuation is due on 1 January 2017.

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

	2016	2015
	%	%
Discount rate	2.65	3.85
Aggregate long-term expected rate of return on assets (net of expenses)		3.85
Inflation (RPI)	2.45	3.35
Inflation (CPI)	2.45	2.35
Future increases in deferred pensions	2.45	2.35
Rate of increase in salaries	3.45	3.35
Rate of increase to pensions in payment:		
LPI (max 6.5%) based on RPI	3.45	3.35
LPI (max 2.5%) based on RPI	2.15	2.15
Mortality assumptions:		
Life expectancy of male aged 65 now	22.4 ('light' 23.5)	22.4 ('light' 23.9)
Life expectancy of male aged 65 in 20 years	24.1 ('light' 25.1)	24.1 ('light' 25.5)
Life expectancy of female aged 65 now	24.5 ('light' 25.4)	24.8 ('light' 25.2)
Life expectancy of female aged 65 in 20 years	26.4 ('light' 27.3)	26.7 ('light' 27.1)

Cash commutation:

**2016:** Members take 75% of their max allowable pension commencement lump sum, with current commutation factors.

**2015:** Members take 75% of their max allowable pension commencement lump sum, with current commutation factors.

## 23. Pensions (continued)

### Reconciliation of fair value of plan liabilities:

	2016 £'000	2015 £'000
At the beginning of the year	80,929	81,727
Current service cost		543
Interest cost	3,080	2,907
Remeasurement (gains) / losses:		
Actuarial (gains) and losses	23,839	(2,309)
Benefits paid	(1,865)	(1,939)
At the end of the year	<u>105,983</u>	<u>80,929</u>

### Changes in the fair value of plan assets:

	2016 £'000	2015 £'000
At the beginning of the year	63,245	58,560
Interest income	2,419	2,169
Remeasurement (losses) / gains:		
Return on scheme assets excluding interest income	10,047	(922)
Contributions by employer	1,000	5,377
Benefits paid including expenses	(1,865)	(1,939)
At the end of the year	<u>74,846</u>	<u>63,245</u>
Actual return on plan assets	12,466	1,247

	2016 £'000	2015 £'000
Fair value of plan assets	74,846	63,245
Actuarial value of plan liabilities	(105,983)	(80,929)
Net pension scheme liability	<u>(31,137)</u>	<u>(17,684)</u>

### Group and charity

	2016 £'000	2015 £'000
Pension liability recognised on the balance sheet	<u>31,137</u>	<u>17,684</u>

### 23. Pensions (continued)

Amounts recognised in profit or loss are as follows:

	Group and charity	
	2016	2015
	£'000	£'000
Current service cost	-	543
Net interest cost	661	738
<b>Total</b>	<b>661</b>	<b>1,281</b>

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

	Group and charity	
	2016	2015
	£'000	£'000
Actual return less interest income included in net interest income	10,047	(922)
Changes in assumptions underlying the present value of the scheme liabilities	(23,839)	2,309
<b>Actuarial (loss)/gain on defined benefit pension scheme</b>	<b>(13,792)</b>	<b>1,387</b>

Composition of plan assets

	2016	2015
	£'000	£'000
Equities	32,258	37,062
Diversified growth funds	19,535	-
Liability Driven Investment funds	8,982	-
Annuities	10,778	10,119
Corporate bonds	2,919	6,577
Property	-	5,439
Cash	374	4,048
<b>Total plan assets</b>	<b>74,846</b>	<b>63,245</b>

#### 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 £2,114k (2015: £1,976k). An amount of £1k (2015: £257k) was payable to the schemes at the year end.

## 24. Analysis of changes in net funds

	2016 £'000	2015 £'000
(Decrease) / increase in cash and cash equivalents	3,845	(3,094)
Exchange translation	591	153
<b>Movement in net funds in the year</b>	<b>4,436</b>	<b>(2,941)</b>
Net funds brought forward	<u>19,817</u>	<u>22,758</u>
<b>Net funds carried forward</b>	<b><u>24,253</u></b>	<b><u>19,817</u></b>

## 25. Commitments under operating leases

### Group

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

	<b>Land and buildings 2016 £'000</b>	Land and buildings 2015 £'000
Not later than 1 year	1,285	1,015
Later than 1 year and not later than 5 years	3,577	3,737
Later than 5 years	434	133
	<u>5,296</u>	<u>4,885</u>

The group has also planned to undertake capital development work over the next 2 years on the freehold property that was purchased in 2013.

### Charity

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

	<b>Land and buildings 2016 £'000</b>	Land and buildings 2015 £'000
Not later than 1 year	916	916
Later than 1 year and not later than 5 years	2,883	3,666
Later than 5 years	-	133
	<u>3,799</u>	<u>4,715</u>

## 26. Amounts receivable under operating leases

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

	<b>Land and buildings 2016 £'000</b>	<b>Land and buildings 2015 £'000</b>
Not later than 1 year	<b>845</b>	<b>845</b>
Later than 1 year and not later than 5 years	<b>2,703</b>	<b>3,381</b>
Later than 5 years	<b>-</b>	<b>167</b>
	<b>3,548</b>	<b>4,393</b>

## 27. Related parties

The charity has taken advantage of the exemption available to not disclose transactions with its wholly owned subsidiaries.

The charity did not receive any donations without conditions from the trustees or any other related party (2015: nil).