



# Annual Report

April 2011

Annual activities and outreach • Policy • Education • Looking ahead



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## Annual activities and outreach

The Institute of Physics in Ireland (IOPI) has had an action-packed year, emphasised by a number of events that reached radio, television and newspapers. The BBC’s ‘Good morning Ulster’ and RTE’s ‘Mooney Show’ both included significant pieces on the ‘physics question’ adverts displayed on buses and DART carriages, encouraging people to text in answers from their mobile phones. One member of the radio panel asked, ‘why is there no prize?’ and the answer matched the thinking behind the campaign, ‘it’s the curiosity aspect – for the joy of knowledge’. There were well over 3000 text responses and webpage hits to the questions, which were visible on public transport both North and South during November and December.

Produced in Ireland, the modernised IOP leaflet that asks the question, ‘What is physics? Is physics for you?’, is in strong demand by teachers and guidance counsellors. Both the younger age group (13–15) and parents were kept in mind when deciding on its vibrant design. Twenty copies of these were sent to all physics teachers across all of Ireland, along with the annual ‘Physics courses in Ireland’ document. Complementing this, five new profiles have been added to the IOPI ‘Day in the Life’ booklet along with a colourful new cover and memorable title: ‘28 Days 28 Physicists’.

Last September, participants from across Ireland and the UK came to Queen’s University in Belfast to celebrate the 50th anniversary of the demonstration of lasing in an event sponsored by IOPI. A selection of engaging and fascinating talks covered the past, present and future of the laser.

Creating a dramatic spectacle at the BT Young Scientist Exhibition, IOPI’s physics of RADAR and soccer stand was on display in January, with hundreds of people queuing each day to take a penalty kick. Huge applause erupted when Mark Langtry, theoretical-physics student and First XI soccer-team member at University College Dublin, set a new record with a kick of 115 km/h.

At the Spring Weekend the lively ‘definite particle’ discussions took place on Irish membership of CERN and other large-scale instruments. Over the same weekend, the Rosse medal for postgraduate research posters was awarded by IOP president Jocelyn Bell to Mark Daly of University College Cork. Staying with the awards, the physics Leaving Certificate and GCE A-level awards this year had an all female cast, with Aislinn Hayes from Limerick, Eimear Keane from Dublin and Olivia Burke from Belfast taking the honours. Eileen Armstrong of the University of Limerick was the recipient of the Earnshaw Medal for the best final-year undergraduate project for her work on ‘Electron Microscopy Study of Hydrothermally Synthesized Single Crystal Cadmium Sulfide’.

Two IOPI speakers have been interviewed on Dublin South 93.9FM in recent months: ‘The Red Shift’ programme featured Artur Ekert talking about quantum cryptography and Peter Vukusic discussed the fascinating aspects of structural colour that he presented in this year’s Tyndall lecture entitled, ‘All things bright and beautiful’. The Tyndall Lectures attracted more than 2000 students across eight venues



Prof Robert Bowman, chairman of IOPI, presents a medal to Olivia Burke for her achievements in GCE A Level physics, 2010.

in Dublin, Cork, Limerick, Galway, Carlow, Waterford, Belfast and, for the first time, this event was hosted by Thornhill College, Derry. The students were enthralled by the physics of light and colour, the natural beauty of colour in butterflies and the control that it exerts over many processes in biology and chemistry, from the steady march of evolution to the molecular dynamics of photosynthesis.

## Policy

With the IOPI launching its manifesto for physics during the recent Irish general election, politics moved centre-stage with a determined campaign that involved the Institute contacting all candidates with details of our key concerns in relation to physics. With physics-based industry supporting more than 85,000 jobs and contributing €15 billion annually to the economy, it is clear that physics-based innovation is part of the solution to many of the critical issues in Ireland, particularly economic renewal and sustainability in energy. The campaign received welcome support from members who distributed hundreds of postcards to the candidates.

In Northern Ireland (NI), the Institute provided key input to a breakfast-briefing session for members of the NI Assembly at Stormont on 16 February 2011. The session focused on how important STEM skills and careers are to the NI economy. In addition, another IOPI physics manifesto campaign is underway for the May 2011 assembly elections.

Alongside such direct lobbying, the Institute has continued to make the case for physics in a range of government consultations both North and South in areas spanning teacher education, numeracy and literacy, strategy for science and key requirements for future skills needs. Underlying all such campaigns is the need for good data. During the year the Institute worked with third-level institutes throughout the country to contact physics graduates in relation to a comprehensive survey on their employment history and acquired skills.

### Some of the key facts to emerge include:

- High salaries – the survey found that 14% of graduates earn more than €100,000 a year.
- Employment in sectors ranging from hi-tech industries to the arts and the media.
- Widely sought-after skill sets such as problem solving, team working and creativity.
- An increasing number of women are pursuing careers in physics: just under a third of the survey respondents were women.
- It is particularly encouraging to see the number of graduates with a higher-level physics qualification who are contributing to Ireland’s rapidly growing third-level research disciplines, such as ICT, biotechnology and nanotechnology etc.

## Education

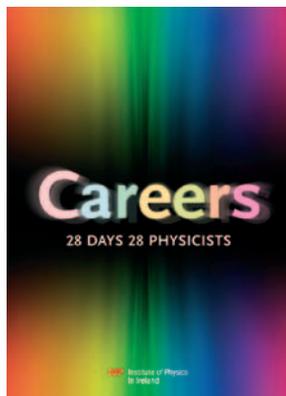
The five teacher co-ordinators in IOPI have provided tremendous support for teachers throughout the island with organised events such as teacher visits to Met Eireann, the chance to see medical physicists at work in hospitals and a demonstration of operations at the lifeboat in Dun Laoghaire. There were also exciting workshops including ‘Rockets and Dragsters’ at the NI Association for Science Education conference. A new initiative called Physics Mentors was launched last September by the IOPI teacher network. It is a free, nationwide service that seeks to support classroom teachers on any matter related to teaching of physics – to make contact, a teacher can send an e-mail to physicsmentors@gmail.com. So far, nearly 20 teachers have contacted the service, some on several occasions.

The annual Northern Ireland teachers’ conference at QUB was held in June, with more than 80 people attending for a day of physics demonstrations and presentations, highlighted by keynote speakers that included the BBC’s science and environment correspondent Mike McKimm and Cambridge University’s James Stirling on particle physics and the Large Hadron Collider. Going south, the IOPI Frontiers of Physics teachers’ meeting at NUI Maynooth featured Paul Dolk from the Netherlands, who inspired all with

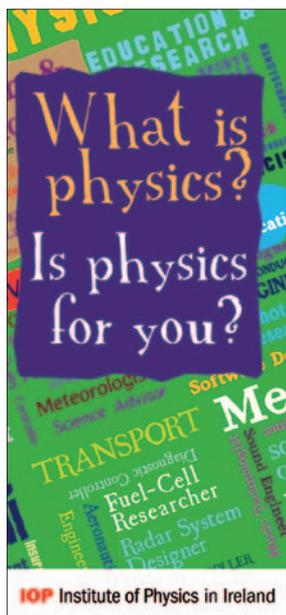
### Image notes (left to right)

The assistants at the IOPI stand at the BT Young Scientist Exhibition in January: (from left to right) Paul Moran (NUIG), Mark Langtry (UCD), Breandan Hill (QUB), Ronan Rochford (NUIG) and Andrew Grier (QUB) • Leaving cert winners: Eimear Keane and Aislinn Hayes who came first in the Leaving Certificate physics exam in 2010 were awarded IOP medals • Talking to potential students about physics careers at the Higher Options conference in the RDS in September • (Left to right), Donal O Sullivan, Eoin O Brien, Eoin Miller (sitting), Stephen McNulty and Anthony Donohoe from NUI Maynooth were the winners of the third IOPI interspersed quiz which was held in UCD School of Physics on Friday 4th March • Pauline Scott, Tony Scott and Brian Manley take a break on the boat trip during the 2010 Spring Weekend, titled ‘The definite particle’, held at the Hodson Bay Hotel on the shores of Lough Ree.

*“The five teacher coordinators in IOPI have provided tremendous support for teachers throughout the island”*



The new cover of the IOP Day in the Life booklet.



The design of the 'What is Physics?' booklet is aimed at both parents and students.



This comprehensive survey of physics graduates examined their employment history, salaries and acquired skills.

his demonstrations on the use of an iPod as a pocket laboratory, while local physicists provided insights into their areas of research on the ESA Herschel Space Telescope, the Planck satellite and atmospheric physics. There was also a discussion about the recent Leaving Certificate physics examinations and marking scheme. A report based on this and several other meetings with teachers was then sent to the State Examinations Commission and various other educational stakeholders.

Five second-level teachers were selected to represent Ireland at the Science on Stage Festival in Copenhagen in April 2011 and the Physics/Science on Stage team

recorded videos of their demonstrations for sharing with teachers in co-operation with the Professional Development Service for Teachers (PDST).

Jane McLoughlin Shimizu from Scoil Chaitriona Junior school in Galway was the first Irish recipient of the IOP Primary Science Teacher award and two second-level teachers, Noel Cunningham from The King's Hospital in Dublin and Diarmuid Hickey from Coachford College in Cork were winners of the Teachers of Physics award.

## Looking ahead

Dublin, City of Science 2012, will form a significant backdrop to next year's activities. The Spring Weekend, which is to be held in Dublin, will be a centrepiece for IOPI and we will be contributing to many other events such as the European Science Open Forum and outreach initiatives. Regardless of these uncertain economic times, IOPI is committed, through judicious use of our budget, to supporting the essential role of physics in schools, third-level, research, industry and the wider community.

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